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Determining the Role of Relationship Quality and Psychological Capital in the Resilience and Self-regulation of Women with Breast Cancer

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A B S T R A C T

Purpose: The diagnosis of breast cancer in women is of particular importance due to its impact on various dimensions of life quality, including physical health, mental well-being, and social welfare. Therefore, identifying factors that influence the resilience and self-regulation of women with breast cancer has garnered researchers' attention. This study aims to investigate the role of the quality of relationships with others and psychological capital in the resilience and self-regulation of women diagnosed with breast cancer.

Methodology: This research is applied in its purpose and descriptive-correlational in its method and nature. The statistical population of this study included all women with breast cancer who attended hospitals in Shahroud and Semnan. Based on the Green formula, 200 individuals were selected as the sample through purposive sampling, and research questionnaires were distributed among them. For data collection, standardized questionnaires on relationship quality by Pierce et al. (1991), psychological capital by Luthans et al. (2007), resilience by Connor and Davidson (2003), and self-regulation by Bouffard (1995) were used. Data were analyzed using SPSS software version 22 and regression analysis method.

Findings: Data analysis revealed that the quality of relationships with others and psychological capital have a significant positive impact on the resilience and self-regulation of women with breast cancer ($p<0.05$).

Conclusion: It appears that the quality of relationships with others and psychological capital play a significant role in the resilience and self-regulation of women with breast cancer.

Keywords: *Quality of relationships with others, Psychological capital, Resilience, Self-regulation*

1. Introduction

Cancer is one of the chronic diseases that, despite medical advancements, still causes a deep sense of helplessness and fear in individuals. After heart and vascular diseases and heart attacks (responsible for the death of 43% of individuals), cancer is considered the second leading cause of death worldwide (Jodaki et al., 2022; Kamian, 2014; Mir Ahmadi et al., 2022). The incidence of cancer in Iran is higher than the global average, with breast, colorectal, skin, and thyroid cancers being the most common types in the country. Health Ministry statistics also show that annually, 60,000 people in Iran lose their lives to various types of cancer (Jodaki et al., 2022; Kamian, 2014). Cancer not only affects the life of the patient but also impacts the physical, psychological, social, and economic dimensions of the patient's family's life (Movahedi et al., 2019).

Today, breast cancer is considered one of the most significant health threats to women (González-Fernández et al., 2017; Huang et al., 2019). The diagnosis of life-threatening diseases like cancer has numerous effects on an individual's quality of life and causes significant anxiety and stress. Emotional responses begin to emerge with the appearance of disease symptoms (González-Fernández et al., 2017; Masoumi et al., 2022), including severe depression, sadness, anger, personality changes, and anxiety. The primary cause of emotional responses in this disease is confronting individuals with the reality that many things are significantly out of their control. This challenges people's belief that they have considerable control over their lives, especially in crises or chronic diseases that reduce lifespan. In reality, individuals have much less control over their lives than they think, but confronting them with this illusion of control can be very distressing and anxiety-inducing (Sajadian et al., 2017; Tang et al., 2020; van de Wal et al., 2018). Belief in the lethality of the disease, helplessness, and anxious rumination torment cancer patients. One of the ways to help them cope with these undesirable emotional responses, alleviate symptoms, and improve quality of life is to resort to positive psychology concepts such as connecting with others, psychological capital, resilience, and positive and adaptive emotional regulation (Keramati, 2021).

A large part of human pleasure or despair in life depends on their relationships with others; many scientists mention establishing and maintaining relationships and sharing efforts with others as one of the indicators of health. High-quality relationships are those formed by social and expressive support. According to Reif, high-quality relationships consist of trust and satisfying interpersonal relationships that care about the welfare of others and are capable of empathy, affection, intimacy, and understanding interactive relationships (Henderson et al., 2023; Holt et al., 2018). Individuals who are lonely or have dysfunctional relationships are more likely to experience health problems such as stroke, tuberculosis, cancer, and accidents. Additionally, the ability to establish relationships with others is a key factor in the health and well-being of adults (Mirsadeghi et al., 2018; Ostadzadeh et al., 2017).

Connecting with others is a reliable source for assisting cancer patients in coping with anxiety, depression, and feelings of insecurity, reducing mortality rates, enhancing quality of life, and negatively correlating with patient symptoms (Fox, 2023; Larsson, 2007). The quality of relationship with others refers to an individual's perception or experience of being loved, cared for, respected, empowered, and accepted as part of a communication network (Larsson, 2007; Stone et al., 2014).

