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Original Article

Personality Traits, Emotional Intelligence, and Sexual Functioning in Women With Metastatic and Non-Metastatic Breast Cancer: A Comparative Study

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Abstract

Background and aims: Psychological and functional aspects, such as personality traits, emotional intelligence (EI), and sexual functioning, are critical yet often overlooked in women with breast cancer (BC). Thus, this study compared these variables between metastatic and non-metastatic patients.

Methods: In this cross-sectional study, 150 young married women diagnosed with BC (metastatic and non-metastatic) were recruited from Shohadaye Tajrish Hospital in Tehran in 2024 through purposive sampling. Data were collected using the NEO-Five Factor Inventory (1992), Bar-On Emotional Intelligence Questionnaire (2003), and Female Sexual Function Index (2000). Statistical analysis was conducted in SPSS 27 using descriptive statistics, multivariate analysis of variance, and independent t-tests.

Results: Univariate ANOVAs revealed significant differences between groups in personality traits: neuroticism ($F(1,148)=5.68$, $P=0.018$, $\eta^2=0.037$), extraversion ($F(1,148)=26.17$, $P<0.001$, $\eta^2=0.150$), and conscientiousness ($F(1,148)=10.45$, $P=0.002$, $\eta^2=0.066$), with non-metastatic patients scoring higher in extraversion and conscientiousness. Similarly, significant differences were found in interpersonal skills ($F(1,148)=40.64$, $P<0.001$, $\eta^2=0.215$) and sexual functioning, including arousal ($F(1,148)=51.61$, $P<0.001$, $\eta^2=0.259$) and satisfaction ($F(1,148)=53.05$, $P<0.001$, $\eta^2=0.264$), with non-metastatic patients reporting higher scores.

Conclusion: It was revealed that disease stage in BC correlates with distinct psychological and sexual health profiles. Accordingly, integrating psychosocial interventions into oncology care for metastatic patients may enhance emotional well-being and quality of life.

Keywords: Breast cancer, Personality traits, Emotional intelligence, Sexual functioning, Metastasis, Quality of life

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Introduction

According to the World Health Organization, cancer is the second leading cause of death before age 70 in 112 out of 183 countries (1). Based on GLOBOCAN database reports, there have been 2.3 million new cases of female breast cancer (BC) and 670,000 deaths in 2022, with incidence rates rising by 1–5% in half of the studied countries. By 2050, new cases and deaths are projected to increase by 38% and 68%, respectively, particularly affecting countries with low human development indices (2, 3). BC risk factors are categorized as modifiable (e.g., obesity and smoking) and non-modifiable (e.g., family history and genetic predisposition). In Iran, unhealthy lifestyle patterns have been linked to the rising prevalence of BC (4, 5).

BC involves the uncontrolled growth of malignant cells in breast tissue, leading to symptoms such as lumps and abnormal nipple discharge (6). Despite advances in treatment, some interventions, including chemotherapy and surgery, can significantly impact patients psychologically and socially (7, 8). Treatment decisions depend on disease stage, with metastatic BC (stage IV) indicating spread to distant organs, while non-metastatic cases remain localized (9). Patients frequently face challenges to their quality of life, including fatigue, anxiety, and cognitive difficulties (10).

A significant but often overlooked issue is sexual dysfunction, which can result from early menopause or reduced estrogen levels due to treatment (11). According to the Diagnostic and Statistical Manual of Mental Disorders (fifth edition), sexual dysfunction encompasses issues related to desire, arousal, orgasm, or pain, leading to personal distress (12). Therefore, identifying factors influencing sexual health is crucial, as personality traits have been shown to affect sexual satisfaction and marital quality (10–13). Personality encompasses patterns of thoughts and behaviors that contribute to motivations and emotional responses, while emotional intelligence

(EI) may mediate these effects (14). More precisely, EI aids in making decisions and coping with the emotional challenges of BC (15, 16).

While many studies have explored the psychological consequences of BC, research linking personality traits, EI, and sexual functioning, especially across disease stages, remains limited (17–20). Thus, this study aims to compare these variables between metastatic and non-metastatic patients, identifying patterns that may enhance recovery outcomes and inform psychological interventions. Improving EI and addressing maladaptive personality traits can lead to better mental health, sexual satisfaction, and overall quality of life for patients with BC.

