



The relationship between resilience, quality of life, and body image in women with breast cancer undergoing chemotherapy

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Abstract

Background: The diagnosis and treatment of breast cancer put women at risk of altered body image and quality of life (QOL).

Objectives: This study aimed to investigate the relationship between resilience, QOL, and body image in women with breast cancer undergoing chemotherapy.

Methods: This cross-sectional study was conducted in 2022 on 172 women with breast cancer referring to the chemotherapy department of Omid Hospital in Isfahan, Iran. Data were collected using a demographic data form, the Connor-Davidson Resilience Scale, the World Health Organization Quality of Life questionnaire (WHOQOL-BREF), and the Hopwood Body Image Scale (HBIS). The data were analysed using one-way analysis of variance, Pearson's correlation, Spearman's correlation, and multiple linear regression analysis.

Results: The mean total QOL score was 53.70 ± 18.94 . In addition, the mean resilience score was 69.83 ± 14.52 . The mean body image score was 8.23 ± 6.65 . Resilience was directly correlated with QOL ($r=0.491$, $P<0.001$). The psychological-spiritual dimension of QOL was a significant predictor for resilience ($P<0.001$). Resilience was inversely correlated with body image ($r=-0.37$, $P<0.05$).

Conclusion: The psychological-spiritual dimension of QOL was a significant predictor for resilience. Improving women's resilience during chemotherapy can reduce their psychological symptoms and improve the QOL and body image of these patients.

Keywords: Breast cancer, Chemotherapy, Psychological Resilience, Quality of life, Body image.

Introduction

Breast cancer (BC) is the most common cancer in women,^[1] with a prevalence of 11.7% among all cancers.^[2] The number of people with BC is predicted to increase from 2.26 million in 2020 to more than 3.19 million in 2040.^[3] BC is also one of the most prevalent malignancies in Iran,^[4] accounting for 28.1% of all cancers in Iranian women.^[5] Women with BC receive various treatments, including surgery, chemotherapy, and radiotherapy.^[6] Chemotherapy is a systemic method that affects not only malignant cells, but also other rapidly proliferating cells in the body, such as hair follicles, bone marrow, and the digestive and reproductive systems.^[7] In addition, chemotherapy negatively affects the patient's self-concept, body image (BI), sexual relationships, and QOL. The cancer diagnosis, along with the significant side effects of chemotherapy, leads to physical, functional, psychological, and social problems and disrupts the patient's QOL.^[8]

QOL is 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.^[9] Since the number of BC survivors is increasing, QOL is a major concern for these patients.^[10] Furthermore, women with BC experience a distorted BI.

BI is a set of conscious and unconscious attitudes that people have toward their bodies and is a main factor affecting QOL.^[11] A recent study reported that women who had undergone mastectomy experienced negative BI, poor QOL, and emotional distress during chemotherapy.^[12] Another study also reported that chemotherapy lowered the QOL of women with BC due to changes in their BI.^[13] A study also confirmed the relationship between BI and QOL in patients with BC, and identified body dissatisfaction as the strongest predictor of QOL.^[14] Therefore, identifying factors affecting patients'

QOL and BI may provide treatment teams with new solutions to help patients with BC.

Resilience protects a person while recovering from difficult conditions such as cancer.^[15] Resilience is a dynamic process that encourages a person to successfully cope with complex or challenging life experiences^[16] Resilience is of particular importance in severe diseases such as cancer. It is believed that an individual's resilience can be strengthened. Improved resilience is associated with improved health, alleviation of illness, and accelerated recovery.^[15] A study found that women with newly diagnosed breast cancer were less resilient, and that resilience was directly correlated with QOL.^[17] However, another study found no significant correlation between resilience and QOL in patients with BC.^[18]

Given the impaired QOL and BI in patients with BC and the controversy over the association between resilience, QOL, and BI, the question arises whether resilience, QOL, and BI are correlated in women with BC undergoing chemotherapy.

Objectives

This study aimed to determine the relationship between resilience, QOL, and BI in women with BC undergoing chemotherapy.

