

Quality of Life of Breast Cancer Patients in Amhara Region, Ethiopia: a Cross-Sectional Study

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Abstract

Background: Although breast cancer has a markedly higher incidence in developed countries, 50% of the new diagnosis and 70% of deaths occur in developing countries. There are limited data available on the quality of life among breast cancer patients in Ethiopia, notably in the Amhara region. This study aimed to assess the quality of life and associated factors among patients with breast cancer in the Amhara Region, Ethiopia, 2019.

Methods: Institutional based cross-sectional study was conducted from March 25 to July 7/2019 among 256 patients with breast cancer in the Amhara region. A systematic random sampling technique was used. Data were collected by using a standardized interviewer-administered Amharic version of the European Organization for research and treatment of cancer quality of life questionnaire core 30 (EORTC QLQ C30) and breast cancer supplementary measure (QLQ-BR23). Data were analyzed by SPSS version 23. A binary logistic regression model was fitted to identify the associated factors. The odds ratio (OR) with 95% confidence interval (CI) was used to measure the strength of association.

Results: Sixty-eight point four percent (68.4%) of breast cancer patient's QoL was poor. The mean score of quality of life was 70.6 (standard deviation (SD) \pm 13.9; 95% CI: 69.0-72.4). All functional component scores were less than 75, from the symptom scale; diarrhea (11.6), constipation (17.5), and dyspnea (24.7) were less noticeable. Unmarried patients (AOR=2.59, 95% CI: 1.32-5.07), poor (AOR=2.39, 95% CI: 1.32-5.03), non housewife (AOR=3.25, 95% CI: 1.16-7.22), and complaints to dyspnea (AOR=3.48, 95% CI: 1.79-6.79), and insomnia (AOR=2.03, 95% CI: 1.05-3.91) were significantly associated with quality of life.

Conclusions: Health care professionals should give attention to unmarried, and non-housewife breast cancer patients, besides the treatment to improve the health of breast cancer patients.

Keywords: Quality of Life, Breast Cancer, Amhara region, EORTC QLQ

Introduction

Breast cancer is the leading cause of cancer-related mortality among women worldwide [1-4]. Globally, in 2018, an estimated that 627,000 women died from breast cancer, which accounts for 15% of all cancer deaths among women. Approximately, 2.1 million new cases were diagnosed per year [5]. In Ethiopia, breast cancer is the most prevalent type of cancer and the leading cause of high mortality among women and accounts for 34% of all female cancer cases [6, 7]. In 2018, over 15,000 breast cancer cases were diagnosed, and an estimated 8,000 cases were died. In Ethiopia, about 15,244(32.9%) new breast cancer cases were diagnosed, also the incidence and mortality rate of breast cancer were 42 and 23 per 100,000 respectively [8]. The World Health Organization (WHO) defines the quality of life (QoL) as “an individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns.” It is a broad-ranging concept affected in a complex way by the person’s physical health, psychological state, personal beliefs, social relationships, and their relationship to salient features of their environment [9]. The consequences of breast cancer in the poorest settings are socially and economically devastating [10]. QoL plays an increasingly important role in treatment decisions, and it has become an obligatory aspect of evaluating new treatments [11]. Better QoL has been associated with longer survival of patients with cancer [12]. The impairment in the QoL starts from the diagnosis of cancer and continues with the aggressive nature of treatment [13]. QoL in breast cancer is influenced by the disease itself (direct disease effects, stage at diagnosis and clinical course), the treatment of the disease, comorbidity, age at presentation, race or ethnicity, and socioeconomic status [14, 15]. Oncologic medical treatments may lead to QoL improvements but, sometimes, a wide variety of side effects can arise bringing about significant health-related complaints [16]. The most common systematic chemotherapeutic side effects; nausea, and vomiting, followed by fatigue, which can be emotionally distressing and debilitating which in turn may affect their QoL [17]. Women receiving chemotherapy and took more than three cycles of chemotherapy had lower QoL [18, 19]. Studies show that at the age of 51 to 60 years and a young age, unmarried patients were associated with poor QoL [20, 21]. However, studies show that; higher household income, older than 55 years of age, post-menopausal, stage I malignancy, patients who have completed treatment, and patients who underwent breast-conserving surgery were more likely to have a better QoL [22-24]. In a study in Black Lion hospital, educational status of college and above had good QoL than patients with no formal education, and divorced mothers were more likely to have good QoL than singles marital status. Even though in Ethiopia breast cancer is among the leading causes of morbidity and mortality among women, few published studies have been conducted so far on the QoL in breast cancer patients. It is important to include patients in various treatment categories; surgery, chemotherapy, and post-treatment follow-up, it gives broad pictures of the issue of the QoL. Therefore, this study was probably the first study tried to assess the QoL and associated

