

Original Article

Clinical Profiles, Diagnosis and Treatment for Breast Cancer Patients in Hawassa Comprehensive Specialized and Teaching Hospital in Southern Ethiopia: Descriptive Analysis

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Abstract

Background: Breast cancer is the most commonly diagnosed cancer in Africa, including Ethiopia, leading to morbidity and death. Clinical profile and tumor characteristics of patients are essential for proper case management and timely referral linkage. This study aimed to describe the clinical profiles, diagnosis and treatments provided to breast cancer patients treated at Hawassa Comprehensive Specialized and Teaching Hospital (HCSTH) from 2013 to 2017 in Southern Ethiopia.

Methods: The medical records of 210 breast cancer patients were reviewed retrospectively in March 2018 in HCSTH. Data on stage at diagnosis, sociodemographic, and tumor characteristics were collected from patient medical charts using a data extraction checklist. Descriptive analysis was performed using Statistical Package for Social Sciences (SPSS) version 23.

Results: One hundred seventy-four (82.9%) patients presented with advanced-stage breast cancer (Stage III n=126 (60%), Stage IV n=48 (22.9%)). Invasive ductal carcinoma was present in 192 (91.4%) patients. Almost all (207; 98.6%) of the patients presented with a breast “lump.” A total of 137 (65.2%) patients had a tumor size greater than 5cm. The number of breast cancer cases increased linearly over the study period from 28 in 2013 to 70 in 2017. Over 94.8% of patients were treated with surgery, only 12.5% of patients received hormonal therapy, and only 0.5% of the patients received radiotherapy service through referral.

Conclusion: The rising incidence of breast cancer cases highlights the growing demand for services at this tertiary healthcare facility. A significant proportion of patients, exceeding 80%, are diagnosed with advanced-stage disease upon presentation, indicating a need to address delays in diagnosis and barriers to timely treatment. It is imperative to focus on downstaging the disease through early detection programs and establishing rapid diagnostic unit as part of interventions aligned with the objectives of the World Health Organization Global Breast Cancer Initiatives. [*Ethiop. J. Health Dev.* 2023; 37(3): 00-00]

Keywords: Breast Cancer; Stage, Surgery, Access, Hospital, Ethiopia

Introduction

Breast cancer is the second most common and the leading cause of death from any cancer in women globally. The burden is projected to increase to 2.74 million new cases and 857 000 deaths annually by 2030, with a greater relative impact on countries with the most limited resources (1-3). In Africa, breast cancer is the most commonly diagnosed cancer among women, with the highest rates being recorded in sub-Saharan Africa. Although many cases are under-detected and under-reported, the rate of patients presenting with breast cancer is now increasing in health facilities (3, 4). In Zimbabwe, the incidence rates of breast cancer have shown significant increases (4.9% annually) from 1991–2010 (5).

In Ethiopia, breast cancer is the most common cancer in the country as of 2018, accounting for 33% of all cancers in women and 23% of all cancers identified from the population-based cancer registry. The

estimated age-standardized incidence rate of breast cancer is 43 cases per 100 000 women. It is also reported as the most common cancer in four of the six Ethiopian regions(6). Studies conducted at Tikur Anbesa Specialized Hospital (1997-2012) and Northern Ethiopia also show an increasing number of breast cancer cases in health facilities in the country (7, 8). Studies on tumor phenotype have shown that approximately 2/3 of breast cancer cases are hormone receptor-positive in Ethiopia (9).

The following African studies showed that most patients with breast cancer have advanced-stage presentations. In Tanzania, 90.7% of patients were presented in late stage (10). Similarly, in Libya (65.5%) (11), Zimbabwe (72.6%)(12), Rwanda (76%)(13), and Nigeria (67.7%)(14), breast cancer patients were diagnosed at the late stage disease.

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Most breast cancer patients in Africa were young at presentation. In Ghana, almost all cases of breast cancer presented at the median age of 49 years with breast lump and a mean age of 43.4 years presentation in Tanzania(10, 15). The most common type of breast tumor reported by several studies was ductal carcinoma, which accounts for the majority of cases in Tanzania (85.5%), Northern Ethiopia (74%), and (72.90%) in Ghana (8, 10, 15).

