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DEPARTMENT OF NURSING AND MIDWIFERY

SOCIAL NETWORKS, SOCIAL SUPPORT AND QUALITY OF LIFE AMONG FEMALE BREAST CANCER PATIENTS AT TIKUR ANBESSA SPECIALZED HOSPITAL, ADDIS ABABA, ETHIOPIA 2019.

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A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES, SCHOOL OF NURSING AND MIDWIFERY DEPARTMENT OF NURSING AND MIDWIFERY IN PARTIAL FULFILMENT OF THE REQUIRMENT FOR THE DEGREE OF MASTER OF SCIENCE IN CLINICAL ONCOLOGY NURSING.

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This thesis by Rahel Aberaraw is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of masters in clinical oncology nursing.

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ABBREVIATIONS AND ACRONYMS

BC	Breast cancer
BMI	Body mass index
EORTC	European Organization on Research and Treatment of Cancer
EORTC-QLQ-BR23	European Organization on Research and Treatment of Cancer, Quality of life questionnaire Breast cancer Specific
EORTC-QLQ-C30	European Organization on Research and Treatment of Cancer, quality of life questionnaire
ETB	Ethiopian birr
MOS	Medical outcome study
QOL	Quality of Life
SNI	Social network index
SPSS	Statistical Package for Social Sciences
TASH	Tikur Anbessa Specialized Hospital

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ABSTRACT

Background: Breast cancer is a major life-threatening public health problem in the world. It is the most common form of cancer among women in many developing countries including Ethiopia. Social networks and social supports could change the course of cancer and can influence the quality of life among breast cancer patients.

Objective: The purpose of this study was to assess social networks, social support and quality of life among female breast cancer patients attending in Tikur Anbassa Specialized Hospital, Addis Ababa, Ethiopia 2019.

Methods: An institutional basedcross-sectional study was conducted in Tikur Anbessa Specialized Hospital Addis Ababa, Ethiopia from March to April 2019. A total of 214 female breast cancer patients were included and systematic sampling method was used. A structured and pre-tested questionnaire was used. Data entry was done using epi data version 4.2.Data analysis was done using Statistical Package for the Social Sciences version 25. Binary and multiple logistic regression was used to show the association of social networks, social support and quality of life. P-value <0.05 and 95%CI was used.

Result:A total of 214 women with breast cancer were recruited.Themeanage was 41.85.Among total participants,13(6%), 65(30%) and 136(64%) had limited, medium and diverse social networks respectively. From total participants, 124(58%) had good social support whereas,198(92.52%) of them had affectedquality of life.Participants who were illiterate were more likely to have affected quality of life by 3 times than who were more educated (AOR=3, 95%CI: 1.3,6.9, COR=4.8) and who had systematic therapy side effects were more likely to have affected QoL by 3.8 times than who had no systemic therapy side effect (AOR=3.8, 95%CI: 1.1,13, COR=4).

Conclusionandrecommendation: In this study finding quality of life in breast cancer was low.Healthcareprovidersespecially working at oncology departmentneed to focus on addressing side effects of therapy, social network and social support which may help to improve quality of life of women with breast cancer.

Keywords: Social networks; social support; Quality of life; breast cancer.

1. INTRODUCTION

1.1. Background

Breast cancer refers to cancer originating from breast tissue, most commonly from the inner lining of milk ducts or the lobules that supply the ducts through milk. It is the most common cancer and the principal causes of cancer related deaths in women worldwide(1). A breast cancer diagnosis not only affects the woman diagnosed but also has huge implications for those involved in their life(2). Different studies have shown that the number of patients with breast cancer is rising sharply in recent years. Currently, the problem of breast cancer is likely to grow greatly in Africa(3). It's burden has become a major public health problem in developing regions, as incidence rate is particularly growing in these regions of the world(3).

Annually in Ethiopia, around 60,000 new cases of breast cancer were diagnosed (4).The Addis Ababa Cancer registry reports that breast cancer was the commonest cancer which accounts for 33% of all female cancer cases and 23% all cancers followed by cervical cancer at 17%(5). Deaths of women from breast cancer during their most productive years could result in tragedy for families, food insecurity and children withdrawal from school, increased work burden on children and loss of assets(6).

Social networks defined the network of social relationships that surround an individual and the characteristics of those bonds(7). The most commonly examined aspect of social networks with regard to breast cancer outcomes has been social network size, i.e. the number of network members(8). It is well established that larger social networks predict lower overall mortality in healthy populations(9).

Social support, defined as any process over which social associations might promote health and well-being(10). Perceived general social support has been shown to be positively correlated with quality of life among breast cancer patients(11). Social networks and social

support are two social ways that have been connected to the approval of healthy behaviors in the overall population (7, 10). Social support is a critical part to physical and mental health when fronting cancer care. However, social support does not supernaturally appear and people are reluctant to request for help, even when they want it. Ironically, social networks are often prepared and ready to offer help. Psychological research displays that people significantly underestimate the readiness of others to help(12). Preceding studies have initiate that larger networks (i.e. greater social integration) are associated with better survival(13, 14) and better quality of life after breast cancer.Social networks might impact cancer outcomes by influencing stage at detection or progression by affecting treatment decisions(13).

In a meta-analysis of 87 papers, larger social networks were found to be meaningfully connected with lower cancer mortality(15). In other studies, larger networks were associated through increased quality of life(16). A recent meta-analysis combining data from 87 studies of social support, social networks, and cancer consequences reported stronger inverse associations through cancer mortality among breast cancer survivors compared with other cancer sites(15).

1.2. Statement of The Problem

Breast cancer is a worldwide problem and 1.7 million new cases are diagnosed per year**(17)**. In study conducted in Tikur Anbessa specialized hospital, it accounts for 29.4% of cancer cases followed by cancer of the cervix 26.3%**(18)**. Among cancer survivors, social networks and social support have been related with improved quality of life **(16)**. In a Nurses' Health Study (NHS) of 2,835 women by any stage breast cancer Kroenke and colleagues found that socially isolated women were twice as likely to die of their breast cancer than socially integrated women**(14)**. One study has discovered that women with few social connections had a 43 percent higher risk of breast cancer returning, compared to well-connected women, the researchers found. Likewise, isolated women were 64 percent more likely to die from breast cancer and 69 percent more possible to die of any cause during the development of the study, compared to their complements with many social bonds (6).

A meta-analysis of 87 studies summarizing the literature on the association between social networks and cancer survival stated having high levels of perceived social support, larger social networks, and being married were connected with declines in risk ratios for mortality of 25%, 20%, and 12%, respectively (15) and other literature supposed that important relations of social network size and quality of life outcomes for types of social support are significant mechanisms through which naturally occurring networks influence QOL outcomes after a breast cancer diagnosis(16).

As with social networks, social support can disturb how individuals access the health care system or health information(7). And can influence insights of normative health behaviors (10). Socially-isolated individuals are less able to buffer the impact of health stressors than others and consequently are at greater risk of adverse health effects such as quality of life (QOL) illness or death(19). The impact of social networks, social support and quality of life has not been well characterized among Ethiopian breast cancer patients.Therefore, thisstudyaimed to assess social networks, social support and quality of life among female breast cancer patients, in Addis Ababa, Ethiopia.

1.3. Significance of The Study

Breast cancer is the most public type of cancer affecting women in Ethiopia. Studies suggest that assessment of social networks and social support is important to improve quality of life and decrease mortality in breast cancer. However, as far as I browse there is no research done in our country that assess social networks and social support among breast cancer patients. Thus, this study finding may be generates evidence-based knowledge about social networks, social support, quality of life and their association among breast cancer. This knowledge is important for health care providers, breast cancer patients and other stakeholders to improve quality of life.

The result of this study may help for breast cancer patients to get evidence-based care and health care professionals achieve evidence-based care and deliver continuation services more effectively. Furthermore, the results may help to generate and implement systematic social support protocols and different follow-up options, including individual and group rehabilitation and support based on patient's wants, focused more on the quality rather than the occurrence of social support. The results may also serve as a starting point for further study on the same problem.

2. LITERATURE REVIEW

2.1. Social networks of breast cancer patients

Social networks can be a vital resource for coping with breast cancer and the dynamics of survival and too be helpful in reducing mortality(13). The most frequently examined aspect of social networks with regard to breast cancer survival has been social network size (i.e. the number of web members)(8). Former studies have found that larger networks (i.e., greater social integration) are related with better survival after breast cancer diagnosis(13, 14). The networks of these Latina breast cancer survivors commonly included children, other close relatives, friends and neighbors(6). Social associations may have both adverse and beneficial influences on breast cancer survival, though larger social networks are connected with reduced breast cancer mortality(20).Categorizing the participants' SNI, 25% fell into the limited social network group (SNI 0–3), 37% into the medium network group (SNI 4–5), and 38% into the diverse social network group (SNI≥ 6)(21). Women's network diversity score ranged from one to nine network domains (of a possible 12 domains), with a mean sum of network diversity score of 4.8 (SD = 1.9) and a median score of 5.0(6).

Study conducted from multiple U.S. sites and Shanghai, China in the large, prospective In, pooled cohort study of 9,267 women with breast cancer, who were socially isolated had higher risks of recurrence, breast cancer-specific mortality, and overall mortality(22). In a study done in Northern California, Women with larger social networks had higher education and income and a healthier lifestyle with higher levels of physical activity and lower BMI and likelihood of current smoking(8). Among specific types of social contacts, increased participation in religious or community activities was significantly associated with improved overall survival**(13)** and Attending religious gatherings more than once a week was associated with a 34% reduction in death from any cause when compared to no religious participation.Older women's social networks have been shown to be relatively stable across diagnosis(14).

