

# The causal relationship between perceived stress, perceived social support, and resilience with emotional adaptation mediated by body image of breast cancer patients

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## Abstract

**Background:** Breast cancer acts as a leading source of stress in the patient beside being a major challenge for family relationships.

**Objectives:** The present study aims to investigate the causal relationship between perceived stress, perceived social support, and resilience with emotional adaptation by mediating body image in breast cancer patients.

**Methods:** The statistical population of this descriptive-correlational research was cancer patients referred to Khatam hospital, Tehran from October to December 2019. Two hundred samples were selected by Cochran formula using the purposeful sampling method. The used instruments in this study were the Perceived Stress Scale (1983), Perceived Social Support (1988), Resilience (2002), Emotional Adjustment (1961). The proposed model was evaluated by using the path analysis method. Correlation tests such as Pearson correlation coefficient and regression test were used to test the relationships.

**Results:** The proposed model had a goodness of fit based on the results of this study. The results indicated that all direct pathways were significant except for perceived social support. Non-linear correlations between perceived social support and body image adjustment were reported to be 0.22 which was statistically significant. Non-linear correlations between resilience and body image compatibility were reported to be 0.0001 which was not statistically significant.

**Conclusion:** Body image has a mediating role in the relationship between perceived social support, perceived stress and resilience with life satisfaction.

**Keywords:** Body image, Breast cancer, Emotional adjustment, Perceived stress, Perceived social support, Resilience

## 1. Introduction

Women with breast cancer had suffered a traumatic life event. The disorders associated with stress, medical treatments and their problems, concerns about the future of the disease and survival affect the disease. Coping with the stress of life-threatening diseases cannot be considered as an individual phenomenon, rather the mutual relationship of the families is better to be noticed which is affected by the consequences of chronic diseases. Breast cancer is a threat to both the patient and the family relationships. Understanding social support can prevent occurring of undesirable physiological factors of the disease and increasing the amount of self-care which positively impact the physical, mental and social status of the individual. Social support is the strongest coping factor in cancer patients for a successful and easy confrontation with the disease and which facilitates tolerating problems in stressful conditions (1).

Resilience is one of the factors in controlling stress. Studies proved that people with high level of resilience have lower levels of avoidance toward their pain and did not have a catastrophic attitude or can usually cope with it (2). Also, the symptoms of depression in these people are reduced due to their efficient coping. The patients' resilience slowly decreases due to the long course of the disease and they move towards painful conditions (3).

Social support and resilience are referred to as healing factors based on the research results. The negative effects and resistance to cope with these conditions can be reduced if these factors are strengthened and improved in those who are suffering from traumatic conditions such as cancer. Social support is a social network which provides people with tangible psychological resources which constantly emphasizes the role of social adjustments of stress with stressful living conditions and daily problems (4). Social support of the patient affects the emotional adjustment

according to the mediating effect of the patient's mental image. The positive picture of social support can play an effective role in the emotional adjustment of the patient. However, the patient's emotional adjustment may be strained if mental image of social support is a form of pity. Resilience is another indicator that affects emotional adjustment. Having a fighting spirit toward the disease and more resilience against therapeutic problems, along with satisfaction with past life and hope of continuing to live can have a positive effect on emotional adjustment. The effect of resilience on emotional adjustment is certainly complex. The positive effects of emotional adjustment can be revealed in the absence of resilience and submission to cancer. This study investigates the effect of mentioned variables on emotional adjustment and life satisfaction (5).

Emotional adjustment is a factor which is affected by stress. A cancer patient's emotional adjustment is affected and may move towards inconsistency when he feels stressful and separate from relatives. Piaget's theory of adapting to the concept of extroversion, changes the exogenous cognition of the individual according to the internals in which a kind of adaptation is created between schemas and reality around the individual (7). One of the dimensions of adjustment is an emotional adjustment which refers to a set of psychological states, such as optimal mental health, individual life satisfaction, and the relationship between emotions, activity, and thoughts. Emotional adjustment can be also assumed as a mechanism by which a person reaches emotional stability. Emotional adjustment requires self-knowledge, awareness of the abilities, and acceptance of shortcomings. Low levels of emotional adjustment is leading to the lack of self-knowledge and self-awareness, which reducing self-esteem and failing to respond positively to the needs (8).

The physical appearance of those affected by the disease is very important factor in body image. Mastectomy is destructing a part of the body which represents all of the maternal dimensions. The possibility of losing one or both breasts is the major concern of breast cancer patients. Those who underwent a mastectomy may experience many problems in the field of body images such as body unrest, hopelessness, and low self-esteem after the mastectomy. Body image is not related to the individual's appearance but is related to beliefs, thoughts, emotions, and the person's special relationship with his body (9).