Methods

Study design and participants

A cross-sectional study was conducted between November 2021 and March 2022 on 172 women with BC admitted to the chemotherapy department of Omid Hospital in Isfahan, Iran. The sample size was calculated based on the results of a former study.^[19] Then, with a type I error of 0.05, $Z_1=1.96$, $Z_2=0.8$, $r=0.22$, and using the following formula $[n = \frac{(z_1+z_2)^2 (1-r^2)}{r^2} + 2]$, with a 10% chance of falling, the sample size was calculated at 172. Convenience sampling was used to recruit eligible subjects. Eligible women were recruited by the researcher (F.S, M) based on the file review.

After obtaining written informed consent, the researcher provided the participants with questionnaires to personally complete in a private setting. If the patients were unable to complete the questionnaire due to illiteracy or their illness, the researcher read the questionnaire items to them and recorded their answers on the questionnaire.

Inclusion criteria included a definite medical diagnosis of BC, undergoing breast surgery, undergoing inpatient or outpatient chemotherapy, passing at least three months since the diagnosis of BC, no history of disease recurrence

(being in the first phase of diagnosis and treatment of the disease), and willingness to participate in the study. The only exclusion criterion was an incomplete response to the questionnaire.

Data collection instruments

We used a four-part instrument to collect the study data. The instruments included a demographic data form, the Connor-Davidson Resilience Scale (CD-RISC), the World Health Organization quality of Life questionnaire (WHOQOL-BREF), and the Hopwood Body Image Scale (HBIS). The demographic data form included questions on the participant's age, marital status, number of children, education level, occupation, spouse's education, spouse's occupation, place of residence, time passed from the disease diagnosis, chemotherapy phase, previous treatments, and type of surgery.

The WHOQOL-BREF questionnaire contains 26 items in 4 subscales namely, physical health, psychological health, social relationships, and environmental health. All items are answered on a five-point Likert scale ranging from 1 to 5 (except for items 3, 4, and 26 that are scored reversely). Scores of each subscale are converted to a standard score ranging from 0 to 100. Higher scores indicate better QOL.^[20] Nejat *et al.* have tested the reliability and validity of the Persian version of WHOQOL-BREF, and the reliability coefficient was reported to be 0.77, 0.77, 0.75, and 0.84 for different subscales.^[21]

The HBIS contains 10 items arranged on a 4-point Likert scale (not at all=0 to very much=3) and briefly evaluates emotional issues (feeling self-conscious), behavioral issues (difficulty looking at the naked body) and cognitive issues (such as self-satisfaction). This instrument was designed to measure the BI of cancer patients. The minimum and maximum scores are 0 and 30, respectively, with higher scores indicating more symptoms and higher distress or concern about BI.^[22] Rajabi *et al.* reported a reliability coefficient of 0.70 for this scale.^[23]

The CD-RISC contains 25 items scored on a 5-point Likert scale ranging from zero (not true at all) to four (true nearly all of the time). The total score ranges from 0 to 100, with higher scores indicating greater resilience.^[24] Amini *et al.* reported an internal consistency coefficient of 0.83 for this scale.^[25]

Data analysis

Data analysis was performed using the SPSS software version 16. Descriptive statistics (frequency, percent, mean, and standard deviation) were used to describe participants' characteristics. Pearson's or Spearman's

correlation coefficients were used to examine the correlation between the main variables.

The independent samples t-test, and one-way analysis of variance were used to compare mean BI, QOL, and resilience scores between subgroups of participants.

Multiple linear regression analysis was performed to predict the impact of QOL and BI subscale scores on resilience. The significance level was set at $P < 0.05$.

Ethical considerations

This study was approved by the Ethics Committee of Isfahan University of Medical Sciences under the ethics code IR.MUI.NUREMA.REC.1400.147. Before the questionnaires were distributed, the researcher explained the study objectives and obtained informed consent from

the patients. All participants were assured of data confidentiality and were free to participate or withdraw from the study.

Results

The mean age of the patients was 49.65 ± 11.11 years. The mean chemotherapy phase was 9.25 ± 5.75 , and on average, 8.24 ± 3.85 months had passed since the diagnosis of BC. Other demographic information is presented in [Table 1].

