

CONTEXTUAL AND INDIVIDUAL LEVEL DETERMINANTS OF BREAST
CANCER SCREENING INTENTION AMONG WOMEN IN GHANA

SAMUEL MANTEY OFORI DEI

BA, University of Cape Coast, 2007
MSS, Linkoping University, 2011

A Thesis

Submitted to the School of Graduate Studies
of the University of Lethbridge
in Partial Fulfillment of the
Requirements for the degree

MASTER OF SCIENCE, HEALTH SCIENCES

Faculty of Health Sciences
University of Lethbridge
LETHBRIDGE, ALBERTA, CANADA

Dedication

I dedicate this thesis to God, my mother and all the women who participated in this study. A special dedication goes to my late father, Emmanuel Mantey who made me who I am today. I will always remember you Papa; your educational vision will be my guide forever. To my future children—this is just the beginning of my academic trajectory, but not the end.

Abstract

Steady increases in breast cancer burden have recently been observed in Ghana. Despite the low incidence of the disease compared with other African countries, breast cancer deaths are high in this West African country. However, the uptake of breast cancer screening programs remains extremely low among Ghanaian women. Using a mixed methods approach comprising quantitative surveys and focus groups interviews, this study examined the influences of individual and contextual level factors on Ghanaian women's intention to perform breast self-examination or undergo clinical breast examination and mammography screening. The results suggest that health beliefs, knowledge, and sociodemographic, cultural and health system factors individually and collectively influence intentions towards breast cancer screening. These findings highlight the need for health education interventions to promote breast cancer screening programs, while addressing systemic, psychosocial, and cultural barriers to screening.

Acknowledgements

My sincere gratitude goes to the Lethbridge Public Interest Research Group (LPIRG) for providing me a research grant with regard to this project. This funding enabled me to travel to Ghana for data collection.

My deepest appreciation goes to my supervisor, Dr. Jean Harrowing for her great support, advice and encouragement. Despite our cultural differences, we were able to work harmoniously to implement the project. Her soft-spoken advice was full of inspiration and has made me develop lasting interest in research in cancer prevention in Africa, where a lot is yet to be learnt.

I am very thankful to my thesis committee members Dr. Robert Williams and Dr. James Mackenzie. In fact, Dr. Robert Williams has been my great source of inspiration and statistical knowledge. He always interacts with me not just as my academic advisor, but also a good friend.

Table of Contents

Approval and Signature Page.....	ii
Dedication.....	iii
Abstract.....	iv
Acknowledgement.....	v
Table of Contents.....	vi
List of Tables and Figures.....	viii
Chapter One: Introduction.....	1
Background.....	4
Overview of Methodology.....	6
Philosophical Stance.....	8
Ethical Considerations.....	9
Purpose of the Study.....	10
Chapter Two: Literature Review and Conceptual Framework.....	13
Determinants of Screening Intentions.....	13
Overview of the Health System in Ghana.....	26
Breast Cancer Prevention in Ghana.....	27
Conceptual Framework.....	31
Study Hypotheses and Questions.....	40
Chapter Three: Influence of Knowledge, Health Beliefs and Sociodemographic Factors on Intention to Screen for Breast Cancer among Women in Ghana.....	43
Problem Statement.....	44
Literature Review.....	45
Conceptual Framework.....	46
Research Question.....	47
Method.....	48
Results.....	55
Discussion.....	64
Limitations.....	74
Implications for Health Promotion and Policy.....	76
Conclusion.....	77
Chapter Four: Cultural Beliefs and Health System Predictors of Breast Cancer Screening Intention among Ghanaian Women.....	79
Problem Statement.....	80
Literature Review.....	81
Conceptual Framework.....	84
Method.....	86
Results.....	91
Discussion.....	97
Limitations.....	107
Implications for Health Education and Policy.....	108
Conclusion.....	109

Chapter Five: A Qualitative Study of Breast Cancer Screening Intention Among Ghanaian Women	111
Problem Statement	111
Literature Review	113
Conceptual Framework.....	116
Method	117
Findings	121
Discussion.....	136
Limitations and Recommendations	142
Conclusion	142
Chapter Six: Conclusion	144
Discussion.....	144
Implications for Health Promotion and Policy	150
Recommendations for Future Research.....	153
References	155
Appendices	168
Appendix A: Permission Letter from Ghana Health Service.....	168
Appendix B: Recruitment Flyer.....	169
Appendix C: Participants’ Information Sheet.....	170
Appendix D: Breast Cancer Screening Questionnaire for Ghanaian Women	171
Appendix E: Letter of Introduction	184
Appendix F: Informed Consent	185
Appendix G: Focus Group Interview Questions	187

List of Tables and Figures

Table 1: Descriptive Characteristics	57
Table 2: Sociodemographics, Knowledge and HBM Constructs Associated with Intentions to have BSE or CBE or Mammography	58
Table 3: Prediction of Intention to have BSE or CBE or Mammography from Sociodemographics, Knowledge and HBM Constructs.....	62
Table 4: Mediating Effects of Sociodemographics and Knowledge on the Relationship Between HBM Constructs and Intention to have BSE or CBE or Mammography	65
Table 5: Associations of Cultural Beliefs and Health System Factors with Intentions to have Mammography or CBE	93
Table 6: Prediction of Intention to have CBE or Mammography from Cultural Beliefs and Health System Factors.....	96
Table 7: Mediating Effects of Sociodemographics and Cultural Beliefs on the Relationship between Health System Factors and Intentions to have CBE or Mammography	98
Table 8: Demographic Characteristics of Focus Group Participants.....	119
Table 9: Individual and Contextual Factors Influences on Ghanaian Women's Intentions to have BSE or CBE or Mammography	122
Figure 1: A Conceptual Framework for Understanding the Influence of Cultural and Health System Factors on Ghanaian Women's Intentions to Undergo CBE or Mammography Screening	34

Chapter One

Introduction

The global burden of breast cancer has increased over time, with an estimated 1.3 million women diagnosed and 458,503 deaths per year, distributed disproportionately between the developed (189,455) and developing (269,048) countries (Jemal et al., 2011). Incidence rates are increasing rapidly in many developing countries, with greater increases occurring in Africa and Asia. While mortality rates have remained relatively stable in developed countries, they continue to surge in developing countries. Of almost 460,000 breast cancer deaths observed in 184 countries in 2008, about two thirds occurred in developing countries, particularly those in Africa and Asia (Jemal et al., 2011). For example, in Uganda, Kamangar, Dores, and Anderson (2006) reported that breast cancer mortality rates have been increasing since the 1960s. Similarly, Parkin et al. (2008) observed a steady increase in breast cancer mortality rates among Zimbabweans and indigenous South Africans. In recent years, Akarolo-Anthony, Ogundiran, and Adebamowo (2010) have found breast cancer to be the leading cause of cancer-related deaths in Nigeria. The findings from these studies demonstrate that breast cancer incidence and mortality is increasing rapidly in many sub-Saharan African countries. Therefore, effective strategies are needed to reduce the incidence and mortality rates from this treatable disease in populations in this region.

Findings from the few epidemiological studies conducted in Ghana have also shown that both breast cancer incidence and mortality rates are increasing rapidly among women. In a retrospective study, Wiredu and Armah (2006) estimated cancer mortality between 1991 and 2000 in Ghana and showed that deaths from breast cancer increased by

about 17% over the 10-year period. Jemal et al. (2011) found that about 2,000 breast cancer cases and 1,137 related deaths occur annually among women in Ghana. This finding suggests that mortality from breast cancer has increased by about 15% from a previous estimate in 2002 (Parkin et al., 2002). As in other African countries, Ghanaian women are more likely to be diagnosed with breast cancer at an early age. The lifetime risk of breast cancer is 2.72%, whereas the five-year survival rate is below 50% (Jemal et al.). Although the primary cause of rising breast cancer deaths in Ghana is unknown, the late presentation for treatment (Clegg-Lampsey, Dakubo, & Attobra, 2009; Kirby, 2005) and the low screening uptake (Opoku, Benwell, & Yarney, 2012) could be major contributing factors. However, despite the overall increasing incidence and mortality of breast cancer in Ghana, little has been done to improve survival and reduce the health risk posed by the disease in women. Thus, the purpose of this study was to examine the influence of individual and contextual level factors on breast cancer screening intentions among Ghanaian women in an attempt to improve the uptake of screening and early treatment and reduce mortality from this disease.

Currently, global efforts to improve survival from breast cancer have focused on early detection of the disease through screening programs such as mammography, clinical breast examination (CBE) and breast self-examination (BSE). Although mammography is currently recognized as the most effective screening program, CBE and BSE have also been found to facilitate early detection of breast cancer (American Cancer Society [ACS], 2012; Saslow et al., 2007; Wolf et al., 2010). Early detection in turn improves treatment outcome and survival of the disease (Gotzsche & Nielsen, 2009). Thus, women who engage in screening regularly are more likely to have a lower risk of developing and

dying from advanced breast cancer, compared to unscreened women. Kricke et al. (1999) reported a 33% reduction in breast cancer mortality rates among women aged 50-69 years in the United Kingdom following the introduction of mammography. Other authors have also found mammography to be effective in reducing breast cancer mortality by about 30% (Gotzsche & Nielsen, 2009; Miller, To, Baines, & Wall, 2002; Saslow et al., 2007).

Although the uptake of breast cancer screening programs appears to have improved over the years among women in many high-income countries, screening remains low among women in Ghana and many other African countries (Opoku et al., 2012; Fregene & Newman, 2005). For example, most women in Ghana do not undergo CBE and mammography screening, and only a few perform BSE on a regular basis (Opoku et al., 2012). Fregene and Newman (2005) also reported low uptake and adherence to breast cancer screening programs among women in many sub-Saharan African countries. While this trend presents a major public health problem for the prevention of breast cancer in Ghana, only a few authors have identified contributing factors. No investigator has so far examined the factors that facilitate and prevent Ghanaian women's intentions to perform BSE or undergo CBE or mammography screening; neither has any one attempted to identify the factors that influence women's intentions to screen for breast cancer in other African countries. This thesis aims to fill this knowledge gap, by using qualitative and quantitative methods to examine the effects of individual and contextual factors on screening intentions in Ghanaian women.

Background

In a cross-sectional study, Opoku et al. (2012) explored the breast cancer screening behaviours of 474 Ghanaian women aged 40 to 70 years in two urban settings in southern Ghana. Overall, the uptake was generally low. Only 2% of the women reported ever undergoing mammography screening in their lifetime, and 12% reported having been examined by a health care professional once in their lifetime. About 32% of women reported ever practicing BSE in their lifetime. However, none of the women reported adhering to recommended screening guidelines for any of the programs. While these findings may reflect breast cancer screening practices among women in Ghana, there is a greater likelihood that breast cancer screening uptake is even lower among women living in other parts of the country (especially in the rural areas) than those reported by the authors. This may be because women residing in urban settings have somewhat easier access to mammography and CBE services, compared to those who live in the rural areas.

Evidence from other studies have shown low uptake of breast cancer screening among women in Africa. For example, Oche, Ayodele, and Umar (2012) examined mammography screening practices of female health care professionals in Nigeria and found that only about 9% of the respondents had undergone mammography screening during the previous year. Despite this low uptake, an overwhelming majority (84%) of these respondents were aware of the importance of mammography screening, as they knew that screening facilitates early detection of breast cancer. However, it was not clear whether the respondents knew that regular uptake of screening is needed to maximize early detection of breast cancer and the reduction of mortality from the disease. Similar to

the findings reported by Opoku et al. (2012), Oche et al. found that 54% of female health care professionals in Nigeria practiced BSE on a regular basis, and some of the women reported practicing it for over a decade. Women who had been taught how to perform BSE by health care professionals were more likely than those who had not been taught to comply with screening recommendations and practice it on a regular basis.

Krombein and De Villiers (2006) investigated breast cancer screening practices among women in Bonteheuwel, a white-dominated community in Western Cape, South Africa. Despite the fact that the majority of women had a family history of breast cancer, screening uptake was low. Only 11% of women were found to have undergone mammography screening once in their lifetime. Of these women, only about 3% reported having received such screening in the previous two years. However, the CBE practices of the women were somewhat encouraging, as about 62% reported ever receiving CBE, with 29% reporting having been checked in the previous year. In addition, 65% of women reported ever practicing BSE, whereas 44% reported having performed BSE during the previous year, and 24% performed BSE on a regular basis as recommended. In general, women who practiced BSE on a regular basis also reported regular uptake of CBE and mammography screening.

The evidence presented thus far demonstrates that breast cancer screening uptake among women in Ghana and other African countries is generally low. In particular, only a few women undergo mammography and CBE screening. Even those who undergo the screening programs normally do not comply with screening recommendations. Although the uptake of BSE as reported by the authors (Krombein & De Villiers, 2006; Oche et al., 2012; Opoku et al., 2012) appears to be somewhat encouraging, many women do not

practice BSE as recommended. Of greater concern is that while the uptake of breast cancer screening programs remains low among Ghanaian women, breast cancer incidence and mortality rates are increasing very rapidly in Ghana, and a similar trend is noticeable in many other African countries.

Overview of Methodology

This study employed a mixed methods approach to examine the individual and contextual level determinants of breast cancer screening intention among Ghanaian women. Typically, use of mixed methods involves both quantitative and qualitative data collection and/or analysis either sequentially or simultaneously. Teddlie and Tashakkori (2009) defined mixed methods as a process of integrating quantitative and qualitative approaches in the data collection, analysis and drawing of inferences in a single study. The rationale for employing this approach is based on the fact that neither the qualitative nor quantitative methods can produce a satisfactory research outcome (Creswell, 2009). While the quantitative method emphasizes objective analysis and numerical interpretations, the qualitative method allows for a subjective interpretation of data. Although it is not possible to generalize findings from qualitative study, using mixed methods makes such generalization empirically acceptable (Johnson & Onwuegbuzie, 2004). In addition, addressing a research problem using mixed methods allows for a more in-depth and rich understanding of the phenomenon of interest and its solution. For these reasons, the present study employs a mixed methods approach to address the research objectives.

Quantitative design. An exploratory descriptive cross-sectional survey design was used to identify and describe the factors influencing breast cancer screening intention

among women in Ghana. This approach provides a snapshot or brief measure of an event at a particular point in time as it exists in the population under study (Oleckno, 2002). Generally, this approach uses a theoretically accepted representative sample of individuals from a defined population to measure an association between exposure and outcome. In other words, cross-sectional design allows for examination of the relationships between and among phenomena in their natural context at a particular point in time. With regard to data collection, population survey techniques such as interviews and self-administered questionnaires are often used in cross-sectional studies. Oleckno (2002) argued that findings from cross-sectional survey studies offer better representation of the source population as compared to those of other quantitative designs, because they often involve a large sample size. One central characteristic of cross-sectional studies is that subjects are selected randomly from the study population. Also, because there is no follow-up in cross-sectional studies, the response rate is usually high as compared to other quantitative methods such as case and longitudinal studies.

An exploratory cross-sectional design was selected because limited research exists that explores the influence of contextual and individual factors on breast cancer screening intentions. The underlying assumption of this design is that women's health behaviours, including their perceptions and attitudes towards utilization of screening services is influenced by multiple and interrelated factors. Conceptually, this design posits that contextual and individual level factors collectively facilitate or hinder women's intentions, desire and capability to use breast cancer screening services such as CBE and mammography.

Qualitative design. The qualitative aspect of this study employed an exploratory approach and used focus group interviews to explore Ghanaian women's perceptions of factors influencing their intentions to screen for breast cancer. Specifically, in-depth understanding of the role of psychosocial and sociocultural beliefs along with the relevant characteristics of the health care system was sought. This approach was chosen because it provides a holistic approach to comprehensively identify, describe and interpret a phenomenon (Creswell, 2009). In other words, the exploratory research approach allows for a deeper understanding and exploration of the subjective perspectives of individuals and groups, as well as their attitudes, motivations and apprehensions regarding a particular phenomenon. In particular, this qualitative research method is useful in structuring group interviews and gathering the perspectives of individuals on health-related issues within a group.

Philosophical Stance

Speziale and Carpenter (2007) argued that philosophical underpinnings of qualitative research are essential because they inform researchers about what factors to consider in their inquiry and serve as a guide to answer their research questions. Guba and Lincoln (1994) asserted that the philosophical stance of particular qualitative research traditions influences our ontological assumptions regarding reality and epistemological beliefs about the study phenomena. Exploratory qualitative research adopts the ontology of interpretivism and is based on the premise that social phenomenon can be understood through interpretations of individuals' subjective experiences. Like other qualitative research traditions, interpretivist research rejects the notion of positivism, which assumes an objective view of the world (Creswell, 2009). Rather,

interpretivist researchers embrace an organismic worldview, in which reality is viewed as subjective, with emphasis on the holistic and dynamic aspects of human experiences (Boyd, 1990).

In general, qualitative researchers attempt to capture the subjective meanings of human experiences in their entirety, including the context in which they occur. Researchers belonging to this tradition believe that knowledge about reality is socially constituted and historically embedded (Lather, 1986). This implies that individuals' perceptions about reality are shaped by their social, cultural and other contextual experiences (Creswell, 2009). One of the central characteristics of interpretivist research paradigm is that the researcher is considered as the main instrument for the collection, analysis and interpretations of data (Guba & Lincoln, 1994). The study takes place in the natural setting of the participants. That is, the researcher engages with the participants in the field in order to understand their experiences and perceptions about the phenomena.

Ethical Considerations

Ethics approval from the University of Lethbridge Human Subject Research Committee was obtained prior to the commencement of data collection in Ghana. In addition, permission was obtained from the New Juaben Regional Hospital (Appendix A) and other places where participants were recruited. Issues regarding participants' confidentiality and informed consent were ensured during and after the data collection. In the focus groups, the content of the consent form was explained to the participants in both English and Twi (a local language spoken by the researcher). Participants were informed about the purpose of the study and the risk and benefits of participation. All participants (in both the focus group and survey) were informed that they had the right to withdraw at

any time from the research without consequences. Although there were no anticipated risks associated with this study, several steps were taken by the researcher to minimize any potential harmful effects of the study on the participants. The researcher provided information to help any participants who experienced emotional discomfort during the focus groups. While the focus group discussions were audio-taped, all written material, such as transcriptions, field notes and debriefing notes did not contain any identifying information. All research materials are stored securely and will be destroyed as confidential waste five years after the end of the study.

Purpose of the Study

Despite the efficacy of screening in reducing deaths from breast cancer, the uptake of such breast health care services among women in Ghana remains extremely low (Opoku et al., 2012). Only a few women practice BSE and rarely do they undergo mammography screening or CBE. Moreover, the few women who undergo screening do not comply with recommendations, probably because of lack of knowledge of the screening guidelines and their importance (Opoku et al., 2012). While this low uptake could be a result of the lack of organized screening programs in the country, the potential influence of other factors on women's screening behaviours and intentions needs to be examined in order to improve participation rates and subsequent survival of breast cancer. Unfortunately, of the few studies that have examined Ghanaian women's screening behaviour, most focused only on individual determinants (such as knowledge and health beliefs) of screening behaviours. Therefore, a comprehensive understanding of all the reasons for poor screening behaviours and intentions in Ghanaian women is required. The purpose of this mixed methods study was to examine the influences of

individual and contextual factors on Ghanaian women's intentions to perform BSE or undergo CBE and mammography screening. The study findings yielded insightful health promotion and policy implications that may facilitate screening intentions among women and the development of organized programs in Ghana.

Three separate but interrelated aspect of the research are presented in this thesis: Chapter Three discusses the influence of individual-level factors such as sociodemographics, health beliefs and knowledge of breast cancer and screening on women's intentions to perform BSE or undergo CBE or mammography. Chapter Four presents the effects of contextual factors such as cultural and health care system characteristics on intention to undergo CBE or mammography, using a cross-sectional study design. Chapter Five reports about the focus group interviews used to understand the perceptions of Ghanaian women about the impact of individual and contextual factors on intention to perform BSE or undergo CBE or mammography. The chapters were written in anticipation of revision and submission to peer-reviewed journals as separate articles.

The specific objectives addressed in each chapter include:

Chapter Three:

- 1) To use the Health Belief Model ([HBM], Maiman & Becker, 1974; Rosenstock, 1966) to assess (a) the influence of perceived susceptibility to and severity of breast cancer, and (b) perceived benefits of and barriers to screening on women's intentions to perform BSE or undergo CBE or mammography;

- 2) To assess the influence of sociodemographics and knowledge of breast cancer and screening on women's intentions to perform BSE or undergo mammography or CBE; and
- 3) To determine the mediating influence of knowledge and sociodemographics on the relationship between health beliefs and intentions for each of the screening behaviours.

Chapter Four:

- 1) To use a newly developed conceptual framework (see Chapter Two) to examine the influence of (a) cultural beliefs about modesty on breast screening; and (b) attitudes towards preventive health care and social support on women's intentions to undergo CBE or mammography;
- 2) To examine the influence of health system factors such as cost, availability, waiting time, physician recommendation, gender and attitudes on intentions to undergo CBE or mammography using the developed framework; and
- 3) To determine the mediating effect of sociodemographic and cultural factors on the associations between the health system factors and intentions for each screening behaviour.

Chapter Five:

- 1) To use the conceptual framework to understand the perceptions of Ghanaian women about the influence of health beliefs, knowledge, cultural and health system factors on their intentions to perform BSE or undergo mammography or CBE.

Chapter Two

Literature Review and Conceptual Framework

This chapter provides a brief review of the literature regarding the factors associated with and predictive of breast cancer screening intentions in women, particularly those in underserved populations. The review focuses on the effects of knowledge, health beliefs, sociodemographic, cultural and health system factors on screening intentions. Because few studies on breast cancer screening intentions have been conducted in low-income populations, this literature review will include studies that examined cancer screening behaviours, especially those from Ghana and other African countries. A description of the health care system in Ghana is presented as background to understand its potential impact on breast cancer screening intention among women. The chapter concludes with a comprehensive examination of the theoretical framework used in this study.

Determinants of Screening Intentions

Women's intentions to undergo breast cancer screening have been explained as a function of individual and contextual influences. Many authors (Ham, 2005; O'Neill et al., 2008; Othman, Kiviniemi, Wu, & Lally, 2012; Soskolne, Marie, & Manor, 2007) have associated intentions with several psychosocial, cultural and health system characteristics. Also, sociodemographic factors have been found to have an effect on screening intentions (Ham, 2005; Lechner, De Nooijer, & De Vries, 2004; Othman et al., 2012; Soskolne et al., 2007). Strong intentions have been associated with a greater likelihood of BSE, CBE and mammography behaviours (Bowie, Curbow, Laveist, Fitzgerald, & Zabora, 2004). This suggests that the factors that influence intentions

towards breast cancer screening may be likely to also influence screening behaviours.

Thus, identifying the factors that influence screening intentions among Ghanaian women may be useful in developing health promotion interventions to improve women's intentions towards the uptake of BSE, CBE and mammography screening, and this may help to reduce the late presentation for treatment and the high mortality rates from breast cancer in Ghana.

Sociodemographics influences. Sociodemographic factors have been found to influence women's intentions towards breast cancer screening. For example, low mammography intention has been reported among women who have low socioeconomic status, such as low education and income level (Othman et al., 2012; Soskolne et al., 2007). In Ghana, low income women have been found less likely to undergo mammography screening than those with higher income status (Opoku et al., 2012). The authors stressed that high costs of mammography screening services prevent many women from undergoing such screening. In addition, Elsie et al. (2010) found that employed Ugandan women were seven times more likely to undergo mammography. This is primarily because the employed women had higher incomes, which enabled easier access to mammography screening services. In Nigeria, Ndikom and Ofi (2012) reported low mammography screening utilization among women with low socioeconomic status. In that study, low income women considered breast cancer screening to be of less importance because of numerous competing health needs. Furthermore, Oche et al. (2012) reported a similar finding from a cross-sectional study of female health care professionals in Nigeria. Oche et al. found that low paid professionals rarely undergo

mammography screening while highly paid professionals reported greater screening uptake and compliance with recommendations.

McFarland (2003) examined cancer screening practices of Botswana women with various income levels. Although all the women cited cost as a major barrier to cancer screening, those with low income were the least likely to undergo cancer screening, compared to women with high incomes. In addition, women in the medium income category had a negative attitude towards screening. However, women in the high income category and those with health care insurance had a positive attitude towards screening uptake, and were more likely to comply with screening recommendations. In general, the high cost of screening services prevented uptake in Botswana women.

Education has been found to be a great influence on women's decisions about breast cancer screening. Studies examining the association between screening intention and education have shown consistent findings, with higher education levels showing increased intentions (Ham, 2005; Lechner et al., 2004; Othman et al., 2012; Soskolne et al., 2007). Similarly, a higher level of education has been associated with greater uptake of breast cancer screening (Remennick, 2006). Opoku et al. (2012) found that highly educated Ghanaian women were more likely than the uneducated to have mammography screening or CBE or to perform BSE. Women with formal education were more likely to undergo screening as compared to those with informal education. In addition, compliance with breast screening recommendations was greater in women with more education than it was among the less educated. For example, the majority of women who reported practicing BSE on a regular basis had completed secondary school or higher (Opoku et al., 2012). Highly educated women reported greater knowledge of screening guidelines

and breast cancer risk factors and symptoms—knowledge that can facilitate screening intention.

Other authors reported low rates of screening uptake among African women with low levels of education. In Uganda, Elsie et al. (2010) found high rates of mammography screening uptake among women with higher education attainment. For example, Ugandan women who had completed primary education or higher were about four times more likely than those without any education to be screened. Women with a low level of education were also more hesitant to seek information about breast cancer screening than were educated women. In addition, lack of education adversely affected women's ability to comprehend and understand recommended screening guidelines and other related issues such as breast cancer symptoms and risk factors (Elsie et al., 2010; Ham, 2005; Othman et al., 2012; Remennick, 2006; Soskolne et al., 2007).

A number of studies have shown age-related variations in breast cancer screening intentions. Higher screening intention has been consistently associated with older age (Ham, 2005; Othman et al., 2012; Soskolne et al., 2007), with highest rates in the 50 to 60 year group. Both after and before this age, screening intentions were lower among women in many populations. For example, Othman et al. (2012) found that Jordanian women above age 50 years were more likely than those below that age to have mammography screening. However, breast cancer screening intention in older women in Ghana is more likely to be lower than in younger women because of the high level of poverty (Ghana Statistical Service, 2012) in the former age group. Nonetheless, the high rate of screening intention often found in older women could be explained by the fact that

breast cancer risk increases concurrently with age, especially in women above 50 years (Jemal et al., 2011).

A few authors have found a relationship between marital status and screening intentions of women. Although findings are mixed, most studies have shown that married women are more likely than single women to undergo breast cancer screening (Christou & Thompson, 2012). The influence of marital status on screening intentions and behaviours appears to be highly prevalent among low-income women, particularly those in African countries, where many women rely on their partners or husbands for advice and financial support for health care (Boateng & Flanagan, 2008). Despite the potential influence of marital status on health-seeking behaviours of women, no researchers have assessed its relative effect on breast cancer screening intentions or behaviours in Ghanaian women. This therefore warrants empirical research into the potential influences of marital status on women's intentions to perform BSE or undergo CBE or mammography screening in Ghana.

A family history of breast cancer has long been recognized as a significant predictor of breast cancer screening intentions. Evidence suggests that women with a family history of breast cancer are more likely than women without any history of the disease to initiate screening intentions at an earlier age, and to undergo screening on a regular basis (Finney & Iannotti, 2001; Othman et al., 2012). Regarding screening preferences, women with a family history of breast cancer are more likely to undergo mammography than CBE and BSE (Price et al., 2010). Murabito et al. (2001) found that women with a family history of breast cancer were three times more likely than those without such a history to undergo mammography screening. As well, women with family

history of breast cancer were more likely than women without a history to receive a recommendation for mammography. One of the explanations provided for the high screening intentions among women with family history of breast cancer is that many such women believe that regular screening could potentially reduce their chances of developing the disease (Finney & Iannotti, 2001; Othman et al., 2012). In a related finding, women with a history of breast health problems such as swelling and pain were found to undergo screening regularly as compared to those without such health problems (O'Malley et al., 2001).

Psychosocial influences. Intention to undergo breast cancer screening has been associated with many psychosocial factors such as health beliefs, attitudes and knowledge (Bowie et al., 2004; Christou & Thompson, 2012; O'Neill et al., 2008; Othman et al., 2012; Soskolne et al., 2007). For example, women who believe that mammography screening is effective in detecting breast cancer have been found to have positive intentions towards screening uptake. Similarly, women who know that regular screening can potentially improve survival of breast cancer are most likely to undergo screening (Othman et al., 2012). Indeed, this finding suggests that knowledge of screening programs has a significant bearing on women's screening intentions and perhaps their behaviour. Unfortunately, many women in Ghana have limited knowledge of breast cancer screening programs (Opoku et al., 2012), and this in turn, may adversely affect their screening intentions. In spite of its potential effect on screening, no study has examined the influence of knowledge of breast screening on women's intentions to perform BSE, or to have a CBE and mammography in Ghana.

The HBM (Maiman & Becker, 1974; Rosenstock, 1966) has provided a useful framework for studies examining the influences of such health beliefs as perceived severity, susceptibility, benefits and barriers on breast cancer screening intention and behaviours. In most studies, women who perceive themselves to be susceptible to breast cancer and who view the disease as fatal have been found to have greater intentions to undergo BSE, CBE and mammography screening (Bowie et al., 2004; Christou & Thompson, 2012; Lechner et al., 2004; O'Neill et al., 2008; Othman et al., 2012; Soskolne et al., 2007). Similarly, high perceived benefits and low perceived barriers have been associated with greater screening intentions (Othman et al., 2012; Soskolne et al., 2007). Unfortunately, only a few authors have applied the model to understand breast cancer screening intentions among women in low-income populations; no such study exists in Ghana.

Abotchie and Shoker (2009) examined Ghanaian women university students' knowledge, behaviours and health beliefs about cervical cancer screening. Using the HBM as the theoretical framework for the development of the survey questionnaire, 140 women aged 20-35 years were interviewed about various aspects of cervical cancer screening. The results of the bivariate analysis showed support for the components of HBM in predicting women's behaviours toward cervical cancer screening uptake. Of significance, beliefs about perceived benefits and barriers were predictive of screening behaviours in women. In addition, cues to action, such as knowledge of procedures and sources of screening services were found to be strongly predictive of screening behaviours. In their concluding remarks, the authors suggested that health promotion

interventions be targeted at reducing barriers and increasing cues that facilitate cervical cancer screening uptake.

Cultural influences. Cultural beliefs provide a lens through which people conceptualize their attitudes towards a particular disease or health care services. Such beliefs inform peoples' behaviours regarding the prevention of the disease (Giuliano, Mokuau, Hughes, Ho, & Mccaskill-Stevens, 2000). Breast cancer screening behaviours have been shown to be influenced by several cultural factors including beliefs about modesty and screening, as well as attitudes towards preventive care and social support (Carroll et al., 2007; Krombein & De Villiers, 2006; Messina et al., 2004; Mupepi, Sampsel, & Johnson, 2011; Nguyen, Belgrave, & Sholley, 2011; Simon, 2006). With regard to the influence of beliefs about modesty, Ashing-Giwa (1999) reported that the belief that women's breasts should be kept private and not be exposed to others negatively influences African American women's attitudes towards BSE, CBE, and mammography screening uptake in the United States. Among Asian and Caucasian women residing in the United States, Tang, Solomon, Yeh, and Worden (1999) found that concerns about discussions around sexual issues prevented the uptake of BSE and Papanicolaou tests.