Women with larger social networks were more likely to be never smokers and they were more likely to be married, have children, to participate in religious/social activities, to volunteer, and to have a larger number of female relatives**(16)** and larger social networks have been associated with lower breast cancer mortality. In a case-control study higher

categories of social connectedness were more likely to be married, have children, be non-smokers, and have a history of chemotherapy and tamoxifen treatment**(13)**. A lack of a spouse/ partner (p=0.02) and community ties (p=0.04) predicted higher BC-specific mortality in older, White, but not other, women. However, a lack of relatives (p=0.02) and friendship ties (p=0.01) predicted higher BC-specific mortality in non-White women only(22). Women with high network diversity were younger than women with low network diversity (52.8 years vs. 61.9 years, p = 0.004) and Age was also inversely related to the number of network members (r = -0.51, p = 0.02)(6).

Evidence suggests that size of social networks is positively associated with higher levels of income and education(6). The networks of Latina breast cancer survivors commonly included children, other close relatives, friends and neighbors(6). Women with high network diversity were younger than women with low network diversity (52.8 years vs. 61.9 years, p = 0.004)(6).

2.2. Social support of breast cancer patients

social support have been identified as pivotal elements affecting the quality of life of breast cancer survivors(11). It is also an important aspect of modern breast cancer care(23). An important determinant of the ability of breast cancer patients to cope with their illness and treatments is the perceived social support (PSS), which can be defined as the extent to which an individual believes that his/her needs for support, information and feedback are fulfilled(24). With the increasing demands of caring for cancer patients the need for social support network can be enhanced, especially for the socio – emotional aspects of support.

The mean total perceived social support score of the group was 59.4 ± 14.9, whereas the maximum is 84(25). Women with breast cancer undergoing treatment have a real need for support(26). The study determined that social support for patients with breast cancer had an influence on their psychosocial adjustment to illness(27). Social support is a key for any individual's emotional safety because every individual has a need to feel part of a family or group of friends(26). Providing social support is a part of integral care provided by nurses. Emotional support was the most beneficial in the adjustment of women with breast cancer, generating opportunities for them to express feelings and favoring treatment

adherence.Themain sources are the spouse, family and friends, while the spouse is the most important emotional support and the main source of instrumental support(26).

Support from a partner can play a key role in a woman's emotional adjustment to breast cancer (28). Breast cancer patients through close social and emotional bonds in the first six months after diagnosis have better survival and fewer recurrences within the first few years, although the extra benefits appear to stop at about three years(29). The study conducted in Nepal said to improve social support; counseling of spouse, family members and friends could be done along with the patient(30). In Turkey study , assisting social support with organizational support and establishment of some type of screening for psychological distress in patients may lead to better cancer-related outcomes(25). One study revealed that aging and low education were negatively predicted total social support scores(31).

The strongest mediator and type of social support that was greatest predictive of QOL results was positive social interaction. However, each type of support was important depending on outcome, stage, and treatment status(8). In one study social support was important especially from family and significant others, for women who underwent breast surgery(32). Age, type of treatment and time since diagnosis not showed association with social support(25). Social support showed association with physical activity and BMI (33). For social support, mean linear score was 85.03 (on a scale of 0-100; higher the score, better the social support(30). Social support scores of above mean had significant association with normal mood ($p<0.05$) in Nepal (30). social support has been shown to be important in achieving and maintaining health behavior change(7).

2.3. Quality of life of breast cancer patients

It is difficult to define meaning of Quality of Life and quantify it through comparing one individual with another while measurement may not be significant from the other patient's point of view plus QOL might differ meaningfully with time. Consequently, QOL can only be defined and measured in individual terms and depends on present lifestyle, past experience hopes for the future, dreams and ambitions as well as impact of sickness and treatment(19). The quality of life (QOL) is a multidimensional, multifaceted measure that includes the influence of the diagnosis, treatment and movement of the disease on the daily living and rehabilitation of with breast cancer(34). It is a term often used to refer to the overall wellbeing

of the individual. For this study quality of life among breast cancer clients should be understood as the awareness of the clients about their physical, psychological, and social functioning following the diagnosis and treatment of the disease. A good QOL is frequently expressed in terms of approval, contentment, happiness and fulfillment and the ability to cope with breast cancer (19). Quality of life of patients with breast cancer is examined in different studies mainly in the developed countries. However, there is a knowledge gap concerning the relationship between breast cancer and QoL of patients in Africa(35).

The study conducted in china demonstrates that income, social support and treatment for breast cancer have significant impact on quality of life of women with breast cancer(34). Having children was positively associated with emotional functioning, physical functioning and global health(36). Larger social networks and greater social support were related to higher QOL after a diagnosis of breast cancer and Tangible support was a strong predictor of physical QOL in women with late stage of breast cancer(8). Perceived social support was an important factor for better QoL with breast cancer women(37).

Women who were socially isolated were significantly more likely to have lower than median QOL scores in both minimally and multiply adjusted models (Age-adjusted models and Multivariate-adjusted models than women who were socially integrated(8). The mean global health status score was 77.93. in one study the functional scores of the roles, physical, emotional, cognitive, and social, and body image, were high ranging from 80 to 89, the functional scores of sexual function, sexual enjoyment, and future perspective were low, in the range of 58 to72(38).In study done in South India(38) the effect of breast cancer on the occupation and marital status was minimal and the overall QOL in younger patients with breast cancer appeared to be good.

In one study the mean global health status score was 77.93,the functional scores of the roles, physical, emotional, cognitive, and social, and body image, were high ranging from 80 to 89 besides the functional scores of sexual function, sexual enjoyment, and future perspective were low, in the range of 58 to72(38).

In study done in Shanghai China(34)age at interview (P = 0.029), level of education (P = 0.001), occupation (P<0.001) and household income (P<0.001)were significantly associated with QOL in univariate analysis.

Adequate social support from family members, friends and neighbors and higher scores of Perceived Social Support Scale were connected with meaningfully improved quality of life of breast cancer patients(34). The symptom scales of the QLQ-C30 in general showed a low degree of symptomatology(32). The mean values of the GQL scale and of the functional scales of the QLQ-C30 were all ≥60. The symptom scales of the QLQ-C30 in general showed a low degree of symptomatology and the most frequent complaints were insomnia, fatigue, pain, and financial difficulties, whereas nausea and vomiting, diarrhea, appetite loss, and constipation were seldom reported(32). In one study done in Addis Ababa Ethiopia(35)those who earn 320-700 ETB were about thirty percent less likely to have good (unaffected) quality of life than they didn't have income, those who were classified as having unaffected emotional and cognitive functioning were about 2 times more likely to have good QoL, those who were having less fatigue were less likely to have unaffected QoL, While those who have no problem of nausea and vomiting, appetite loss and financial difficulties were about four, one and half and above two times more likely to have unaffected quality of life respectively.

2.4. Conceptual framework of the study

After a thorough review of literatures related to the major variables of the study a conceptual frame work was adapted as follows. It includes: socio demographic characteristics (e.g. age, education and religion), life style, clinical factors and socioeconomic issues was predicted to affect the dependent variable of the study(8, 14, 35).

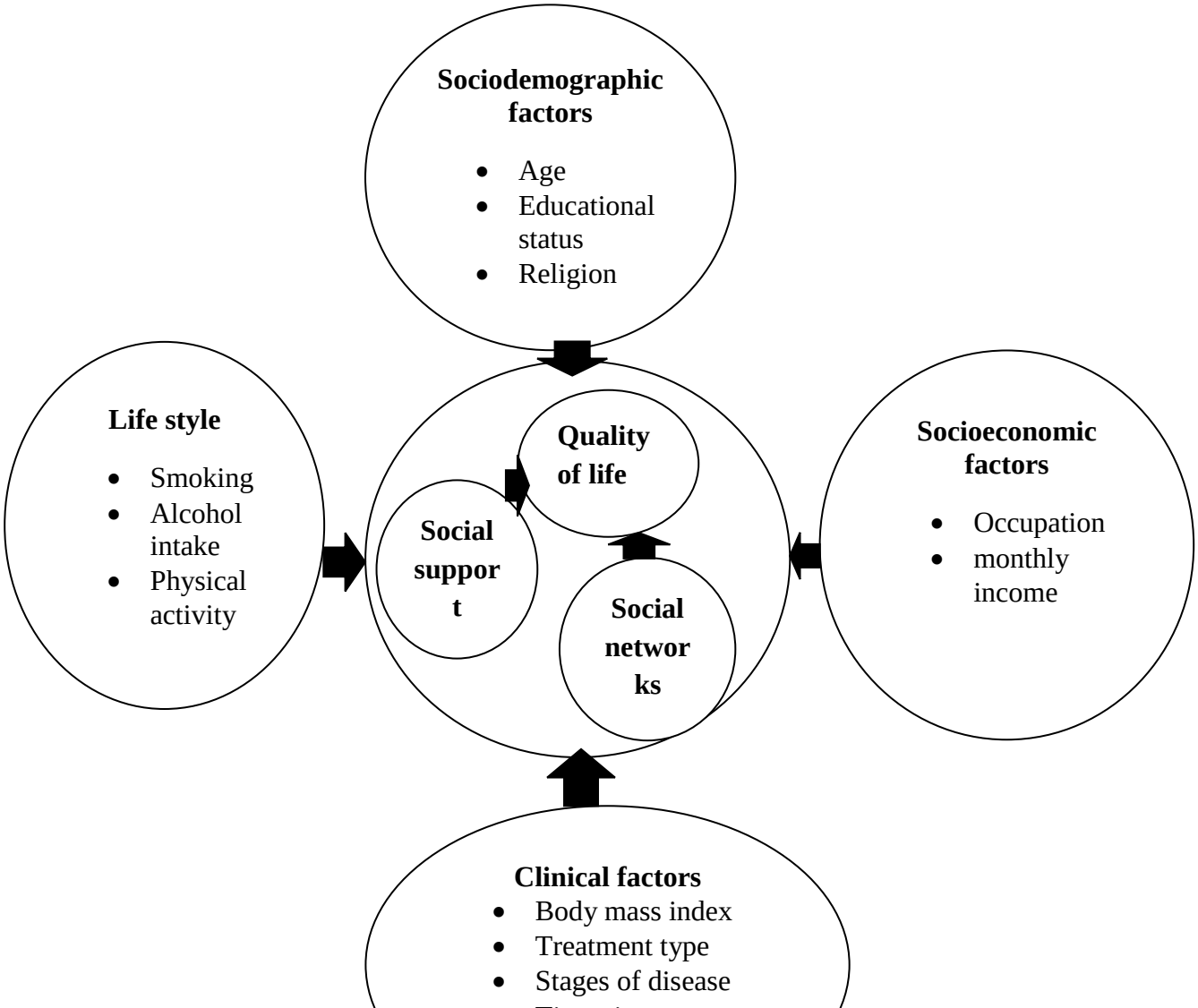

Figure 1: A conceptual frame work adapted on social networks, social support and quality of life among female breast cancer 2019.

