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Breast-cancer training for primary care providers; a step towards establishing breast centres in eastern Uganda

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Abstract: Introduction: One of every two Ugandan women diagnosed with breast cancer (BC) will survive past 5 years, mostly due to late stage at diagnosis. Despite ongoing efforts to implement Uganda's National Cancer Control Plan (NCCP), BC specialists, infrastructure and diagnostic equipment remain scarce. However, Primary care providers (PCPs) are a critical link between the community and healthcare system. Eastern Uganda has only 19% of all health facilities in Uganda, with 3 regional referral hospitals, and 37 general hospitals. **Objective:** We evaluated the impact of BC training for PCPs in eastern Uganda. **Methods:** A cross-sectional survey was conducted among 25 PCPs attending a BC training workshop organized by the Uganda Cancer Institute (UCI). Participants were purposively selected to constitute BC teams of; general surgeon, medical officer/clinical officer, radiographer, nurse and a cytotechnologist/laboratory technician. The course content was adapted from the "Handbook for the management of breast cancer in a general hospital" and delivered in 12 modules. A Likert score was used evaluate each training session in terms of information delivered, format of delivery, time management, content, and applicability. **Results:** The majority (18, 72%) PCPs were female, age group 35 – 44 years, and had a bachelor's degree and higher (n= 15, 60%). Nearly one-third were medical officers, and 80% PCPs reported at least 5 years of working experience. At three months, two hospitals were providing BC services constituting breast centres. Collectively, PCPs provided health education and early detection services to 1,265 Uganda women, through 15 community BC outreaches in the eastern region of Uganda. Also, PCPs attended 4 of the 12 BC multidisciplinary team meetings. Overall, nearly 70% strongly agreed with all the five dimensions regarding the overall evaluation of the training, with the highest score on module for staging and treatment decisions. **Conclusions:** Primary care

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providers play a key role in breast cancer control through improving early detection, initial surgical management, timely referral and supporting post-treatment care and survivorship.

Keywords: Capacity building, Breast cancer, regional clinics, Eastern Uganda.

1. Introduction

In 2020, there were 2.3 million, and 685,000 deaths from breast cancer (BC) globally [1,2], making BC the second leading cause of cancer worldwide, and the most frequent cause of cancer in sub-Saharan Africa (SSA) [3]. Approximately 2,630 new cases, and 1,330 deaths from BC occur annually in Uganda [4]. One of every two Ugandan women diagnosed with BC will survive past 5 years [5], mostly due to late stage at diagnosis [6].

Despite ongoing efforts to implement Uganda's National Cancer Control Plan (NCCP), BC specialists, infrastructure and diagnostic equipment remain scarce [6]. However, Primary care providers (PCPs) are a critical link between the community and healthcare system [7,8]. PCPs are envisaged to bridge existing gaps thereby nurturing the establishment on breast centres [9].

A breast centre is a unit within a regional/district hospital, that provides health education, screening, early detection, BC diagnostic workup, initial treatment, genetic counselling, health education, supportive and palliative care [9]. Eastern Uganda has only 19% of all health facilities in Uganda, with 3 regional referral hospitals, and 37 general hospitals. We evaluated the impact of BC training for PCPs in eastern Uganda.

2. Methods

2.1. Design

A cross-sectional survey was conducted among PCPs attending a BC training workshop organized under the Improving Breast Cancer Care Coordination (IBCCC) project, a quality improvement initiative of the Uganda Cancer Institute (UCI).

2.2. Setting

Uganda Cancer Institute is a national cancer referral and treatment center, providing comprehensive cancer care including screening, early detection and prevention, surgery, chemotherapy, radiotherapy, supportive and palliative care.

Five hospitals in eastern Uganda namely; Mbale regional referral hospital, Tororo general hospital, Kamuli general hospital, Soroti regional referral hospital and Jinja regional referral hospital (Figure 1) participated in this training workshop.

