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Trend, Treatment outcome and Associated Factors of Breast Cancer at Tgsh and Fhrh From January 2018 To December 2021

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BY

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A THESIS SUBMITTED TO COLLEGE OF MEDICINE AND HEALTH SCIENCE, BAHIR DAR UNIVERSITY, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR SPECIALIZATION IN GENERAL SURGERY

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Declaration

This is to certify that the thesis entitled "trend, treatment outcome and associated factors of breast cancer at TGSH and FHRH from January 2018 to December 2021 G.C", submitted in partial fulfillment of the requirements for the certificate of specialty program in general surgery, Department of surgery, Bahir Dar University, is a record of original work carried out by me and has never been submitted to this or any other institution to get any other degree or certificates. The assistance and help I received during the course of this investigation have been duly acknowledged.

Dr Assefa Sisay Ayenew   Nov/2022   Bahir dar

Acknowledgement

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Abbreviations and acronym

AC	Adriamycin and Cyclophosphamide
AI	Aromatase inhibitors
AOR	Adjusted Odds Ratio
BCT	Breast conservative therapy
BDU	Bahir Dar University
BIG	Breast International Group
BSE	breast self-examination
CI	Confidence Interval
CHT	Chemotherapy
CMHS	College of medicine and health science
COR	Crude odd ratio
FAC	Fluorouracil, Adriamycin and Cyclophosphamide
FHRH	Felegehiwot referral hospital
FMoH	Federal ministry of health
FNAC	Fine needle aspiration cytology
GSR	General Surgery resident
HRT	Hormonal therapy
Mgmt	Management
MRM	Modified radical mastectomy
MRN	Medical Record Number
NST	breast carcinoma of No Special Type
XRT	Radiotherapy
SPSS	Statistical Package for Social Science
TASH	Tikur Anbesa specialized hospital

TGSH   Tibebe Gion specialized hospital

WHO   World health organization

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Abstract

Background: Breast cancer is a leading cause of death worldwide and ranks as the 5th cause of death from all cancers, and the most common cause of cancer death in women in both developing and developed countries.

Objective: The study was conducted to assess the trend, treatment outcomes and associated factors of breast cancer patients at TGSH and FHRH from January 1, 2018 to December 30, 2021.

Methods: Institution based retrospective study conducted on patients who was treated for breast cancer from January 1, 2018 to December 30, 2021 at TGSH and FHRH, Bahir Dar. Secondary data collected by reviewing patient's charts by trained personnel. The collected data entered into Epi data and exported to SPSS for further analyses. A univariate logistic regression done to identify the associated factors. Variables with P-value ≤ 0.25 in binary logistic regression analysis were a candidate for multi-variable analysis. P-value <0.05 used to declare statistical significance. The AOR with at 95% CI used to measure the strength of association.

Results: among 132 patients operated for breast cancer 119(90.2%) were females. The median age at the time of diagnosis was 38 (25-76) years. About 75.3% of patients presented with only breast lump. The mean duration of presenting symptoms was 7.87 months. One patient had bilateral breast cancer. The late presentation of the patients and the locally advanced stage at the time of presentation was observed in most of the patients. The predominant histology was ductal carcinoma witnessed in 70 patients (53.0%), followed by breast carcinoma of NST seen in 53 (40.2%) and one patient had mucinous carcinoma. NACT was administered only in 18 (13.6%) patients. During the follow up, 45 of 132(34.1%) and 5 of 132 patients (3.8%) developed local wound complications and recurrences respectively. Only one patient referred for radiotherapy. **Presenting symptoms and waiting time for surgery after diagnosis** significantly associated with short-term complications with (AOR=0.28; 95% CI (0.09,0.93)) and (AOR=0.16; 95% CI (0.03,0.89)) respectively. In multivariable models, doing surgery within 10 days of diagnosis decreases the incidence of short-term complications.

Conclusion: Our study has shown that relatively young females are commonly affected; majority presented in locally advanced stage of the disease.

Keywords: breast, cancer, treatment, outcome, recurrence, TGSH, FHRH

1. Introduction
1.1. Background

Cancer is one of the major non-communicable diseases responsible for 13% of yearly total deaths worldwide (1). Breast cancer frequently develops in cells lining milk ducts and the lobules that deliver the ducts with milk. There are more than 18 subtypes of breast cancer depending on cells in the breast affected (2).

Breast cancer is a leading cause of death worldwide and ranks as the 5th cause of death from all cancers, and the most common cause of cancer death in women in both developing and developed countries. Prevalence of breast cancer alone accounts for 25% of all cancer cases and 15% of all cancer deaths among females (3). Male breast cancer is a rare disease representing, 1% of all breast carcinomas.

The lifetime risk of breast cancer is about 0.1% for a man, whereas it is 12% for a woman(4). Breast cancer incidence rates rise steadily with age in men as they do in women; however, the average age of a new breast cancer diagnosis is five years older for men (67 years) than for women (62 years). Other risk factors for male breast cancer include a family history of breast cancer; black ethnicity; exposure to radiation to the breast or chest; carrying a predisposition germline genetic mutation; use of exogenous estrogen; and diseases associated with hyperestrogenism (4).

Breast cancer has geographic variation in presentation and the reasons for this disparity, however, are not as obvious and are likely to be multifactorial. Although environmental and biological factors may all play a role, race and urbanization also affect breast ca presentation (5).

Studies have reported that risk factors such as sex, obesity, lack of physical exercise, drinking alcohol, hormone therapy during menopause, ionizing radiation, age at first menstruation and old age affect the incidence of breast cancer (5) (6). Breast cancer could be reduced if appropriate treatment is provided for the patients and detection is made earlier but old age remains a risk factor for a poorer survival (5).

Most guidelines recommend screening after 50 years of age. Mammographic density, which is determined by the relative amounts of fibro-glandular tissue and fat in the breast, varies between women. Mammographic density is associated with a range of factors, including age and body mass index (4).

A study conducted in Gondar university hospital on 82 patients, the main presenting symptoms at presentation was a longstanding breast mass in 65 patients (79%) and breast ulceration in 15 patients (18%). The predominant histology was ductal carcinoma about 74%, followed by breast carcinoma of No Special Type (NST) 21% (7). The incidence of patients with breast cancer who

present with ipsilateral supraclavicular lymph node metastasis without distant spread at time of diagnosis, is low (1-4%) (8).

In the 19th century, most surgeons apparently treated breast cancers by limited resections, with local recurrence being the rule. However, it was not until 1894 that William Stewart Halsted proposed radical mastectomy as the treatment of choice of breast cancer of any type and size (9).

Neoadjuvant systemic treatment has emerged as a standard of care for treatment situations in which primary breast conservation is not possible because of tumor size or the association of the tumor and breast size, provided that the patient has a chemotherapy indication at all. Breast conservation is nowadays technically feasible in many clinical situations that had earlier led to primary mastectomy because of advances in oncoplastic surgical techniques and the increased success of neoadjuvant tumor-shrinking drug therapies. Yet, a concerning development is the increase in voluntary mastectomy, including voluntary contralateral (prophylactic) breast amputation, observed particularly in the USA (10).

Endocrine manipulation with tamoxifen, ovarian ablation or both is the preferred option in the case of endocrine-responsive tumors. Aromatase inhibitors (AIs) have now been used as adjuvant therapy in postmenopausal, ER+ breast cancer patients for more than a decade. The commonly prescribed AIs, letrozole and anastrozole, both seem to increase the risk of developing hypercholesterolemia compared with tamoxifen. Postmenopausal women with endocrine-responsive breast cancer, adjuvant treatment with letrozole, as compared with tamoxifen, reduced the risk of recurrent disease, especially at distant sites (11). Tamoxifen plus ovarian ablation is more effective than tamoxifen alone for premenopausal women. Chemotherapy is the treatment of choice for steroid receptor-negative tumours (12).