3. OBJECTIVES OF THE STUDY

3.1. General Objective

To assess social networks, social support and quality of life among female breast cancer patients at Tikur Anbessa Specialized hospital, Addis Ababa, Ethiopia 2019.

3.2. Specific Objectives

- To determine social networks among female breast cancer patients.
- To determinesocial support among breast female cancer patients.
- To determine quality of life among female breast cancer patients.
- To identifyassociated factors to social networks, social support and quality of life among female breast cancer patients.

4. METHODS

4.1. Study Area and Setting

The study was conducted at Oncology center, TASH, Addis Ababa. Addis Ababa is the capital city of Ethiopia. It is the largest city in Ethiopia, with a population of 3,475,952 according to the 2007 population census with annual growth rate of 2.7%. Its area is estimated to be 540km^2 altitudes ranging from 2200- 3000m above sea level, average temperature of 22.8^{o}c and average rainfall of 1,180.4mm. Addis Ababa has 41 hospitals (13 public and 28 NGO and private), 29 health centers 122 health stations, 37 health posts and 382 modern private clinics (18).

Tikur Anbassa Specialized Hospital is government owned large referral teaching hospital, located in Kirkos sub-city under the administration of Addis Ababa University, College of Health sciences. The hospital has been inaugurated by the title Prince Mokonnen the Duke of Harar Memorial Hospital on 3/11/1973 and combined with the princess Tesha memorial Hospital on 24/5/1975 by the name of Tikur Anbassa Hospital.

The oncology center at the Hospital is the only referral center in the country. The hospital has 600 beds of which 18 are allocated to cancer treatment. Of the 201 physicians at the hospital, only two are hematologists, four are medical oncologists, four are radiotherapists, two are surgical oncologists, and one is a pediatric oncologist. Three palliative pain specialists moreover work on the hospital. Only 26 of the Tikur Anbessa's 627 nurses are dedicated oncology nurses. In 2010, more than 260 000 patients in total were treated in the hospital, including more than 2000 adults and more than 200 children with cancer. Treatments offered at Tikur Anbessa hospital cancer center contain anti-cancer drugs, surgery and radiotherapy(39).

4.2. Study Design and Period

An institutional based cross –sectional study was conducted from March to April 2019.

4.3. Source Population

All breast cancer patients being evaluated and treated in oncology units were considered as a source population.

4.4. Study population

Those breast cancer patients visiting the hospital and being evaluated or treated at oncology unit during data collection time and who met the eligibility criteria were invited.

4.5. Inclusion and Exclusion Criteria

4.5.1. Inclusion criteria

All female breast cancer patients who visited the hospital during the data collection were eligible for participation in the study.

4.5.2. Exclusion criterion

Serious ill patients,unwilling to fill the questionnaireand patients didn't take chemotherapy treatment was excluded from the study.

4.6. Sample size determination

The sample size was calculated using single proportion formula. Using the prevalence of breast cancer patients 14.8% (40). So that the sample size was calculated as follows:

$$n = \frac{(Z\alpha/2)^2 p(1-p)}{d^2}$$

Assumptions

- Prevalence: P= 14.8%
- Marginal of error: d=5% and
- Confidence interval: CI= 95%

$$\frac{(1.96)2\ (0.148)\ (0.852)}{(0.05)2} = 193.76=194$$

by adding 10% non- response rate, the total sample size was: 194+19.4=213.4=214

4.7. Sampling procedure

Tikur Anbessa Specialized Hospital was selected because it is currently the only referral hospital which provides different types of therapy including radiation therapy for cancer patients in Ethiopia.

According to the one-year record of female breast cancer, 8000 cases were seen in the oncology unit at Tikur Anbessa Specialized Hospital (TASH). Since the duration of the study was four weeks, the calculated flow within the four weeks was 667 and the required sample size was 214 study cases that was come for initiation of treatment and on follow-up during data collection period was asked. Therefore, "K" was 3.12. Based on systematic random sampling technique every 3 study participants were enrolled in the study during data collection period.

4.8. Variables

4.8.1. Dependent variables

- Social networks among female breast cancer patients
- Social support among female breast cancer patients
- Quality of life among female breast cancer patients.

4.8.2. Independent Variables

- **Socio-demographic** (Age, educational status and religion)
- **Socioeconomic** (occupation and monthly income)
- **Clinical factors**: Body mass index (BMI), stage of the diseases, time since diagnosis and type of treatment.
- **Lifestyle** (smoking, alcohol intake and physical activity)

4.9. Operational Definition

Social networks:defined as the overall connectedness or relationship of the twelve domains includes (spouse, children, parents, partner's parents, other relatives, close friends, religious, education, employment, neighbors, volunteer works, and other social groups(10).

Limited social networks: based on Social Network Index (SNI) score participants who were scored 0-3.

Medium social networks: based on Social Network Index (SNI) score participants who were scored 4-5.

Diverse social networks: based on Social Network Index (SNI) score participants who werescored≥6(21).

social support: defined as the degree to which interpersonal relationships serve particular support or functions (including emotional/informational support, tangible support, positive social interaction, and affectionate support (9).

Good social support: Participants who were scored mean and above the mean for social support questions.

Poor socialsupport: Participants who were scored below the mean for social support questions.

Quality of life: Assessed by using functional scales, symptom scales and global health status scales(35). Functional scale includes: - Physical, Role, Cognitive, Emotional, Social Functioning, body image, sexual functioning, sexual enjoyment and future perspective. Global health status assessed by two items. And symptom scales include: - fatigue, nausea and vomiting, pain, dyspnea, insomnia, appetite loss, constipation, diarrhea, financial difficulty, systemic therapy side effects, breast symptoms, arm symptoms and upset by hair loss.

Not affected quality of life: Participants who were scored75 andabove for functional and global health status scale and 25 and below for symptom scale.

Affected quality of life: Participants who were scored below 75 for functional and global healthstatus scale and above 25 for symptom scale(35).

4.10. Data collection methods

4.10.1. Data collection tools

Data was collected by using structured questionnaire which was adapted from literatures(9, 21, 35). The questionnaire was prepared in English language and then translated to the Amharic by experts who are expert in both languages, then back to English by another expert to ensure the uniformity of the instrument. Five percent of the sample size was pre-tested in Haleluiahospitalto check whether the study population understand the questions and modified accordingly (if needed). The questionnaire contains four parts. These are: -

Part one: Socio-demographic characteristics (age, educational status and religion), socioeconomic issues (occupation, monthly income), lifestyle (smoking, alcohol taking and physical activity), clinical factors (body mass index (BMI), types of treatment, stage of the diseases and time since diagnosis.

Part two: Social networks of the respondents was assessed using Cohen's social network index (SNI) which contains 12 items(10).This index counts the number of social roles in which the respondent has regular contact, at least once every 2 weeks, with at least one person:(spouse, children, parents, partner's parents, other relatives, close friends, religious, education, employment, neighbors, volunteer works, and other social groups).The maximum SNI score is 12. Three categories of social network diversity were formed based on the SNI score: SNI 0–3 represents a limited social network, 4–5 as a medium social network and SNI ≥6 as diversesocial networks.

Part three: Social support of the respondents were assessed using a 19-item medical outcome study (MOS) social support survey (8). Medical Outcomes Study (MOS) Social Support Survey, a multidimensional social support survey developed for patients with chronic conditions, to assess perceived social support, including (emotional/informational support, tangible support, positive social interaction, and affectionate support). Each participant asked how true each statement was during the past7days. Responses range was from none of the time (1) to all of the time (5). From 19 item social support questions, the first 8

questions were used to assess emotional/informational support (1-8 questions), from question 9-12 was used to assess to tangible support, from 13-15 was used to assess affectionate support and the rest was used to assess positive social support.

Part four: Quality of life of the respondents were assessed by using the European Organization for Research and Treatment of Cancer (EORTC) version 3.0 of QLQ-C30 which contains 30 items and European Organization on Research and Treatment of Cancer, Quality of life questionnaire breast cancer specific version (EORTC QLQ-BR23) which contains 23 items(35, 38). The EORTC is an organization that has a set of a standardized questioners targeted to assess the QoL of cancer patients in general and different supplementary modules targeted for specific cancer types such as breast cancer(41).

The QLQ-C30 is the main questionnaire which is aimed to address health-related quality of life of cancer patients in general.It incorporates 30 items among which are nine multi-item scales: five functional scales (Physical, Role, Cognitive, Emotional and Social Functioning); three symptom scales (Fatigue, Pain and Nausea or Vomiting), a global health status scale, and a number of single items assessing additional symptoms commonly reported by cancer patients (dyspnea, loss of appetite, insomnia, constipation and diarrhea) and perceived financial impact of the disease. While, QLQ-BR23, which assesses the quality of life for breast cancer patients, has 23 items assessing disease symptoms, side effects of treatment, body image, sexual functioning and future perspective to predict the specific breast cancer related QoL predictors(42).

