Prediction of post traumatic growth based on social support, coping styles and optimism in patients with Brain Tumor

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Original Article

Abstract

Introduction: Brain tumorr is a deadly disease but patients can have positive growth psychologically. It is important to find factors that lead psychological growth of patients. Therefore, this study was aimed to predict the post traumatic growth based on social support, coping styles and optimism in patients with brain tumor.

Methods: In this correlational and descriptive study, the statistical population included all patients with brain tumor who referred to the hospitals of Bandar Abbas in 2015, 200 patients were selected through convenience sampling method. Posttraumatic Growth Inventory (PTGI), Social Support Inventory (SSA), Ways of Coping Questionnaire (WOCQ) and Life Orientation Test (LOT) were used to gather data. For data analysis, Pearson correlation and stepwise multivariate regression analyses were used to determine the relationship between variables and examine the role of predictor variables and their contribution in predicting the criterion variable. Data were analyzed using SPSS 22.

Results: Pearson correlation results showed that there was a significant correlation between social support, problem-based and emotion-focused coping strategies with post-traumatic growth ($P < 0.05$). But there wasn't a significant relationship between optimism and post-traumatic growth. The results of stepwise regression analysis also showed that social support and problem-based coping strategies explained 30.3% of posttraumatic growth variance together, but emotion-focused coping strategies and optimism cannot predict posttraumatic growth.

Conclusion: According to the findings it can be suggested that training and intervention on improving patients' social support and coping strategies are effective way on increasing posttraumatic growth and improving the psychological state.

Key words: Post Traumatic Growth, Social Support, Optimism, Brain tumor

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Introduction:

Despite major medical advancements in this age, cancer remains a major growing disease in the current century (1). Brain tumors in general, and malignant ones in particular, are regarded as one of the most dreadful conditions (2). Although less prevalent than other malignancies, the incidence of brain tumors has increased over 40% among all age

groups over the past 20 years (1). Brain tumor is the growth of an abnormal mass in the brain causing certain behavioral and cognitive inabilities. Compared with other cerebrovascular diseases, brain tumors generally induce additional psychiatric syndromes and are usually associated with intelligence, language, and memory disorders (3,4).

Studies reveal numerous psychological problems and emotional and personality changes on the part of patients with brain tumors (5). These patients have a low quality of life, often complain about the adverse economic effects of the disease, dyspnea, and severe headaches and are only slightly optimistic about the future (6).

As a traumatic event, brain tumors can pose numerous physical, psychological, and social problems to patients. However, distressing life events, and brain tumors in particular, can occasionally produce positive outcomes (7).

Numerous individuals who have survived stressful events experience positive psychological changes referred to as posttraumatic growth (PTG) (8). PTG is a mental experience or understanding of positive psychological changes gained as a result of struggles with a traumatic event (9). The role of various events such as bereavement, cancer, traffic collision, sexual assault, war, surgical procedure, and chronic diseases in the development of PTG has been examined (10-13). According to studies on various populations, women, young, married, and affluent individuals as well as those who have undergone extensive chemotherapy exhibited greater PTG rates (14-18). With the emergence of the concept of PTC as an area of study, researchers have sought to identify contributing factors to its development (18). Studies point to the level of education, disease duration since diagnosis, spirituality, mental health, age, and income as the determinants of PTG (8,19).

Schaefer and Moos developed a comprehensive model of PTG determinants. According to this model, environmental resources (such as support from family and friends) and personal factors (such as personal traits and prior crisis experience) lead to the development of PTG (20). Providing social support to patients is an environmental resource that can lead to PTG, whose effect has been supported by numerous studies in various fields (21). The

results of such studies reveal that the quantity and quality of social support is related to PTG (19,22).

Social support is defined as the availability of individuals who instill a sense of confidence and respect in others and are viewed as important psychological resources in stressful conditions such as diagnosis of cancer (23). Social support can affect individual's cognitive evaluations and world view (24), reduce the severity of disease and improve health (25). Domestic studies indicate the relationship between perceived social support and PTG in patients with cancer (26-28).

