**EAS Journal of Radiology and Imaging Technology**
*Abbreviated Key Title: EAS J Radiol Imaging Technol*
ISSN: 2663-1008 (Print) & ISSN: 2663-7340 (Online)
Published By East African Scholars Publisher, Kenya
Volume-6 | Issue-6 | Nov-Dec-2024 | DOI: https://doi.org/10.36349/easjrit.2024.v06i06.006

OPEN ACCESS

**Original Research Article**

# Factors Affecting Low Uptake of Mammography Utilization in a Sub-Saharan African Setting: A Mixed-Methods Study

Joshua Tambe[1, 2*], Yannick Onana[3], Vanessa Tongue[4], Ambroise Seme[5], Gregory Halle-Ekane[6], Emilienne Guegang[5], Pierre Ongolo-Zogo[5], Boniface Moifo[5], Odile F. Zeh[5]

[1]Division of Radiology, Faculty of Health Sciences, University of Buea, Buea, Cameroon
[2]Regional Hospitals Limbe & Buea, Cameroon
[3]Department of Biophysics, Radiology and Medical Imaging, University of Garoua, Cameroon
[4]Department of Clinical Sciences, University of Douala, Carrefour Ange Raphaël, Douala, Cameroon
[5]Department of Medical Imaging and Radiotherapy, The University of Yaoundé I, Cameroon
[6]Department of Obstetrics and Gynecology, University of Buea, Buea, Cameroon

**Article History**
Received: 18.03.2024
Accepted: 02.05.2024
Published: 30.12.2024

**Journal homepage:**
https://www.easpublisher.com

**Quick Response Code**

**Abstract:** Recent data confirms breast cancer to be the leading cancer amongst women in sub-Saharan Africa and the second cause of cancer-related deaths. Screening and early diagnosis are the main pillars in the management of breast cancer in resource-limited settings. This study explored mammography utilization and challenges in a peripheral referral hospital in Cameroon. To achieve this aim, a hospital-based sequential explanatory mixed-methods study was conducted. Quantitative data was extracted from the mammography registry over a five-year period, after which in-depth interviews were conducted for some clients randomly selected from the registry. A total of 392 clients had a mammogram during the study period and all were females. The median age was 47 years (range: 20 to 73 years). There were 126 screening mammograms (32.14%; 95% confidence interval: 27.54 – 37.02%). The fear of a diagnosis of breast cancer was reported to be an important factor in getting a mammogram, but also deterred some who did not consider themselves able to afford for care in the event of such a diagnosis. Other important factors associated with obtaining a mammogram were the death of a relative, friend, colleague or acquaintance attributed to breast cancer. Many respondents did not know about mammography and its availability in the local reference hospital. These findings indicate low levels of awareness and under-utilization of mammography. Campaigns to educate and raise public awareness about breast cancer screening may be important to improve mammography uptake and increase the proportion of screening studies.

**Keywords:** Mammography, utilization, mixed-methods, Cameroon.

**Copyright © 2024 The Author(s):** This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

## INTRODUCTION

The incidence of breast cancer is on the rise in sub-Saharan Africa (SSA) and affected women are relatively younger [1, 2]. Late presentation with advanced disease and a higher mortality remain a problem in SSA compared to high-income countries [3, 4]. Generally, screening mammography is highly recommended for average-risk populations between the ages of 40 and 74 years old, either annually or biannually [5]. The cut-off of 40 years old is reportedly selected as it is associated with the greatest mortality reduction (likely early stage disease), better surgical options and more effective chemotherapy [6]. With respect to the upper limit of 74 years old suggested by some, the American College of Radiology (ACR) and the Society of Breast Imaging posit that screening should be inclusive for all women at average risk without any upper age limit, except other health conditions that are severe enough to reduce life expectancy are present [6]. However, the United States Preventive Services Task Force in its draft recommendation of 2023 concluded that there was not sufficient evidence of benefits over harm in pursuing screening mammograms for women 75 years old and above [7].

