ORIGINAL ARTICLE

The relationship between protective factors and a measure of psychological resistance in women diagnosed with breast cancer

Delila Lisica[1], Jadranka Kolenović-Đapo[2], Amela Džubur[1], Damir Abdulahović[3], Malik Ejubović[4]

[1]Department of Public Health, Medical Faculty, University of Sarajevo, [2]Department of Psychology, Faculty of Philosophy, University of Sarajevo, [3]Institute for Public Health of Canton Sarajevo; Sarajevo, [4]Department of Internal Diseases, Cantonal Hospital Zenica; Bosnia and Herzegovina

ABSTRACT

Aim To examine the relationship of protective factors (self-esteem, optimism, proactive coping), and a measure of psychological resistance in women diagnosed with breast cancer, and the contribution of protective factors in explaining the criterion of posttraumatic growth.

Methods The study included 100 women diagnosed with breast cancer. To examine optimism the Scale of Dispositional Optimism and Pessimism, the Scale of Self-esteem for self-esteem and the Scale of Proactive Coping for proactive coping were used. The posttraumatic growth measured five factors: relating to others, new possibilities, personal strength, spiritual changes, appreciation of life.

Results Self-esteem, optimism and proactive coping were associated with posttraumatic growth and its factors: new possibilities, personal strength, appreciation of life. Optimism and proactive coping positively corelated also with relating to others. Final model of posttraumatic growth in all three steps (self-esteem, optimism, proactive coping) explained 20.4% variability of the posttraumatic growth total score.

Conclusion Posttraumatic growth does not mean a decrease in trauma, but leads to a change in the perception and view of life. It refers to more favourable management and use of its own resources, relying on its own strengths and capabilities, identifying new opportunities and connecting with others.

Key words: optimism, posttraumatic growth, proactive coping, self-esteem

Corresponding author:
Delila Lisica
Department of Public Health,
Medical Faculty, University of Sarajevo
Čekaluša 90, 72000 Sarajevo,
Bosnia and Herzegovina
Phone: +387 33 226 478;
Fax: +387 33 202 051;
E-mail: delila.lisica@gmail.com
ORCID ID: https://orcid.org/0000-0003-1594-623X

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INTRODUCTION

The diagnosis of breast cancer is a traumatic event that is a direct threat to a person's life (1). The patient faces a number of negative experiences including the treatment and reaction to the treatment such as pain, fatigue, temporary or permanent change in physical appearance, fear of recurrence, uncertain future (1). Changes in physical appearance can be a significant source of anxiety, dissatisfaction, depressive symptoms (1,2). All effects of the treatment, hair loss that adversely affect the image of their own body, feeling of femininity and sexuality, scars after surgery and mastectomy are visible reminders of the presence of the disease (2,3). For a women hair loss from cancer treatment is more than a physical appearance, it emotionally affects self-image and the quality of life (3). In the recent period, many studies have researched positive outcomes after the disease and reported positive changes that occur in people who are diagnosed with cancer (4). The idea that traumatic events can bring out positive changes in life has been the main message in many religions and philosophies for thousands of years (5,6). Large life crises are usually caused by unfavourable psychological reactions, but posttraumatic growth occurs simultaneously. This means that personal troubles and growth often coexist (6). Posttraumatic growth (PTG) refers to a range of positive changes that may arise after a traumatic experience (5,7). It implies the improvement, development and growth of a person in the domain of better connections with others, perceiving new opportunities, own strengths, spiritual development and greater understanding and appreciation of life (6). Posttraumatic growth does not reject or minimize the adverse effects of the trauma, but emphasizes that growth and adaptation in certain areas of functioning can occur simultaneously (7). According to Tedeschi and Calhoun (7), the process of dealing with destructive circumstances can in fact boost growth.

High level of self-esteem, optimism and proactive coping with problems, have the role of stress buffer, as well as better adaptation and reduction of negative outcomes after stressful events (8-10).

Self-esteem is the basis of mental health, and high self-esteem relieves anxiety, and is viewed as a protective factor against the negative influences that endanger it (11,12). Optimism refers to the way in which an individual approaches the world. People who are high on the scale of optimism are looking at the favourable side of events or conditions, expect a better resolution of the situation, and have positive expectations of future events (8,13). Proactive confrontation can be viewed as an effort to build common coping resources that make it easier for people to meet the demands, goals and develop their potentials. In the proactive confrontation, they have a vision, they see risk, demands and opportunities, and perceive demanding situations as personal challenges (9). Over the past twenty years, more and more research has been done on how to deal with stress, and there is a desire to increase benefits, and build factors that contribute to better resistance to a stressful situation (9,12,14,15).

The aim of this study was to examine the relationship of protective factors, such as self-esteem, optimism, proactive coping, and a measure of psychological resistance in women diagnosed with breast cancer, as well as the contribution of self-esteem, optimism, proactive coping in explaining the criterion of posttraumatic growth.

