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

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Research article

Keywords: Social-networks, Quality of life, Breast cancer

Posted Date: December 19th, 2019

DOI: https://doi.org/10.21203/rs.2.12540/v2

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 on females 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 a 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 and quality of life. The strength of association was declared P-value <0.05 and 95%CI was used.

Result: A total of 214 female with breast cancer were recruited with a mean age of 41.85. From participants, 13(6%), 65(30%) and 136(64%) had limited, medium and diverse social networks respectively. However, 198(92.52%) of them had affected the quality of life. It was found that participants who had children (AOR=5, 95%CL:1.3,21 COR=6), and other relatives(AOR=6, 95%CI: 1.2,30, COR=7), were more likely to have good social networks. In addition, it was found that participants who had systematic therapy side effects(AOR=3.8, 95%CI: 1.1,13, COR=4, p value=0.035), problem of appetite loss(AOR=3.5, 95%CI: 1.02,12 COR=4, p-value= 0.047) were more likely to have affected Quality of life.

Conclusion: In this study finding, the quality of life and social networks on breast cancer females was relatively low. Healthcare providers especially working at the oncology department need to focus on addressing the side effects of therapy and social networks which may help to improve the quality of life of females 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 cause of cancer-related deaths in female worldwide(1). A breast cancer diagnosis not only affects the female 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 the 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). The increase in number of cases from year to year is due to the increase in the awareness of the people disease, its prognosis and to be diagnosed (6, 7) and more than 50% of breast cancer occurs during premenopausal, aged <40 years and/or with stage 3 disease (7) or age of the women ranged from 20 to 88 years (median age 43.0 years) (6) due to low life expectancy, having children in their young age and low awareness/low educational status. Deaths of female 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(8). Social networks defined the network of social relationships that surround an individual and the characteristics of those bonds(9).

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(10). It is well established that larger social networks predict lower overall mortality in healthy populations(11). Preceding studies have initiated that larger networks (i.e. greater social integration) are associated with better survival(12,13) 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(12).

In a meta-analysis of 87 papers, larger social networks were found to be meaningfully connected with lower cancer mortality(14). In other studies, larger networks were associated with increased quality of life(15). 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(14).

Breast cancer is a worldwide problem and 1.7 million new cases are diagnosed per year(16). In a study conducted in Tikur Anbessa specialized hospital, it accounts for 29.4% of cancer cases followed by cancer of the cervix 26.3%(17). Among cancer survivors, social networks have been related to improved quality of life(15). In a Nurses' Health Study (NHS) of 2,835 female by any stage breast cancer Kroenke and colleagues found that socially isolated female were twice as likely to die of their breast cancer than socially integrated women(13). One study has discovered that female with few social connections had a 43 percent higher risk of breast cancer returning, compared to well-connected female, the researchers found. Likewise, isolated female 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(8).

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(14) 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(15).

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(18). 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 the 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 an annual growth rate of 2.7%. Its area is estimated to be 540km^2 altitudes ranging from 2200- 3000m above sea level, the average temperature of 22.8^{o}c and an 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 (17).

Tikur Anbassa Specialized Hospital is a 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(19).

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 the 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

Patients who are unwilling to fill the questionnaire and those who didn't take chemotherapy treatment were excluded from the study.

Sample size determination

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

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

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

Sampling procedure

Tikur Anbessa Specialized Hospital was selected because it is currently the only referral hospital that 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 a systematic random sampling technique every 3 study participants were enrolled in the study during the 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 include (spouse, children, parents, partner’s parents, other relatives, close friends, religious, education, employment, neighbors, volunteer works, and other social groups(21).

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 ≥6(22).

Good social networks: based on social network index (SNI) score, participants who were scored ≥4.

Poor social networks: based on social network index(SNI) score, participants who were scored <4.

Quality of life: Assessed by using functional scales, symptom scales, and global health status scales(23). The 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(23).

Data collection tools

Data was collected by face to face interview using structured questionnaires that was adapted from literature (10, 22,23). 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 populations understand the questions and modified accordingly (if needed). The questionnaire contains three parts. The 1st part was used to assess socio-demographic characteristics of the respondents, the 2nd was asses social networks of the respondents using Cohen's social network index (SNI) which contains 12 items(19). And the last was used to assess the quality of life of the respondents were using the European Organization for Research and Treatment of Cancer (EORTC) version 3.0 of QLQ-C30 (23,25).

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, the aim of the study concerning the need for strict confidentiality of respondent's information and time of data collection. Supervisors have closely monitored daily 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 supervisors regarding the study, the questionnaire and the data collection procedure by the main investigator. The Collected data were checked every day by supervisors and principal investigators for its completeness. Data was kept in the form of a file in-secured place where no one can access it except the investigator and confidentiality was ensured by not recording names or any personal identity. Data was checked again for its completeness before data entry.