Early breast cancer is considered potentially curable. Therapy has progressed substantially over the past years with a reduction in therapy intensity, both for locoregional and systemic therapy; avoiding overtreatment but also undertreatment has become a major focus (8). In the last decade, in spite of an increasing incidence, breast cancer mortality has been declining in the majority of developed countries. This is the combined result of better education, widespread screening programs and more efficacious adjuvant treatments.

More than one in five women with breast cancer will develop breast cancer-related lymphedema (13).

1.2.Statement of the problem

Breast cancer is the most frequently diagnosed and the most common cause of cancer death among women worldwide. As we all know breast cancer is the most common malignancy in

females and females have 12% life time risk of breast cancer, it affects males too with 0.1% lifetime risk (12) (14). Breast cancer is by far the commonest cancer, constituting 33% of the cancers in women and 23% of all cancers identified from the Addis Ababa cancer registry done at TSAH (12). A study conducted in Ethiopia reported that breast cancer accounts for 25-34% of all female cancer cases and 15% of all cancer deaths among females (1), (3), (5). Breast cancer burden has well-defined variations by geography, regional lifestyle, and racial or ethnic background (5). This study identified the most common presentation and patterns of breast cancer, and treatment outcomes of patients. Most studies done in our country mainly focuses on breast self-examination practice, breast cancer screening, awareness and knowledge of breast cancer and quality of life after mastectomy. There are limited studies on the patterns and treatment outcomes of breast cancer in our country. A study done at TASH oncology unit on breast cancer treatment outcome didn't assess the recurrence of breast cancer rather it focuses on mode of treatment, and determinants of death of patients. Those studies done in our country are conducted in a setup which is better than us. There is no any paper done in our institution.

1.3.Significance of the study

This study provides us crucial information about our management of breast cancer patients and identifies the trained of breast cancer in our hospital. This research systematically identified our weakness in the management of breast cancer patients and supports us to have common understanding on the burden of breast cancer at TGSH and FHRH and helps the physician and the patient to choose better treatment options. The findings of this research may help policy makers at regional as well as national level for policy making and program implementation to improve treatment outcomes of breast cancer and used as an input for other researchers to do further analysis. This study will also use as a base line for further research. Thus, updated study findings will help to design appropriate management guidelines and preventive measures.

1.4 Objective of study
1.4.1 General Objective

➢ Assessed the trend, treatment outcome and associated factors of breast cancer at TGSH and FHRH from January 1, 2018 to December 30, 2021 G.C.

1.4.2 Specific Objective

✓ Assessed the trend of breast cancer at TGSH and FHRH

✓ Described the short-term outcomes of breast cancer surgery at TGSH and FHRH

✓ Identified the associated factors of the outcome of breast cancer surgery

2 Literature review
2.1 Magnitude and pattern of breast cancer

Breast cancer is the most commonly diagnosed cancer and the leading cause of cancer death in women worldwide, with about 2,088,849 new cancer cases and 626,679 deaths occurred in 2018 (1). Reports from most Sub-Saharan Africa countries showed a significant increase in breast cancer incidence and is an increasing public health problem in the continent. Widespread urbanization, changing patterns of reproductive and environmental risks factors, obesity, decreased physical activity, and increasing life expectancy were among the salient factors responsible for the steady rise in breast cancer incidence across third world countries (15).

Similarly, breast cancer was the most frequently diagnosed cancer and the leading cause of cancer death in women in Ethiopia, with an estimated 15,244 newly diagnosed cases and 8159 deaths in 2018. In Ethiopia, cancer accounted for about 5.8% of total national mortality. The most prevalent cancers in Ethiopia among the entire adult population were breast cancer (30.2%), followed by cervical and colorectal cancer respectively (1). A study conducted in Tikur Anbesa Hospital reported that breast cancer accounts for 34% of all female cancer cases (3), (5).

About two-thirds of women with breast cancer in Addis Ababa, the capital city of Ethiopia, were diagnosed with advanced stage disease. Advanced stage at diagnosis of breast cancer among women in Addis Ababa is strongly associated with use of traditional medicine and with prolonged time interval between symptom recognition and disease confirmation. Survival after diagnosis of breast cancer is poor in Ethiopia because of late-stage at diagnosis and limited access to standard treatments (16), (6). About 85% of the cases from Gondar study diagnosed at a stage III and IV (7).

Study done at TASH, from Ethiopia and other East African countries shows that hormone receptor negative tumors were not the most common molecular subtypes of breast cancer in this particular part of Africa. Majority of breast cancer cases in this population benefited from hormone therapy and/or anti-HER2 or other targeted therapy. Additionally, comparing their findings from other East African Studies confirmed the geographic variability in the distribution of the molecular subtypes of breast cancer in Africa. Ethiopian breast cancer patients exhibited highly proliferative Luminal B tumors at young ages. Overall, the largest proportions of cases were classified as Luminal A (40%). Triple negative breast cancer represents 23% of all cases (5). Another study done in done Nigeria, Benin demonstrations the predominant pattern of immunohistochemistry study is estrogen positive breast ca in 61.9% and triple negativity of 28.3% of breast cancer patients (17). A study in Gondar, the predominant histology was ductal carcinoma in 61 patients 74%, followed by NST in 21% patients. The most common grade of differentiation was moderately differentiated in 37% patients (7).

A community based cross sectional study conducted on 617 women from March 12 to March 30, 2020 at randomly selected kebeles of Bahir Dar city done by Gebiyaw W. et al. showed about 32.4% of the study population practiced BSE and only 26% had good knowledge on breast

cancer. Overall knowledge of women on breast cancer, perception of women towards breast cancer, women's source of information about cancer, family history of breast cancer, marital status and occupation were significantly associated with BSE (18). Another study conducted in Bahir Dar University among college of health science regular female undergraduate students from March 10 to April 10 2016, only 54.1% of participants knew and did BSE (18). BSE is one important method of early detection of breast cancer depending on a woman's age. Breast cancer screening and early detection was the key strategy in reducing breast cancer related mortality and distant complication and signifies a better outcome (19).

2.2 Treatment outcomes of breast cancer

A study done in Gondar from December 2016 to November 2017 on 82 patients showed about 82% were female and the median age for all patients was 45 years but for males the median age was 65.7% of patients had positive surgical margin. About 85% of the cases were diagnosed at stage III and IV (7). A study conducted in TASH on 303 patients, more than half of the patients diagnosed to have stage III breast cancer and almost all of the patients (98.34%) diagnosed with invasive breast cancer among them 95.63% had ductal invasive breast carcinoma. Overall breast cancer treatment outcome was poor in TASH. Majority of the patients presented at the late stage of the disease with invasive ductal carcinoma, which might contribute to a poor treatment outcome (3). As it was clearly shown on the recent publication of Weiner et al., the average survival probability of metastatic breast cancer in Ethiopia was about 12 months which was significantly lower than western countries (7).

BIG 1-98 studied on total of 8010 women and compared five years of treatment with various adjuvant endocrine therapy regimens in postmenopausal women with hormone-receptor–positive breast cancer: letrozole, letrozole followed by tamoxifen, tamoxifen, and tamoxifen followed by letrozole and letrozole significantly reduced the risk of an event ending a period of disease-free survival, especially the risk of distant recurrence (11). A review of the literature on treatment outcome in breast cancer patients with ipsilateral supraclavicular lymph node involvement without evidence of distant metastatic spread at time of diagnosis showed similar outcome to locally advanced breast cancer patients rather than M1-patients (20).

A study conducted in Nigeria Benin university hospital on 292 breast cancer patients and followed for two years, about 38.7% of patients developed post taxane based therapy metastases. The pattern of metastases was commonly to the loco-regional sites (39.5%), bone (16.9%), lungs (10.6%), brain (6.3%) and liver (4.4%) while multiple sites were (15.0%) and of these, 51.3% developed the metastasis within 10 – 12months. Ipsilateral axillary nodes were the commonest locoregional site (27.5%). Invasive ductal carcinoma of the breast was the commonest histologic variant and accounted for greater than 50% of the metastatic disease. Moderately differentiated carcinoma was the main histologic diagnosis (62.8%) (21). This study showed loco-regional site as the commonest metastatic sub-site in this region with bony metastasis being the commonest distant spread and most commonly occur within the first one-year post-treatment (17).

