

# Prediction of post-traumatic growth based on pain-related beliefs and perceived social support in women with cancer

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## ABSTRACT

**Background and Aim:** Cancer is one of the most harmful diseases that has physical, interpersonal, social, psychological, and spiritual aspects that should be considered in the course of illness and treatment. Post-traumatic growth refers to positive psychological changes that are created after facing challenging events. Therefore, the purpose of this study was to determine the role of pain beliefs and perceived social support in the post-traumatic growth of women with cancer. **Materials and Method:** This is a descriptive-correlational and cross-sectional study. The population of this study was women with cancer in Tehran. A sample of 90 women was selected using purposeful sampling and then, using Pain Beliefs and Perceptions Inventory (PBPI) perceived social support (SS-A) and post-traumatic growth Inventory (PTGI) were evaluated. The data were analyzed by Pearson correlation and multiple regression analysis using the stepwise method. **Results:** Data analysis showed that there is a positive relationship between perceived social support and post-traumatic growth, and there is a negative and significant relationship between the Pain Beliefs and post-traumatic growth. Finally, through stepwise analysis of multiple regression, shown post-traumatic growth in women with cancer is predicted through pain beliefs and perceived social support. **Discussion and Conclusion:** Considering the role of pain beliefs and perceived social support in post-traumatic growth, it is suggested that the importance of these variables in women with cancer should be considered and these variables should be included in the explanatory and therapeutic models of these patients.

**Keywords:** post-traumatic growth, cancer, social support, pain beliefs, women

## Introduction

Cancer is one of the most harmful diseases that has physical, interpersonal, social, psychological, and spiritual aspects and should be considered in the course of illness and treatment. Diagnosis and treatment of cancer can create conditions that somehow impede the achievement of life goals and challenge them <sup>[1]</sup>. Considering that cancer can be cured if diagnosed and treated quickly <sup>[2]</sup>. Today, the number of those who have

recovered has increased, and the nature of the disease has also been transformed from a lethal disease to a chronic disease <sup>[3]</sup>.

Researchers nowadays have even gone beyond this and pay attention to the positive outcomes that may occur after a traumatic occurrence <sup>[4]</sup>. Post-traumatic growth refers to positive psychological changes that are created after facing challenging events. This post-traumatic growth can act as a protective shield that will protect a person against negative consequences such as distress and depression <sup>[5]</sup>. This Post-traumatic growth should not be considered a rare phenomenon, as its prevalence rate is 52% in those who experience a traumatic event <sup>[6]</sup>. When faced with a life-threatening event, individuals are reevaluating their goals and priorities and social relationships, and they unconsciously acquire a more comprehensive understanding of the world <sup>[7]</sup>. Generally, changes in post-traumatic growth can be classified into five categories, which include changes in individual perception,

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change in relationships with others, increased spirituality, changes in the philosophy of life, self-awareness of possibilities, and greater understanding (meaning) of life <sup>[8]</sup>. Researchers associate the process of post-traumatic growth with certain types of cognitive reconstruction that help individuals adapt to new realities <sup>[9]</sup>. Concerning the factors involved in post-traumatic growth, researchers have pointed to variables among which personality factors <sup>[10]</sup>, resilience <sup>[11]</sup>, central beliefs <sup>[12]</sup>, and social support <sup>[13]</sup> can be pointed out. Of course, some other researchers indirectly point to the role of beliefs about pain <sup>[14]</sup>. Among the underlying factors in post-traumatic growth in cancer patients, two factors of social support <sup>[15]</sup> and beliefs about pain <sup>[16]</sup> can play a more universal role because they are more significant in cancer disease. Evidence suggests that social support has a protective role in cancer patients, and a lack of social support is a predictor of relapse and death in these patients <sup>[17]</sup>. Supportive behaviors such as empathic listening, taking care, and helping a person to accept the illness help him to cope with the harmful event, and thus more adaptation, increases the chance of growth along with it <sup>[18]</sup>.

Based on theoretical models, social support in the form of encouragement, confirmation, positive mood enhancement, and the provision of recommendations for better coping with the condition of the traumatic, in addition to having a supporting role, can increase the resilience of the individual and this also leads to increased post-traumatic growth <sup>[19]</sup>.

