

Self-Compassion: The Factor That Explains a Relationship between Perceived Social Support and Emotional Self-Regulation in Psychological Well-Being of Breast Cancer Survivors

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Abstract

Objective: Perceived social support (PSS) and emotional self-regulation have customarily been related to greater psychological well-being, but the pathways via which perceived social support and emotional self-regulation increase psychological well-being have not been revealed. We investigated how much self-compassion mediated the association between perceived social support and emotional self-regulation in psychological well-being of breast cancer sufferers.

Method: A cross-sectional study design was used. Participants were recruited from three oncology departments in Zanjan, Iran. Data was collected from breast cancer patients (n = 300). Participants completed self-report measures, the short Ryff scale Psychological Well-being (RSPWB), Emotion Regulation Questionnaire (ERQ), Multidimensional Scale of Perceived Social Support (MSPSS) and Self-Compassion Scale (SCS). Pearson correlation coefficient was used to assess association among the study variables and multivariable regression analysis was used to assess linear relationships among predictor variables (emotional self-regulation, perceived social support and self-compassion) and criterion variable (psychological well-being). Bootstrapping analyses were used to test the significance on indirect effects.

Results: Bootstrapping analyses revealed significant indirect effects of perceived social support ($\beta = 0.055$, SE = 0.45, P = 0.049, 0.95 CI: LL = 0.0092, UL = 0.1345) and emotional self-regulation ($\beta = 0.079$, SE = 0.079, P = 0.004, 0.95 CI: LL = -0.0331, UL = -0.1358) on psychological well-being through self-compassion.

Conclusion: These findings present new evidence that self-compassion may be a target for psychological interventions attempted at enhancing psychological well-being in cancer populations, particularly breast cancer survivors.

Key words: *Breast Cancer; Emotional Self-Regulation; Mental Health; Perceived Social Support; Self-Compassion*

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No one can deny that nowadays because of social and industrial improvements, repertoire of diseases has changed. Cancer is a chronic disease that affects patients' quality of life quality, behavior, emotions and cognition. In addition, Breast cancer is a life-threatening event accompanied with physical and psychological consequences (1-3) that may occur after fruitful medical treatments (4). A cancer diagnosis might be a traumatizing event for any individual who experiences it (5). Following diagnosis and during treatment, women may experience many challenges to their physical, emotional and psychological well-being (6). All of these insults will have an unfavorable impact on patients' well-being, daily functioning and efforts at returning to normal routines (7). In contrast, many factors such as emotional self-regulation (8), perceived social support (9) and self-compassion (10) improve the sense of psychological well-being. People are more able to overcome extreme depression, fear, and other psychiatric disorders if they treat themselves with compassion and recognize that they are not alone in their pain. Self-compassion is a relatively new dispositional approach that suggests how directing self-compassion can be a defense against suffering (11). Compassion is an intimate reflection of one's thoughts, feelings, and behaviors, and it is what enables one to be fully compassionate towards others (12). Compassion includes caring for people in need and motivation to improve and use caring skills (13).

Greater compassion leads to lesser depression and anxiety in mental health (10) and more physical health (14). Compassion helps people regulate their emotions through self-healing when facing difficulties, especially suffering, including cancer, which is beyond their direct control (12). Gradual impairment of emotional self-regulation is considered to be a main process fundamental to improvement and continuation of psychological disorders (15). Emotional self-regulation is defined as the ability to manage and control what emotions are expressed when they are expressed to shape emotional experiences (8). Experiencing meaningful events and events relevant to goals result in emotional responses (16). Emotional self-regulation in patients with breast cancer has been linked to their adaptation, well-being and quality of life (17).

Patients with sense of control can better regulate their negative emotions including anger, reinforce past relationships and control their therapeutic processes (18). It is evident that social support is a powerful and protective resource for better psychological well-being (19). Perceived social support (PSS) refers to the belief that others focus on that person and that the person has a dependable interpersonal organization to use when needed (20). The higher the PSS in patients with breast cancer, the better their adaptation to the disease (21). According to several quantitative studies, PSS provides many advantages to patients with cancer and cancer

survivors such as multiplied survivorship and improved quality of life (22). Put another way, PSS acquired from relatives, kin, companions and medical service experts is a significant source of comfort for cancer patients, particularly, support received from family or companion assists in adjusting to physical illness and predicts improvement in these patients' quality of life (23).