Mupepi et al. (2011) explored the factors influencing cervical cancer screening behaviours among Zimbabwean women. The results indicated that cultural beliefs about modesty prevented many women from undergoing cervical screening. Women who perceived cervical screening as sexually embarrassing were less likely than those without such beliefs to be screened. Also, Nguyen et al. (2011) showed that beliefs about modesty impede participation in breast cancer screening among Vietnamese immigrants in the

United States. Women who considered touching and exposure of women's breasts as morally embarrassing reported lower screening behaviours. As well, Krombein and De Villiers (2006) and Elsie et al. (2010) identified concern about embarrassment as a significant barrier to breast cancer screening uptake among women in South Africa and Uganda, respectively. In both studies, screening procedures of CBE and mammography were considered sexually embarrassing, and this perception in turn negatively affected women's attitudes towards participation in the screening programs.

Cultural beliefs may influence women's perceptions about preventive health care and hence their attitudes towards the uptake of preventive health services such as screening (Carroll et al., 2007). In general, the concept of preventive care is generally unfamiliar to many individuals in Ghana. For example, in the absence of severe symptoms of breast problems, some Ghanaian women do not seek breast health care (Opoku et al., 2012). This attitude may have a potential effect on women's intentions to have CBE and mammography, and on the performance of BSE.

Considering the strong connectedness among individuals in Ghana, the potential effect of social support on women's intentions toward breast cancer screening cannot be overemphasized. In most cases, however, when Ghanaian women have problems with their health, they first seek non-medical support from their family and friends (Boateng & Flanagan, 2008). While no study has examined the potential effect of this support on Ghanaian women's screening intentions, elsewhere, strong social support has been associated with strong intentions to undergo BSE, CBE and mammography (Bowie et al., 2004; Lechner et al., 2004). For example, Katapodi, Facione, Miaskowski, Dodd, and Waters (2002) and Messina et al. (2004) reported higher compliance and uptake of

screening among low-income women who received both appraisal and logistical support from their family or friends. The authors observed high rates of participation in mammography among women with higher levels of support than among those with low or no social support.

Unfortunately, the potential impacts of cultural factors, especially beliefs about modesty on Ghanaian women's intentions towards breast cancer screening, have not been examined. Thus, it seems very reasonable to identify the cultural elements that influence the intention of Ghanaian women to have BSE or undergo CBE or mammography. Explicating the cultural determinants of intention to screen for breast cancer would be particularly useful in developing culturally tailored interventions to facilitate the acceptance of and participation in future population-based breast cancer screening programs in Ghana.

Health system influences. A number of explanations for the low breast cancer screening intentions in low-income women have been proposed, but the most influential factor may be the characteristics of the health care system. In Ghana, mammography screening is provided to women who can pay for the service, suggesting that women who cannot afford it will be excluded. Opoku et al. (2012) examined the attitudes of Ghanaian women toward breast cancer screening, and the findings showed that the high cost of mammography discouraged its uptake. McAlearney, Reeves, Tatum, and Paskett (2007) investigated the effect of cost on uptake among women, aged 40 years and older in the United States. While 77% of the women reported that they could not afford mammography, 70% indicated that they would undergo the procedure if they had the disease. Women who had no health insurance were three times more likely than those

without insurance to report cost as a barrier. In contrast, women who had ever had a mammography were less likely to report cost as a barrier.

While no study has examined the impact of availability of screening services on intention to screen for breast cancer in both low- and high-income countries, it is well established that long distances to health care facilities discourages utilization of cancer screening services (Shaikh & Hatcher, 2005). Mupepi et al. (2011) contrasted the screening behaviours of women living in urban areas with those of women living in rural areas of Zimbabwe. The results showed that about 91% of the women from rural areas had never in their lifetime participated in cervical cancer screening programs, and only 4.5% were likely to undergo screening in the future. Women who lived in very remote rural areas were about 96% less likely to participate in screening than those who lived in the urban areas. The low screening in rural settings was due to the fact that most rural women did not have regular and convenient access to screening services.

One of the well-established predictors of breast cancer screening intention is a physician recommendation. Several authors have suggested that women who receive a recommendation for breast cancer screening tended to have strong screening intentions as compared to those who have never received a recommendation (Carcaise-Edinboro & Bradley, 2008; Gany, Herrera, Avallone, & Changrani, 2006; Godin et al., 2001; Soskolne et al., 2007). However, little is known about the potential influence of physician recommendation on the intentions of Ghanaian women towards mammography, CBE and BSE uptake. The literature suggests that women in Ghana rarely receive cancer screening recommendations from health care professionals (Abotchie & Shokar, 2009). Evidently, it is only recently that health professionals in Ghana have recognized the need to

encourage cancer screening uptake among women (Abotchie & Shokar, 2009). Only a few women, especially those in urban areas, receive information from health professionals about screening.

A key component of the health care system that may have a greater impact on women's intention towards breast cancer screening is the provider-patient relationship. A strong relationship has been shown to be associated with greater intention and compliance with cancer screening (Knapik, 2012). McFarland (2003) examined the knowledge and beliefs of Botswana women regarding cervical cancer screening, and found that negative attitudes of health professionals toward patients discouraged participation in cancer screening. Provider attitudes that negatively affected women's intentions included lack of attention and frightening expressions during medical care. In a related study, Carcaise-Edinboro and Bradley (2008) examined the effect of provider-patient relationship on cervical cancer screening among 8488 women aged 50 years and older in the United States, and showed that women who had positive interaction with physicians during medical care encounters were more likely to be screened than those who experienced unfavorable interactions.

Relatively little attention has been given to the effects of waiting time on breast cancer screening intention in both low-and high-income countries. However, the literature shows that long waiting time negatively influences women's attitudes towards screening (Earp et al., 2002; Gany et al., 2006). In their study of cervical cancer screening behaviours of Zimbabwean women, Mupepi et al. (2011) demonstrated that lack of time (resulting from sociocultural and family responsibilities) prevents many women from undergoing cervical cancer screening on a regular basis. Gany et al. (2006) noted that

low-income women often find it difficult to take time off from their social and family responsibilities to present for cancer screening in the United States. In that study, women who were not undergoing screening reported that it would take too long to be screened at the hospital.

In conclusion, the findings from the literature demonstrate that intentions to perform BSE or undergo CBE or mammography screening are influenced by individual and contextual factors. The effect of the health system-related characteristics such as cost and availability on screening intention was found to be more prevalent in low-income countries. Of the psychosocial factors, knowledge, perceived susceptibility, barriers and benefits played a significant role in influencing women's intentions towards screening. While only a few authors have examined the influences of cultural factors on breast cancer screening behaviours among women, little is known about their impact on screening intentions. However, the cultural factors that appear likely to be related to breast cancer screening intentions among Ghanaian women include beliefs about modesty and screening, attitudes towards preventive health care, and social support. Although the influence of sociodemographic factors such as age, income, education, marital status, and history of breast cancer and breast problems on screening intentions has been extensively explored in the literature, little is known about its impact on Ghanaian women's intentions to perform BSE or undergo CBE and mammography screening. In addition, findings from the few studies that examined the determinants of cancer screening behaviours among women in Ghana are less informative, as they focus mainly on the individual level factors and largely ignore the potential influence of contextual factors such as the cultural and health system-related characteristics. In an attempt to bridge this

knowledge gap, the present study examined the influence of both individual and contextual level factors on intentions to perform BSE or undergo CBE or mammography screening among women in Ghana.

Overview of the Health System in Ghana

A notable feature of the history of health care delivery in Ghana has been its thoughtful organization. The service is regionally based and publicly operated and provides equal access to all residents. It comprises three administrative levels: national, regional, and district. Although both the regional and districts level components operate through the national level, the provision of basic health care services, particularly for infectious diseases is decentralized throughout the country. The national level, operating under the Ministry of Health, is responsible for ensuring equitable and quality health care delivery across the country. With the exception of two regions in the northern part of the country, each of the ten regions in Ghana has one regional hospital. These hospitals are coordinated and administered by the regional level administration. All the regional hospitals are relatively well equipped with modern equipment and staffed by both specialists and general medical practitioners. In addition to their territorial health care delivery responsibility, two of the regional hospitals, the Korle-Bu and Komfo-Anokye, provide breast cancer care services and serve as a tertiary referral centers and teaching hospitals for medical schools in the country. Despite the well-structured health system, health care services for chronic disease such as breast cancer are unevenly distributed throughout the country and are only available in the southern part.

Access to health care contributes to the improvement of the health of the community and forms the cornerstone of every successful health policy. Although

differences exist among the populace and geographical areas, most residents in Ghana face common problems regarding access to care. As defined by Khan and Bhardwaj (1994), access to health implies the ability of individuals or a population to obtain and afford health care. Other authors have discussed access to health care in terms of physical and psychological circumstances that prevent people from reaching or acquiring their health needs (McIntyre, Thiede, Dahlgren, & Whitehead, 2006). In Ghana, access (including physical access) to health care may be strongly influenced by provider and system-related factors. These factors are lack of specialists, cost of care, and unavailability of services. Of greater concern is the fact that many individuals in rural areas face substantial barriers in obtaining health care.

Breast Cancer Prevention in Ghana

Since the early 2000s there have been efforts to reduce morbidity and mortality from breast cancer in Ghana through primary, secondary and tertiary prevention methods. As part of the effort to control cancer, the Cancer Society of Ghana (CSG) was established in 2003. The goals of the CSG are to increase awareness and promote breast cancer care through public education. The GCS is also responsible for the prevention and control of morbidity or mortality from other cancers. At the 2010 Cancer Awareness Workshop organized at the Ghana Institute of Management and Public Administration, a panel of experts from the CSG proposed an action plan aimed at advancing its goal of reducing breast cancer mortality in Ghana. Public education and awareness were considered important component of the plan (CSG, 2013). Other factors taken into consideration during the workshop included: empowerment of women to gain access to health care; promotion of BSE; and the development of infrastructure and human

resources for the treatment of breast cancer. However, no concrete decision was taken with regard to improvement in access to mammography screening and CBE. This may be because of the limited availability of such services in the country; however, given the effectiveness of these screening programs in reducing breast cancer deaths, it is unfortunate that little effort was made to promote their uptake in Ghana.

Despite the numerous logistical challenges and financial constraints, the CSG has over the years embarked on many educational campaigns to heighten women's knowledge and awareness of breast cancer, and increase their engagement in early detection behaviours. The various outreach programs for schools, women's groups, and in rural communities are examples of grassroots-level interventions and initiatives aimed at influencing early screening and diagnosis practices among women (CSG, 2013). Although most of the education campaigns have focused on women in urban areas, the CSG is committed to bringing breast cancer education and screening services to rural underserved women. In collaboration with non-governmental organizations, such as Breast Care International and the Susan G. Komen for the Cure Foundation, the CSG routinely organizes educational and outreach screening programs for some rural areas. In other interventions, individuals of national prominence including opinion and religious leaders, health professionals, and politicians have been involved in mass media campaigns to raise women's awareness of breast cancer and BSE. The Susan G. Komen Ghana Race for the Cure is also another awareness educational campaign that attracts thousands of women annually across the country (CSG, 2013). This outreach program is gradually gaining recognition as an important awareness raising campaign for the CSG.

However, little has been done to increase women's awareness about how to perform BSE correctly and of the benefits of CBE and mammography screening.

Although no organized breast cancer mass screening program exists in Ghana, CBE and mammography are offered to women upon request. These opportunistic screening programs are available at two government hospitals and a few private health facilities in urban settings. All ten regional hospitals in Ghana provide CBE. However, only a few specialists, mostly male physicians, provide these services. Screening is normally offered to women attending hospitals for various health care needs. Typically, women who undergo screening are encouraged by family members and friends. They mostly receive information about the sources and benefits of screening services from the same group of social network, only a few get such information from health professionals (Abotchie & Shokar, 2009; Opoku et al., 2012). Unlike the situation in high income countries, mammography is usually recommended for women at age 35 and older because of the early onset of breast cancer in Ghana (Clegg-Lampsey et al., 2009). However, the screening guidelines are generally consistent with those recommended by the ACS. The type of screening offered to women depends not only on their age but also on the hospital they attend. For example, while women attending a tertiary hospital receive either CBE or mammography, those who go to regional hospitals have no choice other than to undergo CBE. Mostly, women do not undergo mammography as recommended because of the high cost involved.

Cultural beliefs and health/screening behaviours. Although the extent and pattern of cultural influence on Ghanaians health behaviours have been in constant flux for the past three decades, health behaviours of many individuals reflect cultural influences. Often, cultural attributes of individuals create unique patterns of beliefs that inform their health-seeking behaviours and attitudes towards the treatment and prevention of disease (Giuliano et al., 2000). Although almost all the different ethnic groups in Ghana have, to some extent, adopted western-based medicine, there remain many people, particularly those in the rural areas who continue to adhere to traditional medicine. In times of health crises, these individuals typically seek western interventions only when all available traditional medical solutions have been exhausted.

Although there is diversity among ethnic groups, there are several shared cultural beliefs that appear to influence Ghanaians' attitudes toward the uptake of preventive health care services. For example, with regard to breast cancer screening, common cultural factors that may account for fewer screening behaviours among women include beliefs about modesty and preventive care, concerns about embarrassment, and support from family or friends. The impact of these factors on the use of reproductive services (e.g., antenatal care) for women has been empirically established (Abor, Abekah-Nkrumah, Sakyi, Adjasi, & Abor, 2011; Farnes, Beckstrand, & Callister, 2011; Gyimah, 2007). Unfortunately, the influence of the aforementioned cultural factors on women's attitudes towards breast cancer screening programs has not been examined. In addition, their influence on screening behaviour for other cancers has not been explored in Ghana. One potential implication could be that health interventions for breast cancer prevention

may fail to address the specific cultural factors that prevent women from undergoing screening.

Considering the pivotal role played by individual cultural beliefs in informing health behaviours of many individuals, it seems reasonable to identify the cultural elements that influence the intention of women regarding participation in breast cancer screening programs in Ghana. Identifying the cultural determinants of screening intentions and behaviours would be particularly be useful in developing culturally tailored health education interventions to facilitate the acceptance of and participation in future population-based breast cancer screening programs among women.

Conceptual Framework

Much has been made of the idea that intention is the most proximal correlate of behaviour. The influence of intention has been assessed with respect to the performance of several health-related activities including the uptake of screening for breast and other cancers. The utility of intention in predicting such diverse health behaviour in various populations has received much empirical support, with recognition of intention as most immediate predictor of actual behaviour (Ajzen & Fishbein, 2005). When appropriately measured, intention has been found to predict a substantial proportion of variance in the performance of actual behaviour. For example, in a meta-analysis of several health-related behaviours, the reported mean correlations between intention and behaviour ranged from 0.45 to 0.62 (Ajzen & Fishbein, 2005). This implies that intention had a strong significant predictive effect on the performance of the actual behaviours. Consequently, in recent years, a number of behavioural researchers have focused on

identifying the factors that affect intention to perform health behaviours, particularly for cancer screening.

Guided in part by behavioural theories, several investigators have assumed that intention to perform a health behaviour is a function of several social cognitive and environmental factors. With respect to social cognition, much emphasis has been placed on the influence of general health-related concerns, such as perceived susceptibility to and severity of a disease, perceptions of medication effectiveness, concerns about barriers to health care, and feelings of self-control over disease (Ajzen, 2005). In addition, a number of environmental facilitators, including ease of access to health care, cultural support and socioeconomic characteristics such as education and income have been assessed in relation to their predictive effect on intention to perform health behaviours (Ajzen & Fishbein, 2005). Intention to perform a health behaviour can also be influenced by many demographic characteristics, especially age and marital and health status of individuals. Given the complexity of these social cognitive and environmental factors, empirical research assessing their influence on intention to perform a health behaviour has often been guided by theories such as the Health Belief Model (Maiman & Becker, 1974; Rosenstock, 1966), the Theory of Reasoned Action ([TRA], Ajzen & Fishbein, 2005), the Theory of Planned Behaviour (Ajzen, 2005) and Bandura's (1986) Social Cognitive Theory (SCT). The utility of these theories in examining and understanding the influence of social cognitive and environmental factors on intention to perform health behaviours including breast cancer screening has been well established (Abotchie & Shokar, 2009; Ajzen & Fishbein, 2005; Bowie et al., 2004; Othman et al., 2012).

In the present study, a heuristic conceptual framework (Figure 1) based on selected concepts from the HBM, TRA and the SCT was developed to provide a basis for identifying and examining the factors that influence Ghanaian women's intentions to perform BSE or undergo mammography or CBE. The framework takes into account the influence of both individual and contextual factors on intention to engage in each of these screenings, while considering sociodemographic characteristics as both direct and mediating factors. Based on the HBM, the variables that were incorporated into the conceptual framework include perceived susceptibility, severity, benefits, and barriers. In addition, the concept of intention was drawn from the TRA, whereas all the remaining contextual factors in the model were adopted from the SCT. While it is assumed that the sociodemographic factors can moderate the influence of other individual and contextual level factors on screening intention, they may also have a direct causal influence on intention. The mediating effects of knowledge and cultural factors on screening intentions are also expected. The outcome measure of the current study is intention to perform BSE or undergo mammography and CBE.

The reason for developing the framework was that, although many theories exist that attempt to explain the health behaviours of individuals, they fail to provide a holistic explanation of the extent to which both individual and contextual level factors influence such behaviours. For example, both the HBM (Maiman & Becker, 1974; Rosenstock, 1966) and the TRA (Ajzen & Fishbein, 2005) view health behaviours as a function of individual level factors, emphasizing the effect of sociocognitive factors on the decision-making process. The HBM and TRA propose that the performance of a given health

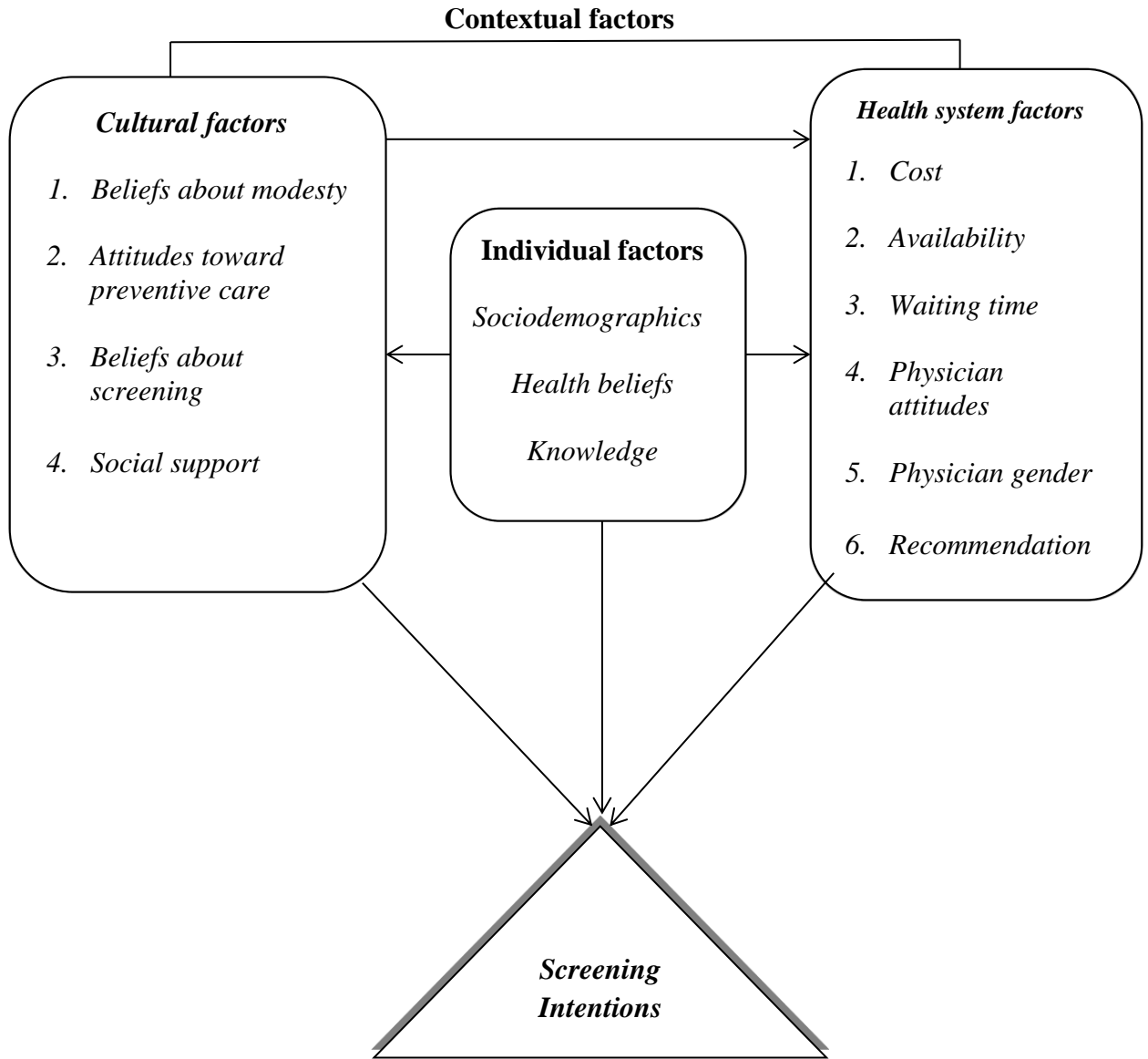


Figure 1. A conceptual framework for understanding the influence of individual and contextual level factors on Ghanaian women's intention to have BSE or CBE or mammography screening.

behaviour is determined primarily by sociocognitive factors such as health beliefs and attitudes. Although these theories acknowledge the potential influence of other non-cognitive factors, none of them specify how, for example, cultural and health system factors influence health-seeking behaviours. The theories overlook the impact of environmental or contextual factors such as cultural beliefs and health care accessibility issues on health behaviours. Given these limitations of the HBM and TRA, a theory that takes into account environmental influences was incorporated into the current conceptual framework. Specifically, the concept of environmental or contextual influences on screening intentions or behaviours was drawn from the SCT (Bandura, 1986).

HBM. The HBM, developed by a number of behavioural theorists, has over the years served as a framework for understanding health-seeking behaviours of individuals and for the development of interventions for behavioural change (Maiman & Becker, 1974; Rosenstock, 1966). Central to the philosophical tenets of the HBM is that health behaviours are influenced by several interwoven social and cognitive processes. The model assumes that individuals take decisions regarding the adoption of recommended health behaviour based on the perception that such behaviour will yield beneficial results (Rosenstock, 1966). Individuals, however, tend to be discouraged from engaging in recommended health behaviour if the perceived associated benefits do not maximally outweigh the efforts needed to perform it. According to the HBM, this decision making process is influenced by four major social cognitive elements: perceived susceptibility to a condition; perceived severity of the condition; the belief that a particular behaviour would lead to a reduction in threat from the condition; and the belief that the associated benefits would maximally exceed the perceived barriers or cost (Maiman & Becker,

1974; Rosenstock, 1966). In addition, the HBM proposes that a cue to action, whether internal (e.g., knowledge of breast cancer screening programs) or external (e.g., recommendations from physicians or reminders from health care professionals, family members and friends) is required to prompt the individual to adopt a particular health behaviour. In the present study, examples of cues to action that may facilitates the uptake of breast cancer screening programs among women in Ghana and other low-income countries include physician recommendation and advice from family members and close friends. However, the developed framework considered cues to action as contextual level variables. While this consideration may contradict the assumptions of the HBM, it is believed that cues to actions measure contextual level effects rather than individual level influences.

TRA. The TRA, developed by Ajzen and Fishbein (2005), attempts to account for behavioural intention and how the intention of individuals relates to the actual performance of a given behaviour. The TRA postulates that behaviour represents action undertaken by individuals in response to a particular condition, whereas intention represents an individual's willingness and preparedness to perform a given action in the future. The TRA refers not only to anticipated future actions to be performed, but also the commitment to ensure that the behaviour or action is successfully brought into effect. In other words, behavioural intention reflects the extent to which individuals are willing to strive toward achieving their desired behaviour or are consciously planning to carry out the behaviour. As explained by Ajzen (2005), intention remains a behavioural disposition until an attempt is made to translate it into action or actual behaviour at a future point in time. However, the likelihood of achieving the desired behaviour depends, in part, on the

nature of the behaviour and the strength of the individual's commitment/intention to perform that behaviour. In general, the stronger the intention to undertake a given behaviour, the greater the likelihood the behaviour will be performed (Ajzen). In addition, it is assumed that the more individuals perceive themselves to be in control of a given behaviour, the more likely it will be translated into action at a future point in time.

The underlying assumption of the TRA is that the most proximal antecedent of behaviour is the intention to perform the behaviour in question (Ajzen, 2005). Intention is also assumed to reflect the motivational factors that influence the performance of the behaviour. Indeed, if intentions are the immediate correlate of behaviour then the determinants of intention may also be influential on the actual performance of that behaviour. In support of this notion, the TRA posits that the behaviour of individuals is influenced by their behavioural intentions, and that beliefs and attitudes about the behaviour determine the intention of individuals to engage in that behaviour (Ajzen, 2005). In other words, both subjective norms and attitudes are determinants of intention, which in turn influence individuals' behaviour. Other non-motivational factors such as availability of requisite opportunities and resources such as income, time, and knowledge are believed to directly influence behavioural intention through their impact on either subjective norms or attitudes. Thus, according to the TRA, subjective norms and attitudes, together with other non-motivational factors, can be used directly to predict intention to engage in a given behaviour such as screening. In general, the more favorable the attitudes and subjective norms of individuals toward a behaviour, the stronger should be the intention to perform the behaviour (Ajzen, 2005). Despite their predictive utility, the relative importance of subjective norms and attitudes in predicting intention often

does vary, depending on the behaviour under consideration. In some situations, attitudes appeared to be stronger in predicting intention, while in others subjective norms have significant influence on intention, and in most situations both strongly predict intention.

SCT. The SCT assumes that reciprocal interaction exists between individuals and their environment, and that interaction, in turn, influences individuals' behaviour.

Specifically, the SCT argues that behaviour is a product of the interaction of personal, social and environmental factors (Bandura, 1986). While the SCT acknowledge the influence of environmental factors, it also recognizes that individuals have the potential to change those conditions to ones that would facilitate the achievement of their desired behavioural outcome or benefits. According to the SCT, successful adoption of a given behaviour depends largely on the environment in which individuals reside (Bandura, 1986). It hypothesizes that individuals would be more likely to adopt a new behaviour if their environment supports that behaviour, in terms of motivation or reward. An example of motivational support could be encouragement and financial assistance from partners, family members and friends, as well as cultural values that support the behaviour under consideration (Bandura, 1986). In the present study it was hypothesized that women who receive such support would be more likely than those who do not to intend to undergo breast cancer screening.

SCT also identifies several environmental facilitators that promote the adoption of behaviour (Bandura, 1986). Examples of these facilitators include resources such as time, income, access to the behaviour in question and other opportunities that enable performance of the behaviour. While the environmental motivators noted previously seek to enhance adoption of a given behaviour through external controls, the facilitators

instead empower individuals to take desirable decisions regarding the behaviour under consideration (Bandura, 1986). For example, in the present study, it was predicted that the more women can afford and have convenient access to screening, the higher the likelihood of intention to screen. In addition, the better the women's past experiences with health care professionals, the more likely their intention to undergo screening, particularly mammography and CBE. Although the application of the SCT in understanding health behaviours in low-income countries including Ghana (and Africa as a whole) is rare, studies from elsewhere used the SCT to assess breast cancer screening behaviour (Curry & Emmons, 1994).

In conclusion, the factors that have been identified by the HBM, TRA and SCT as most influential on screening intentions or behaviours among women include psychosocial factors such as health beliefs, attitudes and knowledge (Bowie et al., 2004; Carcaise-Edinboro & Bradley, 2008; Christou & Thompson, 2012; Gany et al., 2006; Othman et al., 2012). The theories also acknowledged the influences of cultural factors such as social support and cultural-related beliefs on intention (Ashing-Giwa, 1999; Lechner et al., 2004; Othman et al., 2012; Tang et al., 1999).

The effects of sociodemographic factors such as age, education, and income on screening intention have been highlighted by the theories (Lechner et al., 2004; Othman et al., 2012). In addition, health system factors such as physician recommendation, attitudes, cost and availability of services are also considered as contextual level determinants of screening intentions (Ham, 2005). Other contextual level factors that have received little attention in the literature (Mupepi et al., 2011), but may have

influence on intentions to screen for breast cancer among women in Ghana include waiting time for screening, attitudes towards preventive health care and physician gender.

Study Hypotheses and Questions

The following hypotheses were examined and reported in the Chapter indicated:

Chapter Three: The components of HBM were used to examine the influence of knowledge, health beliefs and sociodemographic factors on intentions to perform BSE or undergo CBE and mammography. The Cramer's V and Phi coefficients were used to examine the associations among the sociodemographics, knowledge, health beliefs and screening intentions. Logistic regression was used to determine the predictors of screening intentions from the above independent variables. The following specific hypotheses were tested:

Hypothesis 1: Health beliefs including perceived susceptibility, severity, benefits and barriers directly or independently influence screening intentions.

Hypothesis 2: Sociodemographic factors such as income, age, education, marital status, history of breast health problems and family history of breast cancer have direct effect on screening intentions.

Hypothesis 3: Knowledge of breast cancer and screening independently influences screening intentions.

Hypothesis 4: Sociodemographic factors and knowledge of breast cancer and screening mediate the relationships between health beliefs and screening intentions. This hypothesis was tested using hierarchical logistic regression method.

Chapter Four: The contextual components of the conceptual framework (Figure 1) were used to assess the influence of cultural and health system factors on intention to undergo mammography and CBE. This study also used Cramer's V and Phi coefficients to determine the associations of the cultural and health system factors with screening intentions, while at the same time predicting intentions from the predictor variables using logistic regression. The specific hypotheses were:

Hypothesis 5: Cultural factors such as beliefs about modesty and breast screening and attitudes towards preventive health care directly influence screening intentions.

Hypothesis 6: Social support from family/friends has a direct effect on screening intentions.

Hypothesis 7: Health system factors such as cost, availability of services, waiting time for screening, physician recommendation, attitudes and gender have a strong influence on screening intentions.

Hypothesis 8: Sociodemographic and cultural factors moderately mediate the relationship between health care system factors and screening intentions. Hierarchical logistic regression analysis was used to test this hypothesis.

Chapter Five: The focus was to qualitatively understand the perceptions of women about the impact of knowledge, health beliefs, cultural and health system factors on intentions to screen. The study was guided by the following research questions:

- 1) What health beliefs and knowledge influence Ghanaian women's intentions to perform BSE or undergo CBE or mammography screening?

- 2) What cultural factors influence women's intentions to perform BSE or undergo CBE or mammography screening?
- 3) What health system factors influence women's intentions to perform BSE or undergo CBE or mammography screening?

Chapter Three

Influence of Knowledge, Health Beliefs and Sociodemographic Factors on Intention to Screen for Breast Cancer Among Women in Ghana

The low utilization of breast cancer screening among Ghanaian women presents a major public health concern. Although there are no organized screening programs, many women in this population do not undergo CBE and mammography, and those who engage in such behaviours do so occasionally (Opoku et al., 2012). A relatively greater proportion of women practice BSE, but only a few perform the test on a regular basis and comply with screening procedures (Opoku et al., 2012). Without higher participation rates, the public health benefits of screening for the early detection of breast cancer among women in Ghana may not be substantially maximized. Encouraging maximum uptake of screening programs in low-income countries such as Ghana often comes with several challenges because of the many competing health needs of these countries and the lack of health care resources. Nonetheless, given the high breast cancer mortality rates in Ghana, it seems more reasonable that increased uptake of screening may be the appropriate strategy for improving survival from this treatable disease among women. Despite this prospect, no study has identified the factors responsible for the low screening uptake among Ghanaian women. This study seeks to bridge this knowledge gap by examining the influence of knowledge, health beliefs and sociodemographic factors on women's intention to be screened.