Thus, the 53 questions from EORTC (30 questions QLQ-C30 and 23 questions QLQ-BR23) were used to assess QOL. From the EORTC-C30 questions 1-15 were used to assess functional scale, from question 16-28 were used to assess symptom scale and the last 2 questions (29-30) were used to assess global health status scale. And from the EORTC-BR23 questions 1-8 were used to assess functional scales and 9-23 were used to assess symptom scales.The participants of the study were requested to select only one answer from (1- Not at all, 2- A little, 3- Quite a bit or 4- Very much) for the first 28 questions and they were asked to select one between the range from 1 (which means Very poor) to 7 (Excellent) in the EORTC QLQC30 items for global health status questions. When it comes to EORTC QLQ-BR23 questions, the participants were requested to select only one answer (1-Not at all, 2-A little, 3-Quite a bit or 4-Very much) for each question.

4.11. Data collection procedure

Six BSc nurses and two MSc supervisors were used for data collection. One day training was given for clarification of some terms and assessment tools, aim of the study concerning need for strict confidentiality of respondent's information and time of data collection. Supervisors were closely monitor daily the data during data collection.

4.12. Data quality control

Data quality control was made by pre-tested in 5% of the total sample size. One full day training was given for data collectors and supervisor regarding the study, the questionnaire and data collection procedure by the main investigator. The Collected data were checked every day by supervisors and principal investigator for its completeness. Data was kept in the form of file in secure place where no one can access it except the investigator and confidentiality was insured by not recording names or any personal identity. Data was checked again for its completeness before data entry.

4.13. Data processing and analysis

First, data was checked for completeness then cleaned and coded before entered to epi-data manager version 4.2. Next data from completed questionnaire was entered (double entry) in to epi-data and transferred in to SPSS version 25 for analysis. Descriptive statistics were used to analyze demographic characteristics.Logistic regression models were used to evaluate associations between social network, social support, and quality of life. Bivariate and multivariate analysis with 95 % CI was employed. Variables found to have a P-value<0.2 in the binary logistic regression were entered into multivariate analysis and strength of association was declared at P value<0.05.

4.14. Ethical consideration

Ethical clearance was obtained from institutional review board of Addis Ababa University, College of Health Sciences, School of Nursing and Midwifery. Support letter from School of Nursing and Midwifery was written to Tikur Anbesa Specialized hospital. Informed written consent was gained from all study participants. Participants were informed about the important of the study. After information was provided about purpose of the study, non-invasiveness of the data collection procedure, confidentiality of the information and

respondents were reassured that they would be anonymous (unnamed). Then respondents were given a chance to ask anything about the study and was free to refuse or stop at any moment they want if their choice.

4.15. Dissemination of the result

The primary objective of this thesis is for partial fulfillment in the requirements to degree of master in clinical oncology nursing. It will be presented and submitted to the department of Nursing and Midwifery, School of Health Sciences, Addis Ababa University. In addition, copies of the result will be given to Tikur Anbesa Specialized Hospital oncology unit to utilize the information for further development of strategic and educational plan promotion of Health care providers, breast cancer patients and other stakeholders about social networks, social support and quality of life of breast cancer patients. Presentations at professional, local, national and international meetings and publication in peer reviewed national or international journals will be attempted.

5. RESULT

5.1. Socio-demographic characteristics of the participants

A total of 214participants were included in this study.Themean age was 41.85and the range of age was from 20 to 80 years. Most of the participants, were orthodox 142 (66.4%) followed by Muslim41 (19.2%).Sixty-six (30.8%) of participants were illiterate. From the total respondents, 104 (48.6%) were housewives. Ninety (42.1%) of the respondents got monthly income ≥2000 ETB (Ethiopian Birr).Among total participants, 155(72.5%) were diagnosed with breast cancer before 12 months. Among the total participants,129(60.3%) of them werereceived, surgery with chemotherapy treatment (Table 1).

Table 1:Socio-demographicand clinical factor characteristics of the participants at TASH, Addis Ababa, Ethiopia 2019.

Variable	Frequency n=214	Percent
Age		
<40	106	49.5
40-49	54	25.2
50-59	29	13.6
≥60	25	11.7
Religion		
Orthodox	136	63.6
Muslim	41	19.1
Protestant	31	14.5
Catholic	6	2.8
Educational status		
Illiterate	66	30.8
Grade1-8	38	17.8
Grade 9-12	64	29.9
College graduated	46	21.5
Occupation		
House wife	104	48.6
Governmental	44	20.6
Private	34	15.8
Student	3	1.4
Pension	29	13.6
Monthly income in ETB		
<500	67	31.3
501-1000	27	12.6
1001-1500	20	9.3
1501-2000	10	4.7
≥2000	90	42.1
Smoking		
Current	9	4.2
Past	3	1.4
Never	202	94.4
Alcohol intake		
Current	2	0.9
Past	9	4.2
Never	203	94.9
Physical activity		
<3	24	11.2
3-17	172	80.4
≥18	18	8.4
Type of treatment		
Chemotherapy	51	23.8
Surgery and chemotherapy	148	69.2
Surgery, chemotherapy and radiation therapy	15	7
Stage of diseases		
Stage 1	75	35
Stage 2	24	11.2
Stage 3	20	9.3
Stage 4	54	25.4
Recurrence	41	19.1
Time since diagnosis		
<12 month	155	72.5
13-24 month	14	6.5
25-34 month	6	2.8
35-59 month	22	10.3
≥60 month	17	7.9

5.2. Social networks characteristics of the participants

Among total participants, 141 (65.9%)ofthemwere married followed 28 (13.1%) were divorced. Half of the respondents, 109 (50.9%) had one to three number of children whereas, 45 (21%) of them had no children. Most of them, 196 (91.6%) had other relatives (other than parents, husband and children) and 136 (63.6%) of them had close friends. Majority of the respondents, 199 (93%) were belonging to religious activity. Participants who had involved in regular volunteer work were 203 (94.9%) (Table 2).

Table 2:Social networks characteristics among female breast cancer patients at TASH, Addis Ababa, Ethiopia 2019.

Variable	Frequency n=214	Percent
Marital status		
Married	141	65.9
Single	28	13.1
Divorced	28	13.1
Widowed	17	7.9
Number of children		
0	45	21
1-3	109	50.9
4-6	49	22.9
≥7	11	5.2
Parents living		
Neither	79	36.9
Mother	64	29.9
Father	15	7
Both	56	26.2
Partner's parents Living		
Neither	131	61.2
Mother	39	18.2
Father	10	4.7
Both	34	15.9
Other relatives		
0	18	8.4
1-3	69	32.2
4-6	69	32.2
≥7	58	27.2
Close friends		
0	78	36.4
1-3	113	52.8
4-6	13	6.1
≥7	10	4.7
Belong to religious group		
Yes	199	93
No	15	7
Attend any class		
Yes	9	4.2
No	205	95.8
Employed full or part time		
No	149	69.6
Private	26	12.2
Governmental	39	18.2
Neighbors		
0	59	27.6
1-3	92	43
4-6	30	14
≥7	33	15.4
Volunteer work		
Yes	11	5.1
No	203	94.9
Belong to any group		
Yes	3	1.4
No	211	98.6

There were 12 items that used to assess social networks of study participants among breast cancer patients. From 12 items, participants who had scored 0-3 were categorized as limited social networks. Participants who had scored 4-5 and ≥6 were categorized as medium social networks and diverse social network respectively. To do logistic regression social networks categorized dichotomously good vs poor.from total participants 13(6%),65(30%) and 136(64%) had limited, medium and diverse social networks respectively (fig 2).

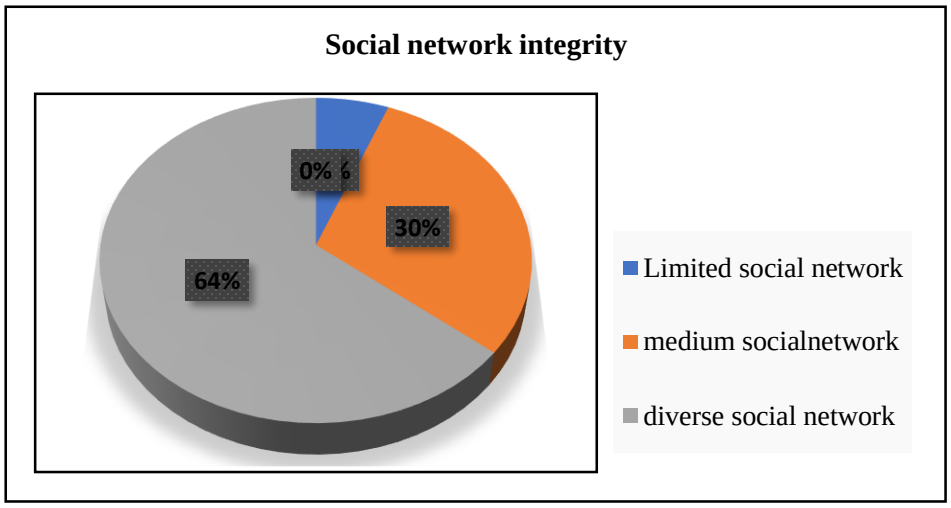

Figure 2: Social networks integrity among female breast cancer at TASH, Addis Ababa, Ethiopia 2019.

5.3. Social support characteristics of the participants

Among the total respondents,175(81.8%) had someone to listen them when they need to talk and they got good advice about their problem.Majority of the participants, 177(82.7%) got information that help them to understand a situationand 178 (83.2%) of them had a person to share their most private worries and fears. Among the total participants, 182(84.3%) had someone to help them when they were confined to bed. Of the respondents, 170 (80.1%) had someone to prepare their meals if they were unable to do it themselves and 173 (80.8%) participants had someone to help with daily activity when they were sick (Table 3).

Table 3:Socialsupport characteristics among female breast cancer patients at TASH, Addis Ababa, Ethiopia 2019.