Scarcely any investigations give fundamental proof that compassion might be an instrument to clarify any relationship between PSS and emotional self-regulation with psychological well-being in a diverse range of populations. Several qualitative studies have indicated the effect of PSS on patients and survivors of breast cancer (9, 24, 25). Recent research has examined the association between social support and well-being. PSS was positively associated with well-being by mediating self-compassion; that is, individuals who had higher PSS, scored more in self-compassion which mediated the relationship between perceived social support and better psychological well-being (19). Several studies have shown the positive long-term effects of improving emotional regulation skills by providing training on social relationships, subjective well-being, life satisfaction, and physical and psychological health (26, 27). According to Bond (8), people with daily conflicts experienced enhancements in some emotional regulation skills and their well-being improved after the brief intervention workshop. Despite all this consistent evidence, it is unknown whether self-compassion accounted for the relationship between emotional self-regulation and PSS with better psychological well-being among breast cancer survivors. As a result, the novelty of the current study is that it examines the association between emotional self-regulation and PSS with psychological well-being among a large sample of breast cancer survivors and examines the mediator effect of self-compassion.

Thus, the first objective of this research was to investigate the positive relationships among PSS, emotional self-regulation, self-compassion, and psychological well-being. The second objective was to examine the mediating effects of self-compassion on these associations. A conceptual diagram of the hypothesized mediation model is presented in Figure 1.

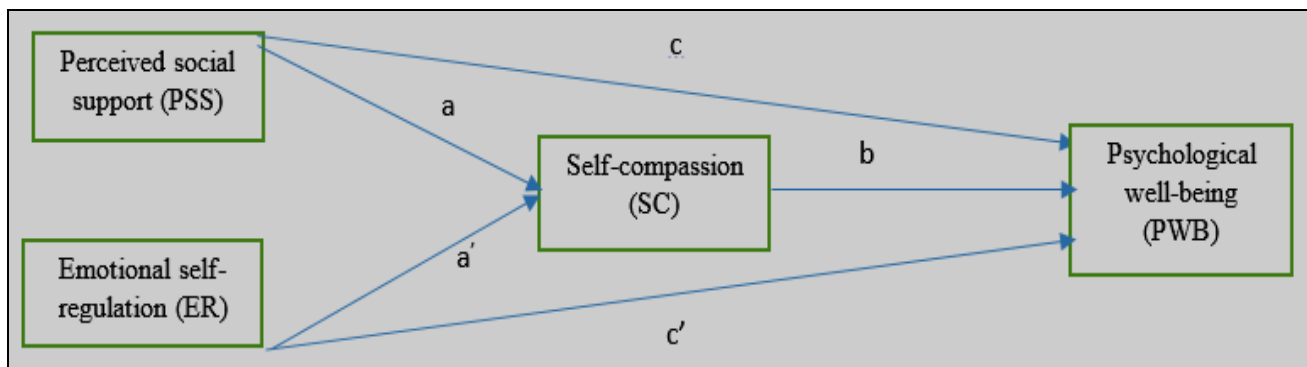


Figure 1. A Conceptual Diagram of the Hypothesized Mediation Model, Including a, a', the Effects of the Perceived Social Support and Emotional Self-Regulation on Self-Compassion; c, c', the Direct Effects of Perceived Social Support and Emotional Self-Regulation on Psychological Well-Being; b, the Effect of the Self-Compassion on Psychological Well-Being