In this chapter I report on the impacts of sociodemographic factors, knowledge and health beliefs on Ghanaian women's intention to perform BSE or undergo CBE or mammography. I begin with an introduction of the problem statement, literature review

and the conceptual framework. The conceptual framework (Figure 1) served as a theoretical framework for the analysis and interpretation of data. A binary logistic regression method was used to determine the direct effects of sociodemographic factors, knowledge, and health beliefs on screening intentions. In addition, the mediating effects of sociodemographic factors and knowledge on the relationships between health belief variables and intention to engage in screening behaviours were also examined. The chapter concludes with a discussion of the findings, implications for health policy, limitations and suggestions for future research.

Problem Statement

As the second most commonly diagnosed and second leading cause of cancer-related death, breast cancer accounts for about 21% of the total cancer cases among women in Ghana (Jemal et al., 2011). Although Ghanaian women have a lower overall incidence of breast cancer as compared to women in other sub-Saharan African countries, they have high mortality rates and poor survival. In 2008, about 1,137 women died from breast cancer out of the 2,062 reported cases (Jemal et al., 2011). This represents a 15% (1,714) increase in mortality rates from the year 2002, when breast cancer was the primary cause of cancer-related mortality among women. In addition to the high breast cancer burden among the elderly, a relatively greater proportion of the disease has been reported in women below the age of 50 years (Ohene-Yeboah & Adjei, 2012; Wiredu & Armah, 2006), and this poses a potential public health problem in the future in Ghana. Early detection of breast cancer by BSE, CBE, and mammography screening has been found to reduce mortality and improve survival from the disease, but their uptake remains low in Ghana.

Literature Review

Various agencies including the American Cancer Society ([ACS], 2012) and the National Cancer Institute (2012) have recommended annual mammography screening for women aged 40 and older. Despite being the most effective early detection modality, the use of mammography in most low-income countries, including Ghana, is very low, probably because of the high cost of the screening services and their limited availability. For these reasons and the fact that mammography screening is less effective at detecting breast cancer in women below age 40 years, CBE and BSE are also recommended for women over the age of 20 years (ACS, 2012; National Cancer Institute, 2012; Saslow et al., 2007).

An individual's intention to engage in cancer screening behaviours is, in part, influenced by several sociodemographic factors, including level of income and education, age, marital status, history of breast health problems and family history of breast cancer (Bowie et al., 2004; Christou & Thompson, 2012; Othman et al., 2012; Pakenham, Pruss, & Clutton, 2000). Many of these factors play both direct and mediating effects on screening intentions. For example, it has been found that women with low socioeconomic status are less likely than those with high status to participate in breast cancer screening programs (Othman et al., 2012). Among Ghanaian women, the high cost of screening programs has been reported to be a major barrier to cancer screening uptake (Abotchie & Shokar, 2009; Opoku et al., 2012). Additionally, women with low levels of education and income often do not comply with BSE recommendations (Lechner et al., 2004). While the effects of socioeconomic factors on screening intentions or behaviours can be modified through effective interventions such as provision of health insurance coverage,

the influences of basic demographic factors such as age, marital status, and personal or family history of breast health problems on screening intentions are less modifiable.

Psychosocial factors such as attitudes, health beliefs, and knowledge, have been identified as major determinants of breast cancer screening intention and behaviour (Bowie et al., 2004; Christou & Thompson, 2012; Othman et al., 2012). For example, in Ghana, knowledge and health beliefs about cancer have been found to positively or negatively influence screening behaviour of women (Abotchie & Shokar, 2009; Opoku et al., 2012). Elsewhere in Africa, higher uptake of screening has been associated with positive attitudes toward early detection programs and knowledge of screening benefits and guidelines (Elsie et al., 2010; Krombein & De Villiers, 2006; Mupepi et al., 2011). Bowie et al. (2004) found that positive attitude is a significant predictor of mammography screening intention among underserved women in the United States. In addition, a large body of evidence has associated health beliefs such as perceived susceptibility, severity, benefits, and barriers with intention to screen for breast cancer (Montaño, Thompson, Taylor, & Mahloch, 1997; O'Neill et al., 2008; Othman et al., 2012; Soskolne et al., 2007). While many authors have reported positive association between screening intention and psychosocial factors, others have found negative associations, particularly among low-income women. For example, Othman et al. (2012) found that intention to undergo mammography was lower among Jordanian women who perceive breast screening to be sexually embarrassing.

Conceptual Framework

The constructs that form the basis of the conceptual framework (Figure 1) that guides this study provide a theoretical understanding of the extent to which individual

level factors influence intentions to screen for breast cancer. The health beliefs, including perceived susceptibility, severity, benefits, and barriers, can collectively or individually influence individuals' intentions towards screening. For example, Ham (2005) found that women who believe that breast cancer would bring serious health problems are more likely to undergo screening than those who do not have such beliefs. In addition, Othman et al. (2012) reported that perceived susceptibility to cancer and the belief that screening can lead to early detection of cancer were predictive of intention to get mammography. Greater perceived barriers have also been associated with lower screening intentions (Soskolne et al., 2007). In the current study, it is assumed that women would be more likely undergo CBE or mammography or perform BSE if they have knowledge and positive health beliefs about these programs.

Research Question

The primary question for this study was: *Do sociodemographic factors, knowledge and health beliefs influence Ghanaian women's intentions to perform BSE or have mammography or CBE?* The specific objectives guiding this study were to: (1) examine the effect of breast cancer/ screening knowledge on women's intentions to engage in screening; (2) examine the influences of sociodemographic characteristics on women's intentions to screen; (3) determine the influence of health beliefs such as perceived susceptibility, severity, benefits and barriers on women's screening intentions; and (4) examine the mediation effects of sociodemographic factors and knowledge on the associations between health beliefs and intention to engage in each of the behaviours.

Method

Study Design

An exploratory descriptive cross-sectional survey design was used to examine the influence of knowledge, health beliefs and sociodemographic factors on breast cancer screening intention among women in Ghana. This approach was selected because limited research exists that explores the influence of these individual-level factors on screening intention in this population. The underlying assumption is that Ghanaian women's intentions to engage in BSE, CBE, and/or mammography are likely to be influenced by their perceptions of susceptibility to and severity of breast cancer, as well as the benefits and barriers to screening. Knowledge and sociodemographic factors may either facilitate or hinder screening intention.

Respondents and Setting

This study included a random sample of 291 Ghanaian women who were selected based on the criteria that they were between the ages of 30 and 65 years, and could speak and understand Twi (a major local language) or English. They were recruited from various government and private institutions including the regional hospital, churches, ministries and departments and schools. Approximately one-third of the participants were recruited from the regional hospital. While being at the hospital does not guarantee knowledge of screening programs or their uptake, women who regularly visit the hospital for health care were more likely to have participated in CBE, been taught BSE by a health care professional, or had a general knowledge about breast cancer and screening.

This study was conducted in the New Juaben Municipality, the administrative regional capital of the Eastern Region of Ghana. The municipality is located in the

southern part of Ghana, about 84 km from the national capital, Accra. A recent census put the total population of the municipality at 183,727, with about 80% being urban (Ghana Statistical Service, 2010). The main occupation of the residents are trading and farming, with a few working in both government and private institutions. Most women work as storekeepers or housekeepers with a minority gainfully employed in government institutions as secretaries and teachers. The socioeconomic conditions of these women are generally better than those of women in other parts of the Eastern Region. For example, about half of the female population in the municipality has completed at least primary education, compared to only one-third elsewhere in the region (Ghana Statistical Service, 2010). This area was selected for the present study because it shares several characteristics with other urban settings in Ghana, particularly in terms of socioeconomic conditions and problems related to access to health care.

The prevalence of chronic diseases, particularly breast cancer, has recently increased dramatically in this population, but has received little public health attention. Although not well established, the increasing burden of breast cancer deaths has been partly attributed to factors such as lack of access to screening and treatment services (Clegg-Lamptey et al., 2009). In addition to these factors, the socioeconomic hardships faced by many Ghanaians discourage participation in screening and uptake of treatment (Opoku et al., 2012). Access to comprehensive breast health services is limited in the New Juaben Municipality; none of the health facilities provide mammography services. The only breast health screening service is CBE, and it is provided by only a few professionals. All the health facilities are located in the center of the municipality,

leaving those residing in the outskirts (and without private transport) with limited access to care.

Procedure

Following approval from the Human Subject Research Committee at the University of Lethbridge, permission was also sought from the administrative heads of the workplaces where recruitment took place. Research assistants were briefed about the overall purpose of the study and familiarized with the content and administration of the questionnaires to promote consistent, ethical data collection. Flyers (Appendix B) and an information sheet (Appendix C) with detailed information about the research were distributed to potential participants at the various recruitment centers. Women at the hospital site were randomly selected from different outpatient departments, and the rest were recruited from different public and private workplaces in the municipality during their regular working hours. Prior to the survey administration, women who agreed to participate received further explanation about the study, including the procedures for completing the questionnaire and confidentiality issues. Those who consented to participate were asked to complete the questionnaire with instruction and guidance provided in English and Twi, depending on the request and the literacy level of the respondents. Particularly, women who were not fluent in the English language received explanation of the questionnaire in Twi. This facilitated completion of the questionnaire by women with limited education, and provided the opportunity to explain complex questions. Those questionnaires that were less than 85% completed were excluded from the data analysis.

Instrument

Questionnaire development. A questionnaire (Appendix D) was developed based on extensive review of the literature examining breast cancer screening intention of low-income populations and items derived from Champion's (1999) HBM scales. The questionnaire primarily measures breast cancer screening intention and its determinants among women in Ghana. Items adapted from the Champion's (1999) HBM scales were used to assess the influence of individual factors such as health beliefs (including those assessing *susceptibility*, *severity*, *benefits*, and *barriers*) on breast screening intention. The perceived benefits component of the HBM was also used as a measure of attitudes toward breast cancer screening. Knowledge of breast cancer and screening was assessed using questions developed through the literature review. With the exception of the knowledge scale, which used true/false statements, responses to belief items were rated on a five-point Likert scale. In addition, sociodemographic characteristics of the respondents were collected.

The validity of the instrument was examined through a pilot study with a subsample (n=20) of the study population, about one week prior to the administration of the main survey. Specifically, the instrument was field-tested to assess its appropriateness, readability, and internal consistency. A few minor changes were made in the questionnaire based on the preliminary analysis of the pilot data and the recommendations from the women who participated. The Cronbach's alpha coefficients for the health beliefs and knowledge items in the survey questionnaire ranged from approximately 0.63 to 0.89, showing a relatively strong internal reliability.

Screening intentions. The primary outcome, intention to undergo breast cancer screening in the future, was measured on a two-point scale (yes/no) using a single item for each behaviour (mammography, CBE, and BSE). To enhance respondents' understanding, mammography was defined as a screening test for breast cancer in which the doctor uses a machine to look for lumps in the breast. CBE was operationally described as a breast screening performed by a doctor or nurse with his/her hand. Lastly, BSE was operationally defined as breast screening test performed by women themselves using their hands. Women who responded "yes" were considered to have positive intention. In addition, women's self-reported screening behaviours for mammography, CBE and BSE were assessed using a single item for each behaviour, with "yes" and "no" responses.

HBM variables. Components of the HBM were used to examine women's beliefs about breast cancer and its screening tests, and how those beliefs influenced intentions to undergo screening. The HBM components included in this study were perceived susceptibility, severity, barriers, and benefits. Although the "cues to action" construct of the model has often been considered as an individual level determinant of screening intention or behaviour, it was treated as a contextual level variable in the current study. The items measuring the HBM components were based on those developed by Champion (1999). *Perceived susceptibility* to breast cancer was assessed with five items, which examined the women's beliefs about their chances of developing breast cancer in the near future. *Perceived severity* was measured using seven items that asked about the seriousness of breast cancer. For example, some of the items assessed whether women believe that breast cancer is deadly and untreatable. The *perceived benefits* component

consisted of five items which assessed beliefs about the importance of screening tests in terms of their effectiveness in reducing deaths and other life threatening conditions associated with breast cancer. The five items measuring *perceived barriers* included concerns about pain, fear, embarrassment, forgetfulness, time constraints, cost and not knowing how to perform or where to where to get the test. Women's responses to the beliefs items were summed for each component of the HBM to yield a total score, with higher scores indicating greater perceived susceptibility, severity, barriers, and benefits.

Knowledge of breast cancer screening. A knowledge scale was constructed to assess women's level of understanding and awareness of breast cancer and the screening programs. Specifically, twelve items referred to knowledge of screening procedures and guidelines as well as breast cancer. The items were taken from the literature on screening programs for breast cancer (Smith, Cokkinides, Brooks, Saslow, & Brawley, 2010), and studies that assessed knowledge of screening among low-income women (Elsie et al., 2010; Krombein & De Villiers, 2006; Opoku et al., 2012). A composite measure of knowledge of screening was created by combining women's responses to these questions. A greater knowledge of screening tests was represented by higher scores.

Demographic measures. Information about participants' basic characteristics such as age, marital status, and education and income levels was obtained. To gain insight into health-related characteristics, the women were asked about their family history of breast cancer and history of breast health problems. With the exception of the question about age, responses were multiple-choice or yes/no.

Data Analysis

The primary objective of data analysis was to examine the influence of knowledge, health beliefs and sociodemographic factors on Ghanaian women's intention to perform BSE or undergo CBE or mammography. First, descriptive statistics were performed to characterize the predictor variables, in addition to the outcome variables, which included intention to perform BSE or to have a CBE and mammography. Because women who intended to be screened (79%) were more than those who were not intending to do so (21%), all the outcome measures were weighted. No issues of multicollinearity were evident, and variables with missing data below 3% were imputed with appropriate means. Second, association analyses were performed between the screening intention measures and the predictor variables. Specifically, the associations among intention to perform BSE or have a CBE and mammography and the sociodemographics, health beliefs, and knowledge were calculated using the Cramer's V or the Phi coefficients (where appropriate). All the statistically significant predictor variables were submitted to multivariate logistic regression analysis to determine their predictive value with respect to the three screening intention measures. Simultaneous logistic regression analyses were performed to ascertain the extent to which women's intentions to perform BSE or undergo CBE or mammography were directly or independently influenced by the health beliefs and knowledge and sociodemographic variables. Sociodemographic factors included in the analysis were age, income, education, marital status, family history of breast cancer, and history of breast health problems.

Finally, combined effect analysis was performed to see if sociodemographic factors and knowledge mediated the influence of health beliefs on screening intentions.

This analysis was guided by the mediation regression analysis procedure described by Baron and Kenny (1986). To determine the mediating effects for each of the screening behaviour, the variables were simultaneously entered into a hierarchical regression model in two steps. The mediators, knowledge, and sociodemographics were entered in the first step, followed by the health belief variables in the second step. The dependent variables were BSE, CBE and mammography intentions. A mediating effect is assumed if the health beliefs variables become attenuated or non-significant following the inclusion of the sociodemographics and knowledge in the model. P-values ≤ 0.05 were considered statistically significant. All analyses were performed using Statistical Package for the Social Sciences ([SPSS], version 20, SPSS Inc., Chicago, IL).

Results

The results of the data analysis are presented in three sections. First, descriptive characteristics of the participants, including their intentions to undergo BSE, CBE, and mammography screening are explained. Second, logistic regression method was used to determine whether knowledge, health beliefs, and sociodemographic factors independently affects women's intentions to screen. Finally, the mediating influence of the sociodemographics and knowledge on the associations between health beliefs and intentions was examined. The following section provides the descriptive characteristics of participants, followed by results of the independent effects of knowledge, health beliefs and sociodemographic factors on screening intentions. Results of the mediating influences of knowledge and sociodemographic factors on the relationship between health beliefs and screening intentions are also presented.

Descriptive Characteristics

Table 1 shows the descriptive characteristics of the respondents. The women ranged in age from 30 to 60 years, with an average age of 41.2 years. Most had at least college education and were employed. A large proportion of the women (55.7%) were not married. The most common breast problems included pain and swelling, and more than half were reported by women above age 40 years. Similarly, less than one-third of the women reported a family history of breast cancer. A majority reported practicing BSE, while close to one-third reported having undergone CBE once in their lifetime. Few women reported that they had ever had a mammography screening. Overall, a greater majority (79%) reported intending to perform BSE or have mammography or CBE in the future.

Sociodemographic Characteristics and Screening Intentions

Several of the sociodemographic characteristics were found to be significantly associated with screening intentions. Age was moderately negatively associated with screening intentions (Table 2). Over two-thirds of those negative intentions were reported by women older than age 40 years. About 36% of the women above age 40 intended to perform BSE, compared to 33% for both mammography and CBE screening. Similarly, education was positively related to screening intentions, with highly educated women reporting stronger intention to undergo mammography than CBE and BSE. In addition, income was positively related to intentions for both mammography and CBE, but not for BSE. Women with higher income reported greater intentions than those with lower income to undergo screening. Further, a significant positive association was found

Table 1. Descriptive characteristics of respondents

	<i>M</i>	<i>SD</i>	<i>N=291</i>	<i>%</i>
Age (years)	41.2	8.2		
30-39			142	48.8
40-49			86	29.6
> 50			63	21.6
Education level				
High school			88	30.2
College ¹			128	44.0
Degree ²			75	25.8
Marital status				
Single			162	55.7
Married			107	36.8
Divorced/Separated/Widowed			22	7.6
Monthly income				
< \$150			144	49.5
\$150 - \$250			103	35.4
> \$250			44	15.1
Employed			246	84.5
History of breast health problem			86	29.6
Family history of breast cancer			52	17.9
Ever engaged in:				
BSE			176	60.5
CBE			83	28.5
Mammography			21	7.2
Had intentions to undergo:				
BSE			251	86.3
CBE			216	74.2
Mammography			222	76.3
Knowledge of:				
BSE			154	52.9
CBE			87	29.9
Mammography			93	32

Note. ¹ ~ Includes diploma; ² ~ Includes undergraduate and degrees.

Table 2. Sociodemographic factors, knowledge, and HBM constructs associated with intentions to have BSE or CBE or mammography

Variable	Intentions to have		
	BSE	CBE	Mammography
HBM constructs			
Perceived susceptibility	0.194**	0.332**	0.323**
Perceived severity	0.220**	0.337**	0.328**
Perceived barriers	-0.243**	-0.277**	-0.452**
Perceived benefits	0.136*	0.254**	0.205**
Knowledge	0.484**	0.422**	0.417**
Sociodemographics			
Age	-0.351**	-0.281**	-0.286**
Education	0.191**	0.223**	0.230**
Income	0.129	0.188**	0.200**
Marital status	0.264**	0.191**	0.217**
History of breast problems	0.171**	0.261**	0.237**
Family history of breast cancer	0.082	0.131*	0.381*

Note. *Association significant at $P < 0.05$; **Association significant at $P < 0.001$.

between marital status and intention to be screened. Married women reported stronger intention to have screening than did unmarried women. Family history of breast cancer was strongly associated with mammography and CBE, but not with BSE. Women with a family history of cancer reported higher intention to be screened than did those without such history, and the former expressed more interest in mammography screening than CBE. Lastly, history of breast health problems was strongly related to intentions for each of the three screening behaviours. Of these women, 99% said that they would consider undergoing mammography and about 91% also intended to seek CBE, whereas 95% intended to perform BSE.

Health Beliefs and Screening Intentions

The associations between health beliefs and intention to engage in the three screening behaviours are presented in Table 2. All the HBM constructs except perceived barriers positively related to screening intentions. Most of the items on the model's constructs were moderately strongly related to intention to undergo CBE and moderately associated with mammography and BSE intentions. However, there were a number of items that correlated strongly with intentions for each of the screening behaviours. For example, for perceived susceptibility and severity, items such as "I am more likely than the average woman to get cancer" and "problems I would experience with cancer would last a long time" were all strongly associated with intention for each behaviour. With regard to perceived barriers, concerns about discomfort and embarrassment were strongly associated with intentions for both mammography and CBE, but were moderately related to intention to perform BSE. For perceived benefits, the belief that screening can lead to early detection of cancerous lumps and improved survival were strongly related to

intention for each behaviour. Intentions to have mammography and CBE were strongly associated with items such as fear and pain.

Participants who perceived themselves as vulnerable to breast cancer (64%) reported higher screening intentions than those without such beliefs. Similarly, many women (67%) who perceived breast cancer as life-threatening and not easily treated reported stronger intentions to be screened. Also, the majority of the women (70%) who believed in the efficacy of screening (mammography, CBE and BSE) reported higher screening intentions. In general, a greater proportion (57%) of women who intend to engage in screening reported lower perceived barriers.

Knowledge and Screening Intentions

Knowledge of screening guidelines and benefits were all positively associated with intentions to perform BSE or to have a CBE and mammography. Women who knew that screening can lead to early detection of breast cancer lumps reported higher intention to engage in BSE (86%) than in mammography (72%) and CBE (64%). Also, among those who knew that mammography was more effective in detecting breast cancer lumps earlier than other screening methods, 96% said they would consider undergoing mammography in the future. Further, women (97%) who knew the procedures for performing BSE reported higher intentions. Women with knowledge about the recommended frequency and the starting age for engaging in BSE and mammography expressed strong screening intentions than those without such knowledge. In addition, women who were aware of the importance of regular screening reported higher screening intentions, compared to those without such knowledge. On the other hand, no association was observed between knowledge of risk factors and symptoms and intentions. Overall,

greater knowledge of screening, including the guidelines, procedures, and benefits was related to strong intentions to perform BSE or have a mammography or CBE.

Predictors of Screening Intentions

Results of the logistic regressions showed that the sociodemographic factors, knowledge, and health beliefs significantly predicted intentions to engage in each of the screening behaviours (Table 3). The sociodemographic factors accounted for approximately 41% of the explained variance in intention for both mammography and CBE. The factors that contributed significantly to intentions included education, income, family history of breast cancer, age, marital status and history of breast health problems. The odds of intending to engage in mammography increased fivefold in women with family history, compared to a fourfold increase for CBE. Women with history of breast problems were more likely to consider having mammography than CBE. Again, women with higher education and income were about five times more likely to be screened than those who were less educated and economically dependent. Marital status and age contributed moderately to the prediction of intention to have mammography or CBE, accounting for approximately 9% and 20% influence on intentions for each of the above screening behaviours, respectively.

Intention to perform BSE was predicted by education, history of breast health problems, age and marital status. These sociodemographic factors explained about 68% of the variance in BSE intention. Women who had experienced breast health problems in the past were about ten times more likely to practice BSE than those without such experience. Additionally, a unit increase in education was associated with seven times

Table 3. Prediction of intention to have BSE or CBE or mammography from sociodemographics, knowledge and HBM constructs

Variable	Intentions to undergo		
	BSE OR (95% CI)	CBE OR (95% CI)	Mammography OR (95% CI)
HBM constructs			
Perceived susceptibility	1.2 (0.5-2.5)	0.4 (0.2-0.8)*	3.6 (1.7-6.2)**
Perceived severity	4.9 (1.9-10.8)**	1.6 (1.1-2.9)*	1.8 (1.0-3.3)*
Perceived barriers	0.5 (0.8-1.4)	1.5 (0.8-2.1)	0.4 (0.2-0.8)*
Perceived benefits	3.4 (1.7-3.7)*	1.5 (0.4-2.2)*	1.7 (0.9-3.2)*
Knowledge	9.8 (5.3-18.0)**	7.4 (4.1-13.2)**	7.1 (4.0-12.6)**
Sociodemographics			
Age			
30-39	1.5 (0.9-2.7)*	0.09 (0.03-0.7)	0.3 (0.08-1.1)
40-49	2.1 (1.3-4.2)**	0.2 (0.03-0.5)	0.6 (0.1-1.2)
≥ 50	2.4 (1.2-3.9)**	0.5 (0.01-0.9)**	0.8 (0.5-1.5)**
Education			
High school	1.0 (Reference)	1.0 (Reference)	1.0 (Reference)
College ¹	6.8 (2.1-15.7)*	3.0 (1.0-9.9)**	3.4 (1.2-10.6)**
Degree ²	7.1 (2.5-16.0)**	4.7 (1.5-11.2)**	4.8 (1.5-11.3)**
Income			
< \$150	NEM	0.8 (0.2-4.0)	0.9 (0.1-2.3)
\$150 - \$250	NEM	1.1 (0.3-4.3)*	1.0 (0.2-3.8)*
> \$250	NEM	4.5 (1.1-13.9)*	4.7 (1.4-14.5)*
Marital status			
Single	1.0 (Reference)	1.0 (Reference)	1.0 (Reference)
Married	1.2 (1.0-1.9)*	0.09 (0.03-0.4)*	0.2 (0.1-0.9)*
Divorced ³	0.4 (0.02-0.8)	0.02 (0.01-0.3)	0.01 (0.009-0.07)
Breast health problems			
Yes	9.6 (4.9-18.2)**	0.1 (0.02-0.5)**	0.3 (0.03-0.4)**
No	1 (Reference)	1.0 (Reference)	1.0 (Reference)
Family history of breast cancer			
Yes	NEM	3.9 (1.6-7.1)*	5.2 (2.0-11.7)**
No	NEM	1.0 (Reference)	1.0 (Reference)

Note. * $P < 0.05$; ** $P < 0.001$; NEM ~ Did not enter the regression model; ¹ ~ Includes diploma holders; ² ~ Includes masters' and bachelor degree; ³ ~ Includes separated & widowed women.

the odds of intending to perform BSE, whereas every unit increase in age was associated with twice the likelihood of BSE intentions.

The results indicated that the HBM constructs explained 25% and 26% of the variance in intentions to have a CBE and mammography, respectively. As shown in Table 3, all of the model's constructs contributed significantly to the prediction of intention to undergo mammography screening, with the strongest predictor being perceived severity, followed by benefits, susceptibility and barriers. For intention to have a CBE, only three HBM constructs—susceptibility, severity, and benefits emerged as significant predictors; but perceived barriers were not predictive of CBE intention. Inspection of the odds ratio showed that every unit increase in perceived susceptibility to breast cancer increased fourfold the likelihood of intending to have mammography. Similarly, every unit increase in perceived severity and benefits was associated with about two times increase in the likelihood of engaging in mammography and CBE. Additionally, a unit decrease in barriers was associated with 1.5 times and 40% increases in the odds of intending to undergo CBE and mammography screening, respectively. The HBM also explained about 19% of the variance in intention to perform BSE, with perceived severity and benefits emerging as the only significant predictors. A unit increase in perceived severity of breast cancer and benefits of BSE increased the likelihood of BSE performance by approximately five and three times, respectively.

Knowledge of breast cancer screening explained about 22% of the variance in intentions for both mammography screening and CBE, and 37% for intention to perform BSE. Women who knew about the benefits and guidelines for any of the screening programs were more than seven times more likely to undergo mammography and CBE

than those without such knowledge. Furthermore, the results indicated that the odds of intending to perform BSE increased by more than nine-fold for every unit increase in knowledge of the procedures and guidelines for performing the test.

Mediating Effects

A hierarchical logistic regression analyses were performed to examine whether sociodemographic factors and knowledge mediated the relationships between the health beliefs and intentions to engage in each of the screening behaviours. As shown in Table 4, the only HBM variable that contributed significantly to the prediction of intention for both mammography and CBE after controlling for sociodemographics and knowledge was perceived susceptibility. None of the remaining HBM constructs (perceived barriers, benefits, and severity) entered the model.

Most sociodemographic factors and knowledge remained significant predictors of intentions. The sociodemographic mediators included family history of breast cancer, history of breast health problems, income, age, and marital status. For BSE, none of the HBM constructs emerged as significant predictors of intention after controlling for sociodemographic factors and knowledge. These results show that knowledge and sociodemographic factors fully mediated the effects of health beliefs on BSE intention, and partially for intentions to undergo mammography and CBE.

Discussion

This is the first study to examine the influence of sociodemographic, health beliefs and knowledge on intention to screen for breast cancer among women in Ghana. Overall, more than two-thirds of the women in this study reported intending to undergo mammography, CBE or BSE in the future. However, only 7.2% reported having

Table 4. Mediating effects of sociodemographics and knowledge on the relationship between HBM constructs and intention to have BSE or CBE or mammography

HBM constructs	Intentions to undergo		
	BSE	CBE	Mammography
	OR (95% CI)	OR (95% CI)	OR (95% CI)
Perceived susceptibility	FM ¹	3.3 (1.5-7.1)**	3.6 (1.7-7.7)**
% ME		+ 78.4% ²	0% ³
Perceived severity	FM ¹	FM ²	FM ³
% ME			
Perceived barriers	FM ¹	FM ²	FM ³
% ME			
Perceived benefits	FM ¹	FM ²	FM ³
% ME			

Note. ** $P < 0.001$; FM ~ Full mediation; 1 ~ Mediated by age, breast problems, family history, knowledge and marital status; 2 ~ Mediated by age, family history and knowledge; 3 ~ Mediated by age, family history, education and knowledge; ME ~ % of effect caused by the mediators (+ = increasing effect; - = decreasing effect).

undergone mammography in their lifetime. Although these self-reported screening rates are low, they are more encouraging than those reported by Opoku et al. (2012). In that study, the authors found that only 2% of their participants had ever participated in mammography screening. The very low screening rates reported by Opoku et al. could be because those data were collected in 2007—a time during which issues about screening may have been of less importance or awareness to women themselves, and even to health professionals.

The findings of this study suggest that sociodemographic factors were associated with screening intentions. Overall, women who were more likely to undergo screening were older and married with a family history of breast cancer or other breast health problems, and to have a higher income and education levels. While all these factors were relevant for intentions for mammography, CBE and BSE, the ones that had a strong direct influence on intentions toward these behaviours were history of breast problems, education, and income. Surprisingly, although family history of breast cancer was significantly predictive of CBE and mammography intentions, it did not predict intention to perform BSE. This may suggest that women who perceived themselves as susceptible to breast cancer believe that mammography and CBE would be more effective than BSE in reducing their risk of developing or dying from the disease. Also, it may be that at-risk women have low confidence in their ability to perform BSE correctly. This finding supports health promotion interventions to educate women on how to perform BSE (including practical demonstrations) and also to reduce their worries about breast cancer. Women should also be educated that their chances of developing breast cancer tend to increase if any of their close relatives develop the disease. Such information may induce

positive screening intention. The findings further suggest that as women get older, their intentions of screening were more likely to increase. These findings are comparable with those of other authors who have found sociodemographic factors to be predictors of screening intention (Othman et al., 2012).

Marital status may have both direct and indirect influences on screening intention because most women in Ghana make health-related decisions based upon advice from their partners and family members (Boateng & Flanagan, 2008; Ezeh, 1993). In a related study, Christou and Thompson (2012) found that intention to screen for colorectal cancer was higher among married persons and those in a de-facto relationship, compared to individuals who were not married or in any relationship. Among Zimbabwean women, support from male partners has been identified as a major determinant of cervical cancer screening uptake (Mupepi et al., 2011). These findings emphasize the important role played by partners in influencing women's breast cancer screening behaviours or intentions (Messina et al., 2004), particularly among low-income women. Despite their effects on screening intentions and behaviours, health policy makers often fail to consider the influence of sociodemographic factors when planning for specific health promotion interventions for the prevention of breast cancer-related morbidity and mortality. Until these factors are considered, health interventions may be unable to address the specific breast health needs of underserved women, particularly those in low-income countries.

One of the most important findings of this study is the relationship between knowledge and screening intention. It was the only individual-level factor that had a strong association with all the screening behaviours. Likewise, knowledge was the only variable that strongly predicted intention for mammography, CBE and BSE. While only a

small proportion of the women in this study were knowledgeable of the benefits and guidelines for the various screening programs, those who had such knowledge were more likely to be screened. In a related cross-sectional study, Opoku et al. (2012) assessed the knowledge, attitudes, beliefs and breast cancer screening behaviours among women in Ghana. The authors found that knowledge of screening benefits, as well as the risk factors for breast cancer were associated with higher screening uptake and compliance with screening recommendations among women. Similarly, Abotchie and Shokar (2009) identified knowledge as a strong predictor of cervical cancer screening among women in Ghana.