According to Schaefer and Moos's model, In addition to environmental resources, personal factor are significantly involved in the development of PTG (20). Coping styles are among such factors (21). According to Zahlen et al., PTG is not a direct consequence of traumatic events; rather, it is a function of coping strategies employed to tackle them (29). Coping styles are defined as a set of cognitive and behavioral responses aimed at minimizing tensions in stressful conditions (30).

Studies demonstrate that coping strategy types lead to the development of ability to deal with traumatic conditions (31), enhancement of physical and mental health (32,33), and PTG (10,27,34-36).

Optimism is another personal factor influencing PTG in Schaefer and Moos's model (20).

Optimism refers to an orientation in which usually positive consequences are expected and these consequences are considered as a result of constant, general, and internal factors (37). When human perceptions coincide with a positive sense of self and an optimistic, though inaccurate, perspective about the future, it can help them cope with extremely stressful and life-threatening life events (38). Studies reveal that optimism and positive attitudes improve physical and mental health (39) and PTG (40-42).

Patients suffering from brain tumors regard their disease as dreadful and fatal accompanied by serious complications. Understanding and conceptualization of factors that bring about positive psychological changes in patients' attitudes toward undergoing necessary trainings and interventions can diminish their pain and lead to positive therapeutic outcomes. As stated earlier, social support, coping style types, and optimistic attitudes can seemingly lead to the development of PTG in

such patients. Given the lack of domestic studies on the relationship between social support, coping styles, optimism, and PTG in patients with brain tumors and the scarcity of such studies on a global scale, therefore, the aim of this study is to investigate whether social support, coping styles and optimism can predict PTG in patients with brain tumors?.

Methods:

This was a descriptive-correlational study whose statistical population consisted of all patients suffering from brain tumors who visited hospitals of Bandar Abbas, Iran, in 2015. Two hundred patients were selected as the sample through convenience sampling as follows: after the research topic was approved and necessary permissions were obtained, the researcher visited hospitals of Bandar Abbas. With the cooperation of hospitals' staff and the observance of ethical principles, patients suffering from brain tumor were selected based on the inclusion criteria and responded to the research instruments. Inclusion criteria included: the passage of at least 6 months from the onset of the disease, having a reasonable physical condition, lack of psychological disorders, and expressing consent and agreement to respond to the research instruments. The following questionnaires and inventories were used to collect data:

Posttraumatic Growth Inventory (PTGI): developed by Tedeschi and Calhoun, this inventory comprises 21 items. It is a self-rating instrument in which the respondents have to describe themselves on a 6-point scale (0 = "I have not experienced any change" to 5 = "I have experienced change to a great degree"). The score range is 0 – 105. The main inventory consists of 5 subscales in 1- relating to others, 2- new possibilities, 3- personal strength, 4- spiritual change, and 5- appreciation of life. The reliability of the inventory was measured by evaluating the internal consistency of the overall scale score with subscale scores on a sample of American cardiovascular patients (Cronbach's alpha = 0.96) (16). In another study, the factorial structure of PTGI was examined on a sample of Iranian university students. The PTGI reliability and Cronbach's alpha coefficients with a one-week

interval between measurements were 0.94 and 0.92, respectively (17). In the present study, the reliability of the overall and subscale inventory scores were calculated as 0.88 and 0.72-0.84, respectively, using Cronbach's alpha.

Social Support Inventory (SSI): Developed by Vaux et al., SSI comprises 23 items, measuring social support in terms of three components: family (8 items), friends (7 items), and significant others (8 items). This is scored on a 4-point Likert scale (1 = "completely agree" to 4 = "completely disagree"), with lower scores indicating higher levels of social support. Vaux et al., verified the three-factorial structure of the inventory. Cronbach's alpha coefficients for family, friends, and significant others were 0.86, 0.72, and 0.89, respectively (43).

The reliability coefficients of SSI in a domestic study conducted on collegian and student samples were 0.90 and 0.70, respectively. The re-administration of SSI on student group with a 6-week interval resulted in a Cronbach's alpha coefficient of 0.81 (44). In the present study, the reliability of the overall and subscale inventory scores were calculated as 0.77 and 0.70-0.74, respectively, using Cronbach's alpha.