With regard to BC care, regional referral hospitals (RRH) provide a wider scope of services such as surgery, inpatient care, pathology, and imaging [10], and provide a reference point for general hospitals.

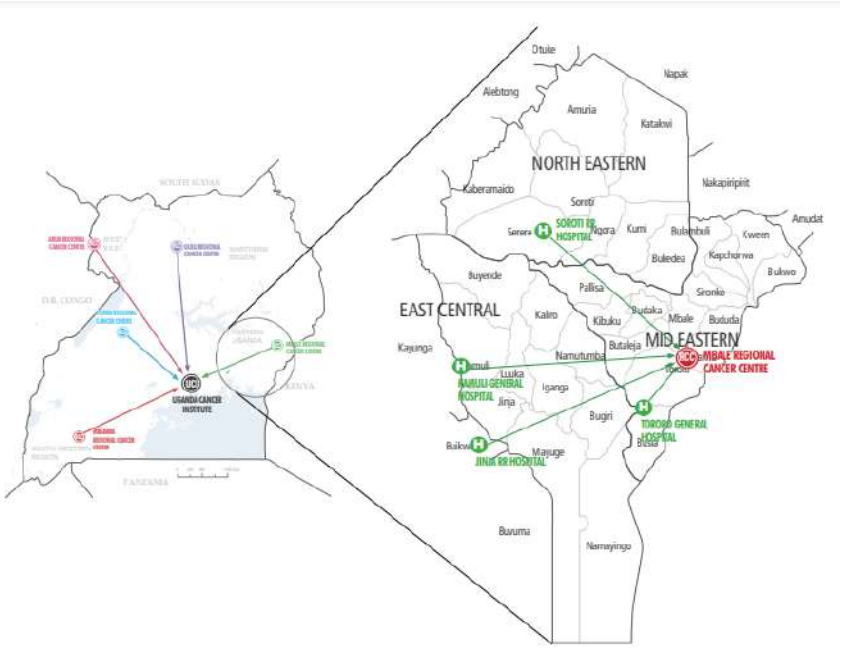

Figure 1. Network of participating hospitals in Eastern Uganda

2.3. Participants

Twenty-five (25) participants were purposively selected from five participating hospitals to constitute breast care team with cadres including; general surgeon, medical officer/clinical officer, radiographer, nurse and a cytotechnologist/laboratory technician.

2.4. Training format and content

The format of delivery was: didactic lectures, group assignments, and clinical attachments to shadow experts in breast clinic, radiotherapy, pathology laboratory, imaging department, tumour board, navigation unit, and chemotherapy clinic.

2.5. Training content

The course content was delivered in modules adapted from the "Handbook for the management of breast cancer in a general hospital" [11] as follows (Figure 2);

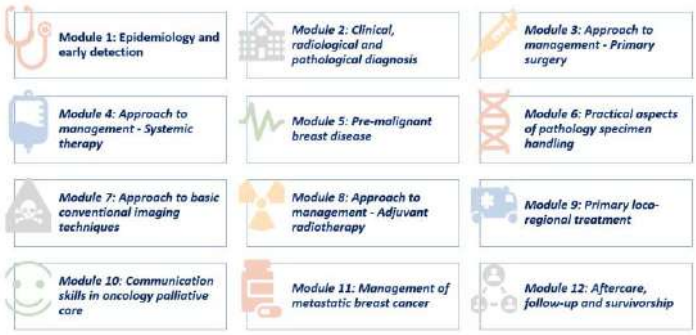

Figure 2. Training content

2.6. Assessments

Participants evaluated and scored each training session in terms of information delivered, format of delivery, time management, content, and applicability using a Likert rating scale, reflected as follows: Score of 0 – 2 : strongly disagree; score 3 – 4 : disagree; score 5 – 6 : neutral; score 7 – 8 : agree; and score 9 – 10 : strongly agree.

2.7. Data management and analysis

A pre-tested evaluation form was completed by participants after every module. The data was entered, cleaned and analysed using REDCap®. Quantitative data were presented as numbers, proportions, median and averages.

