

# Social networks and quality of life among female breast cancer patients at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia 2019

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## Research article

**Keywords:** Social-networks; Quality of life; Breast cancer

**Posted Date:** August 9th, 2019

**DOI:** <https://doi.org/10.21203/rs.2.12540/v1>

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**Version of Record:** A version of this preprint was published at BMC Women's Health on March 11th, 2020.  
See the published version at <https://doi.org/10.1186/s12905-020-00908-8>.

# 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 could change the course of cancer and can influence the quality of life among breast cancer patients. Therefore, the purpose of this study was to assess social networks and quality of life among female breast cancer patients attending in Tikur Anbassa Specialized Hospital, Addis Ababa, Ethiopia 2019. Methods An institutional based cross-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-manager 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 and quality of life. The strength of association was declared P-value <0.05 and 95%CI was used. Result A total of 214 women with breast cancer were recruited. The mean age was 41.85. Among total participants, 13(6%), 65(30%) and 136(64%) had limited, medium and diverse social networks respectively. Whereas, 198(92.52%) of them had affected quality 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). Conclusion and recommendation In this study finding quality of life in breast cancer was low. Healthcare providers especially working at oncology department need to focus on addressing side effects of therapy and social networks which may help to improve quality of life of women with breast cancer.

## 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). Its 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). Preceding studies have initiated that larger networks (i.e. greater social integration) are associated with better survival(10, 11) 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(10).

In a meta-analysis of 87 papers, larger social networks were found to be meaningfully connected with lower cancer mortality(12). In other studies, larger networks were associated through increased quality of life(13). A recent meta-analysis combining data from 87 studies of social networks and cancer consequences reported stronger inverse associations through cancer mortality among breast cancer survivors compared with other cancer sites(12).

Breast cancer is a worldwide problem and 1.7 million new cases are diagnosed per year(14). In study conducted in Tikur Anbessa specialized hospital, it accounts for 29.4% of cancer cases followed by cancer of the cervix 26.3%(15). Among cancer survivors, social networks have been related with improved quality of life(13). 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(11). 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 larger social networks and being married were connected with declines in risk ratios for mortality of 20%, and 12%, respectively(12) and other literature supposed that important relations of social network size and quality of life outcomes are significant mechanisms through which naturally occurring networks influence QOL outcomes after a breast cancer diagnosis(13).

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(16). The impact of social networks and quality of life has not been well characterized among Ethiopian breast cancer patients. Therefore, this study aimed to assess social networks and quality of life among female breast cancer patients, in Addis Ababa, Ethiopia.

## Methods

### 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<sup>2</sup> altitudes ranging from 2200-3000m above sea level, average temperature of 22.8°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 (15).

Tikur Anbessa 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 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(17).

### **Study Design and Period**

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

### **Source Population**

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

### **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.

### **Inclusion criteria**

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

### **Exclusion criterion**

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

### **Sample size determination**

The sample size was calculated using single proportion formula. Using the prevalence of breast cancer patients 14.8% (18). So that the sample size was calculated as follows:

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

$$d^2$$

### Assumptions

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

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

$$(0.05)^2$$

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

### 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. Based on systematic random sampling technique every 3 study participants were enrolled in the study during data collection period.

### Dependent variables

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

### 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)

### 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(19).

**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 were scored  $\geq 6$ (20).

**Quality of life:** Assessed by using functional scales, symptom scales and global health status scales(21). 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 scored 75 and above 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 health status scale and above 25 for symptom scale(21).

### **Data collection tools**

Data was collected by using structured questionnaire which was adapted from literatures(9, 20, 21). 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 Haleluia hospital to check whether the study population understand the questions and modified accordingly (if needed). The questionnaire contains three parts. The 1<sup>st</sup> part was used to assess socio-demographic characteristics the respondents, the 2<sup>nd</sup> was assess social networks of the respondents using Cohen's social network index (SNI) which contains 12 items(19). And the last was used to assess quality of life of the respondents were using the European Organization for Research and Treatment of Cancer (EORTC) version 3.0 of QLQ-C30 (21, 22).

### **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.

### **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.

### **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.

### **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.

## **Results**

### **Socio-demographic characteristics of the participants**

A total of 214 participants were included in this study. The mean age was 41.85 and the range of age was from 20 to 80 years. Most of the participants, were orthodox 142 (66.4%) followed by Muslim 41 (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  $\geq$ 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 were received, surgery with chemotherapy treatment (Table 1).

### **Social networks characteristics of the participants**

Among total participants, 141 (65.9%) of them were 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).

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  $\geq 6$  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 1).

### **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 S1).

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. Among the 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 2).

