Validation of the Persian Version of the Posttraumatic Growth Inventory Using Iranian Patients with Cancer

Mehdi Heidarzadeh	* Maryam Rassouli	Farahnaz Mohammadi shahbolaghi
PhD candidate, Nursing & Midwifery School, Shahid Beheshti University of Medical Sciences	PhD, RN, Assistant professor, Nursing & Midwifery School, Shahid Beheshti University of Medical Sciences. * correspondent author	Assistant Professor of Social Determinants of Health Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
Hamid Alavi Majd	**Hamidreza Mirzaei**	**Mamak Tahmasebi**
PhD, Associate professor, Para Medicine School, Shahid Beheshti University of Medical Sciences	Associate professor, Oncology and Radiotherapy Department, Shahid Beheshti University of Medical Sciences	Assistant professor, Gynecologist, Palliative Medicine Fellow, Cancer Institute of Imam Khomeini Hospital, Tehran University of Medical Sciences

ABSTRACT *purpose: Posttraumatic growth is defined as subjective positive psychological changes following the struggle with highly challenging life events. The Posttraumatic Growth Inventory (PTGI) is one of the most credible tools for measuring these changes. The aim of current study was translating the PTGI into Persian and validating it using Iranian patients with cancer.*

Methods: This research validated the Persian version of the PTGI using 402 patients with cancer who referred to the oncology wards of two main hospitals in Tehran, Iran. The PTGI was translated into Persian and back-translated into English and the comments of its developers were applied. The scale's content and face validity, construct validity, and internal consistency and test-retest reliability were then assessed. SPSS 15 and LISREL 8.8 for Windows were used to analyze the data.

Results: The mean PTGI score of the participants was 68.68 ± 14.68. In confirmatory factor analysis, all fitness indexes, except goodness of fit index (0.88), confirmed the five-factor structure of the PTGI. Cronbach's alpha for the total 21 items of the PTGI and its five subscales was calculated as 0.87 and 0.57-0.77, respectively. Test-retest correlations (r = 0.75) suggested the acceptable repeatability of the Persian version of the PTGI.

Conclusion: The findings of the current study support the applicability of the Persian version of the PTGI for measuring perceived growth following cancer diagnosis.

Introduction

Frankl (1961) was the first to announce the possible positive effects of some major life crises (Frankl, 1961). However, systematic attempts to understand and investigate positive psychological changes after stressful events have been postponed until recent years (O'Leary & Ickovics, 1995; Tedeschi & Calhoun, 1995, 1996; Tedeschi et al., 1998). Some stressful life events may in fact facilitate positive psychological changes (Schroevers et al., 2010). Tedeschi and Calhoun were among the premier researchers who defined posttraumatic growth as a set of subjective positive psychological changes experienced following the struggle with highly challenging life circumstances (Tedeschi & Calhoun, 1996).

Diagnosis and treatment of cancer are traumatic experiences. Patients with cancer are faced with various complications like anxiety and depression as a result of undergoing radiotherapy and chemotherapy. These circumstances decrease the quality of life of the affected patients (So et al., 2010). On the other hand, individuals treated with a combination of radio- or chemotherapy and surgery suffer from higher levels of psychological distress than those receiving a single treatment (Pereira et al., 2012). However, the traumatic conditions evoked by the diagnosis and treatment of cancer can lay the g round for posttraumatic growth (Love & Sabiston, 2010). Many studies have shown diagnosis and treatment of cancer to be associated with some positive psychological outcomes (Taylor, 1983; Thornton & Perez, 2006; Sears et al., 2003;

Widows et al., 2005; Morris et al., 2012). Empirical evidence suggests perceived growth after diagnosis and treatment of cancer as a common phenomenon experienced by 60-95% of patients with cancer (Stanton et al., 2006).

Many instruments have been designed to evaluate posttraumatic growth. One of the most applicable and credible available tools is the 21-item Posttraumatic Growth Inventory (PTGI) which was designed by Tedeschi and Calhoun in 1996 (Tedeschi & Calhoun, 1996). The PTGI assesses new possibilities, relating to others, appreciation of life, personal strength, and spiritual change as five categories of psychological growth after struggling with stressful events. All items are scored based on a six-point Likert scale from 0 (not at all) to 5 (a very great degree). While the total scores of the PTGI can vary between 0 and 105, higher scores reflect greater growth (Tedeschi & Calhoun, 1996).

The PTGI has good internal consistency for the total 21 items (α = 0.90) and the five subscales (α = 0.67-0.85). Moreover, the test-retest reliability of the whole scale and its five subscales is 0.71 and 0.37-0.74, respectively (Tedeschi & Calhoun, 1996). The validity and reliability of the PTGI have been confirmed by various studies in numerous countries and among populations with the experience of different stressful events (Linley et al., 2007; Lee et al., 2010). Nevertheless, in spite of the high overall validity of the PTGI, not all previous research has approved its five-dimensional structure (Maer-

cker and Langner, 2001; Ho et al., 2004; Powell et al., 2003; Weiss & Berger, 2006; Taku et al., 2007; Hooper et al., 2009; Osei-Bonsu et al., 2012). For instance, Maercker and Langner (2001) validated the German version of the PTGI in a sample including both non-clinical subjects (university students with severely stressful life experiences) and clinical subjects (patients at internal medicine clinics). They showed acceptable reliability of the scale. However, confirmatory factor analysis replicated four out of the five original PTGI factors. Ho et al. (2004) assessed the dimensions of the Chinese version of the PTGI in a sample of 188 cancer survivors. Despite the good reliability of the scale, they reached a factor structure different from the original version with four rather than five factors.