Materials and Methods

The statistical population comprised all married women diagnosed with BC who visited or were hospitalized at Shohadaye Tajrish Hospital, Tehran, during the second half of 2024 for treatment or follow-up. The sample included 150 married women with histologically confirmed metastatic and non-metastatic BC (stages I–IV), selected through an oncologist review of medical records. In addition, the purposive sampling method was employed to minimize selection bias and ensure representation of the clinical population.

The target sample size of 150 was determined based on statistical precision, power, and feasibility. With an α of 0.05 (two-tailed) and a power of 0.80, this size provides a ~ ± 8% margin of error for proportions ($P = 0.5$) and adequate power to detect medium effects (Cohen's d ≈ 0.5) or ~25% differences between equal subgroups (21). The inclusion criteria were being a married, middle-aged woman (in this study, the definition of "middle-aged women" was set between 40 and 60 years), being diagnosed with BC, being aware and showing a willingness to participate, and being fluent in Persian. On the other hand, the exclusion criteria included being single, male, postmenopausal, or unwilling to participate. Control variables, such as age, education, socioeconomic status, number of children, place of residence, and cultural/religious factors, were considered to reduce confounding.

Procedure

In this comparative study, three standardized questionnaires were employed to assess personality traits, EI, and sexual functioning among women with metastatic and non-metastatic BC. They included the NEO Five-Factor Inventory, the Bar-On EI Scale (EQ-I), and the Female Sexual Function Index (FSFI), which were used to evaluate personality traits, EI, and sexual functioning, respectively. Data collection took place in quiet, private hospital settings to ensure a comfortable environment for participants. Literate participants were instructed to complete the questionnaires independently in order to promote accuracy and authenticity in their responses. For those with lower literacy levels or physical limitations, the researcher assisted by reading the questions aloud and recording their responses to ensure inclusivity and reliability in data collection.

Each session lasted approximately 20–30 minutes, allowing sufficient time for participants to reflect on each question and provide thoughtful answers. Moreover, the study followed ethical guidelines and received approval from the Ethics Committee of Shahid Beheshti University. Before participation, written informed consent was also obtained from all participants, ensuring they were fully aware of the study's purpose and their rights. Additionally, privacy and confidentiality were strictly maintained throughout the research process, and measures were taken to minimize any psychological or physical discomfort participants might experience during the assessment. This comprehensive approach to data collection allowed for a nuanced understanding of the interplay between personality traits, EI, and sexual functioning in women facing the challenges of BC, contributing valuable insights into the existing literature.

Instruments

NEO-Five Factor Inventory

Costa and McCrae developed the NEO-FFI in 1992 (22). This inventory consists of 60 items and utilizes a 5-point Likert-type scale ranging from strongly disagree to agree strongly. The NEO-FFI measures neuroticism, extraversion, openness, agreeableness, and conscientiousness. Costa and McCrae reported internal consistency coefficients ranging from 0.68 for agreeableness to 0.86 for neuroticism. The short form of the inventory showed a correlation of $r = 0.68$ with the long version. In addition, correlations between spouse and peer evaluation forms ranged from 0.36 to 0.44 for conscientiousness and from 0.48 to 0.65 for agreeableness. In Iran, test-retest reliability was reported to be between 0.61 for openness and 0.82 for extraversion, while Cronbach's alpha values ranged from 0.35 for openness to 0.83 for neuroticism. The neuroticism factor was associated with all dimensions of the Symptom Checklist-90-Revised (SCL-90-R), whereas the other factors exhibited either a negative correlation or no correlation with the SCL-90-R dimensions (23). In this study, the Cronbach's alpha values for neuroticism, extraversion, openness, agreeableness, and conscientiousness were 0.72, 0.84, 0.65, 0.70, and 0.65, respectively.

