ORIGINAL ARTICLE

VALIDATION OF THE MALAY VERSION OF THE POSTTRAUMATIC GROWTH INVENTORY-SHORT FORM (PTGI-SF) AMONG MALAYSIAN CANCER PATIENTS

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Abstract

Introduction: **Posttraumatic growth (PTG) is a positive psychological change in life that occurs as a result of struggle with highly challenging life crises. There is a growing need to explore posttraumatic growth (PTG) in cancer patients, as higher PTG may enhance well-being of patients.** *Objectives:* **The aim of this study was to translate the Posttraumatic Growth Inventory-Short Form (PTGI-SF) into the Malay language and evaluate its psychometric properties for assessing Malaysian cancer patients in future studies.** *Methods:* **Two parallels forward and backward translations of the PTGI-SF into the Malay language were conducted. The test was administered to 195 cancer patients. Reliability was evaluated by testing internal consistency (Cronbach's α) and calculating the test-retest intra-class correlation coefficient, and validity was examined by determining face, convergent, and discriminant validities and using confirmatory factor analysis (CFA).** *Results:* **The Malay version of the PTGI-SF and its five domains demonstrated good internal consistencies and acceptable test-retest reliability. All 10 items of this version were highly correlated with their own domains and thus exhibited convergent validity. Discriminant validity was achieved, as all domains of the Malay PTGI-SF was not highly correlated with the domains of the Source of Social Support Scale. CFA resulted in a best-fitting 5-factor model.** *Conclusion:* **The Malay version of the PTGI-SF is a suitable tool for measuring PTG in Malaysian cancer patients.** *ASEAN Journal of Psychiatry, Vol. 18 (2): July – December 2017: XX XX.*

Keywords: Malaysian Cancer Patients, Malay Version of PTGI-SF, Reliability, Validity, Posttraumatic Growth

Introduction

There are many situations or events that cause trauma in life, such as experiencing a car accident, rape, natural disaster, physical or sexual abuse, being a refugee or prisoner of war, and suffering from chronic and recurrent illnesses such as cancer. Most victims of such events suffer from acute trauma whereby they constantly think about the nature of the trauma that occurred. Unlike those with acute trauma, those diagnosed with cancer experience

chronic trauma and persistently worry about adverse effects of treatment and possible recurrence of cancer (i.e., future trauma). Hence, no doubt a proportion of cancer patients tended to develop posttraumatic growth (PTG) as a result of their illness [1].

PTG is defined as positive psychological changes that occur as a result of struggle with major life crises or traumatic events [2]. Not all patients with cancer will experience PTG; it will only occur if the person strongly perceives the illness and its course as a threat and has an intense emotional response to the seriousness of the event [3]. The importance of studying PTG and possible factors that may enhance PTG in cancer survivors is the potential benefits it may provide, such as a greater value of life, improved interpersonal relationship with others, higher capacity and strength to face new possibilities in life, higher spiritual maturity, and optimisation of self-values [1].

Several screening tools are used to assess the level of PTG in cancer patients. These include the Posttraumatic Growth Inventory (PTGI) [4], Stress-Related Growth Scale [5], Changes in Outlook Questionnaire [6], and Perceived Benefit Scales [7]. Among these, the PTGI is the most widely used questionnaire for assessing PTG. The PTGI is a 21-item scale that measures the degree of positive change experience by a person in the aftermath of a traumatic event. It consists of five subscales (appreciation of life, spiritual change, and new possibilities in life, personal strength, and relating to others). The PTGI total score has excellent internal consistency (Cronbach's α = 0.9), and its five subscales have acceptable internal consistencies (Cronbach's α ranged from 0.67 to 0.85). Confirmatory factor analysis (CFA) demonstrated that an oblique 5-factor model was the best-fit [4].