In high-income countries, breast cancer is often diagnosed at an early stage, and the prognosis is good. Most patients in low and middle-income countries, however, are diagnosed at a later stage, and their survival is unfortunate(16-19). Rural populations in sub-Saharan African countries have been shown to be at particular risk for delayed presentation and late-stage diagnosis, 74.5% of patients from this population with late-stage disease. Engagement with early detection practices is also low in resource-limited areas (20-22). Low health literacy, lower education level, no formal employment, lower income, rural residence, fear of treatment, and traditional and spiritual beliefs have been identified as barriers to breast cancer early diagnosis in low and middle-income countries (22, 23).

In Ethiopia, currently, one centralized, comprehensive cancer center exists, Tikur Anbesa Specialized Hospital (TASH), in the capital city of Addis Ababa, to treat a population of 107 million people with one cobalt radiation machine. One population-based cancer registry is available for the country, with data representing the population from the capital city of Addis Ababa. In 2016, Ethiopia launched a National Cancer Control Plan, which includes screening and early detection programs and comprehensive plans for building capacity in 5 new oncology centers throughout the country(24). A number of challenges exist today, including (but not limited to) a lack of health care providers, lack of facilities for diagnosis and treatment services, shortages in medications and essential supplies, and challenges with implementing strategies and policies (24). Importantly, the capacity to determine hormone receptor status is extremely limited. Within this context, this study on breast cancer patients in Hawassa Comprehensive Specialized and Teaching Hospital (HCSTH) is particularly timely because the hospital will soon expand its capacity and will also have a radiation therapy machine. Here we report the patient clinical characteristics, diagnosis, and treatment of 210 breast cancer patients treated in Hawassa Specialized Breast Oncology Unit from 2013-2017.

Methods

Study Setting and Period

The study was conducted at the Breast Cancer Chemotherapy Care Unit (BCCCU) of HCSTH. The HCSTH is a tertiary hospital of 300 beds in the Southern region of Ethiopia, located 273 km South of Addis Ababa. The hospital has been serving 15 million people in the Southern part of the population. As a major academic teaching hospital, the campus has a medical and nursing school and trains a variety of professionals in health sciences. By design, the

BCCCU operates as a specialized unit that is fully integrated within the HCSTH structure to remain funded and sustainable. It has six hospital beds, a consultation area, a work room for staff, and a ventilation hood for mixing chemotherapy. Breast cancer patients received comprehensive care except for radiation. Currently, there is one Oncologist and more than 8 Oncology Nurses in the hospital.

Study Design and Population

In March 2018, a retrospective examination of medical records was performed. The study focused on individuals diagnosed with breast cancer between January 1, 2013, and December 31, 2017. Inclusion criteria encompassed patients with authenticated diagnoses of breast cancer through Pathology, Fine Needle Aspiration Cytology, or Biopsy, and those with well-defined staging details in their medical records. Patients with incomplete or missing medical documentation were excluded from the review.

Sampling technique and Data collection tools

All the available medical records of breast cancer patients were reviewed based on the inclusion criteria at the oncology unit. Medical records of patients who did not have clear stage information were excluded from the analysis. Information on sociodemographic characteristics, stage at diagnosis, and tumor characteristics was retrieved using a data extraction checklist from the patient's medical records. Two trained oncology nurses were recruited to extract data from medical records.

The American Joint Committee on Cancer staging system AJCC (7th edition) was used to determine the stage of cancer (25). We defined patients diagnosed with breast cancer stage III and IV as "late stage" and those diagnosed with breast cancer stage I and II as "early stage"(10, 14).

A total of 223 breast cancer patients were diagnosed and registered from January 1 2013, to December 31, 2017, in the hospital. Among these, 13 medical records were excluded from the final analysis since 8 patient records did not have clear stage information, and 5 medical records were absent for review. The records from 210 patients were reviewed and included in the final analysis.

Data Analysis Procedures

For this study, a descriptive analysis was performed using relative frequency, proportion, and other summary measures. The data were entered in Epi-info version 7.2, and Statistical Package for Social Sciences (SPSS) version 23 was used to analyze the data.

Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Thus, the study was approved by the Research Ethics Committee of the School of Public Health and the College of Health Science Institutional Review Board

of Addis Ababa University. Per-protocol permission and agreements were also obtained from HCSTH prior to the study per approved ethical standards. The information from the patient's medical records was kept confidential to protect privacy.

Results

Socio Demographic Characteristics

The mean age of patients at diagnosis was 41.40 ± 11.62 years, with a range of 21 to 88 years. Nearly three-fourths, 156 (74.3%), of breast cancer patients were below 50 years old. A total of 198 (94.3%) of patients were female, with male to female ratio of 1:17. More than half, 122 (58.1%) of patients, were from rural residences. Half, 105 (50%), were premenopausal women (Table 1).

Table 1. Sociodemographic characteristics of breast cancer patients diagnosed from 2013 to 2017 at Hawassa Specialized Hospital, Southern Ethiopia

Characteristics	Frequency	Percentage
Age group(n=210)		
<30	26	12.4
30-39	72	34.3
40-49	58	27.6
50-59	35	16.7
60+	19	9.0
Mean(SD)	41.40 ± 11.62 years	
Sex (n=210)		
Male	12	5.7
Female	198	94.3
Home residence (n=210)		
Rural	122	58.1
Urban	88	41.9
Menopausal status (n=185)		
Pre-Menopausal	105	56.8
Menopausal	43	23.2
Post-Menopausal	37	20.0
HIV status (n=173)		
Negative	166	96.0
Positive	7	4.0
Current pregnancy status (n=168)		
Not pregnant	158	94.0
Pregnant	10	6.0
History of alcohol (n=155)		
Yes	3	1.9
No	152	98.1
Family history of breast cancer(n=165)		
Yes	26	15.8
No	139	84.2
History of any comorbidities (n=210)		
Yes	73	34.8
No	137	65.2
Use of traditional treatment (n=148)		
Yes	78	52.7
No	70	47.3
Presenting chief complaint		
Breast lump or mass	207	98.6
Swelling or lump in the armpit	68	32.4
Painful wound	68	32.4
Other*	4	1.9

NB. Other=nipple retraction, nipple discharge, skin color change*

Clinical Characteristics

In the review of 210 cases, a family history of breast cancer was found in 26 (15.8%). HIV status was determined for 173 (82.4%) patients, and 4% were positive for the disease. Seventy-three patients (34.8%) had a history of any of the comorbidities (Tuberculosis, Asthma, Hypertension, and any other cardiac disease). Most breast cancer patients (98.6%) presented with a breast "lump." We found that 67 (31.9%) patients were not suspected of having breast cancer at their initial

visit. The majority, 192 (92.9%), presented with axillary lymphadenopathy (Table 1).

Diagnostic Profiles

Most patients, 174 (82.9%), presented with late-stage disease: 126 (60%) with stage III, 48 (22.9%) with Stage IV. Thirty-six patients presented with early-stage disease (Figure 1). The annual total volume of breast cancer cases increased over the five-years (Figure 2).

The majority of patients came from rural areas, 122 (58.1%). Nearly all rural patients were diagnosed with late-stage disease (114 of 122, or 93.4%). By contrast,

31.8% of urban patients were diagnosed with early-stage disease (28 of 88) (Figure 3).