factors among breast cancer patients in the Amhara region using the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30 (EORTC QLQ C30) and breast cancer supplementary measure (QLQ-BR23) instrument. Thus, identifying the associated factors of QoL may provide insights into how to improve living conditions in breast cancer patients and, their survival.

Materials and Methods

Study Setting and Population

An institution-based cross-sectional study design was employed in oncology centers of three public hospitals in the Amhara regional state. The three public hospitals considered in the study were Felege Hiwot Comprehensive Specialized Hospital (FHCSH), Gondar Referral Teaching Hospital (GRTH), and Dessie Referral Hospital (DRH). FHCSH is located in Bahir Dar city 565 Km away from Addis Ababa, the capital city of Ethiopia. The hospital started oncology services in April 2016 with 18 inpatient beds. GRTH is located in Gondar town 750km far from Addis Ababa and it started to provide oncology service in January 2015 with 17 inpatient beds. DRH is located in Dessie town of South Wollo Administrative zone of Amhara region and it started providing oncology services as of October 2017 with 15 inpatient beds. Currently, three of the hospitals had both outpatient department (OPD) and inpatient department for cancer diagnosis and treatment, including surgery and chemotherapy services; however, none of the hospitals had no radiotherapy service. In 2018/19, there were 217, 191, and 168 breast cancer patients on treatment or post-treatment follow-up in FHCSH, GRTH, and DRH, respectively. The source populations were those breast cancer patients who were evaluated and treated in the oncology units of the three hospitals. Those breast cancer patients who visit the hospitals and being evaluated or treated at the oncology units from March 25, 2019, to July 7, 2019, were the study population. We included female breast cancer patients aged 18 years or above, and who had received at least two or more cycles of chemotherapy, or who were on post-treatment follow up, or who received surgical therapy irrespective of receiving chemotherapy while excluding those patients who had known cases of chronic illness, or those patients who were newly diagnosed for breast cancer.

Sample Size and Sampling Technique

The sample size was determined using a single population proportion formula: . The following assumptions were taken into considerations: a 95% confidence level ($Z_{\alpha/2}=1.96$), 5% marginal error ($d=0.05$) and 80% proportion of poor QoL of breast cancer patients [25]. Then, adding 10% to compensate non-response ($248*10\%=24.8$). The calculated sample size was 273. A systematic random sampling technique was used to select study participants. The sample was taken proportional to each hospital patient load. The previous three months patient load were taken from patient logbook of each hospitals (i.e., FHCSH = 217, GRTH = 191, and DRH = 168; total load= 576). The calculated sample size was proportionally allocated to each hospital. Then, a sampling

interval (K) was calculated by dividing the total number of breast cancer patients expected to come to the hospitals during the data collection time by the calculated sample size ($k=576/274=2$). The lottery method was used to select the first patient and then, every other patient was included according to her order of visits to the oncology unit.

