ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PHARMACY

DEPARTMENT OF PHARMACEUTICS AND SOCIAL PHARMACY

Assessment of Health-Related Quality of Life, its Predictors and Utility among Patients with Breast Cancer at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia: A Hospital-Based Cross-Sectional Study

By: Selamawit Gebrehiwot (B.Pharm)

September, 2018

Addis Ababa, Ethiopia

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Assessment of Health Related Quality of Life, its Predictors and Utility among Patients with Breast Cancer at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia: A Hospital based Cross-sectional study

A Thesis Submitted to the Department of Pharmaceutics and Social Pharmacy, School of Pharmacy, College of Health Sciences, Addis Ababa University in Partial Fulfillment for the Requirements of Master of Science Degree in Pharmacoepidemology and Social Pharmacy.

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This is to certify that the Thesis prepared by Selamawit Gebrehiwot, entitled: **Assessment of Health Related Quality of Life, its Predictors and Utility among Patients with Breast Cancer at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia: A Hospital based Cross-sectional study** and submitted in partial fulfillment of the requirements for the degree of Master of Pharmacy in Pharmacoepidemology and Social Pharmacy complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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List of Acronyms /Abbreviations

AMHI	Average Monthly Household Income
ETB	Ethiopian Birr
EORTC QLQ-BR23	European Organization for Research and Treatment of Cancer-Breast Module
EORTC QLQ-C30	European Organization for Research and Treatment of Cancer
EQ5D-5L	Euro Quality of Life Group's 5-Domain Questionnaires 5 Levels
EQ-VAS	Euro Quality of Life Group's visual analog scale
HRQoL	Health Related Quality of Life
QALY	Quality Adjusted Life Year
GLOBOCAN	Global Cancer Initiative
GQoL	Global Quality of Life
TASH	Tikur Anbessa Specialized Hospital
UK	United Kingdom

Abstract

Background: Breast cancer is the most common cause of mortality and morbidity in Ethiopia. So far, the focus has been on clinical management of cancer but nowadays, health-related quality of life (HRQoL) is emerging as an important health outcome. Hence, evaluating the HRQoL and utility is relevant to monitor patient treatment outcome and determine their quality adjusted life year's gains to be used for economic evaluations.

Objective: To assess HRQoL, influencing factors, and utility among patients with breast cancer at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia.

Methods: Hospital-based cross-sectional study was conducted among 404 women with breast cancer from December to February, 2018. The Amharic version of European Organization for Research and Treatment of Cancer-Breast Module, European Organization for Research and Treatment of Cancer, Euro Quality of Life Group's 5-Domain Questionnaires 5 Levels and Euro Quality of Life Group's visual analog scale instruments were used to collect the data. The HRQoL data was analyzed using SPSS version 23 while Microsoft Office Excel 2010 was used to analyze the utility score. Mean difference among independent were analyzed using one way ANOVA, Kruskal-wallis-test and Mann-whitney u test. Multivariable logistic regression was employed to assess the possible predictors of HRQoL.

Results: The mean age of patients was 43.94 ± 11.72 years with majority (35.1%) of them on cancer stage 3. The mean score for global quality of life (GQoL) and visual scale analog was 59.32±22.94 and 69.94 ± 20.36, respectively while their mean utility score was 0.8 ± 0.25.The possible predictors of HRQoL were found to be stage of cancer (AOR= 7.94; 95%CI: 1.83-34.54), cognitive functioning (AOR=2.38; 95%CI: 1.32-4.31), pain (AOR=7.99; 95%CI: 4.62-13.83), financial difficulties (AOR=2.60; 95%CI: 1.56-4.35), and future perspective (AOR=2.08;95%CI: 1.24-3.49).

Conclusions: The GQoL of patients from the present study was comparable to other studies and the utility mean score was estimated to be above average.

Key words: Breast cancer, Health related quality of life, HRQoL, Utility, EQ5D-5L, EORTC-QLQ-C30, EORTC-QLQ-BR23, Ethiopia.

1. Introduction

1.1. Background

Breast cancer is the most frequently diagnosed and leading cause of cancer related deaths among females worldwide. A study done on global burden of cancer showed 2.4 million women were diagnosed With 523,000 related deaths due to breast cancer in 2015 (GLOBCAN, 2017). Approximately 60% of deaths due to breast cancer occur in developing countries (da Costa Vieira *et al*., 2017). In Africa, cancer is emerging as the critical public health problems where the incidence is rising in Ethiopia, like other sub-Saharan countries (Tefera et al., 2016, Jemal et al., 2011).

Despite advances in medicine, Breast cancer is diagnosed in the advanced stages in countries with limited resources because early detection, diagnosis, and treatment cannot be efficiently promoted(da Costa Vieira *et al*., 2017). It was reported that African patients present late with aggressive tumors and face lack of therapeutic options, resulting in short survival duration(Balekouzou *et al.,* 2016). Similarly, Ethiopian women with breast cancer often ignore lumps, and usually seek treatment only when symptoms like pain and itching occur(Woldeamanuel *et al*., 2013). This, in sequence, can lead to worsening of the HRQoL of breast cancer patients.

Health related quality of life is a wellbeing related to or affected by the presence of a disease or treatments(Ebrahim, 1995).It generally consists of a number of domains including physical functioning, psychological well-being (such as levels of anxiety and depression), and social support (Perry *et al*., 2007). A diagnosis of breast cancer is a distressing event that affects physical and psychological functioning and impacts on lifestyle and social engagements (Bloom *et al*., 2012). Patients with breast cancer experience physical symptoms and psychosocial distress that adversely affect their HRQoL.

Patients receiving chemotherapy might experience several side-effects and symptoms that negatively affect their HRQoL (Montazeri *et al*., 2008). In addition to the treatment and disease burden, functioning scales and symptom scales have also an impact on HRQoL of patients (Safaee *et al*., 2008).

However, studies conducted on HRQoL in patients with breast cancer enormously contributed towards improved breast cancer care (Montazeri *et al*., 2008). Measuring HRQoL improves patient's health outcome by incorporating better treatment options. Healthcare studies use many different health outcome measures to demonstrate the effect of a treatment. Health state utility values are essential for cost–utility analysis, which in turn contribute to health economic evaluation(Whitehead and Ali, 2010). In Ethiopia, although there was studies conducted focusing on HRQoL of patients (Bekele, 2016, Yilma, 2016), utility scores were not given enough attention to assist health economic decisions. Therefore, this research endeavors to assess and bring detailed analysis on HRQoL among patients with breast cancer and their utility at Tikur Anbessa Specialized Hospital (TASH).

1.2. Statements of the problem

Breast cancer is a growing problem worldwide which has been the leading cause of death among women of both developed and developing nations, and the most prevalent cancer among African women (Obrist *et al*., 2014). According to 2012 GLOBOCAN statistics, nearly 1.7 million women were diagnosed with breast cancer with 521,900 related deaths; an increase in breast cancer incidence and related mortality by nearly 18% from 2008. It has been predicted that the worldwide incidence of breast cancer will reach approximately 3.2 million new cases per year by 2050 (Tao *et al*., 2015).

About two-thirds of the annual cancer mortality and more than 50% of all new cancers worldwide happen in low income and middle-income countries (Knaul *et al*., 2011).It is estimated that there are annual new cases of 882,900 and 324,300 death every year in developing nations (Torre *et al*., 2015).These numbers reflect the magnitude of breast cancer incidence, its effect on society world-wide and the need for urgency for preventive and treatment measures.

The impact of cancer is far greater than the number of cases would suggest. Regardless of prognosis, the initial diagnosis of cancer is perceived as a life-threatening event, with over one-third of patients experiencing clinical anxiety and depression. Cancer is also distressing for the family, profoundly affecting both the family's daily functioning and economic situation. The economic shock includes both the loss of income and the expenses associated with health care costs. Aside from the primary diagnosis with breast cancer, The incurable nature along with

recurrence of the disease causes, psychological distress, deterioration of physical functioning, and aggravation of symptom scales to patients which in turn affects the HRQoL of these patients (Perry *et al*., 2007, Grabsch *et al.*, 2006).

Measuring HRQoL helps towards better patient outcome in a way of making decisions towards alternative treatments. Thus, utility measurements are particularly appropriate, given their foundation in decision theory, to conduct economic evaluations and make decision to introduce cost-effectiveness interventions (Whitehead and Ali, 2010, Torrance, 1987).

Even though breast cancer is the leading cause of morbidity and mortality among women with cancer in Ethiopia, HRQoL among patients with breast cancer is given minimal emphasis. There are a couple of studies conducted in TASH using European Organization for Research and Treatment of Cancer (EORTC QLQ-C30), European Organization for Research and Treatment of Cancer-Breast Module (EORTC QLQ-BR23) but did not measure utility (Bekele, 2016, Yilma, 2016). Based on those studies, health economic evaluations for decision making cannot be employed. Thus, assessing the HRQoL and the utility at the same time projected to same population helps to provide information to decision makers for efficient use of available resources for maximizing health benefits (Dang *et al*., 2016).

1.3. Significance of the study

Evaluating the HRQoL is used to identify cancer patients in need of clinical attention and to evaluate interventions for cancer patients and lead to better outcome. Epidemiological studies suggest that addressing socio-economic issues is utmost important, so that all patients have equal access to medical care from screening to advanced treatment, and only such decisive action can help reduce the worldwide burden of breast cancer (Tao *et al*., 2015).Therefore, the present study will fill the knowledge gap about the impact of socio-demographic and clinical factors on HRQoL among patients with breast cancer in the study setting. Furthermore, it will help healthcare providers to recognize the causes that affect HRQoL and to identify the aspects of patient treatment protocol that needs to be enhanced to improve their HRQoL since its assessment is used to measure the outcome of medical intervention. It will mainly help for economic evaluation of existing and new chemotherapy drugs for patients with breast cancer.

2. Literature review

2.1. Burden of Breast Cancer

The leading cancer sites in 2030 are predicted to be prostate, lung, and melanoma for men and breast, thyroid, and uterine for women. Combined sex analysis shows that breast, prostate, and lung cancers will remain the highest in absolute number of cases until 2030. Projected incidence of breast cancer based on changing demographics and average annual percentage change in incidence rates in 2010, 2020, and 2030 estimated as 226,000, 262,000 and 294,000 respectively (Rahib *et al*., 2014).

Breast cancer alone accounts for 25% of all cancer cases and 15% of all cancer deaths among women worldwide. More developed countries account for about one-half of all breast cancer cases and 38% of deaths (Torre et al., 2015). Even though the highest reported prevalence of breast cancer is in developed nations, a significant body of research has found an increasing incidence and poorer survival from breast cancer in developing countries (Bhikoo *et al*., 2011). In Africa, cancer is emerging as the critical public health problems. In 2008, there was an estimate of 715,000 new cancer cases and 542,000 cancer deaths occurred in Africa (Torre et al., 2015). In sub-Saharan African countries, cancers of prostate (20.3%), liver (9.7%) and Kaposi – sarcoma (9.2%) are the three commonest cancers in males, while cancers of the breast (25.2%), cervix (25.2%) and colorectal (3.7%) are the top in women (Jemal et al., 2011).

Like other sub-Saharan countries, the incidence of cancer is rising in Ethiopia. Thus in Ethiopia, cancer accounts for about 5.8% of total national mortality. Although population-based data does not exist in the country except for Addis Ababa, it is estimated that the annual incidence of cancer is around 60,960 cases and the annual mortality is over 44,000. The most prevalent cancers in Ethiopia among the entire adult population are breast cancer (30.2%), cancer of the cervix (13.4%) and colorectal cancer (5.7%). About two-thirds of annual cancer deaths occur among women (FMOH, 2015).

2.2. Treatment and prognosis of Breast cancer

Breast cancer is divided into operable (also known as early that describes which is confined to the breast and/or the lymph glands in axilla (arm pit) on the same side of the body) and advanced(where the cancer has spread beyond the breast and arm pit to other parts or organs of the body) for the management purpose. Advanced is either locally advanced or metastatic disease (Rustogi et al., 2005). There are different managements of breast cancer like Surgery, Radiation, Target therapy (Hormone therapy, Human epidermal growth factor receptor 2 targeted therapy), chemotherapy (Paik et al., 2004).

The Ethiopian standard treatment guideline also suggests a combination of pharmacological and non-pharmacological treatment strategies for treatment of breast cancer. A non-pharmacologic treatment in early stage breast cancer is Surgery. Modified Radical Mastectomy is the preferred treatment in Ethiopia. Breast conservative Surgery is not recommended as it always needs adjuvant Radiotherapy to reduce recurrence of cancer. The waiting time for Radiotherapy is currently very long. Radiotherapy is indicated to reduce loco regional (chest wall and axillary lymphnode). Chemotherapy/Hormonal therapy is used to eradicate microscopic residual tumor. Indications for adjuvant Chemotherapy: Tumor > 1cm in Diameter and Positive lymph node. Patient with good response to chemotherapy should be assessed by surgeon for modified: radical mastectomy or Radiotherapy-refer. Patients with limited bone and skin metastasis have good prognosis and long survivals as compared to patients with visceral metastasis involving lung, liver, and brain etc. and can be tried on hormonal treatment (FMHACA, 2014).