Items	None of the time n (%)	A little of thetime n (%)	Some of the time n (%)	Most of the time n (%)	All of the time n (%)
Availability of someone to:					
Listento you	3(1.4)	36(16.8)	50(23.8)	49(22.9)	76(35.1)
Give you good advice	5(2.3)	34(15.9)	56(26.2)	47(22)	72(33.6)
Give you information	5(2.3)	32(15)	58(27.1)	56(26.2)	63(29.4)
Give advice you really want	5(2.3)	37(17.3)	54(25.2)	56(26.2)	62(29)
Share worries with	4(1.9)	32(15)	56(26.2)	58(27.1)	64(29.9)
Turn to for suggestions	4(1.9)	33(15.4)	59(27.6)	60(28)	58(27.1)
Understand yourproblems	2(0.9)	34(15.9)	55(25.7)	64(29.9)	59(27.6)
Confide in	4(1.9)	27(12.6)	59(27.6)	67(31.3)	57(26.6)
Help if confined to bed	3(1.4)	29(13.6)	58(27.1)	69(32.2)	55(25.7)
Take to doctor	5(2.3)	33(15.4)	58(27.1)	61(28.5)	57(26.6)
Prepare meals	5(2.3)	39(18.2)	49(22.6)	69(32.6)	52(24.3)
Help with daily tasks	5(2.3)	36(16.8)	61(28.5)	61(28.5)	51(23.8)
Love you	10(4.7)	36(16.8)	58(27.1)	63(29.4)	47(22)
Hug you	9(4.2)	37(17.3)	63(29.4)	59(27.6)	46(21.5)
Show love and affection	11(5.1)	36(16.8)	67(31.3)	55(25.7)	45(21)
With for relaxation	16(7.5)	38(17.8)	61(28.5)	54(25.2)	45(21)
Do something enjoyable with	17(7.9)	37(17.3)	64(29.9)	52(24.3)	44(20.6)
Have good time with	16(7.5)	40(18.7)	67(31.3)	49(22.9)	42(19.6)
Mind off things	16(7.5)	45(21)	60(28)	50(23.4)	43(20.1)

The social support status of the participants was assessed using 5-point Likert scale of 19 items. For analysis this 5-point Likert scale change to 3-point Likert scale. Participants who responded none of the time and a little of the time categorized into none of the time and who responded most of the time and all of the time categorized in to most of the time. For each item participants who responded some of the time and most of the time were classified as having good social support and participants who scored mean and above the mean (44.17) of the total 19 items were classified having as good social support. Base on this, women with breast cancer who had good social support were 124 (58%)(Fig 3).

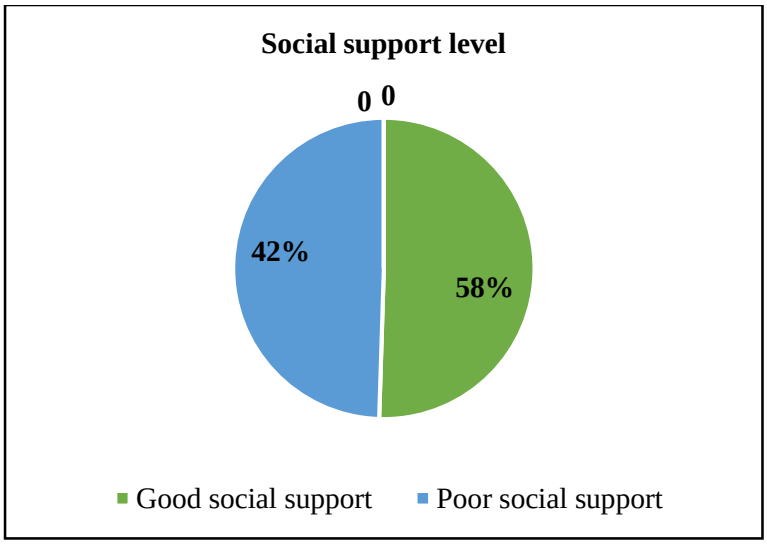

Figure 3: Social support level among female breast cancer at TASH, Addis Ababa, Ethiopia 2019.

5.4. Quality of life of the participants

Participants scored a global health status scale with a mean=83.61 and SD=20.9. From EORTC-C30 Functional scales the best score was observed a mean of 75.5 (SD=26) for social functioning. Whereas, in the QLQ-BR23 functioning scales, the best score was observed for future perspective mean=78 and SD=33.6). Participants also had a low mean score (20) for sexual functioning(Table 4).

Table 4:Quality of life characteristics of female breast cancer patients at TASH, Addis Ababa, Ethiopia 2019.

Scales	Mean ±SD
Global health status/QOL	83.61±20.9
EORTC QLQ-C30 functional scale	
Physical functioning	60±21.8
Role functioning	23.8±32.8
Emotional functioning	59.1±38.7
Cognitive functioning	72.8±28.2
Social functioning	75.5±26
EORTC QLQ-C30 symptom scale	
Fatigue	64.1± 23.5
Nausea and vomiting	30.7±28
Pain	67.8± 22.8
Dyspnea	41.3± 31.5
Insomnia	47.2±35.8
Appetite loss	59.3± 32.8
Constipation	14.8± 26
Diarrhea	14±29.3
Financial difficulty	63± 43
EORTC QLQ-BR23 functional scale	
Body image	76.9± 33.5
Sexual functioning	20.1±20
Sexual enjoyment	35.6±25.4
Future perspective	78± 33.6
EORTC QLQ-BR23 symptom scale	
Systemic therapy side effect	55.9±17.7
Breast symptoms	20.3± 21.6
Arm symptoms	20.4± 22.3
Upset by hair loss	15.6± 29

To assess quality of life of the participants, there are three sub scales: - functional scale, symptom scales and global health status scale. Based on this, participants who scored 75 and above for functional and global health status scale and 25 and below for symptom scale classified as not affected quality of life whereas, participants who scored below 75 for functional and global health status scale and above 25 for symptom scales classified as affected quality of life.Amongthe total participants, 48(22.4%), 150(70.1%) and 192(89.7%) of them had affected QoL, in global health status scale, functional scales and symptom scales respectively.Participants who had not affected QoL were 16 (7.48%)(fig 4).

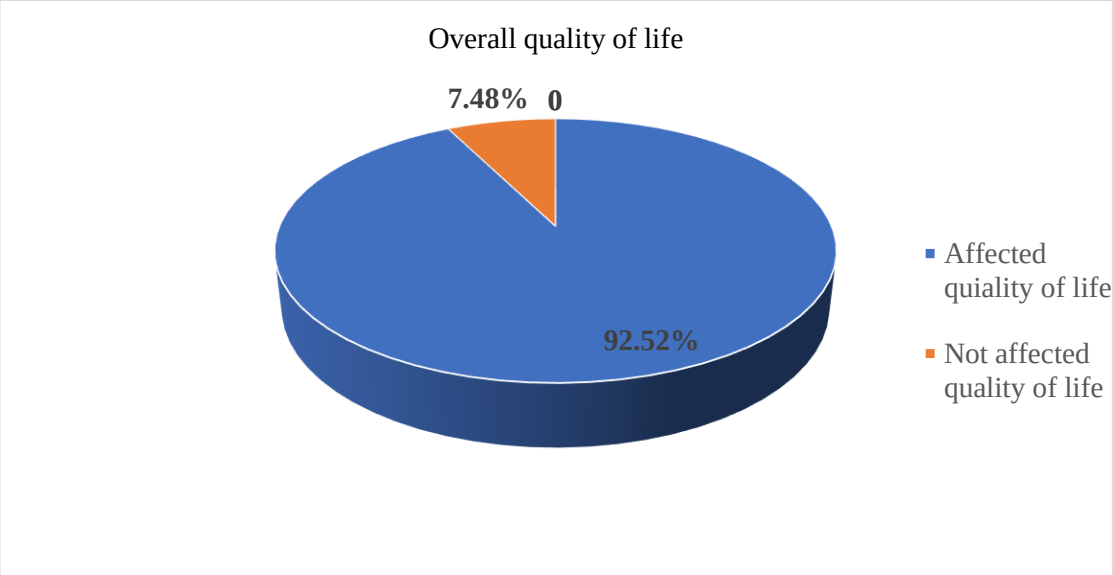

Figure 4:Overall quality of lifeamong female breast cancer patients at TASH, Addis Ababa, Ethiopia 2019.

5.5. Association of variables and social networks among female breast cancer patients

Among the total study participants, 132 (61.7%) of female breast cancer patients had children. It was found that participants who had children were more likely to have good social networks by 5 times than participants who had no children (AOR=5, 95%CL:1.3,21 COR=6). Besides, from the total study participants, 189 (88.3%) of them had other relatives. It was found that participants who had other relatives were more likely to have good social networks by 6 times than who had no other relatives (AOR=6, 95%CI: 1.2,30, COR=7) (Table 5).

Table 5: Bivariate and multivariate logistic regression analysis to show association of variables with social networks among female breast cancer patients at TASH, Addis Ababa, Ethiopia 2019.