Emotional Intelligence Bar-On Inventory

The Persian 133-item EQ-I, originally designed by Bar-On and translated by Dehshiry, was utilized, revised, and modified in various ways for this study (24). First, fifteen items (5, 12, 25, 34, 41, 50, 57, 65, 71, 79, 94, 101, 109, 115, and 123) specifically related to negative impact (NI) and positive impact (PI), along with one item related to interpersonal impact (II), were removed from the Persian EQ-I. This decision was made because participants were not required to complete the questionnaire, thus eliminating the need to ensure response validity. The researchers believe that voluntary participants who take

the time to answer questions would not intentionally mislead the study, especially when their anonymity is guaranteed. Furthermore, removing these items shortened the questionnaire, saving time and effort in administration and data tabulation. In addition to deleting these sixteen NI, PI, and II items, the 63 reverse-scored indicators were transformed into positively worded EI indicators. This change was made because answering reverse items could lead to unrealistic or confusing responses. For instance, item 18 in the original 133-item EQ-I (which corresponds to item 9 in the revised 117-item EQ-I) states, "I am unable to understand the way other people feel." Then, all 117 positively phrased English items were analyzed using schema theory in conjunction with Dehshiry's Persian translations (25, 26). The reported Cronbach's alpha value for the scale was 0.92.

The Female Sexual Function Index

This brief, multidimensional self-report index is designed to assess sexual dysfunction and consists of 19 items across six dimensions, rated on a Likert-type scale ranging from 0 to 5 or 1 to 5. The dimensions include desire (items 1–2), subjective arousal (items 3–6), lubrication (items 7–10), orgasm (items 11–13), satisfaction (items 14–16), and pain (items 17–19) (27). A score of zero is assigned to individuals who report no sexual intercourse in the past four weeks, while higher scores, whether in total or within the individual dimensions, indicate less sexual dysfunction. Cronbach's alpha coefficient was used to evaluate the internal consistency of the overall FSFI and its relevant dimensions, with internal consistency categorized as fair, moderate, and excellent if the coefficient is 0.7, between 0.7 and 0.8, and 0.9 or higher, respectively (28). In this study, the reported Cronbach's alpha value was 0.89.

Data Analysis

Both descriptive and inferential statistical analyses were performed. Descriptive statistics, such as means and standard deviations (SDs), were utilized to summarize the data. Data were analyzed in SPSS (version 27) using descriptive statistics (frequencies, percentages, means, and SD) and inferential methods, including multivariate analysis of variance (MANOVA) and independent t-tests.

Results

A total of 150 women, including 90 cases with non-metastatic and 60 cases with metastatic BC, participated in the study. The mean (SD) age of women was 48.7 (±8.4) years. Most participants were married (100%), with more than half holding a university degree (55.0%). The majority of women (48.7%) had undergone surgery combined with chemotherapy, and about one-third had been diagnosed more than three years before data collection (Table 1).

Table 2 presents the descriptive statistics for personality traits, EI, and sexual function across non-metastatic and metastatic groups. For instance, the mean score for neuroticism in the non-metastatic group was 47.31

Table 1. Sociodemographic and Clinical Characteristics of Participants

Variable	Non-Metastatic (n = 90)	Metastatic (n = 60)	Total (N = 150)
Age, mean (SD)	47.9 (8.2)	49.8 (8.7)	48.7 (8.4)
University degree, n (%)	52 (57.8)	31 (51.7)	83 (55.0)
Diagnosis > 3 years, n (%)	30 (33.3)	20 (33.3)	50 (33.3)
Surgery + chemotherapy, n (%)	44 (48.9)	29 (48.3)	73 (48.7)

Note. SD: Standard deviation.

(SD = 4.89), while the metastatic group had a mean of 50.33 (SD = 5.44). Additionally, the total sexual function score for the non-metastatic group was 48.50 (SD = 12.53) compared to 31.22 (SD = 22.46) for the metastatic group, highlighting significant differences in sexual function between the two groups.

The assumption of homogeneity of covariance was examined using the M-box test (Table 3), yielding a value of F = 1.21; $P = 0.18$), confirming the assumption. Following the assumption checks, the results of the MANOVA indicated significant differences between groups in at least one personality trait component. Additionally, the M-box test for EI showed (F = 0.91; $P = 0.51$), implying homogeneity of covariance and revealing significant differences between non-metastatic and metastatic groups in at least one EI component. Ultimately, the M-box test for sexual function reported (F = 1.21; $P = 0.11$), demonstrating homogeneity of covariance and significant differences between non-metastatic and metastatic groups in at least one sexual function component.

