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Research Article

Quality of Life and Its Contributing Factors Among Patients with Breast Cancer: A Descriptive-Analytical Study

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Abstract

Background and Aim: The prevalence of breast cancer is increasing among Iranian women. Breast cancer and its treatments can affect ones quality of life. The aim of this study was to assess the quality of life and its contributing factors among patients with breast cancer.

Methods: This descriptive-analytical study was conducted in 2014 - 2015 on 108 women who had been diagnosed with breast cancer in 2008 - 2014 and had received cancer treatments for at least 3 months before recruitment to the study. Initially, a list of all eligible women was created based on the data available from the cancer record center in South Khorasan, Iran. Then, eligible women were contacted over the telephone and were invited to the study. The 30-item EORTC core quality of life questionnaire and the 23-item EORTC Breast cancer quality of life questionnaire were completed for participants through face-to-face interviews. Collected data were entered into the SPSS software (v. 16.0), where the two-way analysis of variance was conducted for data analysis at a significance level of less than 0.05.

Results: The total mean score of quality of life was 2.01 ± 0.47. Around 85.2% of participants had low quality of life, 13.9% had medium quality of life, and 0.9% had high quality of life. Quality of life had significant relationships with marital status and income ($P < 0.05$). The highest-scored dimensions of the functional and the symptom scales of the Core quality of life questionnaire were global health status (2.67 ± 0.78) and financial difficulties (2.8 ± 1.07), respectively. On the other hand, the highest-scored dimensions of the functional and the symptom scales of the breast cancer quality of life questionnaire were future perspective (2.62 ± 0.97) and systematic therapy side effects (2.11 ± 0.73), respectively.

Conclusions: Only 0.9% of breast cancer patients have high quality of life and more than 85% of them have low quality of life. Women are at the heart of families and communities. Therefore, educational interventions and governmental support are needed for improving the quality of life among women with breast cancer.

Keywords: Breast Cancer, Quality of Life, Women, Birjand

1. Background

Breast cancer (BC) is the most prevalent cancer among women in the world. It constitutes 23% of all cancers in women. In 2015, 231,840 new cases of BC and 40,290 BC-induced deaths happened in the United States (1). The Iranian ministry of health and medical education reported that the incidence and the mortality rates of BC increased from respectively 16 and 0.96 cases per 100,000 persons in 1995 to respectively 28.3 and 4.33 cases per 100,000 in 2010. In Iran, BC is also the most prevalent cancer among women and the cause of 24.4% of all malignancies (2). The age of BC onset in Iran is around 1 decade sooner than developed countries, thus, more than 30% of BC patients in Iran are less than 40, while only 6% of BC patients in western countries are less than 40 (3).

An important treatment outcome among cancer patients is quality of life (QOL). The world health organization defines QOL as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns" (4). Concepts used for understanding QOL are satisfaction and dissatisfaction, life conditions, happiness, unhappiness, life experience, comfort, functional status, socioeconomic status, independence, and environmental conditions (5).

Cancer patients' QOL is affected by different factors such as age, employment status, insurance coverage, treatment-related costs, concerns over treatments such as surgery, and lengthy treatment and follow-up courses. Yet, previous studies reported contradictory results respecting the effects of these factors on QOL (6, 7). For instance, age has been reported as a determining factor behind QOL, while there is no credible evidence respecting the effects of marital status, life conditions, educational status, and employment status on QOL (8). Another study reported that socio-demographic factors such as income level, and educational status can affect QOL among BC patients (9). QOL among cancer patients is also affected by the long-term course of the illness as well as cancer-related physical and psychological disorders and complications (10). QOL improvement is among the main goals of cancer care (10). QOL has been an important indicator of treatment success. Assessment of QOL helps identify cancer patients' perceptions about the effects of cancer and its treatments on their lives and helps healthcare providers base their services on patients' needs and conditions (11). Improving BC patients' QOL not only improves their survival, but can also improve their family members' QOL and family integrity (12). Therefore, QOL improvement needs to be considered as the primary goal of cancer treatment (13).

There is limited credible information about factors behind QOL among Iranian BC patients. Therefore, this study was done to assess QOL and its contributing factors among patients with BC.