## 2. Objectives

Therefore, the present study aims to investigate the causal relationship between perceived stress, perceived social support, and resilience with emotional adjustment mediated by body image in breast cancer patients according to the above-mentioned materials and the importance of the subject.

## 3. Methods

The statistical population of this descriptive-correlational study was cancer patients referred to Khatam hospital, Tehran from October to December 2019. Two hundred people were selected by purposeful sampling method for each obvious variable in the modeling study. Inclusion criteria were: at least one year

after breast cancer, physician's approval, high school diploma, no acute or chronic medical disease such as epilepsy, osteochondrodysplasia, heart and respiratory failure, and no severe mental illnesses such as psychosis and distraction. Exclusion criteria were incomplete information or poor cooperation.

Following the ethical considerations of the research, all individuals orally received information about the research and participated voluntarily. They also ensured that their full name and information was confidential and the data would be only used for research purposes. The method of implementation was explaining how to complete the questionnaires and obtaining informed consent from the participants. Then, the participants completed the questionnaires and 200 questionnaires were returned to be analyzed. The power and fitness indicators of the model showed the adequacy of the sample size. This article is derived from the first author's Ph.D. dissertation with the code of ethics IR.IAU.AHVAVZ.REC.1398.019 from Islamic Azad University, Ahvaz Branch.

### 3.1. Perceived Stress Scale:

Cohen and his colleagues introduced a Perceived Stress Scale in 1983 to measure the degree of stressful life situations. Its three versions of PSS-4, PSS-10, and PSS-14 have been used to measure perceived stress in the last month. This scale also examines risk factors in behavior disorders and stressful relationships. The perceived stress scale measures two subscales: a) The subscale of negative perception of stress includes items 1, 2, 3, 4, 11, 12 and 14. b) A positively perceived subscale of stress includes items 5, 6, 7, 8, 9, 10, and 13, which are scored reversely.

This questionnaire has been used in Gunacon countries and therefore it has been translated into different languages to be used in many countries (10). Cronbach's alpha coefficient of the main scale and the Japanese version were 0.88 and 0.81 in a study on Japanese students, respectively. Also, this scale was used by Maroufizadeh et al. (11) in an intercultural study in which the alpha coefficient was 0.81 for Iranian participants and 0.86 for Americans. Reliability of the instrument in this study was 0.87 obtained by Cronbach's alpha method.

### 3.2. Perceived Social Support Questionnaire:

The multidimensional Perceived Social Support Scale (MSPSS) is a 12-item tool for evaluating perceived social support by Simt et al. (1988). It has three subscales: family (items 3, 4, 8, and 11), friends (items 6, 7, 9, and 12), and significant others (items 1, 2, 5, and 10). MSPSS is a simple and time-affected tool that has been used in many types of research. Smith et al. presented the validity of multidimensional perceived social support scale with good factor and concurrent validity in the research as it is inversely associated with depression and coronary heart disease in type A (13). The alpha coefficient in Ekbäck et al.'s test was 0.91 and that of its subscales ranged from 0.90 to 0.95 (13). The internal consistency coefficient of this questionnaire was 0.77, 0.82 and 0.79 for three subscales of family, friends and important individuals, respectively.

### 3.3. Resilience Questionnaire:

Connor-Davidson Resilience Questionnaire designed in 2002 which consisted of 25 items to measure the strength of coping with pressure and threat. Each spectrum is grading from one (completely incorrect) up to five (always true). This scale has a total score, though it measures different dimensions of resilience. Connor and Davidson reported that the reliability of the scale as Cronbach's alpha coefficient of resilience scale (0.89). Also, the re-test reliability coefficient was 0.87 in a 4-week interval (14).

### 3.4. Emotional Adjustment Questionnaire:

Bell's Adjustment Inventory developed in 1961 which consisted of 160 yes, no and don't know questions. Answering yes has one score and no is zero. The coping scales are the students and the adults which measure different areas of adjustment in social, emotional, educational, physical, and family fields. Each of these subscales is composed of 32 questions with a high score in the emotional subscale indicating instability of the emotional context. The reliability of this questionnaire was reported in an internal study as emotional adjustment 0.91, social 0.88, education 0.85, physical 0.91, family 0.82, an overall 0.94 (15).