Psychological capital, one of the variables that has shown high capacity in recent research for enhancing health and how individuals function in various work environments, is a conceptual construct under positive psychology characterized by: a) individual belief in their abilities to achieve success in specific tasks (self-efficacy); b) creating positive attributions about current and future successes (optimism); c) persistence in pursuing goals and following necessary strategies to achieve success (hope); and d) enduring difficulties and returning to normal levels of functioning or even improving upon them to achieve successes (resilience) (Mohammadi et al., 2021).

Maintaining and increasing hope is important at all ages and for all groups. The concept of hope for life refers to the number of years each individual expects to live. Hope leaves numerous signs and effects. Physically, a hopeful person is energetic and spends life with joy, welfare, and health, being assertive, alive, and with excellent readiness to face dangers. Emotionally, they exhibit optimism, vitality, calmness, harmony, dignity, free from anxiety and feelings of guilt and anger. Intellectually, they are alert, realistic, and also possess thinking, freedom of choice, and control over their life. Socially, they are inclined to communicate and interact with others, and psychologically, they have a meaningful and purposeful life philosophy (Luthans et al., 2014; Luthans et al., 2008; Luthans et al., 2007; Luthans et al., 2006). The high prevalence of breast cancer in young individuals and the role of psychological capitals in directing and controlling internal challenges and their impact on the formation of

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individual perceptions of the disease are influential. Pain is a common phenomenon in these patients, and it has recently been identified as playing a significant role in mental health and their quality of life, such that greater pain intensity leads to poorer performance in most components of mental health and social functioning scales (Keramati, 2021). Individuals with high self-efficacy in a threatening situation may experience a lower level of negative emotions. Self-efficacy is the extent of an individual's confidence in their ability to perform a series of actions and has been shown to be related to individuals' adaptation to cancer.

Another variable investigated in women with breast cancer is resilience, which is influenced by psychological capital and the quality of relationship with others. Resilience is one of the important components that has been focused on by researchers and specialists to assist cancer patients, meaning positive outcomes despite experiencing adversities and unpleasantness, positive and effective functioning in adverse conditions, and recovery after a significant blow (Huang et al., 2019; Kiaei et al., 2021). Resilience is a psychological subject that examines an individual's response in connection with stressful, harmful, and problematic life situations, like cancer (Lamond, 2018). The moral dimension of resilient individuals in fragile events and crises expands, they experience a greater sense of purpose in life, their compassion and kindness towards others' hardships increase, they maintain their psychological health, and their stress levels decrease (Chiesi et al., 2022; Emami et al., 2018). In contrast, an unresilient thinking style causes the individual to cling to incorrect beliefs and fundamental beliefs about the world and inappropriate problem-solving strategies that lead to the wastage of psychic energy (Heidarian et al., 2016; Huang et al., 2019).

Finally, self-regulation is another variable examined in women with breast cancer in the study, which is influenced by the quality of relationship with others and psychological capital. Self-regulation is used to manage emotions and stimulating emotional information and emphasizes the cognitive and mental aspect of coping with emotion. It is clear that self-regulation and the use of appropriate strategies play a significant role in adapting to the disease and enhancing the quality of life of cancer patients (Masoumi et al., 2022).

In general, given the population of individuals with breast cancer and the need for planning to improve their quality of life, resilience, interpersonal relationship quality, and self-regulation, this research aims to study the impact of psychological capital on resilience, the quality of relationship with others, and the self-regulation index of women with breast cancer. Considering these explanations, the high prevalence of breast cancer in young individuals and the role of psychological capital in directing and controlling internal challenges and their impact on forming individual perceptions of the disease, sufficient studies on disease perception as an effective factor on individual perceptions of their skills and abilities to successfully perform health-promoting behaviors in breast cancer patients have not been conducted, and in previous studies, the role of these factors has been examined separately. However, the interactive relationships of these positive factors with breast cancer have not been studied in a single model. Therefore, examining the relationships between these variables in this research is of importance and necessity. Thus, considering the presented discussions and research, the current study seeks to answer whether the quality of relationship with others and psychological capital play a role in predicting the resilience and self-regulation of women with breast cancer.

2. Methods and Materials

2.1. Study Design and Participants

The present study is applied in aim. In terms of method and nature, it falls within the category of descriptive-correlational research. The statistical population of this research includes all women diagnosed with breast cancer who attended hospitals in Shahroud and Semnan cities. In this study, the Green formula was used for sample selection. In this formula, the number of independent variables is added to the number 104 to obtain the minimum sample size. Therefore, considering the presence of 2 independent variables, the sample size in the current research should not be less than 106 individuals. For higher generalizability of the results and the possibility of some questionnaires being discarded, 215 questionnaires were distributed through purposive sampling, and eventually, 200 valid questionnaires were collected. The inclusion and exclusion criteria are explained below.