2. Methods

This descriptive-analytical study was conducted in 2014 - 2015 on women who had been diagnosed with BC in 2008 - 2014 and had received cancer treatments for at least 3 months before recruitment to the study. Initially, a list of all eligible women was created based on the data available from the cancer record center in South Khorasan, Iran. Then, a telephone contact was made with each eligible woman to inform her about the study and invite her to participate. Women who agreed to participate were asked to refer to the social determinants of health research center of Birjand University of Medical Sciences, Birjand, Iran. In the center, they were asked to complete the study questionnaires.

Data collection was done through holding face-to-face interviews with each woman for completing the following 3 questionnaires:

1. A researcher-made demographic and clinical characteristics questionnaire: This questionnaire included items on age, height, weight, breastfeeding history, educational status, marital status, employment status, number of children, husbands' employment status, husband's educational status, family income, family financial status, BC grade, treatment type, length of treatment, family history of BC, and history of affliction by other illnesses.

2. The 30-item EORTC core quality of life questionnaire (EORTC QLQ-C30): This questionnaire was developed by the European organization for research and treatment of cancer. Thirteen items of the questionnaire are grouped into a symptom scale on the complications of cancer and chemotherapy such as fatigue (3 items), pain (2 items), nausea and vomiting (2 items), dyspnea (1 item), appetite loss (1 item), insomnia (1 item), constipation (1 item), diarrhea (1 item), and financial difficulties (1 item). Items are scored on a four-point Likert-type scale from 1 to 4, resulting in a total symptom scale score of 13 - 52. The remaining 17 items are labeled on a functional scale and are related to physical functioning (5 items), role functioning (2 items), emotional functioning (4 items), cognitive functioning (2 items), social functioning (2 items), and global health status (2 items). The first 15 items of the functional scale are scored from 1 to 4, while the 2 items on global health status are scored from 1 to 7. Therefore, the total score of the functional scale can range from 17 to 74.

3. The 23-item EORTC breast cancer quality of life questionnaire (EORTC QLQ BR23): this questionnaire also includes a functional and a symptom scale. The 8 items of the functional scale are related to body image (4 items), sexual functioning (2 items), sexual enjoyment (1 item), and future perspective (1 item). These 8 items are scored 1 - 4, resulting in a total score of 8 - 32. The remaining 15 items of this questionnaire form a symptom scale and are systematic therapy side effects (7 items), breast symptoms (4 items), arm symptoms (3 items), and upset by hair loss (1 item). These items are also scored 1 - 4 and the total score of symptom scale is 15 - 60.

In order to facilitate inter-scale comparison, the total score of each scale was changed to a 1 - 4 scale through dividing it by the number of items in that scale. Higher total QOL scores represent better QOL. On the other hand, higher functional scale scores indicate higher functional status, while higher scores for the symptom scale stand for lower status. The total 1 - 4 score of QOL is interpreted as follows: scores 1 - 2.49: low QOL; scores 2.5 - 3.24: moderate QOL; and scores 3.25 - 4: high QOL.

The Persian versions of both QLQ-C30 and QLQ-BR23 were reported to have great validity and reliability (14, 15) with Cronbach's alpha values of 0.63 - 0.95 (16). The Cronbach's alpha values of the questionnaires and their scales in this study were 0.77 - 0.88.

Collected data were entered into the SPSS software (v. 16.0). The two-way analysis of variance was employed for data analysis at a significance level of less than 0.05.

3. Results

This study was conducted on 108 women with BC. The means of participants' age and marriage age were 46.27 ± 10.01 and 21.19 ± 4.49, respectively. Around 91.7% of participants were married. A total of 25% of married women had 3 children. The number of children ranged from 1 to 10. In total, 69.4% of participants were literate. From literate women, 41.4% had an elementary education and only 14.6% held university degrees. Most women were housewives (86.1%), had medium financial status (57.4%), reported no family history of BC (98.1%), and had low QOL (85.2%) (Table 1).

Table 1. Participants' Demographic Characteristics

Characteristics		No. (%)
Marital status	Married	99 (91.7)
	Single	9 (8.3)
Educational status	Illiterate	33 (30.6)
	Literate	75 (69.4)
Literate women's educational status	Primary	31 (41.4)
	Below diploma	11 (14.6)
	Diploma	22 (29.4)
	University degrees	11 (14.6)
Employment status	Employee	13 (12)
	Self-employed	2 (1.9)
	Housewife	93 (86.1)
Family income	Low	62 (57.4)
	Moderate	40 (37)
	High	6 (5.6)
Family history of BC	Yes	2 (1.9)
	No	106 (98.1)
Total QOL	Low	92 (85.2)
	Moderate	15 (13.9)
	High	1 (0.9)