The total mean QOL score of women with BC was 53.70 ± 18.94 , with the highest and the lowest mean scores were related to the environmental (56.56 ± 13.83) and the physical (47.98 ± 19.07) subscales, respectively. The mean resilience score was 69.83 ± 14.52 , and the mean BI score was 8.23 ± 6.65 [Table 2].

Table 1. The demographic characteristics of the participants and their mean quality of life, body image, and resilience scores

Variable	n (%)	Quality of life	Body image	Resilience
Marital status				
Single	9 (5.2)	63.88 ± 13.17	5.88 ± 6.60	71.75 ± 21.05
Married	144 (83.7)	60.50 ± 19.59	8.69 ± 6.56	69.72 ± 14.39
Divorced	3 (1.9)	58.33 ± 14.43	16.66 ± 6.65	61.80 ± 8.09
Widowed	16 (9.2)	64.06 ± 17.00	3.76 ± 4.75	71.26 ± 12.89
Number of children				
Without children	18 (10.5)	63.19 ± 13.19	7.44 ± 6.94	68.41 ± 17.90
1 child	20 (11.6)	56.25 ± 23.47	9.84 ± 8.95	70.16 ± 14.72
2 children	62 (36)	63.70 ± 21.91	8.80 ± 6.24	68.46 ± 14.15
More than 2 children	72 (41.9)	59.37 ± 15.66	7.47 ± 6.17	71.26 ± 14.01
Education				
Illiterate	58 (33.7)	58.72 ± 18.40	9.18 ± 6.97	69.43 ± 14.34
Sub-diploma and diploma	87 (50.6)	61.02 ± 19.13	8.41 ± 6.39	68.83 ± 14.67
Associate or Bachelor's degrees	22 (12.8)	59.09 ± 26.86	8.62 ± 6.66	71.49 ± 11.04
Above bachelor's degree	5 (2.9)	68.75 ± 8.83	4.50 ± 6.36	88.54 ± 2.94
Occupation				
Employed	12 (7)	60.78 ± 4.86	6.08 ± 4.96	79.34 ± 10.40
Housekeeper	150 (87.2)	52.97 ± 12.71	8.43 ± 6.74	69.33 ± 14.60
Retired	10 (5.8)	56.13 ± 9.89	7.70 ± 7.06	65.90 ± 14.26
Place of residence				
Urban area	87 (50.6)	55.91 ± 11.02	8.22 ± 6.66	70.85 ± 13.96
Rural area	85 (49.4)	51.43 ± 13.20	8.23 ± 6.67	68.79 ± 15.08
Spouse's education				
Illiterate	50 (29.1)	58.72 ± 18.40	9.18 ± 6.97	69.43 ± 14.34
Sub-diploma and diploma	107 (62.2)	61.02 ± 19.13	8.41 ± 6.39	68.83 ± 14.67
Associate or and Bachelor's degrees	13 (7.5)	59.09 ± 26.86	8.62 ± 6.66	71.49 ± 11.04
Above bachelor's degree	2 (1.2)	68.75 ± 8.83	4.50 ± 6.36	88.54 ± 2.94
Spouse's occupation				
Unemployed	11 (6.4)	63.75 ± 14.96	7.80 ± 5.37	68.08 ± 21.50
Employee	26 (15.1)	59.65 ± 19.64	7.71 ± 4.45	65.53 ± 16.65
Self-employed	72 (41.9)	61.08 ± 21.83	9.24 ± 6.86	67.78 ± 13.89
Teacher	6 (3.5)	65.00 ± 10.45	4.80 ± 5.06	72.70 ± 17.51
Other	57 (33.1)	58.67 ± 17.89	8.91 ± 7.19	73.46 ± 11.26

Pearson's correlation coefficient showed that the resilience score was directly associated with the total QOL score ($r=0.491$, $P<0.001$) and all its subscales, with the strongest correlation observed for the psychological-spiritual subscale. An inverse correlation was observed between the BI scores and all QOL scores [Table 3]. Furthermore, an inverse correlation was found between resilience and overall BI score ($r=-0.37$, $P<0.05$).