Data processing and analysis

First, data were checked for completeness then cleaned and coded before entered to epi-data manager version 4.2. Next data from the completed questionnaire was entered (double entry) into epi-data and

transferred into SPSS version 25 for analysis. Descriptive statistics were used to analyze demographic characteristics. Logistic regression models were used to evaluate associations between social networks, 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 the institutional review board of Addis Ababa University, College of Health Sciences, School of Nursing and Midwifery. A support letter from the 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 importance of the study. After information was provided about the 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 were free to refuse or stop at any moment they want if their choice.

Result

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 the 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 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. The 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 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 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 the quality of life of the participants, there are three subscales: - 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 the quality of life whereas, participants who scored below 75 for functional and global health status scale and above 25 for symptom scales classified as the 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 with 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 5 times more likely to have good social networks 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 6 times more likely to have good social networks by than those who had no other relatives (AOR = 6, 95%CI: 1.2,30, COR = 7) (Table S2). However, participants not married(AOR = 0.02, 95%CI: 0.03, 0.28), no parents living(AOR = 0.1, 95%CI: 0.02, 0.4), No close friends(AOR = 0.06, 95%CI: 0.01, 0.4), no job(AOR = 0.09, 95%CI: 0.02,0.46), no belong to church(AOR = 0.09, 95%CI:0.02,0.4) and no neighbors (AOR = 0.09, 95%CI:0.03,0.5) were poor social networks.

Association of variables with 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 3 times more likely to have affected QoL than 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 3.8 times more likely to have affected QoL 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 an appetite loss problem. It was found that participants who had a problem of appetite loss were 3.5 times more likely to have affected QoL than who had no problem of appetite loss (AOR = 3.5, 95%CI: 1.02,12 COR = 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 network score was ten in a possible of 12, in this study. The finding is similar to the study done in New York, which was nine (8). This similarity might be due to the use of the same tool to assessed the 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 the study done in Nepal which was (82.08)(25). 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 a study done in Addis Ababa that was (52.5)(23), the EORTC reference value mean score was (61.8 ±24.6)(26) and in South India mean score was (77.93)(24). This difference might be due to the 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 a mean score of 74.1±28.5(23). 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)(26) and study conducted in South India mean score(87.7±24.6)(24). The difference might be due to educational level differences, study participant age difference, awareness about the disease's consequence and stage of the diseases.

In QLQ-BR23 functioning scales, the highest mean score (78± 33.6) was observed in a future perspective scale. The finding is comparable in the study done in Addis Ababa Ethiopia's mean score(82.1±30.3)(23). Whereas, the finding is greater than the study conducted in South India's mean score was (72.62±33.81)(24). The difference might be due to participants' obtained psychological and social support through informal ways such as family and in religious institutions.

In the QLQ-C30 symptom scales, a 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)(24), Ethiopia with the mean score of (46.0±31.9)(23) and the EORTC reference value mean score (28.7±28.7)(26). This difference might be due to the availability of anti-pain, the use of ani-pain properly, awareness about the importance of anti-pain medication and their side effects. In QLQ-BR23 symptom scales highest mean score (55.9±17.7) was observed in systematic therapy side effects. This finding is greater than the study done in South India mean score (13.04±11.93)(24) and in Addis Ababa Ethiopia mean score (34.6±29.7)(23). This alteration might be due to the 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 (12), in California (10,15). This might be due to the fact that being married, having children and participating in religious activities will enhance the social, physical, emotional and spiritual interconnections in their day to day activities.

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 a study conducted in Shanghai, China (27) more educated breast cancer patients had improved quality of life. The similarity might be due to awareness about the side effects of treatment and proper management of treatment side effects.

High monthly income in the current study was more likely to have brought a good quality of life. This finding is in agreement with the study done in Shanghai, China(27) high monthly income associated with good quality of life and study done in Addis Ababa(23), those who have reported that they didn't have income, less likely to have a good (unaffected) quality of life. This might be due to that female having better income can access better information regarding to their health, nutrition, screening and treatment and have better life span compared to females having low income.

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(23) 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 the 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 the quality of life. This is in line with the study done in California (15,28) larger social networks predicted improved QoL after breast cancer and the other study done in California(10) larger social networks were associated with higher QOL after a diagnosis of breast cancer. The comparison might be due to having social networks that might be important to improve the quality of life in breast cancer.

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.

Conclusion

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 the quality of life. Married, having children, parents living, other relatives, close friends and belong to the 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

Healthcare providers especially working at the oncology department should teach community, attendants as well other stake-holders to address diverse social networks based on female needs and desires and the side effects of treatment to improve the quality of life of female with 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 the card room, the information was used for study purposes only.

Consent for publication

Not applicable.

Availability of data and material

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

Competing interests

The Corresponding author declares that there were no competing interests

Funding

Addis Ababa University was involved in 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 in 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 special thanks go to Tikur Anbessa specialized Hospital staff for their support during the data collection process.