The Posttraumatic Growth Inventory-Short Form (PTGI-SF) is a shortened version of the original PTGI (Appendix 1). It consisted of the same five subscales but has a total of 10 items with two items designated to each subscale. The advantage of using the PTGI-SF instead of the PTGI for assessing cancer patients is that it takes less time to administer and has fewer total questions to answer; this is beneficial for cancer patients who are physically weak and have reduced concentration. Hence, the PTGI-SF may minimize response bias from cancer patients. The PTGI-SF has demonstrated good internal consistency (Cronbach's α = 0.86), and its five subscales have acceptable internal consistencies (Cronbach's α ranged from 0.68 to 0.8). CFA demonstrated the same 5-factor model as the best fit for both the PTGI and PTGI-SF. PTGI-SF has been shown to measure the degree of posttraumatic growth equivalent to that of PTGI. Thus, the PTGI-SF can be used in place of the PTGI for measuring degree of PTG without significant loss of information [8].

The PTGI-SF has been translated and validated in several other languages, such as Portuguese, French, Urdu, and Spanish [9 - 12]. The goal of this study was to translate the original English version of the PTGI-SF into the Malay language and determine the psychometric properties of the Malay version for use in future studies of PTG in Malaysian cancer patients.

Methods

Translation of the PTGI-SF

The original English version of the PTGI-SF was translated in parallel by two bilingual language experts who were native speakers of the Malay language and proficient in English. It then was back-translated by another bilingual expert who was a native speaker of English and proficient in the Malay language who had never seen the original English version. Permission for validation of the questionnaire was obtained from Cann et al. (2010) prior to these processes. A group of experts consisting of two psychiatrists, a clinical psychologist, and a PTG expert assessed the translated and back-translated versions of the questionnaire to decide on the appropriateness of the contents before the final draft of the Malay version of the PTGI-SF was generated. A pilot study was conducted in which the final draft of the Malay version was administered to 20 Malay speaking Malaysian cancer patients to identify any flaws in the wordings and sentence structure, appropriateness of questions asked and instructions given, and duration of

administration. Any sentences or questions found to be inappropriate were amended by the group of expects based on the feedback from the respondents in the pilot study.

Data collection

This prospective study received approval from the Human Ethics Committee of Universiti Sains Malaysia (code: USM/JEPeM/15060178).

Cancer patients with different diagnoses were recruited from the Oncology Unit of the Advanced Medical and Dental Institute, Universiti Sains Malaysia in 2016 for one year. The inclusion criteria were patients with any type of cancer diagnosis confirmed by the histopathological report (except those with a primary brain tumour), no cognitive impairment (cognitive functioning screened using the Malay version of the Mini Mental State Examination; participants must have a score of > 24/30), 18 years and older, ambulatory, any stage of cancer except those with brain metastasis, and those who understand and can read and write in the Malay language. Those who were too weak to answer questionnaires were excluded from the study. Cancer patients were approached and told about the study. Those who agreed to participate signed the informed consent form and enrolled in the study.

Baseline assessment was performed by administering a general questionnaire (which included age, gender, education status, race, and type of cancer), the Malay version of the PTGI-SF, and the Malay version of the Source of Social Support Scale (SSSS) (used for comparison with the Malay version of the PTGI-SF to evaluate discriminant validity of the latter). Follow-up assessment commenced 2 months after baseline, at which time the Malay version of the PTGI-SF was re-administered (in order to assess test-retest reliability).

Research tools

The PTGI is a self-administered scale used to assess the degree of positive psychological change in a person that occurred as a result of a struggle with highly challenging life crises.

It consists of a total of 21 items and made up of five domains: appreciation of life, personal strength, relating to others, spiritual growth, and new possibilities in life. Each item is rated from 0 (I did not experience this change) to 5 (I experienced this change to a great degree). The higher the total score, the higher the level of PTG is [4]. The PTGI-SF is a shorter scale adapted from the PTGI that can be used to replace the PTGI without any significant loss of information. It consists of a total of 10 items in five domains, each of which contains two items (appreciation of life: items 1 and 2, spiritual change: items 3 and 8, new possibilities in life: items 4 and 7, relating to others: 5 and 10, and personal strength: items 6 and 9). It is scored from 0 to 50 and can be administered in a much shorter period of time compared to the PTGI [8].