2.3 Associated factors of poor outcome

Danish population-based cohort study on postmenopausal breast cancer patients showed statin use reduces risk of breast cancer recurrence among postmenopausal patients diagnosed with early-stage breast cancer who received adjuvant AI therapy (22). Another study done in TASH on treatment outcomes of breast ca 54% of patients diagnosed at clinical stage III, 69% of patients completed 6th cycle chemotherapy and only 34% of patients were alive after years of follow-up. They found out the determinants of death were age, number of chemotherapy cycle, clinical stage, type of chemotherapy, mode of treatment, and endocrine therapy (3).

A retrospective follow-up study with survival analysis by Wondimeneh S., Yared A. on incidence and predictors of recurrence among 513 breast cancer patients in TASH adult oncology unit; overall incidence of recurrence was 6.5% per year but overall cumulative incidence of recurrence was 18.5% and recurrence free survival of 98% at 12 months of follow up. The overall median recurrence free survival was 60 months. Similarly, the 6-year recurrence free survival after breast cancer diagnosis was 53% for those who received HT and 34% for patients who didn't. This study concluded that patients with negative estrogen receptor had two times higher risk of recurrence than estrogen positive patients and those with poorly differentiated histologic tumor had almost 3 times higher risk of recurrence than histologic grade I. similarly, positive lymph node status, clinical stage III, and deeply involved surgical margin were significantly associated with recurrence (23).

A Multi-center, Double-Blind Randomized Controlled Trial on Reducing Seroma Formation and Its Sequelae After Mastectomy by Closure of the Dead Space showed that the incidence of seroma after mastectomy ranges from 3-85%. Flap fixation after mastectomy leads to fewer seroma aspirations than conventional wound closure, with a significant difference between flap fixation with sutures and conventional wound closure (AOR, 0.37; 95% CI, 0.16-0.89; p = 0.025). Flap fixation has no significant negative effect on surgical-site infections (24).

Another meta-analysis study on Flap fixation in preventing seroma formation after mastectomy on 1887 female patients explored that 221/986 (22.41%) patients experienced seroma formation after flap fixation and 393/901 (43.61%) patients developed this complication not receiving flap fixation, with a significant statistical difference between the two groups (AOR = 0.267, 95% CI 0.153, 0.464, p = 0.001). About, SSI 59/686 (8.6%) in flap fixation group and 67/686 (9.7%) in patients without flap fixation (25). Type of dissection, tools with which dissection is carried out, reduction of dead space, suction drainage, use of fibrin glue and octreotide usage, have been found to reduce seroma rates (26).

A study done on association between skin flap necrosis and sarcopenia in patients who underwent total mastectomy; sarcopenia and diameter ≥2 cm significantly associated with the incidence of skin flap necrosis. By contrast, BMI, presence or absence of comorbidities, preoperative CHT, and surgical factors did not affect the occurrence of skin flap necrosis (27).

Figure 2.1: Conceptual frame work of outcome determinant factors for breast ca

Sociodemographic factors; sex, age, personal and family history of breast cancer

Treatment related; procedure applied, mode of mgmt, waiting time for surgery, positive marigin, NACT, CHT regimen

Treatment outcomes of breast cancer; short term complications

Hormonal factors; parity, menstrual status, hormonal status of the tumor

Patient and clinical factors; knowledge about breast cancer and BSE, duration presentation, stage and histologic grade

Magnitude of breast cancer

3   Method
3.1 Study area and Period

The study conducted at TGSH and FHRH from Jan 1, 2018 to Dec 30, 2021. Bahir dar is a capital city of Amhara regional state, found in northwest Ethiopia, 490 Km away from Addis Ababa; capital city of Ethiopia. In Bahir dar city, there are three government hospitals; one general (Addis Alem) and two referral hospitals (TGSH and FHRH). TGSH is one of the referral hospitals and established in 2018 and serves for more than 5 million people in the region as a referral center. There are 18 general surgeon and 9 subspecialties in different units of surgery.

3.2 Study Design

Retrospective institution-based study design was conducted

5.3 Source and study population
5.3.1 Source population

All breast cancer patients operated at TGSH and FHRH

5.3.2 Study population

All breast cancer surgically treated patients at TGSH and FHRH from Jan 1, 2018 to Dec 30, 2021 were the source population.

5.4 Eligibility criteria
5.4.1 Inclusion criteria

All cases of breast cancer surgically treated patient's medical records who had complete medical information in the study period at both referral hospitals.

5.4.2 Exclusion criteria

All cases of breast cancer medical records **whom referred from other hospitals after operation and patients with unknown discharge status** in the study period

5.5 Sample size determination

I had two different sample size considering different prevalence of breast cancer from world cancer society and other literature.

The first sample size estimated to be around **178** patients, C/I 95%, Z=1.96, expected prevalence of breast cancer is 12% from previous studies and world cancer registry record and we'd like the result to be within 5% of the true value

$$n = \frac{z^2 \cdot p \cdot (1-p)}{d^2}$$

$$n = \frac{1.96*1.96*0.12*(1-0.12)}{0.05*0.05} = (\frac{\mathbf{1.96*1.96*0.12*0.88}}{\mathbf{0.05*0.05}}) = 162.29 \sim \mathbf{162}$$

Finally, by adding 10% potential non participatory rate of the study, the final sample size (*n*) was **178** patients

Using other literature, with breast cancer prevalence of 9% and 95% confidence interval

$$n = \frac{z^2 \cdot p \cdot (1-p)}{d^2}$$

$$n = \frac{1.96*1.96*0.09*(1-0.09)}{0.05*0.05} = (\frac{\mathbf{1.96*1.96*0.09*0.91}}{\mathbf{0.05*0.05}}) = 125.85 \sim \mathbf{126}$$

Finally, by adding 10% potential non participatory rate of the study, the final sample size (*n*) would be **138** patients

So, considering those two different sample sizes and collecting our breast cancer operated patient I used the sample size **138**

5.7 Sampling techniques

The charts were collected after I found patient's MRM from the OR registration log book, all breast cancer patients who were operated from January1, 2018 to December 30, 2021 at TGTH and FHRH. Those who met the inclusion criteria sampled and 132 patient charts were found for final analysis.

5.8 Study variable
5.8.1 Dependent variable

Breast cancer treatment outcome; short-term local complications

5.8.2 Independent variable

Socio-demographic; Sex, age, family and personal history of breast cancer, chest wall radiation exposure

Hormonal factors; pre-menopause, post-menopause, parity, hormonal status of the tumor

Patient and Clinical related: presenting symptoms, duration of presentation, tumor stage, treatment adherence to CHT, tumor histologic grade and lymphovascular invasion status, knowledge about breast cancer and screening

Treatment related: types of surgical procedure applied, and mode of management, NACT use, CHT regimen, surgical margin status, waiting time for surgery after diagnosis.