Ways of Coping Questionnaire (WOCQ): Developed based on the coping strategies checklist by Lazarus and Folkman, WOCQ comprises 66 items designed in the form of 8 micro-subscales and 2 macro-subscales. The micro-subscales include direct confrontation, distancing, self-control, seeking social support, accepting responsibility, escape-avoidance, planed problem-solving, and positive reappraisal. The macro-subscales are emotion-focused and problem-focused coping styles. The range of WOCQ Cronbach's alpha coefficient was reported as 0.61-0.89 in an Iranian population after the verification of face content (45).

In the present study, the reliability of the overall questionnaire and subscale scores were calculated as 0.93 and 0.83-0.90, respectively, using Cronbach's alpha.

Life Orientation Test (LOT): Developed and later revised by Scheier and Carver, LOT measures dispositional optimism. It comprises 6 items, 3 of which are used to evaluate optimism and the other

three to evaluate pessimism about the future on a 5-point Likert scale, referred to as optimistic and pessimistic attitude, respectively (46). Using Cronbach's alpha, Carver et al., reported reliability and retest reliability coefficients of 0.76 and 0.79 with a 4-week interval between measurements in a study conducted on a group of university students. Cronbach's alpha reliability in a sample consisting of 59 breast cancer patients was 0.78. The retest reliability with a 12-month interval was arrived at 0.74 (47). The correlation coefficient of the revised LOT (LOT-R) with a five-factorial structure of The Beck Hopelessness Scale was measured in a domestic study. In addition to the verification of LOT-R's face content, the reliability and retest reliability coefficients of this test were respectively reported as 0.54 and 0.70 in a sample of 27 college-preparatory students with a 10-day interval between the measurements (48). In the present study, the reliability of the overall test and subscale scores were calculated as 0.86 and 0.75-0.78, respectively, using Cronbach's alpha.

Descriptive statistics (mean and standard deviation) were used to analyze data. Inferential statistics (Pearson correlation and stepwise multivariate regression analyses) were used to determine the relationship between variables and examine the role of predictor variables and their contribution in predicting the criterion variable. Data were analyzed using SPSS ver.22.

Results:

The research sample consisted of 200 patients with brain tumors, 33% and 67% of whom were male and female, respectively. The mean age and standard deviation were 39.59 and 12.34 years, respectively. In terms of education, 29.5% had elementary education, 14.5% had intermediate education, and 28%, 11.5%, 15%, and 1.5% had high-school diplomas, associate degrees, bachelor's degrees, and postgraduate education, respectively.

Based on the results of Pearson correlation analysis, the correlation of PTG with problem-focused coping styles, emotion-focused coping styles, social support, and optimism equals 0.458 ($P < 0.01$), 0.215 ($P < 0.01$), -0.392 ($P < 0.01$), and -0.058 ($P > 0.05$). Therefore, there was a significant correlation between problem-focused coping styles, emotion-focused coping styles, and social support in that PTG increased with an increase in any of these variables (it should be noted that higher SSI scores indicated lower levels of social support and vice versa). However, no significant relationship was found between PTG and optimism. Step-wise multivariate regression analysis was used to account for the extent to which problem-focused coping styles, emotion-focused coping styles, social support, and optimism accounted for PTG, the results of which are presented below:

Table 1. Mean and standard deviation of variables

Variables	Mean	Std.Error	Minimum	Maximum
Optimism	19.13	2.89	13	26
Problem-based strategies	39.59	7.17	17	55
Emotion-based strategies	37.62	7.12	21	58
Family support	15.07	2.54	8	21
Friend support	14.11	2.87	7	23
Other people's support	16.79	2.75	9	23
General social support	45.98	6.14	27	59
New facilities	16.96	4.27	0	25
Contact with others	22.28	5.72	0	35
Individual's power	13.84	3.44	0	20
Life value	10.92	2.97	0	15
Spiritual change	7.83	1.88	0	10
Post-tramuatic growth	71.83	15.03	0	105

Table 2. Matrix of correlations between predictor variables and the criterion variable post-traumatic growth