Multivariate test results (Table 4) revealed a significant overall group effect [Pillai's Trace = 0.18, F (5,144) = 6.52, $P < .001$, partial $\eta^2 = .18$]. A second MANOVA was conducted on the five components of EI (intrapersonal, interpersonal, adaptability, stress tolerance, and overall mood). The results demonstrated a significant multivariate group effect [Pillai's Trace = 0.30, F (5,144) = 12.42, $P < .001$, partial $\eta^2 = .30$]. Likewise, a MANOVA was performed on the six components of sexual function (desire, arousal, lubrication, orgasm, satisfaction, and sexual pain). Based on the results, there was a significant overall group effect [Pillai's Trace = 0.32, F (6,143) = 11.46, $P < .001$, partial $\eta^2 = .32$].

Follow-up univariate ANOVAs (Table 5) indicated statistically significant group differences in neuroticism [F (1,148) = 5.68, $P = .018$, $\eta^2 = .037$], extraversion [F (1,148) = 26.17, $P < .001$, $\eta^2 = .150$], and conscientiousness [F (1,148) = 10.45, $P = .002$, $\eta^2 = .066$]. Conversely, no significant differences were found for openness or agreeableness. Mean comparisons demonstrated that the non-metastatic group scored higher on extraversion and conscientiousness but lower on neuroticism than the metastatic group. According to Cohen's conventions, effect sizes for significant traits ranged from small (neuroticism, conscientiousness) to medium (extraversion).

Univariate analyses (Table 5) confirmed significant differences in interpersonal skills [F (1,148) = 40.64, $P < .001$, $\eta^2 = .215$], adaptability [F (1,148) = 4.04, $P = .046$,

Table 2. Descriptive Statistics

Row	Variable	Component	Non-Metastatic M	Non-Metastatic SD	Non-Metastatic Skewness	Non-Metastatic Kurtosis	Metastatic M	Metastatic SD	Metastatic Skewness	Metastatic Kurtosis
1	Personality	Neuroticism	47.31	4.89	0.38	0.79	50.33	5.44	0	1.36
2	Personality	Extraversion	36.76	4.7	-0.72	1	33.02	3.87	0.25	-0.79
3	Personality	Openness	37.9	4.28	-0.74	1.89	37.08	3.13	0.24	0.7
4	Personality	Agreeableness	38.36	5.23	-0.29	0.26	37.53	3.86	0.08	0.84
5	Personality	Conscientiousness	40.99	4.94	-1.1	1.42	38.48	4.18	0.34	-0.77
6	Emotional intelligence	Intrapersonal	82.93	11.84	-0.45	0.1	84.73	7.33	0.06	1.59
7	Emotional intelligence	Interpersonal	33.42	6.39	-0.12	-0.45	40.25	6.48	-0.85	0.82
8	Emotional intelligence	Adaptability	46.73	6.27	-1.19	1	48.58	4.16	0.31	0.79
9	Emotional intelligence	Stress tolerance	33.44	7.02	0.09	-0.28	29.9	5.88	0.59	0.06
10	Emotional intelligence	Global affect	31.83	3.82	-0.29	0.66	35.12	3.98	-1.33	1.6
11	Emotional intelligence	Total score	227.28	26.11	-1.01	0.78	238.85	14.62	-0.13	1.36
12	Sexual function	Libido	4.41	1.52	0.17	-0.26	3.4	1.6	1.07	0.24
13	Sexual function	Arousal	9.27	3.24	-0.32	0.3	4.77	4.42	0.91	0.19
14	Sexual function	Lubrication	9.79	2.06	-0.83	0.36	8.62	3.46	0.06	-1.78
15	Sexual function	Orgasm	8.11	1.56	-0.08	-0.15	6.63	1.92	1.21	1.41
16	Sexual function	Satisfaction	8.83	3.42	-0.17	-0.58	4.73	3.31	1.3	0.89
17	Sexual function	Pain during intercourse	9.06	3.26	0.13	-0.78	9.33	4.64	0.13	-1.82
18	Sexual function	Total score	48.5	12.53	-1.04	1.74	31.22	22.46	0.02	-1.7

Note. SD: Standard deviation.