2.3. Health related quality of life and utility of patients with Breast cancer

The World Health Organization defined HRQoL as involving a person's physical health, psychological state, degree of independence, social relationships, personal beliefs and environment (Harrington *et al*., 2014). Breast cancer patients faced physical, psychological and social distress in addition to fatigue, irritability, memory loss, decreased energy level, and recurring pain and decreased HRQoL. The symptom distress experienced by those patients is a critical factor influencing their HRQoL (Huang *et al*., 2017).

The influence of a disease and its treatments on various spheres of life of affected individuals can be investigated by HRQoL scores (Kulesza-Bronczyk *et al*., 2014). The EORTC QLQ-C30 is a tool that is currently being used to assess the HRQoL of patients with cancer. This tool has a possible mean range between 0-100 with the scores for GQoL which with high score represents better HRQoL (Aaronson *et al*., 1993). This tool incorporates different items which investigate the different dimensions of HRQoL in cancer patients such as functional, symptom, a GQoL scale, and different symptoms commonly reported by cancer patients. Moreover, breast cancer related symptoms are being investigated using the EORTC QLQ-BR23 questionnaire in addition to the core questionnaire to assess the HRQoL for breast cancer patients.

HRQoL is an important issue in the treatment of breast cancer and health state utility values are essential for cost–utility analysis (Peasgood *et al*., 2010). The ultimate goal of HRQoL research must be to improve medical care and inform medical decision making. Individual patients who incorporate HRQoL considerations into their decisions generally feel better about their treatment choices and are more satisfied with their overall care (Litwin, 2006).

The impact upon HRQoL and length of life are both important to the assessment of treatments for breast cancer. These outcomes are increasingly being combined using values for HRQoL to derive Quality Adjusted Life Year (QALY). QALYs are calculated by multiplying the time spent in a health state by the health-state utility values assigned to this health state. Within economic model pathways, the total costs, and QALYs gained from alternative treatments can be compared. The cost per QALY of competing treatments can be a useful input into medical decision making and priority setting (Peasgood et al., 2010).

2.4. Associated factors of health-related quality of life of patients with breast cancer

Using the EORTC QLQ-C30 in developing countries, patients with breast cancer have an average to intense functioning experience. Within the functional scales, the worst scores were for emotional functioning and the most intense symptom were fatigue, hair loss, pain and insomnia. The best domains of GQoL were cognitive, social and sexual functioning. Studies Brazil women with breast cancer patients tended to have poor emotional well-being as measured by EORTC-QLQ (Lôbo et al., 2014). Among Bahraini patients, social functioning

scored the highest, whereas emotional functioning and sexual functioning scored the lowest, in addition the most distressing symptom was fatigue, followed by hair loss as the most intense symptom (Jassim and Whitford, 2013).

Studies conducted among women with breast cancer have identified socio-demographic and clinical factors associated with HRQoL. Results of studies conducted in United Arab Emirates (Awad et al., 2008), Lebanon (Huijer and Abboud, 2012) and Bahrain (Jassim and Whitford, 2013) have shown strong relationship between medical characteristics and GQoL. As a result, family history of cancer, menopausal status, presence of metastasis, time since diagnosis, symptoms, disease stage, presence of side effects and type of treatment received were significantly associated with GQoL.

Similarly, in Jordan the social functioning scored the highest while emotional functioning, body image, and future perspective scored the lowest (Abu-Helalah et al., 2014). Study conducted in Singapore showed that younger women had experienced more physical and psychosocial concerns than older women who had good symptom experience (Tan *et al*., 2014).

A study conducted in Malaysia showed that physical and social functioning improved over time and there were no significant changes in other two functioning scales, namely, role and cognitive. And, depression is relatively low and does not change significantly at both 6months and 12 months' time point, but anxiety changed overtime (Ng et al., 2015). Another study conducted in India showed that all functioning and symptoms significant improvement over time. Related to the symptom depression were reported in all variables which has a statistically significant impact from a study conducted in India where participants with depression were more likely to have poorer overall GQoL (Bouzari *et al*., 2011).Similarly, a study conducted in Brazil regarding the symptom scale; the highest scores were insomnia, fatigue and loss of appetite. Regarding the subscales of the QLQ-BR23 instrument, the most affected scores were hair loss, arm symptoms, and breast symptoms (Soares *et al*., 2013).

3. Research Questions

This study tried to explore and answer the following questions:

1. What is the HRQoL of patients with breast cancer in TASH?
2. What are the predictive factors associated with the HRQOL of patients with breast cancer in TASH?
3. What is the utility value of patients with breast cancer in TASH?

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4. Objectives

4.1. General objective

- To assess HRQoL, influencing factors, and utility among patients with breast cancer at TASH, Addis Ababa, Ethiopia.

4.2. Specific objectives

- To assess the HRQoL among patients with breast cancer at TASH, Addis Ababa, Ethiopia.
- To estimate the utility mean score of patients with breast cancer at TASH, Addis Ababa, Ethiopia.
- To identify factors associated with HRQoL among patients with breast cancer at TASH, Addis Ababa, Ethiopia.

5. Methods

5.1. Study setting

The study was conducted at the oncology unit of TASH, the largest teaching hospital under the administration of Addis Ababa University, College of Health Sciences. The hospital started providing services starting from 1972. The hospital has 700 beds giving diagnostic and treatment service for about 370,000 to 400,000 patients per year.

The oncology unit at TASH is the largest referral site for the country, giving service for over 60,000 patients annually and has an out-patient, in-patient (21beds), radiotherapy and palliative care services. There were 6 senior oncologists, 25 residents and 36 oncology nurses and 8 pharmacists working in the unit (TASH, 2018).

5.2. Study design and period

A hospital based cross-sectional study design was employed to assess the HRQoL, associated factors, and utility among patients with breast cancer at the oncology unit of TASH. Data collection was conducted from December to February 2018.

5.3. Source and study population

All patients with breast cancer who were being treated at the oncology unit of TASH were the source population. The study population included all breast cancer patients who visited the oncology unit at the time of data collection period and fulfilling the eligibility criteria.

5.4. Eligibility criteria

All female patients diagnosed with breast cancer; both new and follow up were included in the study. Those patients who were pregnant, critically ill (too weak to communicate, according to the oncology physician) or have a psychiatric disorder, participants who can't speak and/or read Amharic language and unwilling to participate in the study were excluded.

5.5. Sampling and sample size

The sample size was calculated by using single population proportion formula (Fisher et al., 1983). Due to absence of studies done using Euro Quality of Life Group's 5-Domain Questionnaires 5 Levels (EQ-5D-5L) and with the intention of obtaining maximum sample size, an estimate proportion of patients that have utility values above the average was considered to be 50%, was used to calculate the sample size.

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

$$n = \frac{(1.96)^2(0.5)(0.5)}{(.05)2} = 384$$

Where: - **n**= required sample size

$\mathbf{Z_{\alpha/2}}$= 1.96 (Z=score corresponds to 95% confidence level)

P= proportion of patients with utility above the average

$\mathbf{d^2}$= margin of error (0.05)

Considering a 5% of contingency for inappropriate and nonresponses, a total of 404 patients were approached. Due to few number of breast cancer patients, participants were recruited consecutively until the required sample size was reached.

5.6. Study variables

5.6.1. Dependent variable

- GQoL
- Functional scales
- Symptom scales

5.6.2. Independent variable

- Socio-demographic characteristics such as age, marital status, level of education, and average monthly household income (AMHI).

- Clinical characteristics such as patient status, time since diagnosis, stage of cancer, current type of anticancer treatment and comorbid conditions.
- Functional scales
- Symptom scales

5.7. Data collection instruments

Patients were interviewed for socio-demographic (age, marital status, level of education) and AMHI information. Besides data on clinical characteristics (patient status, time since diagnosis, stage of cancer, current type of anticancer treatment and comorbid conditions) were filled through chart review by data collectors. The total time for completion of the questionnaires was approximately 15-20 minutes.

A general questionnaire (EORTC QLQ-C30, EQ-5D-5L and Euro Quality of Life Group's visual scale analog (EQ-VAS)) and a patient disease specific questionnaire (EORTC QLQ-BR23) were used. EQ-5D-5L was used to estimate the utility of patients while EORTCQLQ-C30 and EORTC QLQ-BR23 were used to assess the HRQoL.

i. EORTC QLQ-C30

The EORTC QLQ-C30 consists of five functional scales (physical, emotional, role, cognitive, and social functioning), nine symptom scales (fatigue, nausea/vomiting, pain, dyspnea, insomnia, appetite loss, constipation, diarrhea and financial difficulties) and GQoL scale, which aims to provide a multidimensional assessment of the HRQoL of patients based on 28 questions using a four-point scale. Two additional questions were used to determine the state of health on a seven-point Likert scale. Each of the multi-item scales includes a different set of items, no item occurs in more than one scale (Fayers *et al*., 2001).

ii. EORTC QLQ-BR23

The side-effects of therapy and tumour-related symptoms in patients with breast cancer was determined and recorded using the additional EORTC QLQ-BR23 module, which consists of 23 questions distributed across eight (sexual functioning, future perspective, body image, sexual

enjoyment, systemic therapy, breast symptoms, arm symptoms, and upset by hair loss) with a four-point scales; from 1= not at all to 4 = very much. (Fayers *et al*., 2001).

iii. EQ-5D-5L, and EQ VAS

The generic EQ-5D-5L questionnaire investigated the HRQoL across five dimensions (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression), with a 5-level response (from 1= no problem to 5= extreme problem) and the EQ-VAS scale on which the overall state of health is marked by the patient in the form of a number (0 = worst imaginable state of health, 100 = best imaginable state of health).And the utility value between the worst and best on to 0-1, 0 is for death and 1 is for perfect health. EQ-5D-5L is highly discriminatory, easy to use and can generate a single total score based on socially relevant measures of HRQoL(Gusi *et al*., 2010). EQ-5D5L defines a total of 3125 health states (i.e., 5^5).

5.8. Scoring of results

The collected responses were coded, entered and cleaned. Both EORTC QLQ-C30 and EORTC QLQ-BR23 are composed of both multi-item scales and single-item measures. Each of the multi-item scales includes a different set of items no item occurs in more than one scale. The principle for scoring the EORTC QLQ-C30 and EORTC QLQ-BR23 scales is the same in all cases which starts with estimating the average of the items that contribute to the scale (raw score) and using a linear transformation to standardize the raw score. Scores range from 0 to 100; a higher score represents a higher ("better") level of functioning, or a higher ("worse") level of symptoms (Fayers *et al*., 2001). The raw score was calculated as follows:

Raw score

Calculate the raw score

Raw Score = RS = (I1 + I2 +...+ In)/ n

Linear transformation

Apply the linear transformation to 0-100 to obtain the score S,

Functional scales: S = {1- (RS -1) }*100

Range

Symptom scales / items: S = {(RS -1)/range}*100

Global health status / QoL: S = {(RS - 1)/range}*100

RS= Raw Score, I= Item

Remarks

1. Sexual enjoyment is not applicable if item 15 is scored “not at all.”
2. Upset by hair loss is not applicable if item 4 is “not at all.”

The above two items for the scales are scored positively (i.e. “very much” is best) and therefore use the same algebraic equation as for symptom scales which is reversely coded; however, the Body Image scale uses the algebraic equation for functioning scales (Aaronson et al. 1993).

5.9. Data quality assurance

To maintain the quality of the data, validate structured questionnaires were utilized. Pretest of the questionnaires was carried out in 5% of the participants to assure the quality of the questionnaires. Data were collected by two trained oncology nurses working within the oncology clinic. Two days training was given for the oncology nurses focusing on; the contents of the questionnaire, the identification of patients based on the inclusion/exclusion criteria, and how to get consent. All the collected data were checked for completeness by the principal investigator on a daily basis.

5.10. Data Analysis and Interpretation

Data was entered to Epi-info version 7.2., then exported and analyzed using Statistical Package for Social Sciences (SPSS) version 23.0, while Microsoft Office Excel 2010 was used to analyze the EQ-5D-5L utility mean score. Analyzing the data, responses were reverse coded as appropriate. Simple descriptive statistics such as frequencies, means, and standard deviations (SD) were employed to report the socio-demographic characteristics, clinical characteristics, EORTC QLQ-C30, EORTC QLQ-BR23, EQ-5D-5L, and EQ VAS scores.

Multivariable logistic regression was carried out to identify possible predicting factors for GQoL. GQoL, symptom and functional scales have been dichotomized and binary logistic regression was conducted between the GQoL and independent variables to obtain candidate variables for multi-variable logistic regression analysis. Variables with *p*-value <0.25 were

candidate for multiple regression analysis. Due to many independent variables, forward stepwise method was used for the multivariable analysis and significance of association was determined at *p*-value <0.05.

The mean difference among independent variables (socio-demographic and clinical characteristics) was done by analysis of variance (ANOVA) and for those which are not distributed normally a non-parametric analysis (Kruskal-wallis-test and Mann-whitney u test). *p*-values with <0.05 were considered statistically significant.

Patient's utility score is obtained using possible (3125) health states of patients with breast cancer defined by the 5 dimensions and disutility coefficient of general population. Final utility score was estimated using Ethiopian general population disutility coefficient obtained from a censored heteroscedasticity a hybrid modeling (Welie et al., 2018). The formula below was used to estimate the final utility value for each state (except for state 1111 which set at 1).