In SSA countries, many hurdles persist with respect to the use of mammography. The first is the availability of this technology in health facilities. Available equipment are usually concentrated in the major cities, leaving peripheral regions void of this technology. Furthermore, even when available, the technology is often outdated such as screen-film mammography or substandard as with computerized

***Corresponding Author:** Joshua Tambe
Division of Radiology, Faculty of Health Sciences, University of Buea, Buea, Cameroon

digital technology. There is also the lack of regular quality control of equipment and no accreditation system for the equipment or the staff. In many SSA countries such as Cameroon, there is no nation-wide screening program for breast cancer, even though some stakeholders continuously promote this activity usually during specific periods such as the World Cancer Day or the month of October of every year.

To curb this tide, the government of Cameroon is improving the health landscape by providing more imaging equipment to peripheral referral public health facilities. This is through the creation of regional Medical Imaging Centers with mammography technology as part of the package. This move is intended to improve access to mammography so that breast cancer can be screened in persons at risk. It is therefore imperative to understand how this technology is used, even though research data from SSA suggests that the uptake of this technology is low [8-11]. This study aspired to assess mammography utilization and explanatory factors as proposed in the Andersen Behavioral Model [12] in a peripheral referral hospital in Cameroon.

## MATERIALS AND METHODS

A sequential explanatory mixed-methods study was conducted. This consisted of a hospital-based quantitative review of the mammography registry at Regional Hospital Limbe over a five-year period (from the 1st of January 2017 to the 31st of December 2021), followed by in-depth interviews of some randomly selected patients who had a mammogram during the review period. Regional Hospital Limbe is an intermediate-level referral hospital in the South-West Region of Cameroon, and the first in the region to be endowed with a modern radiology department (Medical Imaging Centre). Available technology at this department include ultrasonography, digital radiography and mammography, and multi-slice computed tomography.

During this study, data was extracted from the mammography registry over a period of five years. Extracted information included age, sex and clinical indication (dichotomously categorized into screening and diagnostic). For the diagnostic studies information provided on the symptoms were also recorded. For clients for whom telephone numbers were available in the registry, these numbers were randomly selected and called by a hospital staff working at the Imaging Center who was trained as a research assistant. The aim of the study was presented to the clients, who were later invited to participate in a phone interview at their convenience should they consent. Informed consent was verbal and all interviews were conducted by the principal investigator (JT) until saturation. Permission was obtained from the respondents to record the conversation, which was anonymous. Ethical clearance for this study was waived.

Data extraction was carried out using a standardized form and transcribed onto a Microsoft Excel® spreadsheet. The quantitative data was analyzed and graphically presented using Microsoft Excel®. Categorical data was summarized as counts and percentages with 95% confidence intervals where necessary, while continuous data (age) was summarily presented using the median and the range. Thematic analysis was used to analyze the qualitative data. Records of interviews were continuously reviewed so as to be familiar with the data. The data was later transcribed into written texts in English and coded manually. A theoretically-driven analytical approach was used to identify and categorize themes from the data.

## RESULTS

After reviewing of the registry and accounting for repeat studies, a total of 392 mammograms were identified for data extraction, and thirteen in-depth interviews were conducted. Figure 1 shows the study procedure.