Variables	1	2	3	4	5
Posttramuatic growth	1				
Problem based strategies	0.458**	1			
Emotion based strategies	0.215**	0.458**	1		
Social support	-0.392**	-0.203**	-0.058	1	
Optimism	-0.058	-0.106	-0.103	0.118	1

P<0.01**

Table 3. Results of stepwise multivariate regression analysis of predictor variables with post-traumatic growth

Predictive variable	R	R Square (R2)	Standard beta (β)	B	Std.Error	T	P-value
Problem based strategies	0.550	0.303	0.771	0.771	0.119	6.49	0.001
Social Support			-03.12	-0.764	0.149	-5.13	0.001

The "normality", "constant variance" and "multiple non-linearity" assumptions were made to determine regression coefficients. As can be seen from Table 3, since the significance level of predictor variables of PTG in terms of problem-focused coping styles and social support is less than 0.05, the regression model can be considered significant (F=42.82, P<0.05).

Given that emotion-focused coping styles and optimism had no significant effect in predicting PTG, they were removed from the regression equation. Problem-focused coping styles and social support could predict 30% of the PTG variance. Considering the standardized (beta) coefficients for problem-focused coping styles (β=0.395) and social support (-0.312), they contribute significantly to PTG, accounting for 39.5% and 31.2% of the PTG variance, respectively. The correlation coefficient of predictor variables with PTG criterion variable was 0.55.

Conclusion:

The present study aimed to predict PTG in terms of social support, coping styles, and optimism in patients suffering from brain tumors. Results pointed to a significant relationship between social support and PTG in which the former could predict the latter. In line with this study, Danhauer et al., (19) and Nikmanesh et al., (26) examined the relationship between PTG and social support in breast cancer women and concluded that social support could predict PTG. Studying the relationship between social support and PTG in patients with cancer, Shamkouian et al., discovered

that PTG was significantly predicted by social support (28). In their research on earthquake survivors, Jia et al., verified the role of social support in PTG (22). Given these results, the availability of individuals who instill a sense of confidence and support in patients in face of hardships helps them combat the disease and develop PTG. Support offered by others helps patients cope with tensions and the understanding of prevailing support makes life-threatening conditions to be evaluated as less stressful. Social support helps patients experience positive posttraumatic changes within a shorter period of time.

The emotional support received by patients from those close to them not only eases the feeling of loneliness, but empowers them to combat the disease. When patients realize that there are people who can help them in hardships and difficulties, they feel determined not to surrender to difficulties and try to resolve them in a more active manner. In line with such an understanding, Shoaakazemi et al., concluded that the course of PTG and recovery in patients with cancer is more desirable when they enjoy the support of family and particularly spouse (27). Encouragement, comfort, and support given to patients with brain tumors will undoubtedly instill a positive attitude in them. In addition, support given by physicians, nurses, or even other patients to patients with brain tumors can influence their attitude toward and perspective on life. Shaping patients' cognitive evaluations and world views, social support helps them come to terms with their disease, adopt a more effective coping strategy, and subsequently develop a positive psychological growth.

Examining the relationship between coping strategies and PTG, the present study pointed to a significant relationship between problem- and emotion-focused coping styles and PTG. However, results from regression analysis showed that PTG could only be significantly predicted by problem-focused coping styles. In line with this, Mehrabi et al., examined the relationship between coping styles and PTG in disabled Iranian veterans suffering from posttraumatic stress disorder [PTSD] and concluded that the relationship between problem-focused coping styles and PTG is significant. However, no significant relationship was found between emotion-focused coping styles and PTG (34). Investigating the relationship between coping styles and PTG in HIV-positive individuals, Seyed-Mahmoudi et al., established a significant relationship between problem- and emotion-focused coping styles and PTG, although with varying degrees depending on the period they were employed (10). Therefore, it can be maintained that coping strategies adopted by patients suffering from brain tumors can contribute significantly to the development of PTG.

Schaefer and Moos distinguish between adaptive problem-focused coping styles [seeking social support, accepting responsibility, planed problem-solving, and positive reappraisal] and adaptive emotion-focused coping styles [direct confrontation, distancing, escape-avoidance, and self-control]. The first category, i.e. problem-focused strategies, promotes growth, whereas the same thing cannot be said about emotion-focused coping strategies (20).

