



Predicting Posttraumatic Growth Based on Coping Strategies in Women and Men Involving with Advanced Cancer

Farzaneh Baghjari,¹ Maryam Esmaeilinasab,^{1*} and Ali Shahriari-Ahmadi²

¹Department of Psychology, Tarbiat Modares University, Tehran, IR Iran

²Department of Medical Oncology and Hematology, Iran University of Medical Sciences, Tehran, IR Iran

*Corresponding author: Maryam Esmaeilinasab, Tarbiat Modares University, No 13-7, Ground Floor, Department of Psychology, Faculty of Humanities, Jalal Al Ahmad highway, Tarbiat Modares University, Tehran, IR Iran. Tel: +98-2182884699, Fax: +98-2188706310, E-mail: esmaeilinasab@modares.ac.ir

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Abstract

Background: Lots of research has been dedicated to negative consequences of cancer, but few probably studied personal growth and self-enhancement and its related variables after experiencing this disease. The aim of this research was to predict posttraumatic growth based on coping strategies and gender in patients with cancer.

Methods: Using a correlational method and a questionnaire tool, 120 patients (65 females and 55 males, mean age 47 ± 14.72) were selected among hospitalized patients in Firouzgar, Ayatollah Taleghani and Rasoul Akram hospitals in Tehran. They completed post traumatic growth inventory (PTGI) and coping responses inventory (CRI). Descriptive statistics, independent t-test, correlation tests and multiple linear regression were used for data analysis by SPSS version 20.

Results: Findings indicated that among problem-oriented coping strategies, cognitive assessment and seeking social support explains 53% of PTG changes ($P < 0.001$). However, emotion-oriented strategies, including emotional inhibition and somatic inhibition, had no significant relation with PTG. The regression model also revealed that more use of problem-oriented strategies can predict more PTG rate. The results of the t-test showed that there was no significant difference between men and women regarding the PTG score and coping strategies application ($P > 0.05$).

Conclusions: Results showed that problem-oriented strategies especially re-evaluation can support the patients to strive to reconceptualize their experience and make it easier to deal with. In this regard, clinical interventions such as training problem-focused coping skills and facilitating measures to provide social support may also be helpful.

Keywords: Cancer, Coping Strategies, Posttraumatic Growth, Gender

1. Background

Cancer is a major medical problem with more than 200 types regarded as one of the leading causes of death in Iran so that it takes the lives of 205 men and 300 women every year (1). Diagnosis of cancer, added to disrupting normal flow of lives of the patients and changing their social roles and relationships can create unexpected challenges in core beliefs about oneself and the whole world (2). Its return may be marked with high levels of turbulence, sadness, fear, and existential crises (3).

In spite of many researches dedicated to negative consequences of cancer, some findings indicate that experiencing pain in some traumatic events may be associated with better feeling and wider perception about personal growth; these positive psychological changes are known as post-traumatic growth (PTG) or cognitive-existential development (4). For instance, Barakat et al. (5) conducted

a research on 150 patients with cancer and reported 85% personal growth followed by positive changes during cancer treatment process; experience that was reported by patients with different types of cancer such as bone marrow, lung, colon, testicular and prostate. In a cross-sectional study on patients with breast cancer (stage 0-3), the time elapsed since diagnosis was a strong predictor of individuals' PTG; however, Kurtz et al. (6) and Lechner et al. (7) found no significant correlation between time of diagnosis and PTG.

Among mediators suggested by Vishnevsky et al. (8) in their study on growth experience, there are some factors such as type of cancer, stage of cancer, time elapsed since diagnosis, and coping strategies. It seems that coping is the main way toward PTG (9). Coping refers to cognitive, behavioral, and emotional efforts of patients who are trying to deal with their situation, after facing a stressful event, in order to solve and conceptualize it (10).

Billings and Moos (11) introduced five coping strategies, including: cognitive assessment focused coping, problem-solving focused coping, emotional inhibition focused coping, social support seeking coping, and somatic inhibition coping. Researches have shown that some coping strategies, such as problem-solving, reassessment of the problem (disease) and social-support seeking lead the individual toward PTG more than others (12, 13).