It seems clear that the more women become aware of the benefits and guidelines for screening, the greater the likelihood that they will intend to participate in the future. For example, Lechner et al. (2004) argued that although awareness of BSE procedures does not automatically translate into desirable screening behaviours, it does encourage women to practice BSE. Indeed, most of the women in the present study reported not practicing BSE due to lack of knowledge about how to perform the screening test. In the absence of such knowledge women may become discouraged and less confident in their ability to perform BSE, even if they are willing to do so. With regard to mammography screening, prior studies have found that knowledge of screening procedures and the source of screening services significantly influence intention (Ham, 2005). In the present study, the results suggest that women would be more likely to undergo mammography if they were well informed about how the screening test is performed and where to get the screening tests. From these findings, it could be concluded that increasing women's awareness about the benefits and guidelines for screening through health education in the

media and outreach programs could influence positive intention toward screening, which may subsequently lead to increased participation in screening and improvement in survival of breast cancer.

In general, higher perceived susceptibility to breast cancer was predictive of greater screening intention for both BCE and mammography. It was anticipated that perceived susceptibility would motivate BSE intention because women in the study population did not have regular access to CBE and mammography. However, this expectation was not confirmed by the results. A potential explanation is that women who feel susceptible to breast cancer may be more likely to seek effective screening strategies such as mammography rather than BSE. Othman et al. (2012) found that perceived susceptibility to cancer moderately predicts intention to participate in mammography among Jordanian women. In contrast, in low-income countries like Ghana where access to breast cancer screening programs such as mammography and CBE is usually limited, perceived susceptibility to breast cancer may not necessarily motivate screening intentions among women.

Perception of severity of breast cancer was found to be associated with screening intention in this study. The results suggest that perceived severity was strongly predictive of intention to perform BSE but moderately predictive of intention to have a mammography and CBE. This might have been because, although many women in the present study had fatalistic beliefs about breast cancer and thus may want to be screened regularly, they also reported not having regular access to CBE and mammography. Perceived severity was the only HBM component that contributed significantly to the prediction of BSE intention. With regard to fatalistic beliefs about breast cancer, the

findings presented here are slightly different from those reported by Mayo and Hunter (2010). Those authors examined Ghanaian women's beliefs about breast cancer and found that few women had fatalistic beliefs about the disease. However, many women in the present study perceived breast cancer to be fatal, a finding supported by Opoku et al. (2012). Although the effect of perceived severity on breast cancer screening intention has received little empirical support, some authors have found the variable to be a predictor of screening intention, particularly among underserved women (Christou & Thompson, 2012; Ham, 2005).

It was found that women's perceptions of the benefits of breast cancer screening were related to their intentions to perform BSE or have CBE or mammography. Women who knew that early detection through screening could reduce their chances of dying from breast cancer reported positive intentions toward screening. Consistent with prior studies (Mikhail & Petro-Nustas, 2001; Othman et al., 2012), greater screening intention was associated with greater perceived benefits. Specifically, those who were more likely to be screened were women who believed that regular performance of BSE and mammography would be effective in detecting breast cancer lumps. Based on these findings, health promotion interventions that aim to increase screening intention in Ghana should focus on informing women that regular uptake of BSE, CBE and mammography, can help detect breast cancer lumps. Such educational messages can motivate women to consider undergoing screening on a regular basis. Surprisingly, perceived benefits moderately predicted intention to undergo CBE and mammography among the women. However, the relatively strong influence of perceived benefits on BSE intention suggests

a need for promoting the benefits of CBE and mammography through the media or outreach programs.

An association between perceived barriers and screening intention was observed for all the screening behaviours. Several perceived barriers were found to be associated with screening intention. In general, women were less likely to consider undergoing screening if they perceived it to be excessively costly, embarrassing, inconvenient, inaccessible, and time consuming. It was surprising to find that intention to undergo CBE was positively significantly associated with concerns about cost. It thus implies that women who did not intend to undergo CBE believe that such screening would be costly. However, CBE is provided free of charge by all health facilities in Ghana, suggesting that many women in this population were not aware of this information. If this is the case, then it raises serious concerns about the breast health information women receive from health educators in the country. Given the high cost of mammography screening, interventions should focus on promoting CBE and informing women about the cost-free nature of the service. Simply telling women that CBE is free of charge might motivate them to participate.

The importance of the perceived barriers component of the HBM for the prediction of screening intention has some empirical support (Montaño et al., 1997; O'Neill et al., 2008; Soskolne et al., 2007). Congruent with the findings presented here, other authors have associated greater perceived barriers with low screening intention, especially for mammography. Although several factors have been associated with low screening intention among low-income women, the most common ones include cost, fear, and time constraints (O'Neill et al., 2008; Soskolne et al., 2007). For example, concerns

about side effects of screening and procedures have been shown to be major barriers to the uptake of mammography. However, in addition to fear and time constraints, the factors that are most likely to discourage Ghanaian women from engaging in mammography screening are cost and lack of availability. Given the low socioeconomic status of women in Ghana and the fact that mammography services are not provided free of charge, it was not surprising that this study identified cost as a major determinant of low mammography intention. Perhaps the best solution to this problem would be to make mammography screening free for the most at-risk women, particularly those above the age of 50 years. Extending the national health insurance coverage for mammography screening for all women may also potentially and significantly increase participation.

While perceived barriers were significantly associated with BSE and CBE, they were not predictive of intentions towards these behaviours. It is perhaps possible that the benefits women anticipated from BSE and CBE services significantly overshadowed the barriers they anticipated encountering when performing the tests. In addition, some women may not recognize the barriers associated with the performance of BSE until they begin to practice it. Although BSE could be considered a volitional behaviour, its performance could be hindered by factors that cannot be easily foreseen prior to its performance, especially by women who have limited knowledge of the procedures for performing the test. For example, lack of confidence in one's ability to perform BSE and issues of privacy can prevent many women from practicing it (Ham, 2005; Othman et al., 2012; Soskolne et al., 2007). This suggestion is supported by the present results as over 25% of the women reported that they were not sure of their own ability to perform BSE effectively. Also, the women who did not intend to perform BSE reported lack of

privacy, embarrassment and forgetfulness as barriers. Umeh and Rogan-Gibson (2001) found perceived barriers to be non-predictive of BSE performance. In that study, non-performance of BSE was associated with lack of confidence and fear.

The hypotheses that the association between screening intentions and health beliefs would be mediated by knowledge and sociodemographic factors were partially supported by the results. Using Baron and Kenny's (1986) regression mediation analysis procedure, it was found that the influence of health beliefs on screening intentions were mediated by several factors such as a history of breast health problems, family history of breast cancer, education, age, marital status, and knowledge. For mammography intention, controlling for these mediator variables, the predictive ability of the HBM components was reduced and only the perceived susceptibility component remained significantly predictive of screening intentions. This result suggests that Ghanaian women were more likely to undergo mammography if they perceived themselves to be susceptible to breast cancer, had knowledge of breast cancer and screening, a history of breast health problems, higher education, and were older and married. These motivational factors, particularly knowledge and history of breast problems, far exceeded perceived susceptibility in explaining women's screening intentions. A similar pattern of mediational effect was observed for CBE intention. In addition, the association between BSE intention and health beliefs was fully mediated by knowledge and the same set of sociodemographics factors as was found for mammography.

Support for the mediational roles of knowledge and sociodemographic factors highlight the motivational mechanisms through which health beliefs influence Ghanaian women's screening intentions. The relatively strong mediation effects found in this study

clearly suggest that regardless of Ghanaian women's health beliefs, the likelihood that they would undergo breast cancer screening is largely dependent on the influence of motivational factors such as knowledge of breast cancer and screening, family history of breast cancer, breast health problems, and education. This implies that health beliefs may be important determinants of screening intention, but are not independent of other factors. This finding is consistent with Rosenstock and colleagues' (1966) assumption that the HBM constructs can operate indirectly through motivational factors to influence health behaviours. If that is the case, then health beliefs contributed indirectly to the prediction of screening intentions among women in Ghana. It further suggests that motivational factors strongly moderate the associations between health beliefs and intention to perform BSE or have mammography screening, and to a lesser extent, to undergo CBE.

Limitations

Despite the important findings presented in this study, there are a number of limitations that need to be acknowledged. With regard to methodological issues, the study was cross-sectional in nature, meaning that women's intentions to screen for breast cancer were surveyed at a point in time. Therefore, there should be caution when inferring causality from the results. It is worth noting that while intention was associated with the composite measures of the HBM constructs, not all the individual items on each measure significantly correlated with intention. Notable were the items measuring the perceived barriers and benefits of BSE; about one-third of the items measuring these constructs were not related to intention to perform BSE. Further, the limited time frame under which the data for this study were collected only allowed for validation of the HBM and knowledge measures through a pilot study with a small sample of women. It is

thus recommended that future research be conducted to investigate further the validity and reliability of Champion's (1999) HBM scales as a measure of intention to perform BSE or have CBE or mammography screening among women in Ghana.

Because the outcome measures of the present study were intentions to undergo breast cancer screening, the findings should be interpreted with caution when applied to the actual performance of screening behaviour. Although behavioural intention has been found to be the most proximal determinant of health behaviour (Ajzen & Fishbein, 2005), it cannot be concluded with certainty that women who reported intending to undergo screening in this study would do so. A potential solution to this interpretational problem is to conduct a longitudinal study to examine the association between intention and behaviour by using the same set of items. In such a study, the follow-up results would suggest whether women who intend to undergo breast screening implement their intentions. Another limitation is that the women were not asked to specify when they intend to undergo screening. The survey questions focused on their intentions to undergo screening in the future without indicating a timeline. Future study is recommended to address this issue by investigating women's screening intentions within a given time frame.

Given the relatively small size of the sample, generalization of the findings to the general population of Ghana is problematic. For example, although the participants may be representative of the population of the New Juaben Municipality, their sociodemographic characteristics may differ from those who reside in other communities in the country, especially those in the rural areas. The women were predominantly educated, employed, and had regular access to general health care and breast cancer

screening such as CBE. Therefore, this limits the generalizability of the findings to other women. In a sample of predominantly low sociodemographic status women, the associations between the health belief variables such as perceived benefits and screening intention may be weaker than those reported in the present study. Furthermore, given the high reported rates of screening intention, the sample may have been over-represented by women with higher socioeconomic status, as women with lower status are less likely to intend to undergo screening.

Implications for Health Promotion and Policy

Despite the limitations of this study, several important lessons for health promotion and policy interventions can be drawn from the findings. The most influential individual level determinants of screening intentions among participants were income, education, knowledge, history of breast problems, and the constructs from the HBM such as perceived susceptibility, benefits, and severity. In view of this, interventions seeking to increase breast cancer screening intentions should focus on increasing women's awareness about the benefits of screening through educational campaigns in the mass media and outreach programs. The messages should be framed in the local languages of the target population, and prominent personalities such as doctors, nurses, and community leaders should be involved in the educational campaign. The health education messages must also emphasize the importance of screening for all women, irrespective of the person's family history of breast cancer and other risk factors such as age and breast health problems. Perhaps women should be told that breast cancer has no boundary and can affect any of them at any time in their adult life. Health education messages that suggest that although breast cancer is a very serious disease, it can be detected early and treated

successfully may also help to increase screening intentions among women. Given the association between screening intention and history of breast problems, health messages should encourage women to seek medical help whenever they experience a problem with their breast.

Access-related barriers to screening programs such as mammography and CBE can be reduced through effective policy interventions. For example, the cost of mammography can be subsidized by the government, thereby making the screening more accessible and attractive to women. If the screening cannot be subsidized for all women due to financial constraints, policy can target only the most at-risk women in the country, particularly the elderly. Perhaps the national health insurance coverage should be extended to include comprehensive breast cancer screening. Educational messages must also be designed to inform women that CBE is free of charge.

Conclusion

The results provide support for the utility of the HBM in predicting intention to perform BSE or to have a CBE and mammography screening among women in Ghana. Congruent with the present findings, other studies that have employed the HBM as a theoretical framework have found the model to be useful and appropriate for predicting intention to undergo cancer screening among low-income women (Ham, 2005; Othman et al., 2012; Soskolne et al., 2007). While all the constructs of the model were associated with intentions, the construct that predicted all the behaviours was perceived benefits and severity. This suggests that health interventions might be developed to increase women's awareness that regular and appropriate screening by BSE, CBE and/or mammography

could potentially reduce the risk of developing or dying from breast cancer. Interventions should also address the psychosocial barriers to screening identified in this study.

Chapter Four

Cultural Beliefs and Health System Predictors of Breast Cancer Screening Intention

Among Ghanaian Women

Although there are mixed results regarding their effectiveness, breast cancer screening programs such as mammography, CBE and BSE are widely used in many countries for the early detection of the disease. In particular, a number of authors have found low breast cancer mortality among women who regularly undergo mammography screening as compared to those who rarely undergo the procedure (ACS, 2011; Miller et al., 2002; Saslow et al., 2007; Smith et al., 2010). In addition, findings from the Canadian National Breast Screening Study (Miller et al., 2002) suggested that regular performance of CBE and BSE increase women's awareness about breast cancer, which subsequently leads to early detection of the disease. CBE and BSE appear to be more favorable than mammography for the prevention of breast cancer in low-income countries as many women in these areas cannot afford the cost of routine mammography screening. However, in light of the controversies surrounding their effectiveness, women are advised to undergo both BSE and CBE in combination with mammography screening (ACS, 2011; Saslow et al., 2007). Nonetheless, the likelihood of early detection of breast cancer depends on the utilization and regular uptake of multiple screening modalities, which is also essential for the maximization of screening benefits at a population level. Unfortunately, many Ghanaian women do not undergo mammography screening and CBE, and only a few perform BSE on a regular basis as recommended (Opoku et al., 2012).

The purpose of this chapter is to report on the influence of cultural and health system factors on Ghanaian women's intentions to undergo CBE and mammography. The problem statement, literature review and methods are described. Analysis of data and interpretation of the results were guided by a conceptual framework developed for this study (Figure 1). The study results including the descriptive information of the participants, as well as the logistic regression of the direct effect of cultural and health system factors on intention are presented. Results regarding the mediating influences of sociodemographic and cultural factors on intention are highlighted. The chapter concludes with a discussion of the results, followed by the implications for health promotion and policy. As well, recommendations for future research are addressed.

Problem Statement

Breast cancer, once thought to be rare in low-income countries has increased steadily among women in Ghana in recent years. While relatively few women develop breast cancer in the country, the majority of the affected women die from the disease (Jemal et al., 2011; Wiredu & Armah, 2006). More than 1,100 women die (approximately 56% of the total number diagnosed) from breast cancer each year (Jemal et al., 2011). This high mortality rate has been partly attributed to the late presentation for breast cancer treatment among Ghanaian women (Clegg-Lamptey et al., 2009). For example, about 90% of women with breast cancer in Ghana are treated for advanced cases of the disease as compared to 10% in most high-income countries (Kirby, 2005), where the disease is often caught at an earlier stage. Most patients seek medical treatment 8 to 10 months after observing a change in their breast (Clegg-Lamptey et al., 2009). As a result, more than half of the patients experience poor treatment outcomes. Clegg-Lamptey et al.

(2009, p. 128) also reported that more than 12.8% of breast cancer patients in Ghana do not attend for any treatment after their diagnosis, and of those who do, about 10% do not complete the entire treatment regimen, perhaps due to its aggressive nature. The late presentation and poor breast cancer survival could be reduced if Ghanaian women were to undergo and/or adhere to breast cancer screening and follow-up recommendations. However, despite their effectiveness in reducing mortality from breast cancer, the uptake of screening programs is low among women in Ghana. The purpose of this study was to use a newly developed conceptual framework (Figure 1) to examine the influence of cultural and health system factors on Ghanaian women's intentions to undergo CBE and mammography screening. To achieve this purpose, the study was guided by the following specific objectives:

- 1) To determine the influence of cultural beliefs about modesty, breast screening and attitudes towards preventive health care on screening intentions;
- 2) To examine the effect of social support from families or friends on screening intentions;
- 3) To assess the effect of health system characteristics such as cost, availability of screening, waiting time for screening, and health professionals' recommendations, attitudes, and gender on screening intentions; and
- 4) To assess whether the relationship between health system factors and screening intentions are mediated by the sociodemographic and cultural characteristics.

Literature Review

While little is known about the reasons for the low screening uptake in Ghana, evidence from studies elsewhere has implicated cultural factors as major determinants of

poor screening behaviour among low-income women, particularly those in Africa. Mupepi et al. (2011) reported that cultural beliefs about modesty and concerns about sexual embarrassment often adversely affect the way in which women perceive and undergo cancer screening in Zimbabwe. Similarly, Krombein and De Villiers (2006) found that concerns about embarrassment prevented many South African women from undergoing screening. Women who reported greater concerns about embarrassment were found to be less likely to have CBE and mammography screenings than BSE (Krombein & De Villiers). Nguyen et al. (2011) examined the attitudes and beliefs of Vietnamese immigrants in the United State with regard to preventive health services, including breast cancer screening. Women who held Vietnamese cultural beliefs about sexuality were more reluctant to undergo screening, compared to those without such beliefs. The culturally engrained women expressed greater concerns about touching and exposure of breasts to male health care professionals—a concern that negatively influenced their attitudes towards screening uptake in the United States.

Social support and beliefs about preventive health care seem to be important determinants of screening intention among Ghanaian women, but have not received any research attention to date. Most authors have found social support to be positively associated with intentions towards various kinds of cancer screening (Allen et al., 1998; Ford, Vernon, Havstad, Thomas, & Davis, 2006; Jepson & Rimer, 1993; Steele & Porche, 2005; Van Jaarsveld, McCaffery, Miles, Atkin, & Wardle, 2008). For example, Montañó et al. (1997) explored the factors that influence mammography intention among low-income women in the United States, and found that women who received support such as encouragement and advice from their family, friends, doctors and media

personalities are more likely to have mammography screening than those without any such support. Additionally, intention to perform BSE has been reported to be high among women who have social support (Lechner et al., 2004). Katapodi et al. (2002) found that financial and logistic supports facilitate compliance and participation in breast cancer screening programs among underserved women in the United States. In a large study of 55,278 women, Messina et al. (2004) reported that appraisal support such as encouragement was associated with greater uptake of mammography screening. Clearly, receipt of appraisal and instrumental supports from family and/or friends have important ramifications on women's intentions and attitudes towards breast cancer screening, particularly for mammography and CBE. However, less well understood is how beliefs about preventive care influence intention to screen for breast cancer. Carroll et al. (2007) reported low breast cancer screening utilization among women who had negative attitudes towards preventive care in the United States.

The question of how health care system-related factors influence screening intention in low-income countries such as Ghana may not be a novel one, but it remains to be empirically answered. The limited literature on this subject indicates that health care system factors such as cost, availability, waiting time, physician attitudes, and lack of recommendation affect intention to participate in cancer screening among women in underserved populations (Carcaise-Edinboro & Bradley, 2008; Gany et al., 2006; Godin et al., 2006; Soskolne et al., 2007). Among these factors, those that have been consistently associated with low screening in Ghana are cost and lack of availability and recommendation (Abotchie & Shokar, 2009; Opoku et al., 2012). As noted by McAlearney et al. (2007), concerns about cost may even prevent ever-screened women

from returning for subsequent mammography screenings. Mupepi et al. (2011) reported lack of physician recommendation as one of the major barriers to participation in cancer screening among Zimbabwean women. It was found that women who received physician recommendation were about 70% more likely to be screened than those without.

Mupepi, et al. (2011) found lack of time to be a major barrier to screening uptake in Zimbabwe. Women who reported having numerous sociocultural responsibilities were the least likely to be screened. McFarland (2003) found that negative attitudes of health care professionals towards female patients prevented many Botswana women from undergoing cancer screening. Carcaise-Edinboro and Bradley (2008) also reported that women who had good interaction with their health care professionals during medical care encounters were more likely than those who experienced poor interactions to undergo screening on a regular basis. Moreover, the receipt of sufficient explanation about cancer screening programs, including the procedures, guidelines and benefits has been associated with increased utilization of cancer screening (Carcaise-Edinboro & Bradley).

Conceptual Framework

Although the effects may be profound, there is no published conceptual framework that integrates sociocultural and health system factors in explaining cancer screening intentions or behaviours among women in Africa or low-income countries. Given this lack of conceptual guidance, the framework shown in Figure 1 was developed for use in this study, to increase our understanding of the dynamic influences of cultural and health system factors on intention to screen for breast cancer in Ghanaian women. Although individual factors may play an important role in intention formation with regard to cancer screening, contextual factors such as sociocultural of women and characteristics

of the health system may also be influential determinants in low-income countries like Ghana. The assumption underlying the proposed framework is believed to be conceptually consistent with other behavioural theories and purports that individuals' experiences influence their perceptions, which in turn affect their intentions toward and retention of a given behaviour (Maiman & Becker, 1974; Rosenstock, 1966). For example, women who have easier access to screening services and who have no cultural barriers to screening would be more likely than those without such beliefs to intend to undergo screening. However, if the experience is not supportive of the desired screening behaviour, women may be unlikely to undergo screening unless they have strong implementation intention.

The conceptual framework comprises two main theoretically driven constructs: cultural and health care system factors. It suggests that both constructs independently contribute to the prediction of intention to engage in CBE and mammography screening among Ghanaian women. In line with this proposition, the framework assumes that cultural orientations such as beliefs about modesty, preventive health care, breast screening, and social support would directly affect women's intentions towards both behaviours. Similarly, it was assumed that health system characteristics such as cost and availability of screening, outpatient waiting time for screening, and physician attitudes, recommendation, and gender would influence women's intentions about screening. Given the strong orientations of Ghanaian women towards health care, the cultural and sociodemographic characteristics were considered as mediating factors.

Based on this conceptual framework, the following hypotheses were tested: firstly, that cultural factors directly influence the intention to undergo CBE or

mammography; secondly, that health system factors directly and strongly affect intention to undergo screening; and finally, that the effect of health system factors on screening intentions is mediated by the sociodemographic and cultural factors. The sociodemographic factors considered to be mediators included income, age, education, marital status, history of breast health problems and a family history of breast cancer.

Method

Study Design

An exploratory descriptive cross-sectional survey approach was used to examine the influence of cultural beliefs and health system factors on intentions to screen for breast cancer among women in Ghana. Previous studies have also used cross-sectional designs to assess the influence of individual level factors such as health beliefs and knowledge on cancer screening behaviours in Ghanaian women (Abotchie & Shokar, 2009; Opoku et al., 2012). However, these authors focus primarily on individual level (e.g., health beliefs and knowledge) influences, while neglecting the potential effects of contextual factors such as cultural beliefs and health system characteristics. The present study seeks to bridge this knowledge gap by examining the influence of cultural and health care system factors on Ghanaian women's intention to undergo CBE and mammography.

Respondents and Setting

The 291 women recruited for the study were 30 to 65 years of age, spoke English or Twi (local language) and resided in the New Juaben Municipality, Ghana. About one-third of the women were recruited from the regional hospital. Approximately 83% of the women invited to participate in the study agreed to take part in the survey. Although the

remaining women had agreed to participate, they were not able to return their completed questionnaire to the researcher or could not be located for follow-up. There were no significant differences in terms of background characteristics between women who participated in the study and those who were unable to return the questionnaire. Thus, the participants were generally representative of women in the region.

The New Juaben Municipality has a population of about 184,000 inhabitants and is located approximately 84 km from Accra, the national capital. The primary occupations of most women in this municipality involve trading, housekeeping, and working in the government and private organizations (Ghana Statistical Service, 2010). The health-related problems faced by many women in this area included lack of access to comprehensive breast cancer care and preventive services, specifically mammography screening.

Because of a lack of information about cancer incidence and mortality rates in Ghana, the true prevalence of breast cancer in the municipality is yet to be known. However, hospital records suggest that morbidity and mortality from breast cancer are increasing in Ghana (Wiredu & Armah, 2006). Despite the threat posed by the disease, the municipality lacks health facilities that provide comprehensive preventive breast cancer care such as mammography and CBE.

Procedure

The women were randomly recruited using flyers (Appendix B) and an information sheet (Appendix C) distributed at various public and private places (e.g., churches, schools, government ministries, and a hospital) in the municipality. An introductory letter (Appendix E) from the University of Lethbridge was used to explain

the study. Women who agreed to participate received detailed information about how to complete the questionnaire; instructions were provided in either English or Twi by research assistants. Those women who asked to complete the questionnaire at their own convenience provided their contact numbers and first names to the researcher, which were then used to collect the completed questionnaire during a follow-up visit. Approval from the Human Subject Research Committee from the University of Lethbridge and permission from the administrative heads of the recruitment centers were obtained prior to data collection.

Instrument

Questionnaire development. Based on an extensive literature review, a questionnaire (Appendix D) was developed to assess the influence of cultural beliefs and the characteristics of the health system affect women's intention to have CBE and mammography screening. The demographic characteristics of the respondents and their influence on screening intention were also assessed. The instrument was field-tested to assess its appropriateness, readability and internal consistency through a pilot study with 20 participants. A few minor changes were made in the questionnaire based on the preliminary analysis of the pilot data and recommendations from the participants. For the internal consistency and reliability of the items on the final instrument, a Cronbach's alpha of 0.68 and 0.82 were obtained for the cultural beliefs and health system measures, respectively.

Screening intentions. Intentions to screen for breast cancer were measured with a single item for each behaviour (CBE and mammography screening) on a two-point scale (yes/no). To enhance respondents' understanding, mammography was defined as a

screening test for breast cancer in which the doctor uses a machine to look for lumps in the breast. CBE was operationally described as a breast screening performed by a doctor or nurse with his/her hand. Women who responded “yes” were considered to have a positive intention to screen for breast cancer. Also assessed were women’s self-reported screening behaviours for mammography and CBE using a single item for each behaviour and “yes/no” responses.

Cultural factors. Currently, there are no established general measures of cultural factors and their influence on screening behaviours or intentions in Africa. In addition, studies assessing cultural influences on screening behaviours elsewhere have tended to focus on acculturation and racial factors, which may not be important determinants of health behaviours in Ghana. Thus, efforts have been made to develop general measures of cultural beliefs that may influence women’s intentions to undergo screening. The measures developed for the present study assess four health-related cultural beliefs that appear to be common across diverse ethnic groups in Ghana. These beliefs refer to modesty, sexual health care services, preventive health care, and social support for preventive care. A single item-question with a yes/no response was used to assess women’s perceptions and beliefs about these cultural factors. The measures were developed through extensive review of studies examining the use of preventive care services such as screening, contraceptives and maternal care among low-income women (Ashing-Giwa, 1999; Farnes et al., 2011; Lee-Lin et al., 2008; Owusu-Daaku & Smith, 2005; Tang, Solomon, & McCracken, 2000).

Health system measures. Six measures were developed to assess the influence of health care system factors on women’s intentions to undergo mammography and CBE.

Three of the measures, including physician recommendation, attitudes, and gender were used to examine provider-related influences. The remaining measures, such as cost, lack of availability of services, and waiting time for care captured the structural characteristics of the health care system that may affect screening intention. A single item-question with a yes/no response was used to assess women's perceptions about the influence of these health care system factors on screening intention.

Demographic measures. Questions were asked to elicit information about the background characteristics of the study respondents. For instance, basic characteristics such as age, marital status, and education and income levels were obtained. The women were asked about their family history of breast cancer and history of breast health problems. With the exception of the question about age, responses were multiple-choice and yes/no.

Data Analysis

The objective of the data analysis was to examine the influence of cultural and health system factors on Ghanaian women's intention to undergo CBE and mammography screening. Data analysis proceeded in three distinct, but interrelated stages. First, descriptive analyses were performed for the predictor variables and the outcome measures. Because women who intended to be screened (75%) for both behaviours and those not intending (25%) were not relatively equally distributed, responses to each of the behaviour were weighted to reflect the composition of the sample. Second, the associations between intentions and the predictor variables were assessed for each behaviour using the Cramer's V and Phi coefficient (where necessary). Third, binary logistic regression analyses using simultaneous method were performed to

assess the direct effects of the cultural and health system factors on intentions to undergo CBE or mammography. In addition, the independent effects of the sociodemographic variables on screening intention were examined simultaneously. Using Baron and Kenny's (1986) approach, the effects of the cultural beliefs and sociodemographics on the relationship between the health system variables and intentions were examined for each behaviour using a hierarchical regression method. In the first regression model, the cultural and sociodemographic variables were entered, followed by the health system variables in the second model. Intention for each of the screening behaviours was entered into the model as a dependent variable, separately. All variables with p -value ≤ 0.05 were considered statistically significant, and there were no multicollinearity concerns. All analysis was performed using the Statistical Package for the Social Sciences ([SPSS], version 20, SPSS Inc., Chicago, IL).

Results

This section presents the results of the regression analyses. It begins with a description of participants' characteristics, including their intentions to undergo CBE and mammography. The direct influences of the cultural and health system factors on intentions to undergo screening are presented. The mediating effects of cultural and sociodemographic factors on intentions are also presented for each of the behaviour.

Descriptive Characteristics

About 350 English-language questionnaires were distributed to the participants. Of this number, 291 completed forms were received, representing a response rate of about 83%. Although few questionnaires were returned incomplete, the percentage of missing data for those questionnaires was below 10% and thus was replaced accordingly

using appropriate tests (Series mean and Linear trend at point for interval and categorical variables, respectively). The characteristics of participants with respect to sociodemographics, screening behaviour, and intentions are presented in Table 1. In general, screening intentions were quite high, with about 75% indicating intention to undergo CBE or mammography screening in the future.

The cultural beliefs of women in relation to breast screening are described to provide a context for understanding their influences on intention. About 53% of the women indicated that they would feel embarrassed to allow a female physician to examine their breast. Women with a high level of education were less likely to feel embarrassed during breast screening than those with limited education. Additionally, about 84% of women were more likely to feel reluctant to seek screening from a male physician because of cultural concerns about modesty. Women who were less educated (secondary education or less) and older showed greater concerns about modesty. Also, both married and unmarried women (70%) were more likely than divorced or widowed women (30%) to be concerned about modesty. Only 44% were likely to be encouraged to undergo CBE or mammography by their family/friends. Reliance on such social support was higher among women who were unmarried, divorced, older, or less educated. Some participants reported poor attitudes toward preventive care, with 70% stating that they only go to the hospital when they have a serious health problem. Of these participants, only 42% reported intentions to screen.

Sociocultural Factors and Screening Intention

Sociocultural factors were significantly associated with intentions to undergo CBE and mammography (Table 5). While no significant differences were found between

Table 5. Associations of cultural beliefs and health system factors with intentions to have mammography or CBE

Variable	Intentions to have	
	CBE	Mammography
Sociodemographics		
Age	-0.281**	-0.286**
Education	0.223**	0.230**
Income	0.188**	0.200**
Marital status	0.191**	0.217**
History of breast problems	0.261**	0.237**
Family history of breast cancer	0.131*	0.381*
Sociocultural factors		
Beliefs about modesty	0.328**	0.232**
Beliefs about screening	0.480**	0.432**
Attitudes towards PHC	-0.394**	-0.417**
Social support	0.365**	0.407**
Health system factors		
Cost	0.641**	0.614**
Availability	0.436**	0.434**
Waiting time	0.358**	0.336**
HP attitudes	0.444**	0.456**
HP Recommendation	0.285**	0.267**
HP gender	0.017ns	0.001ns

Note. * $P < 0.05$; ** $P < 0.001$; ns ~ Non-significant;
PHC ~ Preventive health care; HP ~ Health professionals.

these screening behaviours, sociocultural factors relatively strongly correlated with intention to undergo CBE as compared with mammography. Women who believed that breast screening was embarrassing were associated with lower screening intentions. Although the association between beliefs about modesty and screening intention was generally moderate, a relatively weaker association was observed for mammography screening than for CBE. In addition, attitudes towards preventive health care were negatively associated with intention for both mammography and CBE. Women who had negative attitudes towards preventive health care reported lesser intentions to undergo screening than those with positive attitudes. On the other hand, social support positively related to intentions for both behaviours; however, unlike the associations noted for other cultural factors, social support was relatively strongly associated with mammography compared with CBE.