Inclusion criteria: Definite laboratory diagnosis and disease confirmation by a specialist according to the patient's record, having at least high school education, not being in a severe or acute stage of the disease (patients with a recurring – recoverable type), having at least six months of disease history, completing a consent form based on voluntary participation in the study.

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Exclusion criteria: Suffering from acute or chronic physical disorders (such as debilitating heart, respiratory, liver, musculoskeletal, and kidney diseases), having an addiction or consuming alcohol.

In the current research, after selecting the questionnaires and obtaining approval from the supervising professor, the researcher visited the Amiralmomenin and Kowsar hospitals in Semnan city and Imam Hossein hospital in Shahroud (hospitals that agreed to cooperate with the researcher). After introducing themselves as a student and their research method, the questionnaires were handed over to the hospital management. After their review, it was agreed that the hospitals would distribute the questionnaires to the patients and collect them afterward for the researcher. Eventually, 191 questionnaires were collected for analysis (76 from Amiralmomenin Hospital, 60 from Kowsar Hospital, and 55 from Imam Hossein Hospital).

2.2. Measures

Relationship Quality Questionnaire: The Relationship Quality Inventory (QRI) developed by Pierce et al. (1991) consists of 25 items and 3 subscales: perceived social support (7 items), interpersonal conflicts (12 items), and relationship depth (6 items). Each of the 25 items requires the individual to assess their relationship quality with parents, friends, and spouse. The possible scores range from 25 to 100, categorized as low relationship quality (25 to 50 points), medium relationship quality (50 to 65 points), and high relationship quality (higher than 62 points). The test-retest reliability for the entire questionnaire was 0.83, and for the subscales, it was above 0.70 (Sheivandi Cholicheh et al., 2023).

Luthans' Psychological Capital Scale: This questionnaire was prepared by Luthans et al. (2007). It consists of standardized values widely used to measure constructs such as hope, resilience, optimism, and self-efficacy, with proven validity and reliability. The questionnaire has 24 questions, with each subscale including 6 items. Respondents rate each item on a 6-point Likert scale (strongly disagree to strongly agree). The chi-square ratio of this test is 24.6, and the CFI and RMSEA statistics for this model are respectively 0.97 and 0.80 (Luthans & Avolio, 2007). Luthans and his colleagues reported the questionnaire's reliability above 0.90. In Iran, Ghadimi-Nouran, Yousefi (2015) obtained a Cronbach's alpha reliability of 0.92 and sequential theta of 0.926 for this questionnaire (Saadati & Parsakia, 2023).

Resilience Questionnaire: This questionnaire was developed by Connor and Davidson (2003). The Connor-Davidson Resilience Scale has 25 statements rated on a Likert scale from zero (not true at all) to five (true nearly all the time), thus the score range is between 0 to 100. Higher scores indicate greater resilience of the respondent. Connor and Davidson reported a Cronbach's alpha coefficient for the resilience scale as 0.89. The test-retest reliability over a 4-week interval was 0.87. External validity: Scores on the Connor-Davidson Resilience Scale were positively and significantly correlated with Kobasa's hardiness scores and negatively correlated with scores on the Perceived Stress Scale and Sheehan's vulnerability to stress scale, indicating the concurrent validity of this scale. Discriminant validity: The scores on the Connor-Davidson Resilience Scale at the beginning and end of the experiment did not significantly correlate with scores on the Arizona Sexual Experience Scale, indicating the discriminant validity of the test. Iranian reliability: This scale was normed in Iran by Mohammadi (2005), who reported a Cronbach's alpha reliability of 0.89 using the method. Iranian validity: To determine the validity of this scale, first, the correlation of each statement with the total score was calculated, and then factor analysis was employed. Correlation of each score with the total score, excluding statement 3, showed coefficients between 0.41 and 0.64. Then, the scale's statements were subjected to factor analysis using the principal component method. Before extracting factors based on the correlation matrix of the statement, the KMO index was 0.87, and the chi-square value in the Bartlett's test of sphericity was 5556.28, both indices indicating the sufficiency of evidence for conducting factor analysis (Ghorbani Amir et al., 2023).

