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**ORIGINAL ARTICLE**

## The Relationship of Posttraumatic Growth with quality of life in cancer patients

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**ABSTRACT**

Posttraumatic growth (PTG) is a person's mental experience of positive psychological changes induced by encountering extremely challenging situations. This study aimed to investigate the concept of posttraumatic growth and its relationship with quality of life (QOL) in cancer patients. This is a descriptive cross-sectional study. The study population consisted of cancer patients referred to two main cancer referral hospitals in Iran. Samples included 154 patients that met study inclusion criteria, and were selected by convenient sampling. Study tools included demographic details questionnaire, "posttraumatic growth inventory", and "SF-36". Data were analyzed using SPSS-15 software. Mean age of study subjects was found 44±14.27 years, and 56.5% of them were female. In this study, mean score of PTG was 71.14±14.5, mean QOL score was 60.24±19 in the physical dimension, and 59.86±17.6 in the mental dimension. Significant correlations were found between PTG and the physical dimension of QOL ( $r=0.183$ ,  $P=0.02$ ) as well as the mental dimension ( $r=0.245$ , and  $P=0.002$ ). Also, significant correlations were observed between dimensions of personal strength, appreciation of life, and new possibilities, with QOL. However, this correlation was inverted in relation to spiritual changes. PTG rate, especially in the dimension of spiritual changes was high in cancer patients, and a direct and significant correlation was observed between PTG and QOL.

**Keywords:** posttraumatic growth, quality of life, cancer

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**INTRODUCTION**

In recent years, researchers systematically attempted to understand and examine positive changes following stressful events [1-2], and identified these events as a facilitating factor in positive changes of psychology [3]. Tedeschi and Calhaun were the very first researchers that studied the subject and named these positive changes "posttraumatic growth (PTG)", which has been defined as a person's mental experience of positive psychological change, caused by encountering extremely challenging situations in life such as harms, crisis, and stressful events [2].

It is not just the diagnosis, but treatment of cancer is blameworthy as well in creating stressful situations. As well as creating physical problems for the patients, cancer causes many psycho-social problems, and such reactions as denial, anger, and guilt [4]. Various physical and psycho-social problems lead to disruption in the normal trend of life and its quality. Quality of life (QOL) is a multidimensional and complex concept, and involves objective and subjective factors, and has been accepted as a criterion for assessment of treatment outcomes and status of patients with physical and mental disorders [5]. In

patients with cancer, like other chronic diseases, enhancement of QOL is the primary purpose of care, and the care team endeavors to improve their health and QOL.

PTG is a phenomenon that may occur in cancer patients [6-7]. Tedeschi and Calhaun, [2] recognize 5 dimensions for PTG: new possibilities, relationship with others, appreciation of life, personal strength, and spiritual changes. Although many studies have investigated the relationship between PTG and QOL, the relationship between these two variables in cancer patients has been associated with conflicting results. In a study by Hallam 2012, a direct and significant correlation was observed between PTG and QOL [8]. In a study by Teodorescu *et al.* [2012], a direct and significant correlation between PTG and the mental dimension of QOL was also identified [9]. Bellizzi *et al.* showed that there is no significant correlation between PTG and the physical dimension of QOL, but the mental dimension of QOL has an inverse correlation with PTG [6].

Given that in the Iranian society, the concept of QOL and its associated factors have less been considered, and given conflicting results of various studies in the area of relationship between PTG and QOL in the above patients, the aim of this study was to assess the relationship between PTG and QOL in cancer patients.

### MATERIALS AND METHODS

The present study is a descriptive correlative study in which patients referred to oncology wards and cancer clinic at Imam Khomani (the largest oncology center in Iran) and Tajrish-Shohada hospitals in Tehran city comprised the study population. Sampling was conducted using simple sampling method and study inclusion criteria. A total of 154 patients qualified for participation in the study (in 2013). Patients who were informed of their definitive cancer diagnosis confirmed by an oncologist entered the study. A minimum of at least one year since diagnosis and treatment, minimum age of 21 years, and no history of severe psychiatric disorders like schizophrenia were other study inclusion criteria.