Data Collection and Variable Measurement

Data were collected through face-to-face interview and patient chart review. Six trained BSc Nurses have collected the data with the supportive supervision of three BSc Nurses. A structured questionnaire or data extraction checklist was used to collect socio-demographic, economic, clinical, and QoL data via interview or patient chart review. Medical data such as the stage of the disease, type of treatment, type of surgery, cycles of chemotherapy, and other medical conditions were extracted from the patient's medical charts. The socio-demographic data include residence, age, education, religion, occupation, and marital status. The economic status was measured by the wealth index. The wealth index was assessed separately for rural and urban residents. The tool used to assess the wealth index was adapted from the Ethiopian demographic and health survey 2016 questionnaire. The quality of life of breast cancer patients was the outcome variable for this study. We have used the EORTC QLQ tool to measure the patients' quality of life. The measurement tool was used after getting permission from the EORTC. The Amharic version of EORTC QLQ version 3 of QLQ-C30 and its breast cancer supplementary measure (QLQ-BR23) was used in the current study. This tool is a disease-specific QoL scale. In the assessment of patients' QoL, there is evidence remarking that disease-specific QoL scales are preferred because they are sensitive and are capable of detecting small but clinically significant changes in health [26]. It is a reliable and valid measure of QoL of cancer patients; the internal consistency had a Cronbach's α value of 0.81. The internal consistency of the subscale, a Cronbach's α value were greater or equal to 0.73 except for cognitive function (Cronbach's $\alpha = 0.29$) [27].

The EORTC QLQ-C30 is a tool used to address quality of life issues to all cancer type patients and it is composed of nine multi-item scales and six single items. The multi-item scales include five functioning scales (physical, role, cognitive, emotional, and social), a global health status (QoL) scale, and three symptom scales (fatigue, pain, and nausea/vomiting). The six single items include dyspnea, insomnia, appetite loss, constipation, diarrhea, and financial difficulties [28]. The EORTC QLQ-BR23 is unique to breast cancer patients and it is composed of four functional scales (future perspective, body image, sexual function, and sexual enjoyment) and four symptom scales (systemic therapy side effect, arm symptom, breast symptom, financial difficulties, and upset by hair loss). The global health status (QoL) had two questions, with a modified 7point linear analog scale ranging from 1 "very poor" to 7 "excellent". All other items are scored on a 4-point categorical scale ranging from 1 "not at all to 4 "very much". There is no agreed threshold score to mean significant impairment for the EORTC

QLQ-C30 and QLQ-BR23 scales. However; a study in Ethiopia, Black Lion Specialized and Referral Hospital, dichotomized each scale and subscales into the "good" or "poor" category [29]. We have followed the same classification for the current study.

In Functional Component/Scale and Global Health Status or QoL

- **Good-** Higher scores on the functioning/global health status scale 75 and above
- **Poor-** lower mean score in the functioning/global health status scales (75 and lower)
- In Symptom Scale/ Item
- **Good-** when the mean score is lower or less than 25
- **Poor-** when the mean score is higher or 25 and above

Data Analysis

The data were coded and entered into EPI data version 3.1 software. Then exported to statistical packages for social sciences (SPSS) version 23 software for further analysis. Descriptive statistics were used to summarize the data in the form of frequency, mean, standard deviation (SD), and cross-tabulation. The internal consistency of the EORTC QLQ was evaluated using the reliability coefficient (i.e. Cronbach's alpha value). The Cronbach's alpha value of EORTC QLQ-C30 and QLQ-BR23 was 0.80. The reliability coefficient of each subscale was also greater than 0.7 except for the cognitive function (0.63) and pain (0.65) subscales. We used Hosmer-Lemeshow's goodness-of-fit test to evaluate model fitness, its p-value was 0.687. The EORTC QLQ-C30 and QLQ-B23 scoring manual were used to create raw scores and transform the raw scores to 0 to 100 values [30]. A 100 corresponds to the maximum score while 0 corresponds to the minimum score. A high scale score represents a higher response level. Thus, a high score for a functional scale or a global health status/QoL scale represents a high/healthy level of functioning while a high score for a symptom scale/item represents a high level of symptomatology/problems. The principle for scoring these scales is the same in all cases and it involves two procedures: 1) Raw Score, which is the average of the items that contribute to the scale, and 2) A linear transformation to standardize the raw score.

