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# Leveraging breast cancer screening to promote timely detection, diagnosis and treatment among women in sub-Saharan Africa: a scoping review protocol

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## ABSTRACT

**Introduction** Female breast cancer is now the most often diagnosed cancer in the world. Breast cancer screening aims to reduce mortalities related to cancer, and morbidity associated with advanced stages of the disease, through timely detection in asymptomatic women. This study aims to conduct a comprehensive assessment and evaluation of the evidence on the factors that influence the provision and uptake of breast cancer screening among women in sub-Saharan Africa (SSA).

**Methods and analysis** PubMed, Web of Science, EMBASE and the Cumulative Index to Nursing and Allied Health Literature including Google Scholar will be searched to identify published studies on barriers and facilitators to breast cancer screening from January 2010 to 2021. Two reviewers will independently assess the quality of all the included studies using the Mixed Methods Appraisal Tool version 2018. We envisage that this review will adduce evidence on common barriers and facilitators to breast cancer screening in SSA. Identifying these barriers and facilitators will help guide the initialisation of effective interventions that will improve breast cancer screening uptake among women in SSA. This review will also guide future research in developing, implementing and evaluating appropriate interventions tailored toward increasing breast cancer screening uptake.

**Ethics and dissemination** Ethics approval for this protocol is not required since it does not involve collecting data from human participants. The outcomes of this study will be published in a peer-reviewed journal.

## STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This scoping review protocol adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews guideline.
⇒ The scoping review protocol is aimed to reduce the possibility of the duplication of this review, provide transparency to the methods and processes that will be employed, ensure bias reduction and allow peer review.
⇒ Despite a robust search strategy and the use of multiple electronic databases, potentially relevant studies might be missed.

## INTRODUCTION

Globally, over 2.1 million women are affected yearly by the ravages of breast cancer, making it the most frequent cancer among women.[1] According to statistics released by the International Agency for Research on Cancer (IARC) in December 2020, female breast cancer has overtaken lung cancer as the world's most diagnosed cancer.[2] Currently, breast cancer is considered a global public health problem due to its increasing incidence coupled with the high mortality rate among women both in developed and low- and middle-income countries (LMICs).[1 2] The IARC estimated 2.3 million new breast cancer cases in 2020 representing 11.7% of all cancer cases worldwide.[2] Out of these cases, one in every eight cancer diagnoses is breast cancer. Also, the IARC estimated in 2020 that 685 000 women across the globe died of breast cancer. Between 1990 and 2017, it was estimated that the global breast cancer cases increased by about 123.14%.[3] The GLOBOCAN cancer prediction tool estimates that by 2040 the global incidence of breast cancer cases is expected to increase more than 46%.[4] It is estimated that by 2050 the prevalence of breast cancer cases in sub-Saharan Africa (SSA) will double.[5] Currently in SSA, cancer control plans, prevention and strategies are weak; only a few cancer registries exist in most SSA countries with poorly structured cancer reporting systems.[6 7] A recent study using a large prospective cohort

of women with breast cancer among five countries in SSA revealed an alarming low 3-year survival rate, with near 40% in Nigeria, 45%–50% in Uganda and Zambia, and 56%–59% in South Africa and Namibia.[8] Due to the lack of national cancer registries in SSA, the true burden of cancer incidence might probably be under-reported.[9]

It is evident that timely detection of breast cancer through screening is one of the breast cancer control strategies and this is one of the keys to meeting the global health goals including the Sustainable Development Goals.[6] In developed countries, advances in breast cancer treatments, early presentation of symptoms before they become advanced cancer; more openness about cancer generally have all played a part in reducing the burden of breast cancer. Also, it is reported that the burden of cancer has been significantly reduced through well-coordinated screening programmes. In fact, in America, it is recommended that every woman at risk must undergo yearly breast cancer screening through mammography.[10]

A recent worldwide review and meta-analysis of cohort studies measuring the effect of mammography screening programmes on incidence-based breast cancer mortality revealed a 22% reduction in breast cancer mortality with an invitation to screening and a significant 33% reduction with actual attendance to screening.[11] Several other studies have also reported screening via mammography reduces breast cancer-related deaths by 15%–20%.[12–14] Though it has been proven that mammography is a reliable breast cancer screening method due to its ability to detect (some) symptoms early, finding it too early too many times has also shown to have some harmful effects and will incur more costs (physically, emotionally, psychologically, socially, financially), on women[14] and also on the resources (financial and healthcare staff/professionals) of the health service in that country.