Utility value = mo2 * coef1+ mo3 * coef2+ mo4 * coef3+ mo5 * coef4+ sc2 * coef5+ sc3 * coef6+ sc4 * coef7+ sc5 * coef8+ ua2 * coef9+ ua3 * coef10+ ua4 * coef11+ ua5 * coef12+ pd2 * coef13+ pd3 * coef14+ pd4 * coef15+ pd5 * coef16+ ad2 * coef17+ ad3 * coef18+ ad4 * coef19+ ad5 * coef20

coef= coefficient, mo=mobility, sc=self-care, ua=usual activity, pd=pain and discomfort, ad=Anxiety and depression

5.11. Ethical considerations

Ethical approval was obtained from the Ethics Review Committee of School of Pharmacy, Addis Ababa University (ERB/SOP/40/10/2017) and an official letter of support was provided to TASH to get approval in data collection. Verbal informed consent was obtained from the study participants after explaining the purpose of study. Participants were assured of anonymity and about the confidentiality of their information obtained in the study by excluding any personal identifier in the data collection form and that their answers would remain confidential. They were also reassured that the report of the findings would not identify them and only the aggregate data would be reported. Participant were informed the right to refuse or terminate at any point of the interview.

5.12. Operational Definitions

Functional scales: physical, emotional, role, cognitive, social, sexual functioning, future perspective, body image, and sexual enjoyment.

Symptom scales: systemic therapy, breast symptoms, arm symptoms, upset by hair loss, fatigue, nausea/vomiting, pain, dyspnea, insomnia, appetite loss, constipation, diarrhea and financial difficulties

Affected functional and symptom scales: There are no clear threshold levels stated in the search of literatures and in the scoring manuals for the EORTC QLQ-C30 and EORTC QLQBR23 scales to indicate the threshold scores that are likely to mean significant impairment. Therefore, in this study, after transformation of each domain, it was dichotomized into "Affected at any degree" and "Not affected at all". In which a score below 75 (above 75 mean no problem at all) for functional and QoL scales which indicate affected domain at any degree are used as affected. Scores above 25 mean (below 25 indicates no symptom at all) which indicate there was a problem at any degrees have been used as affected for symptom scales

Affected Global health status/QoL: Scoring below 75 or below the cut of point of 75.

6. Results

6.1. Socio-demographic characteristics/socio-economic characteristics of patients

The results of the study are based on 404 patients. The questionnaires were filled with no missing responses. Patients' mean age was 43.94±11.72 years and ranged from 24 – 98 years. More than half (79.2%) of the patients were in the age range of 25-54 years and most (51.7%) of them were living in Addis Ababa. Among the patients, Orthodox Christians and Muslim accounted for 283(70.0%) and 71(17.6%), respectively. The study showed that most (57.4%) of the patients were married and 284(70.2 %) of the patients attended formal education. However, 92 (22.8%) of the patients were illiterates. The majority (40%) of patients were housewives. The mean average family monthly income was 2634 ±3373 Ethiopian Birr (ETB). One-third (31.9%) of the patient's household income was ≤600 ETB, which was below the poverty line (FDRE, 2017) (Table 1).

Table 1: Socio-demographic/Socio-economic characteristics of patients with Breast cancer at TASH, Addis Ababa, Ethiopia, 2018.

Study Variables	n (%)
1.1 Age (years)	
15-24	3 (0.7)
25-54	320 (79.2)
55-64	57 (14.1)
>65	24 (5.9)
1.2 Region	
Addis Ababa	209 (51.7)
Oromiya	90 (22.3)
SNNPR	48 (11.9)
Amhara	42 (10.4)
Others[*a]	15 (3.7)
1.3 Religion	
Orthodox	283 (70.0)
Muslim	71 (17.6)
Protestant	49 (12.1)
Catholic	1 (0.2)
1.4 Marital status	
Single	56 (13.9)
Married	232 (57.4)
Divorced	56 (13.9)
Widowed	60 (14.9)

1.5 Level of Education	
Illiterate (neither read nor write)	92 (22.8)
Informal Education	28 (6.9)
Primary Education	76 (18.8)
Secondary Education	123 (30.4)
Higher Education (Certificate, Diploma, and above)	85 (21.0)
1.6 Occupational status	
Government employee	79 (19.6)
Private employee	47 (11.6)
House wife	165 (40.8)
Others[*b]	113 (28.0)
1.7 AMHI, in ETB	
≤600	129 (31.9)
>600	275 (68.1)

[*a] Tigray, Dire Dawa, Somalia, Afar, Harar

[*b]Merchant, Retired, Farmer, Unemployed

6.2. Clinical characteristics of patients

Majority (89.4%) of the patients was on follow up and more than half (52.7%) patients with breast cancer were one year and less time since diagnosis. Regarding the severity, 142 (35.1%) and 134 (33.2%) of patients with breast cancer were in cancer stage of 3 and 2, respectively. Most 156 (38.6%) of the patients received a combination of surgical treatment and chemotherapy followed by a combination of surgery, chemotherapy and hormonal therapy 87 (21.5%). Considering their health status, 318 (78.7%) of patients with breast cancer had no comorbid conditions (Table 2).

Table 2: Clinical characteristics of patients with Breast cancer at TASH, Addis Ababa, Ethiopia, 2018.

Study Variables	n (%)
2.1 Patient status	
New patient	43 (10.6)
Follow up	361 (89.4)
2.2 Time since diagnosis (months)	
<12 months	213 (52.7)
13-60 months	154 (38.1)
>61months	37 (9.2)
2.3 Stage of cancer	
Stage 1	13 (3.2)
Stage 2	134 (33.2)
Stage 3	142 (35.1)
Stage 4	84 (20.8)

Unknown	31 (7.7)
2.4 Treatment history	
Surgery	22 (5.4)
Chemotherapy	26 (6.4)
Hormonal therapy	1 (0.2)
Surgery and chemotherapy	156 (38.6)
Surgery and radiotherapy	3 (0.7)
Surgery and hormonal therapy	7 (1.7)
Chemotherapy and radiotherapy	3 (0.7)
Chemotherapy and hormonal therapy	6 (1.5)
Surgery, chemotherapy and radiotherapy	43 (10.6)
Surgery, chemotherapy and hormonal therapy	87 (21.5)
Chemotherapy, radiotherapy and hormonal therapy	3 (0.7)
Surgery, chemotherapy, radiotherapy and hormonal therapy	47 (11.6)
2.5 Current treatment	
Surgery	212 (52.5)
Chemotherapy	24 (5.9)
Hormonal therapy	139 (34.4)
Radiotherapy	29 (7.2)
2.6 Comorbid conditions	
None	318 (78.7)
RVI	14 (3.5)
Hypertension	29 (7.2)
Diabetic mellitus	10 (2.5)
Asthma	8 (2.0)
Hypertension and Diabetic mellitus	9 (2.2)
Hypertension and RVI	3 (0.7)
Others*	13 (3.2)

*****heart failure, ischemic heart disease, peripheral neuropathy, Disc dislocation, cholesterol

6.3. Global quality of life and utility among Breast cancer patients

All of the items had Cronbach's alpha of $\alpha \geq 0.70$ except Cognitive functioning (0.46). The GQoL mean score was found to be 59.32 ± 22.94. The functional scale scores ranged from mean 67.97 ± 25.15 for physical functioning to a mean of 80.07 ± 30.08 for social functioning. All the symptom scales and items except for nausea/vomiting, dyspnea, constipation, and diarrhea scored above 25. With regarding to EORTC QLQ-BR23 functioning scales/items, body image was the highest score (77.21±32.09), while sexual functioning recorded the lowest score (17.78±28.09). Except for breast symptoms and arm symptoms, the others scored above 25 for the symptom scales and items (Table 3).

Table 3: Means, SD values and Cronbach's alpha of the EORTC QLQ-C30 and EORTC QLQ-BR23 Scales Variables of patients with Breast cancer at TASH, Addis Ababa, Ethiopia, 2018.

	EORTC QLQ-C30 and EORTC QLQ-BR23 Scales	Item numbers	Mean ± SD	Cronbach's alpha
EORTC QLQ- C30	GQoL	29,30	59.32 ± 22.94	0.74
	Functional scales			
	Physical functioning	1 to 5	67.97 ± 25.15	0.78
	Role functioning	6,7	73.18 ± 36.19	0.96
	Emotional functioning	21 to 24	71.51 ± 29.74	0.87
	Cognitive functioning	20,25	78.55 ± 26.23	0.46
	Social functioning	26,27	80.07 ± 30.08	0.79
	Symptom scales and Items			
	Fatigue	10,12,18	42.38 ± 33.35	0.87
	Nausea and Vomiting	14,15	14.48 ± 24.96	0.73
	Pain	9,19	36.46 ± 32.91	0.79
	Dyspnoea	8	18.65 ± 30.69	NA
	Insomnia	11	33.16 ± 39.85	NA
	Appetite loss	13	36.47 ± 40.69	NA
	Constipation	16	24.83 ± 35.72	NA
	Diarrhea	17	4.04 ± 14.76	NA
	Financial Difficulties	28	48.59 ± 44.56	NA
EORTC QLQ-BR23	Functional scales			
	Body image	39-42	77.21 ± 32.09	0.94
	Sexual functioning	44,45	17.78 ± 28.09	0.88
	Sexual enjoyment	46	63.51 ± 30.98	NA
	Future perspective	43	52.47 ± 43.13	NA
	Symptom scales/ items			
	Systemic therapy side effects	31-34,36,37,38	34.11 ± 22.59	0.70
	Breast symptoms	50-53	18.39 ± 22.71	0.76
	Arm symptoms	47,48,49	24.92 ± 25.06	0.69
	Upset by hair loss	35	26.92 ± 40.24	NA

For the EQ-5D-5L, except for pain variable, more than half of the patients had no problem in any of the five dimensions. The study showed that 23.8%, 4.2%, and 1% of the patients reported slight to moderate, severe mobility problem, and unable to walk, respectively. According to the study, 9.9% of them reported a slight to moderate self-care problem while 1.7% of them were unable to wash or dress themselves. Regarding daily activities, 27.4% of the patients reported that they experienced slight to moderate problems in their daily activity with 3.5% were unable

to do their usual activities. 43.3% of the patients reported that they suffered slight to moderate pain, 6.9% suffered a severe pain and 4.5% suffered an extreme pain. Considering depression/anxiety, 30.2%, 7.4%, and 2.7% of the patients suffered a slight to moderate, severe, and an extreme anxiety/depression, respectively (Figure 1).The mean score for the EQ-VAS was 69.94±20.36, while the mean utility score was found to be 0.8±0.25. Thus, the utility of the patients with breast cancer implies that they prefer to live with full health of 8 years than living 10 years with their current health status.

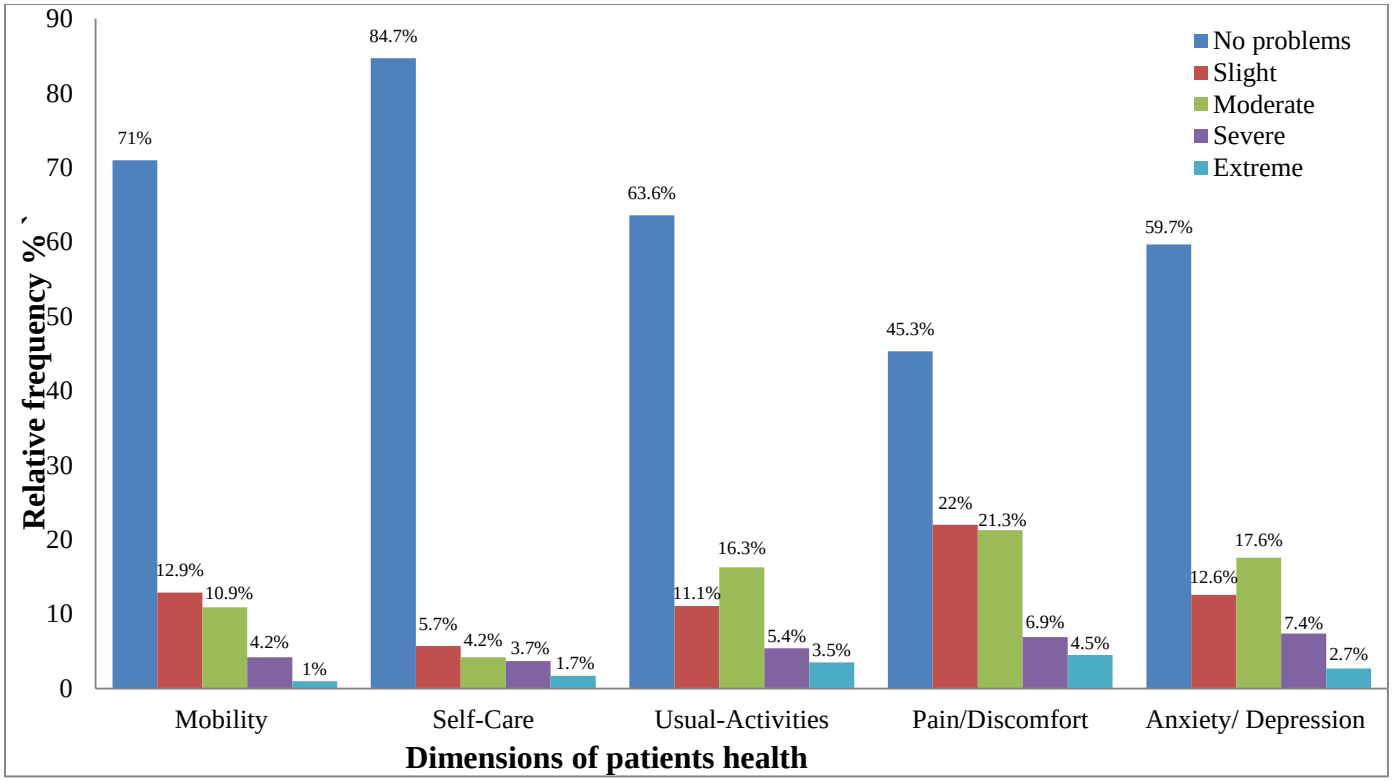

Figure 1: Frequency distribution of the five dimensional EQ-5D-5L questionnaire of patients with Breast cancer at TASH, Addis Ababa, Ethiopia, 2018.

