

## Posttraumatic Growth and its Dimensions in Patients with Cancer

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### Abstract

**Background:** Physical and psychological stresses produced by diagnosis and treatment of cancer can lead to positive psychological changes or posttraumatic growth. The aim of current study is to assess posttraumatic growth and its dimensions in Iranian patients with cancer, and the impact of demographic characteristics on posttraumatic growth.

**Methods:** This was a descriptive study on 452 patients with cancer who referred to the oncology wards of two main hospitals in Tehran, Iran. The instruments were the Demographic Characteristics Scale and the Posttraumatic Growth Inventory. SPSS version 15 was used to analyze the data.

**Results:** The mean age of participants was  $46.2 \pm 14.2$  years, 59% were female and 39% had metastatic cancer. The mean PTGI score of the participants was  $68.6 \pm 14.6$ . The most acquired percentage of score was for "spiritual changes" and "communication with others". Age, educational status, income, and type of cancer had significant correlation with posttraumatic growth score.

**Conclusion:** The findings of the current study indicated that the score of posttraumatic growth in Iranian patients with cancer was higher than in patients of Western societies. The most improvement was seen in the "spiritual changes" dimension.

**Keywords:** Posttraumatic growth, Cancer, Spirituality

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### Introduction

According to studies undertaken in recent years, it seems that many of

those who survived after stressful events have experienced positive psychological changes<sup>1</sup> including

appreciation of life, setting new priorities in life, feeling stronger, finding a profound sense of meaning, identifying new opportunities, feeling closer to relatives, and positive spiritual changes.<sup>2</sup> Posttraumatic growth is the experience of positive psychological changes that are created by struggling during the stressful event.<sup>1</sup>

One of the most stressful events is diagnosis and treatment of cancer. A psychologically and physically stressful condition that results from the diagnosis and treatment of cancer can provide the grounds for positive psychological changes, which is considered to be posttraumatic growth.<sup>3</sup> The studies indicate that most patients who survive cancer have experienced positive changes during the course of the disease.<sup>4-7</sup> The perceived growth as the result of the diagnosis and treatment of cancer is common and it occurs in 60% to 90% of cancer survivors.<sup>8</sup>

Understanding posttraumatic growth provides nurses and other health care providers with information that can assist them in providing care and helping the patients in coping better with their stressful situation. Patients who experience posttraumatic growth show positive and meaningful changes in their emotional and cognitive life, which has a positive impact on their behavior.<sup>9</sup> These positive changes can facilitate the process of understanding the stressful event for the patient and create a positive view for the patient, their family and their lifestyle.<sup>10</sup>

The aspects of posttraumatic growth varies in different communities.<sup>2,4</sup> In the differences among the aspects of posttraumatic growth in different populations, the demographic characteristics of the samples are associated with the positive changes in each individual. For example there are more positive changes in women than men.<sup>11,12</sup> In other studies young people have reported more posttraumatic growth compared to the elderly,<sup>12,13</sup> married,<sup>11</sup> wealthy,<sup>14</sup> and patients under extensive chemotherapy.<sup>12</sup>

Several studies on posttraumatic growth in cancer patients have shown growth in Western societies.<sup>3,5,15-18</sup> However, there are few studies on the experience of posttraumatic growth in other

cultures, particularly in Eastern societies. Researchers have only located one study on this subject that examined the posttraumatic growth of patients with cancer in Azarbaijan (Northwestern Iran).<sup>19</sup> The concept of posttraumatic growth is related to the social and cultural context of the study population, and there are a limited number of studies conducted on cancer patients in Iran. Therefore, the aim of this study is to examine the concept of posttraumatic growth, its aspects in cancer patients from Iran and the associated demographic factors.