Clinical breast examination (CBE) is a relatively simple, easy and cost-effective method for the timely detection and diagnosis of breast cancer/tumours.[15] A prospective cluster randomised controlled trial in Mumbai, India revealed that biennial CBE led to significant down-staging of breast cancer in all women including those younger than 50 and those aged 50 and older.[16] The study revealed a non-significant 15% reduction in breast cancer mortality in the overall study population but a significant reduction of nearly 30% in mortality in women aged ≥50.[16] Though mammography[17 18] and CBE[16] have their benefits, they also have some harmful effects on women, therefore, it is necessary that women are fully informed before they decide whether or not to undergo screening.[19 20] Evidence from two large trials reported no beneficial effect of screening by breast self-examination (BSE) but rather reported increased harm in terms of increased numbers of benign lesions identified and an increased number of biopsies performed.[21] Due to the above evidence, screening by BSE is not recommended,[22] therefore the current review will not include BSE.

Given the recent burden of breast cancer in SSA, a more comprehensive and detailed understanding of the barriers and facilitators is urgently required to prevent and plan interventions to reduce the burden of breast cancer. In our search in literature based on the review aim, we did not come across any existing published scoping review that has examined the barriers and facilitators of breast cancer screening among women in SSA.

Due to the lack of evidence, the main objective of this scoping review is to: (1) comprehensively review and assess evidence on the factors that influence the provision and uptake of breast screening among women in SSA. The secondary objectives are in two folds: (2) to highlight the barriers that influence breast cancer screening and (3) to identify the promoting factors (facilitators) of breast cancer screening uptake.

## METHODS AND ANALYSIS

This scoping exercise is being undertaken using the Joana Briggs Institute (JBI) guideline recommendations.[23] The review will also use the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) extension for Scoping Reviews.[24]

### Patient and public involvement

This study will review published and grey literature; therefore, patients and the public were not involved in the development of this protocol.

### Identification of research question

The main research question is: What factors influence breast cancer screening among women in SSA? Subquestions include (1) What are the factors that promote the provision and uptake of breast cancer screening among women in SSA? (2) What are the factors that hinder the provision and uptake of breast cancer screening among women in SSA? In accordance with JBI, a scoping review research question should cover the population, the concept and the context.[25] With regard to our research question, the population is limited to women in SSA who have not been medically diagnosed with breast cancer. The concept is to identify factors influencing breast cancer screening (CBE/mammography), including barriers and facilitators. The context includes breast cancer screening services offered within hospitals, primary healthcare facilities and in the communities (as shown in table 1). Articles published between 2010 and 2021 will be included.

### Search strategy

We will employ a comprehensive search strategy to identify various publications related to the aim of this review. The literature search will be conducted within the following electronic databases; PubMed, Web of Science, EMBASE and Cumulative Index to Nursing and Allied Health Literature (CINAHL via EBSCOhost). The search period for this review will be from January 2010 to 2021. To develop the preliminary search strategy, the reviewers will adopt the triple step approach to search for published evidence.[23] The first step will involve an initial limited

Table 1 Population, concept, context (PCC) framework

| Study component | Criteria |
|---|---|
| Population | Women in sub-Saharan Africa who have not been medically diagnosed with breast cancer (any age above 18) |
| Concept | Factors influencing breast cancer screening (CBE/mammography), including barriers and facilitators |
| Context | Breast cancer screening services within hospitals, primary healthcare facilities and in the communities. Articles published between 2010 and 2021 will be included |

CBE, clinical breast examination.

search in PubMed and CINAHL via EBSCOhost database. Subject terms (identified from relevant study titles and abstracts of articles) and free-text terms (identified from relevant study descriptions of articles) will be employed in the development of the preliminary search strategy. Step 2 will involve refining the second search terms which will be tailored to the various databases (PubMed, CINAHL via EBSCOhost, Web of Science and EMBASE) including Google Scholar (see online supplemental appendix 1 for search strategies). In step 3, the citation list of the selected studies for the scoping review will be screened for additional relevant studies. The search findings will be in the English language and will be compiled by AA and SS.

## Screening of studies

All the citations of the retrieved articles will be imported into Endnote X9 (V.1.19.6) reference manager for removal of duplicates, screening and storage. The titles and abstracts will be screened using the standard review process by reviewers. Full-text article screening will be done following title and abstract screening by two reviewers. After full-text screening, articles that will meet the inclusion criteria will be included in the data synthesis/analysis. Disagreements between the two independent reviewers on the full-text inclusion will be fully discussed and if not resolved a third review author will be consulted for further adjudication. We will provide a detailed written report giving reasons for the exclusion of articles from the final list of articles. Details of the selection process of the included and the excluded studies at various stages will be clearly shown in the PRISMA flow chart diagram for scoping reviews.