Most researchers have used non-clinical samples to validate the PTGI. Besides, posttraumatic growth is widely influenced by cultural aspects of communities (Morris et al., 2010). Considering the absence of a standard tool to assess this concept in Iran, evaluation of the psychometric properties of the PTGI through a study on a clinical sample of Iranian subjects seems necessary. Therefore, we translated the PTGI and validated its Persian version using an Iranian population of patients with cancer.

Methods

This was a methodological study (Lobiondo-Wood & Haber, 2006) translated the PTGI and validated its Persian version among Iranian patients with cancer. The study population comprised of patients with cancer who referred to oncology wards and cancer clinics of Imam Khomeini Hospital (as the largest center of oncology in Iran) and Shohada Hospital in Tehran, Iran. Since these large educational and therapeutic centers accept patients from all over the country, we could access individuals with different cultures and attitudes. Convenient sampling was performed until reaching the acceptable sample size for confirmatory factor analysis. Individuals whose cancer diagnosis had been confirmed by an oncologist were included only if they were aware of their disease, had been affected by cancer for at least one year, aged 21 years old or more, and had no history of severe mental disorders such as schizophrenia. Type and stage of cancer and step of therapy were not considered as inclusion criteria. Finally, 402 eligible patients (mean age: 46.7 ± 14.0 years old) were selected.

We translated and validated the PTGI according to the method suggested by Wild et al. (Wild et al., 2005). After the approval of the developers of the PTGI, it was translated into Persian by two researchers. The two translations were then compared and edited and a final copy was prepared. In the next step, the text was back-translated into English by an English language expert and sent to the designers of the scale. Afterward, the comments of the designers were applied and the validation process using content and face validity, construct validity (by confirmatory factor analysis), and test-retest and internal consistency reliability was conducted.

In order to assess content validity index, five oncology nursing instructors, one oncologist, two psychiatric nurses, five nursing professors and PhD instructors, an educational supervisor, and a nurse in the oncology ward were asked to comment on the translated scale. They also confirmed the face validity of the Persian version of the PTGI.

The participants provided informed consents after they had been explained about the study objectives and procedure. The questionnaires were then filled out individually. The researcher read the items to the illiterate individuals and marked their responses.

LISREL 8.8 for Windows (SSI Inc., Skokie, IL, USA) was used confirmatory factor analysis of all five dimensions of the PTGI. Internal consistency reliability and test-retest were performed by using SPSS for Windows version 15 (SPSS Corporation, Chicago, Illinois). Internal consistency reliability of the scale was calculated by Cronbach's alpha. The correlation between test-retest among 18 patients with a 30-day interval was used to assess the repeatability.

Results

According to the viewpoints of the 15 experts, content validity index of the whole scale was 0.97 and the scores of relevance, clarity, and simplicity were 0.98, 0.96, and 0.96, respectively.

A total number of 402 patients with cancer were evaluated. The demographic characteristics of the patients are reported in table 1. The mean total score of PTGI in this study (68.68) was lower than that reported from the original scale (Tedeschi & Calhoun, 1996).

Confirmatory factor analysis was used to assess the original five-dimensional PTGI. The ratio of chi square to degree of freedom in this model was 3.25. Other fit indexes such as comparative fit index (0.940), incremental fit index (0.930), root mean square error of approximation (0.075), normed fit index (0.910), non-normed fit index (0.930), relative fit index (0.900), and standardized root mean square residual (0.055) indicated that the model fitted (Brown, 2006).

Table 1
Demographic characteristics of patients with cancer

Parameter	Category	Number	Percentage
Sex	Female	241	60.0
	Male	161	40.0
Marital status	Single	50	12.4
	Married	316	78.6
	Widowed or divorced	36	9.0
Metastasis	Metastatic	150	38.5
	Non-metastatic	240	61.5
Education level	Primary school	141	35.0
	Secondary school	184	45.8
	University degree	77	19.2
Occupation	Self-employed	56	13.9
	Employee	42	10.4
	Housewife	185	46.0
	Retired	35	8.7
	Other	32	8.1
	Unemployed	52	12.9
Years after cancer diagnosis	1	228	56.9
	2	63	15.7
	3	30	7.5
	4	17	4.2
	5	15	3.7
	> 5	48	12.0
Type of cancer	Breast	154	38.7
	Gastrointestinal	78	19.6
	Hematologic	21	5.3
	Cervical/ovarian	19	4.8
	Prostate	21	5.3
	Lung	17	4.3
	Liver	10	2.5
	Other	78	19.6

Cronbach's alpha was 0.87 for the whole PTGI and 0.57-0.77 for the five subscales. The test-retest correlation for the PTGI score was 0.75 (p < 0.001). The values for the five subscales of relating to others, new possibilities, personal strength, spiritual changes, and appreciation of life were 0.64, 0.73, 0.68, 0.71, and 0.75, respectively (p < 0.001).