## Materials and Methods

This is a cross-sectional study conducted as a part of a larger study at Shahid Beheshti University of Medical Sciences, Iran. The sampling was done from March 2012 to January 2013. The study population consisted of 452 patients with cancer who referred to the Oncology and Cancer Clinics of Shohada-e-Tajrish and Imam Khomeini Hospitals (the two mentioned clinics are the largest referral centers for patients with cancer in Iran). Patients who enrolled in the study were diagnosed with cancer by an oncology specialist and were aware of this diagnosis. Other inclusion criteria included: diagnosis and treatment procedures undergone at least one year before the study, minimum age of 21 years, and no history of severe psychiatric disorder such as schizophrenia. Cancer type, stage, and grade of disease progression were not considered as inclusion criteria.

The tools used in this study included a demographic characteristics questionnaire and the posttraumatic growth inventory (PTGI). The demographic characteristics questionnaire included ten questions about age, gender, marital status, education, occupation, place of residence, type of cancer, the extent of cancer (metastatic and non-metastatic), type of treatment, and duration of the illness. The PTGI was developed in 1996 by Tedeschi and Calhoun to assess the concept of posttraumatic growth in the United States. This tool has 21 items, which determines 5 domains of psychological growth after encountering a traumatic stressor (identifying new opportunities,

**Table 1.** The scores of posttraumatic growth and its dimensions in cancer patients who referred to Imam Khomeini and Shohada-e-Tajrish Hospitals in 2012.

Dimensions	Minimum score	Maximum score	Mean	Mean items score deviation	Standard
Identifying new opportunities	0	25	12.9	2.58	5.5
Communication with others	5	35	25.06	3.58	4.9
Becoming stronger	0	20	13.05	3.26	3.85
Appreciation of life	0	15	9.94	3.31	2.87
Spiritual changes	0	10	7.58	3.79	2.10
Total score of posttraumatic growth	25	105	68.6	3.26	14.6

communicating with others, appreciating life, personal power, and spiritual changes). This tool is based on the six point Likert scale, of which the first item is assigned zero points (not in general); items 2 to 6 receive 1 to 5 points (very little, to some extent, moderate, to a large extent, and very much). Scores range from zero to 105. Higher scores indicate greater posttraumatic growth and lower scores represent less posttraumatic growth. The PTGI has a good internal consistency for the entire instrument ( $\alpha=0.90$ ) and an acceptable internal consistency for the five sub-scales ( $\alpha=0.67-0.85$ ). Test-retest reliability over two months was  $ICC=0.71$ .<sup>1</sup> The reliability and validity of the instrument were examined by the researchers for the first time in Iran, and the five factor structure of the PTGI was approved. Coefficient alpha for the entire instrument was  $\alpha=0.87$ , and the coefficient obtained for the five sub-scales was  $\alpha=0.57-0.77$ . Correlation between two times performing the test with a 30-day interval in 18 patients was  $ICC=0.75$ .

The data were gathered after the study was explained to the participants who gave their informed consent. Subsequently, questionnaires were completed by the patients. In cases where the patients were illiterate the questions were explained by an interviewer. Data analysis was performed by descriptive statistics (mean, median, range, and frequency) and inferential statistics (t-test, ANOVA, chi square, Fisher, etc.) using SPSS for Windows (version 15; SPSS Inc., Chicago, IL., USA).

## Results

In this study data from 452 patients were analyzed. There were 47.6% of patients who resided in Tehran; the remainders were from other areas in the country (29 provinces). Mean age of the participants was  $46.2\pm 14.2$  years, with a range from 19 to 80 years. There were 267 (59%) female and 185 (41%) male patients. Metastatic cancer was present in 39% of patients.

The results indicated that all cancer patients who participated in this study (100%) showed some degree of growth. The mean posttraumatic growth was  $68.60\pm 14.6$ . The highest percentages of scores in different dimensions were spiritual changes, communication with others, appreciation of life, becoming stronger, and identifying new opportunities (Table 1). Among the different expressions, the expression number 21 ("I realize we all need to help each other.") had the highest mean score (4.37).