The procedure for these calculations presented as follows:

$$\text{The raw score (RS)} = (I_1 + I_2 + I_3 + \dots + I_n) / n$$

Where, $I_1 + I_2 + I_3 + \dots + I_n$, are items included in the scale
A linear transformation: we applied the linear transformation to 0-100 to obtain the score S ,

$$\text{Functional scale: } S = \left\{ 1 - \frac{RS-1}{\text{Range}} \right\} \times 100$$

$$\text{Symptom scale/item: } S = \left\{ \frac{RS-1}{\text{Range}} \right\} \times 100$$

$$\text{Global health status/QoL: } S = \left\{ \frac{RS-1}{\text{Range}} \right\} \times 100$$

Where a range is a difference between the maximum possible value of RS and the minimum possible value. All items of any scale in the QLQ-C30 and QLQ-BR23 have been designed to take the same range of values. Therefore, the range of RS equals the range of item values. Most items are scored 1 to 4, giving range = 3. The exceptions are the items contributing to the global health status/QoL, which are 7-point scale questions with a range = 6. Bi-variable and multivariable binary logistic regression analyses were carried out to identify factors associated with the outcome variable. Variables with P-value less than 0.2 in bi-variable logistic regression were considered to fit the multivariable logistic regression model. A p-value of less than 0.05 was used to determine the

presence of a significant association in the multivariable logistic regression model. Wealth index for rural and urban residencies was separately analyzed by principal component analysis (PCA).

Result

Socio-Demographic Characteristics of Patients

A total of 256 breast cancer patients with a response rate of 93.4 % were included in the study. The participants' mean (SD) age was 44.34 (± 14.11) years with a range of 22-95 years. One hundred fifty-five (60.5%) patients were married. One hundred fifty-three (59.8%) were urban residents, and 190 (74.2%) were Orthodox Christian. About seventy percent of patients were house-wives, and 134 (52.3%) had no formal education. One hundred sixteen (45.3%) patients had health insurance schemes to cover the cost of treatment and 91 (35.6%) patients were from poor wealth (Table 1).

Table 1: Socio-Demographic Characteristics of Breast Cancer Patients, Amhara Region Ethiopia 2019 (N=256)

Variables	Categories	Frequency	Percentage (%)
Age	<=40 years	129	50.4
	41-54 years	64	25.0
	>=55 years	63	24.6
Residence	Urban	153	59.8
	Rural	103	40.2
Marital status	Married	155	60.5
	Unmarried	101	39.5
Educational status	No formal education	134	52.3
	Primary(1-8)	46	18.0
	Secondary(9-12)	24	9.4
	Higher ^a	52	20.4
Religion	Orthodox	190	74.2
	Muslim/protestant	66	25.8
Occupation	House-wife	180	70.3
	Non-housewife ^c	76	29.7
Cost of treatment	Health insurance/Free	140	54.7
	Private/self	116	45.3
Wealth index	Poor	91	35.6
	Medium	83	32.4
	Rich	82	32.0

^adiploma and above, ^bOromo and Tigre; ^cstudent, farmer and daily laborer, merchant, gov't employee

Clinical Characteristics of the Patients

One hundred eighty-two (70.6%) (Stage III, 38.3%, and stage IV, 32.3%) patients were with advanced stages of breast cancer, and 96.9% of the patients receiving/received chemotherapy treatments.

Seventy-eight percent of patients were less than 12 months since they were diagnosed with breast cancer. The mean (±SD) duration from diagnosis was 12± (12.6) months (Table 2).