5.9 Operational definition and term definitions

Modified radical mastectomy; is a procedure that removes the entire breast long with skin and axillary lymph nodes

NACT: is systemic treatment of breast cancer prior to definitive surgical therapy

Adjuvant therapy refers to radiation therapy and systemic therapies, including chemotherapy, immunotherapy and hormonal therapy given after definitive primary surgical therapy

Late diagnosis; patients diagnosed with breast cancer stage III and stage IV

Early diagnosis; patients diagnosed with breast cancer stage 0, Stage I and Stage II

Complete response: Is defined as the disappearance of all target lesions and regression of any pathologic lymph node to < 10mm

Partial response: Is considered if the sum of the diameters of target lesions has at least a 30% decrease from baseline size

No response: no decrement in the size of target tissue or decrement <30% from baseline

Progressive disease: Defined as at least 20% increase in the sum of target lesions or appearance of new a lesion (at least 5mm)

Complications: is the occurrence of either one of the following conditions; SSI, flap necrosis, seroma and lymphedema

Short-term outcome: Immediate postoperative outcomes and patient outcome within 6 months of the surgery

5.10 Data collection tools and methods

Data collected by chart review retrospectively using structured pre-tested questioners and checklist from the patients' charts. The English version questionnaire and checklist adapted from different pieces of literature. The questionnaire and checklist contain; socio-demographic, patient & clinical, treatment related factors and patients' outcomes including diagnostic modalities. Data collected by trained four residents and supervised by principal investigator. A phone call conversation undergone for collecting missed information from the chart.

5.11 Data quality control

Standardized and properly designed data collection tool were prepared. Before the actual data collection, data collectors took theoretical and practical training intensively for two days on the contents of the questionnaire and checklist, objective and relevance of the study, data collection techniques, confidentiality of information and ethical concerns by principal investigator. The questionnaire pre-tested on 5 % of the sample of the study area and the questionnaires modified based on the findings and data collectors are reassured. Questionnaires checked for completeness

on a daily basis by immediate supervisors. Principal investigator did close supervision to overcome any mistakes from data collectors. After checking all questionnaires for consistency and completeness the supervisors submitted the filled questionnaire to the principal investigator. The principal investigator cross checked the questionaries on daily basis for the completeness of the collected data. A day to day on site supervision were carried out during the entire period of data collection by principal investigator. At the end of each day, the questionnaires checked for completeness, accuracy and consistency by investigator and corrective discussions commenced with all the data collectors. Furthermore, data were rechecked during entry into EPI data before analysis

5.12 Data Processing and Analysis

The collected data coded and entered into EPI data 3.1 software. It was cleaned, edited and exported into SPSS version 26 for further analysis and was checked for missing values before analysis. Descriptive statistics done to summarize the data in the form of frequency mean, standard deviation (SD), and cross-tabulation. Binary logistic regression analyses carried out to identify the association between the short-term complications and independent variables. Those variables associated at bivariate logistic regression with significance level (p value ≤ 0.25) were entered into multiple logistic regression to identify important determinants by controlling possible confounding effect. Statistical significance was declared at p-value ≤ 0.05 and the predictors of outcome variable was identified accordingly. AOR with 95% CI used describe the association.

5.12   Ethical clearance

Ethical clearance obtained from the Institutional Review Board (IRB) of CMHS, Bahir Dar University, Ethiopia. Official letter of permission from the college submitted to BDU, CMHS. Then, support letter obtained from TGSH medical director office. A formal letter submitted to all concerned bodies to obtain their cooperation. We took oral informed consent during a phone call while collecting missed information from the chart. I didn't use patient name rather their MRN and phone number on the questionnaire and the data is not given for the third person. The data extraction conducted in a separate room. Moreover, privacy strictly secured during data collection and analysis.

5.13 Dissemination of the Result

The final report of this thesis will be presented to BDU, CMHS, department of surgery. The findings will be published in a relevant scientific journal and disseminated online so that it can be used for other academic researchers and clinical practitioners. It will also be presented on different conferences, and professional society meetings like Ethiopian Society of surgery. The data can also serve as a base line for future studies. At last, the final report will also be disseminated to regional health bureau.

6 Result

6.1 Socio-demographic characteristics of breast cancer

From the total of 138 patient charts included in this study, 132 questionnaires were ready for final data analysis making the response rate 95.65%. Among 132 patients 119(90.2%) and 13(9.8%) were female and male respectively. About 4/13 (30.77%) of male patients operated for breast cancer were 61 to 70 years. The participants were between the age group of 25 - 76 years with a mean age of 41.95 years and standard deviation of 12.948 years. By age group, over sixty-two cases of the study (47%) were aged between 30 to 40 years, 19(14.4%) were under 30 years of age and 5(3.8%) of the cases are above 70 years of age. **(Figure 2)**

Most of the participants were married with 117 (88.6%). Seventy-two (55.8%) of breast cancer patients involved in this study are uneducated, while only 2 cases (1.5%) are medical personnel. From the total participants 4 (3%) and 5 (3.8%) of them had family and personal history of breast cancer respectively. While none of them had history of chest wall radiation exposure. All patients operated for breast cancers with personal and family history of breast cancer were females. (Table 1)

Table 6.1; Frequency distribution of Sociodemographic characteristics of breast cancer at TGSH & FHRH from 2018 to 2021 (n=132)

Variables		Frequency	Percentage
Sex	Male	13	9.8
	Female	119	90.2
Marital status	Single	5	3.8
	Married	117	88.6
	Divorced	2	1.5
	Widowed	8	6.1
Level of education	Uneducated	73	55.3
	Up to high school	46	34.8
	Diploma and above	11	8.3
	Medical education	2	1.5
Family history of breast cancer	Yes	4	3
	no	128	97

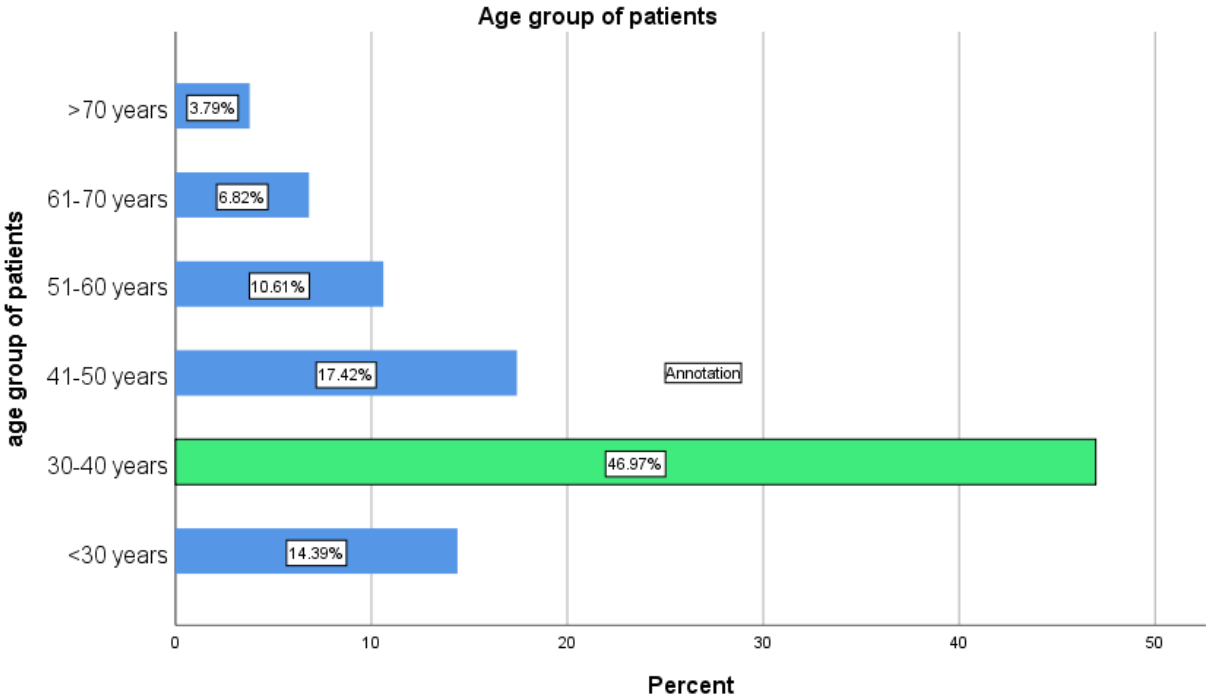| Personal history of breast cancer	Yes	5	3.8
	No	127	96.2
History of chest wall irradiation	Yes	0	0
	No	132	100