Health System Factors and Screening Intentions

Most of the health system factors were associated with both mammography and CBE intentions. Among the factors, only physician gender was not significantly related to intentions for both screening behaviours. Although intentions to undergo mammography and CBE were almost equally related to the system factors, some slight differences were evident (see Table 5). In general, women who perceived the screening test to be expensive had the lowest intention of engaging in screening. Surprisingly, intention to obtain CBE was more strongly associated with cost than was mammography. As well, perceived long waiting times for screening were related to low intention for mammography and CBE. Availability of screening services also positively influenced intentions towards screening. Surprisingly, physician recommendation was weakly

associated with both screening behaviours, especially for mammography. Lastly, the attitude of health care professionals was also positively associated with screening intentions.

Predictors of Screening Intention

Results of logistic regression analyses of the effects of sociocultural and health system factors on intention to undergo CBE and mammography screening are presented in Table 6. All the sociocultural factors, except social support, significantly predicted screening intentions for both behaviours. Inspection of the odds ratios indicated that beliefs about breast screening and attitudes towards preventive health care were the strongest predictors of mammography and CBE intentions. For both behaviours, women who perceived breast screening not to be embarrassing were six times more likely than those with negative beliefs to be screened. Similarly, positive attitudes towards preventive health care were associated with approximately five times increased likelihood of intending to engage in both behaviours. Intention to undergo mammography and CBE were 50% and 70% lower, respectively, among women who considered the exposure and touching of breasts to be culturally inappropriate than among those without such modesty beliefs. Social support had no significant effect on intentions to have mammography or CBE.

Health system factors (except gender) contributed significantly to the prediction of mammography and CBE intentions, with cost being the most important. A unit decrease in the cost of screening services was associated with approximately fifteen times increase in the likelihood of mammography screening intention. Concerns about cost of screening had a strong effect on intention to have a CBE. Additionally, women who had

Table 6. Prediction of intention to have CBE or mammography from sociocultural and health system factors

Variable	Intentions to undergo	
	CBE	Mammography
	OR (95% CI)	OR (95% CI)
Sociocultural factors		
Beliefs about modesty	0.7 (0.4-0.82)**	0.5 (0.2-1.1)*
Beliefs about screening	6.2 (2.8-15.9)**	6.5 (3.0-17.3)**
Attitudes towards PHC	5.8 (2.7-12.3)**	5.1 (3.3-13.2)**
Social support	0.09 (0.07-1.4)	0.01 (0.002-0.02)
Health system factors		
Cost	24.0 (8.7-35.2)**	14.7 (5.9-26)**
Availability	9.7 (4.0-18.3)**	8.1 (3.3-16.7)**
Waiting time	7.8 (4.6-13.2)**	7.2 (2.8-11.9)**
HP attitudes	3.8 (1.1-7.3)*	4.3 (1.5-8.0)**
HP recommendation	0.03 (0.004-0.3)**	0.07 (0.01-0.5)**

Note. * $P < 0.05$; ** $P < 0.001$; PHC ~ Preventive health care; HP ~ Health Professionals.

regular access to screening services were about 8 to 10 times more likely than those with limited access to intend to undergo mammography or CBE. Positive or better health professional-patient relationship and perceived shorter waiting times for screening strongly increased the likelihood of intending to screen by about 3 to 8 times for CBE or mammography screening.

Mediating Effects

The effect of the health system factors on screening intentions (for both behaviours) was partially mediated by sociocultural and sociodemographic factors (Table 7). For mammography and CBE intentions, mediating effects were found for history of breast health problems, beliefs about screening, attitudes toward preventive health care, and cultural beliefs about modesty. The inclusion of these confounding variables in the regression models attenuated the influences of health professionals' recommendation on CBE intention by approximately 66%, and the effect of recommendation on intention to undergo mammography was also reduced to a statistically non-significant level. A 4.2% reduction in the effect of waiting time on mammography intention was noted after controlling for the influences of the sociodemographic and sociocultural factors.

Discussion

The present study examined the influence of cultural and health care system factors on intention to screen for breast cancer among Ghanaian women. The finding that only about one-third of the participants had undergone mammography screening and CBE in their lifetime was not surprising, given the limited access to these screening services. However, perhaps the most encouraging finding of this study was that many participants (75%) intended to participate in screening in the future. In the univariate analysis, intentions to undergo screening were found to be significantly associated with

Table 7. Mediating effects of sociodemographics and sociocultural factors on the relationship between health system factors and intentions to undergo CBE or mammography screening

Health system factors	Intentions to have	
	CBE	Mammography
	OR (95% CI)	OR (95% CI)
Cost	31.6 (10.4-52.0)**	19.1 (7.9-39.0)**
% ME	+ 31.7% ¹	+ 30% ²
Availability	11.0 (5.9-22.0)**	14.3 (5.1-27.4)**
% ME	+ 13.4% ¹	+ 77% ²
Waiting time	10.7 (4.1-19.2)**	6.9 (3.3-15.1)*
% ME	+ 37% ¹	- 4.2% ²
HP attitudes	6.3 (2.8-13.1)*	5.7 (2.4-11.9)*
% ME	+ 66% ¹	+ 32.6% ²
HP recommendation	0.01 (0.009-0.03)*	0.3 (0.01-1.6)ns
% ME	- 66% ¹	FM ²

Note. * $P < 0.05$; ** $P < 0.001$; ns ~ Non-significant; 1~ Mediated by breast health problems, modesty and attitudes towards preventive health care; 2~ Mediated by breast problems, beliefs about screening and attitudes toward PHC; ME ~ the percentage of effect caused by the mediation factors (+ = increasing effect; - = decreasing effect); FM ~ Full mediation; HP ~ Health professionals.

sociocultural and health system factors. The average correlation between the cultural factors and screening intentions was 0.40 for CBE and 0.37 for mammography screening. In addition, average correlation values of 0.42 and 0.43 were obtained for the association between health system factors and intention to have mammography and CBE, respectively. Although quite moderate, the observed average correlations are large enough to conclude that screening intentions of Ghanaian women are associated with contextual characteristics. This suggestion is strongly supported by the results of the regression analyses, which showed a relatively strong effect of cultural and health system factors on intentions for each behaviour. Mediation effect was found for the relation between screening intention and the health system factors.

To identify the specific cultural factors that would be most appropriate to target for health promotion interventions, I inspected the relative contributions of the individuals' beliefs to the prediction of screening intentions. Although all the cultural factors were significantly associated with intentions, the ones that had relatively stronger relations with both mammography and CBE intentions were beliefs about preventive health care and breast screening. While beliefs about the latter were positively associated with intention, beliefs about the former correlated negatively with intention for both mammography and CBE. Beliefs about breast screening were measured in terms of whether participants perceived regular screening as embarrassing or not. Overall, the finding suggests that women with negative beliefs about preventive care, and who believe that breast screening is embarrassing would be less likely to engage in either mammography or CBE. Mupepi et al. (2011) also found that concern about embarrassment and lack of understanding of preventive health care play important roles

in influencing cervical cancer screening behaviours among Zimbabwean women. The findings presented here indicate a need for interventions that educate women about the benefits of preventive health care and put them at ease in the clinical setting, to improve screening intentions.

Other cultural variables that correlated moderately with intention for both mammography and CBE were beliefs about modesty and support from family and/or friends. However, only the former were significantly predictive of both CBE and mammography intentions. In addition, stronger beliefs about modesty were deterrents to screening intention, particularly for CBE. Most (84%) of the women who perceived the exposure of women's breasts to male health care professional as culturally inappropriate reported lower intentions to undergo mammography and CBE. This finding is not unexpected, given the relatively strong emphasis placed on issues of modesty in many Ghanaian societies. Based on personal experience, some ethnic groups (e.g., particularly among the Akans), public discussion about female genitalia is prohibited, especially in the presence of a male. These cultural attitudes may have a negative effect on Ghanaian women's attitudes towards CBE and mammography screening, given the fact that such services are often provided by male physicians. This finding is congruent with that reported by Mupepi et al. (2011) in Zimbabwe. Those authors found that Zimbabwean women who perceived their participation in cervical cancer screening as culturally inappropriate, compared to those without such perception, were less likely to undergo screening. A potential way to increase screening intention is to develop culturally sensitive educational interventions and screening programs for women.

The non-significant effect of social support on intentions to have mammography and CBE was surprising, given the enormous influence that family and friends usually have on Ghanaian women's decisions towards health care. It may be that, given the low priority that many women in this population attached to preventive health care and their unfamiliarity with such health care and limited knowledge about the benefits, women may be less willing to seek support (such as advice, financial and logistics) for screening from family and/or friends. In other words, it is possible that the fear of not being able to obtain support from social ties or family for breast cancer screening discourages some women from making any attempt to seek support. Given Ghanaian women's fatalistic beliefs about breast cancer (Mayo & Hunter, 2010), women may believe that seeking support for screening would create the impression that they have breast cancer. In a related finding, Gregory et al. (2011) reported social support to be a non-significant predictor of colorectal cancer screening intentions among individuals aged 50 years and older in Australia. This suggests that support may play a role in the determination of cancer screening intentions.

Contrary to the above findings, other authors have found social support to be a significant predictor of screening intentions (Allen et al., 1998; Ford et al., 2006; Jepson & Rimer, 1993; Lechner et al., 2004; Steele & Porche, 2005; Van Jaarsveld et al., 2008) and behaviours (Katapodi et al., 2002; Messina et al., 2004). Higher participation rates and adherence to cancer screening recommendations have been found among women who receive support such as encouragement, advice, and financial help from their family and/or friends (Messina et al., 2004). In addition, Lechner et al. (2004) found that women who receive encouragement from their family were more likely than those without such

support to perform BSE on a regular basis. Nevertheless, the associations found between social support and intention to have mammography and CBE in this study bear out the idea that women who receive social support from family/friends are more likely to participate in breast cancer screening than those without such support. Further research is needed to examine the association between fatalistic beliefs about breast cancer and social support, and the effect of such associations on intentions to screen for breast cancer.

Noteworthy is that perceived cost of screening had the greatest influence on intention for the two behaviours. It is worth noting that access to mammography screening for women in Ghana is determined by their ability to pay for the service. Therefore, women who cannot afford to pay for screening tests would be unlikely to be screened. While the problem of poverty remains widespread throughout Ghana, the most affected individuals are women as they have limited economic and social power. Thus, it is very likely that without financial support many Ghanaian women would be unable to undergo mammography screening. This finding is congruent with that of Opoku et al. (2012), who found the cost of screening to be the most salient determinant of mammography uptake among Ghanaian women. It can then be suggested that removal of financial barriers to screening may potentially lead to increased screening intention among women. While the unfavorable economic situation in Ghana is unable to support the provision of free mammography, access to such breast health care could be improved through targeted health promotion interventions, either by providing free screening to the most at-risk women or extending the national health insurance coverage for mammography screening in Ghana. McFarland (2003) also recommended removal of

direct financial barriers to cancer screening as a means of improving access to the service among women in Botswana.

The finding that perceived cost of screening was associated with and even predictive of intention to undergo CBE was very surprising, suggesting that participants were not aware that CBE is provided free of charge. If that is the case, it can be concluded that existing health education interventions designed to improve women's awareness of breast cancer screening are not yielding the desired result. To address this problem, special emphasis should be placed on educating women about the benefits and minimal cost of CBE. In addition, efforts should be made to encourage female health care professionals to perform CBE, as this may help in relieving the associated discomfort; this may in turn result in increased positive intentions to screen.

As has been found in other studies from low-income populations (Mupepi et al., 2011; Remennick, 2006), physical access to screening services had a significant negative influence on screening intention. This finding is not surprising because, in Ghana, CBE and mammography services are provided by only a few health facilities. Moreover, these health facilities are located in a few urban areas, and as such are less accessible to women residing in rural and semi-urban areas. It was found that every unit increase in distance to screening facilities reduces the odds of screening intention by about nine times for both mammography screening and CBE. This finding clearly suggests the need for decentralization of breast cancer screening facilities in Ghana. It is thus recommended that mammography and CBE services be made available in all regional hospitals. While the decentralization of such screening services may be very costly, there is no doubt that such policy intervention would facilitate easier access to screening and subsequently the

uptake of the service. It may also help to reduce the transportation-related financial barriers associated with screening.

It was not unexpected to find that outpatient waiting time was a significant predictor of screening intention. Consistent with previous studies (Gany et al., 2006; Mupepi et al., 2011), the perception that waiting time for both CBE and mammography screening would be longer than usual was associated with low intention. In general, the outpatient departments of almost all the government hospitals in Ghana have a long waiting time for both curative and preventive health care. Moreover, the waiting time for preventive care is even longer because of the low priority that health professionals assign to assign to it. Mupepi et al. (2011) also reported a lack of time to be a significant barrier to participation in cervical cancer screening among women in Zimbabwe. In view of this finding, it seems more likely that a reduction in waiting time for screening can increase screening intention among women. This suggestion is supported by the result of the logistic regression analysis as a unit reduction in waiting time was associated with seven times increase in the odds of screening intentions. Further research is needed to examine the effect of waiting time on intentions to undergo preventive health care services such as screening among women in low-income countries, where access to such care is often limited.

Another important discovery was the association between physician recommendation and intention. It was found that women were more prepared to consider undergoing screening if recommended by a physician. Similar to this finding, a recommendation from a physician has been shown to increase intention to have mammography among women. Soskolne et al. (2007) reported a similar outcome. In fact,

the impact of physician recommendation on screening intention is not surprising because many women in Ghana place a high value on advice from their health professionals. Similarly, interaction between health professionals and participants played a critical role in influencing screening intention. Women who reported ever experiencing poor interaction with a health care professional were less likely to intend to participate in screening. In Botswana, McFarland (2003) found that negative attitudes of health care professionals towards women during medical encounters discouraged women from participating in cervical cancer screening. Other authors have also reported poor adherence to screening recommendations following a negative health care experience (Carcaise-Edinboro & Bradley, 2008; Knapik, 2012). It is thus likely that a positive relationship between health care professionals and women, accompanied by a screening recommendation, may increase intention and compliance. Further investigation is needed to understand how past experiences with health care providers influence cancer screening intentions among women in Ghana.

The results of the present study suggest that various sociodemographic factors were associated with screening intention. Congruent with findings from previous studies (Bowie et al., 2004; Othman et al., 2012; Pakenham et al., 2000; Soskolne et al., 2007), this study found that age, income, education, marital status, history of breast health problems, and a family history of breast cancer were all associated with intentions towards screening. Women with high income and education level were more likely to be screened. Further, a negative association was found for age, with older women having greater intention to undergo screening. Married women were more likely to intend to undergo screening than unmarried women. This finding makes sense, given the low

socioeconomic status of women in Ghana, and the fact that access to screening is determined by one's ability to pay; women who have support from their partners would be more likely to be screened than those without support. As noted by Pakenham et al. (2000), women with a history of breast problems and a family history of breast cancer were among the most likely to intend to undergo screening, particularly for CBE and mammography screening.

The present study demonstrates that while intention to undergo CBE and mammography screening was associated with health care system factors, these associations were not completely independent of the effect of cultural and sociodemographic characteristics. The direct effect of waiting time on mammography intention decreased, and that of physician recommendation was reduced to a non-significant level, after controlling for the effect of sociodemographics and cultural factors. The direct effect of physician recommendation on CBE intention was reduced to a borderline significance after controlling for the mediators. Mediation effects were found for history of breast problems, beliefs about screening, and attitudes towards preventive health care on the associations between mammography screening intention and both waiting time and physician recommendation. Additionally, the association between intention to have a CBE and physician recommendation was mediated by a history of breast health problems, beliefs about modesty, and attitudes towards preventive health care. These mediation findings suggest that the contextual factors that strongly influence Ghanaian women's intentions to undergo CBE and mammography screening include cost of screening services, availability of services, and attitude of physicians.

Limitations

Although the framework used in the present study provided a powerful explanation of the variance in screening intention among the women, there are number of shortcomings that limit its utility. First, because the study is cross-sectional, causal inferences cannot be drawn from the findings. However, because the conceptual framework is still in the developmental stages, it can serve as a heuristic conceptual guide for the selection of the study variables and interpretation of findings, rather than as a well-defined and established theoretical framework or model that has already been validated. Thus, as more studies are conducted using the framework, revisions and refinement will present a clearer explanation of the functions of the various components and their interactions. Further study is needed to test the utility of this framework in measuring cancer screening intention and perhaps behaviours in women in other populations and make suggestions for further improvement.

Second, although the relatively strong explanatory power provided by the components of the framework is striking, this may be due to chance, given the relatively small sample size of the study. While the sample was theoretically sufficient to perform regression analyses, its size might have produced statistically significant results that may not represent a valid outcome. In other words, the likelihood of type II error is high. As such, interpretation of the findings, particularly the regressions, should be viewed with caution. In addition, because the outcome measures of this study were screening intentions, caution must be applied when applying the findings to promote breast cancer screening behaviour. Further study should be conducted using the framework to examine the actual performance of mammography screening and CBE among Ghanaian women.

Additionally, generalization of the findings to other populations within and without Ghana must be applied with care, given the potential differences that may exist between the socioeconomic characteristics of the women in this study and those of women from other areas.

Finally, although the cultural factors measures were developed through literature review and pilot tested on women from the study population, further testing of the instrument is indicated. To develop a more reliable scale to measure the cultural beliefs influence on screening intention and behaviour in African countries like Ghana, open-ended questionnaires or qualitative methods should be used to elicit women's perceptions and beliefs about breast cancer screening and the factors that influence it.

Implications for Health Education and Policy

In spite of the noted limitations, the findings of this study have several important implications for interventions to improve screening intention among Ghanaian women. The study identified that cultural beliefs were associated with screening intentions. For example, cultural beliefs about modesty were found to be negatively associated with screening intentions, and this suggests that effective health education messages should be designed to make screening more culturally appealing to women. In addition, beliefs about preventive health care and breast screening were all related to screening intention; thus, health promotion messages that encourage positive attitudes towards screening might help in facilitating intentions. Such interventions must educate women about the benefits—particularly letting them know that regular screening can help detect breast cancer at an earlier stage, and that early detection may lead to less costly, but effective treatment outcomes. Further, the finding that social support was associated with

screening intentions suggests the need for interventions aimed at promoting screening not only among women, but also their friends and family, especially their partners. These individuals should be encouraged to motivate women to undergo screening on a regular basis.

In addition, the study identified five health care system factors that were associated with screening intention: cost of screening, availability of service, outpatient waiting time, and physician attitudes and recommendation. Interventions aimed at improving access to mammography and CBE might include reducing the cost of the test and waiting times for consultation. It is recommended that if possible, free screening should be provided to the most vulnerable and at-risk women in the country. An alternative intervention is to extend the coverage of the national health insurance to breast cancer screening. In this way, women may find screening services more accessible and attractive. As in the case of social support, it is recommended that health care professionals be encouraged to give attention to preventive health care, and particularly to breast cancer screening, and should be encouraged to recommend screening to women whenever they present for care.

Conclusion

This study is the first of its kind to examine the influence of contextual factors such as cultural beliefs and health system characteristics on intention to screen for breast cancer among Ghanaian women. The findings suggest that the components of the conceptual framework that guided the present study successfully predicted screening intention for both mammography and CBE. As predicted, the effect of the health system factors on screening intention was partially mediated by both the cultural and

sociodemographic factors. The findings from this study provide reasonably strong support for the claim that breast cancer screening intentions of women in low-income countries are a function of their cultural orientations and the characteristics of the health system.

The framework offers a generic model that captures the specific cultural beliefs and characteristics of the health system that are believed to influence the health care-seeking intentions of many women in Ghana. In addition, examination of the components of the framework provide a clearer view of the extent to which these items individually and collectively impact women's intentions towards breast cancer screening. Furthermore, the framework recognizes the potential direct impact of sociodemographic factors on screening intention. Of particularly importance, this framework also supports the mediational effects of cultural and sociodemographic factors on screening intentions. The findings of this study provide a robust explanation of the relationship between the components of the framework and the outcome measures, as well as their mediational effects.

Chapter Five

A Qualitative Study of Breast Cancer Screening Intention among Ghanaian Women

The qualitative component of the study explored the perceptions of women regarding the impacts of health beliefs, knowledge, cultural and health system factors on intention to perform BSE or undergo CBE and mammography. Focus group interviews were used to explore the perceptions of Ghanaian women regarding the impact of psychosocial, cultural and health system factors on their screening intentions. The framework described in this chapter provides a basis for the examination of the influences of these factors on intention. The chapter begins with a description of the problem, a review of the literature and a detailed explanation of the framework. It concludes with presentation and conclusion of findings, recommendations, and limitations. The implications of the findings for policy interventions are then addressed.

Problem Statement

Steady increases in breast cancer burden have recently been observed in Ghana. Despite the low overall incidence of the disease compared with other countries in Africa, breast cancer-related deaths are high among Ghanaian women (Wiredu & Armah, 2006). One primary reason for the increasing burden of breast cancer mortality is the late diagnosis of the disease. As has been observed in other African countries (Fregene & Newman, 2004), most women in Ghana present for breast cancer treatment only after the disease has reached an advanced stage, at which time treatment is usually unsuccessful. Over 80% of women with breast cancer in Ghana are treated for advanced disease, as compared to 10% in developed countries (Kirby, 2005). Most Ghanaian women seek medical treatment for breast cancer about 8 to 10 months after observing a change in their

breast (Clegg-Lampsey et al., 2009). Hence, over half of women who present for breast cancer treatment experience poor outcomes. In addition, about 13% of breast cancer patients do not return for care following the diagnosis, while 10% abandon the treatment once begun (Clegg-Lampsey et al., 2009), probably due to the aggressive interventions required for advanced disease. Thus, given the rapid increase in breast cancer incidence in Ghana, regular uptake of screening presents an important opportunity to facilitate early presentation for breast cancer treatment (Smith et al., 2010).

The limited research about breast cancer screening conducted in Ghana focused on the influence of individual level factors such as knowledge, health beliefs and attitudes on screening behaviours (Opoku et al., 2012), while neglecting the role of contextual factors. Also, no author has identified the factors influencing women's intention to undergo screening in Ghana. The overall purpose of this study was to understand the perceptions of Ghanaian women about the impacts of psychosocial, cultural and health system factors on their intentions towards screening. The primary research question that guided this study was: *What are the factors that influence Ghanaian women's intentions to perform BSE or undergo mammography or CBE?* The specific objective was to understand Ghanaian women's perceptions regarding the impacts of knowledge of breast cancer and screening, health beliefs, and cultural and health care system factors on their intentions to perform BSE or undergo CBE or mammography screening. A conceptual framework developed for this study provided a foundation for the examination of the influences of these factors on screening intentions. Understanding the influences of these factors on screening intentions may facilitate the development of effective health

promotion interventions that will increase women's intentions to perform BSE or undergo CBE or mammography, in an attempt to improve survival from breast cancer.

Literature Review

Women's decisions to undergo breast cancer screening are influenced by many factors, ranging from individual to contextual influences. One of the most commonly cited reasons for the low screening intention among women is lack of knowledge (Mupepi et al., 2012; Tolma, Reininger, Evans, & Ureda, 2006). In Ghana, screening rates are relatively high among women who knew of the benefits and guidelines of screening (Opoku et al., 2012). Elsie et al. (2010) noted that many Ugandan women did not undergo mammography because they did not know the benefits of screening. In Nigeria, knowledge of the risk factors and symptoms of breast cancer has been associated with high uptake of screening (Oche et al., 2012). Indeed, some women may not recognize the need to undergo screening if they lack awareness about its benefits, and this in turn negatively affect women's intentions to screen. Bowie et al. (2004) found that prior experience and knowledge of screening facilitates positive intentions towards the uptake of mammography.

The influence of beliefs on screening intentions has received considerable attention in the literature. While some studies have associated beliefs such as perceived susceptibility and fear of cancer with negative screening intentions, others have also reported positive associations (Bowie et al., 2004). For example, fear of breast cancer has been found to facilitate screening intention among African American women (McCaul, Reid, Rathge, & Martinson, 1996); however, the same belief has been shown to have a negative effect on intention among low-income women (Ham, 2005; Ogedegbe et al.,

2005; Othman et al., 2012). The reasons for these inconsistent findings are not known, but it may be that less fear motivates intentions toward screening, whereas strong fear produces negative intention. It can also be that the fear of cancer motivates screening intention when one perceives that screening will, in fact, reduce the threat. Othman et al. (2012) found that higher perceived susceptibility to breast cancer significantly predicts greater intentions to participate in mammography screening among Jordanian women. Among Zimbabwean women, Mupepi et al. (2011) found that those who had a family history of cervical cancer were more likely to undergo screening than those without a history. Those without a family history believed that they were not susceptible to cancer and thus considered screening to be less important. The belief that “it is better not to know” is more likely to inhibit intention to seek screening. For instance, the fear of knowing that one has breast cancer has been found to prevent African women (particularly those without easy access to treatment) from engaging in screening (Krombein & De Villiers, 2006). Additionally, lack of sufficient knowledge about cancer screening procedures creates a sense of fear, which in turn negatively affects women’s decisions towards the uptake of screening (Krombein & De Villiers, 2006).

Contextual factors such as cultural beliefs and characteristics of the health care system have been identified as major determinants of screening behaviours among women in low-income countries (Krombein & De Villiers, 2006; Mupepi et al., 2011; Othman et al., 2012). However, the effects of these factors on screening intention among Ghanaian women have not been empirically established. As a socially acquired behaviour, culture is acquired through generational social experiences, and it provides a lens through which individuals conceptualize their perceptions and beliefs about a

particular disease. In one qualitative study, Ghanaian women were found to believe that breast cancer was from the devil and thus “cannot be treated by doctors” (Opoku et al., 2012, p. 3). Although this belief was not widely held, it was negatively correlated with screening behaviour. Similarly, Mupepi et al. (2011) implicated cultural beliefs such as modesty and embarrassment as deterrents to screening among Zimbabwe women. Often, cultural attributes of Ghanaian women create unique patterns of beliefs that inform their health-seeking behaviours, particularly their perceptions and attitudes toward participation in preventive health care for various diseases (Addai, 2000; Farnes et al., 2011; Boateng & Flanagan, 2008). In Ghana, the concept of preventive care such as regular medical checkups is unfamiliar to many individuals, and this unfamiliarity makes women hesitant to seek screening. Other factors such as encouragement and financial support are more likely to promote screening intentions (Allen et al., 1998; Ford et al., 2006; Jepson et al., 1993; Lechner et al., 2004; Steele & Porche, 2005; Van Jaarsveld et al., 2008), especially among low-income women (Mupepi et al.).

Health system factors such as cost, lack of availability of screening services, and long waiting times have been negatively associated with screening behaviours of low-income women (Abotchie & Shokar, 2009; Mupepi et al., 2011; Opoku et al., 2012; Remennick, 2006). In Ghana, access to mammography screening is largely determined by one’s ability to pay, as women are required to bear the full cost without recourse to government assistance. The unfavorable economic position of many Ghanaian women makes it extremely difficult for them to afford the service. In addition, provider-related factors such physician recommendation and positive attitudes strongly facilitated screening behaviours among women in most African countries (Abotchie & Shokar,

2009; Mupepi et al., 2011). For example, Krombein and De Villiers (2006) reported that most South African women expect physicians to recommend and perform CBE without being requested. Other authors have also found these health system factors to be significantly associated with either positive or negative cancer screening intentions among women (Gany et al., 2006; Matthews, Anderson, & Nattinger, 2005).

Conceptual Framework

Yet to be understood is how the individual and contextual level factors interact to affect screening intentions of women in low-income countries. To date, no theoretical framework exists that captures the multifaceted influences of these factors on screening intentions or behaviours. Those who have attempted such conceptualization have failed to account for cultural factors (Maiman & Becker, 1974; Rosenstock, 1966) that are believed to influence behaviours/intentions. Thus, in the present study, a heuristic conceptual framework based on selected components of the Health Belief Model ([HBM] Maiman & Becker, 1974; Rosenstock, 1966) and the Social Cognitive Theory (Bandura, 1986) was developed to provide a basis for understanding the effects of both individual and contextual factors on screening intentions among women in Ghana (Figure 1). Congruent with the conceptual underpinnings of these behavioural theories, the present framework takes into account the influence of individual factors such as health beliefs and knowledge on screening intention, while considering sociodemographic characteristics as both direct and mediating variables. In addition, the influence of contextual factors such as cultural beliefs, social supports and the characteristics of the health system on intentions are considered. The *health belief* factors include perception of susceptibility, severity, and barriers. *Knowledge* of screening was assessed in terms of

women's awareness of the benefits of screening and its guidelines, whereas the *cultural factors* constructs measured women's beliefs about modesty, breast screening, and preventive health care in general. *Social support* includes encouragement, information about screening, and financial support from family or friends. The *health care system* factors include cost, availability of services, waiting times, and provider-related factors such as physician recommendation, gender, and attitudes. All these factors may collectively or individually influence screening intentions in women.

Method

Study Design

An exploratory qualitative design was utilized to explore Ghanaian women's perceptions of the influences of individual and contextual factors on intention to screen for breast cancer. This approach was deemed appropriate for this study because of the paucity of knowledge of screening behaviour among women in this population. Focus group interviews were chosen as the primary procedure for data collection to generate in-depth understanding and varied perspectives about a phenomenon (Krueger & Casey, 2000).

Participants and Setting

A purposive sample of female nurses and non-health professional (lay) women residing in the New Juaben Municipality of the Eastern Region of Ghana was recruited to participate in this study. One-third, or seven, of the women were nurses recruited from the regional hospital because they had participated in CBE, had been taught how to practice BSE by a health professional, and had knowledge of breast cancer. They were

included because health care professionals have been noted to have significant influence on women's beliefs and attitudes toward breast cancer screening (Hart & Bowen, 2009).

The participants ranged in age from 30 to 55 years and were well educated (Table 8). The majority were unmarried employees of private or government institutions. Most of the women with higher levels of education also reported higher monthly incomes. Although nearly half of the participants reported having experienced a breast health problem, none had ever participated in any of the breast screening programs. Moreover, only a few of these women had reported the incident to a physician or had planned to go for breast health assessment. These breast health problems were more prevalent among women aged 34 years and above. The majority of participants had no known family history of breast cancer and none had been diagnosed with breast or any other cancer.

The nurses who participated in the focus group interviews had a minimum of three years working experience at the regional hospital. Three of the nurses had more than ten years of working experience and about one third specialized in surgical and intensive care. In addition to their areas of specialization, all the nurses were midwives and general clinical practitioners.

Ethics

The study protocol was approved by the University of Lethbridge Human Subject Research Committee and the regional hospital where the participants were recruited. In addition to written informed consent (Appendix F), a verbal consent (from those who could not understand or read English) was obtained prior to data collection. Women were informed that their contribution to the study and their identity would be kept strictly

Table 8. Demographic characteristics of focus group participants (n = 21)

	<i>Number</i>	<i>%</i>	<i>M</i>	<i>SD</i>
<i>Age (years)</i>			40.4	7.8
30-39	11	52.4		
40-49	7	33.3		
≥ 50	3	14.3		
<i>Education level</i>				
High school	1	4.8		
Diploma	15	71.4		
Degree	5	23.8		
<i>Marital status</i>				
Single	17	81.0		
Married	4	19.0		
<i>Monthly income</i>				
< \$150	1	4.8		
\$150 - \$250	9	42.9		
> \$250	11	52.4		
<i>Breast health problem¹</i>	9	42.9		
<i>Family history of breast cancer</i>	4	19.0		

Note.¹ ~ Including breast cancer.

confidential and that the discussion would be recorded by a female research assistant.