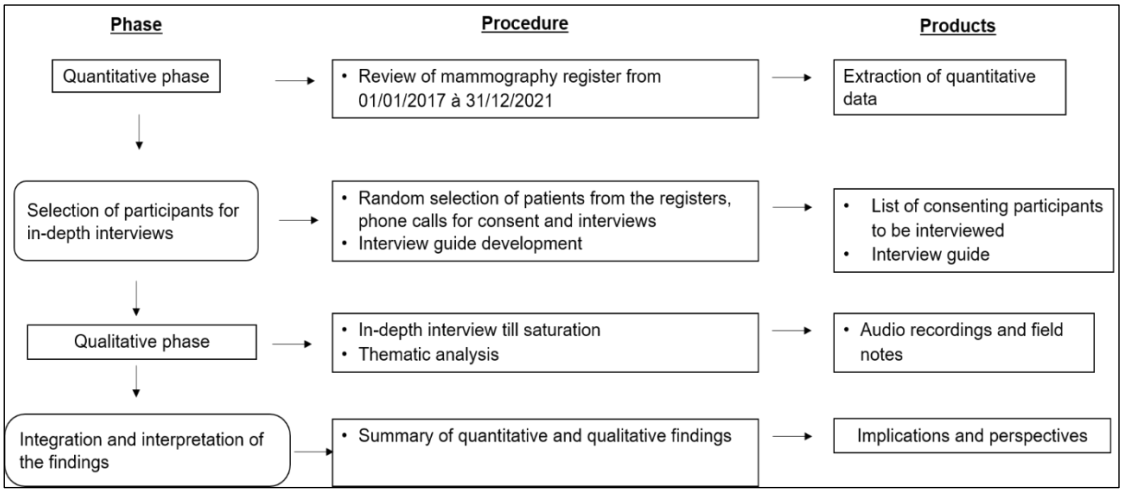


**Figure 1: Study procedure**

The median age of the clients was 47 years (range: 20 to 73) and all patients were female. Figure 2 shows the age distribution.

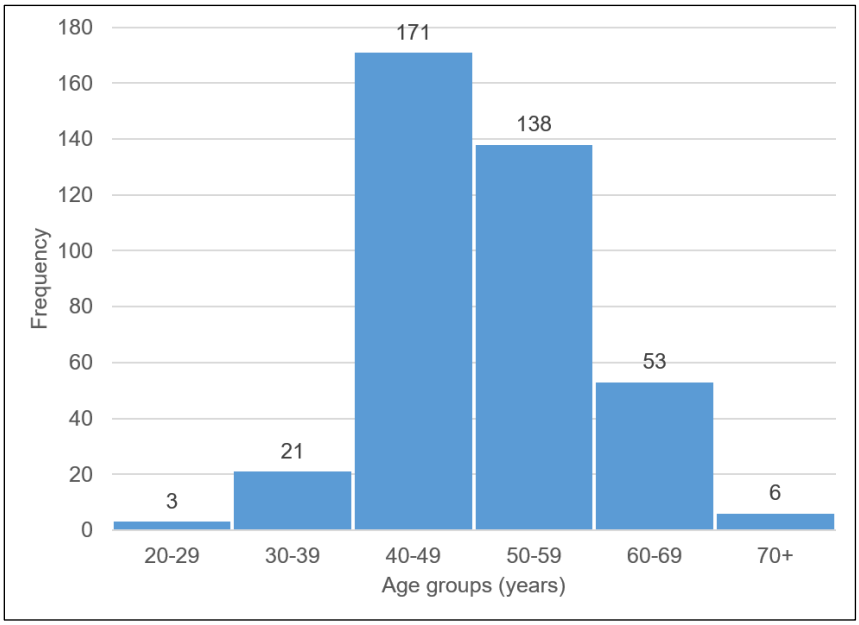


**Figure 2: Age distribution of the study population**

One hundred and twenty-six mammograms out of 392 were requested for the purposes of screening (32.14%; 95% CI: 27.54% - 37.02%), whilst 266 were diagnostic studies (67.86%; 95% CI: 62.98% - 72.46%). The symptoms for the diagnostic studies included breast pain or tenderness in 161 cases (60.52%), breast nodule, lump or mass in 72 cases (27.07%) and nipple discharge in 15 cases (5.64%). The symptoms were not reported in 18 cases.

*Predisposing factors for mammography utilization*

The fear of the breast symptoms being due to cancer was an important prompt to seek care. Some respondents admitted they came to the hospital to request proper checkup to rule out the possibility of a cancer as the source of the symptoms they were experiencing. The following excerpt from a respondent illustrates:

> *"My children are still young … if that is what it is [cancer] … they should please start the treatment immediately" P2*

For other respondents, going to the hospital and requesting for a breast cancer screening "test" was motivated by a recent breast cancer diagnosis or related death of a relative, friend, colleague or an acquaintance.