Figure 6.1: age distribution of breast cancer patients at TGSH & FHR from 2018 to 2021

Table 6.2: Sex vs age groups of patients with breast cancer at TGSH & FHRH (n=132)

Age group of patients Vs sex		
	Sex	Total

		Male	Female	
Age group of patients	<30 years	2	17	19
	30-40 years	3	59	62
	41-50 years	1	22	23
	51-60 years	1	13	14
	61-70 years	4	5	9
	>70 years	2	3	5
Total		13	119	132

Table 6.3: Sex vs personal history of breast cancer at TGSH & FHRH (n=132)

Personal history of breast cancer Vs sex				
		Sex		Total
		Male	Female	
Personal history of breast cancer	yes	0	5	5
	no	13	117	130
Total		13	119	132

6.2 Patient and clinical related factors of breast cancer management outcome:
Among all of the breast cancer patients only 9 (6.8%) knew about breast cancer and breast cancer screening, 8 (88.9%) patients used BSE as a screening method, 1(11.1%) used ultrasound. Majority of patients 129 (97.7%) with breast mass were diagnosed to have breast carcinoma. About 67 (50.8%) of patients had right side breast cancer, while only 1 case had bilateral breast cancer.

Duration of presentation ranges from 1 month to 24 months with a mean duration of 7.87 months and standard deviation of 3.283 month. Only 3.8% (5/132) of patients presented within 3 months of the onset of symptoms of breast cancer; 66.6% presented ≥7 months after they developed the symptoms. Breast lump or mass (98.5%) was the most common finding followed by axillary lymphadenopathy (15.9%), skin changes (5.3%), and nipple discharge (1.5%). Clinical staging of the breast cancer was documented in all patients and majority (77.5%) of patients were in late stage of the disease; only 22.5% of patients diagnosed with stage II disease. Among male patients 10 (76.9%) of cases are stage III and all stage 4 breast cancer patients are females.

Out of 132 patients studied in this paper, about 125 (94.69%) patients investigated by FNAC, was consistent with breast cancer in 87.2%, carcinoma insitu in 9.6% and about 2.4% had phyllodes tumor.

Histology report was conclusive of invasive breast carcinoma in 70 (53.0%) of patients. Among those patients with breast carcinoma 55 (41.7%) and 52 (39.4%) are moderately differentiated and well differentiated respectively. Evidence of distant metastatic features were noted in 2 patients (1.5%). (Table 4)

Table 6.4: Frequency of patient and clinical related factors of breast cancer at TGSH & FHRH

Variables		Frequency			Percentage (%)
Knowledge about breast cancer and screening use	Yes	9			6.8
			BSE	8	88.9
			US	1	11.1
	No	123			93.2
Stage of cancer	1	0			0
	2	29			22.5
	3	93			72.1
	4	7			5.4
FNAC result	Ductal carcinoma	104			
	Lobular carcinoma	5			5.3
	Carcinoma insitu	12			9.1
	Phyllodes tumor	3			2.3
	Secondary axillary deposit	1			0.8
	Unknown	7			5.3
Types of histologic biopsy result	Invasive ductal ca	70			53.0
	Lobular carcinoma	3			2.3
	NST	53			40.2
	Mixed lobular and	1			0.8

	ductal carcinoma		
	Mucinous carcinoma	1	0.8
Side affected	Right breast	67	50.8
	Left breast	64	48.5
	Bilateral breast	1	0.8
Histologic grade	Well differentiated	52	39.4
	Moderately differentiated	55	41.7
	Poorly differentiated	12	9.1
	Unknown	13	9.8
Causes of breast mass	Breast carcinoma	129	97.7
	Phyllodes tumor	3	2.3
Duration of presentation	Within 3 months	5	3.8
	4-6 months	39	29.5
	7-9 months	66	50.0
	10-12 months	16	12.1
	>12 months	6	4.5
	Mean ±SD		7.87±3.281

Table 6.5: frequency distribution of duration of presentation of breast cancer at TGSH & FHRH

Variable	Min	Max	Mean	Std deviation
Duration of presentation in months	1	24	7.87	3.282
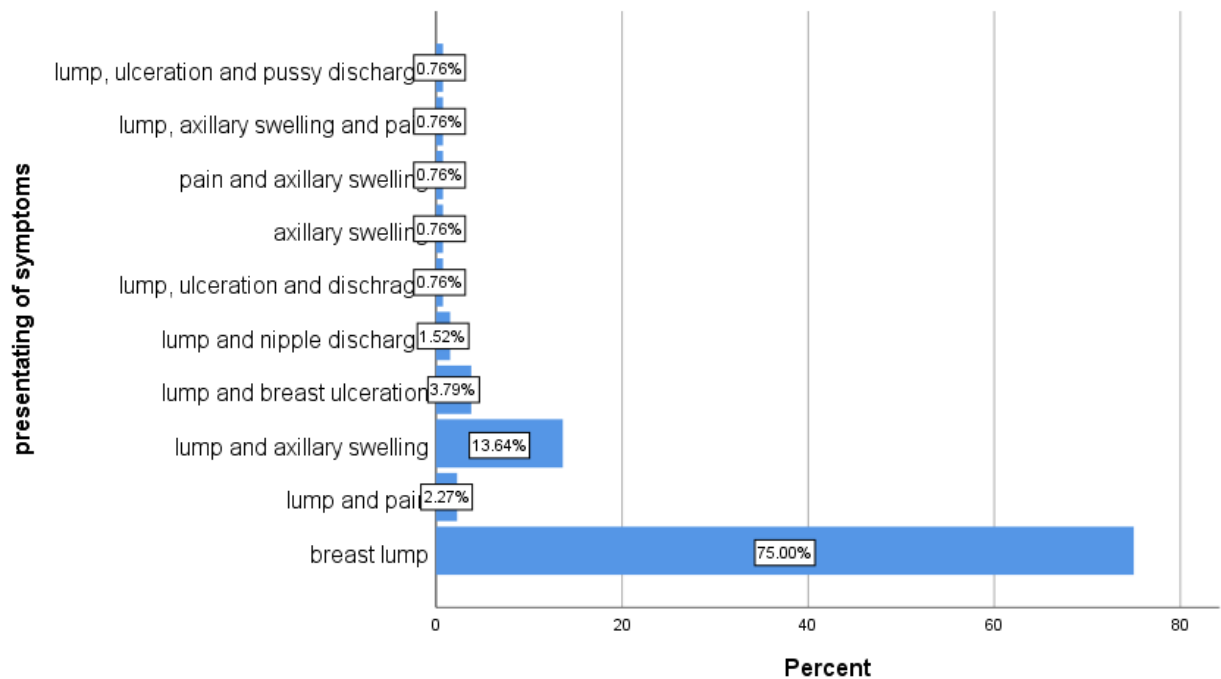
Figure 6.2: frequency distribution of breast cancer presenting complaints at TGSH & FHRH

6.3 Hormonal status of breast cancer patients at FHRH and TGSH:

Among 132 patient, 17 (14.2%) were nulliparous and 17 (14.2) of cases were non-breastfeeding. Majority of cases 94 (79.0%) are premenopausal. Among all patients reviewed in this study only 19 (14.4%) of cases had hormonal status determination. From this 14 (73.7%) %) expressed estrogen receptors.