Variables	Social	Networks		
	Lown(%)	High n (%)	COR (95%CI)	AOR (95%CI)
Education				
illiterate	8 (3.7)	51 (23.8)	0.16(0.04,0.64) *	0.28(0.54,30.34)
grade1-8	1 (0.5)	22 (10.3)	0.56(0.05,5.62)	0.91(0.65,17.35)
grade9-12	1 (0.5)	10 (4.7)	0.25(0.02,2.67)	0.95(0.03,9.43)
college	3 (1.4)	118 (55.1)	1	1
Occupation				
housewife	2 (0.9)	185 (86.4)	1	1
governmental	0 (0)	4 (1.9)	0.01(0.05,1.57)	0.36(0.54,13.64)
private	11 (5.1)	1 0(4.7)	0.01(0.01,0.043) *	0.93(0.65, 9.83)
Student	0 (0.0)	2 (0.9)	0.01(0.009,34.55)	0.9(0.65,38.34)
Alcohol intake				
Past	10 (4.6)	1 (0.5)	0.002(0.00,0.02) *	0.017(0.01,20.15)
Never	3 (1.4)	200 (93.5)	1	1
Married				
No	12 (5.6)	61 (28.5)	0.036(0.001,0.28*	0.03(0.03,0.28) **
Yes	1 (0.5)	140 (65.4)	1	1
Children				
No	10 (4.7)	69 (32.2)	1	1
Yes	3 (1.4)	132 (61.7)	6(1.6,23) *	5(1.3,21) **
Parents living				
No	10 (4.7)	69 (32.2)	0.15(1.7,23.9) *	0.1(0.02,0.4) **
Yes	3 (1.4)	132 (61.7)	1	1
Other relatives				
No	4 (1.9)	12 (5.6)	1	1
Yes	9 (4.2)	189 (88.3)	7(1.8,26) *	6(1.2,30) **
Close friends				
No	4 (1.9)	12 (5.6)	0.14 (0.04,0.5) *	0.06(0.01,0.4) **
Yes	9 (4.2)	189 (88.3)	1	1
Belong to church				
No	4 (1.9)	12 (5.6)	0.14 (0.04,0.5) *	0.09(0.02,0.4) **
Yes	9 (4.2)	189 (88.3)	1	1
Job				
No	7 (3.3)	50 (23.4)	0.284 (0.09,0.9) *	0.09(0.02,0.46) **
Yes	6 (2.8)	151 (70.6)	1	1
Neighbors				
No	7 (3.3)	50 (23.4)	0.284 (0.09,0.9) *	0.13(0.03,0.5) **
Yes	6 (2.8)	151 (70.6)	1	1

***statistically significant at 95% CI, P< 0.2, ** p<0.05**

5.6. Association of variables and social support among female breast cancer patients

Among the total study participants, 73(34.1%) of breast cancer patients were college graduated. It was found that participants who were college graduated were more likely to have good social support by 3 times than who were illiterate (AOR=3, 95%CI: 1.5, 5.9 COR=3.2). And from total participants, 85(39.7%) of them had monthly income more than 2000 ETB. It was found that participants who had high monthly income were more likely to have a good social support by 5.39 times than who had less monthly income (AOR=2.3, 95% CI: *1.2 ,8.5*, COR=5.39) (Table 7).

Table 6: Bivariate and multivariate logistic regression analysis to show associationofsocio-demographic characters withsocial support among female breast cancer patients at TASH, Addis Ababa, Ethiopia 2019.

VARIABLES	SOCIAL	SUPPORT		
	Low n (%)	High n (%)	COR (95%CI)	AOR (95%CI)
Age				
<40	74(34.6)	81(37.9)	2.85(0.97,8.37)	1.02(0.19,5.56)
40-49	14(6.5)	12(5.6)	2.23(0.62,8.08)	0.85(0.13,5.39)
50-59	5(2.3)	10(4.7)	5.2(1.17,23.04) *	2.16(0.28,16.85)
≥60	13(6.1)	5(2.3)	1	1
Education				
illiterate	40(18.7)	19(8.9)	1	1
grade1-8	11(5.1)	12(5.6)	2.3(0.9, 6)	2(0.7, 5.7)
grade9-12	7(3.3)	4(1.9)	1.2(0.3, 4.6)	0.9(0.2, 3.8)
college	48(22.4)	73(34.1)	3.2(1.6, 6.2) *	3(1.5, 5.9) **
BMI				
<25	96(44.9)	91(72.5)	1	1
25-29	4(1.9)	13(6.1)	3.43(1.08,10.9) *	2.91(0.82,10.30)
≥30	6(2.8)	4(1.9)	0.7(0.19,2.57)	0.67(0.17,3.39)
Time since diagnosis				
<12month	70(32.7)	85(39.3)	1	1
13-24 month	8(3.7)	6(2.8)	0.62(0.21,1.86)	0.67(0.19,2.26)
25-36 month	3(1.4)	3(1.4)	0.82(0.16,4.21)	0.73(0.13,3.91)
37-59 month	17(7.9)	5(2.3)	0.24(0.08,0.69) *	0.23(0.55,0.98) **
≥60 month	8(3.7)	9(4.2)	0.93(0.34,2.53)	1.03(0.34,3.10)
Monthly income				
<500	32(14.9)	16(7.5)	1	1
501-1000	1(0.5)	3(1.4)	2.75(1.03,157.14) *	1.5(0.48,166)
1001-1500	4(1.9)	3(1.4)	3.19(0.5,20.3)	1.66(0.18,15.2)
1501-2000	2(0.9)	1(0.5)	2.13(0.15,29.66)	0.73(0.04,15.3)
>2000	67(31.3)	85(39.7)	5.39(1.73,16.78) *	2.3(1.2 ,8.5) **
Alcohol intake				
past	8(3.7)	3(1.4)	1.18(0.04,0.95) *	0.62(0.04,9.3)
never	98(45.8)	105(49.5)	1	1

*** statistically significant at 95% CI, P< 0.2, **p<0.05**

5.7. Association of variables and quality of life among female breast cancer patients

Among the total study participants, 28(13.1%) of breast cancer patients were illiterate. It was found that participants who were illiterate were more likely to have affected QoL by 3 times than who were more educated (AOR=3,95%CI: 1.3,6.9, COR=4.8, p-value=0.008). Among the total study participants, 45(21%) of breast cancer patients had systematic therapy side effects. It was found that participants who had systematic therapy side effects were more likely to have affected QoL by 3.8 times than who had no systemic therapy side effect (AOR=3.8, 95%CI: 1.1,13, COR=4, p-value=0.035).Among the total participants, 45(21%) of the breast cancer patients had appetite loss problem. It was found that participants who had problem of appetite loss were more likely to have affected QoL by 3.5 times than who had no problem of appetite loss (AOR=3.5, 95%CI: 1.02,12COR=4, p-value= 0.047) (Table 8).

Table 7: Bivariate and multivariate logisticregression analysis to show association of variables with quality of life among female breast cancer patients at TASH, Addis Ababa, Ethiopia 2019.

Variables	Quality of life			
	Not affected n (%)	Affected n (%)	COR (95%CI)	AOR (95%)
Education				
Illiterate	40(18.7)	28(13.1)	4.8(2.3,9.6) *	3(1.3,6.9) **
Grade1-8	19(8.9)	2(0.9)	0.7(0.15,3.4)	0.7(0.14,3.33)
Grade9-12	12(5.6)	4(1.9)	2.3(0.64,8)	2(0.7,10)
College	95(44.4)	14(6.5)	1	1
Monthly income				
<500	31(14.5)	23(10.7)	4(2,8.9) *	2.6(1.2,6.2) **
501-1000	13(6.1)	2(0.9)	0.9(0.25,4.28)	0.7(0.13,3.4)
1001-1500	4(1.9)	3(1.4)	4.3(0.9,21)	2.5(0.47,13.7)
1501-2000	14(6.5)	2(0.9)	0.8(0.2,3.9)	0.8(0.2,3.9)
>2000	104(48.6)	18(8.4)	1	1
Emotional functioning				
Affected	90(42.1)	39(18.2)	1	1
Not affected	76(35.5)	9(4.2)	3.6(1.67,8) *	2.5(1.1,6) **
Cognitive functioning	72(33.6)	32(15)		
Affected	94(43.9)	16(7.5)	2.6(1.3,5) *	2.3(1.1,3) **
Not affected			1	1
Fatigue				
Affected	133(62.1)	46(21.5)	5.7(1.3,24) *	5.2(1.1,15) **
Not affected	33(15.4)	2(0.9)	1	
Nausea/vomiting				
Affected	99(46.3)	38(17.8)	2.6(1.2,5.5) *	2.3(1.1,5) **
Not affected	67(31.3)	10(4.7)	1	
Pain	112(52.3)	42(19.6)	3.4(1.3,8.4) *	3(1.2,8) **
Affected	54(25.2)	6(2.8)	1	1
Not affected				
Insomnia	101(47.2)	41(19.2)	3.8(1.6,9) *	3(1.2,7) **
Affected	65(30.4)	7(3.3)	1	1
Not affected				
Appetite loss				
Affected	130(60.7)	45(21)	4(1.2,14) *	3.5(1.02,12) **
Not affected	36(16.8)	3(1.4)	1	1
Financial difficulty				
Affected	118(55.1)	42(19.6)	2.8(1.1,7) *	2.6(1.01,6.8) **
Not affected	48(22.4)	6(2.8)	1	1
Systemic therapy side effect				
Affected	130(60.7)	45(21)	4(1.2,14) *	3.8(1.1,13) **
Not affected	36(16.8)	3(1.4)	1	1
Social networks				
Poor	5(2.3)	8(3.7)	6.4(1.9,20) *	4.5(1.3,15) **
Good	161(75.2)	40(18.7)	1	1
Social support				
Poor	73(34.1)	33(15.4)	2.8(1.4,5.5) *	2.4(1.2,5) **
Good	93(43.5)	15(7)	1	1

***statistically significant at 95% CI, P< 0.2, **p<0.05**

6. DISCUSSION

This study assessed social networks, social support and QoL among female breast cancer patients at TASH.The maximum social networks score was ten in a possible of 12, in this study.The finding is similar with the study done in New York, that was nine(6). This similarity might be due to used the same tool to assessed social networks of the participants.

The overall social support meanscorewas about 44.17 in the current study.This study finding is lower than the study done in Nepal, which showed that the mean score was85.03(30). The difference might be due to education of participantsand awareness of the participants.

The average global health status score of study participants' in this studywas about 83.6. This result is consistent with study done in Nepal which was (82.08)(30). This similarity might be due to the studydesign, study tools and sociodemographiccharacteristics of study participants. However, the current finding is high compared to study done in Addis Ababa that was (52.5)(35), EORTC reference value mean scorewas(61.8 ±24.6)(43) and in South India mean score was (77.93)(38). This difference might be due to stage of diseases, type of treatment and time since diagnosis.