Table 3. Homogeneity of Variance Test for Variable Components Between Non-Metastatic and Metastatic Groups

Component of Variables	F	df1	df2	*P*-Value
Neuroticism	0.01	1	148	0.91
Extraversion	0.70	1	148	0.40
Openness	1.13	1	148	0.25
Agreeableness	1.81	1	148	0.17
Conscientiousness	0.001	1	148	0.99
Intrapersonal (intra-psychic)	1.79	1	148	0.18
Interpersonal	0.14	1	148	0.71
Agreeableness and conformity	1.85	1	148	0.10
Psychological stress	1.14	1	148	0.08
Overall, mood/affect	0.04	1	148	0.84
Libido	0.07	1	148	0.80
Psychomotor arousal	1.29	1	148	0.13
Humidity (moisture)	1.62	1	148	0.13
Orgasm	3.86	1	148	0.05
Satisfaction	0.09	1	148	0.77
Sexual pain	1.32	1	148	0.09

$\eta^2 = .027$], psychological stress [F (1,148) = 10.42, $P = .002$, $\eta^2 = .066$], and overall mood [F (1,148) = 25.70, $P < .001$, $\eta^2 = .150$]. No significant group difference was observed for intrapersonal skills. The non-metastatic group reported higher interpersonal skills, adaptability, and overall mood, whereas the metastatic group mentioned lower stress tolerance (indicating higher psychological stress). Effect sizes were small to medium, with the largest detected for interpersonal skills and overall mood.

Univariate analyses (Table 5) indicated significant group differences in sexual desire [F (1,148) = 15.29, $P < .001$, $\eta^2 = .094$], arousal [F (1,148) = 51.61, $P < .001$, $\eta^2 = .259$], lubrication [F (1,148) = 6.75, $P = .010$, $\eta^2 = .044$], orgasm [F (1,148) = 26.76, $P < .001$, $\eta^2 = .153$], and satisfaction [F (1,148) = 53.05, $P < .001$, $\eta^2 = .264$]. There was no significant difference in sexual pain between the two groups. Across significant variables, the non-metastatic group consistently reported higher sexual function scores than the metastatic group. Finally, effect sizes ranged from small (lubrication) to large (arousal and satisfaction).

Discussion

The present study compared personality traits, EI, and sexual functioning between women with metastatic and non-metastatic BC, revealing significant differences across several psychological and functional domains. These findings align with an increasing body of evidence emphasizing the role of psychosocial factors in shaping cancer-related outcomes and quality of life (4-10). Our results demonstrated metastatic patients scored higher in neuroticism, whereas non-metastatic patients exhibited higher levels of extraversion and conscientiousness. There were no significant differences between openness to experience and agreeableness. These findings corroborate prior research indicating that neuroticism, characterized by emotional instability, anxiety proneness, and heightened stress reactivity, is linked to maladaptive coping strategies and poorer health-related quality of life in cancer populations (29-34). Elevated neuroticism can amplify the perception of disease-related stress and

Table 4. Results of Multivariate Analysis of Variance for Personality Traits

Source of Effect	Test	Value	F	Hypothesis df	Error df	*P*-Value	Effect Size
Group	Pillai's Trace	0.18	6.52	5	144	0.001	0.18
Personality traits	Wilks' Lambda	0.82	6.52	5	144	0.001	0.18
	Hotelling's Trace	0.23	6.52	5	144	0.001	0.18
	Largest Root	0.23	6.52	5	144	0.001	0.18
Group	Pillai's Trace	0.30	12.42	5	144	0.001	0.30
Emotional intelligence	Wilks' Lambda	0.70	12.42	5	144	0.001	0.30
	Hotelling's Trace	0.43	12.42	5	144	0.001	0.30
	Largest Root	0.43	12.42	5	144	0.001	0.30
Group	Pillai's Trace	0.32	11.46	6	143	0.001	0.32
Sexual function	Wilks' Lambda	0.68	11.46	6	143	0.001	0.32
	Hotelling's Trace	0.48	11.46	6	143	0.001	0.32
	Largest Root	0.48	11.46	6	143	0.001	0.32

Table 5. Results of Univariate Analysis of Variance for Personality Traits Differences Between Metastatic and Non-Metastatic Groups