### **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 S2).

### **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 S3).

## Discussion

This study assessed social networks 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 average global health status score of study participants' in this study was about 83.6. This result is consistent with study done in Nepal which was (82.08)(23). This similarity might be due to the study design, study tools and sociodemographic characteristics of study participants. However, the current finding is high compared to study done in Addis Ababa that was (52.5)(21), EORTC reference value mean score was (61.8 ±24.6)(24) and in South India mean score was (77.93)(22). This difference might be due to stage of diseases, type of treatment and time since diagnosis.

In this study, from EORTC 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(21). 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)(24) and study conducted in South India mean score(87.7±24.6)(22). 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)(21). Whereas, the finding is greater than the study conducted in South India mean score was (72.62±33.81) (22). 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) was observed in pain. The finding was greater than the study conducted in South India with the mean score of(19.6±26.64)(22), Ethiopia with the mean score of (46.0±31.9)(21) and the EORTC reference value mean score (28.7±28.7)(24). 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 done in South India mean score (13.04±11.93)(22) and in Addis Ababa Ethiopia mean score (34.6±29.7) (21). This alteration might be due to type of treatment, stage of the diseases.

The study participants who were married, had children and participated in religious activities in 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 (10), in California (8, 13). 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.

Study participants who were illiterate were nearly 3 times more likely to have affected QoL than those who were educated. This finding is supported with study conducted in Shanghai, China (25) more educated breast cancer patients had improved quality of life. The similarity might be due to awareness about side effect of treatment and proper management of treatment side effects.

High monthly income in the current study was more likely to have brought good quality of life. This finding is in agreement with the study done in Shanghai, China(25) high monthly income associated with good quality of life and study done in Addis Ababa(21) 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 more likely to have affected 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(21). 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 study were more likely to have affected QoL. Whereas, the study conducted in Ethiopia(21) 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. This similarity might be due to stage of the diseases, type of treatment and availability of treatment.

This study revealed that those study participants who had poor social networks were 6.4 times more likely to have affected quality of life. This is in line with the study done in California (13, 26) larger social networks predicted improved QoL after breast cancer and the other study done in California (8) larger social networks were associated with higher QOL after a diagnosis of breast cancer. The comparison might be due to having social networks might be important to improve quality of life in breast cancer.

### **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 and QoL among breast cancer in our country. Thus, the result of this study will be used as starting point for future researchers.

## 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 and quality of life improvements following a series of intervention strategies
- It is also possibly subjected to social desirability bias as the study outcome is self-reported.

## Conclusions

Based on the finding of this study above half of the total respondents had diverse social networks 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, monthly income, emotional functioning, role functioning, pain, fatigue, financial difficulty, systemic therapy side effect and social networks were significantly associated with QoL.

## 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, QoL and their association 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 and social networks which may help to improve quality of life of women with breast cancer.
- Teach about the importance of social networks to improve the outcome the disease for patients, attendants and other stakeholders.

### To future researchers:

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

## Abbreviations

EORTC-QLQ-BR: European Organization on Research and Treatment of Cancer, Quality of life, AOR: adjusted odds ratio, COR: crude odds ratio, QOL: quality of life, TASH: Tikure-Anbessa Specialized Hospital, NGO: nongovernmental organization, CI: confidence interval, Fig: Figure, SD: standard deviation

# Declarations

## **Ethics approval and consent to participant**

Ethical clearance was obtained from Addis Ababa University. Personal patient information was not recorded, after finishing the data collection the patients' document return to card room, the information was used for study purpose only.

## **Consent for publication**

Not applicable.

## **Availability of data and material**

The data sets used and/or analysed during the current study are available from the corresponding author on reasonable request.

## **Competing interests**

The Corresponding author declare that there were no competing interests

## **Funding**

**Addis Ababa University was involved for financial support for data collectors, and expenditure for translation and transcription of questionnaires and for hard copies.**

## **Authors-contributions:**

RA-was involved in the conception, design, analysis, interpretation, report, manuscript writing, design, analysis, interpretation and report writing. RA, AB and AY were involved design, analysis and interpretation of the data. All authors read and approved the final manuscript.

## **Acknowledgments:**

We would like to express our deepest heartfelt thanks to Addis Ababa University for allowing to conduct this study. Our especial thanks go to Tikur Anbessa specialized Hospital staffs for their support during the data collection process.

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## Tables

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

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

<b>Time since diagnosis</b>		
<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