2.8. Ethics considerations

Ethics approval to conduct this study was obtained from the Uganda Cancer Institute Research and Ethics Committee (UCIREC) [Reference number: UCI-2021-21].

3. Results

Twenty-five (25) primary care providers from five districts in eastern Uganda underwent a 1-week training in breast cancer early detection and management. The majority (18, 72%) participants were female, and the peak age group was 35 – 44 years representing 40%. At least two-thirds (n= 15, 60%) participants had a bachelor's degree and higher, with 4 (16%) surgical specialists. The majority (28%) were medical officers, followed by equal numbers of laboratory technicians, radiographers, and nurses at 5 each (20%), and only 3 (12%) were surgeons (Table 1).

Table 1. Social demographic characteristics of the workshop participants

Variable	Categories	Frequency	Percentage (%)
Sex	Males	7	28
	Females	18	72
Age groups (years)	<24	0	0
	25-34	8	32
	35-44	10	40
	45-54	5	20
	55-64	2	8

	>65	0	0
Marital status	Single	6	24
	Married	18	72
	Separated	1	4
Education level	Certificate	1	4
	Diploma	9	36
	Degree	11	44
	Masters	4	16
Occupation	Laboratory technician	5	20
	Radiographer	5	20
	Medical officer	7	28
	Nurse	5	20
	Surgeon	3	12

Twenty (80%) participants reported at least 5 years of working experience, with half of them reporting more than 10 years of clinical experience (Figure 3).

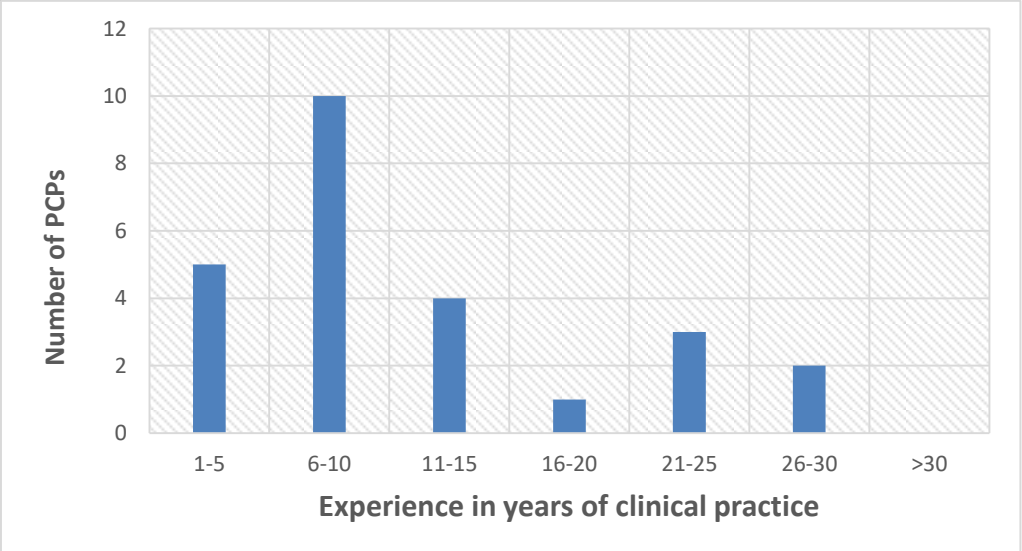

Figure 3. Years of clinical practice

Breast centres.

At 3 months post training, two out of five hospitals registered significant progress towards establishment of breast centres. Jinja, and Mbale RRHs reported meeting critical elements for breast centres such as personnel, dedicated space for consultation, provision of a spectrum of services including: health awareness talks on breast cancer, clinical breast examination, biopsy and cytology services, initial patient evaluation, coordination of breast cancer referrals, and follow-up of breast cancer survivors.

Breast cancer outreaches and educations talks.

At 3 months post training, 15 outreaches were conducted in eastern Uganda, targeting 1,265 women from five districts.