Table 2: Clinical Characteristics of the Breast Cancer Patients Amhara Region Ethiopia 2019 (N=256)

Variables	Categories	N	Frequency (%)
Stage of breast cancer	Early stage	74	28.9
	Advanced stage	182	71.1
Duration of disease	< 12 months	200	78.1
	13-24 months	28	10.9
	25-36 months	13	5.1
	> 36 months	15	5.9
Type of treatment	Chemotherapy +surgery	217	84.8
	Chemotherapy only	31	12.1
	Surgery only	8	3.1
Cycle of Chemotherapy	1-3cycle	108	42.2
	4-6 cycle	83	32.4
	>7cycle	51	19.9
	Completed	14	5.5
Type of surgery	Mastectomy	205	91.1
	Conserving	20	8.9

Quality of Life of Breast Cancer Patients

The mean score for the global health status (QoL) for breast cancer patients was 70.6 (SD=13.9, 95% CI: 69-72). The mean scores on the functional scale range from emotional function 43.8 (SD=35.2) to social function 64.2(SD=27.7). In the symptom scale, almost all symptoms were noticeable with different levels of intensity. The mean score of symptom scales ranged from as high as 67.2

(SD=34.3) for appetite loss to as low as 11.6(SD=25.6) for diarrhea (Table 3). On the EORTC QLQ-BR23, mean scores on functional scales ranged from 40.5(SD=42.5) for future perspective to 67.5 (SD=33.3) for sexual enjoyment. Mean scores on symptoms scales ranged from 57.0(SD=41.6) for an upset by hair loss to 63.0(SD=34.1) for breast symptoms (Table 3).

Table 3: Mean and Standard Deviation of Eortc Qlq-C30 And Br23, Components for Breast Cancer Patients, Amhara Region Ethiopia, 2019 (N=256)

	Analysis Category	Question No	Mean	SD	95% CI	
	Global health/QoL	29 & 30	70.6	13.9	69.0 -72.3	
	Functional scale	Physical function	1-5	52.4	33.8	48.0-56.2
		Role function	6 & 7	61.8	25.6	58.7-65.0
		Emotional function	21- 24	43.8	35.2	39.6-48.2
		Cognitive function	20 & 25	62.2	31.4	58.5-66.2
		Social function	26 & 27	64.2	27.7	60.9-67.7
EORTC QLQ-C30	Symptom scale	Fatigue	10, 12 & 18	60.5	31.9	56.3-64.5
		Nausea & vomiting	14 & 15	40.9	37.0	36.3-45.8
		Pain	9 & 19	53.6	30.3	49.7-57.5
		Dyspnea	8	24.7	29.9	21.2-28.3
		Insomnia	11	34.1	35.3	29.8-38.5
		Appetite loss	13	67.2	34.3	63.2-71.2
		Constipation	16	17.5	26.2	14.3-20.8
		Diarrhea	17	11.6	25.6	8.6-15.1
		Financial difficulties	28	63.3	39.4	58.5-68.1
	Functional scale	Body image	39-42	64.3	33.3	60.1-68.1

EORTC-QLQ-BR23	Sexual function	Sexual function	44 & 45	67.5	33.3	63.6-71.7
		Sexual enjoyment (N=132)	46	46.5	29.6	41.4 -51.8
		Future perspective	43	40.5	42.5	34.9-46.0
	Symptom scale/ items	Systemic therapy side effects	31 -34 & 36-38	58.2	28.8	54.5-61.5
		Breast symptoms	50-53	63.0	34.1	58.6-67.2
		Arm symptoms	47-49	59.5	34.2	55.2-63.8
		Upset by hair loss(N=231)	35	57.0	41.6	51.4-62.5