In studying the relationship between demographic characteristics and posttraumatic growth it was found that age had a negative significant correlation with posttraumatic growth ( $P<0.0001$ ,  $r=-0.186$ ) and with its three dimensions; "identifying new opportunities" ( $P=0.0001$ ,  $r=-0.244$ ), "appreciation of life" ( $P=0.0001$ ,  $r=-0.178$ ) and "becoming stronger" ( $P=0.029$ ,  $r=-0.103$ ). Although there was no significant difference between the total score of posttraumatic growth of the two genders, the score of "communication with others" was higher in women than in men. With the increase in educational level, the score of posttraumatic growth and its dimensions; "new opportunities"

and "becoming stronger" also increased. The income of the patients had a significant relationship with the score of posttraumatic growth in patients with cancer. With increase in income, the score of posttraumatic growth and the dimensions of "new opportunities" and "appreciation of life" also increased. There was no significant difference in the score of posttraumatic growth and its dimensions according to other demographic characteristics that included marital status, occupation, duration of cancer diagnosis, growth of cancer (metastatic and non-metastatic), and type of cancer (Table 2).

## Discussion

The aim of this study was to examine posttraumatic growth in patients with cancer from Iran and to evaluate its relationship with some demographic characteristics of these patients. The results of this study supported the results from previous studies which showed that experiencing a stressful event such as diagnosis of cancer could have positive psychological effects.<sup>4-7</sup> Studies conducted in Western societies showed average posttraumatic growth.<sup>3-5,18,20-23</sup> The mean score of posttraumatic growth in this study was higher than the mean score from other studies<sup>4,24</sup> on patients with cancer and even from the non-clinical participants like college students and soldiers.<sup>25,26</sup> These results indicated that cancer patients in Iran had more posttraumatic growth than other societies. The score of posttraumatic growth in this study was less than the study by Rahmani et al. which was conducted in a specific area of Iran (Azarbaiejan) by using PTGI.<sup>19</sup> This showed that the results might vary based on cultural differences.

Contrary to previous studies, the highest growth in the study subjects was related to spiritual dimensions. The study by Morris et al. revealed that the highest posttraumatic growth in patients with cancer was related to appreciation of life, communication with others, becoming personally stronger, new priorities, and spirituality, respectively. It meant that spiritual changes had the lowest score.<sup>4</sup> A study conducted by Teodorescu

et al. have shown that the highest growth occurred regarding "appreciation of life".<sup>2</sup> With regard to the religious characteristics of Iranians, it is expected that patients with cancer have the highest growth in the aspect of spirituality. Previous studies have shown that spirituality is one the main strategies for adapting to cancer for patients in Iran.<sup>27, 28</sup>

The results of the present study indicated that statement number 21 ("I realize we all need to help each other.") had the highest mean score among other statements. However in the study by Morris et al. the statement "I appreciate every moment of my life." had the highest mean score among the statements.<sup>4</sup> Statement number 21 is part of the dimension, "communication with others", which had the highest percentage of score after the spiritual dimension. This result was in line with previous studies which showed that communicating with others during problems, especially chronic illnesses, has increased in the Iranian society.<sup>29-31</sup>

There was a negative significant relationship between age and posttraumatic growth; the score of posttraumatic growth in teenagers was higher than in older patients. Previous studies showed different results in this regard. Some have shown a reverse relationship between age and posttraumatic growth.<sup>32-34</sup> Other studies did not approve this correlation.<sup>5</sup> In this study the results indicated that young patients had a higher posttraumatic growth score in the dimensions of "identifying new opportunities" and "appreciation of life". It seemed that younger people found new paths in life and attempted to live better.