The SSSS is also a self-administered scale that is used to assess a person's perceived level of spousal support. It consists of four domains (informational support, instrumental support, emotional support, and negative support) with a total of 10 items. The SSSS is scored on a Likert scale of 1 to 5 for each item, and its total score ranges from 10 to 50 [13]. In this study, the SSSS was used for comparison with the PTGI-SF to assess the discriminant validity of the latter.

Data analyses

Statistical analyses were carried out using SPSS version 22. Descriptive statistics were applied to describe the socio-demographic characteristics and the proportion of the types of cancer in this study. Reliability of the total score of the Malay version of the PTGI-SF and its domains was determined based on internal consistency using Cronbach's α and by computing the test-retest reliability using the intraclass correlation coefficient (ICC). Convergent validity of the Malay version of the PTGI-SF was measured using Pearson's correlation coefficient to assess the strength of correlations of items within the designated domains of the inventory. Discriminant validity was measured with Pearson's correlation coefficient to assess the strength of correlations between domains of the Malay versions of the PTGI-SF and those of the SSSS. Finally, exploratory factor analysis of

the Malay version of the PTGI-SF was carried out (with factor loading of > 0.4 for each item). This was followed by CFA with best-fitting model analysis using Analysis of Moment Structure version 22. Goodness-of-fit indicators included χ^2, goodness of fit index (GFI) where > 0.9 was acceptable, comparative fit index (CFI) where > 0.95 was acceptable, Tucker-Lewis index (TLI) where > 0.95 was acceptable, normed fit index (NFI) where > 0.90 was acceptable, and root mean square error of approximation (RMSEA) where < 0.10 was acceptable.

Results

We recruited 208 cancer patients in this study, but only 195 completed both baseline and follow-up assessments. The participants' mean age was 53 years old (±10.25).More than two-thirds of the participants were female (72.8%). Malays constituted more than four-fifths of the participants (82.1%), whereas the proportions of Chinese (9.7%) and Indians (8.2%) were almost equal. More than half of respondents had only secondary education (64.1%), followed by tertiary education (22.6%) and primary education (13.3%). Half of the participants had breast cancer (52.1%), 16.5% had colon cancer, 8.8% had nasopharyngeal

carcinoma, and 22.7% had other cancer diagnoses.

In the pilot study, assessment of face validity demonstrated that 76% of participants judged the duration of administration of the Malay version of the PTGI-SF to be "appropriate", and 24% responded that it was "very appropriate". Sixty-eight percent of participants found the wording and sentence structure to be "clear and comprehensive", and 32% responded that it was "very clear and comprehensive". Finally, 70% of participants judged the questions asked and instructions given to be "clear and comprehensive" and 30% found it to be "very clear and comprehensive". The participants commented they were able to comprehend the meaning of the wordings and sentences well, and able to understand the questions asked and instructions were given clearly. As a result, no further amendment of the Malay version of the PTGI-SF was necessary.

Test-retest reliability assessment demonstrated that total PTGI-SF score had an ICC value of 0.75 (p < 0.05), and its five domains had ICC values ranging from 0.55 to 0.75 (all p values < 0.05). The results are summarized in Table 1.

Table 1. Internal consistencies and test-retest intraclass correlation coefficient of the Malay version of the Post-traumatic Growth Inventory-Short Form (PTGI-SF)

	Baseline mean (SD)	Follow-up mean (SD)	Internal consistency (Cronbach's α)	Test-retest reliability (Intra-class correlation Coefficient)
Appreciation of life	7.27 (±2.11)	7.04 (±2.31)	0.86	0.55*
Spiritual growth	8.48 (±2.04)	8.47 (±2.13)	0.91	0.71*
New possibilities in life	8.02 (±1.95)	7.95 (±2.06)	0.90	0.75*
Relating to others	8.27 (±1.88)	8.14 (±2.03)	0.88	0.71*
Personal strength	8.19 (±1.92)	8.04 (±2.20)	0.91	0.67*
Total PTGI-SF	39.99 (±8.40)	39.87 (±9.09)	0.89	0.75*