Multi-disciplinary approach and apprenticeship.

At 3 months post training, trainees attended 4 of the 12-breast cancer multidisciplinary team meetings via telemedicine, providing apprenticeship, and opportunity to discuss clinical cases they encounter.

Evaluation.

Overall, nearly 70% strongly agreed with all the five dimensions regarding the overall evaluation of the workshop (Figure 4). A similar trend was observed in the scores for four modules on early detection and diagnosis (Figure 5); and four modules on BC treatment and palliative care (Figure 6), with the highest score on module for staging and treatment decisions.

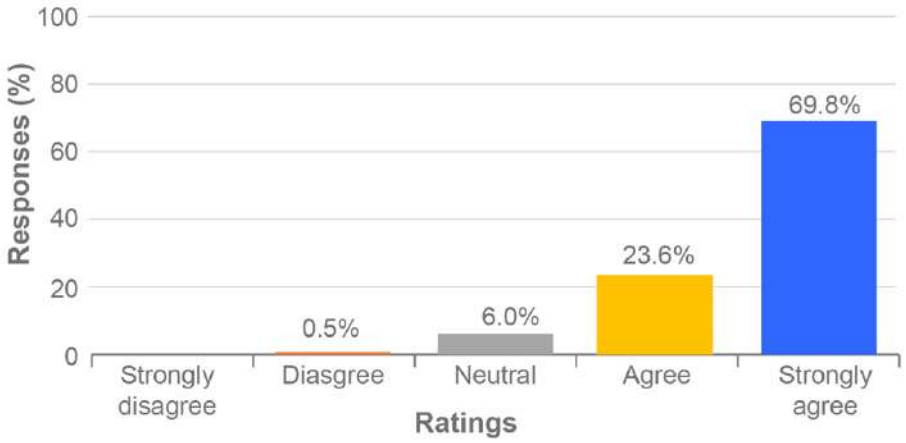

Figure 4. Overall evaluation of the training

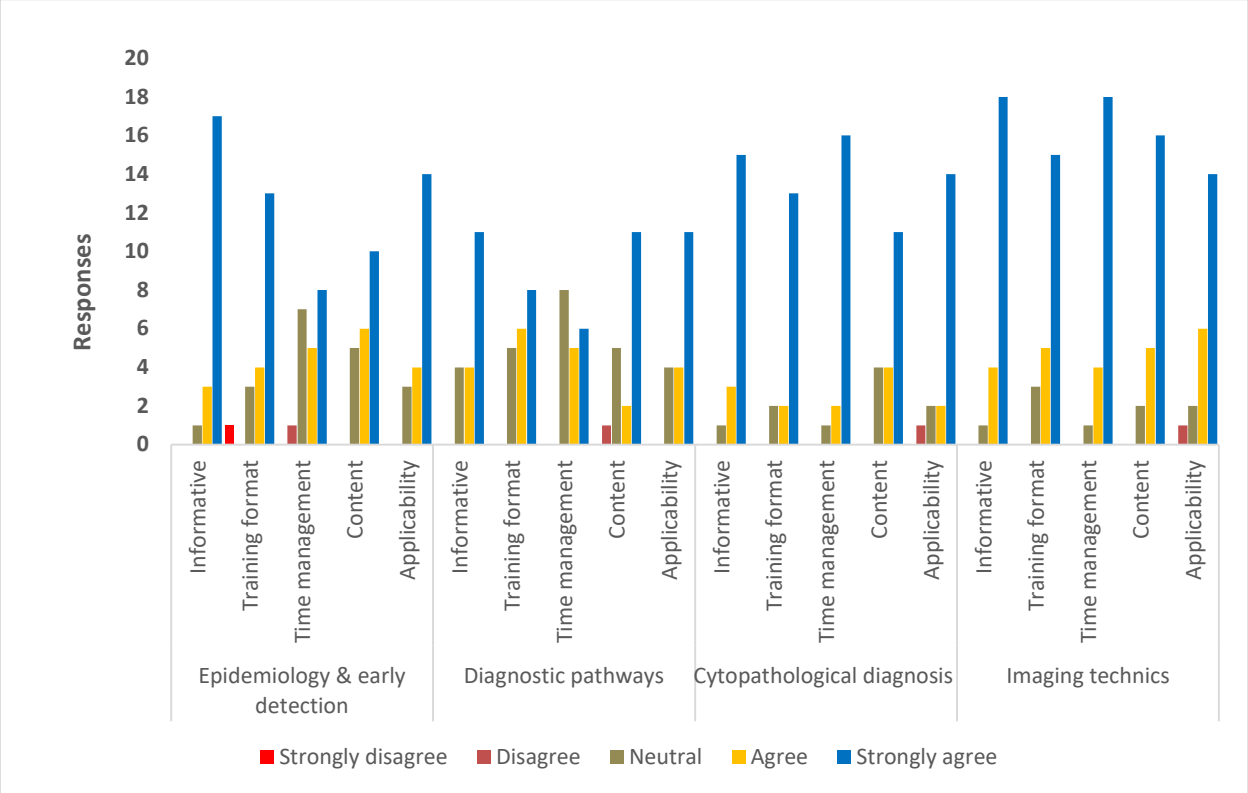

Figure 5. Evaluation of modules on BC early detection and diagnosis

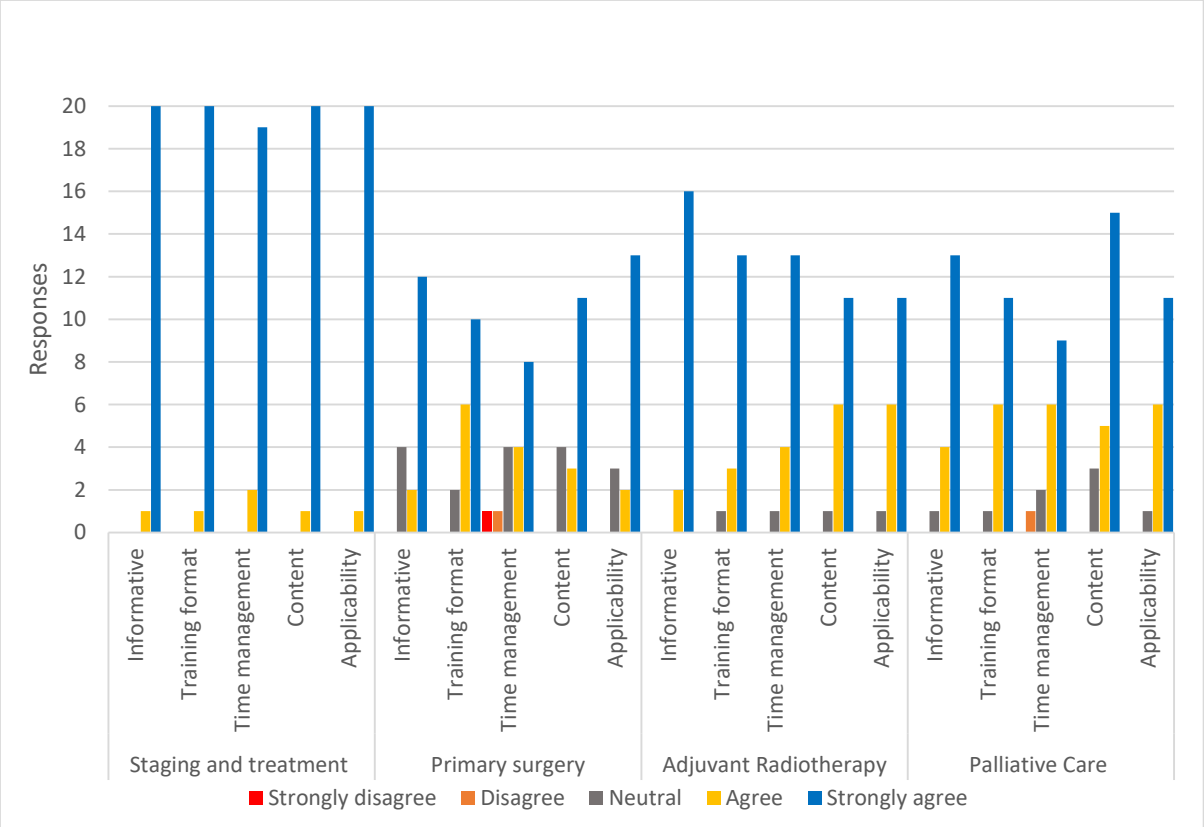

Figure 6. Evaluation of modules on BC treatment and palliative care

4. Discussion

PCPs training in BC had a significant impact on breast health services in eastern Uganda, bringing BC services closer to the community. At three months, two hospitals were providing BC services constituting breast centres. Collectively, PCPs provided health education and early detection services to 1,265 Uganda women, through 15 community BC outreaches in the eastern region of Uganda. Building capacity for PCPs to deliver a range of BC services in the community is cost-effective and leverages existing human resource and infrastructure contributing to unmet needs for BC control [6,12–15].