## Selection criteria

Our search will focus on studies that assessed barriers and/or facilitators of breast cancer screening uptake among women in SSA. We will focus on articles published in the English language because the reviewers do not have the capacity to review articles written in other languages. These inclusive approaches will allow for the examination of current evidence on factors that would indicate the best way to improve breast cancer screening among women in SSA.

### Inclusion criteria

This scoping review will include articles if they (1) involved women with no medical diagnosis of breast cancer as part of the study population, (2) assessed breast cancer screening (CBE/mammography) uptake among women, examining barriers and/or facilitators and were published between 2010 to 2021 and (3) were conducted in health facilities or service delivery in the community within SSA.

### Exclusion criteria

The exclusion criteria will include studies that (1) screened for other cancers among women, (2) involved women with breast cancer history/survivors, (3) did not clearly state their study population to be women without breast cancer, and (4) were conducted outside the SSA region.

## Types of studies included

This review will include all originally published articles in the form of quantitative, qualitative or mixed methods in nature. Quantitative studies will constitute non-experimental studies, including descriptive cross-sectional studies, observational studies and studies that use other quantitative methods. The qualitative studies will constitute focused group discussions, individual in-depth interviews and other forms of qualitative research designs that meet the criteria for qualitative studies. The mixed-methods studies will consist of qualitative and quantitative designs.

## Data charting

Summary tables will be developed by the reviewers to extract key information required from the included articles. Two reviewer authors will independently extract data from the included studies. The extracted data will include the name of the first author, year of publication, country of study, study design, study aim, participants and sample size, type of breast cancer screening, and key findings (focusing on barriers and facilitators of breast cancer screening). The reviewer authors will reconcile the extracted information to make sure that the information is consistent with the originally published studies. If any part of the included study designs or conclusions is unclear to the review authors, they will consult one another.

## Data synthesis and analysis

A convergent qualitative synthesis design will be employed, where results from qualitative, quantitative and mixed-method studies will be transformed into qualitative findings.[26] Researchers will adopt a higher level of thematic approach to synthesise the data emerging from the literature.[26] The summaries of the results will be thoroughly read and reread to gain meaning. Free line-by-line coding will be performed for each study to identify free

codes. Codes will be reviewed, and similar codes categorised to form descriptive themes. The descriptive themes will be assessed to generate meaning beyond the initial data leading to the development of new, interpretive analytical themes.

### Assessment of methodological quality

The Mixed Methods Appraisal Tool[27] will be used for appraising and evaluating the qualitative, quantitative and mixed-methods studies. Two reviewers will independently review the articles and assign the quality rating. Discrepancies regarding the quality assessment of the articles included will be discussed among all the authors to resolve disagreements and agree on. There exist controversies as to whether studies that are appraised as poor quality should be excluded, as exclusion may lead to the loss of potentially relevant findings and increase bias.[28 29] Consequently, the reviewers will not exclude any study if the study meets the inclusion criteria.

### Data presentation

This scoping review will present the charted data in tables that align with the purpose of the study. Descriptive numerical summaries of the quantitative data will be provided where possible (especially the study's characteristics and frequency counts for barriers and facilitators). Finally, these presentations will be accompanied by narrative explanations of important findings that explain how the findings address the review questions.

### Ethics and dissemination

Ethical approval for this protocol is not required since it does not involve collecting data from human participants. To the best of our knowledge, this review will be the first to systematically map current literature available concerning barriers and facilitators to breast cancer screening among women in SSA. Therefore, this scoping review will be of interest to international researchers, oncology nurses, public health professionals and policymakers across SSA. The findings of this review will be published in a peer-reviewed journal and will also be presented in conferences and workshops to clinicians and public health professionals.

## DISCUSSION

This review will systematically and comprehensively assess evidence on barriers and facilitators to breast cancer screening among women in SSA. The surge and high burden of breast cancer mortality in LMICs, especially in SSA are alarming.[2] Therefore, interventions to reduce the morbidity and mortality of breast cancer are required to ensure timely detection among asymptomatic women in the subregion. The significance of this review is to coalesce existing study findings on barriers and facilitators to breast cancer screening uptake to inform policy and aid to bridge the screening services in SSA. Though rigour is applied to this review protocol, likely limitations may eventuate due to resourcing considerations and the nature of the scoping review. First, this review will include only published articles in English which might exclude relevant evidence published in other languages. Second, authors may unintentionally omit relevant studies from this review, although extensive database and hand searches will be conducted. Nonetheless, this study will provide a comprehensive insight into the barriers and facilitators of breast cancer screening in SSA. The findings can also inform policy decision making to increase breast cancer screening within SSA countries. Publishing this scoping review protocol will help reduce the risk of bias by strengthening the clarity of the search strategy and reporting of the outcome.

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