In this study, demographic details questionnaire, posttraumatic growth inventory (PTGI), and the Short Form of Health Survey (SF-36) were used as tools of the study. The PTGI consists of 21 items that determine the 5 domains of psychological growth after encountering a stressful event (new possibilities, relationship with others, appreciation of life, personal strength, and spiritual changes). This tool is based on the 6-option Likert scale with scores: not at all=0, very little=1, a little=2, moderate=3, a lot=4, and very much=5, ranging from 0 to 105, and higher scores indicating higher PTG, and lower scores indicating lower PTG. The reliability and validity of the instruments were examined by the researchers for the first time in Iran, and the 5-factor structure of the PTGI was approved. Coefficient alpha for the entire instrument was  $\alpha = 0.87$ , and the coefficient obtained for the 5 main scale components was  $\alpha = 0.57-0.77$ . The correlation between two times performing the test with a 30 day interval in 18 samples was  $r = 0.75$ . The most common and comprehensive existing general standard tool for assessment of QOL is the 36-item questionnaire that is used internationally as a standard health outcomes measuring tool. Psychometric analyses have shown that this questionnaire is a reliable tool, with applicability in different cultures [10]. Validity and reliability of this tool for use in Iran were found by Montazeri *et al.* [11]. Internal consistency coefficient of its scales was found between 0.77 and 0.9.

Every study subject was briefed about the objectives and methods of the study, their consents were obtained, and questionnaires were completed by the patients (questions were explained by an interviewer to illiterate patients). After collection and coding, data were analyzed using SPSS-15 software. The descriptive statistics included frequency, mean, and standard deviation, and in the analytical statistics, based on the existing assumptions, statistical tests such as Chi-square, Fisher's exact test, and Pearson and Spearman's correlation coefficient were used.

### RESULTS

Mean age of the study subjects was  $44 \pm 14.27$  years, and 56.5% were female. Other demographic details are presented in table 1.

**Table 1:** Demographic details of the cancer patients referred to Imam Khomani and Shohadai Tajrish hospitals in Tehran-2012

%	Number	Categories	Variables	%	Number	Categories	Variables
49.4	76	Tehran	Place of residence	56.5	87	Female	Gender
50.6	78	Other cities		43.5	67	Male	
52.7	81	1 year	Duration since diagnosis	19.5	30	Single	Marriage status
16.2	25	2 years		73.4	113	Married	
9.1	14	3 years		7.1	11	Widowed/divorced	

			of cancer			ced	
6.5	10	4 years		38.9	60	Metastatic	Metastasis
5.8	9	5 years		61.1	94	Non-metastatic	
9.6	15	More than 5 years		18.2	28	Primary and	Education level
38.3	59	Breast	Type of cancer	53.9	83	Diploma	
20.1	31	Digestive		27.9	43	University	
9.8	15	Hematology		12.3	19	Freelance	
3.9	6	Uterus and ovaries		13	20	Employed	Occupation
6.5	10	Prostate		43.5	67	Housewife	
5.8	9	Lung		20.2	31	Other	
15.6	24	Other		11	17	Unemployed	

Table 2 presents a full description of scores of PTG and its dimensions in study subjects. In this study, mean score of PTG was 71.14±14.5 (table 2).

Table 2: Scores of PTG and its dimensions in cancer patients

Components	Maximum score	Mean	%	Standard deviation
New possibilities	25	14.3	57.2	4.9
Communication with others	35	25.35	72.42	5.6
Personal strength	20	13.75	68.75	3.4
Appreciation of life	15	10.16	67.7	2.8
Spiritual changes	10	7.55	75.5	2.0
Total score of posttraumatic growth	105	71.14	67.75	14.5

Mean score of QOL in the physical dimension was found 60.24±19, and in the mental dimension 59.86±17.6. It was identified that there is a significant correlation between physical dimension of QOL (r=0.183 and P=0.02) and mental dimension of QOL (r=0.245 and P=0.002) and PTG. There was a significant correlation between PTG dimensions of: personal strength, appreciation of life, and new possibilities with physical and mental dimensions of QOL, and an inverse correlation between spiritual changes and QOL (table 3).