In this study, fromEORTC functional scales scores, the role functioning was the lowest (23.8±32.80) and the highest was observed in social functioning (75.5±26). The finding is comparable to the study conducted in Ethiopia with the mean score of 74.1±28.5(35). The similarity might be due to the study design, study tool, similarity of study participants and study settings. But, the finding is lower comparing with the EORTC reference value of mean score(77)(43) and study conducted in South India mean score(87.7±24.6)(38). The difference might be due to educational level difference, study participant age difference, awareness about the disease's consequence and stage of the diseases.

In QLQ-BR23 functioning scales, a highest mean score(78± 33.6) was observed in future perspective scale. The finding is comparable in study done in Addis Ababa Ethiopia mean score(82.1±30.3)(35). Whereas, the finding is greater than the study conducted in South India mean score was (72.62±33.81)(38). The difference might be due to participants obtained of psychological and social support through informal ways such as family and in religious institution.

In the QLQ-C30 symptom scales, higher mean score (67.8± 22.8) wasobserved in pain. The finding was greater than the study conducted in South India with the mean score of(19.6±26.64)(38),Ethiopia with the mean score of (46.0±31.9)(35) and the EORTC referencevalue mean score(28.7±28.7)(43). This difference might be due the availability of anti-pain, the use of ani-pain properly, awareness about the important of anti-pain medication and their side effect.In QLQ-BR23 symptom scales highest mean score (55.9±17.7) were observed in systematic therapy side effects.This finding is greater than the study donein South India mean score(13.04±11.93)(38) and in Addis Ababa Ethiopia mean score (34.6±29.7)(35).This alteration might be due to type of treatment, stage of the diseases.

The studyparticipants whoweremarried, had children and participated in religious activitiesin this study had good social networks compared with those who were unmarried,hadn't children and not participated in religious activities. This finding is supported by the study done in Boston (13), in California (8, 16). This similarity might be due to the similarity of source of population and being married, having children and participate in religious activity by itself is more social tie.

Participants who were college graduated were about3 times more likely to have good social support than who were illiterate. This is in agreement with study done in Italy and in New York(6, 32). This similarity might be due to awareness about important of social support.

Studyparticipants who were illiterate were nearly3 times more likely to have affected QoL than those who were educated. This findingissupported with study conducted in Shanghai, China(32)more educated breast cancer patients had improved quality of life. The similarity might be duetoawarenessaboutside effect of treatment and proper management of treatment side effects.

High monthly income in the current study were more likely to have brought good quality of life. This finding is in agreement with the study done in Shanghai, China(32) high monthly income associated with good quality of life and study done in Addis Ababa(35) those who have reported that they didn't have income, less likely to have good (unaffected) quality of life. This similarity might be due to can get necessary medication, food, self-care materials and can afford necessary things.

Those who were classified as having affected emotional functioning and role functioning in functional scales were 2.3 times morelikely to haveaffected QoL. This finding was comparable with the study done in Addis Ababa participants who were classified as having unaffected emotional and cognitive functioning were about 2 times more likely to have good QOL(35). This similarity might be due to the similarity of the study design, study tool and study setting area.

Participants who were having a problem of fatigue, nausea and vomiting, appetite loss and financial difficulty in this studyweremore likely to have affected QoL. Whereas, the study conducted in Ethiopia(35) those who were having fatigue were less likely to have unaffected QoL and those who have no problem with nausea and vomiting, appetite loss and financial difficulties were more likely to have unaffected QoL.Thissimilaritymight be due to stage of the diseases, type of treatment and availability of treatment.

This study revealed that those studyparticipantswho had poor social networkswere 6.4 times morelikely to have affected quality of life. This is in line with the study done in California (16, 20) larger social networkspredictedimprovedQoLafter breast cancer and the other study done in California (8) larger social networkswere associated with higher QOL after a diagnosis of breast cancer. The comparation might be due to having social networks might be important to improve quality of life in breast cancer.

Participants who had poor level of social support were 2.8 times morelikely to have affected quality of life in the current study.This is supported with the study done in California(8, 14)greater social support were related to good QOL after a diagnosis of breast cancer and study done in Turk(25) good social support is best predicter to quality of life in breast cancer. This similarity might be due to get social support might be help to improve quality of life among breast cancer patients.

6.1.Strength and limitations of the study

6.1.1. Strength of the study

- The study used structured questionnaire adapted from standard questionnaire.
- As far as my knowledge is concerned this study is the first study to assess social networks, social support and QoL among breast cancer in our country. Thus, the result of this study will be used as starting point for future researchers.

6.1.2. Limitation of the study

- The nature of this study was a cross sectional one,it hinders the possibilities of assessing for cause and effect associations.
- Furthermore, the design limits the progressive investigation of social networks, social support and quality of life improvements following a series of intervention strategies
- It is also possiblysubjectedto social desirability bias as the study outcome is self-reported.

7. CONCLUSION AND RECOMMENDATIONS

7.1. Conclusion

Based on the finding of this study above half of the total respondents had diverse social networks, majority of, them had good social support and very few of them had not affected quality of life.Married, having children, parents living, other relatives, close friends and belong to church were significantly associated with social networks. Education and monthly income were significantly associated with social support. Education, monthly income, emotional functioning, role functioning, pain, fatigue, financial difficulty, systemic therapy side effect, social support and social networks were significantly associated with QoL.

7.2. Recommendations

Based on the findings of the study the following recommendations are forwarded to concerned bodies: -

To federal minister of health:

- Strength awareness in collaboration with public medias about social networks, social support and their association with QOL for breast cancer patients.

To health care professionals:

- Healthcare providers especially working at oncology department may need to focus on addressing side effect of treatment,social networks and social support which may helpto improve quality of life of women with breast cancer.
- Teach about the importance of social networks and social support to improve the outcome the disease for patients, attendants and other stakeholders.
- Establishing social support groups for women with breast cancer.

To future researchers:

- Including qualitative data and control groups of participants without breast cancer might help to explore the effect of breast cancer.

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9. ANNEXES

Annex 1: Information Sheet

Addis Ababa University College of Health Science, School of Nursing and Midwifery department of Nursing and Midwifery

Here, I the undersigned, a MSc student at Addis Ababa University College of Health Sciences school of Nursing and Midwifery Department of Nursing and Midwifery Post Graduate studies Program, currently I will be undertaking research on a topic social networks, social support and quality of life among female breast cancer patients at Tikur Anbessa Specialized, Hospital, Addis Ababa, Ethiopia 2019.

For this study, you will be selected as a participant and before getting your consent or permission of your participation, you need to know all necessary information related to the study. Thus, this information will be detailed as;

Objective: To assess social networks, social support and quality of life among female breast cancer patients at Tikur Anbessa Specialized hospital, Addis Ababa, Ethiopia 2019.

Significance of the study: AS far as my knowledge there is no research done on this topic in the study area. So, it is believed that it can be a starting point for those who are interested to perform a research on the same problem. Finding from the study is important for policy makers, administers, stakeholders and program implementers addressing the issues related to social networks, social support and quality of life among female breast cancer patients in Ethiopia.

Participants to be included: All female breast cancer patients who visited the hospital during the data collection period will be eligible for participation in the study.

Confidentiality: All information you give will be kept confidential and won't be accessible to any third party. Your name won't be registered on the question sheet so that you will not be identified.

Risks and Benefits of the study

Risks: The study will be carried out simply by asking you, the already prepared and structured questions. The procedure doesn't bear any physical or psychological trauma. Furthermore, you will not be forced to respond to the information you do not know.

Benefits: For your participation in the study no payment will be granted or has no any special privilege to you. But, participating in the study and giving your information to questions asked will have great benefits to the society. The results will be used to improve the knowledge about social networks, social support and quality of life among female breast patients in Ethiopia. And to provide basic information for health policy makers, administrators, stakeholders, researchers and for patients who are suffering from breast cancer.

Consent: Your contribution in the study will be totally based on your willingness. You have the right not to contribute from the beginning, or stop any time after starting participation. You will not be forced to respond to the information you do not know.

Name of principal investigator: RahelAberaraw (BSC)

Date: _____ Signature_____

Tel: +251955432781

Email: richooabersh27@gmail.com

Annex 2: Consent form

I am willing to participate in the study on "Social networks, Social support and Quality of life among female breast cancer patients at Tikur Anbassa Specialized Hospital, Addis Ababa, Ethiopia". (Circle either yes or no)

Yes

No

Tikur Anbassa Specialized Hospital oncology unit, Addis Ababa, Ethiopia

Date.....

Signature ……

Signature of the person who recruited the respondent……...

Title----------

Thank you for your cooperation

Annex 3: English version questionnaire

The objective of this study will be to assess social networks, social support and quality of life of female patients with breast cancer at Tikur Anbassa Specialized Hospital, Addis Ababa, Ethiopia.

Dear clients,

First, I would like to thank you for your voluntary participation in this study. I respectfully requested that you respond to the interview accurately and I assure you that your response and identifying data will be kept confidential. The result of this study will be useful for future planning of health service for breast cancer patients. Therefore; you are politely requested to give accurate information. Still you are free not to answer some of the questions if you are not interested.