The mean scores of total QOL, QOL-C30, and QLQ-BR23 were 2.01 ± 0.47, 2.2 ± 0.51, and 1.92 ± 0.5, respectively (Table 2). The highest and the lowest scores for the functional scale of QLQ-C30 were related to global health status (2.67 ± 0.78) and physical functioning (1.98 ± 0.68), respectively, while the highest mean score for the symptom scale was related to financial difficulties (2.8 ± 1.07; Table 3). On the other hand, the highest scores for the functional and symptom scales of QLQ-BR23 were related to future perspective (2.62 ± 0.97) and systematic therapy side effects (2.11 ± 0.73), respectively (Table 4).

Table 2. The Mean, Minimum, and Maximum Scores of QOL

QOL	Mean ± Standard Deviation	Minimum	Maximum
Total QOL	2.01 ± 0.47	1.08	3.33
QLQ-C30	2.2 ± 0.51	1.25	3.55
QLQ-BR23	1.92 ± 0.5	1	3.39

The results of statistical tests showed that total QOL had no significant relationships with age, educational status, employment status, marriage age, age at first pregnancy, number of children, history of pregnancy, and BC duration ($P > 0.05$). However, its relationships with marital status and income were statistically significant. The effect sizes of marital status and income were 9.1% and 6.2%, respectively (Table 5). The results of Tukey's post hoc test illustrated that women with medium financial status had lower QOL than those with low and high financial status. Moreover, married women had higher QOL than single women ($P < 0.05$; Table 6).

4. Discussion

Study findings revealed that 98.1% of participants had no family history of BC. In other words, only 1.9% of them (2 cases) had the history. However, a study on 56 BC patients in Urmia, Iran, showed that 25% of them had a positive family history of BC (17). This rate, among 124 BC patients in Sabzevar, Iran, was 21% (18). The lower family history of BC in our study compared with previous studies may be attributed to the difference in the prevalence of BC in different areas of Iran.

Our findings also indicated that QOL had no significant relationships with age, employment status, age at first pregnancy, marriage age, number of children, previous history of pregnancy, and BC duration. Similarly, an earlier study showed that QOL was not significantly correlated with age, employment status, and metastasis of cancer (19). Another study also showed that QOL was not significantly correlated with demographic characteristics, except for having children, which was associated with a higher QOL (17). However, a study showed the significant relationship of QOL with employment status among women with cancer so that employed women had higher QOL than their unemployed counterparts (20). This finding may be due to the better financial status of employed women. An explanation for the insignificant relationship of employment status with QOL in the preset study may be the fact that most women (86.1%) were housewives. Moreover, our findings revealed that cancer duration had no significant effect on women's QOL. Contrarily, an earlier study

Table 3. The Scores of the Functional and the Symptom Scales of QLQ-C30

	QLQ-C30 Scales	Mean ± Standard Deviation	Minimum	Maximum
Functional scale	Physical functioning	1.98 ± 0.68	1	3.6
	Role functioning	2.03 ± 0.92	1	4
	Cognitive functioning	2.03 ± 0.76	1	4
	Emotional functioning	2.41 ± 0.89	1	4
	Social functioning	2.16 ± 0.85	1	4
	Global health status	2.67 ± 0.78	1	4
Symptom scale	Fatigue	2.22 ± 0.78	1	4
	Nausea and vomiting	1.43 ± 0.77	1	4
	Pain	2.26 ± 0.86	1	4
	Dyspnea	1.72 ± 1	1	4
	Insomnia	1.93 ± 0.97	1	4
	Appetite loss	1.75± 0.91	1	4
	Constipation	1.59 ± 0.88	1	4
	Diarrhea	1.14 ± 0.46	1	3
	Financial difficulties	2.8 ± 1.07	1	4

Table 4. The Scores of the Functional and the Symptom Scales of QLQ-BR23

	QLQ-BR23 Scales	Mean ± Standard Deviation	Minimum	Maximum
Functional scale	Body image	2.03 ± 0.89	1	4
	Sexual functioning	1.78 ± 0.61	1	3.5
	Sexual enjoyment	1.75 ± 0.65	1	4
	Future perspective	2.62 ± 0.97	1	4
Symptom scale	Systematic therapy side effects	2.11 ± 0.73	1	3.71
	Breast symptoms	1.51 ± 0.54	1	4
	Arm symptoms	1.85 ± 0.78	1	4
	Upset by hair loss	1.85 ± 1.11	1	4