About 68.4% of breast cancer patients' QoL was poor. From the functional status, most patients had a poor emotional function, physical function, and future perspective 207(80.9%), 183(71.5%), and 183(71.5%) respectively. About 122(47.7%) sexual function and 109(42.6%) body image of the patients QoL was good (Figure 1). As shown in the graph below from the symptom scale; most of the breast cancer patients were affected by appetite loss, 226(88.3%), and systemic therapy side effect, 219(85.5%). However, breast cancer patients were less affected by diarrhea 54 (21.1%) and constipation 94(36.7%) (Figure 2). Factors affecting the quality of life of breast cancer patients On bi-variable logistic regression analysis, variables with a p-value less than 0.2 were entered into multiple logistic regressions. The results of bi-variable logistic regression showed that socio-demographic variables (marital status, religion, occupation, and wealth), clinically related variables (stage of disease), role function, future perspective, dyspnea, and insomnia were the candidate variables for multivariable

logistic regression. The results of the multivariable logistic regression analyses showed that marital status, religion, wealth status, insomnia, and dyspnea were significant factors that affect the QoL of breast cancer patients. Those unmarried breast cancer patients were 2.59 times more likely to have poor QoL compared to married breast cancer patients (AOR=2.59, 95% CI: 1.32-5.07). Those poor wealth status breast cancer patients were 2.39 times more likely to have poor QoL compared to rich breast cancer patients (AOR=2.39, 95% CI: 1.32-5.03). Those none housewives breast cancer patients were 3.25 times more likely to have poor QoL as compared to housewives breast cancer patients (AOR=3.25, 95% CI: 1.46-7.22). From the symptomatic breast cancer patients; with complaints of dyspnea were 3.48 times more likely to have poor QoL (AOR=3.48, 95% CI: 1.79-6.79) and those complaints of insomnia were 2.03 times more likely to have poor QoL (AOR=2.03, 95% CI: 1.05-3.91) compared to those not complaints dyspnea and insomnia respectively (Table 4).

Table 4: Factors Associated with Affected Quality of Life Among Breast Cancer Patients, Amhara Region, Ethiopia 2019 (N=256)

Variables	Response	Quality of life (QoL)		COR(95% CI)	AOR(95%CI)
		Good	Poor		
Marital status	Married	62(40.0%)	93(60.0%)	1	1
	Unmarried	19(18.8%)	82(81.2%)	2.88(1.59-5.21)	2.59(1.32-5.07)*
Wealth status	Poor	22(24.2%)	69(75.8%)	2.58(1.35-4.93)	2.39(1.32-5.03)*
	Medium	22(26.5%)	61(73.5%)	2.28(1.19-4.38)	1.90(0.88-4.08)
	Rich	37(45.1%)	45(54.9%)	1	1
Stages of disease	Early stage	19(25.7%)	55(74.3%)	1.50(0.82-2.74)	1.34(0.65-2.76)
	Advanced stage	62(34.1%)	120(65.9%)	1	1
Dyspnea	Poor	23(18.5%)	101(81.5%)	3.44(1.95-6.08)	3.48(1.79-6.79)***
	Good	58(43.9%)	74(56.1%)	1	1
Insomnia	Poor	38(24.8%)	115(75.2%)	2.17(1.27-3.71)	2.03(1.05-3.91)*
	Good	43(41.7%)	60(58.3%)	1	1
Role function	Poor	46(26.4%)	128(73.6%)	2.07(1.19-3.60)	1.54(0.76-3.12)
	Good	35(42.7%)	47(57.3%)	1	1
Future perspective	Poor	50(27.3%)	133(72.7%)	1.96(1.11-3.46)	1.74(0.91-3.34)
	Good	31(42.5%)	42(57.5%)	1	1
Religious	Orthodox	68(35.8%)	122(64.2%)	1	1
	Muslim/protestant	13(19.7%)	53(80.3%)	2.57(1.29-5.13)	2.00(0.92-4.35)
Occupation	Housewives	67(37.2%)	113(62.8%)	1	1
	Not Housewivesa	14(18.4%)	62(81.6%)	2.63(1.37-5.05)	3.25(1.46-7.22)**