### 3.5. The body image scale (BIS):

The body image scale (BIS) which designed in 2001 by Hopwood et al., is a 10-item measure to briefly and comprehensively assess affective (e.g. feeling self-conscious), behavioral (e.g. difficulty with looking at the naked body) and cognitive (e.g. satisfaction with appearance) dimensions of body image in cancer patients. It is designed to use with any cancer and its treatment. It uses a 4-point response scale (0 = not at all to 3 = very much). The final score is the sum of the 10 items, ranging from 0 to 30, which zero represents no symptom or distress and higher scores corresponds to increasing symptoms, distress and body image concerns. Although, in the preliminary version of the scale five questions were presented positively, the authors redrafted the scale and present all items negatively after the initial field testing in order to avoid some possible discomfort in responding to the positively phrased items (e.g., Have you felt feminine/masculine?). The original version revealed a single-factor solution and good psychometric characteristics with adequate reliability (Cronbach's alpha= 0.93) and adequate validity (16).

The Kolmogorov-Smirnov test was performed in the

inferential statistics section to determine whether the distribution of the research data was normal. According to this test, parametric statistical tests were used if the distribution of research data is normal. Nonparametric statistical tests were used if the distribution of research data is not normal. After data collection, data were gathered via questionnaires and were coded and analyzed by using SPSS V16 and AMOS software V23, which were performed by using correlation tests such as Pearson correlation coefficient and regression test.

## 4. Results

The mean (standard deviation) age of the participants was 41.7±6.6.

There was no missing data in this study. Shapiro-Wilk test was used to investigate the normality of variables in this study. The results presented that all variables had a significance level greater than 0.05, which confirmed the normality of the studied variables and the assumption of normality. Multiple linear regression was investigated in this study using tolerance interval and variance inflation factor (VIF). The assumption of multiple non-linearity has been observed in table 3-4 as the factor of variance inflation was less than 10 and tolerance statistics were more than 0.1. Durbin-Watson statistic was used to investigate the independence of errors.

The obtained amount of the study was 1.95 which is in the range of 1.5-2.5. This amount indicates compliance with the assumption of independence of errors. In the following table, simple correlation coefficients are presented between the research variables in all subjects.

As presented in Table 2, correlation coefficients among all the other variables of the study were significant at the level of  $p < 0.01$ . Path analysis was used to evaluate the proposed model of this research by using AMOS and maximum likelihood estimation. Our proposed model investigated six variables of the emotional adjustment variable as endogenous variable (melancholy), perceived stress variable, resilience and social support of perception as exogenous variables, as well as life satisfaction and body image variable as mediator variable.

According to the data presented in Table 3, the estimation of The Root Mean Square Error of Approximation (RMSEA= 0.16) shows that the proposed model needs to be modified. The relationship between resilience and body image as well as that of resilience and emotional adjustment has been eliminated and the final model is obtained as follows.

**Table 1.** Descriptive findings related to research variables for all subjects

Variables	M	SD
Compatibility	14.98	4.85
Body Image	14.42	6.34
Stress	24.28	8.7
Social support	61.51	17.91
Resilience	60.32	17.37
Life Satisfaction	20.65	6.95

**Table 2.** Correlation coefficients between research variables in all subjects

Variables	1	2	3	4	5	6
Compatibility	1					
Body Image	0.82	1				
Stress	-0.33	-0.48	1			
Social support	0.34	0.39	-0.29	1		
Resilience	0.19	0.24	-0.13	0.67	1	
Life Satisfaction	0.32	0.44	-0.39	0.53	0.52	1

**Table 3.** Good indicators of the initial model in standard mode

Goodness of fit indices	df	$\frac{\chi^2}{df}$	P	IFI	CFI	NFI	RMSEA
Final model	1	2.36	0.19	0.99	0.98	0.98	0.16

**Table 4.** Direct effects in path coefficients between research variables in the initial and final standard model

Paths	Final Model	
	$\beta$	P
Perceived stress-emotional adjustment	0.05	0.04
Social Support - Emotional Adjustment	---	-
Resilience-Emotional Adjustment	---	-
Perceived stress-life satisfaction	-0.28	0.01
Perceived stress-body image	-0.44	0.01
Social support-life satisfaction	0.28	0.03
Social support-body image	0.28	0.02
Resilience-Life Satisfaction	0.34	0.001
Resilience - Body Image	---	--
Life Satisfaction-Emotional Adjustment	0.41	0.04
Body image - emotional adjustment	0.88	0.001

## Discussion

The aim of this study was to investigate the causal relationship between perceived stress, perceived social support, and resilience with emotional adjustment mediated by body image in breast cancer patients. The results showed that the proposed model had a good grace. The results of this study were in line with Imani and good method research.