Source of Effect	Variable	SS	df	MS	F	*P*-Value	Effect Size
Group	Neuroticism	148.84	1	148.84	5.68	0.018	0.037
Personality traits	Extraversion	503.25	1	503.25	26.17	0.001	0.150
	Openness	24.01	1	24.01	1.61	0.207	0.011
	Adaptability	24.34	1	24.34	1.09	0.299	0.007
	Conscientiousness	226.00	1	226.00	10.45	0.002	0.066
Error	Neuroticism	3875.40	148	26.19	-	-	-
	Extraversion	2845.61	148	19.23	-	-	-
	Openness	2208.68	148	14.92	-	-	-
	Adaptability	3311.56	148	22.38	-	-	-
	Conscientiousness	3199.97	148	21.62	-	-	-
Group	Intrapersonal	116.64	1	116.64	1.10	0.30	0.007
Emotional intelligence	Interpersonal	1678.27	1	1678.27	40.64	0.001	0.215
	Adaptability and adjustment	123.21	1	123.21	4.04	0.046	0.027
	Psychological stress	452.27	1	452.27	10.42	0.002	0.066
	Overall mood	388.09	1	388.09	25.70	0.001	0.15
Error	Intrapersonal	15637.33	148	105.66	-	-	-
	Interpersonal	6111.21	148	41.29	-	-	-
	Adaptability and adjustment	4518.18	148	30.53	-	-	-
	Psychological stress	6421.62	148	43.39	-	-	-
	Overall mood	2234.68	148	15.10	-	-	-
Group	Desire	36.80	1	36.80	15.29	0.001	0.094
Sexual function	Psychological arousal	729.00	1	729.00	51.61	0.001	0.259
	Lubrication	49.47	1	49.47	6.75	0.010	0.044
	Orgasm	78.62	1	78.62	26.76	0.001	0.153
	Satisfaction	605.16	1	605.16	53.05	0.001	0.264
Error	Sexual pain	2.78	1	2.78	0.19	0.668	0.001
	Desire	356.19	148	2.41	-	-	-
	Psychological arousal	2090.33	148	14.12	-	-	-
	Lubrication	1085.17	148	7.33	-	-	-
	Orgasm	434.82	148	2.94	-	-	-
	Satisfaction	1688.23	148	11.41	-	-	-
	Sexual pain	2220.06	148	15.00	-	-	-

Note. SS: Sum of squares; MS: Mean of squares; df: Degree of freedom; F: F-statistics.

exacerbate emotional distress, thereby undermining treatment adherence and resilience (33).

In contrast, extraversion and conscientiousness are associated with positive affectivity, strong social networks, adherence to medical regimens, and better psychological adjustment to chronic illness (32, 33). The higher prevalence of these traits among non-metastatic patients may contribute to more effective disease self-management and improved emotional well-being. Similar patterns have been reported by Bruno et al (14), highlighting the synergistic role of adaptive personality traits and social support in mitigating psychological distress. However, some studies have found weaker or non-significant associations between personality and cancer outcomes (34), suggesting that cultural context, disease stage, and measurement tools may moderate these relationships.

Non-metastatic patients demonstrated significantly higher overall EI, particularly in interpersonal skills, adaptability, and mood regulation. These domains have been widely recognized as critical to resilience and emotional regulation in chronic illness (33, 34). Higher EI facilitates adaptive coping and enhances communication with healthcare providers while reducing the psychological burden of disease. Conversely, metastatic patients displayed lower EI scores, potentially reflecting the compounded mental and physical stressors of advanced disease, greater treatment burden, and diminished opportunities for social engagement. Similarly, the findings of Cannavò et al (15) confirmed that higher EI is linked to greater post-traumatic growth and life satisfaction in cancer survivors. In the Iranian context, Rezaei et al (4) noted that chronic illness can erode psychosocial resources, implying the need for targeted interventions to strengthen EI among advanced-stage patients.

Moreover, the results revealed significant differences in sexual function components between metastatic and non-metastatic BC patients, with non-metastatic patients reporting higher levels of desire, sexual arousal, lubrication, orgasm, and satisfaction. No significant differences were found in sexual pain between the two groups. Effect size analysis indicated that sexual arousal and satisfaction exhibited the largest differences, suggesting that disease status distinctly affects various dimensions of sexual function. These findings conform to the results of studies by Martins Faria et al (30), Hosseini et al (31), Sousa Rodrigues Guedes et al (32), Grauvogl et al (33), and Makian et al (34).