Table 6.6: frequency distribution of breast cancer patients' Hormonal status at FGRH and TGSH

Variables			
Parity	Nulliparous	17	14.3
	multiparous	102	85.7
Breastfeeding	Yes	101	85.6

	No	17	14.4
Menstrual status	Premenopausal	94	79.0
	Post menopause	25	21.0
Hormonal status of the tumor	ER+	14	10.6
	ER-	4	3
	ER-, PR-	1	0.8
	Unknown	114	85.6

6.4 Management of breast cancer:

Patients with breast cancer in this study were operated between 2 and 150 days with a mean duration of 32.56 days and standard deviation of 23.368 days. Among all of the breast cancer patients 121(91.7%) undergo MRM with or without axillary lymph node dissection and 6(4.5%) cases were operated with toilet mastectomy for advanced breast cancer. 2 cases of phyllodes tumor undergo simple mastectomy while the rest were operated with standard MRM. Only 6/108 (5.56%) of patients had positive surgical margin and 16 (12.1%) had lymphovascular invasion. Among 132 patients operated for breast cancer only 1 (0.8%) case were referred for XRT and about 17 (11.5%) (which is 43.6% (17/39) of cases operated at TGSH) patients referred to FHRH for adjuvant CHT. NACT was administered in the form of AC, FAC and AC-taxol to 18 (13.6%) patients with late disease and the response was partial in 77.8% and complete in 16.67%.

The study participants had followed for 1 to 15 months. Median follow-up time was 8.0 months. **(Table 7)**

Table 6.7; frequency of management related factors among patients operated for breast cancer (n=132)

Variables		Frequency	Percentage
Surgical procedure done	MRM	121	91.7
	Simple mastectomy	2	1.5
	Toilet mastectomy	6	4.5
	Excision	3	2.3

Mode of management	MRM only	1	0.8
	MRM and CHT	62	47
	MRM, CHT & HRT	34	25.8
	NACT, MRM, CHT	2	1.5
	NACT, MRM, CHT, HRT	4	3
	Simple mastectomy	2	1.5
	Excision and CHT	2	1.5
	Excision, CHT & HRT	1	0.8
	Toilet mastectomy and CHT	6	4.5
	MRM and referral for CHT	15	11.4
	MRM, CHT, referral for XRT	1	0.8
Regimen of chemotherapy	AC	25	18.8
	FAC	14	10.6
	AC-taxol	91	68.9
	Unknown	1	0.8
Does the patient take NACT	Yes	18	13.6
	No	114	86.4
Response to NACT	Complete	3	16.67
	Partial	14	77.8
	No response	1	5.5
	Unknown	2	11.1
Surgical margin	Positive	6	4.5

status	Negative	102	77.3
	Unknown	24	18.2
Lymphovascular invasion status	Positive	16	12.1
	Negative	50	37.9
	Unknown	66	50.0
How many cycles of CHT	< 5cycle	5	3.8
	5-8 cycle	127	96.97

Table 6.8: frequency distribution of breast cancer patients of waiting time for surgery and number of CHT taken after diagnosis at FGRH & TGSH (n=132)

Variable	Range	Min	Max	Mean	Std deviation
Waiting time for surgery after diagnosis in days	148	2	150	**32.56**	**23.368**
How many cycles of CHT	6	2	8	**7.17**	**1.122**

6.5 Management outcome of breast cancer at TGSH and FHRH:

About 32 (24.2 %) and 2 (1.5%) of breast cancer patients operated at both hospitals had seroma and flap necrosis respectively. Majority of the case 82(62.1%) discharged within 5 days of operation and about 81.8% had improved condition on subsequent follow up. Among 132 cases, only 5 (3.8%) of patients had recurrence and all of the recurrences are locoregional to chest wall and axilla with a mean ±Std follow up of 7.88±2.443 months. 5 (3.8%) of patients died of the disease during the follow up period. (Table 9)

Table 6.9: frequency distribution of management outcomes of breast cancer

Variable		Frequency	Percentage (%)
Complications up to discharge	SSSI	9	6.5
	Seroma	32	24.2

	Flap necrosis	2	1.5
	Lymphedema	2	1.5
	No complications	87	65.9
Recurrence	Yes	5	3.8
	No	127	96.2
Site of recurrence	Axilla	1	20
	Chest wall	2	40
	Axillary and chest wall	1	20
	Ipsilateral breast	1	20
	Distant	0	0
	Both distant and regional	0	0
Length of hospital stays	1-5 days	82	62.1
	6-10 days	36	27.3
	> 10 days	14	10.6
Condition of the patient on subsequent follow up	Improved	108	81.8
	Same	14	10.6
	Died	5	3.8
	Deteriorated	5	3.8

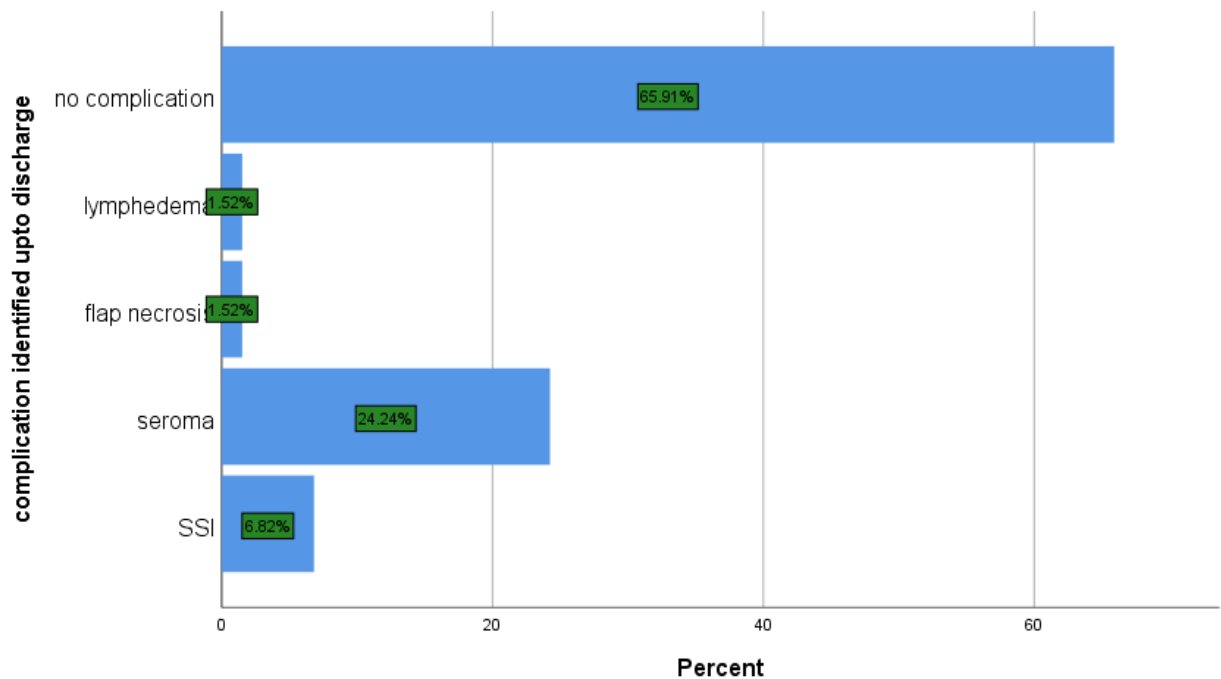| Variable	Mean	Std deviation	Min	Max
Duration of follow up	7.88	2.443	1	15

Figure 6.3: frequency distribution of breast cancer treatment short-term complication at TGSH & FHRH (n=132)

6.6 Factors associated with outcomes of breast cancer management at TGSH and FHRH:
Cross tabulation and logistic regression analysis was carried out to determine the association between independent variables and short-term local wound complications among the patient operated for breast cancer at both institutions.

Binary and multivariable logistic regression analysis was performed between short-term local complications (dependent variable) and socio-demographic, patient and clinical factors and treatment related factors of breast cancer (independent variables).

On binary logistic regression age group, marital status, level of education, presenting complaints, duration of presentation, stage of the tumor, menstrual status, types of biopsy result, waiting time for surgery after diagnosis, surgical margin status, lymphovascular invasion status and NACT CHT use had p value of ≤0.25 compared to short-term complications and the above independent variable collectively analyzed with multi variable logistic regression.