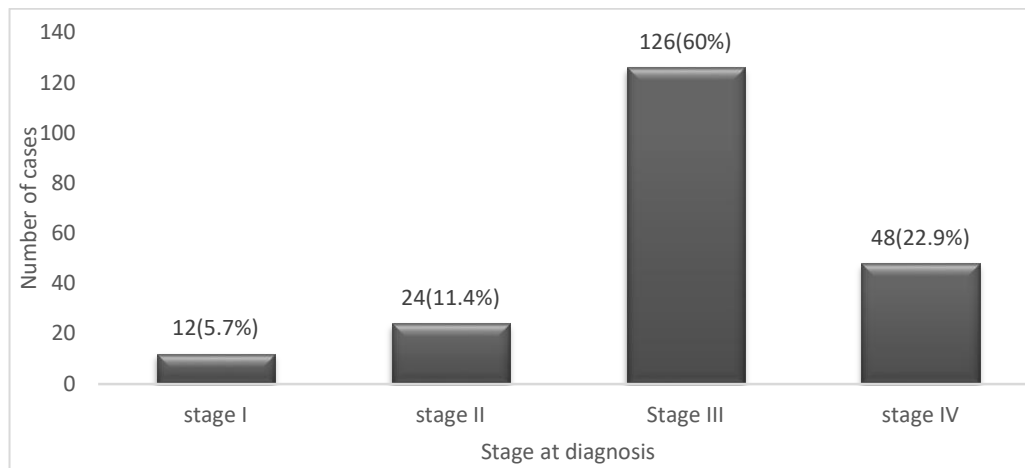


Figure 1. Stage diagnosis of breast cancer patients diagnosed at Hawassa Specialized Hospital, Southern Ethiopia, from 2013-2017.

We found 137 (65.2%) had a tumor size greater than 5cm with a median tumor size of 7 cm. Invasive ductal carcinoma was found in 192 (91.4%), while 13 (6.2%) had lobular carcinoma. Tumor grade was determined

for 115 (54.8%), and of these, 46 (21.9%) had poorly differentiated invasive carcinoma (grade III tumor), and 54 (25.7%) had moderately differentiated invasive carcinoma (grade II tumor) (Table 2).

Table 2: Tumor characteristics and treatment provided to breast cancer patients diagnosed from 2013- 2017 at Hawassa Specialized Hospital, Southern Ethiopia

Characteristics	Frequency (n=210)	Percentage
Site of tumor		
Right breast	95	45.2
Left breast	105	50.0
Bilateral	10	4.8
Axillary lymph node status		
Positive	195	92.9
Negative	15	7.1
Tumor metastases to other body parts		
Yes	48	22.9
No	162	77.1
Type of tumor		
Ductal	192	91.4
Lobular	13	6.2
Other *	5	2.4
Tumor size in cm		
≤5cm	73	34.8
>5cm	137	65.2
Median ±IQR	7.1±3.56cm	
Tumor grade (n=115)		
Grade I	15	7.1
Grade II	54	25.7
Grade III	46	21.9
Patient had taken any treatment.		
Yes	207	98.6
No	3	1.4
Type of treatment the patient had taken		
Surgery	199	94.8
Chemotherapy	180	85.7
Hormonal therapy	27	12.9
Radiotherapy	1	0.5
Patient status with last follow-up data (n=210)		
Known Alive	141	67.1
Known Dead	3	1.4

Unknown

66

31.5

NB. Other* = mixed tumors and inflammatory carcinomas, IQR= Interquartile range, Patient status was taken from the last visit record.

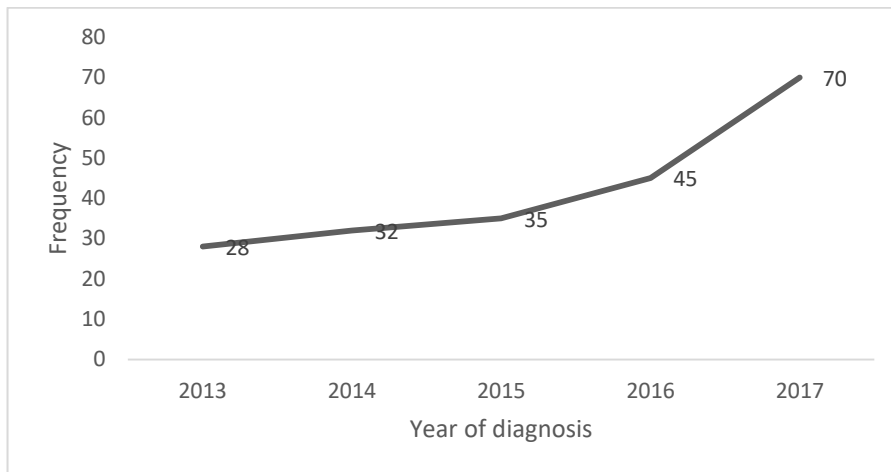


Figure 2. Number of breast cancer cases diagnosed at Hawassa Specialized Hospital, Southern Ethiopia, from 2013 -2017.