As proposed by Zahlen et al., PTG is a function of coping strategies employed to tackle problems (29). Patients who adopt problem-focused strategies try to identify the causes of the problem, reflect on its different aspects, assess the situation accurately, and examine the probable consequences and outcomes of their implementation. In contrast, individuals who employ emotion-focused strategies more often, typically focus on positive emotions, try to restrain themselves, and detach themselves from the problem, cognitively and physically (10).

Accordingly, those who employ problem-focused strategies more often are expected to experience greater levels of PTG. Corresponding to this justification, Shoaakazemi et al., demonstrated a better course of recovery on the part of breast cancer patients who employed problem-focused strategies as opposed to those using emotion-focused ones. The first group could act more accordingly under different circumstances (27).

Bakhshani and Dehghani concluded that, coping with physical problems and psychological disorders are negatively and positively related with problem- and emotion-focused strategies, respectively. In their view, problem-focused strategies are logical and can diminish or eliminate stressors, whereas emotion-focused strategies are of temporary benefit without having a lasting impact (33). Posttraumatic patients adopting emotion-focused strategies initially appear to achieve positive outcomes in reducing their stress; however, such strategies are not effective in the long run in that the problem cannot be overcome by adopting such strategies as self-control and distancing oneself from it. The implementation of such maladaptive coping strategies causes disappointment and depression, fosters negative attitudes, deprives individuals of the opportunity to grow, and diminishes posttraumatic spiritual growth (49). In using problem-focused strategies, patients with brain tumors remain cognizant of their problem or disease, and do not detach themselves from it. Such an individual deals with the heart of the problem to overcome the issue. If unsuccessful, he/she will try to view the problem from a more realistic and logical perspective. Therefore, patients suffering from brain tumors who adopt problem-focused coping strategies are more probable to achieve PTG. This is because they address the problem directly and try to confront it in a systematic and logical manner at a cognitive level, whereas those who adopt emotion-focused strategies try to avoid and ignore the problem in order to feel a [false] sense of serenity and security.

Regarding the relationship between optimism and PTG, the results pointed to no significant relationship between the two variables. Examining PTG in HIV-positive patients, Seyed-Mahmoudi et al., demonstrated no significant relationship between optimism and PTG, which corresponds to the results of the present study. This lack of significance surprisingly persisted in the follow-up conducted 6 months after the initial evaluation (10).

Analyzing 103 studies on PTG, Meyerson et al., established a relationship between optimism and

PTG in adults, which does not correspond to the results of the present study (42). Investigating PTG in Turkish university students experiencing traumatic events, Arikan and Karanci confirmed the role of optimism in PTG (40). Based on the current and previous studies, it appears that optimism is differently related to PTG in dealing with various diseases and within different contexts.

The sample of the present study may be attributable to the discrepancy of results seen between its results with those of others. Patients with brain tumors usually suffer from severe intelligence, memory, and language disorders (3,4).

In addition, this disease causes serious psychological disorders such as emotional and personality changes and also diminishes life expectancy (5). Therefore, the low optimism levels in such patients and the inefficacy of optimism in PTG can be attributed to brain tumor-induced physical and psychological complications, or even to their adverse effects on such patients in rendering them incapacitated to provide precise and accurate responses to research instruments. Accounting for the lack of a relationship between optimism and PTG, Seyed-Mahmoudi et al., referred to the instruments used (10).

According to the literature on optimism, optimism in patients with brain tumors refers to a feeling on their part that they will recover from their disease. Therefore, it indicates the prospects of the condition of tumor. It is also possible for patients to experience positive psychological changes and PTG despite accepting the disease and not expressing any optimism about recovery. In other words, despite being pessimistic about the prospects of recovery and survival, patients may experience positive psychological changes. In addition, the existence of uncontrollable and extraneous variables may well have contributed to the discrepancy of results.