6.4. Mean differences of EORTC QLQ-C30 functional scale with Socio-demographic/socio-economic and clinical characteristics

According to the present study, there was no significant mean difference across age groups with GQoL score, except for physical functioning from the functional scales of the EORTC QLQ-C30. Educational status showed significant mean difference with the GQoL, physical functioning and social functioning. AMHI showed significant mean difference with GQoL, physical

functioning and role functioning. The other socio demographic characteristics showed no significant mean difference with EORTC QLQ-C30 (Table 4).

Table 4: Mean differences of EORTC QLQ-C30 functional scale with Socio-demographic/socio-economic characteristics of patients with Breast cancer at TASH, Addis Ababa, Ethiopia, 2018.

	GQoL	PF	RF	EF	CF	SF
Age(years)						
15-24	52.8 ± 4.8	88.9 ± 10.2	94.4 ± 9.6	52.8 ± 19.3	88.9 ± 9.6	61.1 ± 34.7
25-54	59.5 ± 23.6	69.7 ± 24.4	73.2 ± 35.8	71.9 ± 29.2	79.2 ± 26.1	80.5 ± 30.3
55-64	59.3 ± 21.0	64.6 ± 25.7	74.8 ± 36.6	71.2 ± 32.3	74.3 ± 27.6	79.2 ± 28.7
>65	57.3 ± 19.5	50.5 ± 27.8	65.9 ± 41.5	69.8 ± 32.4	79.2 ± 26.1	79.1 ± 30.4
p-value	0.928	0.001*	0.551	0.725	0.539	0.728
Marital status						
Single	58.5 ± 24.6	69.3 ± 23.7	75.3 ± 36.1	75.7 ± 27.6	86.0 ± 19.5	72.6 ± 36.6
Married	60.2 ± 22.6	68.6 ± 24.7	72.6 ± 35.6	70.4 ± 30.6	76.7 ± 27.9	80.8 ± 28.4
Divorced	60.6 ± 24.2	72.1 ± 23.2	75.3 ± 34.8	73.5 ± 26.4	80.3 ± 22.3	81.8 ± 30.2
Widowed	55.7 ± 21.8	60.2 ± 28.6	71.4 ± 40.1	70.1 ± 31.5	76.9 ± 27.3	82.5 ± 29.5
p-value	0.563	0.055	0.901	0.604	0.104	0.245
Level of education						
Illiterate	53.3 ± 23.5	62.0 ± 26.2	64.5 ± 36.4	66.2 ± 33.1	73.2 ± 29.3	71.9 ± 32.2
Informal Education	53.9 ± 19.4	65.7 ± 23.7	77.9 ± 31.4	76.8 ± 26.9	83.9 ± 20.0	89.9 ± 21.4
Primary education	58.0 ± 21.6	64.6 ± 27.9	73.5 ± 37.6	70.7 ± 27.4	78.1 ± 24.6	76.3 ± 33.9
Secondary Education	59.5 ± 23.5	69.6 ± 26.4	73.6 ± 37.5	72.7 ±28.7	81.0 ± 24.8	83.9 ± 27.5
Higher education	68.5 ± 21.3	75.8 ± 16.8	80.2 ± 32.9	74.5 ± 30.1	79.4 ± 27.4	83.5 ± 28.2
p-value	0.000*	0.004*	0.060	0.297	0.182	0.007*
AMHI, in ETB						
≤600	50.6 ± 28.4	63.9 ± 26.5	66.7 ± 38.5	69.9 ± 29.4	77.8 ±24.0	76.9 ±31.5
>600	63.4 ± 21.4	69.9 ± 24.3	76.2 ± 34.7	72.2 ± 29.9	78.9 ±27.2	81.6 ±29.3
p-value	0.000*	0.027*	0.013*	0.473	0.687	0.143

PF=Physical Functioning, RF=Role functioning, EF=Emotional functioning, CF =Cognitive functioning, SF=Social functioning
*The mean difference is significant< 0.05

As shown in Table 5, there was a significant mean difference of EORTC QLQ-C30 functional scale with patient clinical characteristics. In this regard, new patients scored the lowest mean on emotional functioning. Similarly, patients who were on stage 4 cancer scored the lowest mean in GQoL, physical function and role functioning. The type of treatment showed a significant mean difference and those who were treated with radiotherapy scored lowest mean in their GQoL, role functioning, emotional functioning and cognitive functioning.

Table 5: Mean differences of EORTC QLQ-C30 functional scale with clinical characteristics of patients with Breast cancer at TASH, Addis Ababa, Ethiopia, 2018.

	GQoL	PH	RF	EF	CF	SF
Patient status						
New patient	59.1 ± 22.7	69.4 ± 29.4	65.9 ± 40.3	59.7 ± 32.5	80.6 ± 24.1	84.1 ± 26.5
Follow up	59.3 ± 23.0	67.8 ± 24.6	74.0 ± 35.6	72.9 ± 29.1	78.3 ± 26.5	79.6 ± 30.5
p-value	0.948	0.682	0.162	0.006*	0.584	0.353
Time since diagnosis (months)						
<12	58.8 ± 22.9	67.9 ± 24.7	69.1 ± 37.5	69.1 ± 29.9	78.1 ± 24.7	79.9 ± 30.3
13-60	59.6 ± 23.3	68.1 ± 26.5	77.9 ± 34.1	74.0 ± 30.1	78.2 ± 28.8	81.1 ± 28.8
>61	61.0 ± 21.9	67.2 ± 22.2	77.0 ± 34.9	75.2 ± 26.9	81.9 ± 23.3	77.0 ± 34.8
p-value	0.843	0.980	0.055	0.209	0.706	0.759
Stage of cancer						
Stage 1	62.2± 25.6	68.7 ± 22.8	82.0 ± 24.9	62.2 ± 31.8	85.9 ± 22.4	76.9 ± 25.9
Stage 2	64.4 ±19.1	73.4 ± 20.8	81.1 ± 31.1	74.3 ± 28.8	77.9 ±26. 4	84.2 ± 26.2
Stage 3	61.5 ± 22.5	69.5 ± 23.9	73.6 ± 35.2	72.9 ± 28.4	78.6 ± 26.9	79.8 ± 30.9
Stage 4	46.0 ± 23.9	54.9 ± 31.3	54.8 ± 42.8	64.9 ± 32.4	76.2 ± 27.2	73.8 ± 33.5
Unknown	62.1 ± 24.1	72.5 ± 17.6	83.3 ± 27.9	74.5 ± 30.0	83.9 ± 20.8	81.7 ± 32.3
p-value	0.000*	0.000*	0.000*	0.127	0.553	0.170
Current treatment						
CT	58.2 ± 22.1	66.3 ± 25.0	70.0 ± 38.0	70.5 ± 30.1	75.4 ±27.2	80.0 ± 30.2
S	62.8 ± 23.8	71.4 ± 23.1	70.8 ± 36.2	66.3 ± 35.2	86.1 ± 16.8	82.6 ± 29.7
HT	62.5 ± 23.3	70.6 ± 24.1	81.5 ± 30.6	76.4 ± 26.6	82.8 ± 25.1	82.5 ± 27.5
RT	49.1 ± 23.7	64.4 ± 31.6	58.0 ± 39.9	59.8 ± 33.1	74.7 ± 27.3	66.7 ± 38.6
p-value	0.023*	0.330	0.002*	0.026*	0.024*	0.077
Comorbid conditions						
Yes	61.8 ± 21.7	65.3 ± 24.8	78.3 ± 34.0	73.8 ± 29.5	75.4 ± 26.9	81.9 ± 30.7
No	58.6 ± 23.2	68.7 ± 25.2	71.8 ± 36.7	70.9 ± 29.8	79.4 ± 26.0	79.6 ± 29.9
p-value	0.256	0.276	0.140	0.415	0.208	0.509

PF=Physical Functioning, RF=Role functioning, EF=Emotional functioning, CF =Cognitive functioning, SF=Social functioning, CT= Chemo therapy, S= Surgery, HT= Hormonal therapy, RT=Radiotherapy

*The mean difference is significant at < 0.05 (ANOVA)

6.5. Mean differences of EORTC QLQ-C30 symptom scale with socio-demographic and clinical characteristics

The study showed that older patients (>65) scored a higher mean on dyspnea and appetite loss but the mean difference on the rest of symptom scales were not significant. Patients who were illiterates were significantly higher mean on appetite loss and financial difficulties but there was no significant mean difference on the other symptom scales. There was a significant mean difference in AMHI with constipation and financial difficulties but no mean difference on the other symptom scales (Table 6).

Table 6: Mean differences of EORTC QLQ-C30 symptom scale with socio-demographic/socio-economic characteristics of patients with breast cancer at TASH, Addis Ababa, Ethiopia, 2018.

	Fatigue	Nausea/Vomiting	Pain	Dyspnea	Insomnia	Appetite loss	Constipation	Diarrhea	Financial Difficulties
Age(years)									
15-24	22.2± 22.2	5.6±9.6	27.8±25.4	22.2±19.2	44.4±50.9	22.2±38.5	22.2±38.5	0.00±0.00	66.7±33.3
25-54	41.3±33.3	14.5±25.3	36.4±32.9	17.2±29.4	31.9±39.8	35.8±40.1	24.9±35.9	4.3±15.4	48.5±44.8
55-64	43.1±32.9	12.6±20.7	33.0±33.2	15.8±26.0	33.9±36.4	30.9±40.3	22.8±35.2	2.3±10.6	48.5±43.6
>65	57.4±32.7	20.1±29.9	45.8±33.4	44.4±45.7	47.2±46.0	59.7±43.9	29.2±35.9	5.5± 16.0	47.2±46.0
p-value	0.097	0.863	0.430	0.012*	0.324	0.031*	0.815	0.666	0.916
Marital status									
Single	40.9±31.6	11.0±23.8	36.6±33.1	15.5±25.4	33.9±40.9	27.4±38.2	29.8±41.5	2.9±11.5	45.2±47.3
Married	43.0±33.8	15.2±25.7	36.6±32.9	18.4±31.4	34.0±40.4	38.4±40.3	26.1±35.9	4.6±16.9	46.8±43.3
Divorced	36.9±31.9	13.9±21.9	32.1±31.7	15.5±23.7	23.2±32.4	34.5±41.7	20.2±30.9	2.9±9.6	52.9±45.3
Widowed	46.5±34.5	15.2±26.0	39.7±34.2	25.5±37.0	38.3±42.4	39.4±43.2	19.4±32.6	3.9±12.4	54.4±46.3
p-value	0.456	0.581	0.670	0.544	0.334	0.268	0.477	0.961	0.523
Level of education									
Illiterate	49.6±32.8	17.9±25.9	40.6±32.3	25.7±36.3	39.5±41.0	48.9±40.3	32.9±40.6	3.3±11.1	58.3±44.4
Informal education	38.5±32.0	14.9±21.9	33.9±30.2	16.7±30.8	26.2±37.8	38.1±41.3	27.4±32.8	2.4±8.7	42.8±43.4
Primary education	43.1±32.6	13.4±24.5	37.3±32.9	15.8±24.0	33.3±39.2	32.0±39.8	25.9±35.9	3.5±15.9	51.3±43.7
Secondary education	41.4±34.1	12.9±23.9	36.8±34.2	18.1±30.8	33.3±41.1	37.1±41.2	18.7±31.7	2.9±12.1	50.7±45.2
Higher education	36.6±33.2	13.9±26.8	31.6±32.5	14.9±28.4	28.2±37.6	25.5±38.0	23.1±35.3	7.4±20.8	34.5±42.2
p-value	0.114	0.419	0.472	0.267	0.316	0.002*	0.099	0.445	0.007*
AMHI, in ETB									
≤600	46.1±34.3	17.8±25.3	40.3±34.8	20.7±31.5	32.8±38.6	40.6±41.0	31.5±39.1	2.8±11.0	60.7±43.8
>600	40.6±32.8	12.9±24.7	34.7±31.9	17.7±30.3	33.3±40.5	34.5±40.5	21.7±33.6	4.6±16.2	42.9±43.8
p-value	0.127	0.012*	0.108	0.323	0.929	0.156	0.019*	0.450	0.000*

*The mean difference is significant at<0.05 (ANOVA)

Patients who were diagnosed within the period of less than 12 months at the time of data collection scored significantly higher mean on nausea and vomiting, appetite loss, and diarrhea. Stage 4 cancer patients had higher mean score on fatigue, nausea and vomiting, pain, dyspnea, insomnia and appetite loss except for diarrhea and financial difficulties. Patients who took chemotherapy had a higher score in nausea and vomiting, appetite loss and diarrhea while those who took radiotherapy had a higher score on pain. However, the other symptom scales were not significant with treatment and comorbid conditions (Table 7).