Table 2. The mean scores for quality of life and its subscales, resilience, and body image

Variables	Mean±SD
Quality of life subscales	
Physical	47.98±19.07
psychological-spiritual	54.91±15.81
Social relationships	53.39±23.54
Environment	56.56±13.83
Total score	53.70±12.32
Resilience	69.83±14.52
Body image	8.23±6.65

Multiple linear regression analysis showed that among the QOL subscales and the overall BI score, only the psychological-spiritual subscale score significantly predicted resilience [Table 4].

In addition, Pearson's correlation coefficient showed that age and duration of chemotherapy phase were not significantly correlated with resilience, body image, and total QOL scores ($P>0.05$). The time passed since being informed of the disease correlated directly with the BI score and inversely with the total QOL score ($P<0.05$). The total QOL score was also directly associated with education level of patients and their spouses ($P<0.05$) [Table 5].

Furthermore, the mean BI score was significantly higher in married women than in unmarried women ($P<0.05$). The mean resilience score was significantly higher in employed women than in housekeeper and retired women ($P<0.05$). Besides, the mean QOL score was significantly higher in women who lived in urban areas than in women who lived in rural areas ($P<0.05$) [Table 6].

Table 3. Pearson correlation coefficients of resilience scores and body image with the total score of quality of life and its subscales

Quality of life subscales	Resilience score		Body image score	
	r	P	r	P
Physical	0.194	0.01	-0.279	<0.001
Psychological-spiritual	0.637	<0.001	-0.491	<0.001
Social Relationships	0.241	0.001	-0.237	0.002
Environment	0.339	<0.001	-0.222	0.003
Total Score	0.491	<0.001	-0.415	<0.001

Table 4. Results of regression analysis for predicting the impact of dimensions of quality of life and body image on resilience

Score	Raw coefficient	Standardized coefficient	T	P-value
Physical	-0.071	-0.094	1.39	0.17
Psychological-spiritual	0.551	0.600	7.60	<0.001
Social relationships	-0.002	-0.003	0.05	0.96
Environment	0.070	0.067	0.94	0.35
Body image	-0.190	-0.087	1.27	0.20

Table 5. Correlation between some demographic parameters, resilience, body image, and total quality of life score

Variable	Resilience Score		Body Image Score		Total quality of life scores	
	r	P	r	P	r	P
Age	-0.065	0.39	-0.032	0.68	-0.136	0.08
Chemotherapy phase	0.064	0.40	0.065	0.39	-0.148	0.06
The duration of being informed about the disease	-0.124	0.10	0.163	0.03	-0.229	0.003
Number of children	0.074	0.34	-0.051	0.51	-0.014	0.85
Patients education level	0.079	0.30	-0.120	0.12	0.220	0.004
Spouse's education level	0.036	0.66	-0.052	0.53	0.159	0.04

Table 6. The independent samples *t*-test of Urban and Rural women with resilience, body image quality of life

Score	Urban	Rural	The independent samples <i>t</i> -test		
	Mean ± SD	Mean ± SD	<i>t</i>	df	P
Resilience	70.85±13.96	68.79±15.08	0.93	170	0.35
Body Image	8.22±6.66	8.23±6.67	0.008	170	0.99
Quality of life	55.91±11.02	51.43±13.20	2.42	170	0.02

Discussion

The women who participated in the present study scored about 50% of the possible QOL score. They also possessed the highest and lowest QOL scores in the environmental and the physical subscales, respectively. These findings are consistent with some of the previous studies.^[26,27]

The mean resilience score in the present study was higher than those of women with BC in two earlier studies conducted in Tehran, Iran^[28] and in China.^[17] However, in a previous study conducted in Omid Hospital in Isfahan, women with BC achieved higher resilience scores than in our study.^[29]

This difference could be due to the complexity of this concept, since several parameters such as spirituality and culture-related activities, may affect individual's resilience.