PATIENTS AND METHODS

Patients and study design

The research was conducted from April to the beginning of October 2013. The study included 100 women diagnosed with breast cancer. The women were from different cities in Bosnia and Herzegovina (B&H) (Sarajevo, Bihać, Zenica, Goražde, Banja Luka, Fojnica, Vitez, Orašje, Ključ, Travnik, Maglaj and Olovo). We contacted all Breast Cancer Associations in B&H and informed them about our research. Some patients were questioned in the city where they lived (Sarajevo, Bihać, Zenica and Goražde), and some were questioned when they arrived to Sarajevo for the oncological treatment. Also, women who were not members were randomly included in this study and questioned during their visits to Sarajevo.

The sample was homogenous in terms of gender, but it was heterogeneous in relation to all other socio-demographic variables. The average age of patients was 55 years (mean±standard deviation was 55.02 ± 10.03 years); the youngest patient was 31 and the oldest 83 years old. Monthly earnings below 800 BAM per month were found in

76% of patients (which was lower than the average salary in the Federation of B&H at that time). In our study, 65% of women received chemotherapy and radiation therapy, and also had full or partial mastectomy.

All respondents were given instructions to read carefully the questions contained in each scale and were asked to answer them honestly. It took about 15 minutes to complete the questionnaires. During the data collection process, all ethical principles prescribed by the American Psychological Association (APA) (16) were followed. Participation of all patients was anonymous and on a voluntary basis. All patients read and signed an informed consent. The research was approved by the Ethics Committee of Faculty of Philosophy, University of Sarajevo.

Methods

Socio-demographic questionnaire, Self-esteem Scale (17), Optimisms and Pessimisms Scale (18), Proactive Coping Scale (19) and Posttraumatic Growth Inventory (7) were used.

The socio-demographic questionnaire was designed for the purpose of this research, containing information about the patients and the disease (age, occupation, education degree).

The Scale of Self-esteem (17) is the most commonly used instrument for measuring general self-esteem. It has 10 particles, of which 5 are formulated in positive, and 5 in the negative direction. The scale was Likert type designed from answer 1 (completely incorrect) to 5 (completely true). Before generating the overall result, the responses to non-affirmative particles were reversed in such a way that the higher overall result reflects greater self-esteem. The reliability of this scale in the study was α=0.82

The Optimism and Pessimism Scale (18) - the scale of dispositional optimism and pessimism has 14 particles - six particles contain a scale of optimism, and eight scale pessimism. Patients evaluate the Likert type scale to the extent where each claim relates from 1 (it does not apply to me) to 5 (it entirely applies to me). Reliability for the scale of optimism in this research was α=0.88, reliability for pessimism scale was α=0.81. Reliability at the level of the entire scale in this research was α=0.72.

The Scale of Proactive Coping (19) consists of 14 particles that combine autonomous goal setting with cognitions and self-regulated goal attainment. The task of the respondents was to assess to what extent each of these particles or claims are related to it, on the scale of 1 (totally incorrect) to 5 (completely true). In this study, the reliability of this scale was α=0.83.

The Posttraumatic Growth Inventory (7) was translated into the Bosnian language by three different persons. It was modified until a final version was adopted. The scale consists of 21 items that measure the degree of positive change in the perception of the consequences of the traumatic event. The Posttraumatic Growth Inventory measures five posttraumatic growth areas, and has been developed to allow quantification of observed growth. Items in this scale were developed on the basis of a variety of literature on responses to very stressful events and on the basis of the experience with people with a physical disability or other life crises.

Five factors determine the main domains of posttraumatic growth: the first factor (F1) measures relating to others, the second factor (F2) measures recognition of new possibilities or a new pathway for moving on, the third factor (F3) measures the general sense of increased personal strength or recognition of having personal power, the fourth factor (F4) measures spiritual change, and the fifth factor (F5) measures the level of appreciation of life, i.e. a greater understanding of life and changing priorities. During the analysis, the total posttraumatic growth score (PTG total) was also calculated. The scale was Likert type and the task of the patient was to estimate to what extent each item refered to them, on the scale of 0 (completely incorrect) to 5 (completely correct). The internal reliability of this scale was 0.93.

Statistical analysis

The first test performed was normality of distribution. Due to the significant deviation of distribution from normality, the collected data were analysed by nonparametric procedures. For data processing hierarchical regression analysis was used, and Spearman's correlation coefficient was used within nonparametric statistic tests.

RESULTS

The mean of total posttraumatic growth score was 77.73 (SD=19.05, min. 24, max. 105). The mean of self-esteem score was 39.51 (SD=6.84), optimism 24.94 (SD= 4.61) and mean of proactive coping score was 52.11 (SD=8.87) (Table 1).