Table 7: Mean differences of EORTC QLQ-C30 symptom scale with clinical characteristics of patients with breast cancer at TASH, Addis Ababa, Ethiopia, 2018.

	Fatigue	Nausea and vomiting	Pain	Dyspnea	Insomnia	Appetite loss	Constipation	Diarrhea	Financial Difficulties
Patient status									
New patient	39.3±33.4	13.2±22.6	41.9±34.2	19.4±31.0	34.9±41.1	39.5±44.9	24.8±34.2	2.3±11.2	36.4±41.7
Follow up	42.7±33.3	14.6±25.2	35.8±32.7	18.5±30.7	32.9±39.7	36.1±40.2	24.8±35.9	4.2±15.1	50.0±44.7
P-value	0.519	0.893	0.256	0.907	0.755	0.694	0.830	0.353	0.058
Time since diagnosis (months)									
<12	42.2±33.7	19.4±26.9	38.9±33.9	19.1±30.9	33.3±39.5	42.7±40.6	22.4±33.7	5.9±17.9	48.8±44.8
13-60	41.8±33.8	9.4±21.9	33.5±31.8	18.2±30.9	33.1±40.4	28.6±40.0	28.3±37.7	1.9±10.2	49.6±43.8
>60	45.9±29.9	7.2±18.7	34.7±31.5	18.0±28.9	32.4±40.4	33.3±38.5	24.3±38.2	1.8±7.6	43.2±47.0
P-value	0.788	0.000*	0.291	0.925	0.977	0.001*	0.337	0.034*	0.737
Stage of cancer									
Stage1	41.9±32.1	11.5±24.9	37.2±25.6	7.7±19.9	38.5±38.1	28.2±38.1	23.1±34.4	0.00±0.00	46.1±46.2
Stage2	37.5±32.2	10.9±22.0	28.5±27.9	15.4±27.6	29.3±39.0	30.3±37.8	23.1±33.0	3.5±13.7	45.8±43.9
Stage3	38.6±32.4	13.5±23.9	35.2±32.2	17.4±30.2	29.1±37.8	37.1±40.9	22.1±35.9	3.9±15.6	48.1±44.8
Stage4	57.0±34.2	24.0±30.9	53.9±36.7	29.4±35.9	47.2±42.1	47.2±43.0	33.3±40.4	6.7±17.7	53.6±45.1
Unknown	41.2±31.4	9.7±17.6	29.0±31.9	13.9±28.2	27.9±40.4	34.4±42.6	22.6±31.5	1.1±5.9	50.5±45.4
P-value	0.000*	0.007*	0.000*	0.007*	0.006*	0.086	0.267	0.094	0.792
Current treatment									
CT	45.2±33.2	19.5±28.1	40.1±33.8	19.9±30.9	37.7±40.0	44.0±41.1	26.2±36.2	6.3±18.7	51.4±44.4
S	34.2±33.6	8.3±16.3	33.3±31.8	18.0±31.0	22.2±40.1	36.1±46.0	22.2±30.6	2.8±13.6	31.9±41.1
HT	38.4±31.8	7.7±19.7	29.7±29.7	15.6±29.6	28.1±38.1	25.9±37.9	23.0±35.6	0.9±5.6	47.2±44.8
RT	47.1±39.9	15.5±20.4	44.8±37.6	24.1±34.4	33.3±43.6	32.2±36.2	25.3±37.4	3.4±10.3	48.3±45.9
P-value	0.139	0.000*	0.014*	0.291	0.035*	0.000*	0.806	0.015*	0.228
Comorbid conditions									
Yes	43.3±32.8	12.6±23.3	34.3±31.9	24.0±32.6	32.9±37.4	33.3±39.6	24.8±36.9	5.8±17.8	45.7±43.7
No	42.1±33.5	14.9±25.4	37.1±33.2	17.2±30.0	33.2±40.5	37.3±40.9	24.8±35.4	3.6±13.8	49.4±44.8
P-value	0.778	0.333	0.492	0.028*	0.972	0.388	0.852	0.221	0.503

PF=Physical Functioning, RF=Role functioning, EF=Emotional functioning, CF =Cognitive functioning, SF=Social functioning, CT= Chemo therapy, S= Surgery, HT= Hormonal therapy, RT=Radiotherapy

*The mean difference is significant at < 0.05 (ANOVA)

6.6. Mean differences of EORTC QLQ-BR23 functional scale with socio-demographic/socio-economic and clinical characteristics

The youngest and the oldest age groups had the lowest score on body image and sexual functioning, respectively. The mean score in sexual functioning showed significant mean difference with marital status and widowed had the lowest mean score. Patients who had lower AMHI and illiterate also had also the lowest mean score for sexual functioning (Table 8).

Table 8: Mean differences of EORTC QLQ-BR23 functional scale with socio-demographic/socio-economic characteristics of patients with breast cancer at TASH, Addis Ababa, Ethiopia, 2018.

	Body image	Sexual functioning	Sexual enjoyment	Future perspective
Age(years)				
15-24	19.4 ± 17.3	22.2 ± 38.5	66.7	22.2 ± 19.2
25-54	76.1 ± 32.1	20.7 ± 29.4	62.7 ± 31.2	52.3 ± 43.9
55-64	85.5 ± 28.4	7.9 ± 20.4	80.9 ± 26.2	57.3 ± 40.7
>65	79.9 ± 33.6	1.4 ± 6.8	33.3	47.2 ± 40.4
p-value	0.003*	0.000*	0.357	0.467
Marital status				
Single	72.9 ± 35.4	11.3± 21.6	54.5 ± 22.5	48.8 ± 46.7
Married	76.2 ± 33.0	27.2 ± 31.5	63.4 ± 31.8	53.6 ± 43.2
Divorced	82.6 ± 25.6	3.3 ± 13.3	83.0 ± 19.2	56.5 ± 42.1
Widowed	79.9 ± 30.5	1.1 ± 6.8	100	47.8 ± 40.9
p-value	0.364	0.000*	0.269	0.623
Level of education				
Illiterate	75.2 ± 34.3	11.4 ± 24.3	66.7 ± 26.3	51.8 ± 44.0
Informal	86.9 ± 27.6	15.5 ± 29.7	57.1 ± 25.2	64.3 ± 36.2
Primary	78.6 ± 29.6	13.8 ± 26.3	57.9 ± 31.1	48.7 ± 41.9
Secondary	73.7 ± 33.9	21.0 ± 29.2	64.5 ± 31.4	52.0 ± 44.2
Higher	80.0 ± 29.9	24.3± 29.8	64.9 ± 34.2	52.3 ± 44.0
p-value	0.271	0.001*	0.879	0.602
AMHI, in ETB				
≤600	78.5 ± 31.6	10.1 ± 22.6	63.9 ± 29.3	35.0 ± 43.0
>600	76.6 ± 32.3	21.4 ± 29.7	63.4 ± 31.5	51.3 ± 43.2
p-value	0.564	0.000*	0.948	0.414

*The mean difference is significant at < 0.05 (ANOVA)

There was no significant mean difference in EORTC QLQ-BR23 functional scales across the variables; time since diagnosis, cancer stage, and current treatment. However, there was significant mean difference of EORTC QLQ-BR23 functional scales with patient status and

comorbid conditions. Accordingly, significant mean differences were observed in body image and future perspective with patient status and sexual functioning with comorbid conditions (Table 9).

Table 9: Mean differences in EORTC QLQ-BR23 functional scale with clinical characteristics of patients with breast cancer at TASH, Addis Ababa, Ethiopia, 2018.

	Body image	Sexual functioning	Sexual enjoyment	Future perspective
Patient status				
New patient	65.5 ± 34.9	19.8 ± 31.1	68.9 ± 34.4	30.2 ± 38.4
Follow up	78.6 ± 31.5	17.5 ± 27.7	62.8 ± 30.6	55.1 ± 42.9
p-value	0.011*	0.746	0.477	0.000*
Time since diagnosis (months)				
<12	78.2 ± 30.2	16.7 ± 28.8	62.8 ± 30.1	50.5 ± 43.0
13-60	77.1 ± 33.6	20.2 ± 27.8	63.7 ± 32.9	55.6 ± 43.1
>61	72.0 ± 36.6	13.9 ± 24.7	66.7 ± 27.2	50.4 ± 44.2
p-value	0.567	0.223	0.933	0.516
Stage of cancer				
Stage 1	75.0 ±30.2	15.4 ± 25.9	50.0 ± 19.2	35.9 ± 41.8
Stage 2	77.9 ± 31.6	17.5 ± 28.6	65.8± 29.7	55.9 ± 43.4
Stage 3	76.3 ± 32.5	20.5 ± 29.0	58.9 ± 32.7	53.0 ± 42.9
Stage 4	81.1 ± 32.2	13.1 ± 25.5	71.9 ± 33.8	48.0 ± 43.7
Undefined	68.3 ± 32.7	19.9 ± 29.0	66.7 ± 24.6	53.8 ± 41.9
p-value	0.418	0.277	0.464	0.442
Current treatment				
CT	78.5 ± 32.3	16.5 ± 27.6	66.7 ± 29.7	52.9 ± 43.4
S	63.5 ± 32.9	27.8 ± 35.3	75.7 ± 21.6	34.7 ± 42.2
HT	76.7 ± 32.7	18.5 ± 27.8	56.8 ± 34.2	56.8 ± 41.9
RT	81.0 ± 24.9	15.5 ± 25.9	58.3 ± 29.5	42.5 ± 44.4
p-value	0.160	0.369	0.199	0.070
Comorbid conditions				
Yes	75.2 ± 32.9	8.3 ± 18.6	62.2 ± 24.8	49.2 ± 42.4
No	77.7 ± 31.9	20.3 ± 29.7	63.7 ± 31.8	53.3 ± 43.3
p-value	0.513	0.001*	0.864	0.432

CT= Chemo therapy, S= Surgery, HT= Hormonal therapy, RT=Radiotherapy
*The mean difference is significant at<0.05 (ANOVA)

6.7. Mean differences of EORTC QLQ-BR23 symptom scale with socio-demographic/socio-economic and clinical characteristics

There was no significant mean difference in EORTC QLQ-BR23 symptom scales across marital status and level of education. However, there was significant mean difference with age and

AMHI. Age categories of patients had a significant mean difference, those who were between the age of 15-24 had the highest mean for the upset by hair loss subscale followed by older patients (>65). The systemic therapy side effect and arm symptoms, showed a significant mean difference on the AMHI category (Table 11).

Table 10: Mean differences of EORTC QLQ-BR23 symptom scale with socio-demographic characteristics/socio-economic of patients with breast cancer at TASH, Addis Ababa, Ethiopia, 2018.

	Systemic therapy side effects	Breast symptoms	Arm symptoms	Upset by hair loss
Age (in years)				
15-24	42.8 ± 29.7	22.2 ± 9.6	22.2 ± 11.1	55.6 ± 50.9
25-54	33.3 ± 22.2	18.3 ± 22.8	25.0 ± 24.6	27.8 ± 40.6
55-64	33.8 ± 23.4	20.0 ± 25.7	24.7 ± 26.7	10.7 ± 28.8
>65	44.2 ± 29.1	14.9 ± 14.5	24.5±29.5	48.5 ± 45.6
p-value	0.128	0.761	0.947	0.016*
Marital status				
Single	34.7 ± 23.2	20.8 ± 25.5	25.4 ± 23.6	33.3 ± 45.2
Married	34.9 ± 22.5	18.1 ± 23.2	25.0 ± 24.5	27.1 ± 40.9
Divorced	28.1 ± 22.6	16.4 ± 18.4	21.4 ± 24.2	20.0 ± 34.9
Widowed	36.1 ± 21.9	19.0 ± 21.9	27.4 ± 29.2	25.0 ± 36.9
p-value	0.196	0.902	0.611	0.840
Level of education				
Illiterate	37.0 ± 24.9	21.7 ± 25.7	27.5 ± 27.8	39.6 ± 44.3
Informal education	30.1 ± 18.4	17.5 ± 22.0	27.4 ± 30.9	18.2 ± 34.5
Primary education	37.8 ± 21.2	20.6 ± 24.4	28.5 ± 26.0	21.9 ± 37.4
Secondary education	33.4 ± 22.9	16.3 ± 19.1	22.4 ± 23.2	29.2 ± 41.2
Higher education	29.9 ± 21.5	16.2 ± 22.7	21.7 ± 20.9	20.0 ± 37.9
p-value	0.1183	0.249	0.484	0.122
AMHI (in ETB)				
≤600	37.6 ± 23.1	18.9 ± 21.4	29.0 ± 28.1	27.2 ± 40.8
>600	32.4 ± 22.2	18.2 ± 23.3	22.9 ± 23.3	26.8 ± 40.1
p-value	0.031*	0.220	0.103	0.899

*The mean difference is significant at< 0.05 (ANOVA)

The present study showed that the EORTC QLQ-BR23 symptom scale had significant mean differences with all except the presence of comorbid condition. Clinical characteristics such as patient status and time since diagnosis exhibited a significant mean difference with systemic therapy and breast symptoms; Patients who were diagnosed less than 12 monthly scored the

highest mean. In addition to the two symptom scales mentioned above, cancer stage of the patients mean difference was significant with arm symptoms with those patients who were stage 4 scored the highest score. Patients who took chemotherapy scored the highest mean score of systemic therapy side effect and those who underwent surgery scored highest breast symptom (Table 11).