Data Collection

Three focus groups were conducted with the participants to understand their perceptions about the factors influencing their intentions to screen for breast cancer. Each group interview lasted approximately one and half hours and was guided by a pre-determined set of open-ended questions (Appendix G). The protocol for the focus groups was pilot tested with five women prior to its administration to the study participants; minor adjustments were made. All focus groups were conducted by the principal researcher with the help of a female research assistant who signed a confidentiality agreement prior to data collection. Although the presence of a male researcher among the focus groups may have prevented free expression about breast screening because of beliefs about modesty in Ghanaian women, such influence was not observed during the interviews. At the beginning of the sessions, basic sociodemographic information (Appendix D) was collected. All focus group sessions were audiotaped with permission from the participants, and each were reviewed immediately after the discussion for completeness and accuracy by the principal researcher and the assistant.

Data Analysis

A thematic analysis approach was employed using Braun and Clarke's (2006) analytical process. The process involves familiarization with the data through constant reading of interview transcripts with categorization and identification of concepts and themes across the data set. The method allowed for in-depth examination and understanding of the extent to which personal, sociocultural and health system factors affect intentions. The audiotaped interviews were transcribed verbatim and translated into

English by the principal researcher who is fluent in both Twi and English. The text was reread several times until a clear sense or understanding of the data was achieved. Using NVivo10 (QRS International, 2012) data management software, the focus group interviews were then coded to identify and categorize emerging concepts. This analysis procedure continued until all the major concepts were identified and categorized. The emerging conceptual categories were grouped into two broad themes: individual level factors and contextual level factors influencing women's intentions toward screening. Sub-themes emerging under the broad themes recurred across all the focus groups and were reflective of how psychosocial, sociocultural and health system factors influenced Ghanaian women's intentions to perform BSE or undergo mammography or CBE.

Findings

This section presents the findings regarding the perceptions of Ghanaian women about the impact of psychosocial, sociocultural and health system factors on intentions to perform BSE or undergo CBE or mammography screening. Key quotations from the focus group interviews are used to demonstrate how these factors influence intentions towards screening. This section begins with a description of the sociodemographic characteristics of participants and themes that emerged from the focus groups. The themes are organized in accordance with the conceptual framework guiding this study and are summarized in Table 9. Key findings supported the conceptual framework, which assumes screening intention to be a function of individual and contextual level influences.

Table 9. Individual and contextual factors influences on Ghanaian women's intention to have BSE or CBE or mammography

<i>Facilitating influences</i>	<i>Inhibiting influences</i>
Individual level factors	
<i>Knowledge of breast cancer screening</i>	
Awareness of benefits	Unaware of the benefits of screening
Screening can detect breast lumps	Knew nothing about screening guidelines (e.g., age of initiation and frequency)
	Unaware of how to perform BSE
	Unable to identify abnormal breast lumps
	BSE does not bring on any positive changes
	Unaware of mammography screening
<i>Health beliefs about screening</i>	
Cancer was deadly	Would not get cancer
	God saves from breast cancer, not screening
	Not afraid of cancer, screening was not needed
	Not wanting to know that they had cancer
	Knowing would cause anxiety
	Could be distressing for family members
	Afraid of the outcome
	Regular screening could bring on cancer
	Mammography would be painful like cancer
Contextual level factors	
<i>Cultural beliefs about screening</i>	
Encouragement from family/friends	Would feel embarrassed to expose their breast
Financial support from family/friends	Not talking about breast or sexual issues in public
	Access health care when they were seriously sick
	Attached less importance to preventive care
	Fear of seeking financial support for screening
<i>Health care system influences</i>	
Willing to follow a physician's advice	Lack of physician recommendation
Availability of information	Lack of attention from health professionals
	Afraid to request preventive care from doctors
	Felt that they would be humiliated
	Not comfortable being touched by a male doctor
	Believed that mammography was very expensive
	Increased financial burden from transportation
	Lack of availability of screening services
	Did not know where to get mammography test
	Long waiting time at the hospital
	Difficulty in taking time out of family duties/work

Individual level influences

The focus groups discussed individual level factors that affected their intentions to engage in breast cancer screening. Participants explained that they were not intending to perform BSE or undergo CBE or mammography screening because of their lack of knowledge about these screening programs, especially their benefits and guidelines. The influence of health beliefs on screening intentions were evident as most women indicated that they would be willing to undergo breast screening if they perceived themselves to be at risk of developing breast cancer; they believed that screening would reduce the threat from the disease. Most of the participants who intended to forego screening in the future explained that they were not sufficiently motivated either by their family members or friends.

Knowledge of breast cancer screening. Participants demonstrated various levels of understanding about breast cancer screening programs, which in turn influenced their intentions to perform BSE or to have a mammography and CBE. The participants with knowledge of screening benefits and guidelines showed greater intentions to undergo screening in the future as compared to those with limited knowledge.

Mammography. Knowledge of breast cancer screening among participants was generally low, with most reporting that they had never heard about mammography. The few who had heard of it also reported knowing little about the screening guidelines and the benefits. One nurse explained that she was not aware because no health facilities in the community were providing mammography services:

The truth is that it is only in Accra [the national capital] or Korle-Bu [a hospital in Accra] that you can see or find mammogram screening. Even if

they bring one here, the [hospital] authorities would allow only the most senior nurses to get closer to it. So it is likely that some of us would continue to remain ignorant about the service for some time.

Both the lay women and nurses did not understand that mammography was different from CBE in terms of efficacy. As one woman stated, “I think that the clinical breast exams would be more helpful compared to the mammography.” Some women also believed that mammography for screening is the same as that used for diagnosis. This further demonstrates that none of the women, including the nurses, knew about the benefits and guidelines for mammography screening. For example, one nurse explained, “Even though I am a nurse I have no knowledge about mammography and do not know anything about the starting age.”

CBE. Knowledge of CBE in general was also limited among the participants. None knew of the screening guidelines or benefits. The absence of adequate knowledge was further demonstrated when many of the women stated that they needed several CBE per year to facilitate early detection of lumps. Surprisingly, none of the nurses was able to demonstrate mastery knowledge of CBE guidelines:

For the clinical one [CBE], I think women should start having it immediately they reach their fertile age—let say from age 9 to about 35 years. For me, the moment you start menstruation, maybe from age 13 years and above. So let say from 20 years you start with the breast self-exams, then from age 35 you start with the clinical exams and then...

BSE. Although all the participants knew about BSE, some explained that they had never performed BSE or were not practicing it regularly:

I am aware of the breast self-examination but I have never practiced it before. I think I was not doing it because I didn't know the benefits. Actually, myself I don't practice breast self [examination] regularly. Yeah, because you know, sometimes you don't see how useful it is. I used to examine my breast once a while but it was not effective. What I mean is that, after doing that for a couple of months, I did not observe any positive changes in my breast so I stopped. But now that you [FG facilitator] have told me about the benefit, I will start again (laughter). [Lay woman]

Participants' level of awareness and understanding regarding the screening techniques was limited. For example, most women did not know that BSE includes both palpation and physical inspection of breast. None of them was able to describe how to perform BSE correctly. Others expressed confusion regarding the procedure, particularly how to look for unusual lumps in their breast. In addition, most were also not aware of the recommended optimal frequency and the starting age for BSE. Their level of understating of regular screening was limited: "I was once told by a doctor to do the self-exams, but I did not know why, so I did it only once."

Health beliefs. Participants' intentions to undergo BSE, CBE and mammography reflected their health beliefs about breast cancer and screening. Those who perceived breast cancer to be severe, and who believed that they stood a greater chance of developing the disease in the future were more likely to be screened than women without such beliefs. Greater screening intention was expressed by participants who believed that they would experience fewer challenges in undergoing breast screening than those who expected otherwise.

Perceived severity. Most participants held strong beliefs about cancer that influenced every aspect of their decisions towards screening. Most believed that breast cancer caused not only death but also much suffering. These women described breast cancer as the worst disease one can ever have. This belief appeared to have a positive influence on attitudes towards screening. For example, women who believed that they had greater chances of developing cancer in the future had positive perceptions about screening and were more likely to be screened:

I know I can easily get breast cancer because of my mother's experience. Even when I was a child my father used to restrict me from doing certain things that I did not understand at that time, but now I know why he was doing that. Because I know I am more vulnerable to breast cancer, I am very careful about my breast. I often go to the hospital for check-up and I also check my breast on my own every month. [Lay woman]

Perceived susceptibility. Most of the participants who perceived themselves as vulnerable to breast cancer believed that regular uptake of screening would potentially reduce their chances of developing the disease. Additionally, they were also very interested in knowing more about the screening and its potential benefits. One woman indicated that she “will be very interested to know more about the screening and the benefits women like me can get from it.”

In contrast, some of the women who perceived themselves as less vulnerable to breast cancer held negative perceptions about screening. Regular screening was perceived as less relevant among these women and this belief reflected their religious faith. As explained by one woman, “I know by the grace of God I would not get breast cancer in

the future, so I don't think it is very important for me to go for screening at this moment or in the future." Thus, while the threat of breast cancer had a positive effect on their perceptions about screening, the absence of fear led some women to conclude that screening was not helpful or even important.

Perceived barriers. Most participants indicated that they often felt emotionally aroused when thinking about breast cancer, which in turn made them feel more apprehensive about screening. Some believed that regular uptake of screening could even lead to the development of cancer. Such participants also expressed little faith in the efficacy of screening, as they indicated that the procedure would have little impact in saving their lives if they develop breast cancer. In general, the fear of possible detection of breast cancer appeared to be a major barrier. For example one lay woman stated, "For me, regular breast screening will make me think too much about it [breast cancer] and I can even develop it because of thinking, so that is why I have not been practicing the self-exams." Not engaging in screening on a regular basis was considered as an appropriate choice to remain ignorant of the deadly effect of breast cancer.

Interestingly, some women believed that there would be excessive pain during mammography screening, which they believed could even last for several days. This was clearly elucidated in a statement by one woman, "If you want to know what death is like then think about how you fall asleep, so I believe that [mammography] screening will be painful." Others also expressed the fear that mammography would involve rigorous procedures that might come with extreme pain and discomfort. This belief discouraged many participants from intending to undergo breast cancer screening. Indeed, this and similar statements clearly demonstrate women's concern for pain and suffering during

either mammography or CBE screening. Additionally, some participants reported that they had witnessed the struggles and sadness of other women living with breast cancer; such negative experiences appeared to have an adverse impact on women's perceptions and intentions to towards screening.

Strong concern was expressed by the majority of women regarding the potential outcome of a screening test and its impact on their emotional and psychological wellbeing. They further described how abnormal test results could affect their family. One woman reported, "The thing is like, right now, I really don't know whether I have breast cancer or not, so I am not worried, but if I become aware that I have something like that it will kill my soul and that of my family." In addition, another woman explained that she "would not know what to do next in life if I [unexpectedly] receive abnormal test result" following screening. Although most women believed that breast cancer could be treated if detected early, they had little hope about their personal chances of survival. Women who believed that they might have an abnormal breast screening test result had no intention to undergo screening compared to those who anticipated favorable results.

Contextual Level Influences

Participants' intentions to undergo screening were influenced by a number of cultural and health care system factors. Women explained that the cost of screening tests, lack of regular and convenient sources of screening, and long waiting times for health care discouraged uptake, particularly for mammography screening. Past experience with health care and health professionals' gender also affected women's intentions towards breast screening. Poor communication and lack of attention from health professionals discouraged participation in CBE and mammography screening. In addition, cultural

factors such as beliefs about modesty and breast screening, attitudes towards preventive health care, and social support played significant roles in influencing women's decisions to be screened.

Cultural factors. The impact of cultural factors on screening intentions was evident among participants, as those who were concerned about modesty and perceived screening as sexually embarrassing had negative intentions towards the uptake of the service. Women who believed that they would not get the needed social support expressed less intention to undergo screening. Unfamiliarity with and distrust in preventive health care were mentioned as deterrents to screening intention by the participants. The lay women appeared to be more concerned about cultural influences than did the nurses; indeed, the participants with higher education levels reported little influence of cultural factors on their intentions towards the performance of BSE, CBE, and mammography screening.

Beliefs about screening. Most participants reported that they would feel uncomfortable and embarrassed to expose their body during screening. As explained by one woman, "I will feel uncomfortable during breast check-up because the doctor will ask me to open my dress and that will make me feel like something." Breast examination by a male physician was considered more embarrassing than examination by a female physician. However, the highly educated women, especially those with college or higher education, were less concerned about issues of embarrassment and more concerned about their health. One woman said, "I know I will feel something if a doctor touches my breast, but I am more interested in the benefit of the screening, so I will feel okay." However, women suggested that more female physicians should be trained to perform the

test, and explained that such intervention would make screening less distressing and more attractive.

Beliefs about modesty. Some participants explained that their cultural beliefs did not allow women to discuss sexuality issues in public and prevented them from undergoing screening and receiving reproductive health care from male physicians. Participants further commented that their beliefs about sexuality also required them to be more conservative about their public utterances regarding body parts such as breasts. Those who perceived touching and holding of women's breasts as culturally immoral demonstrated negative intention towards screening. One woman explained, "I know that our culture frowns on acts of nakedness and anything that exposes women's body to men they are not married to." On the other hand, participants who loosely held those cultural beliefs indicated that they would be more willing to undergo screening in the future. They further explained that such beliefs did not prevent them from exposing their breasts when undergoing health care. This clearly underscores the low screening intentions reported by participants who expressed strong beliefs about cultural modesty.

Attitude towards preventive health care. The attitudes of participants towards preventive health care services such as screening or medical checkups were generally negative. Unlike curative health care, many women attached less importance to health care services meant for the prevention of breast cancer. For most women, the ideal way to maintain breast health was through a combination of healthy lifestyles and curative methods such as treatment. Very few women were able to recognize that regular screening was also important for maintaining good breast health. Some of the women emphatically stated that they rarely sought out preventive medicine for cancer. Moreover,

most stated that they only present for health care when experiencing breast health problems such as unusual breast engorgement, swellings and pain:

I prefer going to the hospital for treatment whenever I feel that there is something wrong with my breast. It is better to seek treatment rather than the prevention because you will see all the women going for the same thing [treatment]. If it is not a good practice then why are the doctors doing it for us? So I believe that treatment really helps us to remedy our problems. There is nothing much that prevention can do. You know, I always take good care of myself, but yet I sometimes experience some breast problems. [Lay woman]

This clearly demonstrates that some women's negative attitudes towards preventive care may prevent them from performing BSE or undergoing CBE or mammography screening on a regular basis.

Social support. Support and advice from family and friends were reported as important factors that encouraged compliance and participation in recommended breast health programs among the participants. Women often discussed their breast health problems with their family and close friends and received emotional support and advice that encouraged them to seek solutions for their health problems. As one woman put it, "I can't disobey my husband, so if he tells me to go for breast check-up I will go."

Financial support was considered an important enabling factor for screening among participants. The majority of the participants stated that they would be willing to, for example, undergo mammography screening if supported financially by family members and particularly their partners. One woman explained, "I would be very happy if my husband would pay for the screening." However, despite its potential positive

impacts, women were somewhat hesitant to seek financial support from their family and friends because many believed that preventive health care was less important and thus anticipated not being able to secure the necessary support. In the absence of sickness, many Ghanaians do not seek health care, and this suggests that many women may feel reluctant to request financial support for screening when they are not actually sick.

Health system factors. Many participants did not intend to undergo screening due to the health system related barriers. Although the cost of mammography screening was mentioned as a significant barrier, other factors that were equally influential on participants' intentions towards mammography were availability of the services, waiting times for the screening, and physician recommendation, their attitudes, and gender. With the exception of cost, all the remaining health system factors played a significant role in influencing participants' intentions towards CBE and the performance of BSE.

Health professional recommendation. Participants stated that they would comply with a physician's recommendation regarding breast screening. Although many believed that regular screening could lead to early detection and better treatment of breast cancer, they also felt that screening was not all that necessary because no physician had ever recommended it. They believed that engaging in any health activities such as screening without prior advice from a physician could be very harmful to their health. When one woman was asked why she had not been screened before, her response was, "No doctor has asked me to go for any screening and I think that they [doctor] will tell me to do so if I really need it." Some stated categorically that they would go for mammography only if a physician recommended it. Only physicians were perceived as appropriate to recommend screening. Moreover, because of the high respect accorded to physicians in

Ghana, it was not surprising that women were willing to follow their advice on screening. Some women were hesitant to request screening and/or information about the various screening programs because they believed that they may not get the needed attention.

Attitudes of health professionals. Participants mentioned that negative attitudes of health professionals regarding preventive care discouraged them from going to the hospital, particularly when they were not very sick. This attitude made the women feel that preventive services such as screening were not important and only served to provoke fear and reluctance. One woman explained, “I don’t really go to the hospital regularly because of the attitude of some nurses; they can easily disgrace you in front of other patients at the hospital.” The most common humiliation experienced by women at the hospital included verbal assaults from health professionals, particularly nurses. Such poor communication between health professionals and women eventually discouraged participation in CBE and mammography screening at the hospital.

Cost of screening. The financial constraints imposed by user fees negatively affected participants’ attitudes towards screening. As one woman stated, “You may be surprised to know that my monthly income cannot even pay for one screening test.” Another woman explained, “the cost may even prevent most of us from following up with another test.” Indirect costs such as outpatient cards and transportation fees were considered additional barriers. The low socioeconomic status of women caused many of them to focus their limited incomes on their most immediate basic needs rather than on preventive health care. One woman summarized how the issue of cost adversely affected attitudes towards mammography screening, and perhaps her intention to screen:

Even though I know that the cost of that [mammography] screening would be expensive, there are other things that even make the whole exercise very costly. You know, because we don't have the machine here [Koforidua] we have to travel to Accra or Kumasi for it, and the cost of lorry fare alone is something. It can discourage you from going there. If we are going to pay for the screening, transport and what we will eat, then I don't think some of us can afford all that. We have to remember that the price of food is very high in Accra and Kumasi. If you are not lucky and you don't get the test done on the same day then you are doomed, you have to pay for accommodation or return home, yeah. So if, that happens who would help you pay for all?

Availability. Lack of availability of screening services was mentioned as a major problem facing many women in the community. Participants described the lack of both preventive and curative care services for breast cancer and explained that women who need mammography services, for example, had to travel long distances. Women also explained that the situation was even worse for those who lived in areas without good transportation. One woman recounted a common sentiment: "Being at the hospital where the screening [mammography] is offered would not mean that you would get screened on the same day or the moment you get there; it can take you forever to get the test done." Women reported that the only screening service available to them in the community was CBE.

Several participants expressed a lack of knowledge about the sources of mammography services in the country. Others were only aware of the areas (cities) where the service was available, but not the facilities that offer the service. For example, one

woman reported, “What I know is that [mammography] screening is available in Accra and Kumasi, but I don’t know the exact hospitals where we can get it.” The women thus recommended that information about the sources of mammography screening and CBE be made public.

Waiting time. The difficulty involved in gaining access to preventive health services was repeatedly reported as a barrier to screening. The most commonly mentioned challenges included long queues, extended waiting times, and inconvenient clinic hours. Several women believed that the waiting time for CBE and mammography tests would be very long because doctors normally give priority to patients needing treatment-related or curative care. One participant explained, “Doctors [nurses] at the central hospital do not pay much attention to patients who do not look very sick.” The woman further stated, “Doctors sometimes ask patient to report when they begin to see symptoms of sickness.” As a result, most of the participants believed it would be a waste of time for them to go to the hospital for CBE and mammography screening if they are not ill.

In addition, participants noted that family commitments such as childcare, cooking and cleaning activities interfered with their ability to visit a doctor regularly for medical checkups. They stated that most women have numerous responsibilities that prevent them from going to the hospital when they were not seriously sick. One woman stated, “My boss at work does not allow us to take time off during working hours, except for special purposes—like when you are very sick.” Indeed, the difficulties involved in taking time off from family and work commitments was a significant barrier to screening, particularly among participants who were married or had children.

Discussion

Although screening by mammography, CBE and BSE for the early detection of breast cancer is recommended and widely used in many high-income countries, its utilization remains extremely low in Ghana. This study explored the perceptions of Ghanaian women about the factors that influenced their intentions to screen for breast cancer. The findings provide important information that could inform improved uptake of screening in Ghana. In general, women in the focus groups showed limited knowledge about breast cancer screening. Nearly all were unaware of the guidelines and benefits of mammography and CBE. They also lacked knowledge of how to perform BSE correctly.

A number of misconceptions were reported as many of the women believed, for example, that BSE should be performed as frequently as twice daily. Such knowledge deficits were identified as major determinants of low screening intention. Opoku et al. (2012) showed that lack of knowledge of screening guidelines and benefits plays a significant role in influencing screening uptake among Ghanaian women. Thus, educational interventions must be directed at improving women's awareness of screening, particularly the benefits, guidelines such as the recommended frequency and starting age of screening, as well as the procedures for performing BSE. These could be best achieved through outreach education and practical demonstration of BSE in the media, especially on television and radio. Given the importance Ghanaians attach to religious practices (Takyi, 2003), the church and other faith-based organizations can be used as channels for the promotion of breast screening. The current lack of nationally promoted breast cancer screening programs may have contributed to the poor knowledge

of screening guidelines among Ghanaian women. Thus, efforts should be made to make screening awareness a major public health priority in Ghana.

The findings suggest that the likelihood of BSE depends not only on women's knowledge of the screening guidelines, but also their knowledge of breast cancer symptoms. Almost all women in this study expressed confusion and uncertainty about what to look for when performing BSE. Women explained that, because of the lumpy nature of their breast tissue, they usually find it very difficult to notice changes. This uncertainty was further exacerbated by the fear that they would mistakenly consider a natural breast lump as abnormal. To alleviate this uncertainty and increase their confidence to practice BSE, women should be educated by health care professionals on how to become familiar with their breasts so that they are able to recognize and identify changes over time. Lack of confidence was also identified as a major deterrent of intention to perform BSE. For this reason, effort should be made through practical demonstrations of BSE on the TV and radio or outreach education to increase women's confidence.

Equally important was the impact of beliefs and attitudes on women's screening intentions. As has been reported elsewhere (Godin et al., 2001; Ham, 2005; Lechner et al., 2004; Othman et al., 2012), health beliefs and culturally specific attitudes play a dual role as barriers and motivators of intention to screen for breast cancer. Several of the explanations provided by the focus groups participants for not intending to undergo screening reflect specific beliefs about breast cancer and breast screening. Examples of some of the reasons provided include the belief that regular breast screening would bring on breast cancer and that regular breast screening would potentially increase women's

chances of dying early if they become aware that they have breast cancer. These commonly expressed beliefs had a negative influence on screening intentions. Ogedegbe et al. (2005) found that women who believed that screening could hasten their chances of developing and dying from breast cancer were less likely to be screened than those without such beliefs. In the current study, however, the limited availability of screening services in Ghana and their unpopularity in the general population may explain the erroneous beliefs of women about the intervention. One potential way to overcome the misconceptions of women is to increase their awareness of the benefits of screening programs and procedures for performing the tests.

While fatalistic beliefs about breast cancer often are associated with poor screening intention or uptake (Ham, 2005; Ogedegbe et al., 2005; Othman et al., 2012), the current study found contradictory evidence. On one hand, the belief that breast cancer is deadly and can rarely be treated successfully if diagnosed at an advanced stage served as a motivator for screening intentions. A potential explanation is that although women were fearful of breast cancer, they were also of the belief that early detection of the disease can enhance survival. Whereas this belief does suggest an opportunity to design educational messages to instill cancer-related fear in an attempt to increase intention, careful assessment of the impact of such intervention is needed, particularly among populations with limited knowledge of breast cancer. Another belief-related motivator of intention was perception of susceptibility to breast cancer; women who believed that they may develop breast cancer in the future were more likely to be screened. However, strong belief in susceptibility may over-motivate women, particularly those with limited knowledge of screening guidelines, to perform BSE inappropriately. This possibility must

be addressed by educating women about screening guidelines. On other hand, the fear of detecting cancer tumors during screening was commonly stated as a deterrent to screening intention. This fear reflects women's sense of uncertainty about survival from breast cancer and the possible psychosocial effect of treatment on them and their family members or friends. Such concerns highlight the need for health promotion interventions to encourage routine screening and early presentation for breast cancer treatment as a means of reassuring women of the likelihood of survival from the disease if treated at an early stage.

The way in which participants perceived and intended to undergo screening was reflective of their cultural attitudes toward preventive care. In general, most Ghanaians believe that one presents for medical care only when there are severe manifestations of illness. This attitude was clearly evident among the focus groups, with some participants stating that it was unimportant to undergo screening as they had no symptoms of breast cancer. Other authors have reported lack of symptoms as a determinant of low screening uptake among low-income women (Aswathy, Quereshi, Kurian, & Leelamoni, 2012; Roy & Tang, 2008). In addition, other reasons cited by the women for not seeking CBE and mammography services included lack of time and familiarity with such preventive health care. Women were uninvolved because they perceived breast screening to be embarrassing and a violation of their cultural beliefs regarding modesty. Interestingly, although some women explained that it was not culturally immoral to expose the breast to health care professionals, they believed that such practice is more appropriate if one is seriously sick. One way to overcome this culturally embedded attitude is first to recognize individual women's perspectives about screening or preventive care in general,

and then engage them in meaningful discussion about the guidelines and benefits of screening.

It is well established that social support plays a significant role in influencing screening intention (Allen, Sorensen, Stoddard, Colditz, & Peterson, 1998; Ford et al., 2006; Jepson et al., 1993; Lechner et al., 2004; Steele & Porche, 2005; Van Jaarsveld et al., 2008), and this finding is supported by the present study. The participants in this study indicated that family and friends are their main sources of advice and information with regard to health decision-making with the greatest influence coming from their partners. While nearly all the women believed that their partners would be supportive of screening, many expressed uncertainty regarding the likelihood of receiving financial support. Because many Ghanaian women are not economically independent, the issue of financial support was much more important to them than any other form of support. Another major explanation for this concern is that, unlike in many high-income countries, breast cancer screening programs such as mammography are provided to women in Ghana on a direct payment basis. Thus, given their low socioeconomic status, women would be unlikely to afford screening if they are not supported by their family members or friends. Given women's reliance on family/friends for health decision-making, interventions to improve screening intention should target their social networks and family, especially their partners. These individuals should be encouraged to be supportive of breast health initiatives.

Consistent with previous studies, the findings in this study suggest that recommendation from health professionals facilitates intention to screen for breast cancer. Despite participants' willingness to follow screening recommendations from

health professionals, the women stated that they have never received such advice from a nurse or physician in their lifetime. In one recent study, Ghanaian female students reported receiving little or no information and recommendations from health care professionals regarding cervical cancer screening (Abotchie & Shokar, 2009). In addition, the participants in this study indicated that health professionals, especially nurses did not give attention to patients who seek preventive care. This makes most women hesitant to request screening tests or information. Others also avoided requesting screening because they believed that such requests could create conflicts of interest and inconvenience for their health professionals. This is very worrisome, given the strong influence of health professionals on screening behaviours of women in most African countries (Krombein & De Villiers, 2006; Mupepi et al., 2011). This finding suggests that enhancement of patient-provider relationships and the provision of screening recommendations by health professionals could help improve screening intention among women in Ghana.

Several access-related factors such as cost and availability of screening and long waiting times were identified as major deterrents of screening intention. Many participants considered, for example, the cost of mammography screening to be high. Regardless of cost, participants indicated that they did not have easy access to the services. This compounds the financial challenges as most women have to travel long distances to reach health facilities that provide such services. Even after reaching the facility, women have to wait for several hours before they can meet with a physician. Given the numerous social responsibilities often assigned to women, and the difficulty of taking time out from their social work, it is likely that many Ghanaian women would be

unable to access CBE and mammography screening because of the time commitment. Based on this finding, it is necessary that policy interventions to improve screening intention among women focus on addressing the wait time issues for preventive care in Ghana. Perhaps separate departments should be established throughout the country for preventive care services.

Limitations and Recommendations

It is important to recognize that while this study provides practical implications for improving screening intentions, the findings are based on responses from a small group of women. These women were generally well educated and of a relatively higher socioeconomic status; thus, generalization of the findings to the general population in Ghana must be done cautiously. However, given the homogeneity of cultural beliefs and the relatively better socioeconomic conditions in the semi-urban areas, the responses of the focus group members may be representative of the urban population in Ghana. Future research should employ the framework in examining cancer screening intention or behaviour among women in other population in Ghana.

Conclusion

On the whole, the conceptual framework used in this study provided a useful lens for examining the influence of individual and contextual factors on screening intention among Ghanaian women. The framework revealed that attitudinal, knowledge and belief factors can positively or negatively influence women's intention toward screening. It also highlighted the potential deterrent influence of health system factors such as cost, availability of screening services and wait times on intention. Additionally, the framework illustrated the importance of social support and provider-related factors such

as health care professionals' recommendations and provider-patient relationships in influencing screening intention. These findings suggest the need for health promotion interventions aiming at improving breast cancer screening intention among Ghanaian women to focus on addressing the factors identified in this study. Given the opportunistic nature of breast cancer screening in Ghana, health education interventions should also purposely focus on promoting the benefits, sources and guidelines of breast screening through the media, outreach programs and in health facilities.

Chapter Six

Conclusion

In recent years, breast cancer incidence and mortality have been on the increase in Ghana (Wiredu & Armah, 2006). Despite this increase, there has been little effort to reduce mortality and improve survival from this treatable disease. Although early detection through screening has proven to be effective in reducing mortality from breast cancer elsewhere, the uptake of screening programs such as mammography, CBE and BSE remains low among Ghanaian women (Opoku et al., 2012). The specific factors that may account for poor screening intention and behaviour among women remain poorly understood and relatively unexplored in the literature. To address this knowledge gap, the present study examined the influence of individual and contextual level factors on women's intentions to undergo breast health screening. This chapter provides a brief summary of the study findings, implications for public health promotion and policy, recommendations for future research, and my concluding thoughts and impressions about the research and its contributions to women's health.

While only 32% of participants had been screened for breast cancer in their lifetime, about 79% intended to undergo screening in the future, with the majority expressing strong intentions to perform BSE or undergo mammography and CBE. This finding suggests that although many Ghanaian women are willing to undergo screening, certain factors prevent them from translating their intentions into actual behaviour. Consistent with prior studies, sociodemographic factors were related to intention to engage in each of the screening behaviours (Christou & Thompson, 2012; Mupepi et al., 2011; Othman et al., 2012). Women who intended to undergo BSE, CBE and

mammography were more likely to have experienced breast health problems, were older, and had higher education levels. As well, married women and those with higher income were most likely to intend to be screened. While family history of breast cancer did not influence intention to perform BSE, it did motivate intentions to undergo CBE and mammography. One explanation for this finding may be that women who felt more threatened by breast cancer were interested in undergoing screening programs that they believed to be more effective (for example, mammography) in reducing the threat posed by the disease than those that appear to be less efficacious (e.g., BSE and CBE).

The majority of women demonstrated limited knowledge about breast cancer screening programs, especially mammography and CBE. However, those with knowledge about the benefits and guidelines of the various screening programs reported greater intention to be screened in the future. Of particular importance, women who knew that screening could detect cancerous lumps had strong screening intentions. This finding is consistent with that reported by Opoku et al. (2012), where knowledge of screening benefits was positively associated with greater uptake of mammography, CBE and BSE in Ghanaian women. In addition, women who expressed strong intentions to perform BSE demonstrated greater knowledge about the procedures for performing the test. Moreover, the likelihood of intending to perform BSE was also associated with knowledge of breast cancer symptoms. Most focus group participants were not practicing BSE because they did not know how to identify unusual breast lumps. Other authors have also identified lack of knowledge of BSE procedures and confidence as significant barriers to BSE performance among women (Anderson, 2000; Lechner et al., 2004; Opoku et al., 2012).