Discussion and Conclusion

We translated the PTGI into Persian and assessed its psychometric characteristics and factor structure in patients with cancer. When an instrument is translated into another language or used in another culture, its psychometric properties need to be evaluated (Michaeli-Manee, 2011). Apparently, we were the first to validate the PTGI in an Iranian population. Based on our findings, the Persian version of the PTGI has good validity and a factor structure significantly similar to the original scale (Tedeschi & Calhoun, 1996). Moreover, 15 experts confirmed the relevance, clarity, and simplicity of the translated PTGI.

Confirmatory factor analysis of the PTGI was performed using a sample of 402 patients with cancer. Since five out of this goodness of fit indices were in acceptable range, the original five-factor structure of the scale fitted well. Previous studies have also confirmed the five-factor structure of the PTGI (Lee et al., 2010; Linley et al., 2007). However, the main difference between this study and other research was in participants. Lee and colleagues confirmed the five-factor structure of the PTGI using a sample of active duty soldiers exposed to combat in Iraq or Afghanistan (Lee et al., 2010). Linley and colleagues reported good fitness of the model after evaluating a sample of 372 students with experiences of stressful life events (Linley et al., 2007). Our study proved that the 21-item PTGI and its subscales are also valid in patients with cancer.

In contrast, some researchers have not confirmed the 21-item PTGI (Hooper et al., 2009; Weiss and Berger, 2006; Maercker and Langner, 2001; Ho et al, 2004). For instance, Hooper and colleagues (2009) distributed the scale among 143 college students with a history of stressful events during childhood. The goodness-of-fit indices for the five-factor model indicated a moderate fit. In fact, a five-factor, 18-item model produced a more optimal fit than the original 21-item PTGI. Therefore, they excluded items 1, 10, and 16. In another study, Weiss and Berger (2006) validated the Spanish version of the PTGI using 100 people with distressing experiences of immigration. Although they found the translated version highly reliable, factor analysis failed to confirm the original five factors and a three-factor model was hence suggested.

In summary, although studies on validity and the five-factor structure of the translated PTGI in various populations with different experiences of stressful events have reported inconsistent results, they have all confirmed the good reliability and validity of the PTGI. Discrepancies in factor structures obtained from different populations might have been caused by dissimilar background and culture. We, however, not only found the PTGI highly reliable and valid, but also confirmed its five-factor structure.

In this study, an acceptable Cronbach's alpha, which was also close to the original value reported by Tedeschi and Calhoun (1996), was calculated for the total 21 items of the PTGI. Cronbach's alpha is the most widely used method for evaluating internal consistency (Polit & Beck, 2011). The normal range of alpha is between 0 and 1 and higher values reflect higher internal consistency. While for group-level comparisons, coefficients around 0.70 are usually adequate, coefficients of 0.80 or greater are highly desirable (Polit and Beck, 2011). We could obtain acceptable Cronbach's alpha only for the three subscales of new possibilities, personal strength, and spiritual changes. Lower alpha coefficient in appreciation of life dimension is reasonable due to its small number of items (n = 3). In addition, similar to the study of Tedeschi and Calhoun (1996), we found moderate item-total correlations in this dimension. The most challenging item in this dimension seemed to be item number 1 (I changed my priorities about what is important in life) which had the lowest item-total correlation and whose deletion increased the alpha. Apparently, diagnosis and treatment of cancer affect Iranian patients' priorities less than other aspects of their life. Overall, high test-retest correlations in the present study indicated good reliability of the PTGI in Iranian patients with cancer.

We interestingly observed the acceptable internal consistency of the spiritual dimension in spite of its few items (n = 2). In fact, the correlation between these two questions was greater than the mean correlation between questions of other dimensions. Moreover, the highest percentage of the acquired scores related to spiritual changes. Therefore, spiritual growth is the most significant dimension of growth in Iranian patients with cancer. Other studies have also identified spirituality as a major coping strategy among Iranian patients with cancer (Taleghani et al., 2006; Farsi et al., 2010).

Evaluating and Understanding the concept of posttraumatic growth can help the nurses and other health care providers to increase copping in patients with cancer (The third level of prevention). The findings of the current study support the applicability of the Persian version of the PTGI for measuring perceived growth following cancer diagnosis. However, further studies on posttraumatic growth in Iran are warranted.

Illiteracy of 25% of our participants forced us to fill out their questionnaires through interviews which can be considered as the main limitation of the present study. In addition, we did not establish criterion validity due to lack of a suitable scale. Future studies are thus suggested to evaluate criterion validity besides other factors.

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