* P< 0.05, **P<0.01, *** p<001, astudents, farmer, merchant, daily laborer

Discussion

This study showed that 68.4 % (95% CI: 62.5- 73.8) of breast cancer patients' QoL was poor. The mean score of QoL was 70.6(95% CI: 69-72.4). The study identified that marital status, occupation, wealth status, insomnia, and dyspnea as predictors of poor QoL of breast cancer patients in the Amhara region. This study showed that the QoL is higher than the EORTC QLQ-C30 reference value 61.8(±24.6), and other studies done in India (59.3), Malaysia (65.7±21.4), Morocco (68.5±18.5), Cote d'var and Addis Ababa (53±25.6). The study participants were different in Malaysian; chronic illness patients were included, in Morocco; received treatment for more than 3 months and severe neuropsychiatric disorders patients were excluded. It is evidenced that breast cancer patients with comorbidities had reduced QoL. In Addis Ababa, the study population was breast cancer patients under chemotherapy. However, the mean score of QoL was lower than Colombia 77.5 (±20.1) the possible reason might be due to socio-demographic difference such as mean age 55.7, 95% of the women reported religious affiliation and relatively high level of socioeconomic status were included and all these improve the QoL [31, 32]. Even though religious affiliation was not included in this study, being religious and high socioeconomic status improves the QoL.

This study revealed that all functional components; physical function (52.3±33.8), role function (61.8±25.6), emotional (43.8±35.2), cognitive function (62.2±31.4) and social function (64.2±27.7) were lower than the EORTC QLQ C30 reference value 78.4±21.3, 70.9±29.9, 68.6±23.8, 81.5±21.8 and 77±27.1 respectively. It is similar to a study done in India but lower than Morocco, Malaysia, and Colombia. As compared to our study, the Malaysian study involved less number of patients who were at the advanced stage of the disease (48% vs 72%) and a small number of the patients who were receiving chemotherapy as a treatment option (38% vs 96%). In Morocco, a few cases had stage IV (12.9%) breast cancer. This might be the possible reason because the side effects of chemotherapy and stages of the disease significantly affect the QoL in breast cancer patients. From the EORTC QLQ C30, symptomatic scale/item constipation (17.5±26.3) was consistent with the EORTC QLQ-C30 reference value 17.4±27.2[30] while fatigue (60.5±31.9), nausea and vomiting (40.9±37), pain (53.6±30.3), dyspnea (24.7±29.9), insomnia (34.1±35.3), appetite loss (67.2±34.3), diarrhea (11.6±25.6) and financial difficulties (63.3±39.4) were higher than the EORTC QLQ-C30 reference value. Diarrhea (11.6±25.6) consistent with a study done in Turkey [33]. In this study, 96.9% of breast cancer patients were receiving chemotherapy as a type of treatment. It was reported that patients receiving chemotherapy might experience several side-effects that negatively affected their QoL. From EORTC QLQ-BR23, body image and future perspective were lower than EORTC QLQ BR23 reference value and Malaysia. However, sexuality, systemic therapy side effects, upset by hair loss, breast, and arm symptom were higher than EORTC QLQ BR23 reference value and Malaysia.

This study revealed that women who underwent breast-conserv-

ing surgery had better global health status than women who had a mastectomy. This finding is in line with other studies done in Morocco and Taiwan. This might be due to fact that breast cancer patients who underwent mastectomy may start to worry about their body image and feel less attractive because of the surgery. The current study found that being unmarried was negatively affected by the QoL of breast cancer patients. This is similar to studies done in Morocco, India, and Ethiopia. Married persons tend to present early before metastasis and receive advanced care unlike unmarried patients. This might be because of the reason that unmarried women who have been diagnosed with breast cancer might feel insecure about getting a partner and develop a fear of not being loved by others that likely compromise their QoL. There are also studies with null or reversal association to the current findings. The presence of inconsistent findings is appealing for further investigation. Non-housewives occupational status of breast cancer patients was a significant effect on the QoL. It is similar to a study done in Indian. The reason might be the disease and treatment-related side effects disrupted in their daily lives, work schedules, and financial stability. The treatment needs frequent regular hospital visits and costs for transportation, diagnostic, treatment, and accommodation it may worsen the QoL.