There is an indirect relationship between perceived stress and emotional adjustment through body image which is the image that we have of our apparent body. Understanding inner-self and alternation in bodily and mental status are the basis of self-understand. Body image is an individual's perceptions and attitudes about their own body, especially about the physical appearance (17). Women socially adapt to get credit for their value in relation to others from early years of their lives and society tends to reward them by their lean bodies (18). Describing the feeling of a person losing one or both of the breasts is very difficult which means the end of womanliness to that person. A woman who encounters breast cancer is likely to avoid intimacy with other people and may even going to the bathroom, because of a defect in her body (19).

There is an indirect relationship between perceived social support and emotional adjustment through body image. Receiving higher level of social support in the face of life crises is more beneficial than the verbal encouragements of associates. According to Bandura,

one of the effective ways to foster self-efficacy is to receive verbal persuasion from the associates, so they experience more adequacy and efficiency in overcoming problems (20). They can also solve problems artistically by alleviating excitement healthy alongside their sources of support during their life.

In addition, receiving social support improves the self-esteem and the level of resilience. In fact, those consider their existence valuable, competent, and worthy who are supported by their relatives. This attitude assists people not giving up on problems and working more patiently to overcome problems (21). Life is not considered aimless with strong supportive resources. Social support affects resilience (22) by nurturing meaning in the life and making it meaningful in a special framework to experience more positive emotions and distance from negative emotions such as anxiety and express resilience better in the face of hardships.

There is an indirect relationship between resilience and emotional adjustment through body image. It can be said that mastectomy patients experience negative physical image as the surgery makes them feeling a kind of loss or due to the negative reaction of their spouses. Such evidence suggests that body image disorder relates to the marital satisfaction. A decrease in marital satisfaction and spouse's dissatisfaction are predicted, particularly (23).

An asymmetric breast tissue is a constant reminiscent of the body's relationship with its imagination, sexual

identity, and sexual description which is always reminded the patient of the possibility of relapse or metastasis. It is believed that sexual identity (sexual self-esteem, sexual events, and sexual satisfaction) and body image are important in the overall psychological well-being and life satisfaction in all people. These people are faced with some issues such as feelings of social isolation, fear of the spouse's reaction, preference of being celibacy, fear of death, sterilization due to various treatments and loss of attractiveness (24).

One of the limitations of this study is in the self-reporting method. Participants are likely to be biased. The results cannot be extended to the time and place. Fail to control some of the variables affecting the results of the study such as duration and severity of the disease were among the other limitations of this study. Poor cooperation of some of the statistical population as they considered it time-consuming. Inaccuracy of respondents in providing information despite the given explanations on the confidentiality of the questionnaire.

It is suggested that the duration and the severity of the disease could be investigated in future studies. It is also recommended to use other methods such as interviewing the patients to obtain information. Representing effective factors in improving the quality of life in cancer patients from the experts' view, social support and resilience methods for cancer patients, studies with bigger sample size are valuable in the future studies.

Using the results of this study to familiarize health care providers in improving the related matters would be a great idea. Additionally, the consequences of treatment and quality of life in patients with cancer should be studied in a research and finally, it is suggested that life satisfaction in cancer patients could be compared with patients with other chronic diseases.

## 6. Conclusion

Body image played a mediating role in the relationship between perceived social support, perceived stress and resilience with life satisfaction.

## References

1. Wang AW, Bouchard LC, Gudenkauf LM, Jutagir DR, Fisher HM, Jacobs JM, Blomberg BB, Lechner SC, Carver CS, Antoni MH. Differential psychological effects of cognitive-behavioral stress management among breast cancer patients with high and low initial cancer-specific distress. *Journal of psychosomatic research*. 2018 Oct 1;113:52-7.
2. Rezaei M, Elyasi F, Hamzehgardeshi Z, Janbabai G, Moosazadeh M. Stress Management in Patients with Breast Cancer Using a Supportive Approach: A systematic Review. *Archives of Breast Cancer*. 2019 Feb 28;6-16.
3. Tang M, Liu X, Wu Q, Shi Y. The Effects of Cognitive-Behavioral Stress Management for Breast Cancer Patients: A Systematic Review and Meta-analysis of Randomized Controlled Trials. *Cancer Nursing*. 2020 May 1;43(3):222-37.
4. Burton NW, Pakenham KI, Brown WJ. Feasibility and effectiveness of psychosocial resilience training: a pilot study of the READY program. *Psychology, health &*

*medicine*. 2010 May 1;15(3):266-77.