Table 11: Mean differences in EORTC QLQ-BR23 symptom scale with clinical characteristics of patients with breast cancer at TASH, Addis Ababa, Ethiopia, 2018.

	Systemic therapy side effects	Breast symptoms	Arm symptoms	Upset by hair loss
Patient status				
New patient	25.1 ± 18.8	27.9 ± 26.8	26.1 ± 23.6	22.2 ± 38.5
Follow up	35.2 ± 22.8	17.3 ± 21.9	24.8 ± 25.2	26.9 ± 40.4
p-value	0.006*	0.002*	0.475	0.854
Time since diagnosis (in month)				
<12	37.3 ± 22.6	20.9 ± 23.7	24.9 ± 25.2	23.9 ± 38.0
13-60	30.7 ± 22.6	16.5 ± 21.9	25.3 ± 25.5	34.9 ± 45.9
>61	30.2 ± 20.1	11.3 ± 17.1	23.1 ± 22.7	30.9 ± 42.3
p-value	0.012*	0.006*	0.963	0.419
Stage of cancer				
Stage 1	29.3 ± 17.6	17.9 ± 16.3	29.0 ± 20.5	11.1 ± 19.2
Stage 2	30.6 ± 20.9	14.6 ± 17.2	22.3 ± 22.6	25.0 ± 40.3
Stage 3	33.9 ± 22.2	17.6 ± 23.1	23.7 ± 24.4	33.8 ± 42.7
Stage 4	41.2 ± 24.0	27.2 ± 28.3	32.5 ± 29.4	22.7 ± 38.1
Unknown	32.9 ± 25.7	14.8 ± 22.0	19.3 ± 23.9	13.3 ± 32.2
p-value	0.016*	0.013*	0.044*	0.440
Current treatment				
CT	42.6 ± 21.4	19.6 ± 23.3	25.7 ± 25.2	27.0 ± 40.3
S	20.8 ± 20.4	26.0 ± 27.9	27.3 ± 25.8	0.0
HT	23.7 ± 19.2	14.3 ± 20.2	22.9 ± 24.7	66.7 ± 57.7
RT	33.0 ± 22.3	22.9 ± 22.8	26.8 ± 25.6	14.8 ± 29.4
p-value	0.000*	0.009*	0.552	0.304
Comorbid conditions				
Yes	33.8 ± 22.9	19.6 ± 25.0	28.7 ± 28.2	22.5 ± 39.5
No	34.2 ± 22.5	18.1 ± 22.1	23.9 ± 24.1	28.1 ± 40.5
p-value	0.897	0.951	0.274	0.353

CT= Chemo therapy, S= Surgery, HT= Hormonal therapy, RT=Radiotherapy

*The mean difference is significant at <0.05 (ANOVA)

6.8. Predictors of Global Quality of Life

In a bivariate analysis, all variables with *p*-value <0.25 were included for the analysis. In the multi-variable analysis, all independent variables were considered at once but are presented separately in the tables.

From the results of multivariable analysis, only five variables (stage of cancer, cognitive functioning, pain, financial difficulties, and future perspective) maintained their association from the bivariate analysis (Table 12 and 13). Only stages of cancer maintained significant association from the socio-demographic and clinical characteristics. This implied that stage 4 patients with breast cancer were 7.94 times more likely that their GQoL was affected.

For EORTC QLQ-C30, only cognitive functioning from the functional scales was significant. Thus, patients with affected cognitive functions were 2.38 times more likely that their GQoL was affected. Among the symptom scale variables, pain and financial difficulties maintained their association in the multivariable analysis. Patients who did suffer pain were 7.99 times more likely that their GQoL was affected, these were patients who did have pain, and their daily activities were interfered by pain. Patients who did suffer financial difficulties were 2.60 times more likely that their GQoL was affected.

Considering the breast specific EORTC QLQ-BR23 of the functional scales, only future perspective maintained the association in the multi-variable analysis. Those whose future perspectives affected were 2.08 times more likely that their GQoL was affected (Table 12 and 13).

Table 12: Factors associated with GQoL of patients with breast cancer at TASH, Addis Ababa, Ethiopia, 2018.

	Variables	GQoL		COR (95% CI)	AOR (95% CI)
		Affected	Not affected		
Socio-demographic/socio-economic characteristics	Educational status				
	Illiterate	69 (25.1)	23 (17.8)	1.00	
	Informal	21 (7.6)	7 (5.5)	1.00 (0.38-2.66)	
	Primary	56 (20.4)	20 (15.5)	0.93 (0.47-1.87)	
	Secondary	84 (30.5)	39 (30.2)	0.72 (0.39-1.32)	
	Higher	45 (16.4)	40 (31.0)	0.38 (0.19-0.71)	
	AMHI				
	≤600	100(36.4)	29(22.5)	1.00	

	>600	175(63.6)	100(77.5)	0.51 (0.31-0.82)	
Clinical characteristics	Stage of cancer				
	Stage 1	7 (2.6)	6 (4.7)	1.00	
	Stage 2	86 (31.3)	48 (37.3)	1.54 (0.49-4.83)	3.09 (0.79-12.09)
	Stage 3	93 (33.8)	49 (38.0)	1.63 (0.52-5.11)	3.08 (0.79-12.01)
	Stage 4	71 (25.8)	13 (10.0)	4.68 (1.35-16.18)	7.94 (1.83-34.54) *
	Undefined	18 (6.5)	13 (10.0)	1.19 (0.32-4.37)	2.04 (0.43-9.61)
	Current Treatment				
	Chemo therapy	151 (54.9)	61 (47.3)	1.00	
	Surgery	15 (5.5)	9 (6.9)	0.67 (0.28-1.62)	
	Hormonal therapy	85 (30.9)	54 (41.9)	0.64 (0.40-0.99)	
	Radiotherapy	24 (8.7)	5 (3.9)	1.94 (0.71-5.32)	

*Statistically significant at P<0.05

Table 13: Association between (EORTC QLQ-C30, EORTC QLQ-BR23) functioning and symptom scales with GQoL of patients with breast cancer at TASH, Addis Ababa, Ethiopia, 2018.

Variable		GQOL		COR (95%CI)	AOR (95%CI)
		Affected	Not affected		
Functional scales					
EORTC QLQ C-30 Physical functioning	Affected	187 (68.0)	46 (35.7)	3.83 (2.47 - 5.96)	
	Not affected	88 (32.0)	83 (64.3)	1.00	
Role Functioning	Affected	139 (50.5)	18 (14.0)	6.30 (3.63 -10.94)	
	Not affected	136 (49.5)	111 (86.0)	1.00	
Emotional Functioning	Affected	134 (48.7)	30 (23.3)	3.14 (1.96 - 5.03)	
	Not affected	141 (51.3)	99 (76.7)	1.00	
Cognitive Functioning	Affected	121 (44.0)	23 (17.8)	3.62 (2.18 - 6.03)	2.38 (1.32 - 4.31)*
	Not affected	154 (56.0)	106 (82.2)	1.00	1.00
Social Functioning	Affected	104 (37.8)	27 (20.9)	2.29 (1.41 - 3.75)	
	Not affected	171 (62.2)	102 (79.1)	1.00	
Symptom scales					
Fatigue	Affected	204 (74.2)	45 (34.9)	5.36 (3.41 - 8.43)	
	Not affected	71 (25.8)	84 (65.1)	1.00	
Nausea and Vomiting	Affected	87 (31.6)	14 (10.9)	3.80 (2.07 - 6.99)	
	Not affected	188 (68.4)	115 (89.1)	1.00	
Pain	Affected	195 (70.9)	26 (20.2)	9.66 (5.84 - 15.96)	7.99 (4.62 -13.83)*
	Not affected	80 (29.1)	103 (79.8)	1.00	1.00
Dyspnoea	Affected	113 (41.1)	18 (14.0)	4.30 (2.47 - 7.48)	
	Not affected	162 (58.9)	111 (86.0)	1.00	
Insomnia	Affected	152 (55.3)	37 (28.7)	3.07 (1.96 - 4.82)	
	Not affected	123 (44.7)	92 (71.3)	1.00	
Appetite loss	Affected	166 (60.4)	38 (29.5)	3.65 (2.33 - 5.72)	
	Not affected	109 (39.6)	91 (70.5)	1.00	

	Constipation	Affected	122 (44.4)	35 (27.1)	2.14 (1.36 - 3.38)	
		Not affected	153 (55.6)	94 (72.9)	1.00	
	Diarrhea	Affected	27 (9.8)	7 (5.4)	1.89 (0.80 - 4.48)	
		Not affected	248 (90.2)	122 (94.6)	1.00	
	Financial	Affected	187 (68.0)	54 (41.9)	2.95 (1.92 - 4.55)	2.60 (1.56 - 4.35)*
	Difficulties	Not affected	88 (32.0)	75 (58.1)	1.00	1.00
EORTC QLQ BR-23	Functional scales					
	Sexual	Affected	70 (25.5)	50 (38.8)	0.54 (0.35 - 0.84)	
	functioning	Not affected	205 (74.5)	79 (61.2)	1.00	
	Future	Affected	181 (65.8)	61 (47.3)	2.15 (1.40- 3.29)	2.08 (1.24 - 3.49)*
	Perspective	Not affected	94 (34.2)	68 (52.7)	1.00	1.00
	Symptom scales					
	Systemic	Affected	184 (66.9)	44 (34.1)	3.91(2.51- 6.08)	
	therapy side	Not affected	91 (33.1)	85 (65.9)	1.00	
	effects					
	Breast	Affected	109 (39.6)	24 (18.6)	2.87(1.73 - 4.76)	
	Symptoms	Not affected	166 (60.4)	105 (81.4)	1.00	
	Arm	Affected	119 (43.3)	28 (21.7)	2.75(1.70 - 4.46)	
	symptoms	Not affected	156 (56.7)	101 (78.3)	1.00	

*Statistically significant at $P<0.05$

7. Discussion

The purpose of the study was to assess HRQoL, predicting factors and utility among patients with breast cancer in TASH. Considering the different measurement instruments used in the study; the weight of different parameters was observed in the result of each instrument. The main finding showed that women with breast cancer had relatively comparable HRQoL with other countries. In the assessment of functioning scales, lowest score was found in physical and sexual functioning of breast cancer patients. Highest symptom scales of fatigue, pain, loss of appetite and systemic therapy side effects were reported. Which implied that patients were symptomatic, also had higher financial difficulties and a lower score of future perspective.

Pain was also the major complaint while assessing the results of EQ-5D-5L.The health state determined using EQ-VAS was found to be higher than a study conducted in Germany and lower than a study conducted in Zimbabwe (Wallwiener et al., 2016, Jelsma et al., 2003). And the utility mean score value of the patients with breast cancer estimated to be 0.8, is almost similar with Finnish populations(Roine *et al*., 2016).

This utility value is a measure of strength of preference that people have for particular health states. A year in full health is arbitrarily assigned a value of 1: a state that is considered equivalent to death is assigned a value of zero. Health states that lie somewhere between these two anchor points will have a utility value that lies somewhere between zero and one (Whitehead and Ali, 2010). States considered worse than death will have a negative value. The health utility is used to weight years of life in order to estimate QALYs which is a summary measure of health gain that combines (changes in) life expectancy and QoL. It uses health utilities to weight improvements in life expectancy according to the quality of life experienced. Thus, a given state of health living with breast cancer is assigned a utility of 0.8. Living for 10 years in this state of health would then be considered equivalent to 8 years of living a full health (Shiell et al., 2002).

Thus, the utility values have been used to make health economic evaluations and decisions relevant for better health outcome of patients (Praditsitthikorn et al., 2011). The current research can be used to compare the utility values of any upcoming studies and economic evaluation for breast cancer patients in TASH.

All of the items had Cronbach's alpha of $\alpha \geq 0.70$ except Cognitive functioning (0.46). Inter item constancy results indicated that all of the items of EORTC QLQ-C30 and EORTC QLQ-BR23 had a strong consistency. The generic module that is validated and reliable to measure the quality of life of cancer patients in Ethiopia (Ayana *et al.*, 2016) which the internal consistency had a Cronbach's alpha of $\alpha \geq 0.70$, all of the domains had an acceptable internal consistency except for cognitive function domain with Cronbach's $\alpha = 0.29$ is similar with the current study. Comparing with the previous studies conducted had weaker consistency than the current study and similar with the current study (Bekele, 2016, Yilma, 2016) respectively.

The mean score for GQoL was 59.32 ± 22.94 was lower than the EORTC reference value (61.8 ±24.6)(Scott *et al.*, 2008). The GQoL mean score was found to be almost similar to studies conducted in Iran, central rural India, Germany and Lebanon (Montazeri et al., 2008, Gangane et al., 2017, Wallwiener et al., 2016, Huijer and Abboud, 2012). However, it was found to be lower than studies conducted in south India, Australia, United Kingdom (UK), Bahrain, Jordan, and Latin (Dubashi et al., 2010, Grabsch et al., 2006, Hopwood et al., 2007, Jassim and Whitford, 2013, Abu-Helalah et al., 2014, Lôbo et al., 2014). This could be due to improper understanding of the disease, the lengthy process of referral to the country's only specialized center, late presentation; most patients at the center have incurable disease (Woldeamanuel *et al*., 2013). Patients in TASH could benefit from and have an improved HRQoL if they receive a psychological support, health education on early breast cancer screening and a more rapid treatment. And also the focus has only been on clinical management much emphasis has not been given in measurents of HRQoL for an important health outcome.