* statistical significance at p < 0.05; SD = standard deviation

Evaluation of the Pearson's correlation coefficient of the items and domains of the Malay version of the PTGI-SF revealed that the correlations of all individual items with their designated domain (i.e. items 1 and 2 had highest correlations with appreciation of life, items 3 and 8 with spiritual growth, items 4

and 7 with new possibilities in life, items 5 and 10 with relating to others, and items 6 and 9 with personal strength) ranged from 0.82 to 0.93; correlations with non-designated domains had coefficients of only 0.29 to 0.68 (Table 2).

Table 2. Correlations within the Malay version of the Post-traumatic Growth Inventory-Short Form (PTGI-SF) (item vs. domain)

	Appreciation of life	Spiritual growth	New possibilities in life	Relating to others	Personal strength
Appreciation of life 1[#]	**0.88***	0.29*	0.38*	0.38*	0.33*
Appreciation of life 2[#]	**0.82***	0.49*	0.55*	0.48*	0.52*
Spiritual growth 1[#]	0.43*	**0.93***	0.67*	0.58*	0.64*
Spiritual growth 2[#]	0.40*	**0.93***	0.64*	0.65*	0.61*
New possibilities in life 1[#]	0.55*	0.65*	**0.93***	0.66*	0.61*
New possibilities in life 2[#]	0.42*	0.63*	**0.90***	0.58*	0.63*
Relating to others 1[#]	0.50*	0.51*	0.60*	**0.91***	0.58*
Relating to others 2[#]	0.35*	0.68*	0.59*	**0.84***	0.63*
Personal strength 1[#]	0.50*	0.66*	0.69*	0.68*	**0.93***
Personal strength 2[#]	0.40*	0.68*	0.67*	0.68*	**0.92***

* statistical significance at $p < 0.05$; SD = standard deviation

In addition, all domains of the PTGI-SF were not significantly correlated with the domains of the SSSS, except for appreciation of life and personal strength, which were weakly positively correlated with informational support ($r = 0.21$, $p < 0.01$ and 0.20, $p < 0.05$ respectively), and new possibilities in life was found to be weakly positively correlated with instrumental support ($r = 0.2$, $p < 0.05$) (Table 3).

Table 3. Correlations between domains of the Malay version of the Post-traumatic Growth Inventory-Short Form (PTGI-SF) and those of the Source of Social Support Scale (SSSS)

	Informational support	Instrumental support	Emotional support	Negative support
Appreciation of life	**0.21***	0.14	0.17	0.031
Spiritual growth	0.12	0.13	0.092	-0.40
New possibilities in life	0.16	0.15	0.16	-0.063
Relating to others	0.15	**0.20***	0.071	-0.013
Personal strength	**0.20***	0.17	0.17	-0.030

* statistical significance at $p < 0.05$; SD = standard deviation

Exploratory factor analysis with oblique Promax rotation with Kaiser normalization of the Malay version of the PTGI-SF (Table 4) showed that all items had factor loading values ranging from 0.56 to 0.91. Bartlett's test of sphericity was significant ($p < 0.01$), and the Kaiser-Meyer-Olkin measure of sample adequacy was 0.91.