Part one: Socio-demographic data

code----------

No	Variables	Option	Remark
	Socio- demographic issue		
1	Age	in---------years	
2	Religion	1. Orthodox 2.Muslim 3.Protestant 4.Others(specify)------	
3	Educational status	1.lliterate 2.Grade 1-8 3.Grade 9-12 4.College, University, graduated	
	Clinical factors		
4	Body mass index in kg/m^2	1.<25 2.25-29 3.30 or more than	
5	Type of treatments	1.Surgery 2.Chemotherapy 3. Radiation therapy 4.Hormonal therapy 5.Surgery, Chemotherapy, Radiation therapy 6.Others(specify)-------	
6	Stage of diseases during diagnosis	1.Stage 1 2.Stage 2 3.Stage 3 4.Stage 4	

		5.Recurrence	
7	Time since diagnosis in month	----------	
	Socioeconomic issue		
8	Occupation	1.Housewife 2.Government employee 3.Private 4.Student 5.Others(specify)--------	
9	Monthly income in ETB	1.<500 2.501-1000 3.1001-1500 4.1501-2000 5.>2000	
	Life style		
10	Smoking	1.Current 2.Past 3.Never	
11	Alcohol intake	1.Current 2.Past 3.Never	
12	Physical activity	1.<3 2.3-17 3.18 or more than	

Part Two: Social Network Index

This questionnaire is concerned with how many people you see or talk to on a regular basis including family, friends, workmates, neighbors, etc. Please read and answer each question carefully.

No	**Questions**	**Option**	**Remark**
1	What is your current marital status?	1. Married 2. Single 3. Divorced 4. Widowed 5. Others (specify-	
2	How many children do you have? (If you don't have any children, check '1' and skip to question 3).	1. 0 2. 1-3 3. 4-6 4. 7 or more	
3	Are either of your parents living? (If neither is living, check '1' and skip to question 4).	1. Neither 2. Mother only 3. Father only 4. Both	
4	Are either of your partner's parents living? (If you have none, check "1" and skip to question 5.)	1. Neither 2. Mother 3. Father 4. Both	
5	How many other relatives (other than your spouse, parents & children) do you feel close to? (If 'none', check "1" and skip to question 6.	1. 0 2. 1-3 3. 4-6	

		4. 7or more	

6	How many close friends do you have? (meaning people that you feel at ease with, can talk to about private matters, and can call on for help)	1. 0 2. 1-3 3. 4-6 4. 7or more	
7	Do you belong to a church, temple, or other religious group? (If not, check '1' and skip to question 8.)	1. No 2. Yes	
8	Do you attend any classes (school, university, technical training, or adult education) on a regular basis? (If not, check '1' and skip to question 9.)	1. No 2. Yes	
9	Are you currently employed either full or part-time? (If not, check '1' and skip to question 10)	1.No 2.Private 3.Govermental	
10	How many of your neighbors do you visit or talk to at least once every 2 weeks?	1. 0 2. 1-3 3. 4-6 4. 7or more	
11	Are you currently involved in regular volunteer work? (If not, check '1' and skip to question 12.)	1. No 2. Yes	
12	Do you belong to any groups in which you talk to one or more members of the group about group-related issues at least once every 2 weeks?	1. No 2. Yes	

Part three: MOS Social Support Survey

Next are some questions about the support that is available to you. How often is each of the following kinds of support available to you if you need it?

No	Questions	None of the time	A little of the time	some of the time	Most of the time	All of the time
1	Someone you can count on to listen to you when you need to talk	1	2	3	4	5
2	Someone to give you good advice about a crisis	1	2	3	4	5
3	Someone to give you information to help you under- stand a situation	1	2	3	4	5
4	Someone whose advice you really want.	1	2	3	4	5
5	Someone to share your most private worries and fears with.	1	2	3	4	5
6	Someone to turn to for suggestions about how to deal with a personal problem.	1	2	3	4	5
7	Someone who understands your problems	1	2	3	4	5
8	Someone to confide in or talk to about yourself or your problems	1	2	3	4	5
9	Someone to help you if you were confined to bed	1	2	3	4	5

10	Someone to take you to the doctor if you needed it	1	2	3	4	5
11	Someone to prepare your meals if you were unable to do it yourself.	1	2	3	4	5
12	Someone to help with daily chores if you were sick	1	2	3	4	5
13	Someone to love and make you feel wanted.	1	2	3	4	5
14	Someone who hugs you.	1	2	3	4	5
15	Someone who shows you love and affection	1	2	3	4	5
16	Someone to get together with for relaxation.	1	2	3	4	5
17	Someone to do something enjoyable with	1	2	3	4	5
18	Someone to have a good time with	1	2	3	4	5
19	Someone to do things with to help you get your mind off things	1	2	3	4	5

Part Four: The EORTC QLQ-C30 questionnaire

Please indicate the extent to which you have experienced these symptoms or problems during the past week.

S/No	**Questions**	**Not at all**	**A little**	**Quite a bit**	**Very much**
1	Do you have any trouble doing strenuous activities, like carrying a heavy shopping bag or a suitcase?	1	2	3	4
2	Do you have any trouble taking a long walk?	1	2	3	4

3	Do you have any trouble taking a short walk outside of the house?	1	2	3	4
4	Do you need to stay in bed or a chair during the day?	1	2	3	4
5	Do you need help with eating, dressing, washing yourself or using the toilet?	1	2	3	4
6	Were you limited in doing either your work or other daily activities?	1	2	3	4
7	Were you limited in pursuing your hobbies or other leisure time activities?	1	2	3	4
8	Have you had difficulty in concentrating on things, like reading a newspaper or watching television?	1	2	3	4
9	Did you feel tense?	1	2	3	4
10	Did you worry?	1	2	3	4
11	Did you feel irritable?	1	2	3	4
12	Did you feel depressed?	1	2	3	4
13	Have you had difficulty remembering things?	1	2	3	4
14	Has your physical condition or medical treatment interfered with your family life?	1	2	3	4
15	Has your physical condition or medical treatment interfered with your social activities?	1	2	3	4
16	Were you short of breath?	1	2	3	4
17	Have you had pain?	1	2	3	4

18	Did you need to rest?	1	2	3	4
19	Have you had trouble sleeping?	1	2	3	4
20	Have you felt weak?	1	2	3	4
21	Have you lacked appetite?	1	2	3	4
22	Have you felt nauseated?	1	2	3	4
23	Have you vomited?	1	2	3	4
24	Have you been constipated?	1	2	3	4
25	Have you had diarrhea?	1	2	3	4
26	Were you tired?	1	2	3	4
27	Did pain interfere with your daily activities?	1	2	3	4
28	Has your physical condition or medical treatment caused you financial difficulties?	1	2	3	4
29	How would you rate your overall health during the past week?	1-2	3-4	5-6	7
30	How would you rate your overall quality of life during the past week?	1-2	3-4	5-6	7

Part five - EORTC QLQ - BR23

Please indicate the extent to which you have experienced these symptoms or problems during the past week.

S/No	Questions	Not at all	A little	Quite a bit	Very much
1	Have you felt physically less attractive as a result of your disease or treatment?	1	2	3	4
2	Have you been feeling less feminine as a result of your disease or treatment?	1	2	3	4
3	Did you find it difficult to look at yourself naked?	1	2	3	4
4	Have you been dissatisfied with your body?	1	2	3	4
5	Were you worried about your health in the future?	1	2	3	4
6	To what extent were you interested in sex?	1	2	3	4
7	To what extent were you sexually active? (with or without inter course)	1	2	3	4
8	Answer this question only if you have been sexually active: To what extent was sex enjoyable for you?	1	2	3	4
9	Did you have a dry mouth?	1	2	3	4

10	Did food and drink taste different than usual?	1	2	3	4
11	Were your eyes painful, irritated or watery?	1	2	3	4
12	Have you lost any hair?	1	2	3	4
13	Answer this question only if you had any hair loss: Were you upset by the loss of your hair?	1	2	3	4
14	Did you feel ill or unwell?	1	2	3	4
15	Did you have hot flushes?	1	2	3	4
16	Did you have headaches?	1	2	3	4
17	Did you have any pain in your arm or shoulder?	1	2	3	4
18	Did you have a swollen arm or hand?	1	2	3	4
19	Was it difficult to raise your arm or to move it sideways?	1	2	3	4
20	Have you had any pain in the area of your affected breast?	1	2	3	4
21	Was the area of your affected breast swollen?	1	2	3	4
22	Was the area of your affected breast oversensitive?	1	2	3	4
23	Have you had skin problems on or in the area of your affected breast (e.g., itchy, dry, flaky)?	1	2	3	4

□□□ 3: □□□□□□□□□□

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5	([illegible], [illegible]) [illegible]?	1. 0 2.1-3 3. 4-6 4. 7 [illegible]
6	[illegible]?	1. 0 2. 1-3 3. 4-6 4. 7 [illegible]
7	[illegible]?	1. [illegible] 2. [illegible]
8	[illegible] ([illegible], [illegible], [illegible], [illegible]) [illegible]?	1. [illegible] 2. [illegible]
9	[illegible]?	1. [illegible] 2. [illegible] 3. [illegible]
10	[illegible] 2 [illegible]?	1. 0 2. 1-3 3. 4-6 4. 7 [illegible]
11	[illegible]?	1. [illegible] 2. [illegible]
12	[illegible] 2 [illegible]?	1. [illegible] 2. [illegible]

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16	[illegible]?	1	2	3	4
17	[illegible]?	1	2	3	4
18	[illegible]?	1	2	3	4
19	[illegible]?	1	2	3	4
20	[illegible]?	1	2	3	4
21	[illegible]?	1	2	3	4
22	[illegible]?	1	2	3	4
23	[illegible]?	1	2	3	4
24	[illegible]?	1	2	3	4
25	[illegible]?	1	2	3	4
26	[illegible]?	1	2	3	4
27	[illegible]?	1	2	3	4
28	[illegible] /[illegible]/ [illegible]?	1	2	3	4
29	[illegible]?	1-2	3-4	5-6	7
30	[illegible]?	1-2	3-4	5-6	7

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[illegible] ([illegible])

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1	[illegible]	1	2	3	4

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2	[illegible]?	1	2	3	4
3	[illegible]?	1	2	3	4
4	[illegible]?	1	2	3	4
5	[illegible]?	1	2	3	4
6	[illegible]?	1	2	3	4
7	[illegible]? ([illegible])	1	2	3	4
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20	[illegible]?	1	2	3	4
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23	[illegible] ([illegible])?	1	2	3	4