The physical and cognitive functioning were lower than the reference value, whereas role, emotional and social functioning were higher than the reference value (Scott *et al*., 2008). Regarding the symptom scales of the EORTC-C30 except for diarrhea, all the other subscales were higher than the reference value, which implied that the patient with breast cancer were very symptomatic. Fatigue and financial difficulties were the highest complaints. The mean score of financial difficulties of this study were higher than studies conducted in Nepal, Iran, Kuwait and Nigeria (Manandhar et al., 2014, Montazeri et al., 2008, Alawadi and Ohaeri, 2009, Fatiregun et al., 2017). The current study also showed that AMHI had a significant mean difference with

GQoL, and 31.9% of the study participants were below the poverty line (FDRE, 2017). TASH is a destination for patients from every corner of the country, transport and hospitality fees in Addis Ababa are not easily affordable, and this could have contributed to the higher scores of financial difficulties (FMOH, 2015).

Regarding the breast specific assessment tool, the mean results of the functional and symptom subscales in this study were higher than results of the studies conducted in Kuwait and Morocco (Alawadi and Ohaeri, 2009, Rahou et al., 2017) but lower than studies conducted in south India, Germany, UK, Bahrain, Iran, and Latin (Dubashi et al., 2010, Wallwiener et al., 2016, Hopwood et al., 2007, Jassim and Whitford, 2013, Montazeri et al., 2008, Lôbo et al., 2014). The burden of breast cancer in the Ethiopian women is higher due to a possibility of having a single radiotherapy center in the country (FMOH, 2015). This might exacerbate symptoms because patients waited for a long time before getting a proper treatment. There might be also a limited psychological support for breast cancer patients in the Ethiopian health care system and community.

Pain was the major predictor factor of GQoL; the significant mean difference showed that stage 4 breast cancer patients and patients who were on chemotherapy and radiotherapy a higher mean which implies that those patients were very symptomatic. The current results from the EQ-5D-5L also support that pain is a major complaint among breast cancer patients in TASH. Study conducted in Ethiopia also reported the inadequacy of cancer pain management of patients was high, which calls for stakeholders' attention (Anshabo *et al*., 2017). A study also suggested that a quick screening for the symptoms should be incorporated into nursing assessment procedures for a better outcome (So *et al*., 2009).

Cancer Stage 4 was found to be one of the predictor factors for an affected GQoL, A significant mean difference was also seen between GQoL and stage 4 patients. The association between stage of cancer and GQoL were similar with the study conducted in Bahrain (Jassim and Whitford, 2013). Considering the access of cancer treatment in Ethiopia, Which is accompanied by long waiting time, it is difficult for a great majority of the population to access cancer treatment services. In Addition to that, the low awareness of cancer signs and symptoms, inadequate screening and early detection and treatment services, inadequate diagnostic facilities

and country's very few cancer specialists, also results in many potentially curable tumors to progress to incurable stages (FMOH, 2015).

The present study indicated that cognitive functioning were one of the predicting factors for GQoL and the result also showed that significant mean difference between cognitive functioning and treatment, which mirrors to a study conducted in Tunisia (Masmoudi *et al*., 2009). Cognitive function of patients could be compromised due to the chemotherapy, pain and disease burden of patients (Pendergrass et al., 2018). Patients in TASH could benefit from a follow up of investigation of cognitive functioning.

Patients whose physical condition or medical treatment caused them financial difficulties were a predictor factor for the GQoL. Financial difficulties also showed a significant mean difference with AMHI and 31.9% of the study participants were below the poverty line (FDRE, 2017). A study conducted in Kuwait also showed that financial difficulties were predicting factor for GQoL (Alawadi and Ohaeri, 2009). Future perspective was found to be another predictor of the GQoL. This finding was in contrary with the study done in Kuwait where about two-thirds of the patients were optimistic about their future health (Alawadi and Ohaeri, 2009). This difference of future perspective could attributed to the lower awareness, improper understanding of the disease, associated stigma and sense of hopelessness of Ethiopian cancer patients (Woldeamanuel et al., 2013).

8. Limitations of the study

Since the study was a cross-sectional study, it might limit assessment of prognosis of the patients. In addition, the study was conducted in a single setting, which might be difficult to make a generalization for the country.

9. Conclusions

This study indicated that the GQoL of breast cancer patients were less than the reference value but more or less comparable with international studies. Thus, GQoL of patients with breast cancer was fair and the utility mean score was estimated to be above average. The utility score 0.8 indicated that the patients prefer to stay 8 years in a normal heath state than 10 years in current health state. The possible predictors that affect the GQoL were Stage of cancer, cognitive functioning, pain, financial difficulties and Future perspective.

10. Recommendations

- ✓ Clinicians involved in the management of breast cancer should consider incorporating measurements of HRQoL in their treatment protocols.
- ✓ Focus should be given of pain management of patients with breast cancer.
- ✓ Utility assessments should be seriously considered in upcoming interventions for breast cancer treatment.
- ✓ Further research should be undertaken and data from comparable groups of women without breast cancer might be interesting to explore in comparison.
- ✓ Future research should be undertaken in follow up study which might help in exploring the prognosis of HRQoL of patients with breast cancer.

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ANNEXES

አዲስ አበባ ዩኒቨርሲቲ
ፋርማሲ ትምህርት ቤት እና ህክምና ትምህርት ቤት

ጥቁር አንበሳ ስፔሻላይዝድ ሆስፒታል ውስጥ በመታከም ላይ በሚገኙ የጡት ካንሠር ታማሚዎች ስለህመማቸው ሁኔታ መረጃ ለመሰብሰብ የተዘጋጀ መጠይቅ፣ 2010 ዓ.ም

ተሳታፉዎች በጥናቱ ለመሳተፍ ፈቃደኝነታቸዉን የሚገልፁበት ቅጽ

ጤና ይስጥልኝ እኔ _____ እባላለሁ በአሁኑ ወቅት በአዲስ አበባ ዩኒቨርሲቲ፣ ፊርማሲ ትምህርት ቤት ተማሪ ስሆን፣ ይህ ጥናት የማስተርስ ማሟያ ወረቀት ነው። በመሰራት ላይ ያለው ጥናት አላማ ስለ እርስዎ ጤንነትና ስለሚደረግልዎት ህክምና ለማጥናት ነው:: መጠይቁ ከጊዜዎ ቢበዛ 15 ደቂቃ የሚወስድ ሲሆን በዚህ ጥናት ውስጥ የእርስዎ ተሳታፊነት ሙሉ በሙሉ በእርስዎ ፈቃደኝነት ላይ የተመሰረተ ነዉ። በዚህ ጥናት ውስጥ ለመሳተፍም ሆነ ላለመሳተፍ መወሰንዎ በሆስፒታሉ ውስጥ በሚያገኙት አገልግሎት ላይ ምንም አይነት ተጽእኖ የማይኖረው ሲሆን ቃለ መጠይቁን በማንኛውም ሰዓት ማቋረጥ ወይም ጥያቄዎችን አለመመለስ ይችላሉ። በጥናቱ ውስጥ ለተነሱት ጥያቄዎች የሚሰጧቸው መልሶች ሙለ በሙለ በምስጢር የሚጠበቁ ሲሆን የእርስዎም ስም በማንኛዉም መልኩ በጥናቱ ውስጥ አይገለጽም፤ እንዲሁም የሚሰጡት ምላሽ ከእርስዎ ማንነት ጋር በማንኛውም መልኩ አይያያዝም። በዚህ መጠይቅ ውስጥ ለቀረቡት ማንኛውም ጥያቄዎች ትክክለኛ ወይም የተሳሳቱ የሚባለ ምላሾች የሉም:: ዋናው የሚፈለገው በእነዚህ ጥያቄዎች ወይም አረፍተ ነገሮች ዙሪያ ያሎዎት ምላሽ ነው::

በጥናቱ ለመሳተፍ ፈቃደኛነዎት ?

አዎ☐ አይደለሁም☐

ፈቃደኛ መሆናቸውን ካረጋገጡ ቃለ መጠይቁን ይጀምሩ

ፈቃደኛ ካልሆኑ ወደ ሚቀጥለው ተገልጋይ ይሸጋገሩ

ክፍልአንድ-

እርስዎንበተመለከተአጠቃላይመጠይቅ	መልስ
1.1.እድሜ	_____አመት
1.2.ክልል	_____
1.3.ሀይማኖት	_____
1.4. የጋብቻሁኔታ	ያላገባች□ባለትዳር□ አግብተውየፈቱ□የትዳርጓደኛንበሞትያጡ□
1.5. የትምህርትደረጃ	ማንበብናመፃፍአልችልም□ ማንበብናመፃፍእችላለሁ (መደበኛያሌሆነትምህርት/የሃይማኖትትምህርት)□ አንደኛደረጃትምህርት (ከ 1ኛ-8ኛክፍል)□ ሁለተኛደረጃ/መሰናዶትምህርት (ከ 9ኛ-12ኛክፍሌ) □ ከፍተኛትምህርት (ሰርተፍኬት፣ዲፕልማ፣ የመጀመሪያዲግሪናከዚያበሊይ)□
1.6.የስራቅጥርሁኔታ	የመንግስትሰራተኛ□የግሌመሥሪያቤትተቀጣሪ□ ነጋዴ□ጡረተኛ/ በጡረታከሥራየተገለሉ□ አርሶአደር□የቤትእመቤት□ሥራአጥ□ ሌሎች፣ይግለፁ_____
1.7.ወርሃአማካኝየቤተሰብገቢበብር	_____

Section 2: Medical Characteristics (to be filled through chart review by datacollectors)

2.1.Patient status	New patient □ follow up □
2.2. Time since diagnosis	_____
2.3. Stage of cancer	Stage I □ Stage II □ Stage III □ Stage IV □ If Not mentioned, please write the card number _____
2.4. Treatment history	Surgery □chemotherapy only □ radiation only □ hormonal therapy □
2.5. Current type of anticancer treatment (within the period of the data collection) (more than one answer possible)	Surgery □chemotherapy only □ radiation only □ hormonal therapy □
2.6. Please specify known comorbid condition	_____

EORTC QLQ-C30 (እትም 3)

እርስዎንና ጤንነትዎን በተመለከተ የተወሰኑ ነገሮችን ለማወቅ እንፈልጋለን። እባክዎትን የሚከተሉትን ጥያቄዎች በሙሉ እርስዎ ትክክለኛ ነው ብለው ያመኑበትን በማክበብ ይመልሱ። «ትክክለኛ» መልስ ወይም «የተሳሳተ» መልስ የሚባል የለም። የሚሰጡት መረጃ ሁሉ ምስጢራዊነቱ በደንብ የተጠበቀ ይሆናል።

እባክዎን የእርስዎን የአባትዎንና የእያትዎን የስም መጀመሪያ ፊደል ይጻፉ፡-

የተወለዱበት ዕለት (ቀን፣ ወር፣ ዓም)፡-

የዛሬው ዕለት (ቀን ፣ወር፣ ዓም)፡- 31

		በጭራሽ	በትንሹ	በመጠኑ	በጣም በብዛት
1.	እንደ ከባድ ዘንቢል ወይም ሻንጣ መሸከም የመሳሰሉ ጉልበት የሚጠይቁ እንቅስቃሴዎችን ለማድረግ ችግር አለብዎት?	1	2	3	4
2.	ረዥም የእግር ጉዞ ለማድረግ ችግር አለብዎ?	1	2	3	4
3.	ከቤትዎ ውጭ አጭር የእግር ጎዞ ለማድረግ ችግር አለብዎ?	1	2	3	4
4.	በህመምዎ የተነሳ በቀን አልጋ ላይ ወይም ወንበር ላይ ሆነው ረዘም ላለ ሰዓት ያሳልፋሉ?	1	2	3	4
5.	ሲመገቡ፣ ሲለብሱ፣ ሲታጠቡ ወይም ሽንት ቤት ሲጠቀሙ እገዛ ያስፈልግዎታል?	1	2	3	4

ባለፈው ሳምንት ውስጥ፡-		**በጭራሽ**	**በትንሹ**	**በመጠኑ**	**በጣም በብዛት**
6.	ስራዎትን ወይንም የዕለት ተለት እንቅስቃሴዎትን ለማከናወን ተገድበው ነበር?	1	2	3	4
7.	በትርፍ ጊዜ የሚከናወኑ ስራዎችን ወይንም ሌሎች የመዝናኛ ጊዜዎችን ለማሳለፍ ገድቦዎት ነበር?	1	2	3	4
8.	ሲተነፍሱ የትንፋሽ ማጠር ኢጋጥሞት ነበር?	1	2	3	4
9.	የህመም ስሜት ነበረብዎ?	1	2	3	4
10.	ከወትሮው የተለየ ዕረፍት አስፈልጎዎት ነበር?	1	2	3	4
11.	የዕንቅልፍ ችግር ነበረብዎ?	1	2	3	4
12.	አቅም ያንስዎት ነበር?	1	2	3	4
13.	የምግብ ፍላጎትዎ ቀንሷል?	1	2	3	4
14.	የማቅለሽለሽ ስሜት ነበረብዎ?	1	2	3	4
15.	አስመልሶዎት ነበር?	1	2	3	4
16.	የሰገራ ድርቀት ነበረብዎ?	1	2	3	4