Table 4. Exploratory factor analysis with oblique Promax rotation with Kaiser normalization of the Malay version of the Post-traumatic Growth Inventory-Short Form (PTGI-SF)

	Appreciation of life	Spiritual growth	New possibilities in life	Relating to others	Personal strength
Item 1[#]	0.91				
Item 2[#]	0.56				
Item 3[#]		0.87			
Item 8[#]		0.79			
Item 4[#]			0.79		
Item 7[#]			0.85		
Item 5[#]				0.91	
Item 10[#]				0.59	
Item 6[#]					0.70
Item 9[#]					0.91

CFA with best-fitting model analysis revealed that the Malay version of the PTGI-SF did not fit into a 1-factor model (χ^2 = 171.20, p < 0.001, GFI = 0.840, NFI = 0.864, CFI = 0.880, TLI = 0.856, RMSEA = 0.142) or a 3-factor model (χ^2 = 149.50, p < 0.001, GFI = 0.846, NFI = 0.881, CFI = 0.903, TLI = 0.846, RMSEA = 0.138). A 4-factor model also was not the best fit for this inventory (χ^2 = 138.38, p < 0.001, GFI = 0.853, NFI = 0.890, CFI = 0.910, TLI = 0.860, RMSEA = 0.139). Ultimately, a 5-factor model was the best fit for the Malay version of the PTGI-SF (χ^2 = 125.30, p < 0.001, GFI = 0.90, NFI = 0.919, CFI = 0.933, TLI = 0.90, RMSEA = 0.144) (Figure 1).
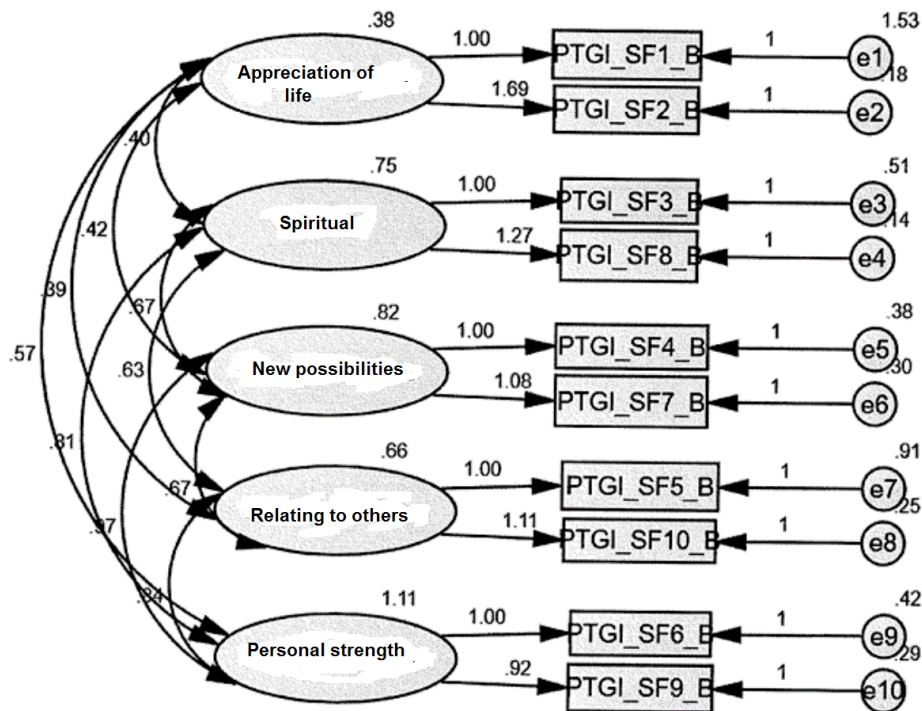

Figure 1. The best-fitting 5-factor model for the Malay version of the Post-traumatic Growth Inventory-Short Form (PTGI-SF)

Discussion

The goal of this study was to translate and validate the original English version of the PTGI-SF into the Malay language for use in the Malaysian cancer population. Results of tests for internal consistency, test-retest reliability, face validity, content validity, convergent and discriminant validities, and CFA indicate that the Malay version of the PTGI-SF was successfully translated and validated.