Materials and Methods

Participants

The study used a cross-sectional design and participants were recruited from three different oncology departments: Valiasr, Ayatollah Mousavi Hospital, and Mehraneh Charity Hospital located in Zanjan, Iran for this study. Individuals were eligible to participate if they: i) had completed medical treatment for diagnosis of breast cancer equal to or more than one year, ii) attended their doctor appointments regularly, iii) survivors who had not received any psychological interventions, iv) able to understand and read Farsi, and v) received at least one or two treatments (Chemotherapy, Radiotherapy, Mastectomy and Lumpectomy). Among 328 patients approached, 300 patients showed interest to participate in this study, 8 did not want to be included in the study, 12 were excluded by the exclusion criteria and 8 patients did not complete the forms. Participants who completed the questionnaires in less than five minutes or more than 20 minutes, participants who were divorcee and those with any other chronic illnesses were excluded. To achieve adequate power for Structural Equation Modeling (SEM), this was more than the suggested sample size (28). Participants were actively recruited from March to June 2020. They were selected through the convenience sampling technique. Participants had mean age of 36.92 and $SD = 11.81$. Participants were invited by a clinician during their doctor's appointment to complete a survey which consisted of several self-report measures. Demographic, clinical and treatment data of participants were displayed in Table 1.

Measures

Demographic and medical characteristics sheet. Participants were asked to supply the following demographic, disease and treatment-related information: age, level of education, level of income, marital status (single, widow or divorced), type of treatment received and time since diagnosis (in months).

The Short Ryff Scale Psychological Well-Being (RSPWB). This is the abridged version of the Ryff scale Psychological Well-being, consisting of six psychological well-being dimensions as follows: Self-acceptance, positive relationships, autonomy, environmental control, meaningful life and personal growth. The scales comprise 18 items, with each dimension covered by three items. Through exploratory and confirmatory factor analysis, construct validity of this questionnaire has been tested in Iran. In addition, reliability has been checked via test-re-test and by Alpha-Cronbach and has been confirmed in Iran. For six subscales, the internal consistencies ranged from 0.51 to 0.76 and for total was 0.71 (29). The scales' overall reliability coefficient was arrived at 0.87 using Cronbach's alpha.

Emotion Regulation Questionnaire (ERQ). Gross and John's Emotion Regulation Questionnaire measures emotion suppression with four items and reappraisal with six items (30). On a seven-point Likert scale going from one ('strongly disagree') to seven ('strongly agree'), items are scored. By averaging the items of the subscale, the total score is attained for each subscale. In women with mixed cancer sites, the original English version of the ERQ was validated and indicated satisfying psychometric properties (17). Cronbach's alpha in this sample was good ($\alpha = 0.85$).

Self-compassion scale (SCS). With 26-items, Neff's Self-compassion scale was applied to measure how participants generally act towards themselves in hard times (31). On a scale from one (almost never) to five (almost always), participants evaluated the frequency with which they behave in the manner stated in each statement (e.g., 'When times are really difficult, I tend to be tough on myself'). Studies have shown good convergent validity, discriminant validity, internal consistency, and test-retest reliability of the SCS (32). Cronbach's alpha was reported at 0.84 for the scale in an Iranian sample (33). Cronbach's alpha in this sample was 0.78.

Multidimensional Scale of Perceived Social Support (MSPSS) A 12-item self-report measure of perceived

social support from family, friends, and significant others was developed by Zimet *et al.* (34). Participants were evaluated on a scale from one (very strongly disagree) to seven (very strongly agree) to show how they felt about each item (e.g., 'I get the emotional help and support I need from my family'). A total score was computed by averaging all items. High scores indicated greater perceived social support. The scale's Cronbach's alpha was 0.86 and sub-scales' reliability coefficient arrived at 0.61-0.90 through Cronbach's alpha (35). Cronbach's alpha in this sample was 0.89.