Research carried out by Jin et al. (14) showed that coping responses of men and women to trauma is different. Their finding suggested that women had more coping ability and were more compatible with trauma; for example, they are more willing to participate in thought - either deliberate or brooding - rumination, increasing awareness of personal strengths, understanding the importance of social connections, etc. All of them are predictors of PTG categories. However, some other researchers revealed either non-significant correlation between gender and PTG (15, 16). With respect to foregoing discussion, it seems that not only few researches have been conducted so far in the context of gender differences in PTG predictors (17, 18), but also there are inconsistencies in results of this type of research as if this issue is highly dependent on type of trauma, gender differences in coping strategy and cognitive or emotional processing of event (19), thus understanding the process and outcome of these approaches to cancer is a complex, fragmented issue and consequently disrupts introduction of interventional coping models. In this regard, the current research is to evaluate the relation between PTG and problem-oriented coping strategies including cognitive assessment focused coping, problem-solving focused coping, social support coping and emotion-oriented coping including emotional inhibition focused and somatic inhibition coping, so as to determine the role of these strategies in PTG prediction as well as type and level of this relation in men and women to find out whether there is any difference or not.

2. Methods

This research is a practical research and the study method is a quantitative, descriptive-correlative research. The statistical population of this research includes all women and men with advanced cancer in Tehran and sample was 120 end-of-life patients, aged 20 - 80 individuals that were selected purposefully among patients admitted to Firouzgar Hospital, Ayatollah Taleghani Hospital, and Rasoul Akram Hospital in Tehran from December 2015 to August 2016. This study was approved by ethics committee of Tarbiat Modares University.

For calculating sample size, first of all a pilot study based on PTG scores was conducted. The results were in-

serted into STATA software and maximum sample of 57 for each group (women 63.5 ± 19.80 , men 74.50 ± 16.15) with consideration of 95% of confidence level and power of 90% was estimated. So we selected 120 patients finally. The Formula for calculation sample size was:

$$n = \frac{\left(z_{1-\frac{\alpha}{2}} + z_{1-\beta}\right)^2 \times (\sigma_1^2 + \sigma_2^2)}{(\bar{x}_1 - \bar{x}_2)^2} \quad (1)$$

After purposeful selecting, the criteria for participating were assessed by medical reports of every patient. Criteria for participating was being native Iranian, having no psychiatric disorders, being diagnosed with advanced cancer (stage 3 - 4), and having the history of medical treatment such as chemotherapy, radiotherapy, and surgery. Then goals, instruments (questionnaires), and methods of implementation of the project were made clear to eligible participants and they declared their consent to participate in this research.

In this research, 3 questionnaires namely post traumatic growth inventory (PTGI), coping responses inventory (CRI) and demographic checklist of patients were used.

Coping responses inventory (CRI): this is a self-reporting questionnaire with 32 items introduced by Billings and Moos (11) which determines individual response to a personal crisis or a stressful event and the way he/she deals with it. The 4-point Likert scale (always, often, sometimes, never), ranging from 0 - 3, is used to measure these five types of coping strategies: cognitive assessment focused coping, problem-solving focused coping, emotional inhibition focused coping, social support seeking coping, and somatic inhibition.

Reported retest reliability coefficient and internal consistency reliability value of the questionnaire were 79% and 41% to 66%, respectively (20). Generally, in the current study, the scale validity (Cronbach's alpha) was 0.75 and for all subscales of cognitive assessment, problem-solving, seeking social support, emotional inhibition, and somatic inhibition, the obtained values were 0.63, 0.69, 0.60, 0.60, and 0.67, respectively.

Post-traumatic growth inventory (PTGI): It is a tool developed by Tedeschi and Calhoun (21) for measuring positive changes and appeared in those who have experienced a negative event. It has 21 items and the responses are measured in a 6 point Likert scale; ranging from 0 (never experienced a change) to 5 (experienced such changes so many times). The greater scores indicate greater PTG. The scale's internal consistency is 90%. Its reported test-retest after two and six months were 71% and 86%, respectively (22). In this study, the obtained validity of scale with Cronbach's alpha was 0.94.

The data have been analyzed using Pearson's correlation coefficient and regression analysis (multiple linear) by the help of SPSS 20.

3. Results

The results in [Table 1](#) indicate that from a total of 120 studied patients with advanced cancer in this research, 54.2% were women and the rest were men. More than one third (45%) of them were middle age and with little difference (39.2%), young subjects had <40 years of age (mean age 47 ± 14.72). One fifth of the cancers were breast cancer (20.8%) followed by colon cancer (17.5%), gastric cancer (8.3%) etc. Among these, more than one-third of the cancers (41.7%) were of other types. About two-third of the patients (83.3%) were married and, with little difference, the rest were single (7.5%), divorced (5%), or widowed (4.2%). More than half of the patients had high school degree or diploma (50.8), about one-third of them had primary education (27.5%) and patients with or without academic degree were in the next place. More than half of the patients (52.5%) explained that their income is not adequate for living cost and most of them were residing in Tehran (61.7%).