The total score of the Malay version of the PTGI-SF had good internal consistency (Cronbach's α = 0.89), and the value was similar to that of the original English version of the PTGI-SF (Cronbach's α= 0.86) [8]. All domains of the Malay version also demonstrated good to excellent internal consistencies (Cronbach's α ranging from 0.86 to 0.91), and these values were even higher than those of the original English version of the inventory (Cronbach's α ranging from 0.68 to 0.80) [8]. The total score of the Malay version of the PTGI-SF also demonstrated fair to excellent test-retest reliability (ICC of 0.75, p < 0.05), and its five domains showed fair to good ICC values as well (0.55 to 0.75, p < 0.05). These results indicate that the Malay version of the PTGI-SF is a reliable tool for measuring PTG in Malaysian cancer patients.

Face and content validities of the Malay version of the PTGI-SF were established by stringent translation and back translation of the questionnaire by language experts followed by review by a group of experts (two psychiatrists, a clinical psychologist, and a PTG expert) before the final version of the questionnaire was created. Its item relevancy, acceptability, duration of administration, and semantic precision were established by testing the questionnaire in a pilot study of Malaysian cancer patients. All respondents accepted the questionnaire without any need for further improvement.

Convergent validity of the Malay version of the PTGI-SF was achieved, as all items had higher correlations with their designated domains than with non-designated domains. Discriminant validity also was established, as none of the domains of the Malay version of the PTGI-SF were highly correlated with the domains of Malay version of the SSSS, which measures different parameters.

Factor loading in exploratory factor analysis revealed that all individual items were designated into their respective domains, as all items had acceptable factor loading > 0.4 (loading factors ranged from 0.56 to 0.91) (Table 4). Bartlett's test of sphericity was significant ($p < 0.01$) and the Kaiser-Meyer-Olkin measure of sample adequacy was 0.91, indicating that the factor analysis was appropriate. CFA confirmed that the Malay version of the PTGI-SF best fit into a 5-factor model, which was also the case for the original English version of the PTGI-SF [8] and for a few translated versions of the PTGI-SF [10, 11, 12,14].

This study had one limitation. The sample size in this study was relatively small, which may have affected the accuracy of CFA. Despite these limitations, this study showed that the Malay version of the PTGI-SF is a reliable and valid tool for assessing the degree of PTG in Malaysian cancer patients. Future studies should validate this questionnaire for use in other Malaysian study populations that may exhibit PTG, such as crime victims, HIV positive or AIDS patients, natural disaster victims, and victims of abuse and domestic violence.

Conflict of interest: None

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Appendix 1. Items of Posttraumatic Growth Inventory-Short Form (PTGI-SF) in original English version and translated Malay version

Appreciation of life 1 = Item 1: I changed my priorities about what is important in life.
[Saya mengubah keutamaan saya tentang apa yang penting dalam kehidupan.]

Appreciation of life 2= Item 2: I have a greater appreciation for the value of my own life.
[Saya lebih menghargai nilai hidup saya sendiri.]

Spiritual growth 1= Item 3: I have a better understanding of spiritual matters.
[Saya mempunyai pemahaman yang lebih baik mengenai perkara-perkara yang berkaitan dengan keagamaan.]

Spiritual growth 2 = Item 8: I have a stronger religious faith.
[Saya mempunyai kepercayaan agama yang lebih kukuh.]

New possibilities in life 1 = Item 4: I established a new path for my life.
[Saya telah membina laluan baharu untuk kehidupan saya.]

New possibilities in life 2 = Item 7: I am able to do better things with my life.
[Saya berupaya melakukan perkara yang lebih baik dalam kehidupan saya.]

Relating to others 1 = Item 5: I have a greater sense of closeness with others.
[Saya berasa lebih rapat dengan orang lain.]

Relating to others 2 = Item 10: I learned a great deal about how wonderful people are.
[Saya telah menyedari bahawa betapa baiknya orang di sekeliling saya.]

Personal strength 1 = Item 6: I know better that I can handle difficulties.
[Saya lebih yakin yang saya boleh menangani kesukaran dalam kehidupan.]

Personal strength 2 = Item 9: I discovered that I'm stronger than I thought I was.
[Saya menyedari bahawa diri saya lebih kuat daripada apa yang saya sangkakan sebelum ini.]