Treatment Provided

During the period spanning 2013 to 2017, a significant proportion of patients underwent surgical treatment (94.8%), received chemotherapy (85.7%), and were administered hormonal therapy (12.5%) for their ailment. Surprisingly, a mere 0.5% of individuals

diagnosed with breast cancer underwent radiotherapy. Follow-up data pertaining to the current health status of patients was accessible for 144 individuals (68.6%), with the majority reported to be alive based on the most recent hospital visit record (Table 2).

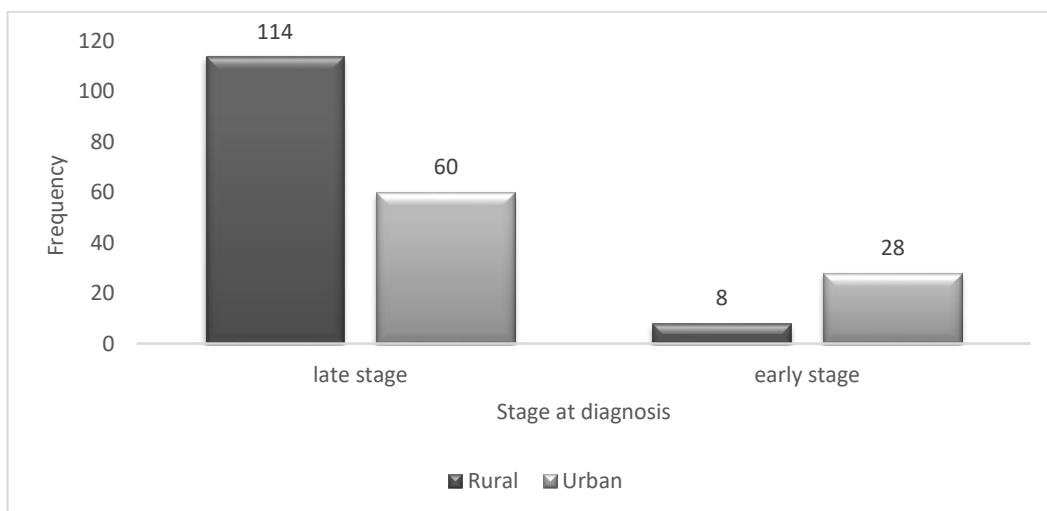


Figure 3. The stage at diagnosis of breast cancer patients distribution by residents at Hawassa Specialized Hospital, Southern Ethiopia, from 2013-2017.

Discussion

This study found a linear increase in the number of breast cancer cases over the study period from 2013 to 2017. This finding is similar to a study conducted at TASH in Addis Ababa, which showed an upward increase in the number of breast cancer cases over the sixteen-year period in the country (7). This increasing number of breast cancer cases in the country might be due to gradual changes in awareness and health-seeking behavior of the people and the recent increases in healthcare capacity in general. While the hypothesis exists that breast cancer risk is associated with the adoption of a Western diet, sedentary lifestyle, and nulliparity, the Ethiopian context is one in which the majority of the women have not adopted such habits. The population as a whole is young, smoking is rare,

people are active, most women are multiparous, and obesity is scarce(26, 27). Similar reports on increasing cases of breast cancer were reported in Zimbabwe (5).

In our study, more than two-thirds, 174 (82.9%) of the patients presented at an advanced stage. It is in accordance with reports from Zimbabwe (72.6%)(12), Rwanda (76%)(13), Tanzania 90.7%(10), and a systematic review finding in Sub-Saharan African countries (74.5%)(22). However, the finding is higher than that of Libya (65.5%)(11) and Nigeria (67.7%)(3). The observed variation might be due to differences in the patients accessing the hospital and other socio-cultural differences between countries. In Ethiopia, the general low community awareness about breast cancer, lack of early detection programs, inadequate diagnostic

services, and long-distance referrals to specialized centers for care may contribute to late stage presentation in the country. In addition there are different traditional and religious beliefs in Ethiopia so most people prefer and first went to these areas before visiting health facilities. (28, 29).