However, in multivariable logistic regression of sociodemographic, patient and clinical factors, treatment of breast cancer and short-term complication or outcomes of surgical management (dependent variable), **only presenting symptoms and waiting time for surgery after diagnosis**

remained significantly associated with breast cancer complications with (AOR=0.28; 95% CI (0.09,0.93)) and (AOR=0.16; 95% CI (0.03,0.89)) respectively.

Table 6.10; Binary and multivariable logistic regression analysis of variables associated with breast cancer treatment related complications at TGSH and FHRH (n=132):

Variables	category	Complications		COR (95%CI)	AOR (95%CI)
		No	Yes		
Sex	Male	8(6.1%)	5(3.8%)	1	
	Female	79(59.8%)	40(30.3%)	0.81(0.25,2.64)	
Age groups	**≤40 years**	**60(45.5%)**	**21(15.9%)**	**0.26(0.08-0.85****	0.31(0.02,4.69)
	41-60 years	21(15.9%)	16(12.1%)	0.57(0.17,1.979	1.20(0.10,14.62)
	>60 years	6(4.5%)	8(6.1%)	1	
Marital status	unmarried	7(5.3%)	8(6.1%)	1	
	Married	80(60.6%)	37(28.0%)	0.41(0.14,1.20) *	0.63(0.10,4.15)
Level of education	Uneducated	45(34.1%)	28(21.2%)	1	
	Educated	42(31.8%)	177(12.9%)	0.65(0.31,1.36) *	1.68(0.54,5.17)
Presenting complaints	**Breast lump only**	**74(56.1%)**	**25(18.9%)**	**0.22(0.09,0.50) ****	**0.28(0.09,0.93) ****
	Lump and other symptoms or other symptoms only	13(9.8%)	20(15.2%)	1	
Duration of presentation	≤6 months	33(25.0%)	11(8.3%)	0.53(0.24,1.19) *	1.08(0.37,3.20)
	>6 months	54(40.9%)	34(25.8%)	1	
Side affected	Right	44(33.3%)	23(17.4%)	1	
	Left	42(31.8%)	22(16.7%)	1.00(0.49,2.06)	

	Bilateral	1(0.7%)	0(0%)	0.00(0.00,)	
Stage at diagnosis	Early	23(17.8%)	6(4.7%)	0.41(0.15,1.09) *	0.35(0.08,1.495
	Late	61(47.3%)	39(30.2%)	1	
Waiting time for surgery	<10 days	12(9.1%)	6(4.5%)	0.71(0.23,2.15)	**0.16(0.03,0.89) **
	10-30 days	41(31.1%)	15(11.4%)	0.52(0.24,1.14) *	0.44(0.14,1.41)
	>30 days	34(25.8%)	24(18.2%)	1	
Parity	Nulliparous	13(10.9%)	4(3.4%)	0.56(0.17,1.80)	
	Multiparous	66(55.5%)	36(30.3%)	1	
Breast feeding	Yes	66(55.5%)	36(30.3%)	1.31(0.43,4.01)	
	No	12(10.1%)	5(4.2%)	1	
Menstrual status	Pre-menopause	66(55.0%)	29(24.2%)	0.48(0.19,1.17) *	1.67(0.32,8.69)
	Post-menopause	13(10.8%)	12(10.0%)	1	
Personal history	Yes	1(0.8%)	4(3.0%)	1	
	No	86(65.2%)	41(31/1%)	0.12(0.01,1.10)	
Types of biopsy result	NST	51(38.6%)	36(27.3%)	1	
	Specified breast cancer	**36(27.3%)**	**9(6.8%)**	**0.35(0.15,0.83) **	0.50(0.18,1.44)
Histologic grade	Well-D	40(30.3)	12(9.1%)	1	
	Moderately-D	**32(24.2%)**	**23(17.4%)**	**2.39(1.04,5.54) **	
	Poorly -D	6(4.5%)	6(4.5%)	3.33(0.91,12.26) *	
	Unknown	9(6.8%)	4(3.0%)	1.48(0.39,5.67)	

Margin status	Positive	2(1.5%)	4(3.0%)	1	
	Negative	69(52.3%)	33(25.0%)	0.24(0.04,1.37) *	0.27(0.03,2.22)
	Unknown	16(12.1%)	8(6.1%)	0.25(0.04,1.66) *	0.38(0.03,4.50)
LVI status	Positive	7(5.3%)	9(6.8%)	1	
	Negative	33(25.0%)	17(12.9%)	0.40(0.13,1.26) *	0.49(0.03,2.51)
	Unknown	**47(35.6%)**	**19(14.4%)**	**0.31(0.10,0.97) ****	0.22(0.04,1.31)
Mode of mgt	Surgery only	15(11.4%)	5(3.8%)	0.69(0.21,2.32)	
	Surgery & CHT	45(34.1%)	27(20.5%)	1.25(0.55,2.82)	
	Surgery, CHT & HRT	27(20.5%)	13(9.8%)	1	
NACT use	Yes	9(6.8%)	9(6.8%)	1	
	No	78(59.1%)	36(27.3%)	0.46(0.17,1.26) *	0.35(0.09,1.33)
CHT regimen	AC	18(13.6%)	7(5.3%)	0.74(0.28,2.96)	
	FAC	8(6.1%)	6(4.5%)	1.43(0.46,4.48)	
	AC-taxol	61(46.2%)	32(24.2%)	1	
Length of hospital stay	**1-5 days**	**80(60.6%)**	**2(1.5%)**	**0.01(0.002,0.06) ****	
	6-10 days	3(2.3%)	33(25.0%)	4.40(0.84,23.04) *	
	>10 days	4(3.0%)	10(7.6%)	1	
Duration of follow up	≤6 months	19(14.4%)	7(5.3%)	0.66(0.25,1.71)	
	>6 months	68(51.5%)	39(28.8%)	1	

* Means p value is ≤0.25

** means p value of <0.05

D- stands for differentiated

7 Discussion

Breast cancer is the most common site-specific cancer in the world in women and overall, it is responsible for 12.5% cancers in both sexes worldwide. In this series, the female to male ratio of 9.15:1.0 showed that the disease affects more female population in Ethiopia than in other African countries. About 64.4% of patient were within the range of 30 to 50 years of age which is nearly similar to the finding in TASH. (3)

This study aimed to assess the trends of breast cancer, breast cancer mgmt outcome and associated factors at TGSH and FHRH. Among all the participants in this study only 9 (6.8%) cases had knowledge about breast cancer and used screening methos. 2 (1.5%) and 2(1.5%) of patients presented with breast lump together with nipple discharge, breast ulceration and pussy discharge respectively.

The other findings of this study were the late presentation of the patients and the advanced stage at the time of presentation. About 75.8% of the cases were diagnosed at a stage III and IV. However, this finding is higher than those done in Addis Ababa (54.2%) (28). This gap might be due to several reasons. The absence of screening combined with the low rate of cancer awareness and unavailability of multi-modality treatment may be the reason for the late presentation and diagnosis. The other possible reason may be most cancer patients came with referral to the tertiary level hospitals this could result delay in diagnosis and treatment.