The present study showed a direct relationship between education and posttraumatic growth and dimensions of "identifying new opportunities" and "becoming stronger". Different studies had different results regarding the relationship between educational level and posttraumatic growth. Cordova et al. gained a positive relationship between education and posttraumatic growth.<sup>34</sup> However, in other studies<sup>18, 32</sup> this relationship was diverse, while in the research by Lechner et al. there was no relationship between education and

**Table 2.** The relationship between demographic characteristics and posttraumatic growth in cancer patients referred to Imam Khomeini and Shohada-e-Tajrish Hospitals in 2012.

Demographic characteristics		Number	Mean (SD)
Gender	Female	267	69.15 (14.7)
	Male	185	67.8 (14.5)
Marital status	Married	353	68.46 (14.75)
	Single	99	69.05 (14.13)
Education	Primary	149	65.24 (15.13)*
	Diploma	212	70 (13.9)*
	University degree	90	71.12 (14.4)*
Metastasis	Metastatic	172	67.14 (14.6)
	Non-metastatic	268	69.16 (14.5)
Income	Low	129	66.14*
	Medium	206	69.74*
	Good	70	71.9*
Duration of cancer diagnosis	1 year	254	68.92 (13.56)
	2 years	71	23/68 (17.44)
	3 years	34	67.0 (13.94)
	4 years	20	66.8 (6/17)
	>5 years	72	69.0 (14.97)
Occupation	Employed	154	69.7 (14.6)
	Unemployed	298	68.02 (14.6)
Type of cancer	Breast	170	70.13 (14.4)*
	Gastrointestinal	90	67 (13.9)
	Hematology	27	70.9 (12.5)
	Prostate	23	63.5 (13.7)*
	Lung	17	63.5 (16.5)*
	Uterus and ovaries	20	65.35 (16)
	Other	100	68.6 (14.6)

\*Shows significant difference; SD: Standard deviation

posttraumatic growth.<sup>35</sup>

Although there was no significant relationship between gender and posttraumatic growth, the present study showed that women had higher posttraumatic growth than men; this growth was significant regarding the aspect of "communicating with others". Previous studies<sup>20,32,36</sup> also approved these results. In the study by Zwahlen et al. women had higher scores than men in dimensions of "communicating with others", "appreciation of life", and "becoming stronger".<sup>20</sup>

The present study showed a significant relationship between income and experiencing posttraumatic growth in cancer patients. With increase of income the total scores of posttraumatic growth, and the dimensions of "identifying new opportunities" and "appreciation of life" increased. In the study by Carpenter et al., people with higher income had better posttraumatic growth

experiences.<sup>14</sup>

In this study patients with breast cancer had higher posttraumatic growth scores compared to patients with other types of cancer. This difference was significant compared to lung and gastrointestinal cancer patients. Women have higher growth scores compared to men; therefore, it is expected that patients with breast cancer, which are mainly women, have higher posttraumatic growth scores compared to other patients.

Contrary to previous studies, the present study did not show a significant relationship between posttraumatic growth and time of diagnosis<sup>13, 34</sup>, marital status,<sup>11</sup> kind of treatment received,<sup>12</sup> and disease progression variables. In the study by Carpenter et al. there was a significant relationship between disease progression and growth.<sup>14</sup>

The limitation of this study was that due to the illiterate participants, approximately 25% of the

questionnaires were completed by the researcher.

## Conclusion

The present study indicated that all the participating cancer patients had experienced some level of posttraumatic growth. Contrary to the previous studies in Western societies, in this study the highest growth was in the dimension of spiritual changes. The results of this study can have clinical applications. Some studies in Iran have shown that most of the health care providers are reluctant in revealing the diagnosis of cancer to patients due to the possibility of negative consequences for these patients.<sup>37,38</sup> However, contrary to what is expected, the results have shown that the experience of cancer may have positive psychological consequences for patients. It is suggested that further studies be conducted on other influencing factors on posttraumatic growth in Iran. Therefore, identifying these factors helps to adjust and improve the patients' health and even improve their quality of life.

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## Conflict of Interest

No conflict of interest is declared.

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