*Deterrent factors for mammography utilization*

A cancer diagnosis was the reason some respondents decided to stay away from the health facility. The scare of this diagnosis and perceived outcome irrespective of treatment (imminent death) was a deterrent for many. The following excerpts illustrate:

> *"If I am told that it is cancer, how will I cope? Where will I even begin?" P5*
>
> *"I don't have money … Even if the thing [cancer] was to be there it is better I should not even know" P1*

Some other reasons that deterred the use of this service was the pain during the procedure and the absence of an oncology care center within the region for the continuation of care in case of a cancer diagnosis. The following are excerpts:

> *"Doctor the machine is very painful … not sure I will ever want to do that test again" P7*
>
> *"We hear that if 'they' say it is a cancer, it is only in Douala or Yaoundé where one will have to go for treatment … I don't speak French and I don't have any family member there … So I never came back [to the hospital]" P11*

## DISCUSSION

The findings of this study indicate a small number of women have been able to use mammography in the study setting during the study period. The observed trend in recent years does not seem to have changed much with barely one to three mammograms being performed per week. About a third of all mammograms performed were for screening purposes and two-thirds being for diagnostic purposes in symptomatic women. There were triggers as well as deterrents to use mammography. Most of these hinged around knowledge, cultural beliefs and perceptions about mammography, and the lack of financial resources.

Breast cancer screening with mammography in women with average risk and above 40 years old has been shown to be able to identify disease at an early stage

when it is potentially curable [6, 13]. This has led to the adoption of this technique in many countries through nation-wide screening campaigns. Low-income countries nevertheless have a different reality as they grapple with insufficient technology and access barriers. In addition, limited knowledge is a problem as many are unaware of screening tools such as breast self-examination, clinical breast examination and mammography [14-16]. Furthermore, cultural beliefs and perceptions about breast cancer determine what services are used and how they are used [17]. The absence of financial risk protection for health care remains an important deterrent to the use of many health services for many [18]. Oncology services are costly and a comprehensive state-of-the-art cancer care will be financially burdensome for many families who have to make direct out-of-pocket payments. Prevailing poverty and economic hardship further compound this difficulty.

It is therefore obvious than any meaningful attempt to improve mammography utilization must seek to improve knowledge and awareness, counter negative cultural beliefs and perceptions, improve the quality of service delivery and financially protect service users from financial hardship.

**Declaration of conflict of interest:** The authors declare no competing interests.

**Acknowledgements**

The authors thank Mrs. Arabella Tambe, B.A., M.Ed., and *Education and Health for All Foundation* (EHAF) for editing services and proofreading