Table 5. Determining the Factors Behind BC Patients' QOL Via the Two-Way Analysis of Variance

Factors	F	P Value	Effect Size
Marital status	5.22	0.007	0.091
Income	6.86	0.01	0.062

Table 6. Comparing BC Patients' QOL Based on Their Marital Status and Income

Variables		Mean ± Standard Deviation	P Value (Tuky's Post Hoc Test)
Marital status	Married	2.04 ± 0.45	0.01
	Single	1.69 ± 0.52	
Income	Low (1)	2.09 ± 0.48	1 and 2: 0.03
	Moderate (2)	1.85 ± 0.4	1 and 3: 0.63
	High (3)	2.01 ± 0.47	2 and 3: .009

showed that women with BC history of less than 4 months had lower QOL than women with a history of 4 - 12 months (20).

Study findings also indicated that married participants had significantly higher QOL than their single counterparts. Previous studies also reported the same finding (17, 19, 21). Family members, particularly spouses, can provide ill people with the necessary social support for coping with their illnesses. We also found a significant relationship between QOL and income. Similarly, 2 earlier studies reported financial status and problems as significant factors behind cancer patients' QOL (17, 20) and role functioning (17).

Findings revealed that the highest and the lowest scores for the functional scale of QLQ-C30 were related to global health status (2.67 ± 0.78) and physical functioning (1.98 ± 0.68), respectively. However, an earlier study showed that the highest score for the functional scale was related to physical functioning (17). Moreover, the most prevalent complaints based on the symptom scale of QLQ-C30 in the present study were gastrointestinal problems such as diarrhea (1.14 ± 0.46) as well as nausea and vomiting (1.43 ± 0.77). On the other hand, the highest-scored subscales of the functional and the symptom scales of QLQ-BR23 were future perspective (2.6 ± 0.97) and systematic therapy side effects (2.11 ± 0.73), respectively. Cancer-related symptoms and complications have considerable effects on patients' QOL. Therefore, effective treatment and supportive strategies are needed to alleviate these symptoms and complications as well as improve cancer patients' QOL.

Another finding of the study was that 85.2% of participants had low QOL, 13.9% had medium QOL, and only 0.9% had high QOL. This finding denotes low QOL among BC patients in South Khorasan, Iran. However, an earlier study in Iran showed that 40% of BC patients had high QOL and 26.8% had relatively high QOL (17). Another study in Iran also showed that BC patients had medium QOL. Low QOL among BC patients in South Khorasan, Iran, highlights the necessity for employing educational interventions to improve their QOL.

4.1. Conclusions

This study indicates that only 0.9% of BC patients have high QOL, while more than 85% of them have low QOL. Women are at the heart of families and communities. Therefore, effective strategies are needed to improve QOL among women with breast cancer. These strategies may include education, relaxation, stress management, dietary modifications, physical activity, group activities, and governmental support.