Statistical analysis

Statistical analysis was performed using SPSS 22 and the first analysis showed that all variables were normally distributed. Pearson correlation coefficient was used to evaluate any relationships among the study variables and multi-variable regression analysis was used to assess linear relationships among predictor variables (emotional self-regulation, PSS and self-compassion) and the criterion variable (psychological well-being). In addition to the SPSS Software Version 22, Amos 23 was used for path analysis to investigate direct and indirect influences of access to psychological well-being through self-compassion. Path analysis is a method by which the relationship between several independent variables and several dependent variables are evaluated simultaneously. The advantage of this method for multiple regression, in addition to the possibility of examining more than one dependent variable simultaneously, is study of direct, indirect and total effects. In the present study, in addition to several direct effects, several indirect effects were considered. Indirect effects are related to the effects of emotional self-regulation and PSS on psychological well-being through mediating self-compassion. A conceptual diagram of the hypothesized mediation model is presented in Figure 1. By VIF (Variance Inflation Factor) scores (less than two), potential multicollinearity between predictor variables was assessed. The general model fitness was assessed by a few goodness of fit indices to survey the degree to which the data upholds the applied model (36).

Ethical approval

Participants did not experience any harm and they were allowed to stop their participation during the data collection process. This study protocol was approved by the research Committee and Ethical Committee of the Faculty of humanities, University of Zanjan. The study was performed in accordance with the Declaration of Helsinki and all methods were performed in accordance with the relevant guidelines and regulations.

Informed consent

Individuals completed a consent document before the survey and they had the right to leave the research whenever they desired.

Results

Demographic and medical characteristics of samples were summarized in Table 1. Participants were, on average, 36.92 years old (SD = 11.81). Most patients were married (68%) and majority of participants (38.7%) had received Lumpectomy + chemotherapy.

Means, SDs, Cronbach's alphas and bivariate correlations among all important variables are indicated in Table 2. As expected, well-being was positively correlated with three variables PSS, emotional self-regulation and self-compassion, although perceived social support generally indicated the smallest correlation among variables. That is, greater PSS, emotional self-regulation and self-compassion were associated with greater well-being.

According to the regression analysis in Table 3, it can be inferred that there are significant linear relationships among predictor variables (emotional self-regulation, PSS and self-compassion) and the criterion variable (psychological well-being) [$P < 0.01$; $F = 196.51$]. Emotional self-regulation ($\beta = 0.47$), PSS ($\beta = 0.28$) and self-compassion ($\beta = 0.39$) are significant predictors of psychological well-being. R^2 equals 0.66 indicating that 66% of changes in psychological well-being of breast cancer survivors is forecasted by predictor variables (emotional self-regulation, PSS and self-compassion).

The goodness-of-fit indices reported in Table 4 show that the analyzed model had an excellent fit ($P = 0.06$; chi square = 2.403; $df = 1$; chi square/ $df = 2.403$; RMSEA = 0.09; GFI = 0.99; AGFI = 0.90).

One mediation analysis was conducted with 300 samples to investigate if self-compassion accounts for the relation between PSS, emotional self-regulation and psychological well-being. There were no covariates. The overall model explained 66% of the variance in psychological well-being ($F(3,296) = 196.51$, $P < 0.01$). Table 5 showed that all paths (direct and indirect paths) were significant $P < 0.01$. As hypothesized, there was significant indirect effect by PSS on well-being ($\beta = 0.055$, $P = 0.049$ CI: LL = 0.0092, UL = 0.1345) and emotional self-regulation on well-being ($\beta = 0.079$, $P = 0.004$ CI: LL = -0.0331, UL = -0.1358) through self-compassion. That is why the bootstrapped confidence interval did not go through zero. Thus, Table 5 indicates that PSS and emotional self-regulation significantly affected well-being indirectly via self-compassion.