Using the HBM (Maiman & Becker, 1974; Rosenstock, 1966) as a theoretical framework for this study, health beliefs such as perceived susceptibility, severity, benefits, and barriers were associated with screening intentions. The more women perceived themselves to be susceptible to breast cancer, the greater the likelihood they would be screened. However, comments from focus group participants indicated that excessive fear of susceptibility to cancer can discourage some women from undergoing screening. Some at-risk women may be reluctant to undergo screening if they believe that they cannot access the treatment they may need to overcome the threat posed by breast cancer. While the fear of cancer was associated with positive screening intentions, strong fear was found to be a deterrent factor. Although feelings of susceptibility to and severity of breast cancer facilitated intentions to have mammography and CBE, strong beliefs about the potential threat tended to reduce screening intentions in women. Findings from other related studies suggest that perceived susceptibility to and severity of breast cancer seem to have dual effects on women's intentions towards breast cancer screening uptake (Bowie et al., 2004). Interestingly, while BSE intention was associated with perceived severity and susceptibility, only the former significantly predicted intention to perform the test. However, findings from the focus group interviews clearly demonstrated that both health beliefs influence BSE intention.

Intentions to undergo BSE, CBE and mammography were higher among participants who perceived breast cancer screening as important. This perception reflects women's beliefs about the efficacy of screening in detecting breast cancer symptoms, reducing their risk of developing and dying from the disease. For example, women who believed that mammography screening can facilitate better treatment outcomes and

improve their chances of survival if they develop breast cancer, were more likely to undergo the test than those without such health beliefs. Likewise, the perception that access to breast cancer screening was not troublesome was related to strong intention to undergo mammography and CBE. Women further said that they would be more willing to undergo mammography test regularly if they have free access.

In general, the perceived barriers that strongly influenced women's intentions to undergo CBE and mammography included cost, concern about embarrassment, and time constraints. The influence of these factors on CBE and mammography screening intentions among women has also been identified by other authors (Montaño et al., 1997; O'Neill et al., 2008; Soskolne et al., 2007). Perceived barriers play a role in influencing intention towards the performance of BSE. Factors such as lack of time, confidence and privacy also influence Ghanaian women's intentions to perform BSE or undergo CBE. With regard to BSE performance, Soskolne et al. (2007) have also identified lack of confidence and privacy as major barriers to intention towards such breast health practices in women.

A number of authors have provided insight into the potential influences of cultural and health system factors on cancer screening intentions and behaviours among women, and more particularly those in low-income populations. For example, cultural beliefs about sexuality have been found to negatively influence women's attitudes towards participation in cancer screening (Mupepi et al., 2011). In that study, Zimbabwean women who perceived cervical cancer screening to be culturally embarrassing were less likely to be screened than those who did not hold such beliefs. In addition, support from family members and friends as well as positive attitudes toward preventive care have

been identified as facilitators of cancer screening intentions (Bowie et al., 2004; Lechner et al., 2004) and behaviours (Katapodi et al., 2002; Messina et al., 2004) among women. Using the conceptual framework (Figure 1) as a guide for analysis and interpretation, the findings presented here are consistent with those reported in previous studies. In general, Ghanaian women who had stronger intention to undergo BSE or mammography and CBE were those who did not believe in cultural modesty and had positive beliefs about breast cancer screening, positive attitudes towards preventive health care, and social support from family and friends.

In addition, several health care system-related factors were found to influence screening intentions in the participants. Similar to findings of other investigators (Mupepi et al., 2011; Opoku et al., 2012), higher cost of screening was associated with low mammography intentions. For example, many focus groups participants considered the cost of mammography services as a major barrier to screening. Even those who intended to undergo the screening in the future stated that they would be unable to do so regularly, because of the high cost involved. Further, women were less likely to undergo mammography and CBE if they perceived such screening services as less accessible and more time consuming. In addition, long queues appeared to discourage women from undergoing mammography and CBE screening. Mupepi et al. (2011) also reported lack of time and availability of screening services as major barriers to cancer screening uptake among Zimbabwean women.

Provider-related factors such as a physician recommendation and their attitudes were related to screening intentions. For example, positive physician-patient relationship and recommendation facilitated women's intentions to undergo CBE and mammography

screening. The focus groups results suggested that women were more likely to intend to perform BSE if they were encouraged by their physicians. While physician gender was not related to intentions to engage in any of the screening behaviours according to the survey findings, the focus group interviews showed that women were more likely to undergo CBE and mammography if such services were performed by a female physician. These results are supported by other authors who have found health system factors to be associated with breast cancer screening intention and behaviour among women (Godin et al., 2001; Mupepi et al., 2011; Soskolne et al., 2007).

The effect of health beliefs on intentions to engage in each of the three screening behaviours was mediated by knowledge and sociodemographic factors. In addition to knowledge, mediation effects were noted for age, marital status, education, history of breast health problems, and a family history of breast cancer. These factors fully mediated the associations between BSE intention and health beliefs, while partially mediating the influence of health beliefs on intentions to undergo CBE and mammography screening. For the associations between health system factors and intention to undergo mammography and CBE, partial mediational effects were found for history of breast health problems and the cultural factors including beliefs about modesty and breast screening as well as attitudes towards preventive health care. In all, these findings confirmed the hypothesis that the associations among intention to screen, health beliefs, and the health system are mediated by motivational factors such as knowledge and sociodemographics. From these findings it can be concluded that health system characteristics, particularly cost and availability of screening services, and cultural factors such as beliefs about screening and attitude towards preventive health care are the most

salient contextual determinants of intention to undergo breast cancer screening among Ghanaian women. Additionally, the individual factors that significantly influenced women's screening intentions were knowledge of breast cancer and screening procedures, health beliefs such as perceived severity of cancer, and the benefits of and barriers to screening.

Implications for Health Promotion and Policy

This study offers several implications for health promotion and policy interventions that could improve breast cancer screening intentions and perhaps behaviours among Ghanaian women. Because strong screening intention was found among older women, it is recommended that access to screening programs such as mammography and CBE be made easier. For example, because of the poverty among older persons in Ghana (Ghana Statistical Service, 2010), mammography screening services should be provided free of cost to women of retirement age. This might help facilitate the uptake of screening among this age group. Moreover, the low screening intentions found in women with low level of income reinforce the need to remove financial barriers to screening for the most at-risk women. In addition, the low screening intention observed among young women suggests the need for intervention programs to promote the benefits of breast cancer screening in this age group. This is particularly important because recent epidemiological studies suggest that breast cancer incidence and mortality rates are increasing rapidly among women below age 50 years in Ghana (Clegg-Lamptey et al., 2009; Ohene-Yeboah & Adjei, 2012; Wiredu & Armah, 2006).

Given the positive association between education and screening intentions, it is likely that improvement in women's health literacy concerning breast cancer risk factors,

symptoms and signs and screening programs through educational interventions may potentially increase screening uptake. Married women were more likely to undergo screening than unmarried women; therefore, breast cancer screening promotion interventions that target both men and women may be more effective in increasing women's intention towards participation in screening. Moreover, given the significant power differential between Ghanaian men and women, men should be encouraged to be supportive of breast cancer screening. Women themselves should also be encouraged to make their own health decisions towards preventive care.

Health-related factors such as family history of breast cancer and breast health problems were positively related to screening intentions. The more women perceived themselves to be at risk of developing breast cancer, the greater the likelihood that they would undergo screening in the future. This finding presents an important opportunity for the promotion of breast cancer screening programs among women. For example, educational messages should inform women that regular uptake of screening programs could potentially reduce their chances of developing and dying from breast cancer. As a result, both at-risk and not-at-risk women may see the need to perform BSE or to undergo CBE and mammography screening on a regular basis as recommended.

The influence of psychosocial factors such as health beliefs and knowledge on screening intention was found for BSE, CBE and mammography. Perceived susceptibility to and severity of breast cancer were associated with greater screening intentions. This suggests that promotion of screening programs should focus on increasing Ghanaians' awareness of the deadly effects of breast cancer, while reassuring them of the effectiveness of screening in reducing the threat from the disease. Given that greater

perceived susceptibility to and severity of breast cancer can result in withdrawal intentions towards screening uptake, caution should be taken when employing threat tactics as part of educational intervention to enhance intentions. In addition, educating women about the benefits of screening may facilitate intention to screen. For example, educational campaigns media, at schools and communities should be intensified to raise women's awareness of the benefits of breast cancer screening. Addressing women's concerns about embarrassment associated with CBE and mammography can potentially reduce the distress associated with screening procedures and subsequently increase the likelihood of intentions toward participation in such screening.

The relative lack of knowledge about breast cancer screening programs found in this study suggests the need to increase women's awareness about the guidelines and procedures of mammography, CBE, and BSE. This can be done through educational media campaigns and community outreach programs. The content of such educational messages should be designed specifically to meet the needs of the target audience. Equally important is addressing the specific cultural beliefs and attitudes associated with breast cancer screening. For example, cultural beliefs about modesty and negative attitudes towards preventive care were related to low intention. Although such cultural beliefs and attitudes may be difficult to change, culturally tailored educational messages may successfully increase screening intentions among women. Consistent with the findings presented here, social support including encouragement and financial assistance from family and friends has been shown to improve screening intention (Allen et al., 1998; Ford et al., 2006; Jepson et al., 1993; Lechner et al., 2004; Steele & Porche, 2005; Van Jaarsveld et al., 2008). Therefore, interventions aiming at improving intention to

screen for breast cancer should not only target women, but also their family, friends and other social networks.

The findings of this study indicate that several health policy interventions are needed to address the changes required to positively influence intention to have mammography and CBE. First, strong physician-patient relationships can encourage positive intentions toward screening. Such relationships foster trust in the health care system, which may then serve as an effective channel for the dissemination of breast cancer screening educational messages to women. Second, physician recommendation appears to be an important influential factor on screening intention. Thus, physicians should be encouraged to recommend screening for women during medical encounters. This is consistent with suggestions from other studies that have found physician recommendation as an important determinant of breast cancer screening intentions in women (Othman et al., 2012; Soskolne et al., 2007). Lastly, the findings of the present study further suggest that in order to increase intention to undergo CBE and mammography screening, health policy interventions should focus on improving access by removing direct financial and physical barriers to screening services. In addition, reducing the waiting time for preventive care could potentially increase women's intentions to undergo CBE and mammography screening. A separate department should be established for preventive health care in all major regions.

Recommendations for Future Research

A number of factors were found to be associated with screening intention. Some are identified in the constructs of the HBM, which has been extensively used to explain cancer screening behaviours among women. However, HBM has rarely been used to

predict screening intentions. In an attempt to test its utility, the constructs of the model, including perceived severity, susceptibility, benefits, and barriers were used to predict intention engage in screening. While all the model's constructs were associated with intention to undergo each of the screening behaviours, some of the constructs were not predictive of intention. Thus, further research is needed to examine the effect of perceived susceptibility on BSE intention. Similarly, perceived barriers predicted intention to undergo mammography but not CBE and BSE. Given the volitional nature of the screening, women who have limited knowledge of BSE procedures may be unable to recognize the barriers associated with the performance of the test. This explanation or hypothesis needs to be tested in future studies of screening intention in Ghana.

Given the strong explanatory power provided by the framework used to guide this study, future studies should further explore the utility of its application to the examination of the influence of individual and contextual factors on cancer screening behaviours among a larger and more diverse population of women. Also, the application of the framework to screening for other cancers such as cervical, prostate, and colorectal may help in the development of a context specific theoretical framework for the study of cancer screening behaviours and intentions in Ghana (and perhaps other African countries in general).

References

- Abor, P. A., Abekah-Nkrumah, G., Sakyi, K., Adjasi, C. K., & Abor, J. (2011). The socio-economic determinants of maternal health care utilization in Ghana. *International Journal of Social Economics*, 38(7), 628-648. doi:10.1108/03068291111139258
- Abotchie, P. N., & Shokar, N. K. (2009). Cervical cancer screening among college students in Ghana: Knowledge and health beliefs. *International Journal of Gynecological Cancer*, 19(3), 412-416. doi:10.1111/IGC.0b013e3181a1d6de
- Addai, I. (2000). Determinants of use of maternal-child health services in rural Ghana. *Journal of Biosocial Science*, 32(1), 1-15. Retrieved from <http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=9913&fulltextType=RA&fileId=S0021932000000018>
- Ajzen, I. (2005). *Attitudes, personality, and behavior* (2nd ed.). Milton-Keynes, UK: Open University Press. Retrieved from <http://psicoexperimental.files.wordpress.com/2011/03/ajzeni-2005-attitudes-personality-and-behaviour-2nd-ed-open-university-press.pdf>
- Ajzen, I., & Fishbein, M. (2005). The influence of attitudes on behavior. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 173-221). Mahwah, NJ: Lawrence Erlbaum.
- Akarolo-Anthony, S. N., Ogundiran, T. O., & Adebamowo, C. A. (2010). Emerging breast cancer epidemic: Evidence from Africa. *Breast Cancer Research*, 12(Suppl 4), S8. doi: 0.1186/bcr2737
- Allen, J. D., Sorensen, G., Stoddard, A. M., Colditz, G., & Peterson, K. (1998). Intention to have a mammogram in the future among women who have underused mammography in the past. *Health Education & Behavior*, 25(4), 474-488. doi:10.1177/109019819802500406
- American Cancer Society. (2011). *Cancer facts and figures 2011*. Atlanta, GA: Author. Retrieved from <http://www.cancer.org/healthy/findcancerearly/cancerscreeningguidelines/index>

- American Cancer Society. (2012). *Cancer facts and figures 2012*. Atlanta, GA: Author.
Retrieved from
<http://www.cancer.org/healthy/findcancerearly/cancerscreeningguidelines/index>
- Anderson, R. B. (2000). Vicarious and persuasive influences on efficacy expectations and intentions to perform breast self-examination. *Public Relations Review*, 26(1), 97-114. doi:10.1016/S0363-8111(00)00033-3
- Ashing-Giwa, K. T., Padilla, G., Tejero, J., Kraemer, J., Wright, K., Coscarelli, A., & Hills, D. (2004). Understanding the breast cancer experience of women: A qualitative study of African American, Asian American, Latina and Caucasian cancer survivors. *Psycho-Oncology*, 13(6), 408-428. doi:10.1002/pon.750
- Ashing-Giwa, K. (1999). Health behaviour change models and their socio-cultural relevance for breast cancer screening in African American women. *Women & Health*, 28(4), 53-71. doi:10.1300/J013v28n04_04
- Aswathy, S., Quereshi, M. A., Kurian, B., & Leelamoni, K. (2012). Cervical cancer screening: Current knowledge and practice among women in a rural population of Kerala, India. *The Indian Journal of Medical Research*, 136(2), 205-210.
Retrieved from <http://0-www.tandfonline.com.darius.uleth.ca/doi/abs/10.1080/08858190802189105#.Uh0O1Bushko>
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality & Social Psychology*, 51(6), 1173-1182. doi:10.1037/0022-3514.51.6.1173
- Becker, M. H., Maiman, L. A., Kirscht, J. P., Haefner, D. P., & Drachman, R. H. (1977). The Health Belief Model and prediction of dietary compliance: A field experiment. *Journal of Health & Social Behavior*, 18(4), 348-366. doi:10.2307/2955344

- Boateng, J., & Flanagan, C. (2008). Women's access to health care in Ghana: Effects of education, residence, lineage and self-determination. *Biodemography & Social Biology*, 54(1), 56-73. doi:10.1080/19485565.2008.9989132
- Boyd, C. O. (1990). Qualitative approaches to research. In G. LoBiondo-Wood & J. Haber (Eds.), *Nursing research: Methods, critical appraisal and utilization* (2nd ed., pp. 181-208). St. Louis, MO: Mosby.
- Bowie, J. V., Curbow, B., Laveist, T. A., Fitzgerald, S., & Zabora, J. (2004). The theory of planned behavior and intention to repeat mammography among African-American women. *Journal of Psychosocial Oncology*, 21(4), 23-42. doi:10.1300/J077v21n04_02
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. doi:10.1191/1478088706qp063oa
- Cancer Society of Ghana. (2013). *Workshop on cancer awareness*. Accra, GH: Author. Retrieved from <http://cancersocietygh.com>
- Carcaise-Edinboro, P., & Bradley, C. J. (2008). Influence of patient-provider communication on colorectal cancer screening. *Medical Care*, 46(7), 738-745. doi:10.1097/MLR.0b013e318178935a
- Carroll, J., Epstein, R., Fiscella, K., Volpe, E., Diaz, K., & Omar, S. (2007). Knowledge and beliefs about health promotion and preventive health care among Somali women in the United States. *Health Care for Women International*, 28(4), 360-380. doi:10.1080/07399330601179935
- Champion, V. L. (1999). Revised susceptibility, benefits, and barriers scale for mammography screening. *Research in Nursing & Health*, 22(4), 341-348. doi:10.1002/(SICI)1098-240X(199908)22:4<341::AID-NUR8>3.0.CO;2-P
- Christou, A., & Thompson, S. (2012). Colorectal cancer screening knowledge, attitudes and behavioural intention among indigenous Western Australians. *BioMed Central Public Health*, 12(1), 528. doi:10.1186/1471-2458-12-528
- Clegg-Lamprey, J., Dakubo, J., & Attobra, Y. N. (2009). Why do breast cancer patients report late or abscond during treatment in Ghana? A pilot study. *Ghana Medical Journal*, 43(3), 127-131. Retrieved from <http://www.ajol.info/index.php/gmj/article/view/55338>

- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Thousand Oaks, CA: Sage.
- Curry, S. J., & Emmons, K. M. (1994). Theoretical models for predicting and improving compliance with breast cancer screening. *Annals of Behavioral Medicine, 16*(4), 302-316. Retrieved from <http://psycnet.apa.org/psycinfo/1995-30540-001>
- Earp, J. A., Eng, E., O'Malley, M. S., Altpeter, M., Rauscher, G., Mayne, L., & Qaqish, B. (2002). Increasing use of mammography among older, rural African American women: Results from a community trial. *American Journal of Public Health, 92*(4), 646-654. doi:10.2105/AJPH.92.4.646
- Elsie, K., Gonzaga, M., Francis, B., Michael, K., Rebecca, N., Rosemary, B., & Zeridah, M. (2010). Current knowledge, attitudes and practices of women on breast cancer and mammography at Mulago Hospital. *Pan African Medical Journal, 5*(1), 1-19. doi: 10.4314/pamj.v5i1.56186
- Ezeh, A. C. (1993). The influence of spouses over each other's contraceptive attitudes in Ghana. *Studies in Family Planning, 24*(3), 163-174. doi: 10.2307/2939231
- Farnes, C., Beckstrand, R. L., & Callister, L. C. (2011). Help-seeking behaviours in childbearing women in Ghana, West Africa. *International Nursing Review, 58*(4), 491-497. doi: 10.1111/j.1466-7657.2011.00917.x
- Ferlay, J., Shin, H. R., Bray, F., Forman, D., Mathers, C., & Parkin, D. M. (2010). Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. *International Journal of Cancer, 127*(12), 2893-2917. doi:10.1002/ijc.25516
- Finney, L. J., & Iannotti, R. J. (2001). The impact of family history of breast cancer on women's health beliefs, salience of breast cancer family history, and degree of involvement in breast cancer issues. *Women & Health, 33*(3-4), 17-31. doi:10.1300/J013v33n03_02
- Ford, M. E., Vernon, S. W., Havstad, S. L., Thomas, S. A., & Davis, S. D. (2006). Factors influencing behavioral intention regarding prostate cancer screening among older African-American men. *Journal of the National Medical Association, 98*(4), 505-514. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2569259/pdf/jnma00191-0037.pdf>

- Fregene, A., & Newman, L. A. (2005). Breast cancer in sub-Saharan Africa: How does it relate to breast cancer in African-American women? *Cancer*, *103*(8), 1540-1550. doi:10.1002/cncr.20978
- Gany, F. M., Herrera, A. P., Avallone, M., & Changrani, J. (2006). Attitudes, knowledge, and health-seeking behaviors of five immigrant minority communities in the prevention and screening of cancer: A focus group approach. *Ethnicity and Health*, *11*(1), 19-39. doi: 10.1080/13557850500391394
- Ghana Statistical Service. (2010). *Population and housing census: 2010 report*. Accra, GH: Author. Retrieved from <http://www.statsghana.gov.gh>
- Giuliano, A. R., Mokuau, N., Hughes, C., Tortolero-Luna, G., Risendal, B., Ho, R., & Mccaskill-Stevens, W. J. (2000). Participation of minorities in cancer research: The influence of structural, cultural, and linguistic factors. *Annals of Epidemiology*, *10*(8), S22-S34. Retrieved from [http://www.annalsofepidemiology.org/article/S1047-2797\(00\)00195-2/abstract](http://www.annalsofepidemiology.org/article/S1047-2797(00)00195-2/abstract)
- Godin, G., Gagné, C., Maziade, J., Moreault, L., Beaulieu, D., & Morel, S. (2001). Breast cancer: The intention to have a mammography and a clinical breast examination—application of the theory of planned behavior. *Psychology & Health*, *16*(4), 423-441. doi: 10.1080/08870440108405517
- Gotzsche, P. C., & Nielsen, M. (2009). Screening for breast cancer with mammography. *Cochrane Database of Systematic Reviews*, Issue 4. Art. no.:CD001877. doi: 1002/14651858.CD001877.pub3
- Gregory, T. A., Wilson, C., Duncan, A., Turnbull, D., Cole, S. R., & Young, G. (2011). Demographic, social cognitive and social ecological predictors of intention and participation in screening for colorectal cancer. *BMC Public Health*, *11*(1), 38. doi: 10.1186/1471-2458-11-38
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105-117). Thousand Oaks, CA: Sage.
- Gyimah, O. S. (2007). What has faith got to do with it? Religion and child survival in Ghana. *Journal of Biosocial Science*, *39*(06), 923-937. doi:10.1017/S0021932007001927

- Ham, O. K. (2005). The intention of future mammography screening among Korean women. *Journal of Community Health Nursing*, 22(1), 1-13.
doi:10.1207/s15327655jchn2201_1
- Hart, S. L., & Bowen, D. J. (2009). Sexual orientation and intentions to obtain breast cancer screening. *Journal of Women's Health*, 18(2), 177-185.
doi:10.1089/jwh.2007.0447
- Hay, J. L., McCaul, K. D., & Magnan, R. E. (2006). Does worry about breast cancer predict screening behaviors? A meta-analysis of the prospective evidence. *Preventive Medicine*, 42(6), 401-408. doi: 0.1016/j.ypmed.2006.03.002
- Jemal, A., Bray, F., Center, M. M., Ferlay, J., Ward, E., & Forman, D. (2011). Global cancer statistics. *CA: A Cancer Journal for Clinicians*, 61(2), 69-90. doi: 10.3322/caac.20107
- Jepson, C., & Rimer, B. K. (1993). Determinants of mammography intentions among prior screenees and non-screenees. *Journal of Applied Social Psychology*, 23(1), 40-51. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/j.1559-1816.1993.tb01003.x>
- Johnson, B., & Onwuegbuzie, A. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26.
doi:10.3102/0013189X033007014
- Kamangar, F., Dores, G. M., & Anderson, W. F. (2006). Patterns of cancer incidence, mortality and prevalence across five continents: Defining priorities to reduce cancer disparities in different geographic regions of the world. *Journal of Clinical Oncology*, 24(14), 2137-2150. doi:10.1200/JCO.2005.05.2308
- Katapodi, M. C., Facione, N. C., Miaskowski, C., Dodd, M. J., & Waters, C. (2002). The influence of social support on breast cancer screening in a multicultural community sample. *Oncology Nursing Forum*, 29(5), 845-852.
doi: 0.1188/02.ONF.845-852
- Khan, A., & Bhardwaj, S. (1994). Access to health care: A conceptual framework and its relevance to health care planning. *Evaluation & the Health Profession*, 17(1), 60-76.

- Kirby, A. (2005). Early detection of breast cancer in Ghana, West Africa. *Journal of Investigative Medicine*, 53(1), S80. Retrieved from http://journals.lww.com/jinvestigativemed/Citation/2005/01010/Early_Detection_of_Breast_Cancer_in_Ghana,_West.35.aspx
- Knapik, G. A. (2012). *Understanding patient commitment for colorectal cancer screening in Southern Alberta*. Unpublished master's thesis. University of Lethbridge, Alberta, Canada.
- Kricker, A., Farac, K., Smith, D., Sweeny, A., McCredie, M., & Armstrong, B. K. (1999). Breast cancer in New South Wales in 1972–1995: Tumor size and the impact of mammographic screening. *International Journal of Cancer*, 81(6), 877-880. doi: 10.1002/(SICI)1097-0215(19990611)81:6<877::AID-IJC7>3.3.CO;2-6
- Krombein, I. W., & De Villiers, P. J. T. (2006). Breast cancer-early detection and screening in South African women from the Bonteheuwel Township in the Western Cape: Knowledge, attitudes and practices. *South African Family Practice*, 48(5), 14. Retrieved from <http://www.safpj.co.za/index.php/safpj/article/viewFile/580/518>
- Krueger, R. A., & Casey, M. A. (2000). *Focus groups: A practical guide for applied research* (3rd ed.). Thousand Oaks, CA: Sage.
- Lather, P. (1986). Research as praxis. *Harvard Educational Review*, 56(3), 257-277. Retrieved from <http://her.hepg.org/content/bj2h231877069482/>
- Lechner, L., De Nooijer, J., & De Vries, H. (2004). Breast self-examination: Longitudinal predictors of intention and subsequent behaviour. *European Journal of Cancer Prevention*, 13(5), 369-376. doi:10.1097/00008469-200410000-00003
- Lee-Lin, F., Menon, U., Pett, M., Nail, L., Lee, S., & Mooney, K. (2008). Measuring breast cancer and mammography screening beliefs among Chinese American immigrants. *Western Journal of Nursing Research*, 30(7), 852-868. doi: 10.1177/0193945908319247
- Maiman, L. A., & Becker, M. H. (1974). The Health Belief Model: Origins and correlates in psychological theory. *Health Education & Behavior*, 2(4), 336-353. Retrieved from <http://0-heb.sagepub.com.darius.uleth.ca/content/2/4/336.short>

- Matthews, B. A., Anderson, R. C., & Nattinger, A. B. (2005). Colorectal cancer screening behavior and health insurance status (United States). *Cancer Causes & Control, 16*(6), 735-742. doi:10.1007/s10552-005-1228-z
- Mayo, R., & Hunter, A. (2003). Fatalism toward breast cancer among the women of Ghana. *Health Care for Women International, 24*(7), 608-616. doi: 10.1080/07399330390217752
- McAlearney, A. S., Reeves, K. W., Tatum, C., & Paskett, E. D. (2007). Cost as a barrier to screening mammography among underserved women. *Ethnicity and Health, 12*(2), 189-203. doi: 10.1080/13557850601002387
- McCaul, K. D., Reid, P. A., Rathge, R. W., & Martinson, B. (1996). Does concern about breast cancer inhibit or promote breast cancer screening? *Basic & Applied Social Psychology, 18*(2), 183-194. doi:10.1207/s15324834basp1802_5
- McFarland, D. M. (2003). Cervical cancer and Pap smear screening in Botswana: Knowledge and perceptions. *International Nursing Review, 50*(3), 167-175. doi:10.1046/j.1466-7657.2003.00195.x
- McIntyre, D., Thiede, M., Dahlgren, G., & Whitehead, M. (2006). What are the economic consequences for households of illness and of paying for health care in low-and middle-income country contexts? *Social Science & Medicine, 62*(4), 858-865. doi: 10.1016/j.socscimed.2005.07.001
- Messina, C. R., Lane, D. S., Glanz, K., West, D. S., Taylor, V., Frishman, W., & Powell, L. (2004). Relationship of social support and social burden to repeated breast cancer screening in the women's health initiative. *Health Psychology, 23*(6), 582. doi:10.1037/0278-6133.23.6.582
- Mikhail, B. I., & Petro-Nustas, W. I. (2001). Transcultural adaptation of Champion's health belief model scales. *Journal of Nursing Scholarship, 33*(2), 159-165. doi:10.1111/j.1547-5069.2001.00159.x
- Miller, A. B., To, T., Baines, C. J., & Wall, C. (2002). The Canadian National Breast Screening Study-1: Breast cancer mortality after 11 to 16 years of follow-up. *Annals of Internal Medicine, 137*, 305-315. doi:10.7326/0003-4819-137-5_Part_1-200209030-00005

- Montaño, D. E., Thompson, B., Taylor, V. M., & Mahloch, J. (1997). Understanding mammography intention and utilization among women in an inner city public hospital clinic. *Preventive Medicine, 26*(6), 817-824.
doi:10.1006/pmed.1997.0215
- Mupepi, S. C., Sampselle, C. M., & Johnson, T. R. (2011). Knowledge, attitudes, and demographic factors influencing cervical cancer screening behavior of Zimbabwean women. *Journal of Women's Health, 20*(6), 943-952.
doi:10.1089/jwh.2010.2062
- Murabito, J. M., Evans, J. C., Larson, M. G., Kreger, B. E., Splansky, G. L., Freund, K. M., & Wilson, P. W. (2001). Family breast cancer history and mammography: Framingham Offspring Study. *American Journal of Epidemiology, 154*(10), 916-923. doi:10.1093/aje/154.10.916
- National Cancer Institute. (2012). *Breast cancer screening*. Retrieved from http://www.cancer.gov/cancertopics/pdq/screening/breast/healthprofessional#Section_7.
- Ndikom, C. M., & Ofi, B. A. (2012). Awareness, perception and factors affecting utilization of cervical cancer screening services among women in Ibadan, Nigeria: A qualitative study. *Reproductive Health, 9*(1), 1-8. doi:10.1186/1742-4755-9-11
- Nguyen, A. B., Belgrave, F. Z., & Sholley, B. K. (2011). Development of a breast and cervical cancer screening intervention for Vietnamese American women: A community-based participatory approach. *Health Promotion Practice, 12*(6), 876-886. doi:10.1177/1524839909355518
- Oche, M. O., Ayodele, S. O., & Umar, A. S. (2012). Breast cancer and mammography: Current knowledge, attitudes and practices of female health workers in a tertiary health institution in northern Nigeria. *Public Health Research, 2*(5), 114-119. Retrieved from <http://article.sapub.org/10.5923.j.phr.20120205.01.html>
- Ogedegbe, G., Cassells, A. N., Robinson, C. M., DuHamel, K., Tobin, J. N., Sox, C. H., & Dietrich, A. J. (2005). Perceptions of barriers and facilitators of cancer early detection among low-income minority women in community health centers. *Journal of the National Medical Association, 97*(2), 162-170. Retrieved

- from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2568778/pdf/jnma00183-0032.pdf>
- Ohene-Yeboah, M., & Adjei, E. (2012). Breast cancer in Kumasi, Ghana. *Ghana Medical Journal*, 46(1), 8-13. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3353503/>
- Oleckno, W. A. (2002). *Essential epidemiology: Principles and applications*. Long Grove, IL: Waveland Press.
- O'Malley, M. S., Earp, J. A., Hawley, S. T., Schell, M. J., Mathews, H. F., & Mitchell, J. (2001). The association of race/ethnicity, socioeconomic status, and physician recommendation for mammography: Who gets the message about breast cancer screening? *American Journal of Public Health*, 91(1), 49-54. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1446507/pdf/11189825.pdf>
- O'Neill, S. C., Bowling, J. M., Brewer, N. T., Lipkus, I. M., Skinner, C. S., Strigo, T. S., & Rimer, B. K. (2008). Intentions to maintain adherence to mammography. *Journal of Women's Health*, 17(7), 1133-1141. doi:10.1089/jwh.2007.0600
- Opoku, S. Y., Benwell, M., & Yarney, J. (2012). Knowledge, attitudes, beliefs, behaviour and breast cancer screening practices in Ghana, West Africa. *Pan African Medical Journal*, 11(1), 1-10. Retrieved from <http://www.ajol.info/index.php/pamj/article/viewFile/75464/66007>
- Othman, A. K., Kiviniemi, M. T., Wu, Y. W. B., & Lally, R. M. (2012). Influence of demographic factors, knowledge, and beliefs on Jordanian women's intention to undergo mammography screening. *Journal of Nursing Scholarship*, 44(1), 19-26. doi:10.1111/j.1547-5069.2011.01435.x
- Owusu-Daaku, F. T., & Smith, F. J. (2005). Health-seeking behaviour: Perspectives of Ghanaian women in London and Kumasi. *International Journal of Pharmacy Practice*, 13(1), 71-76. doi:10.1211/0022357055632
- Pakenham, K. I., Pruss, M., & Clutton, S. (2000). The utility of socio-demographics, knowledge and health belief model variables in predicting reattendance for mammography screening: A brief report. *Psychology & Health*, 15(5), 585-591. doi:10.1080/08870440008405472