In the current study, women with BC scored lower BI than participants in a recent study conducted in Tehran, Iran.^[30] This difference may be attributed to the duration of the disease. The present study was conducted in women with newly diagnosed BC who had recently undergone surgery and chemotherapy. However, the latter study was conducted with women who had been diagnosed with BC for at least one year and who had become somewhat accustomed to changes in their BI.

In the present study, resilience scores of women with BC were directly correlated with total scores as well as the scores of all QOL subscales. Moreover, linear regression analysis showed that of the QOL subscales and the total BI score; only the psychological-spiritual subscale scores could predict resilience. These findings are consistent with what was reported by Tu *et al.* who studied the role of trait resilience and coping styles in positive psychological changes after the diagnosis and treatment of BC.^[31] Zhou *et al.* also reported that resilience indirectly affects QOL through social support and positive coping styles.^[32] High resilience plays a vital role in positive psychological changes and improving the psychological dimensions of QOL.^[31] However, a study by Boškailo *et al.* found no significant correlation between resilience and QOL in women with BC.^[18] The insignificant correlation in the latter study might be attributable to the fact that it was conducted with only 60 patients.

However, our study had a larger sample size, so its results

may be more reliable.

The findings of the present study showed an inverse association between resilience and BI scores. Our findings are consistent with the results of Hsu *et al.* who studied the relationship between BI and resilience in patients with BC.^[33] Patients with low resilience appear to have a more pessimistic attitude toward their bodies, and resilience is a crucial protective factor for maintaining a positive BI. In this study, resilience was not significantly associated with age, education level, and spouse's education level. However, employed women exhibited significantly higher levels of resilience than housekeeper and retired women. Plitzko *et al.* also reported that unemployed patients with poor socioeconomic status had lower levels of resilience.^[34] However, another study in the United States found no relationship between employment and resilience among women.^[35]

These contradictory results indicate that resilience is a personal trait that might be affected by several factors such as culture.

In the current study, the total QOL score was directly correlated with the education levels of patients and their husbands. Considering the role of socioeconomic and cultural factors in health issues and the link between QOL and health, it is possible to justify a higher QOL for people with a higher education level.

Our findings showed that time passed since diagnosis of BC was directly correlated with BI, whereas it was indirectly associated with QOL. These findings are consistent with those of Wu *et al.* who studied changes of BI and QOL in patients with BC.^[36] QOL appears to be affected by the duration of illness. Thus, women have a higher QOL in the early stages of disease diagnosis, but the QOL declines over time as the disease and treatment complications emerge.

In this study, mean QOL scores were significantly higher for women living in urban areas than for women living in rural areas. Urban women have more opportunities to participate in cultural and social activities, which appear to have a positive impact on their QOL.

This study had some limitations. First, because we used self-report instruments, the patient's physical and mental state may have influenced the accuracy of their responses.

Second, the participants were women with newly diagnosed BC who had recently undergone chemotherapy, and this may limit the generalizability of the results.

Conclusions

This study found a direct correlation between resilience and overall QOL and all its dimensions, and an inverse correlation with BI. The psychological-spiritual dimension of QOL was a significant predictor for resilience. Therefore, nurses and other health care providers are recommended to develop programs that strengthen the psychological resilience in women with BC to reduce their psychological symptoms, and improve their QOL and BI.

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Competing interests

There are no conflicts of interest.

Abbreviations

body image: BI

Breast cancer: BC

quality of life: QOL

Hopwood Body Image Scale: HBIS

Authors' contributions

All authors read and approved the final manuscript. All authors take responsibility for the integrity of the data and the accuracy of the data analysis.

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Availability of data and materials

The data used in this study are available from the corresponding author on request.

Ethics approval and consent to participate

This study was approved by the Ethics Committee of Isfahan University of Medical Sciences under the ethics code IR.MUI.NUREMA.REC.1400.147. Before the questionnaires

were distributed, the researcher explained the study objectives and obtained informed consent from the patients. All participants were assured of data confidentiality and were free to participate or withdraw from the study.

Consent for publication

By submitting this document, the authors declare their consent for the final accepted version of the manuscript to be considered for publication.

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