Table 1. Demographic and Treatment Characteristics of Breast Cancer Patients (n = 300)

characteristics	M (SD)	N (%)
Age	36.92 (11.81)	
18-30		101 (33.6)
31-40		89(29.6)
41-50		52 (17.3)
51-60		58 (19.5)
Education		
Diploma		75 (25)
Bachelor		155 (51.7)
Master& higher		70 (23.3)
Income		
Low		75 (25)
Medium		145 (48.3)
High		80 (26.7)
Marital status		
Single		96 (32)
Married		204 (68)
Type of therapy		
Lumpectomy + chemotherapy		116 (38.7)
Mastectomy+ chemotherapy		67 (22.3)
Chemotherapy		51 (17)
Radiotherapy		66 (22)
Time since diagnosis		
12 months		139 (46.3)
More than 12 months		161 (53.7)

Table 2. Means and Standard Deviations, Cronbach's Alphas, and Bivariate Correlations for Variables (Well-Being, Perceived Social Support, Emotional Self-Regulation and Self-Compassion)

Variables	Mean	SD	α	2	3	4
Well- being	5.20	0.43	0.87	0.57**a	0.75**	0.74**
Perceived social support	6.71	0.23	0.89		0.44**	0.68**
Emotional self-regulation	3.82	0.79	0.85			0.83**
Self- compassion	5.20	0.43	0.78			

**a) P<0.01

Table 3. Regression Analysis to Predict Psychological Well-Being based on Predictor Variables (Perceived Social Support, Emotional Self-Regulation and Self-Compassion)

Model	F	P	R	R ²
Regression	196.51	< 0.01	0.81	0.66
Predictor	Beta	t	P	
Emotional self-regulation	0.47	9.89	< 0.01	
Perceived social support	0.28	4.05	< 0.01	
Self-compassion	0.39	5.17	< 0.01	

Table 4. Goodness of Fit Indices for the Model (Perceived Social Support, Emotional Self-Regulation and Well-Being with Mediating of Self-Compassion)

Index	CFI	AGFI	RMSEA	χ^2	df	χ^2/df	P
Value	0.99	0.90	0.09	2.403	1	2.403	0.06

CFI: comparative fit index, AGFI: Adjusted goodness fit index, RMSEA: root mean square error of approximation, χ^2/df : χ^2 to the degree of freedom index.

Table 5. Direct and Indirect Effects of Variables (Perceived Social Support, Emotional self-Regulation and Well-Being with Mediating of Self-Compassion)

Direct paths	β	se	t	P
Perceived social support →well-being	0.30	0.232	5.16	0.001
Perceived social support→self-compassion	0.66	0.262	23.05	0.001
Emotional self-regulation→well-being	0.47	0.053	9.91	0.002
Emotional self-regulation→self-compassion	0.34	0.017	6.10	0.001
Self-compassion→well-being	0.40	0.025	5.18	0.002
Indirect paths	β	se	Lower Limit	Upper Limit
Perceived social support→self-compassion→well-being	0.055	0.45	0.0092	0.1345
Emotional self-regulation→ self-compassion→well-being	0.079	0.08	-0.0331	-0.1358

Discussion

Results indicated that PSS and emotional self-regulation are definitely related to self-compassion. PSS and both of these variables were associated with greater psychological well-being. Most importantly, there were significant indirect effects of PSS and emotion self-regulation on psychological well-being through self-compassion. In other words, participants who had higher PSS and emotional self-regulation scored higher in self-compassion that in turn was considered for the relationships PSS and emotional self-regulation with more worthwhile psychological well-being.

Consistent with earlier studies, higher PSS is pertinent to less depression, tension, and stress and additionally yields more positive feelings and life satisfaction (37, 38). Stable social support gives breast cancer survivors a hand in adaptation and also enhances their mean life span, while destabilized social support has negative outcomes on mental health of patients. A positive link between PSS and psychological well-being has been repeatedly reported in a variety of studies (39). For example, lower social support was partly responsible for the deleterious association between ambivalence about emotional expression and well-being in breast cancer patients (40). Another research showed that higher social support increases self-kindness, and self-kindness is able to mediate the relationship between less psychological stress and greater social support (41). Breast cancer Patients who receive enough social support to treat themselves compassionately can come to terms with chronic diseases. Furthermore, perceived support from others predicts feelings of ability to accomplish one’s objectives (42). In patients with breast cancer, the moderate-to-high PSS group is less sensitive to pain and numbness associated with chemotherapy than the low

PSS group because social support from relatives, kin, and companions may lead to positive thinking about oneself and consequently promotes self-compassion and results in high psychological well-being. Acceptance that can be promoted by Social support, leads to better emotional regulation, which in turn can make it easier for a person to be aware of the present as well as the ability to get rid of negative thoughts (43).