- Parkin, D. M., Sitas, F., Chirenje, M., Stein, L., Wabinga, H., et al. (2008). Cancer in indigenous Africans burden, distribution and trends. *Lancet Oncology*, 9, 683-92. doi:10.1016/S1470-2045(08)70175-X
- Parkin, D. M., Whelan, S. L., Ferlay, J., Teppo, L., & Thomas, D. B. (2002). Cancer incidence in five continents Vol. VIII. *IARC Scientific Publications*, 155. Lyon, France. Retrieved from <http://www.iarc.fr/en/publications/pdfs-online/epi/sp155/>
- Power, E., Miles, A., von Wagner, C., Robb, K., & Wardle, J. (2009). Uptake of colorectal cancer screening: System, provider and individual factors and strategies to improve participation. *Future Oncology*, 5(9), 1371-1388. doi:10.2217/fon.09.134
- Price, M. A., Butow, P. N., Charles, M., Bullen, T., Meiser, B., McKinley, J. M., & Phillips, K. A. (2010). Predictors of breast cancer screening behavior in women with a strong family history of the disease. *Breast Cancer Research & Treatment*, 124(2), 509-519. Retrieved from <http://0-link.springer.com.darius.uleth.ca/article/10.1007/s10549-010-0868-1>
- QSR International. (2012). *NVivo 10*. Doncaster, AU: Author.
- Remennick, L. (2006). The challenge of early breast cancer detection among immigrant and minority women in multicultural societies. *The Breast Journal*, 12(s1), S103-S110. doi:10.1111/j.1075-122X.2006.00204.x
- Rosenstock, I. M. (1966). Why people use health services. *The Milbank Memorial Fund Quarterly*, 44(3), 94-127. doi:10.1111/j.1468-0009.2005.00425.x
- Roy, B., & Tang, T. S. (2008). Cervical cancer screening in Kolkata, India: Beliefs and predictors of cervical cancer screening among women attending a women's health clinic in Kolkata, India. *Journal of Cancer Education*, 23(4), 253-259. doi:10.1080/08858190802189105
- Saslow, D., Boetes, C., Burke, W., Harms, S., Leach, M. O., Lehman, C. D., & Russell, C. A. (2007). American Cancer Society guidelines for breast screening with MRI as an adjunct to mammography. *CA: Cancer Journal for Clinicians*, 57(2), 75-89. doi:10.3322/canjclin.57.2.75
- Simon, C. E. (2006). Breast cancer screening: Cultural beliefs and diverse populations. *Health & Social Work*, 31(1), 36-43. doi:10.1093/hsw/31.1.36

- Shaikh, B. T., & Hatcher, J. (2005). Health seeking behaviour and health service utilization in Pakistan: challenging the policy makers. *Journal of Public Health*, 27(1), 49-54. doi:10.1093/pubmed/fdh207
- Smith, R. A., Cokkinides, V., Brooks, D., Saslow, D., & Brawley, O. W. (2010). Cancer screening in the United States, 2010: A review of current American Cancer Society guidelines and issues in cancer screening. *CA: Cancer Journal for Clinicians*, 60(2), 99-119. doi:10.3322/caac.20063
- Soskolne, V., Marie, S., & Manor, O. (2007). Beliefs, recommendations and intentions are important explanatory factors of mammography screening behavior among Muslim Arab women in Israel. *Health Education Research*, 22(5), 665-676. doi:10.1093/her/cyl132
- Speziale, H. J. S., & Carpenter, D. R. (2007). *Qualitative research in nursing: Advancing the humanistic imperative* (4th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- Steele, S. K., & Porche, D. J. (2005). Testing the theory of planned behavior to predict mammography intention. *Nursing Research*, 54(5), 332-338. doi:10.1097/00006199-200509000-00007
- Takyi, B. K. (2003). Religion and women's health in Ghana: Insights into HIV/AIDS preventive and protective behaviour. *Social Science & Medicine*, 56(6), 1221-1234. doi:10.1016/S0277-9536(02)00122-3
- Tang, T. S., Solomon, L. J., & McCracken, L. M. (2000). Cultural barriers to mammography, clinical breast exam, and breast self-exam among Chinese-American women 60 and older. *Preventive Medicine*, 31(5), 575-583. doi:10.1006/pmed.2000.0753
- Tang, T. S., Solomon, L. J., Yeh, C. J., & Worden, J. K. (1999). The role of cultural variables in breast self-examination and cervical cancer screening behavior in young Asian women living in the United States. *Journal of Behavioral Medicine*, 22(5), 419-436. doi:10.1023/A:1018653306776
- Teddlie, C., & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. Thousand Oaks, CA: Sage.

- Tolma, E. L., Reininger, B. M., Evans, A., & Ureda, J. (2006). Examining the theory of planned behavior and the construct of self-efficacy to predict mammography intention. *Health Education & Behavior, 33*(2), 233-251.
doi:10.1177/1090198105277393
- Umeh, K., & Rogan-Gibson, J. (2001). Perceptions of threat, benefits, and barriers in breast self-examination amongst young asymptomatic women. *British Journal of Health Psychology, 6*(4), 361-372. doi:10.1348/135910701169269
- Van Jaarsveld, C. H., McCaffery, K., Miles, A., Atkin, W., & Wardle, J. (2008). Understanding intentions and action in colorectal cancer screening. *Annals of Behavioral Medicine, 35*(3), 285-294. doi:10.1007/s12160-008-9034-y
- Wiredu, E. K., & Armah, H. B. (2006). Cancer mortality patterns in Ghana: A 10-year review of autopsies and hospital mortality. *BMC Public Health, 6*, 1-7. Retrieved from <http://www.biomedcentral.com/1471-2458/6/159/>
- Wolf, A., Wender, R. C., Etzioni, R. B., Thompson, I. M., D'Amico, A. V., Volk, R. J., & Smith, R. A. (2010). American Cancer Society guideline for the early detection of prostate cancer: Update 2010. *Cancer Journal for Clinicians, 60*(2), 70-98.
doi:10.3322/caac.20066

Appendix A

Letter of Permission from Ghana Health Service

MEMO



TO : ALL UNIT HEADS

FROM : HEAD OF ADMINISTRATION

DATE : 1ST AUGUST, 2012

SUBJECT : LETTER OF INTRODUCTION

We introduce to you Mr. Samuel Mantey Ofori Dei, who has been permitted by Hospital Management to gather information on breast cancer screening for his thesis.

Please assist him

Thank you

A handwritten signature in black ink, appearing to be 'Peter Boateng', written over a dotted line.

MR. PETER BOATENG
HEAD OF ADMINISTRATION

Appendix B

Recruitment Flyer

BREAST HEALTH STUDY!

Hello women, would you like to participate in a research study?

I am interested in talking with you about breast cancer screening!

- The purpose of this study is to learn about the use of breast cancer screening services in Ghana. You are invited to complete a written survey and join a group conversation to share your thoughts about breast cancer screening services. The survey questionnaire will take approximately forty five minutes to complete. The focus group interviews are expected to last approximately one and a half hours. You can participate in both studies, or in either one of them.

To participate, you must be a woman between the ages of 30 and 60 years.

₵3-5.00 GHANA CEDIS HONORARIUM

To learn more about this study, you are invited to attend to an informational get-together prior to the commencement of the interviews and survey at the National Population Council.

Please contact **Samuel Ofori @ 024-----** or **email: poziae@yahoo.com**, if you:

- are interested in learning more about this study
- want to participate in the focus group interview or the survey

Appendix C

Participants' Information Sheet



4401 University Drive
Lethbridge, Alberta, Canada
T1K 3M4

Phone 403.329.2699
Fax 403.329.2668

<http://www.uleth.ca/hlsc>

Study title: Contextual and Individual-level Determinants of Breast Cancer Screening Intention in Ghana

Principal Investigator: Samuel Mantey Ofori Dei, University of Lethbridge, Canada

As part of my master's degree programme at University of Lethbridge, I am doing this research to find out how women make decisions about breast cancer care or screening in Ghana.

Much of what we now know about factors that affect participation in breast cancer screening services comes from research in developed countries and other African countries. Although we know that socioeconomic, cultural beliefs and health services-related factors influence health-seeking behaviours and attitudes towards health services, little is known about how these factors influences women's perceptions and attitudes towards breast cancer screening services in Ghana.

If health care professionals and planners are to meet the needs of Ghanaian women regarding participation in screening services, it is important that we hear and understand your perceptions and thoughts regarding breast cancer screening services.

As a participant in this study you will attend a focus group interview with the principal investigator and other participants at the premise of National Population Council. The focus of the interview will be your perceptions and experiences about breast cancer screening services. While you may not directly benefit from this study, findings may benefit other women or cancer patients in the future. There is very little risk or discomfort related to this research. Your name and other personal information will be kept confidential and will not be detectable in the final report. Importantly, at the end of the focus group interviews each participant will receive 5.00 Ghana Cedis mobile phone credit or cash.

You may choose to withdraw from the study at any time you want. Results of the study will be shared with you. If you agree to be involved in this study, you will participate in one focus group session lasting approximately one and a half hours.

Thank you for your interest in this study.

Appendix D

Breast Cancer Screening Questionnaire for Ghanaian Women



4401 University Drive
Lethbridge, Alberta, Canada
T1K 3M4

Phone 403.329.2699
Fax 403.329.2668

<http://www.uleth.ca/hlsc>

**CONTEXTUAL AND INDIVIDUAL-LEVEL DETERMINANTS OF BREAST
CANCER SCREENING INTENTION IN GHANA**

This study is being conducted to understand and learn more about breast cancer screening practices among women in Ghana. Please be assured that all your responses in this survey will be kept completely confidential and the final results will not contain any identifiable information. Although there are no known risks for taking part in this study, some of the questions may be sensitive and uncomfortable. Please remember that participation in this study is completely voluntary and you can withdraw anytime you want without any penalty. A copy of the research findings will be offered to interested participants. Those who wish to obtain a copy of the results should provide their email address in the space provided below.

I am interested in the final results of this study, **if yes**, please provide your email address here..... **(Don't write your name)**

Thank you very much for considering all the questions below and your participation in this study.

GUIDELINES:

1. DO NOT WRITE YOUR NAME ON THIS PAPER (FOR CONFIDENTIALITY PURPOSE).
2. Please read each question carefully and mark/circle the answers beside the questions.
3. If you want to change your answer please erase/cancel the first answer completely.

BREAST CANCER SCREENING BELIEF SCALE (1A)						
<p>The following statements are about your beliefs and reactions to breast cancer. We want to know how much you agree or disagree with the following statements. <i>(Please circle one number for each question)</i></p>						
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	I have a greater chance to get breast cancer.	1	2	3	4	5
2.	There is a good possibility I will get breast cancer next year.	1	2	3	4	5
3.	I think that I will get breast cancer in the future.	1	2	3	4	5
4.	The thought of breast cancer scares me.	1	2	3	4	5
5.	When I think about breast cancer my heart beats fast.	1	2	3	4	5
6.	I am afraid to think about breast cancer.	1	2	3	4	5
7.	Problems I would experience with breast cancer would last a long time.	1	2	3	4	5
8.	Breast cancer would threaten a relationship with my husband, boyfriend.	1	2	3	4	5
9.	If I had breast cancer my whole life would change.	1	2	3	4	5
10.	If I developed breast cancer, I would not live.	1	2	3	4	5
11.	I am more likely than the average woman to get breast cancer.	1	2	3	4	5
12.	There is a good possibility that I will get breast cancer in the next 10 years.	1	2	3	4	5

BREAST CANCER SCREENING BELIEF SCALE (1B)						
The following statements deals with your believes about the benefits and barriers of performing breast self-examination (BSE). (Please circle one number from each question)						
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
13.	When I do breast self-examination I feel good about myself.	1	2	3	4	5
14.	I would not worry so much about breast cancer, if I always do monthly breast self- examination.	1	2	3	4	5
15.	Completing breast self-examination every month will allow me to find lumps early.	1	2	3	4	5
16.	If I do breast self-examination monthly, it will reduce my chances of going for a more difficult treatment from hospital, if I get cancer.	1	2	3	4	5
17.	If I do monthly breast self-examination, it would help me find early signs of cancer before it is detected by doctor or nurse.	1	2	3	4	5
18.	If I do breast self-examination each month next year, it will decrease my chances of dying from breast cancer.	1	2	3	4	5
19.	Having breast self-examination during the next year will make me worry about breast cancer.	1	2	3	4	5
20.	Having monthly breast self-examination will be embarrassing for me.	1	2	3	4	5
21.	Having breast self-examination will be unpleasant.	1	2	3	4	5
22.	I don't have enough privacy in my house to do breast self-examination.	1	2	3	4	5
23.	I am confident that I can do breast self-examination correctly.	1	2	3	4	5

BREAST CANCER SCREENING BELIEF SCALE (1C)						
The following statements deals with your believes about the benefits and barriers associated with clinical breast examination (CBE). (Please circle one number from each question)						
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
24.	If a doctor/nurse asks me to go for CBE, I will feel good about myself.	1	2	3	4	5
25.	If I go for CBE test, I will not worry about breast cancer.	1	2	3	4	5
26.	Going for CBE will help me find early warnings/lumps easily.	1	2	3	4	5
27.	Having CBE will reduce my chances of requiring difficult treatment if I get breast cancer.	1	2	3	4	5
28.	Having CBE will help me find lump before it can be felt by me.	1	2	3	4	5
29.	Going for CBE regularly will make me worry about breast cancer.	1	2	3	4	5
30.	It would be embarrassing to go for CBE.	1	2	3	4	5
31.	It takes too much time to have CBE done at the hospital.	1	2	3	4	5
32.	Having CBE would be painful.	1	2	3	4	5
33.	Having CBE would cost too much money.	1	2	3	4	5
34.	I fear having CBE because I don't know the procedure.	1	2	3	4	5
35.	I do not know where and how to get CBE.	1	2	3	4	5
36.	The doctors or nurse do not treat people well.	1	2	3	4	5
37.	I cannot remember to go for CBE.	1	2	3	4	5
38.	I have more important problems to deal with than CBE.	1	2	3	4	5
39.	I am not old enough to go for regular CBE.	1	2	3	4	5

BREAST CANCER SCREENING BELIEF SCALE (1D)						
The following statements deals with your believes about the benefits and barriers associated with mammography. (Please circle one number from each question)						
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
40.	If a doctor or nurse asks me to go for mammography, I will be very happy.	1	2	3	4	5
41.	If I go for mammography test, I will not worry about breast cancer.	1	2	3	4	5
42.	Having mammography will help me find early lumps easily.	1	2	3	4	5
43.	Having mammography will reduce my chances of dying from breast cancer.	1	2	3	4	5
44.	Having mammography will decrease my chances of requiring difficult treatment if I get breast cancer.	1	2	3	4	5
45.	Having mammography will help me find lump before it can be felt by me or doctor/nurse.	1	2	3	4	5
46.	Having mammography will make me worry about breast cancer.	1	2	3	4	5
47.	It would be embarrassing to go for mammogram.	1	2	3	4	5
48.	It will take too much time to have mammogram done at the hospital.	1	2	3	4	5
49.	Having mammography would be painful.	1	2	3	4	5
50.	Having mammography would cost too much money.	1	2	3	4	5
51.	I fear having mammography because I don't know the procedure.	1	2	3	4	5
52.	I do not know where and how to get mammogram.	1	2	3	4	5
53.	The doctors or nurses do not treat people well.	1	2	3	4	5
54.	I cannot remember to go for mammogram.	1	2	3	4	5
55.	I have more important problems to deal with than mammography.					
56.	I am not old enough to go for regular mammogram.					

BREAST CANCER SCREENING KNOWLEDGE SCALE (2)

The following questions will ask about your knowledge about breast cancer.

(Please circle one answer for each of the following questions)

57. Most breast lumps are found by?
 a. Doctors and nurses b) Mammogram c) Women themselves
 d) Don't know
58. At what age should women begin doing breast self-examination?
 a. Age 20 b) Age 30 years c) Age 35 and above d) Don't know
59. How often should a woman perform breast self-examination?
 a. Every 6 months b) Once every month c) Once week
 a) Don't know
60. What should a woman do when feeling the breast or trying to find breast lump?
 a. Use the pads of your fingers b) Use the tips of your fingers
 c) Don't know
61. A woman who regularly examines her breast is doing one of the most effective methods of breast cancer detection?
 a. True b) False c) Don't know
62. Breast self-examination should be performed or done during you period/menses when lumps are most easily detected.
 a. True b) False c) Don't know
63. One of the most important aspects of breast self-examination is looking at your breasts in the mirror.
 a. True b) False c) Don't know
64. Some nipple discharge is expected as you get older when you squeeze the nipple during breast self-examination.
 a. True b) False c) Don't know
65. Breast self-examination should include feeling for lumps under your arms.
 a. True b) False c) Don't know
66. A good practice of breast self-examination includes squeezing the nipple.
 a. True b) False c) Don't know
67. It is not important to look at your breast when doing breast self-examination.
 a. True b) False c) Don't know
68. For clinical breast examination, the doctor or nurse uses his/her hand to check a women's breast for breast cancer symptoms.
 a. True b) False c) Don't know
69. At what age should women begin doing breast self-examination?
 a. 20 b) Age 30 years c) Age 35 and above
70. Is clinical breast examination more effective in detecting breast cancer than mammography?
 a. Yes b) No c) Don't know
71. Mammography can detect lumps that cannot be felt when you use your hand?
 a. True b) False c) Don't know

72. If a woman gets regular mammography, she does not need to do breast self-examination or have a clinical breast examination (examination of breast by doctor or nurse).
 a. True b) False c) Don't know
73. Mammography is recommended or good for women at age 40 years and above.
 a. True b) False c) Don't know
74. Women at age 50 and over should go for mammography test every 2 years.
 a. True b) False c) Don't know
75. One of the following is example of abnormal breast change?
 a. Discharge b) Lump, hard knot, or thickening c) Dimpling of skin
 d) All of the above e) None of the above f) Don't know

BREAST CANCER SYMPTOMS AND RISK KNOWLEDGE SCALE (3)

The following statements deals with breast cancer risk factors and early warning symptoms. (Please circle one from each question)

76. Have you ever heard of breast cancer?
 a. Yes b) No c) Don't know
77. Which of the following are associated with increased risk of developing breast cancer in women?
- | | Yes | No | Not Sure |
|-------------------------------------|-----|----|----------|
| a. Older age | 1 | 2 | 3 |
| b. Family history of breast disease | 1 | 2 | 3 |
| c. Obesity | 1 | 2 | 3 |
| d. Monthly breast tenderness | 1 | 2 | 3 |
78. What do you think are some of the early warning signs of breast cancer in women?
 (Please circle all that apply)
- a. Lumps in the breast b) Pain, soreness, burning in breast c) Nausea
 d) Shortness of breath e) Discharge from nipple f) Enlargement of breast
 g) Changes in shape of breast or nipple h) Changes in color of breast
 a) Other j) Don't know
79. Has any of your family members had breast cancer before?
 a. Yes b) No c) Don't know

PERCEIVED SCREENING COMFORT LEVEL SCALE (4)

The following questions concerns how comfortable you feel when discussing any issue related to breast cancer and screening with your health care provider. (Please circle one from each question)

80. How comfortable are you when you ask your doctor/nurse?

	High	Moderate	Low	Don't know
a. Breast cancer	1	2	3	4
b. Breast self-examination	1	2	3	4
c. Clinical breast examination	1	2	3	4
d. Mammography	1	2	3	4

PERCEIVED SOCIAL SUPPORT SCALE (5)

The following questions concern the support that you may receive from your family, partner/husband and friends for having regular breast cancer screening (include mammography, BSE and CBE). (Please circle one from each question)

81. How supportive is your partner/husband for you to get?

	High	Moderate	Low	Don't know
a. Breast self-examination	1	2	3	4
b. Clinical breast examination	1	2	3	4
c. Mammography	1	2	3	4

82. How supportive are your family/relatives for you to get?

	High	Moderate	Low	Don't know
a. Breast self-examination	1	2	3	4
b. Clinical breast examination	1	2	3	4
c. Mammography	1	2	3	4

83. How supportive are your friends for you to get?

	High	Moderate	Low	Don't know
d. Breast self-examination	1	2	3	4
e. Clinical breast examination	1	2	3	4
f. Mammography	1	2	3	4

84. What kind of support can you receive from your family and friends if you decide to go for mammography screening and clinical breast examination or do breast self-examination (*Circle as many as possible*)

- a) Financial help or money to pay for the screening b) Encouragement
 b) Information about the screening test c) Information about where to go for the test

HEALTH SERVICE SYSTEM SCALE (6)

Now, I am going to ask you some questions about the health care you get from the hospital. *(Please circle one answer for each of the following questions)*

85. Is there any place where you can go for clinical breast examination?
 a) Yes b) No c) There is more(specify) d) Don't know
86. About how long does it usually take you to travel to where you go for clinical breast examination care?
 a) (minutes/hours) b) Take long time c) Take short time
 d) Don't know
87. Which of these is the main reason why you don't go to the hospital for clinical breast examination test?
 a) Takes long time to get the test done b) Can't afford it—too expensive
 c) The nurses or doctors do not pay much attention to patients or treat patients well
 e) Takes longer time to travel to the hospital f) Because the doctor/nurse is a male
 g) Because the doctor/nurse is a female h) Other reason
 (Specify)
88. Is there any place where you can go for mammography screening test?
 a) Yes b) No c) There is more(specify) d) Don't know
89. About how long does it usually take you to travel to where you go for mammography test?
 a) (minutes/hours) b) Take long time c) Take short time
 d) Don't know
90. When you get to this place about how long do you have to wait before you get the screening test?
 a) (minutes/ hours) b) Take long time c) Take short time
 d) Don't know
91. Which of these is the main reason why you don't go to the hospital for mammography screening test?
 a) Takes long time to get the test done b) Can't afford it—too expensive
 d) The nurses/doctors do not pay much attention to patients or treat patients well
 f) Takes longer time to travel to the hospital f) Because the doctor/nurse is a male
 g) Because the doctor/nurse is a female h) Other reason
 (Specify)
92. Has any doctor or nurse recommended any of the screening tests (e.g. CBE, BSE, and mammography) for you?
 a) Yes (specify) b) No c) Don't know

BREAST CANCER SCREENING PRACTICES SCALE (7)

The following questions will tell us about your breast cancer screening behaviours.

(Please circle one answer for each of the following questions)

93. Do you know how to do breast self-examination (BSE)? *(A women uses her hand to look for lumps or suspicious changes in her breast)*
 a) Yes b) No
94. Has your doctor or nurse taught you how to do breast self-examination (BSE)?
 a) Yes b) No
95. Have you ever done breast self-examination (BSE)?
 a) Yes b) No
96. If yes, how often do you examine your breast?
 a) Once a month b) Once every 2 months c) Once every 3 months
 d) I do not examine my breast e) Other(specify)
97. Do you intend to do breast self-examination on monthly basis in future?
 a) Yes b) No
98. Have you ever been to a hospital for clinical breast examination (CBE) test? *(A breast test done by doctor or nurse)*
 a) Yes b) No
99. How many times do you go to a hospital for a clinical breast examination (CBE)?
 a) Every year b) Every two years c) Other d) Not all
100. The last time I had clinical breast examination was? *(write the year or month on the line)*

101. Would you go for clinical breast examination (CBE) in the future?
 a) Yes b) No
102. There are many reasons why some women do not go for clinical breast examination test. Why have you not had clinical breast examination test? *(select/circle all answers that apply to you)*
 a) The cost is too much b) I always forget c) I don't know anything about it
 b) It is embarrassing to do that e) The doctor/nurse has not asked me to do that
 f) Not important g) I don't think I have any problem with my breast
 h) I am afraid of the test i) I cannot answer this question
103. Have you ever heard of mammography? *(A mammography is an x-ray breast test- the hospital uses a big machine to look for lumps in your breast)*
 a) Yes b) No
104. Has any doctor or nurse told you to go for mammography?
 a) Yes b) No
105. Have you ever had mammography test before?
 a) Yes b) No
106. At what age did you have your first mammography?(write the age)
107. If you have had mammography, tell me the last time you went for the test?
 a) Less than 1 year ago b) 1 year ago c) More than two years ago
 d) Other

108. Why did you go for the mammography test?
a) For routine check-up b) Follow-up to a problem c) Other
.....
109. There are many reasons why some women do not go for mammography test. Why have you not had mammography? (*select/circle all answers that apply to you*)
c) The cost is too much b) I always forget c) I don't know anything about it
d) It is embarrassing to do that e) The doctor/nurse has not asked me to do that
f) Not important g) I don't think I have any problem with my breast
h) I am afraid of the test i) I cannot answer this question
110. What is the total number of mammography test you have ever had in your life?
Total (write it here)
111. Would you go for mammography test in the future?
a) Yes b) No

CULTURAL BARRIERS TO SCREENING SCALE (8)						
Now, I am going to ask you some questions about your cultural beliefs. (Please circle one answer for each of the following questions)						
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
112.	I feel uncomfortable talking about my body or breast with a doctor or nurse.	1	2	3	4	5
113.	I would feel embarrassed with a doctor examining my breast as part of medical exam.	1	2	3	4	5
114.	I am modest about my body even if it involves a health examination.	1	2	3	4	5
115.	I would feel embarrassed examining my own breast for lumps.	1	2	3	4	5
116.	I only see a doctor when I am having a health problem.	1	2	3	4	5
117.	I don't think preventive health care is useful.	1	2	3	4	5
118.	I believe that breast cancer screening important.	1	2	3	4	5
119.	My partner, family or friends have recommended for me to get checked for cancer.	1	2	3	4	5
120.	My family or friends have never advised me to go to a doctor to check for cancer.	1	2	3	4	5
121.	My family or friends have talked to me about the importance of getting checked for cancer.	1	2	3	4	5
122.	I rely on my family to advise me about health matters.	1	2	3	4	5

DEMOGRAPHIC INFORMATION (9)

Before finishing this survey, we would like to ask you a few questions about your background. Please be assured that all the information you provide on this paper will be kept confidential. No other person will see it. (Please circle one answer for each of the following questions)

123. Have you ever experienced any of the following in relation to your breast?
 a) Unusual pain b) Lump or swelling c) None of the above
124. Have any of your relative or family members had breast cancer?
 a) Yes b) No
125. Has any doctor or nurse told you that you have breast cancer?
 a) Yes b) No
126. How old are you now?-----Years
127. What is your marital status?
 a) Single b) Married c) Separated/Divorced d) Widowed
128. What is the highest level of education that you have attained (check only one answer?)
 a) Senior high school b) College or technical school c) Diploma
 d) Bachelor degree e) Graduate
129. Are you currently working?
 a) Unemployed b) Employed c) Self-employed
130. What is your usual job or occupation? -----
131. What is your monthly income level?
 a) Less than 150.00 b) 150.00 to 250.00 c) More than 250.00

Focus Group Interview

There will be another study where I will interview you and other participants together at the National Population Council Office. The interview session will last approximately one and half hours. If you take part in this study I will give you **5 Cedis phone credit or cash**.

Please, if you want to take part in this study mark the box below:

- Yes, I want to be part of the focus group interview. Please contact me at: 024.....**

Appendix E
Letter of Introduction



4401 University Drive
Lethbridge, Alberta, Canada
T1K 3M4

Phone 403.329.2699
Fax 403.329.2668

<http://www.uleth.ca/hlsc>

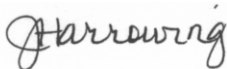
Dear Participant,

Thank you for considering the opportunity to be part of Samuel Ofori Dei's research study. He is a student working with me at the University of Lethbridge, and I believe his project will be very helpful as we try to improve health for people in Ghana. As a native Ghanaian himself, he is well aware of the challenges for women who wish to attain good health and quality of life. He is committed to learning about your views of breast screening and cancer care, and I am very pleased that you have chosen to help him. Your thoughts on this topic will help improve care for other women in the world, and I appreciate your time and effort to assist him.

If you have any questions or concerns about this study, please feel free to speak with Samuel himself. If you prefer, you may get in touch with me or the Research Office at the University of Lethbridge. The contact information is below. We will try our best to help you.

Once again, thank you for your interest and your time.

Yours truly,



Dr. Jean Harrowing, Registered Nurse
Associate Professor
harrjn@uleth.ca
403-394-3944

Office of Research Services, University of Lethbridge
research.services@uleth.ca
403-329-2747

Appendix F

Informed Consent



4401 University Drive
Lethbridge, Alberta, Canada
T1K 3M4

Phone 403.329.2699
Fax 403.329.2668

<http://www.uleth.ca/hlsc>

Dear Participant:

You are invited to take part in a research study on the use of breast cancer screening uptake among Ghanaian women. This research is being conducted by Samuel Mantey Ofori Dei, a student at the University of Lethbridge in Canada, and under the supervision of Dr. Jean Harrowing of the Faculty of Health Sciences.

Before you agree to join this study, I would like you to read and understand the following statements about the study procedure. Below are detailed explanations about the purpose, procedure, benefits/risks and safety measures associated with this study. Please ask questions of the study investigator on anything you do not understand before signing this form.

Purpose

The purpose of this study is to gain a more in-depth understanding of the factors that influence women's decisions regarding participation in breast cancer screening programmes. The study is part of my master's degree requirements at the University of Lethbridge.

Procedure

Your participation in this study will involve a group discussion lasting approximately one and a half hours. The focus of this discussion will be your perceptions and experience about breast cancer screening programmes, such as clinical breast examination and mammography. The interview will take place in a private office at the premises of the National Population Council and will be digitally recorded and transcribed.

Risk

Although there are no known risks for taking part in this study, some of the questions may be sensitive and uncomfortable, in particular talking about unpleasant experiences. If you feel uncomfortable you may refuse to answer any question or discontinue the discussion at anytime. The investigator will provide information that will be helpful to the participants in deciding whether or not to pursue professional counseling if they experience any form of emotional discomfort. However, all necessary steps will be taken to ensure your safety and comfort during the interview.

Appendix G

Focus group interviews questions

1. Would you please tell me what you know about breast cancer screening (e.g., mammography, CBE and BSE), and your experiences with each of these screening tests?
2. For women like you, what would motivate or make it difficult for you to have mammography or CBE or perform BSE?
3. Can you explain to me how your cultural beliefs (e.g., cultural beliefs about modesty, preventive health care and breast screening) prevent/motivate women like you to have mammography or CBE or BSE?
4. If you decide to go for screening, do you believe that your family or friends would support you (e.g., give you encouragement, information about the screening test and financial assistance)?
5. Do your personal beliefs (e.g. your chances of getting breast cancer, beliefs about breast cancer and the benefits of screening) affect your attitude toward having mammography or CBE or BSE?
6. How does the health care system (e.g. cost of screening, availability of services, waiting time at the hospital, nurses/doctors attitudes, their gender and advices) encourage or discourage you to have screening?
7. In your view, what should be done to encourage more Ghanaian women to have breast cancer screening in the future?