Breast health specialists remain scarce in most parts of SSA. In a survey by Scheel at al (2021) assessing diagnostic capacity for early breast cancer diagnosis in Uganda, there were only 47 radiologists, and 18 pathologists, largely concentrated in the capital, Kampala [6]. In some centers in SSA, task shifting has been identified as a viable solution to addressing shortage of specialized manpower [16]. PCPs are willing to participate in provision of BC services at the community [13]. Health education is a key strength of PCPs. Several studies also show a positive impact of training on patient referral pattern [17,18]. In this study, we did not investigate on referral pattern after training.

One-week training in BC had a significant impact, with practical results at 3 months post training. This is consistent with findings on impact of short training in other parts of SSA like Kenya [7], and Eswatini [18]. Strengthening primary care providers (PCPs) role in breast cancer diagnosis, early treatment, and post-treatment follow up; provides an opportunity to mitigate human resource shortage for breast cancer management in SSA. BC trainings were associated with significant down-staging [19], improved referral pattern [18] and higher patient satisfaction [14].

BC staging and treatment decisions was most impactful training session to PCPs. PCPs at regional referral hospitals and general hospitals are expected to provide health education and an opportunity for Clinical Breast Examination (CBE) [20]. Diagnostic infrastructure varies significantly between facilities at same level [21]. Also, in a survey among nurses, the majority (97.4%) claimed that clinical breast examination (CBE) is a useful tool to detect BC .