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Tables

Table 1: Socio-demographic and socio-economic 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

Table 2: Social networks characteristics of the participants 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

Figures

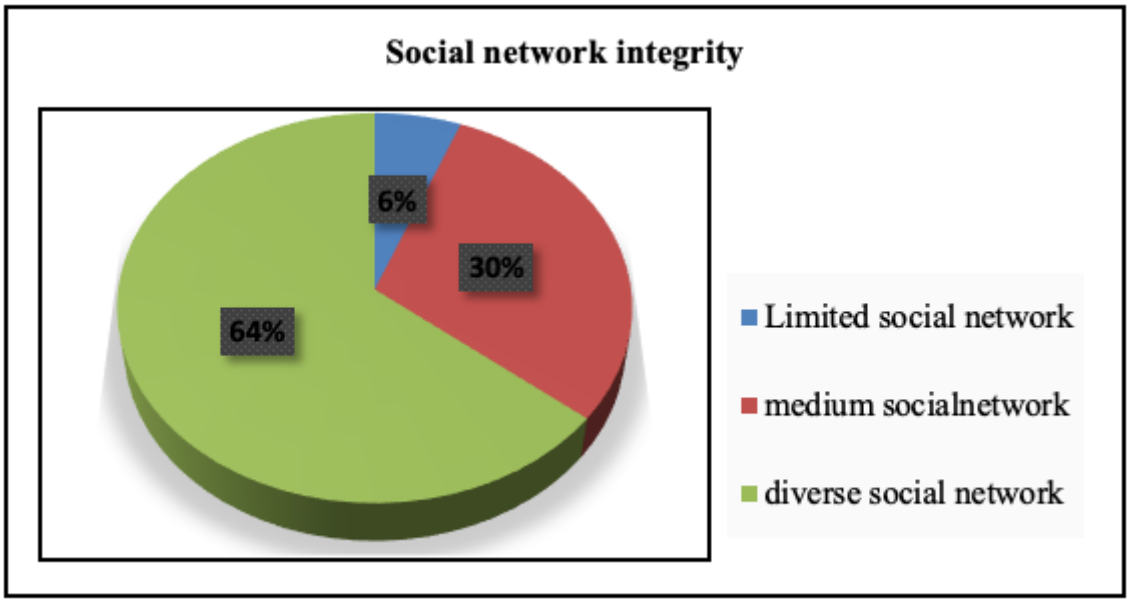

Figure 1

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

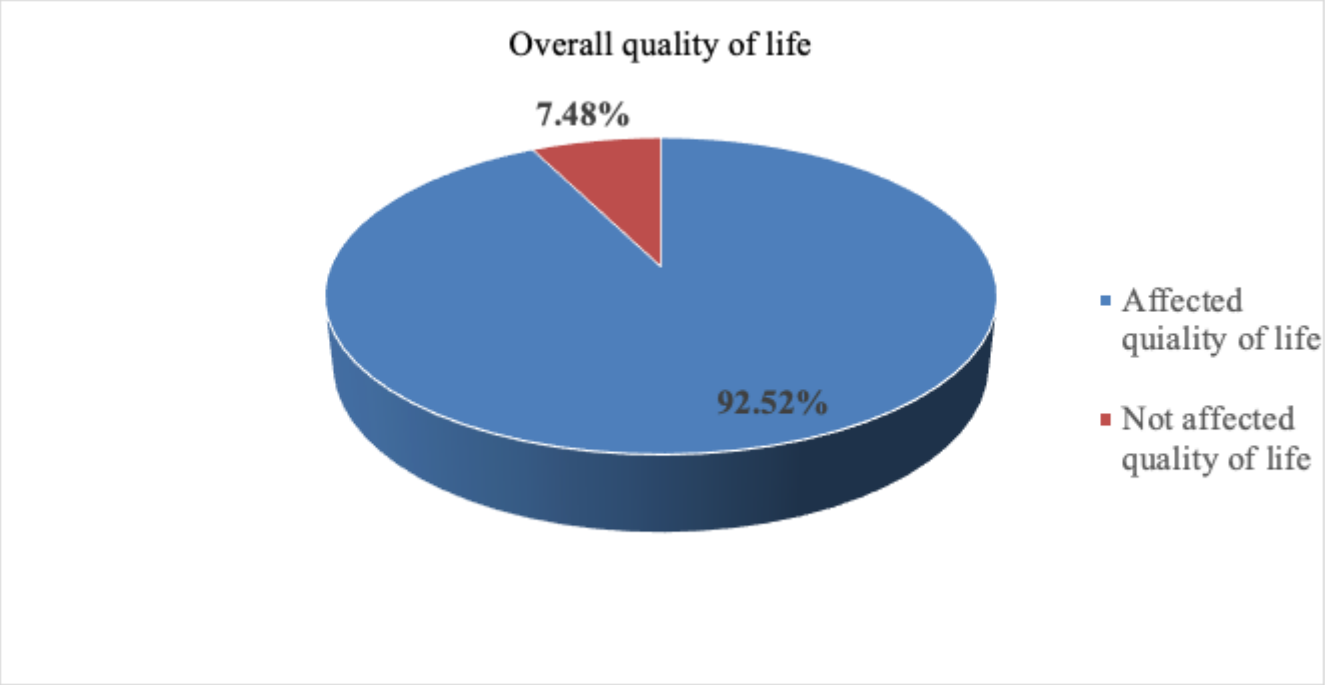

Figure 2

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

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