Several studies have indicated enhanced emotional regulation skills have long-lasting positive effects on subjective well-being, life satisfaction, physical and psychological health and social relationships (26, 27). One study by Weyten *et al.* (44), focused on a six-day training session on the Process Model of Emotional Regulation (PMER). Additionally, their results examined the highest levels of well-being and the fewest depressive symptoms, thus, suggesting that PMER is a formidable way to organize and deliver a ton of positive interventions. Emotional regulation decreases perceived stress and daily problems and will have positive outcomes for people and societal health and well-being. Mental illness can be improved by poor emotional regulation, intense and fluctuating emotions, and an uneven interaction between intensity, duration, and type of emotion for a situation (45). Breast cancer survivors could use emotional regulation strategies in their daily lives which would reduce stress, depressive symptoms, and negative affect, and increase happiness, positive affect, and enhance their ability to cope with daily problems (8) and behave more compassionately toward themselves. With self-compassion skills, cancer survivors may be supported by promoting self-care and regulating emotions in face of distress (11). Self-compassion as a treatment could help psychiatrists treat patients effectively by assessing how the patient

compassionately views themselves during treatment, deals with positive and negative psychological experiences in serious conditions both before and after treatment, and compliments other psychological interventions (46). Earlier research showed relationships between emotional regulation strategies (avoidance and suppression) and psychological symptoms such as depression, fatigue and anxiety in a variety of populations (47-49). Self-compassion is another way to look positively at stressful and disappointing events and to control emotions in these events.

Limitation

There were some limitations to this study. The first limitation of the present research was that due to time limitations, other factors, such as socioeconomic status, were not evaluated. Second, convenient sampling was used in this study, which may limit the generalizability of the current findings. Third, the present study was correlational and path analysis does not indicate causality. Therefore, future research should attempt to duplicate these results through longitudinal studies to reveal the causal mechanisms of mediating relationships. Fourth, only self-report measures were used in this study, which may be biased (e.g., social desirability) and raise concerns about shared method variance (50). Future works should embrace other measures of variables such as non-self-report measures to duplicate these findings. Finally, this study was conducted in Zanjan province. Future research with more diversity in Iran is still needed to examine if the findings generalize across Iranian breast cancer survivors from different areas of Iran.

Clinical and research implications

In spite of the above limitations, there are some implications for practitioners. Even though we showed that PSS and emotional self-regulation enhanced self-compassion, the relationship between these variables may not be unidirectional. That is, the association may be bidirectional. Future research should explore a potentially bidirectional relationship between PSS, emotional self-regulation and the trait self-compassion. Furthermore, the sample size could be improved, and studies could embrace cancer sufferers from different cultures for better comparison and generalization of research findings. The essential indirect associations of mapping should also be a precedence as therapeutic interventions can grow to specific target mediators. Therefore, increasing awareness of PSS, treating emotions in different contexts, and encouraging use of self-compassion techniques can persuade better psychological well-being and ought to be incorporated into interventions. Future research takes into account a qualitative aspect of how breast cancer survivors encounter the six aspects of self-compassion and contributes to the perception of how self-compassion can be endowed by cancer sufferers. It will be vitally important to explore the elements such as specific

apprehensions and psychological factors in patients that control or promote intervention validity.

Conclusion

Our results emphasize that self-compassion is an important construct which mediates the association between PSS and emotional self-regulation with improved psychological well-being. As hypothesized, higher PSS and emotional self-regulation were related to higher psychological well-being and self-compassion and this may mediate these relationships. The present study offers a new pathway in which self-compassion may be a goal for psychological interventions aimed at enhancing psychological well-being in cancer populations, specifically breast cancer survivors. It will be vitally important to examine factors including patient's specific concerns and psychological characteristics that moderate or facilitate effectiveness of interventions.

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Conflict of Interest

None.

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