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References

1. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2016. *A Cancer J Clin*. 2016;**66**(1):7–30. doi: 10.3322/caac.21332.
2. Sharifian A, Pourhoseingholi MA, Emadedin M, Rostami Nejad M, Ashtari S, Hajizadeh N, et al. Burden of Breast Cancer in Iranian Women is Increasing. *Asian Pac J Cancer Prev*. 2015;**16**(12):5049–52. [PubMed: 26163639].
3. Ghiasvand R, Maram ES, Tahmasebi S, Tabatabaee SH. Risk factors for breast cancer among young women in southern Iran. *Int J Cancer*. 2011;**129**(6):1443–9. doi: 10.1002/ijc.25748. [PubMed: 21064105].
4. van Andel G, Bottomley A, Fossa SD, Efficace F, Coens C, Guerif S, et al. An international field study of the EORTC QLQ-PR25: a questionnaire for assessing the health-related quality of life of patients with prostate cancer. *Eur J Cancer*. 2008;**44**(16):2418–24. doi: 10.1016/j.ejca.2008.07.030. [PubMed: 18774706].
5. Zubaran C, Foresti K. Quality of life and substance use: concepts and recent tendencies. *Curr Opin Psychiatry*. 2009;**22**(3):281–6. [PubMed: 19378380].
6. Tsay SL, Chang JY, Yates P, Lin KC, Liang SY. Factors influencing quality of life in patients with benign primary brain tumors: prior to and following surgery. *Support Care Cancer*. 2012;**20**(1):57–64. doi: 10.1007/s00520-010-1053-0. [PubMed: 21107611].
7. Hartl K, Engel J, Herschbach P, Reinecker H, Sommer H, Friese K. Personality traits and psychosocial stress: quality of life over 2 years following breast cancer diagnosis and psychological impact factors. *Psychooncology*. 2010;**19**(2):160–9. doi: 10.1002/pon.1536. [PubMed: 19189279].
8. Ozaras G, Ozyurda F. Quality of life and influencing factors in patients with a gynaecologic cancer diagnosis at Gazi University, Turkey. *Asian Pac J Cancer Prev*. 2010;**11**(5):1403–8. [PubMed: 21198301].
9. Al-Naggar RA, Nagi NM, Ali MM, Almuasli M. Quality of life among breast cancer patients in Yemen. *Asian Pac J Cancer Prev*. 2011;**12**(9):2335–41. [PubMed: 22296380].
10. Stein KD, Syrjala KL, Andrykowski MA. Physical and psychological long-term and late effects of cancer. *Cancer*. 2008;**112**(11 Suppl):2577–92. doi: 10.1002/cncr.23448. [PubMed: 18428205].
11. Lopez-Jornet P, Camacho-Alonso F, Lopez-Tortosa J, Palazon Tovar T, Rodriguez-Gonzales MA. Assessing quality of life in patients with head and neck cancer in Spain by means of EORTC QLQ-C30 and QLQ-HN35. *J Craniomaxillofac Surg*. 2012;**40**(7):614–20. doi: 10.1016/j.jcms.2012.01.011. [PubMed: 22425499].
12. Brunner L, Smeltzer S, Bare B, Hinkle J, Cheever K. *Brunner Suddarth's textbook of medical-surgical nursing*. Philadelphia: Lippincott Williams Wilkins; 2010.
13. Musarezaie A, Ghasemi TM, Esfahani HN. Investigation the quality of life and its relation with clinical and demographic characteristics in women with breast cancer under chemotherapy. *Int J Prev Med*. 2012;**3**(12):853–9. [PubMed: 23272284].
14. Sharif F, Abshorshori N, Tahmasebi S, Hazrati M, Zare N, Masoumi S. The effect of peer-led education on the life quality of mastectomy patients referred to breast cancer-clinics in Shiraz, Iran 2009. *Health Qual Life Outcomes*. 2010;**8**:74. doi: 10.1186/1477-7525-8-74. [PubMed: 20653966].
15. Safaee A, Moghim Dehkordi B. Validation study of a quality of life (QOL) questionnaire for use in Iran. *Asian Pac J Cancer Prev*. 2007;**8**(4):543–6. [PubMed: 18260726].
16. Samiei Siboni F, Anoosheh M, Alhani F. The study of the effects of group counseling on symptom scales of QOL of patients with breast cancer undergoing chemotherapy. *Iran J Breast Dis*. 2010;**3**(1amp;2):28–39.

17. mohaddesi H, Ayatollahi H, Hassanzadeh G, Yegansangi M. Quality of life in breast cancer patients: Study in the Omid cancer research center- Urmia. *Iran Q Breast Dis*. 2013;**5**(4):35–43.
18. Akbarzadeh R, Ghardashi F, Koshki , Tabaraei R, Hashemian M, Norozinejad T, et al. Individual characteristics, family history and blood group in with breast cancer in sabzevar. *Q J Sabzevar Univ Med Sci*. 2014;**20**(5).
19. Safaee A, Moghimi-Dehkordi B, Zeighami B, Tabatabaee H, Pourhoseingholi M. Predictors of quality of life in breast cancer patients under chemotherapy. *Indian J Cancer*. 2008;**45**(3):107–11. [PubMed: 19018114].
20. Safaee A, Zeighami B, Tabatabaee HR, Moghimi Dehkordi B. Quality of life and related factors in breast cancer patients under chemotherapy. *Iran J Epidemiol*. 2008;**3**(3):61–6.
21. Taira N, Shimozuma K, Shiroiwa T, Ohsumi S, Kuroi K, Saji S, et al. Associations among baseline variables, treatment-related factors and health-related quality of life 2 years after breast cancer surgery. *Breast Cancer Res Treat*. 2011;**128**(3):735–47. doi: 10.1007/s10549-011-1631-y. [PubMed: 21681445].