Surgical margin status is reported for 106 patients. Among them only 6 (5.5%) of cases had positive surgical margin. only 19 patients had tests for hormonal status (expression of estrogen and progesterone receptors) and 5(26.32%) didn't expresses estrogen receptors. Our results were lower than the previous studies in Gondar in which 6 out of 29 cases had positive surgical margin. (7)

In the current study, the overall rate of having complication of breast cancer management is 45/132 (34.1%) in a mean follow up period 7.87 months. Seroma formation occurred most frequently. Among those patients, only 2/132 cases had flap necrosis and lymphedema observed in 1.5% of patients which is nearly similar to Daniel et al study (29). This, finding is lower than the report in review of different literature on mastectomy flap necrosis (5-30%) (30). However, compared to Caren G. Solomon et al study on lymphedema after breast cancer treatment the incidence of lymphedema in our study is minimal. The discrepancy of results, which has been seen among studies, might be due to inadequate documentation in our setup. 5 (3.8%) of patients had recurrence and the commonest site chest wall twice that of the axilla. This, finding is lower than the study in Addis (26.5%) but the commonest site the same. (28)

In this study, after multivariable regression analysis presenting symptoms and waiting time for surgery after diagnosis had a significant effect on short-term complications of breast cancer treatment. Accordingly, after adjusting for other covariates, the odds of having short-term

complication of breast cancer among those who wait surgery ≤10 days were 84% less likely compared to those who wait more than 30 days (AOR=0.16; 95% CI (0.03,0.89)). This study also finds out the odds of having short-term complication of breast cancer treatment among those who presented with breast lump only were 72% less probable compared to those who presented with lump and other complaints of breast cancer (AOR=0.28; 95% CI (0.09,0.93)). However, a clinical trial on the impact of wait time from NACT to surgery in breast cancer: Does time to surgery affect patient outcomes? Done by Valerie and his colleagues didn't show any statistically significant differences were seen in surgical complications (p = 0.90) (31). But, in certain breast cancer subtypes, such as in triple negative breast cancer, poorer outcomes have been observed in patients with delays greater than 30 days from surgery (32).

The finding of the current study did not show significant association of family history and personal history of breast cancer with local wound complications and short-term complications on subsequent follow up.

8 Conclusion

In conclusion, Breast cancer affected commonly premenopausal and more than half the patients were younger than 50 years old. The main presenting symptom was breast lump and most patients presented with late stage of the disease. The most common histological type of breast cancer was ductal carcinoma. MRM was the main modality of treatment. About one third of patients had wound related complications.

Patients operated within the first 10 days of diagnosis and those patients who presented with breast lump only has decreased incidence of short-term complications.

9 Recommendation

For ARHB and FMoH;

The FMoH should give emphasis on creating programs to increase individual's knowledge about breast cancer, screening methods and importance of early detection of breast cancer. There should be regular training programs in order to keep the professionals updated about options of breast cancer management and screening protocols. Recommended to establish standard treatment center to decrease referral cases

For health care providers;

Hormonal status determination should be taken seriously as we did for biopsy to enhance mgmt outcome. They should have communicated the hospital officials to shorten the waiting time for surgery and to have common understanding on urgency of breast cancer and as well to give priority for breast cancer patients.

For future studies;

Future researchers suggested to do on a larger sample size and possibly prospective study method to have better understand on determinant factors of post mastectomy complications.

10.1 Strength of the study

o This study is the first study in our institution regarding treatment outcome of breast cancer and can be used as a baseline for further studies and guides the management approach of our patients.
o Phone conversation with the patient undertaken to decrease missed information.

10.2 Limitation of the study

✓ The findings of this study can only be generalized to patients in the study area.
✓ Short follow up period of the patient
✓ Wide confidence interval is noted in some of the multivariate analysis as a result of small sample size
✓ Being secondary data or chart review analysis

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ANNEX

Annex. English version check list

This checklist is prepared to assess trend and treatment outcome of breast cancer in TGSH and FHRH from Jan 2018 to Dec 2021.

Date of data collection…………. …

MRN ----------------, Phone number……………,

Age (in years) ….. , Sex (M/F)……

Address zone……

1. Residency; 1) Urban ……. 2) Rural ……,

2. Level of education 1) NEVER attend 2) Highschool 3) Diploma & above 4) Medical education

3. Marital status; 1) single…., 2) married………., 3) divorce……, 4) windowed……..

4. Presenting complaint; lump…………, pain………, nipple discharge……..., nipple retraction…., axillary swelling…….., distant symptoms…………, breast ulceration ………, others specify ……………,

5. Duration of symptoms in months………….,

6. Side of breast involved; 1) Right…….., 2) Left………, 3) Bileteral………

7. Physical examination; Breast mass…, Ulcerated breast mass……, mobile Axillary LAP…….., fixed and matted Axillary LAP…., Supraclavicular LAP….., Chest wall invasion……, skin involvement …………

8. Stage of the disease at diagnosis; (I, II, III, IV)……….,

9. If advanced mention site of metastases ………………..

10. Waiting time for surgery after diagnosis in days……

11. Parity; 1) nulliparous……….., 2) multiparous ………,

12. Breastfeeding (1) yes…, 2) no….)

13. Menstrual status; 1) Pre-menopause…….., 2) Post-menopause……..,

14. History of drug use; (1) yes/ 2) no)…. If yes specify ………….

15. Family history of breast cancer………(1) yes…. 2) no……)

16. Personal history of breast cancer……… (1) yes…… 2) no……);

17. If yes specify 1) same…. 2) opposite breast ……

18. Chest wall radiation exposure ………….. (yes/no)

19. Does the patient have screening ……? (yes/no); if yes specify the method (US….., BSE…., mammography…..)

20. FNAC done (yes/no) …….; if yes specify result (DCIS, LCIS, ductal, lobular, other) ………………,

21. Biopsy done (1) yes….. 2) no…….), if yes specify result………………………

22. Grade; A) Well differentiated B) Moderately differentiated C) Poorly differentiated D) Not specified

23. BIOPSY margin status; A) positive B) negative C) Not specified;

24. Lymph-vascular invasion; A) positive B) negative C) Not specified

25. Hormonal status; A) ER +/-, PR+/- ………….., Triple negative……, HER 2 -/+……, unknown ……..

26. Mode of treatment; (surgery + CHT, RXT alone, Surgery + CHT + RXT + HCT, Surgery + CHT + RXT, Palliative mastectomy, BCT + CHT + RXT, NACT + surgery + adjuvant therapy)

27. Does she/he take neoadjuvant chemotherapy ……;

28. How many cycles of chemo taken………………?

29. Response to neoadjuvant therapy; response (1) complete…….., 2) Partial….., 3) No …….)

30. Regimen of chemotherapy; 1) AC……, 2) FAC……, 3) AC-taxol………., 4) Specify if others………

31. Complications up to discharge; 1) SSI…., 2) Seroma…, 3) Flap necrosis….., 4) Lymphedema…., 5) no……

32. Length of hospital stay in days………………

33. Does the patient has follow up; 1) yes…… 2) no….., how long……(months)

34. Patient condition on follow up clinic; 1) Improved…., 2) The same……, 4) died……, 5) deteriorated……

35. Complication identified on follow up……………………………….

36. Recurrence; (1) yes………….. 2) no………………….)

37. If yes, specify the site recurrence…………..

Appendices

Approval of thesis for defense

I hereby certify that I have supervised, read, and evaluated this final thesis titled "trend, treatment outcome and associated factors of breast cancer at TGSH and FHRH from January 2018 to December 2021 G.C" by Dr. Assefa Sisay final year general surgery resident prepared under my guidance. I recommend the thesis be submitted for oral defense.

Dr Alemtsehay Mekonen (PHD)   _____   _____

          Advisor's name   Signature   Date

Dr Nebiate Embiale (MD)   _____   _____

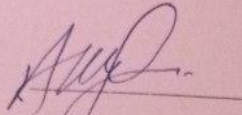   Advisor's name   Signature   Date

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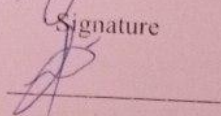
Dr Alemtsehay Mekonen (PHD)

Advisor's name   Signature

Dr Nebiate Embiale (MD)

Advisor's name   Signature

08/03/2015 EC

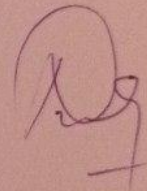Date

08/05/2015

Date

principal investigator - Dr. Assefa Sisay

Approval of thesis for defense result

We hereby certify that we have examined this thesis entitled "the trend, treatment outcome and associatedd factors of breast cancer at TGSH and FHRH from Jan 2018 to Dec 2021.

Board of Examiners

_____   _____   _____

External examiner's name   Signature   Date

_____   _____   _____

Internal examiner's name   Signature   Date

_____   _____   _____

Chair person's name   Signature   Date