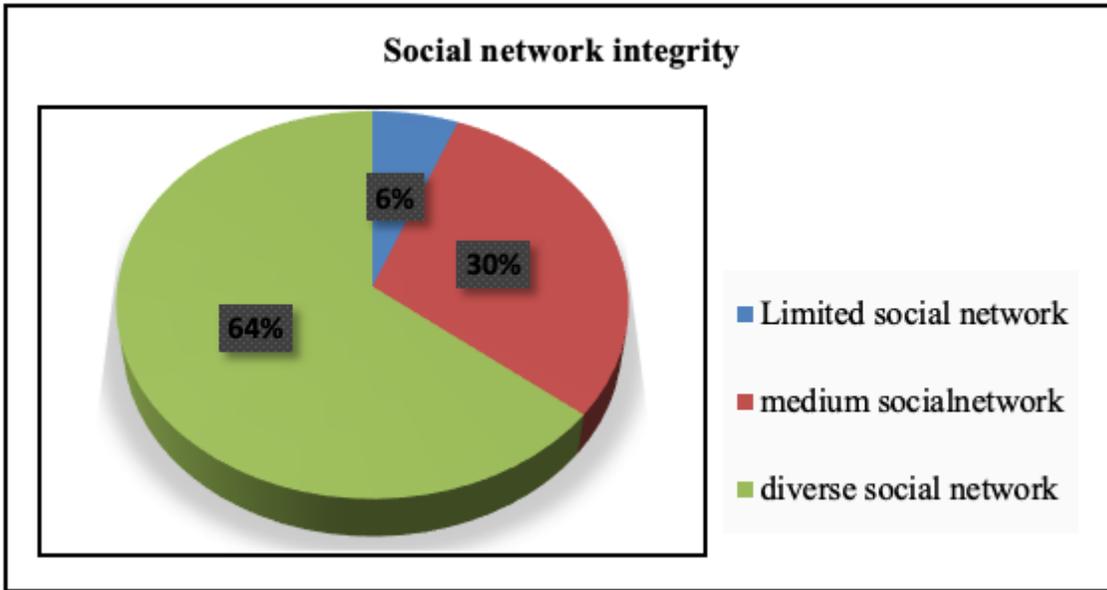
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**Table 2: Social networks characteristics among female breast cancer patients at TASH, Addis Ababa, Ethiopia 2019.**

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

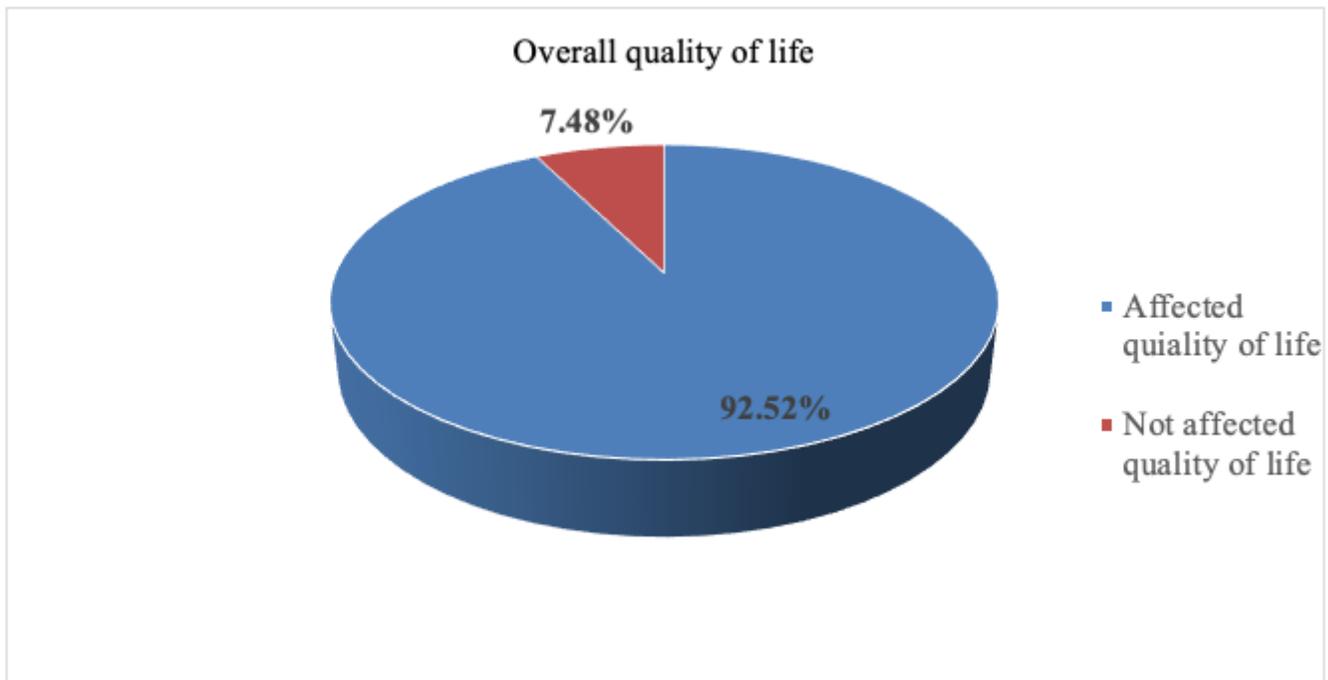
Yes	3	1.4
No	211	98.6

## Figures



**Figure 1**

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



## Figure 2

Overall quality of life among female breast cancer patients at TASH, Addis Ababa, Ethiopia 2019.

## Supplementary Files

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