Bouffard's Self-regulation Questionnaire: Bouffard's Self-regulation Questionnaire (1995) is a 14-item questionnaire designed based on Bandura's socio-cognitive theory to measure self-regulation, assessing cognitive and metacognitive self-regulation strategies on a Likert scale. The overall reliability of Bouffard's Self-regulation Questionnaire based on Cronbach's alpha was 0.71, with the cognitive strategy subscale at 0.70 and the metacognitive subscale at 0.68. The test's reliability in a study conducted by Gholami in 2003 was reported as 0.63. Additionally, the reliability of the test in research by Nikdel (2006), Arabzadeh (2008) was reported as 0.67 and 0.69 respectively. The reliability of Bouffard's Self-regulation Questionnaire in a study by Talebzadeh et al. (2012) was obtained as 0.76 through a pilot test on 30 students using Cronbach's alpha. Factor analysis results showed that the

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correlation between questions was appropriate, and the factor loadings were at an acceptable level, indicating satisfactory validity (Sayedi et al., 2017).

2.3. Data Analysis

Data were analyzed using SPSS software version 22 and regression analysis method.

3. Findings and Results

Table 1 shows the descriptive statistics of the participants.

Table 1

Demographic Information and Descriptive Statistics

Variable	Mean	SD
Perceived Social Support	2.89	0.38
Interpersonal Conflicts	3.04	0.53
Relationship Depth	2.94	0.44
Hope	2.89	0.45
Resilience	2.78	0.57
Optimism	2.98	0.27
Self-Efficacy	2.79	0.28
Resilience	3.20	0.26
Self-Regulation	3.27	0.54

Note. All scores are inserted as standardized value between 0 and 5.

Prior to conducting the multivariate regression analyses, we meticulously examined the underlying assumptions to ensure the validity of our results. First, we confirmed the assumption of linearity by visually inspecting scatterplots of the independent variables against the dependent variables, which indicated a linear relationship. Next, the assumption of homoscedasticity was assessed through the inspection of residual scatterplots, revealing a constant variance of residuals across the predicted values. The Durbin-Watson statistic was employed to test for autocorrelation among residuals, yielding a value of 1.98 for resilience and 2.03 for self-regulation, both indicating that the assumption of independence of errors was satisfactorily met (values close to 2.0 suggest no autocorrelation). Additionally, the absence of multicollinearity was confirmed by examining the Variance Inflation Factor (VIF), where all values were found to be below the threshold of 5, suggesting no significant multicollinearity issues among predictors. Finally, the assumption of normality of residuals was verified using the Shapiro-Wilk test, which resulted in p-values of .15 for resilience and .17 for self-regulation, thereby not rejecting the null hypothesis of normality. Collectively, these analyses affirm that the regression model assumptions were adequately met, supporting the reliability of the subsequent regression analyses.

Table 2

Summary of Multivariate Regression Model Conducted Simultaneously to Investigate the Impact of Relationship Quality with Others and Psychological Capital on Resilience

	Correlation Coefficient	Determination Coefficient (R^2)	Adjusted Determination Coefficient (Adj R^2)	Standard Error of Estimate
Value	0.587	0.344	0.319	6.796

Table 3

Regression Path Coefficients and Significance Test of Coefficients

Variable	Standard Coefficient (B)	Standard Error	t-Value	Significance Level
Constant	45.568	5.500	---	8.284
Perceived Social Support	.425	.235	3.805	.001
Interpersonal Conflicts	.002	.078	.020	.984

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Relationship Depth	.351	.285	2.811	.001
Hope	.706	.223	7.169	.001
Resilience	.372	.219	4.694	.001
Optimism	.107	.179	.597	.551
Self-Efficacy	.319	.211	2.510	.013

The results of Table 2 show that the correlation coefficient between the variables of relationship quality with others and psychological capital with resilience is 0.587. Also, according to the R^2 determination coefficient, it is evident that the variables of relationship quality with others and psychological capital collectively predict 34.4% of resilience.

Path coefficients and significance levels of variables are presented in Table 3. Based on the B coefficients column, it is evident that the variables of perceived social support (t-value = 3.805, β = 0.425), relationship depth (t-value = 2.811, β = 0.351), hope (t-value = 7.169, β = 0.706), resilience (t-value = 4.694, β = 0.372), and self-efficacy (t-value = 2.510, β = 0.319) have a significant positive effect on the resilience of women with breast cancer. Meanwhile, variables of interpersonal conflicts (t-value = 0.020, β = 0.002) and optimism (t-value = 0.597, β = 0.107) do not have a significant impact on resilience.