Regarding the role of pain beliefs in post-traumatic growth, we can point out the importance of belief and cognitive systems in general and pain beliefs in patients with cancer in particular. Pain is one of the most common complaints of cancer patients and one of the causes of fear and concern among them and their families. In other words, pain is an inseparable part of many cancers that cause a lot of problems for the cancer patient <sup>[20]</sup>. But pain is not only a physical sensory experience and many aspects of life, including emotional, cognitive, social, and behavioral well be influenced <sup>[21]</sup>. In general, pain beliefs can be divided into general terms, including positive and negative beliefs. According to Wertli, Held, Lis, Campello & Weiser <sup>[22]</sup> both positive and negative beliefs can affect the amount of pain and outcome of chronic pain diseases. People's pain beliefs can affect the outcome of disease and pain through different pathways. These beliefs simultaneously affect the coping strategies of individuals against pain and pain control <sup>[23]</sup>, affect the emotional and behavioral responses of individuals, and lead to avoidable behaviors that exacerbate illness and pain <sup>[24]</sup>.

Thus, according to the above, this study aimed to determine the predictive role of pain beliefs and perceived social support in the post-traumatic growth of women with cancer.

## Materials and Methods

This study was based on a correlation scheme and investigated the intensity and direction of the relationship between the variables of the research. The population of the study comprised all the women with cancer who were referred to the Oncology department of Tehran hospitals in 2015. The sampling method was purposive and according to the type of correlation research scheme, 90 people were selected for the research sample. The research was carried out in the first place by providing a list of centers that had access to cancer patients and to interview the patient's relevant sections were coordinated. During the interview, the study criteria were evaluated in these patients, and patients who met the criteria for the study were selected. The criteria for entry into the study were: having at least 18 years of age, having at least a diploma certificate, a minimum of 2 years after diagnosis, having at least one experience of treatment (surgery, chemotherapy, and Radiotherapy), and experience pain in the course of the disease. Exit criteria in this study included: chronic psychological illness and reaching the fourth stage of cancer. Then they were given explanations about the purpose of the research. Those who had complete satisfaction to complete the questionnaire completed it. The data was then entered into the software and analyzed.

### The tools used in this research include:

In this section, the purpose of data collection and the need for the respondent's cooperation in supplying the required data is expressed. To this end, the value of the data from the questionnaire has been emphasized, to answer the questionnaire appropriately. As well as questions about age, marital status, education, number of children, occupation, financial status, type of cancer, the growth of cancer, duration of illness, treatment received, frequency of pain in the past three months, and use of painkillers also asked.

The Post-traumatic growth questionnaire (PTGI) was developed by Tedesch & Calhoun <sup>[25]</sup> to assess the self-perceptual changes of individuals associated with the experience of the harmful event. The questionnaire is comprised of 21 terms and is graded according to the six-point Likert scale; the first option (at all), the zero scores, and the second to the sixth option are scored from one to five. A higher score indicates more growth and lower scores represent less growth. The questionnaire has five sub-scales: new possibilities (5 items), relating to others (7 items), personal strength (4 items), appreciation of life (3 articles), and spiritual change (2 items). Scale scores are calculated by adding the scores to each item. In the initial PTGI evaluation by Tedesch & Calhoun, the internal consistency of the scale of 0.91 and the internal consistency of the sub-scales were separately reported from alpha 0/67 to alpha 0/85. In this study, Cronbach's alpha for the total scale score was 0/92. The Social Support Questionnaire (SS-A) was developed by Vaux, Philips, Holly, Thomson, Williams & Stewart <sup>[26]</sup>, and it's based on Cobs' theory of social support. This questionnaire has 23

questions and on a Likert scale, it is composed of one (completely opposite) to four (fully agree) and measures three areas of social support: the family (8 items), friends (7 items), others (8 items). The higher scores indicate higher social support and lower scores indicating lower social support. Cronbach's alpha coefficient for the family support, friends 'support, and others' support subscales were 0/85, 0/87, 0/88, and for the total sample was 0/91.