እባክዎ ወደሚቀጥለው ገጽ ይለፉ

ባለፈው ሳምንት ውስጥ፦	በጭራሽ	በትንሹ	በመጠኑ	በጣም በብዛት
17. ተቅማጥ ነበረብዎ?	1	2	3	4
18. የድካም ስሜት ነበረዎ?	1	2	3	4
19. ህመሙ የዕለት ተዕለት እንቅስቃሴዎትን ያውክብዎ ነበር?	1	2	3	4
20. አንድ አንድ ነገሮችን ትኩረት ሰጥተው ለመስራት ያውክዎት ነበር (ለምሳሌ፤ ጋዜጣ ለማንበብ፣ ራዲዮ ለማዳመጥ)?	1	2	3	4
21. የውጥረት ስሜት ነበረብዎ?	1	2	3	4
22. የመጨነቅ ስሜት ነበረብዎ?	1	2	3	4
23. የመነጫነጭ ስሜት ነበረብዎ?	1	2	3	4
24. የመደበር ስሜት ነበረብዎ?	1	2	3	4
25. ነገሮችን የማስታወስ ችግር ነበረብዎ?	1	2	3	4
26. አካላዊ ሁኔታዎ ወይም የሚከታተሉት ህክምና <u>በቤተሰባዊ</u> ህይወትዎ ላይ ያሳደረው ተጽዕኖ ነበር?	1	2	3	4
27. የጤናዎ ሁኔታ ወይም የሚከታተሉት ህክምና <u>በማህበራዊ</u> ሕይወትዎ በሚደርጉት እንቅስቃሴዎ ላይ ያሳደረው ተጽዕኖ ነበር?	1	2	3	4
28. የጤናዎ ሁኔታ ወይም የሚከታተሉት ህክምና ገንዘብ እንዲያጥርዎ /እንዲቸግርዎ/ አድርጓል?	1	2	3	4

ለሚከተሉት ጥያቄዎች ከ 1-7 ካሉት ቁጥሮች ውስጥ እርስዎን በደንብ የሚገልጽዎን አንዱን ቁጥር ያክብቡ

29. በአጠቃላይ ባለፈው ሳምንት የነበረዎን <u>የጤንነት</u> ሁኔታ እንዴት ይመዝኑታል?

1 2 3 4 5 6 7

በጣም መጥፎ እጅግ በጣም ጥሩ

30. በአጠቃላይ ባለፈው ሳምንት የነበረዎን <u>የኑሮ ሁኔታ ጥራት</u> እንዴት ይመዝኑታል?

1 2 3 4 5 6 7

በጣም መጥፎ እጅግ በጣም ጥሩ

EORTC QLQ-BR 23

ሕመምተኞች አንዳንድ ግዜ ቀጥሎ የተዘረዘሩት ስሜቶች ወይም ችግሮች እንዳሉባቸው ይገልፃሉ። እርስዎ ባለፈው አንድ ሳምንት ውስጥ ምን ያህል እነዚህ ስሜቶች ወይም ችግሮች እንዳጋጠሙዎት ይግለፁልን።

ባለፈው ሳምንት ውስጥ፦	**በጭራሽ**	**በትንሹ**	**በመጠኑ**	**በጣም በብዛት**
31. አፍዎ ይደርቅቦት ነበር?	1	2	3	4
32. የምግብና የመጠጥ ጣዕም ከወትሮ ተለውጦብዎት ነበር?	1	2	3	4
33. አይንዎትን የማመም፣ የመቆጥቆጥ ወይም እንባ የማቅረር ስሜት ነበረብዎ?	1	2	3	4
34. ፀጉርዎ ሳስቶ ወይም ተመልጦ ነበር?	1	2	3	4
35. ይህንን ጥያቄ ፀጉርዎ ሳስቶ ወይም ተመልጦ ከነበረ ብቻ ይመልሱ፦ ፀጉርዎ በመሳሳቱ ወይም በመመለጡ ተበሳጭተው ነበር?	1	2	3	4
36. የህመም ወይም ጤነኛ ያለመሆን ስሜት ነበረብዎት?	1	2	3	4
37. ፊትዎ አካባቢ ድንገተኛ ሙቀት ማላብ እና ማቃጠል ተሰምቶዎት ነበር?	1	2	3	4
38. ራስ ምታት ነበረብዎ?	1	2	3	4
39. በሕመምዎ ወይም በሕክምናው ምክንያት ዓይን የማይስቡ ሰው እንደሆኑ ዓይነት ስሜት ተሰምቶዎት ነበር?	1	2	3	4
40. በህመምዎ ወይም በህክምናው ምክንያት ሴትነትዎ እንደቀነሰብዎት ተሰምቶዎት ነበር?	1	2	3	4
41. ራቁት ሰውነትዎን ማየት ይቸግርዎ ነበር?	1	2	3	4
42. በሰውነትዎ አቋም ያልረኩበት ጊዜ ነበር?	1	2	3	4
43. ለወደፊት ጤንነትዎ ይጨነቁ ነበር?	1	2	3	4
ባለፉት <u>አራት</u> ሳምንታት ውስጥ፦	**በጭራሽ**	**በትንሹ**	**በመጠኑ**	**በጣም በብዛት**
44. ለፆታዊ ግንኙነት ፍላጐትዎ ምን ያህል ነበር?	1	2	3	4
45. ፆታዊ ግንኙነት ላይ ምን ያክል ተሳታፊ ነበሩ? (ከግብረ ስጋ ግንኙነት ጋር ወይም ካለ ግብረ ስጋ ግንኙነት)	1	2	3	4
46. ይህንን ጥያቄ ፆታዊ ግንኙነት ላይ ተሳታፊ ከነበሩ ብቻ ይመልሱ፦ ፆታዊ ግንኙነቱ ለእርስዎ ምን ያህል አስደሳች ነበር?	1	2	3	4

እባክዎ ወደሚቀጥለው ገጽ ይለፉ

ባለፈው ሳምንት ውስጥ፦	**በጭራሽ**	**በትንሹ**	**በመጠኑ**	**በጣም በብዛት**
47. ከንድዎትን ወይም ትከሻዎትን ህመም ተሰምቶዎት ነበር?	1	2	3	4
48. ከንድዎ ወይም እጅዎት አብጦ ነበር?	1	2	3	4
49. ከንድዎትን ለማንሳት ወይም ወደ ጐን ለማንቀሳቀስ ይቸግሮት ነበር?	1	2	3	4
50. በበሽታ በተጠቃው ጡትዎ አካባቢ ህመም ይሰማዎት ነበር?	1	2	3	4
51. በበሽታ የተጠቃው ጡትዎ አካባቢ አብጦ ነበር?	1	2	3	4
52. በበሽታ የተጠቃው ጡትዎ አካበቢ በትንሹ ሲነካ ከባድ ስሜት ነበረው?	1	2	3	4
53. በበሽታ በተጠቃው ጡትዎ አካባቢ የቆዳ ችግር ነበር (ምሳሌ፣ ማሳከክ፣ የመድረቅ፣ የመላላጥ)?	1	2	3	4

የ ሙ ጭ ማኪይቅ

የ አ ሚ ኛ ትር ጉ ምለ ኢ ትዮ ጵ ያ

(Amharic version for Ethiopia)

በእያንዳንዱ ርዕስ ስር፣ እባክዎ **ዛሬ** ያለዎትን ጤንነት በተሻለ ሁኔታ የሚገልጸውን **አንድ** ሳጥን ላይ ምልክት ያድርጉ፡፡

እንቅስቃሴ

የመራመድ ችግር የለብኝም	❑
አነስተኛ የሆነ የመራመድ ችግር አለብኝ	❑
መካከለኛ የሆነ የመራመድ ችግር አለብኝ	❑
ከባድ የሆነ የመራመድ ችግር አለብኝ	❑
ምንምመራመድ አልችልም	❑

ራስን መንከባከብ

ለመታጠብምሆነ ለመልበስ ምንምችግር የለብኝም	❑
ለመታጠብምሆነ ለመልበስ አነስተኛ የሆነ ችግር አለብኝ	❑
ለመታጠብምሆነ ለመልበስ መካከለኛ ችግር አለብኝ	❑
ለመታጠብምሆነ ለመልበስ ከፍተኛ የሆነ ችግር አለብኝ	❑
ራሴ ልታጠብምሆነ ልለብስ አልችልም	❑

መደበኛ ተግባራት *(ለምሳሌ፦ ስራ፣ ትምህርት፣ የቤት ውስጥ ስራ፣ ቤተሰባዊ ወይምየእረፍት ጊዜ ተግባራት)*

መደበኛ ተግባራቶቼን ያለ ምንምችግር አከናውናለሁ	❑
መደበኛ ተግባራቶቼን ለማከናወን አነስተኛ ችግር አለብኝ	❑
መደበኛ ተግባራቶቼን ለማከናወን መካከለኛ ችግር አለብኝ	❑
መደበኛ ተግባራቶቼን ለማከናወን ከፍተኛ ችግር አለብኝ	❑
መደበኛ ተግባራቶቼን ለማከናወን አልችልም	❑

የሕመምስሜት/ምቾት ማጣት

የሕመምስሜትምሆነ የምቾት ማጣት ስሜት የለኝም	❑
አነስተኛ የሕመምስሜት ወይምየ ምቾት ማጣት ስሜት አለኝ	❑
መካከለኛ የሕመምስሜት ወይምየ ምቾት ማጣት ስሜት አለኝ	❑
ከባድ የሕመምስሜት ወይምየ ምቾት ማጣት ስሜት አለኝ	❑
የከፋ የሕመምስሜት ወይምየ ምቾት ማጣት ስሜት አለኝ	❑

ጭንቀት/ድብርት

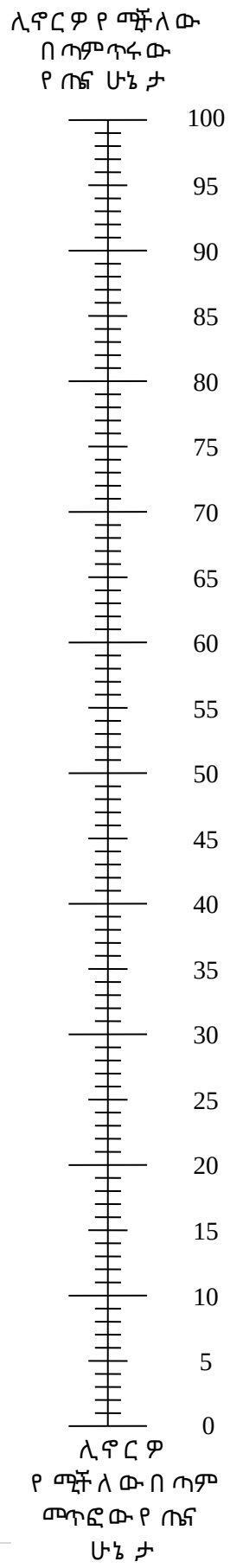
ጭንቀትምሆነ ድብርት የለብኝም	❑
አነስተኛ ጭንቀት ወይምድብርት አለብኝ	❑
መካከለኛ ጭንቀት ወይምድብርት አለብኝ	❑
ከባድ ጭንቀት ወይምድብርት አለብኝ	❑
እጅግ ከባድ ጭንቀት ወይምድብርት አለብኝ	❑

- ዛሬ የጤና ሁኔታዎ ምን ያህል ጥሩ ወይምመጥፎ ሚሆኑን ለሜመ እንፈልጋለን፡ ፡
- ሜላኪያውከ 0 እስከ 100 ድረስ ቁጥሮች አሉት፡ ፡
- 100 ሜላት ሊኖርዎ የሜቻለውበጣምጥሩውየ ጤና ሁኔታ ነው።

0 ሜላት ሊኖርዎ የሜቻለውበጣምመጥፎውየ ጤና ሁኔታ ነው።

- በሜላኪያውላይ ዛሬ ጤንነ ትዎ ያለበትን ሁኔታ ለማሳየ ት የ X ምልክት ያድርጉ፡ ፡
- አሁን፣ ከስር ባለውሳጥን ውስጥ በለሜኪያውላይ ምልክት ያደረጉበትን ቁጥር ይጻፉ፡ ፡

የ ዛሬ ጤንነ ትዎ =



በ ፋርማሲ ት/ቤት
የኢቲካል ሪቪው ቦርድ

አዲስ አበባ ዩኒቨርሲቲ
Addis Ababa University

School of Pharmacy
Ethical Review Board

ቀን Date: December 14, 2017

ቁጥር Ref. No.: ERB/SOP/40/10/2017

To: Selamawit Gebrehiwot
School of Pharmacy

Re: Ethical Clearance

It is to be recalled that you submitted a study proposal entitled "Assessment of Health Related Quality of Life and its Associated Factors Among Women Breast Cancer Patients at Tikur Anbessa Specialized Referral Hospital, Addis Ababa, Ethiopia" for ethical approval by the School's Ethical Review Board (ERB). The Board thoroughly reviewed the study proposal based on its operational guidelines and found it to fulfill all ethical requirements stipulated in the guidelines. This is, therefore, to inform you that the proposal is ethically approved for implementation.

With best regards,

Daniel Bisrat (Dr.)
Secretary, ERB

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