## REFERENCES

1. Anyigba, C. A., Awandare, G. A., & Paemka, L. (2021). Breast cancer in sub-Saharan Africa: The current state and uncertain future. *Experimental Biology and Medicine*, *246*(12), 1377-1387.
2. Lei, S., Zheng, R., Zhang, S., Wang, S., Chen, R., Sun, K., ... & Wei, W. (2021). Global patterns of breast cancer incidence and mortality: A population-based cancer registry data analysis from 2000 to 2020. *Cancer Communications*, *41*(11), 1183-1194.
3. Jedy-Agba, E., McCormack, V., Adebamowo, C., & dos-Santos-Silva, I. (2016). Stage at diagnosis of breast cancer in sub-Saharan Africa: a systematic review and meta-analysis. *The Lancet Global Health*, *4*(12), e923-e935.
4. McCormack, V., McKenzie, F., Foerster, M., Zietsman, A., Galukande, M., Adisa, C., ... & dos-Santos-Silva, I. (2020). Breast cancer survival and survival gap apportionment in sub-Saharan Africa (ABC-DO): a prospective cohort study. *The Lancet Global Health*, *8*(9), e1203-e1212.
5. Ren, W., Chen, M., Qiao, Y., & Zhao, F. (2022). Global guidelines for breast cancer screening: a systematic review. *The Breast*, *64*, 85-99.
6. Monticciolo, D. L., Malak, S. F., Friedewald, S. M., Eby, P. R., Newell, M. S., Moy, L., ... & Smetherman, D. (2021). Breast cancer screening recommendations inclusive of all women at average risk: update from the ACR and Society of Breast Imaging. *Journal of the American College of Radiology*, *18*(9), 1280-1288.
7. U.S. Preventive Services Task Force. Breast Cancer: Screening. https://www.uspreventiveservicestaskforce.org/uspstf/draft-recommendation/breast-cancer-screening-adults#fullrecommendationstart.
8. Magwesela, F. M., Msemakweli, D. O., & Fearon, D. (2023). Barriers and enablers of breast cancer screening among women in East Africa: a systematic review. *BMC Public Health*, *23*(1), 1915.
9. Ba, D. M., Ssentongo, P., Agbese, E., Yang, Y., Cisse, R., Diakite, B., ... & Maiga, M. (2020). Prevalence and determinants of breast cancer screening in four sub-Saharan African countries: a population-based study. *BMJ open*, *10*(10), e039464.
10. Black, E., & Richmond, R. (2019). Improving early detection of breast cancer in sub-Saharan Africa: why mammography may not be the way forward. *Globalization and health*, *15*, 1-11.
11. Nja, G. M. E., Okaliwe, G., Ibor, G. O., Ogunkola, I. O., Okoroiwu, H. U., Ejemot-Nwadiaro, R. I., & Lucero-Prisno III, D. E. (2022). Socio-demographic determinants of mammography uptake among women of 40 years and above in Calabar, South-South, Nigeria: a cross-sectional study. *Pan African Medical Journal*, *43*(1).
12. Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: does it matter?. *Journal of health and social behavior*, 36, 1-10.
13. Joko-Fru, W. Y., Jedy-Agba, E., Korir, A., Ogunbiyi, O., Dzamalala, C. P., Chokunonga, E., ... & Parkin, D. M. (2020). The evolving epidemic of breast cancer in sub-Saharan Africa: Results from the African Cancer Registry Network. *International journal of cancer*, *147*(8), 2131-2141.
14. Halmata, M., Simo, R. T., Kembaou, G. N., Baiguerel, E. M., Ndopwang, L. C., Kamdje, A. H. N., ... & Nukenine, E. N. (2021). Breast cancer awareness and screening practice amongst health personnel and general population of the littoral region of Cameroon. *Heliyon*, *7*(7), e07534.
15. Nguefack, C. T., N'djeudjui, C., Engbang, J. P. N., Nana, T. N., Ekane, G. H., & Tebeu, P. M. (2018). Knowledge, attitude, and practice on breast cancer among health professionals in Douala references hospitals, Cameroon. *Journal of Cancer Education*, *33*, 457-462.
16. Tagne Simo, R., Baiguerel, E. M., Nwabo Kamdje, A. H., Seke Etet, P. F., Ahmadou, M., Nangue, C., & Telefo, P. B. (2021). Awareness of breast cancer screening among the medical and general population of the North Region of Cameroon. *International Journal of Breast Cancer*, *2021*, 1-7.

17. Batcha, J. A. (2019). *Assessing Breast Cancer Screening Among Cameroonian Women in the United States of America* (Doctoral dissertation, Walden University).
18. Tambe, J., Mbuagbaw, L., Ongolo-Zogo, P., Nguefack-Tsague, G., Edjua, A., Mbome-Njie, V., & Ze Minkande, J. (2020). Assessing and coping with the financial burden of computed tomography utilization in Limbe, Cameroon: a sequential explanatory mixed-methods study. *BMC Health Services Research*, *20*, 1-13.

**Cite This Article:** Joshua Tambe, Yannick Onana, Vanessa Tongue, Ambroise Seme, Gregory Halle-Ekane, Emilienne Guegang, Pierre Ongolo-Zogo, Boniface Moifo, Odile F. Zeh (2024). Factors Affecting Low Uptake of Mammography Utilization in a Sub-Saharan African Setting: A Mixed-Methods Study. *EAS J Radiol Imaging Technol*, *6*(6), 134-138.