Given the PTG score range and mean in the present study, it can be argued that the sample experienced a relatively decent level of PTG. In general, the results suggested that social support and problem-focused coping strategies could predict PTG. However, the same thing cannot be stated for emotion-focused coping strategies and optimism. The results showed that, patients with brain tumors can experience positive psychological changes if

they feel that there are people that support them under any circumstances. In addition, such patients are expected not to become dispirited and instead grow psychologically when engaging in planed problem-solving, positive disease appraisal and direct problem management. In general, the findings of this study suggested that providing training and making necessary interventions to enhance social support and coping strategies could be effective in improving patient PTG and psychological condition.

This study like many other studies have a lot of limitations, since the random sampling method is not used in selecting patients with brain tumor, only the questionnaire was used to gather information. Because of some biases in the answers of the questionnaire and lack of control over the variables that can somehow distort the results, the results cannot be generalized. Due to the spread of cancer and its problems, it is suggested to perform further studies more broadly and with control on some factors which distort the results as well as the factors that can improve post-traumatic growth in patients with cancer. Therefore, it is suggested that those responsible for policy and planning as well as doctors, counselors, psychologists and other health professionals try to interfere and teach the necessary factors to increase the social support and coping strategies in patients so that patients grew psychologically.

Acknowledgments:

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پیش‌بینی رشد پس از سانحه بر اساس حمایت اجتماعی، سبک‌های مقابله و خوش‌بینی در بیماران مبتلابه تومور مغزی

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چکیده

مقدمه: تومور مغزی بیماری مهلکی است. اما با این حال بیماران می‌توانند ازنظر روان‌شناختی رشد مثبتی داشته باشند. یافتن عواملی که منجر به رشد روان‌شناختی بیماران شود حائز اهمیت است. ازاین‌رو، این پژوهش با هدف پیش‌بینی رشد پس از سانحه بر اساس حمایت اجتماعی، سبک‌های مقابله و خوش‌بینی در بیماران مبتلابه تومور مغزی انجام شد.

روش کار: روش پژوهش، توصیفی و از نوع همبستگی بود. جامعه آماری شامل کلیه بیماران مبتلابه تومور مغزی مراجعه کننده به بیمارستان‌های شهر بندرعباس در سال ۱۳۹۴ بودند که ۲۰۰ نفر به صورت نمونه‌گیری در دسترس انتخاب شدند. ابزارهای به کار گرفته شده، پرسشنامه‌های رشد پس از سانحه (PTGI)، پرسشنامه حمایت اجتماعی (SSA)، راهبردهای مقابله‌ای لازاروس (WOCQ) و جهت‌گیری زندگی (LOT) بود. در تحلیل داده‌ها به منظور بررسی رابطه بین متغیرها و همچنین برآورد سهم متغیرهای پیش‌بین در تبیین متغیر ملاک از آزمون همبستگی پیرسون و رگرسیون چند متغیری به روش گام به گام استفاده شد. داده‌ها توسط نسخه SPSS 22 تحلیل شدند.

نتایج: نتایج همبستگی پیرسون نشان داد که همبستگی معنی‌داری بین حمایت اجتماعی، راهبردهای مقابله مسأله محور و راهبردهای مقابله هیجان محور با رشد پس از سانحه وجود دارد ($P < 0/05$)؛ اما بین خوش‌بینی و رشد پس از سانحه رابطه معنی‌داری وجود ندارد. همچنین نتایج تحلیل رگرسیون نشان داد که حمایت اجتماعی و راهبردهای مقابله مسأله محور با هم ۳۰/۳ درصد از واریانس رشد پس از سانحه را تبیین می‌نمایند اما راهبردهای مقابله هیجان‌محور و خوش‌بینی توان پیش‌بینی رشد پس از سانحه را ندارند.

نتیجه‌گیری: با توجه به یافته‌های این پژوهش، می‌توان آموزش و مداخله در بهبود حمایت اجتماعی و راهبردهای مقابله بیماران را به‌عنوان یک روش مؤثر در افزایش رشد پس از سانحه و بهبود وضعیت روان‌شناختی آنان پیشنهاد داد.

کلیدواژه‌ها رشد پس از سانحه، حمایت اجتماعی، خوش‌بینی، تومور مغزی

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