Based on these findings, BC, as a chronic illness, affects not only physical health but also the psychological well-being and sexual function of women. According to the findings of the current study, most women with BC, whether in metastatic or non-metastatic stages, face difficulties in sexual function. These issues are primarily due to the side effects of aggressive treatments, such as surgery, chemotherapy, hormone therapy, and the use of related medications, as well as chronic fatigue, hopelessness, and decreased energy levels (31). Even in non-metastatic patients who have long past their initial treatment, some components of sexual function remain impaired. However, based on the results of the present study, non-metastatic patients scored higher in sexual function components than metastatic patients. According to previous studies, sexual function, as one of the most important components related to quality of life, is influenced by various factors, including physical, psychological, social, individual, and hormonal factors, and the like. BC-related surgeries, including mastectomy, can alter body image and lead to decreased self-esteem and feelings of sexual unattractiveness. This issue, especially in metastatic patients facing disease progression and more severe treatment effects, can significantly reduce sexual desire, arousal, and satisfaction.

In contrast, non-metastatic patients who have more hope for treatment and recovery, or who have long past the early stages of their illness, maintain a higher level of psychological adjustment, positively influencing their sexual function (30), which is consistent with the findings of a study that showed that psychological factors significantly impact individuals' sexual experiences. Anxiety and stress can increase sympathetic nervous system activity, leading to decreased sexual arousal, orgasm dysfunction, and reduced sexual desire. Additionally, depression can lower dopamine and serotonin levels, which are neurotransmitters that play crucial roles in regulating sexual desire and pleasure. It is emphasized that psychological support, sexual education, and specialized counseling can help mitigate the negative effects of psychological factors on sexual function (32).

Regarding hormonal changes, BC treatments lead to decreased levels of estrogen and testosterone in patients, which can cause vaginal dryness, reduced arousal, and orgasm dysfunction. Studies have shown that metastatic patients are more likely to experience sexual dysfunction due to hormonal changes, which are associated with the severity of the disease. Furthermore, depression and anxiety resulting from cancer can decrease patients' willingness to engage in sexual activity, while these factors are less observed in non-metastatic patients (33). Individual personality traits may also explain the differences in sexual function between metastatic and non-metastatic patients. Research has demonstrated that extraversion, conscientiousness, and openness positively influence the quality of marital relationships, whereas neuroticism and emotional avoidance have negative effects. Non-metastatic patients, due to higher levels of hope for life, more effective social connections, and lower levels of anxiety and depression, have better sexual function.

Contrarily, metastatic patients experience poorer sexual function due to the severity of the disease, high stress, and medication side effects (34), which is in line with the results of the present study and justifies the difference between female BC patients in metastatic and non-metastatic stages.

Limitations and Future Directions

This study had some limitations, including a single-center design, purposive sampling, reliance on self-report measures, and lack of socioeconomic and cultural moderators. Accordingly, future research should employ longitudinal designs to track changes, assess targeted interventions (e.g., EI training and personality-tailored counseling), and explore the effects of social support and relationship dynamics. Removing 16 items from the Bar-On EQ-I questionnaire without strong justification may undermine the validity of the results, and converting inverted items to positive without careful analysis is problematic. Other researchers should exercise caution in interpreting the questionnaire's validity and reliability. Clinically, integrating EI training and sexual health counseling into oncology care may improve the quality of life of women with BC. Finally, differences in the site of metastasis and disease severity should be examined for their impact on psychological variables and sexual function in future studies.

Conclusion

Our findings revealed that adaptive psychological resources, that is, favorable personality traits and higher EI, are associated with better psychosocial and functional outcomes in BC patients. Non-metastatic patients benefit from greater resilience, more adaptive emotional profiles, and stronger interpersonal functioning. In contrast, metastatic patients face higher vulnerability to stress, poorer emotion regulation, and reduced sexual satisfaction. These differences indicate the importance of integrating psychosocial interventions into cancer care, including personality-informed coping programs, EI training, and sexual health counseling.

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Competing Interests

The authors have no conflict of interests to declare regarding the study and the preparation of the article.

Ethical Approval

The study received approval from the Ethics Committee of Shahid Beheshti University of Medical Sciences (ethical code IR.SBMU.RETECH.REC.1403.483).

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