Table 3: Correlation between posttraumatic growth and quality of life, using Pearson test

	New possibilities	Communication with others	Appreciation of life	Personal strength	Spiritual changes	Overall PTG
Physical dimension of QOL	R=0.219 P=0.006	R=-0.05 P=0.55	R=0.178 P=0.027	R=0.30 P=0.000	R=-0.13 P=0.1	R=0.183 P=0.02
Psychological dimension of QOL	R=0.218 P=0.007	R=0.168 P=0.037	R=0.193 P=0.016	R=0.35 P=0.000	R=-0.10 P=0.21	R=0.245 P=0.002

**DISCUSSION**

In this study that was conducted with the aim to examine the relationship between QOL and PTG in cancer patients, mean score of PTG was higher compared to mean scores found in cancer patients in other studies [6-7], or even non-clinical samples in some studies [12-13]. These results indicate high PTG in cancer patients in the Iranian society. Given the scores obtained in the two dimensions of spirituality and relationship with others, one of the influential factors in high PTG score in the Iranian society could be induced by religious teachings in this society because people turn to spirituality to adjust to incurable diseases (14). A second factor that can be involved is increased level of relationships in these patients; as studies have shown, patients' relationships increase with chronic diseases [15].

Unlike most previous studies [6-7, 12-13], the highest positive change in the subjects was observed in the spiritual dimension. In the findings of a study by Morris et al., spiritual changes scored the lowest [7]. Also, in the study by Teodorescu et al. [9] it was identified that the highest growth was in appreciation of life dimension, while the lowest growths were observed in the two dimensions of new possibilities and relationship with others. Given the religious attributes of the Iranian people, the highest growth in cancer

patients can be expected to be in spirituality. Previous studies also indicate spirituality as one of the main strategies for compliance with cancer in the Iranian society [14].

Unlike findings in previous studies showing conflicting results regarding the relationship between PTG and QOL, and some literatures finding a weak positive significant relationship, and some others reporting an inverse weak relationship between these two, in this study, a significant and relatively high relationship was observed between the physical and mental dimensions of QOL with PTG. In the Hallam study [8], a direct and significant relationship was identified between PTG and QOL, so that, patients with some degree of growth, have better QOL. Results of a study by Teodorescu *et al.* (9) also showed a direct and significant relationship between PTG and the mental dimension of QOL.

Also, unlike findings of the present study, in the study conducted by Bellizzi *et al.* investigating the relationship between QOL and PTG in cancer patients, it was shown that there is no significant relationship between these two variables [6]. In a study by Tomich and Helgeson [16] on the relationship between PTG and QOL, higher growth was associated with lower mental dimension of QOL. In the meta-analysis conducted by Helgeson *et al.* [17], on the PTG predicting factor, it was shown that growth has no relationship with the general QOL, or its physical and psychological dimensions [17].

As well as the significant correlation between PTG and QOL found in the presents study, correlations were also observed between QOL and all dimensions of PTG except the spirituality dimension. Study results showed that personal strength is directly and significantly correlated with the physical and psychological dimensions of QOL. This is important because it shows that people who have become stronger as a result of the struggle with the disease report more desirable QOL.

Appreciation of life and creating new possibilities also have a direct and significant correlation with QOL, and scores of physical and mental dimensions of QOL increase with increasing scores of appreciation of life and new possibilities. It appears that patients that hadn't lost hope because of cancer, and have new plans for their lives, or have been able to appreciate their remaining health and capabilities, and reinforce them or make use of their capabilities advantageously, have better QOL compared to other patients.

An interesting point in this study was the inverse correlation between spiritual changes and physical and mental dimensions of QOL; patients with low QOL reported higher spiritual growth, both from the physical and mental dimensions. This inverse correlation is explained by the fact that more stress experienced by the person leads to more growth [6]. Normally, people are entangled in daily life, and realize their own physical and psycho-social needs; illness causes the person to be distanced from ordinary life, and pay attention to his own spiritual and higher needs [14]. In fact, illness is the trigger that forces the person to assess him, and attempts to modify his shortcomings, and get closer to transcendental aspects of life, and thus achieve some degree of growth.

Regard to positive relationship between PTG and QOL in this study, it is suggested that care providers including nurses, psychologists, and even the clergy should use the potential grounds for growth in adjustment of these patients with the stressful event of cancer and increase their QOL.

It is recommended that in future studies other influential factors in PTG in the Iranian society be investigated. One of the study limitations was low education level of nearly 25% of patients, and questionnaires were completed through interviews conducted by the researcher.

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