Pearson correlation test results ([Table 2](#)) showed that there is a positive significant correlation ($P < 0.001$) between PTG and all problem-oriented coping strategies, including cognitive assessment focused coping (0.71), problem-solving focused coping (0.48) and social support seeking coping (0.43). Among these, cognitive assessment focused coping is more correlated to PTG than others; however, emotion-oriented coping strategies, including emotional and somatic inhibition copings showed no significant correlation with PTG.

To measure the role of every problem-oriented coping strategy in PTG prediction, they were entered into regression analysis linearly and simultaneously.

Results of [Table 3](#) revealed that problem-oriented copings determine 53% of total PTG changes; also the obtained $F (42.90)$ was bigger than critical value which means that the employed regression model is significant.

Results of the obtained model ([Table 4](#)) revealed that, among problem-oriented coping strategies, the effects of cognitive assessment and seeking social support on PTG were significant ($P < 0.05$) and according to β comparison, with confidence interval of 95%, it can be concluded that cognitive assessment variable's effect on PTG was more than seeking social support.

In order to evaluate the difference between men and women with different types of coping strategies and PTG rate, independent t-test was carried out and the results are given in [Table 5](#).

Table 1. Demographic Characteristics of Patients with Advanced Cancer

Demographic	No (%)
Gender	
Women	65 (54.2)
Men	55 (45.8)
Age group	
≤ 40	47 (39.2)
41 - 60	54 (45)
≥ 61	19 (15.8)
Cancer type	
Breast	25 (20.8)
Gastric	10 (8.3)
Colon	21 (17.5)
Blood	3 (2.5)
Liver	4 (3.5)
Prostate	7 (5.8)
Other types	50 (41.7)
Marital status	
Single	9 (7.5)
Married	100 (83.3)
Divorced	6 (5)
Widowed	5 (4.2)
Educational level	
Illiterate	3 (2.5)
Primary and junior school	33 (27.5)
High school and Diploma	61 (50.8)
Academic (BA,MA, PhD)	23 (19.1)
Sufficient income for living cost	
Inadequate	39 (32.5)
Less than adequate	63 (52.5)
Adequate	18 (15)
Habitation state	
Tehran (Capital)	74 (61.7)
Vicinity of Tehran	18 (15)
Other cities	28 (23.3)

The results of the [Table 5](#) showed, with interval confidence of 95% that there was no significant difference between men and women in applied coping strategies. In other words, men and women were almost the same in turning to problem-oriented and emotion-oriented strategies to cope with advanced cancer.

As indicated in the [Table 5](#), there was no significant dif-

Table 2. Coefficient of Correlation Between Coping Strategies and PTG

	PTG	1	2	3	4	5
1. Problem-solving	0.48 ^a	1				
2. Cognitive assessment	0.71 ^a	0.78 ^a	1			
3. Seeking Social support	0.43 ^a	0.28 ^a	0.33	1		
4. Emotional inhibition	0.11	0.07	0.00	0.00	1	
5. Somatic inhibition	-0.04	-0.11	0.13	0.03	0.56 ^a	1

^aP < 0.01.

Table 3. The Results of Regression Analysis for PTG Prediction by Problem-Oriented Strategies

Description	SS	MS	df	F	R	R ²	ΔR ²	P Value
Regression	22562.56	7520.85	3	42.90	0.72	0.53	0.51	0.001
Residual	19982.76	175.28	114	-	-	-	-	-
Total	42545.32	-	117	-	-	-	-	-

Table 4. Linear Regression Coefficients of Problem-Oriented Strategies and PTG

Coefficient	Unstandardized Coefficients				
	B	Std. Error	β	t	P Value
Residual	25.90	4.215	-	6.14	0.001
Problem-solving	-1.13	0.91	-0.11	-1.24	0.216
Cognitive-assessment	4.24	0.57	0.74	7.42	0.001
Seeking Social support	1.28	0.58	0.15	2.18	0.031

Table 5. The Results of Coping Strategies & PTG Differences in Women and Men Based on T-Test Analysis

	Group	M	Std	T	df	P Value
Problem solving	Women	5.46	2.03	-0.37	118	0.709
	Men	5.60	2.00			
Cognitive assessment	Women	16.10	3.69	-0.92	116	0.360
	Men	16.69	3.17			
Seeking Social support	Women	5.56	2.18	1.32	118	0.187
	Men	5.01	2.35			
Emotion inhibition	Women	16.47	4.19	2.69	118	0.008
	Men	14.47	3.98			
Somatic inhibition	Women	6.86	3.06	1.81	118	0.072
	Men	5.80	3.34			
PTG	Women	63.41	21.02	0.21	118	0.83
	Men	62.65	17.92			

ference between men and women regarding the PTG score (P > 0.05) also. In other words, men and women were al-

most the same in experiencing PTG and showed no significant difference.