The PBPI Perception and pain beliefs Questionnaire was developed by Williams & Thorn [27]. The original version of this questionnaire is 16 questions, scaled according to the Likert Quadruple Scale (fully agree, agree, oppose, totally opposite), and quantifies four factors: 1. the mysteriousness of pain (the belief in mysteriousness and the unidentified stay of pain) 2. Self-blaming (self-blaming and self-blaming for pain) 3. Belief in the stability of pain in the present 4. Belief in the continuation of pain in the future. The internal consistency coefficient of the four factors of the questionnaire varies from 0/70 to 0/77. Cronbach's alpha was calculated for the total score of 0/72. After coding, data were entered into SPSS 21 software and the Pearson's correlation coefficient and stepwise multiple regression analysis were performed.

## Research Findings

In this section, firstly, the demographic findings of the research subjects are presented, and then, descriptive indices, Pearson correlation test results, and multiple regressions are presented stepwise.

**Table 1. Demographic findings of subjects**

Variable	Group	Frequency	Frequency Percent
Age	23-39	8	7.2
	40-55	47	42.3
	56-71	35	31.5
Marital status	Single	13	11.7
	married	68	61.2
	Divorced or	5	4.5
	Deceased		
Education	Diploma and Associate	44	39.6
	Bachelor and	47	42.3
	higher		
Job	Employed	27	24.3
	housewife	48	43.2

Type of cancer	Retired	15	13.5
	Breast	50	45
	lymphatic	18	16.2
	Others (Leukemia, cervical)	21	18.9
Use of painkillers	Taking	75	67.5
	Not taking	15	13.5
Duration of illness (Year)	2 – 3/5	51	45.9
	3/5 – 5/5	16	14.4
	5/5 and higher	23	20.7

As shown in Table 1, the data indicates that the highest number of participants (42.3) was between the ages of 40-50. 61.2 of them were married and 42.3 of them had bachelor's and higher degrees. 43% of the patients were housewives. The data also showed that 45% of the patients had breast cancer. This can be an indicator of the incidence of breast cancer in women as the most common type of cancer. 45% of the patients had 2 – 3/5 years to diagnose their illness. The following descriptive indexes of the mean and standard deviation of the research variables are presented.

**Table 2. Descriptive indexes and standard deviations of research variables**

variable	mean	standard deviations
post-traumatic growth	92.644	15.778
social support	66.800	17.221
family support	24.533	5.998
friends 'support	21.044	6.270
others' support	21.222	5.662
pain beliefs	33.266	6.315
mysteriousness of pain	9.111	2.265
continuation of pain	6.466	1.818
self-blaming	6.822	1.946
stability of pain	10.866	2.773

According to table 2, the mean and standard deviation of all subjects in post-traumatic growth variables were 92.64 and 15.77. In the social support variable, the mean and standard deviation for the whole sample were 66.80 and 17.22. Also, in the overall score, the mean of pain beliefs variable is 33.26 and the standard deviation is 6.31. Table 3 shows the correlation matrix of the research variables.

**Table 3: correlation matrix of the research variables**

variable	1	2	3	4	5	6	7	8	9	10
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1.	post-traumatic growth	1									
2.	social support	0.34**	1								
3.	family support	0.33**	0.95**	1							
4.	friends' support	0.39**	0.96**	0.87**	1						
5.	others' support	0.25*	0.96**	0.86**	0.91**	1					
6.	pain beliefs	-0.39**	-0.42**	-0.39**	-0.45**	-0.36**	1				
7.	mysteriousness of pain	-0.09	-0.22*	-0.33**	-0.18	-0.13	0.65**	1			
8.	continuation of pain	-0.41**	-0.20	-0.11	-0.26*	-0.20	0.72**	0.21*	1		
9.	self-blaming	-0.22*	-0.16	-0.14	-0.21*	-0.12	0.63**	0.30**	0.27**	1	
10.	stability of pain	-0.40**	-0.52**	-0.45**	-0.56**	-0.49**	0.82**	0.31**	0.61**	0.32**	1

\* P < .05, \*\*P < .01

Furthermore, to investigate the separation role (differentiative role) of social support and pain beliefs variables in predicting

post-traumatic growth, stepwise multiple regression analysis is provided.