In our study, nearly three forth 156 (74.3%) of breast cancer patients were young adults below 50 years of age, and half 105 (50%) were premenopausal women. This finding is consistent with studies conducted in Zimbabwe, Ghana, and Tanzania in which most breast cancer patients were young premenopausal women (10, 12, 15). The result also aligns with a study conducted at TASH in which the largest group of breast cancer patients were between the ages 30-39 years at diagnosis, and almost half of the women were premenopausal (49.7%)(7). Our findings are also similar to a systematic review conducted in developing countries with a young population structure, which reported on young breast cancer patients with large tumors and poor prognosis(22). Notably, in our study, 68% of patients had -upfollow-up information, and the majority of breast cancer patients treated in the Hawassa BCCU were young, presented with late-stage disease, and were from rural areas. Similarly, a study from Western Ethiopia reported patients presenting at an advanced stage and an average 2-year survival of 44% (30). This may suggest the need to improve early detection and diagnosis of breast cancer at lower setups as well as access to chemotherapy and endocrine therapy for better outcomes.

This study also revealed that the majority of breast cancer cases were invasive ductal carcinoma types with grade II and III tumors. Similar findings are reported in Ghana, Tanzania and Northern Ethiopia(8, 10, 15). The study found that nearly two-thirds (65.2 %) of patients diagnosed with tumor size of more than 5 cm, and the majority of patients presented with breast lumps. A Consistent finding was reported from studies conducted in Ghana and Tanzania (10, 15).

Our study also revealed that the majority of patients from rural areas presented with late stage 114 (93.4%) than those from urban areas 60 (68.2%). This is consistent with the findings from studies in Sub-Saharan Africa (20, 21). The possible reason for this could be the lack of information access to the rural people and barriers to medical care. This finding also identifies the need and opportunity to downstage disease, especially in rural areas.

Our study also found that majority 94.8% received surgical treatment; however, only 12.5% of patients received hormonal therapy, which implies that hormonal therapy is underutilized in the hospital, although previous data on Ethiopian patient's tumor profiles suggests that two-thirds of tumors are estrogen receptor-positive (9).

This study has the following strengths and limitations. It is the first study conducted at HCSTH, which mainly serves the majority of the rural population as a referral and academic center in the southern region of the

country. Our study included all the available cases diagnosed in the last five years period, and it produced vital information on clinical stage distribution, tumor characteristics, sociodemographic data, and long-term follow-up of breast cancer patients treated in the specialized breast oncology unit. The study also has certain limitations due to incompleteness and absence of records on some sociodemographic factors, including educational status, religion, income, distance to the health facility, occupational status, behavioral and clinical variables like hormone receptor status, survival status of all patients, and tumor grade. According to data from Western Ethiopia and TASH, two-thirds of breast cancer cases are estrogen receptor-positive (9, 30). The phenotype of the breast cancer cases in Hawassa BCCU was not available for review or comparison.

Conclusion

In conclusion, we found an increasing number of breast cancer patients over five years in the HCSTH breast oncology unit, which underscores an increase in the uptake of services once offered - even though no formal breast cancer screening or public awareness campaign has been initiated in the region. The majority of patients were young, premenopausal, of rural origin, and presented with advanced-stage disease. This highlights the need to downstage the clinical presentation of breast cancer through early detection and esbalishing rapid diagnostic unit in the general level hopials aligned with world Health Organization Global Breast Cancer Iniataives (GBCI). In addition, this provides evidence for the need to strengthen the referral patterns of care within existing health facilities and increase the number of diagnostic facilities in the region. Moreover, strengthening the long-term follow-up and monitoring patient adherence to treatment and survival are essential. Furthermore, we recommend future studies to be conducted using prospective follow-up studies in multicenter settings to investigate associated risk factors and patient outcomes.

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Authors contributions: AT&SG involved in the conceptualization, design, data collection, data entry, analysis and drafted the manuscript. EG, AA, LT, and EK have contributed to the design, method and revised the manuscript. The final manuscript is read and approved by all authors.

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Conflict of interest: The authors would like to declare that they have no conflicts of interest that could potentially influence the results or interpretation of this study. They have no financial or personal relationships with any individuals or organizations that could bias their work. This declaration ensures the transparency and integrity of the research findings.

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