4. Discussion

Many studies have documented the negative secondary impact of cancer on the patients including heightened levels of psychological issues like anxiety and depression. Some studies, however, have increasingly begun to evaluate the perceived beneficial effects associated with context of trauma. The current study was conducted to evaluate the relationship between PTG and coping strategies in advanced cancer patients and to investigate whether gender role in this relationship is significant or not. This process was carried out in a purposeful sample of 120 advanced cancer patients.

The results show that there is positive significant relation between PTG and problem-oriented coping strategies, in general, and its subscales, including cognitive assessment, problem solving and seeking social support. That is, in patients with advanced cancer, more use of problem-oriented coping strategies, which often has more adaptive nature, has led to increased PTG rate. This finding is consistent with previous studies (10, 23, 24) which reported that cognitive-based and problem-oriented strategies can increase cancer patients' growth by developing their adaptability with situation and re-conceptualization of events. In this regard, it seems that people who are able to manage problematic and threatening conditions like cancer by cognitive-based techniques, may have more self-enhancement and compatibility with trauma.

Emotion-oriented coping strategies (emotional and somatic inhibition), however, revealed no significant correlation with PTG. This finding, contrary to some investigations, indicated negative correlation between these strategies and PTG (22, 25). So far, many definitions have been proposed for cognitive assessment strategies- from a tool for self-deception to an effective coping strategy for self-growth (2, 26) - and various evaluations have been performed to measure emotion-oriented strategies, such as denial and avoidance -as the barriers to individual's growth (27, 28). The results of this study, about no significant correlation between emotion-focused coping and PTG, suggested more important role of problem-oriented coping compared with positive consequences. More than that, for explaining this finding about emotion-focused copings, we can consider hypothesis of Tedeschi and Calhoun (29) that in a period of time, the person involving with trauma will probably be more eager to emotion-oriented strategies - such as denial and avoidance- to dealing with the situation and preventing being overwhelmed with intensive negative emotions brought about by the event in order to encounter to it later; however, over time, he/she attempts to find more cognitive analysis and benefits re-conceptualize the event (24, 30). Our correlation

result about emotion-oriented coping is not positive, although it will be helpful to consider the above mentioned hypothesis. In this regard, it is assumed that each type of strategy is a function of time and situation of a traumatic event, also coping with advanced cancer depends on its widely unsustainable nature probably.

Also among the employed predictors in this study it was indicated that cognitive assessment - as previous studies mentioned (30, 31) - played the greatest role in predicting growth, in other words, being problem-oriented and re-evaluating the recurred cancer, in line with PTG's outcomes, help the patients to be more compatible with negative consequences of cancer (32), feeling more competency (12) and having better psychological performances (33) as well.

Findings of the current research, contrary to some previous researches (8, 25), suggesting that gender is a powerful mediator associated with adaptive coping strategies and greater growth rate, but consistent with other studies (34, 35) it proved that in patients with advanced cancer, being woman cannot be equal to more positive rumination, more outflow of emotion, and more seeking social support. In other words, dealing with advanced cancer probably demands high level of seeking social support and shared emotions or thoughts with others, so this may involve men and women, equally in cognitive-emotional re-evaluation and benefit finding.

4.1. Conclusions

As mentioned before, there is a significant relation between positive effects caused by trauma (PTG) and hope, feeling compatible with trauma, cooperation with doctors and nurses in the hospital and retaining relationships with friends. On the other hand, according to the data in this study about the importance of problem-oriented coping strategies and social support, it seems that finding benefit in the situation of advanced cancer requires some integrative model of psychological perspective to the advanced cancer trauma based on problem-oriented coping educational interventions and social support reinforcement. Therefore, managing this intervention along with medical treatment is strongly suggested. On the other hand, with consideration of equality of men and women in experiencing PTG, contributions of other probable mediators in facilitating growth, such as severity of pain, changes in body form and function, schema derived from the culture about death, social support and etc. are suggested for future studies in this domain.

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Footnotes

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