**Table 4. Results of step-by-step regression analysis along with test results of variance analysis and standard and non-standard coefficients**

step	variable	R	R <sup>2</sup>	F	B	Beta	T
first	pain beliefs	0.397	0.158	16.473**	-0.992	-0.397	-4.059**
second	pain beliefs	0.443	0.196	10.597**	-0.764	-0.306	-2.881**
	social support				0.198	0.216	2.033**

\* P < .05, \*\*P < .01

As shown in Table 4, in the first step, the regression of the variable of pain-related beliefs entered the regression equation and could predict post-traumatic growth significantly. As shown in the above table, pain beliefs explain 15% of the variance of post-traumatic growth variables and The F-statistical analysis of variance model for the study was 16.473, which is significant at the 0/01 level.

It is inversely correlated with the growth after injury, and its beta coefficient is -397.77.

Also, the relationship between this variable is inverse with post-traumatic growth and its beta coefficient is equal to -397/0. In the second step, the social support variable was added to the regression equation and along with the pain beliefs variable, 19 percent explained the variance of the post-traumatic growth variable and the F-statistical analysis of variance model to test the significance of the model is 10/597 which is significant at the 0/01 level. Also, the social protection beta coefficient in the prediction of post-traumatic growth is 0.216 which indicates the direct relationship between these two variables.

## Discussion and Conclusion

In the present study, it has been shown that the two variables of pain beliefs inversely and social support directly were predictive of post-traumatic growth. These findings are in line with the findings of Martin et al. [13], Măirean [15], and Topcu [14]. In explaining the findings of the role of pain beliefs in post-traumatic development, the importance of bias in information processing, normalization, and pain acceptance can be mentioned. Considering that the pain beliefs in the present study

included the mysteriousness of pain, continuation of pain, stability of pain, and self-blaming, they can be considered as negative and ineffective beliefs. Research has shown that negative and ineffective beliefs about pain can disrupt the admission process and then the cognitive and emotional processing of pain [28]. People who have negative pain beliefs are biased in processing information associated with pain so they are waiting for symptoms of pain and this expectation often leads to findings of pain symptoms. Similarly, these people are incapable of relieving mental conflicts of pain symptoms and therefore they feel pain as stable [29]. On the other hand, people who have negative pain beliefs, consistent with their schemas of harmfulness and stability of pain, internalize any small symptom of pain and, on the other hand, ignore the symptoms of analgesia, which causes persistence of pain [28].

In another explanation, the significance of normalization can be pointed out in addition to validation. People who have negative pain beliefs often feel that their pain is specific to them, and this feeling of being alone causes more psychological and physical distress. At the same time, others may ignore their pain or discredit them. In this regard, studies have shown that the normalization of pain is a phenomenon that is not unique to them and, at the same time, understanding their pain can provide the basis for reducing pain and emotional problems [30]. In explaining the role of social support in the prediction of post-traumatic growth, the importance of social protection as a protective and psychological shield can be highlighted [31]. In general, perceived social support has many advantages that can be identified between more psychological well-being and having a lower amount of stress associated with traumatic events [32]. Also, in Tedeschi & Calhoun's [25] theoretical model, it has been shown

that social support is very important and helpful in coping with emotional distress and finding meaning in a traumatic event. Recently, some studies have shown that the experience of social support is directly related to post-traumatic growth<sup>[33]</sup>. Regardless of the traumatic event, having a supportive network and being able to talk about a stressful situation with supporters and friends in addition to having a relaxing role, can act as a cognitive and emotional processing of a stressful event and thus provide grounds for post-traumatic growth<sup>[34]</sup>.

The present research, like most studies, has some methodological and interpretative limitations. Examples include the small size of the sample and the randomness of their selection, which can make it difficult to generalize the results to the larger community. Also, the present study is based on a correlation research method. Therefore, the researchers and readers should note that the study findings are not causal inferences. Regarding the results of this study, it is suggested that other researchers investigate the role of pain beliefs and social support in post-traumatic growth in larger randomly selected samples. It is also advisable to study longitudinal plans for studying the causal inferences for studying the process of influencing pain-related beliefs and social support in post-traumatic development. It is also recommended to study the effects of pain beliefs and social support in post-traumatic development to obtain causal inferences from longitudinal studies.

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