Table 4

Summary of Multivariate Regression Model Conducted Simultaneously to Investigate the Impact of Relationship Quality with Others and Psychological Capital on Self-Regulation

	Correlation Coefficient	Determination Coefficient (R^2)	Adjusted Determination Coefficient (Adj R^2)	Standard Error of Estimate
Value	0.629	0.396	0.373	5.275

Table 5

Regression Path Coefficients and Significance Test of Coefficients

Variable	Standard Coefficient (B)	Standard Error	t-Value	Significance Level
Constant	21.388	4.270	---	5.009
Perceived Social Support	.193	.183	2.059	.021
Interpersonal Conflicts	-.013	-.061	-.220	.826
Relationship Depth	.268	.221	3.212	.001
Hope	.315	.173	4.822	.001
Resilience	.616	.170	5.618	.001
Optimism	-.106	-.139	-.762	.447
Self-Efficacy	.487	.164	4.975	.001

The results of Table 4 show that the correlation coefficient between the variables of relationship quality with others and psychological capital with self-regulation is 0.629. Also, according to the R^2 determination coefficient, it is evident that the variables of relationship quality with others and psychological capital collectively predict 39.6% of self-regulation.

Path coefficients and significance levels of variables are presented in Table 5. Based on the B coefficients column, it is evident that the variables of perceived social support (t-value = 2.059, β = 0.193), relationship depth (t-value = 3.212, β = 0.268), hope (t-value = 4.822, β = 0.315), resilience (t-value = 5.618, β = 0.616), and self-efficacy (t-value = 4.975, β = 0.487) have a significant positive effect on the self-regulation of women with breast cancer. Meanwhile, variables of interpersonal conflicts (t-value = -0.013, β = -0.220) and optimism (t-value = -0.762, β = -0.048) do not have a significant impact on self-regulation.

4. Discussion and Conclusion

The results of the data analysis indicated a positive relationship between relationship quality with others and psychological capital with resilience in women with breast cancer. These findings are consistent with the prior findings that showed connecting with others significantly improved the resilience of breast cancer patients (Chiesi et al., 2022; Huang et al., 2019; Lin et al., 2022). Others also mentioned psychological capital as a strong predictor for resilience (Luthans et al., 2007). Studies further demonstrated that symptom scales in the quality of life of breast cancer patients

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improve due to psychological capital (Keramati, 2021). Additionally, improving body image reduces anxiety and increases resilience in women with breast cancer. From the obtained results, it can be argued that close relationships with family, friends, colleagues, and other individuals in society can provide social support. The presence of individuals who care for and are willing to listen to the concerns and worries of women with breast cancer can enhance the sense of support and coping ability, having a positive effect on their resilience. Psychological capital can also help women with breast cancer better cope with the stresses and psychological pressures associated with the disease, potentially experiencing a lower level of negative emotions in a threatening situation. However, it is important to note that each individual and their life situation is unique, so the impact of psychological capital may manifest differently in each person.

The results also showed a positive relationship between relationship quality with others and self-regulation in women with breast cancer. These findings align with the prior results (Masoumi et al., 2022). From the obtained results, it can be argued that close relationships and social support from loved ones and close individuals to women with breast cancer can help strengthen self-regulation. The presence of people who offer support and companionship with empathy and understanding can enhance self-esteem, increase morale and resilience in women. Moreover, interacting with others and exposure to their perspectives can offer women greater psychological flexibility in dealing with stresses, new situations, and challenges associated with breast cancer. Interacting with others and the ability to accept different opinions and thoughts can assist women in improving their self-regulation ability and adapt to new situations. Psychological capital, as a set of internal resources used by an individual against life's problems and stresses, includes factors such as self-awareness, self-confidence, hope, and resilience. When facing breast cancer, women may encounter psychological issues like anxiety, depression, and stress. A strong psychological capital can help them cope with these challenges and experience improved self-regulation. In other words, women who have a proper understanding of themselves, their needs, and emotions can better cope with the psychological and physical changes associated with breast cancer and find appropriate ways to care for themselves. Self-confidence also helps women to utilize their strengths and abilities to confront cancer and its treatment. Having hope allows women to persist in facing the psychological and physical challenges associated with breast cancer and to recover.

This study also had limitations. Since this research was conducted among women with breast cancer attending hospitals in the cities of Shahroud and Semnan, the results cannot be generalized to other women. Therefore, it is suggested that this research be conducted in a broader community and different groups of patients across the country.

Authors' Contributions

All authors contributed equally.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the interview and participated in the research with informed consent.

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