In this study, breast cancer patients with poor wealth status were found to have poor QoL. This is similar to a study done in Shanghai, China, and Asia. This might be because of poor wealth status patients might be unlikely to access comprehensive care because of financial problems to cover direct (i.e., health care cost) cost and indirect costs such as transportation and accommodation costs. In most instances, chemotherapy medications including strong analgesics for managing disease and treatment side effects and diagnostics may not be available at government hospitals in the current study setup. These all incur additional costs for patients and likely affect their QoL. A study also signified that financial problem is the most devastating in cancer patients; nearly 2 out of 3 patients may sell their homes/other household assets to cover for medical care and other costs [34, 35]. The most common compliance on the symptom scale was dyspnea and insomnia. The mean score of insomnia was greater than 25, which is the most symptomatic, and significantly affects the QoL. This is similar to a study done in Addis Ababa, Ethiopia. In this study pain is the most common complaint and there might not be adequate pain management and prescribed opioids analgesics. In this study, about 71% of breast cancer patients were at an advanced stage, which likely reduces the QoL. When breast cancer is at an advanced stage, it might metastasize to the lung and other organs which leads the patient to face difficulty breathing. The disease itself and treatment side effects can also result in patients having stress and disturbed sleeping patterns. This study had both strengths and limitations. As a strength, the study considered main hospitals with oncology centers in the Amhara region, breast cancer patients at various treatment cycles and types, and various stages of the disease. This gave us the chance to observe a broad picture of the QoL issues in the Amhara region of Ethiopia. As a limitation, some of the questions in the interviews

were personal or sensitive issues; therefore, response bias is a possible limitation of the study. Because of the cross-sectional nature of the study design, data on QoL before the diagnosis or before starting the treatment were not available, and it was therefore not possible to assess the temporal relationship. Participants were also required to recall events as far back as a month before the interview, and therefore, recall bias is also a possible limitation.

Conclusions

We can conclude that the QoL of breast cancer patients was poor. This study identified that being unmarried, none housewife, being poor wealth status, and having complaints of insomnia and dyspnea were significantly affected the QoL of breast cancer patients in the Amhara region. We recommend that the Regional Health Bureau should prepare and incorporate QoL in the patient's treatment protocol and support financially poor wealthy status breast cancer patients. Health Care Professionals should recognize and take into consideration the importance of QoL, besides clinical treatment. They should emphasize unmarried, none housewife and educated breast cancer patients on chemotherapy treatment, and manage the side effects to improve QoL. Further studies with strong design, for example, prospective cohort, are recommended to identify the determinants of QoL.

List of Abbreviations

AOR: Adjusted Odd Ratio

CI: Confidence Interval

COR: Crude Odd Ratio

DRH: Dessie Referral Hospital

EORTC QLQ BR23: European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Breast Cancer supplementary measure

EORTC: European Organization for Research and Treatment of Cancer

FHCSH: Felege Hiwot Comprehensive Specialized Hospital

QLQ-BR23: Quality of Life Questionnaire breast cancer supplementary measure

QLQ-C30: Quality of Life Questionnaire Core 30

QoL: Quality of Life

SD: Standard Deviation

SPSS: Statistical package for social sciences

GRTH: University of Gondar Referral Teaching Hospital

WHO: World Health Organization

Ethics Declarations

Ethics Approval and Consent to Participate

The research approval (CMHS/IRB 03-008) was obtained from the Institutional Review Board (IRB) of the College of Medicine and Health Sciences of Bahir Dar University. The administrators of each hospital were communicated with an official letter and we got permission from each official to go ahead with the study. All the participants gave written informed consent under the Declaration of Helsinki. Patients' privacy and confidentiality of information were maintained throughout the study process.

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