This study had some limitations. First, a post-test was not given to assess the impact on knowledge levels after the training; secondly, there the follow-up period was limited to three months, and lastly, trainees in general hospitals often relocated to other hospitals, affecting implementation of knowledge from the training.

Several training models for PCPs have been employed, however there is paucity of data on capacity building through breast cancer multidisciplinary tumour board meetings. This training has a prospective component through apprenticeship via telemedicine.

Improved access to BC care is achievable and sustainable through setting up breast centers, ideally at major regional referral hospitals. Even at the general hospitals, effective early detection programs can be supported through ensuring timely referral of BC cases.

5. Conclusion

Primary care providers play a key role in breast cancer control through improving early detection, initial surgical management, timely referral and supporting post-treatment care and survivorship.

Besides capacity building through training workshops, primary health care providers require dedicated clinic space/infrastructure, with minimum equipment and health information systems to deliver breast cancer services at regional hospitals

Training PCPs generated significant impact on improvement of breast cancer care coordination in eastern Uganda.

Competing interest.

Authors declare no competing interest.

Authors' contributions.

Conception and design: SK, JA, CJM; Administrative support: SK, JA, CJM; Provision of study materials: SK, JO; Collection and assembly of data: SK, JA, JL; Data analysis and interpretation: SK, JA; Manuscript writing: All authors; Final approval of manuscript: All authors; Accountable for all aspects of the work: All authors

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