5. Masten AS. Resilience theory and research on children and families: Past, present, and promise. *Journal of Family Theory & Review*. 2018 Mar;10(1):12-31.
6. Soundy A, Benson J, Dawes H, Smith B, Collett J, Meaney A. Understanding hope in patients with Multiple Sclerosis. *Physiotherapy*. 2012 Dec 1;98(4):344-50.
7. Li MY, Yang YL, Liu L, Wang L. Effects of social support, hope and resilience on quality of life among Chinese bladder cancer patients: a cross-sectional study. *Health and quality of life outcomes*. 2016 Dec 1;14(1):73.
8. Somasundaram RO, Devamani KA. A comparative study on resilience, perceived social support and hopelessness among cancer patients treated with curative and palliative care. *Indian journal of palliative care*. 2016 Apr;22(2):135.
9. Kazantzaki E, Kondylakis H, Koumakis L, Marias K, Tsiknakis M, Fioretti C, Gorini A, Mazzocco K, Renzi C, Pravettoni G. Psycho-emotional tools for better treatment adherence and therapeutic outcomes for cancer patients. *pHealth*. 2016 Jun 16;2016:129-34.
10. Lee EH. Review of the psychometric evidence of the perceived stress scale. *Asian nursing research*. 2012 Dec 1;6(4):121-7.
11. Maroufizadeh S, Foroudifard F, Navid B, Ezabadi Z, Sobati B, Omani-Samani R. The Perceived Stress Scale (PSS-10) in women experiencing infertility: A reliability and validity study. *Middle East Fertility Society Journal*. 2018 Dec 1;23(4):456-9.
12. Ekbäck M, Benzein E, Lindberg M, Årestedt K. The Swedish version of the multidimensional scale of perceived social support (MSPSS)-a psychometric evaluation study in women with hirsutism and nursing students. *Health and quality of life outcomes*. 2013 Dec 1;11(1):168.
13. Keyhani M, Taghvaei D, Rajabi A, Amirpour B. Internal consistency and confirmatory factor analysis of the Connor-Davidson Resilience Scale (CD-RISC) among nursing female. *Iranian journal of medical education*. 2015 Jan 10;14(10):857-65.
14. Bazrafshan MR, Abdi A, Masmouei B, Kavi E, Abshorshori N, Akbari L, Faramarzian Z, Zakeri M. The relation of social happiness and adjustment with vandalistic behaviour of the children and young adults in the families under supervision of welfare office. *Journal of Clinical and Diagnostic Research*. 2018;12(8):5-9.
15. Hopwood P, Fletcher I, Lee A, Al Ghazal S. A body image scale for use with cancer patients. *European journal of cancer*. 2001 Jan 1;37(2):189-97.
16. Martin AJ, Marsh HW. Academic resilience and academic buoyancy: Multidimensional and hierarchical conceptual framing of causes, correlates and cognate constructs. *Oxford Review of Education*. 2009 Jun 1;35(3):353-70.
17. Uchino BN, de Grey RG, Cronan S, Smith TW, Diener E, Joel S, Bosch J. Life satisfaction and inflammation in couples: An actor-partner analysis. *Journal of behavioral medicine*. 2018 Feb 1;41(1):22-30.
18. Zarei F, Akbarzadeh I, Khosravi A. Self-Esteem Mediates the Relationship between Emotional Intelligence and Life Satisfaction in Iranian Students. *International Journal of Health Studies*. 2019 Dec 28;5(4):22-31.



19. Wright KB. Emotional support and perceived stress among college students using Facebook. com: An exploration of the relationship between source perceptions and emotional support. *Communication Research Reports*. 2012 Jul 20;29(3):175-84.
20. Makhanya BP, Mabuza DC. Body cathexis and fit preferences of young South African women of different body shapes and ethnicity. *International Journal of Fashion Design, Technology and Education*. 2020 May 26:1-8.
21. Bourne PA, Morris C, Eldemire-Shearer D. Re-testing theories on the correlations of health status, life satisfaction and happiness. *North American journal of medical sciences*. 2010 Jul;2(7):311.
22. Sayehmiri K, Azami M, Mohammadi Y, Soleymani A, Tardeh Z. The association between selenium and prostate cancer: a systematic review and meta-analysis. *Asian Pacific journal of cancer prevention: APJCP*. 2018;19(6):1431.
23. Penniecook-Sawyers JA, Jaceldo-Siegl K, Fan J, Beeson L, Knutsen S, Herring P, Fraser GE. Vegetarian dietary patterns and the risk of breast cancer in a low-risk population. *British Journal of Nutrition*. 2016 May;115(10):1790-7.
24. Brunsting NC, Zachry C, Liu J, Bryant R, Fang X, Wu S, Luo Z. Sources of Perceived Social Support, Social-Emotional Experiences, and Psychological Well-Being of International Students. *The Journal of Experimental Education*. 2019 Aug 14:1-7.