Table 1. Self-esteem, optimism, pessimism, proactive coping and posttraumatic growth factors of women with breast cancer*

Variable	M ± SD	Min.	Max.
Self-esteem	39.51 ± 6.84	23	50
Optimism	24.94 ± 4.61	10	30
Pessimism	19.99 ± 6.98	8	35
Proactive coping	52.11 ± 8.87	26	69
Posttraumatic growth factors			
First factor (F1) - relating to others	25.30 ± 8.18	1	35
Second factor (F2) – new possibilities	17.70 ± 5.27	3	25
Third factor (F3) – personal strength	15.70 ± 3.71	3	20
Fourth factor (F4) – spiritual change	6.75 ± 3.09	0	10
Fifth factor (F5) – appreciation of life	12.21 ± 2.60	4	15
PTG total – posttraumatic growth total score	77.73 ± 19.05	24	105

Women who had higher score of self-esteem and proactive coping positively correlated with new possibilities, personal strength, appreciation of life and posttraumatic growth total score, also proactive coping positively correlated with relating to others. Optimism positively correlated with all posttraumatic growth factors and the total score. The highest positive correlation was found between proactive coping and new possibilities ($r = 0.461$; $p<0.01$), and between self-esteem and personal strength ($r = 0.413$; $p<0.01$). Pessimism was negatively correlated only with personal strength ($r = - 0.226$; $p<0.05$).

The obtained results of the hierarchical regression analysis showed that the final model explained 30.8% of the variance of the second factor of new possibilities, and a statistically significant pre-

Table 3. Hierarchical regression analysis of women with breast cancer

Model/Variable		SD β	p	R	R^2	ΔR	Sig.
First factor (F1) – relating to others							
1#	self-esteem	.119	>0.05	.119	.014		>0.05
2#	self-esteem	.029	>0.05				
	optimism	.195	>0.05	.210	.044	.024	>0.05
3#	self-esteem	-.021	>0.05				
	optimism	.081	>0.05				
	proactive coping	.192	>0.05	.245	.060	.031	>0.05
Second factor (F2) – new possibilities							
1#	self-esteem	.286	<0.01	.286	.082		<0.01
2#	self-esteem	.077	>0.05				
	optimism	.450	<0.01	.490	.240	.225	<0.01
3#	self-esteem	-.025	>0.05				
	optimism	.216	>0.05				
	proactive coping	.394	<0.01	.550	.308	.287	<0.01
Third factor (F3) – personal strength							
1#	self-esteem	.415	<0.01	.415	.172		<0.01
2#	self-esteem	.232	<0.05				
	optimism	.394	<0.01	.542	.294	.280	<0.01
3#	self-esteem	.203	<0.05				
	optimism	.329	<0.01				
	proactive coping	.110	>0.05	.547	.299	.277	<0.01
Fourth factor (F4) – spiritual change							
1#	self-esteem	.112	>0.05	.112	.013		>0.05
2#	self-esteem	.005	>0.05				
	optimism	.230	>0.05	.232	.054	.034	>0.05
3#	self-esteem	-.019	>0.05				
	optimism	.174	>0.05				
	proactive coping	.094	>0.05	.240	.058	.028	>0.05
Fifth factor (F5) – appreciation of life							
1#	self-esteem	.275	<0.01	.275	.076		<0.01
2#	self-esteem	.108	>0.05				
	optimism	.360	<0.01	.421	.177	.160	<0.01
3#	self-esteem	.090	>0.05				
	optimism	.318	<0.05				
	proactive coping	.070	>0.05	.424	.179	.154	<0.01
PTG total – posttraumatic growth total score							
1#	self-esteem	.267	<0.01	.267	.071		<0.01
2#	self-esteem	.094	>0.05				
	optimism	.371	<0.01	.423	.179	.162	<0.01
3#	self-esteem	.033	>0.05				
	optimism	.230	>0.05				
	proactive coping	.238	>0.05	.452	.204	.179	<0.01

SD beta, standard regression coefficient; R, explained variance; R2, total explained variance; AR, change in explained variance; Sig. statistically significant;

Table 2. Correlation between self-esteem, optimism, pessimism, proactive coping and posttraumatic growth

Variable	RSS	O	P	PCI	F1	F2	F3	F4	F5	PTGI total
RSS	1	.408*	-584*	.502*	.152	.305*	.413*	.120	.233†	.247†
O		1	-.186	.653*	.199†	.411*	.378*	.264*	.282*	.337*
P			1	-.256†	-.054	-.166	-.226†	-.081	-.103	-.119
PCI				1	.231†	.461*	.354*	.183	.255†	.352*
F1					1	.689*	.638*	.578*	.373*	.878*
F2						1	.785*	.516*	.527*	.896*
F3							1	.578*	.587*	.841*
F4								1	.290*	.695*
F5									1	.578*
PTGI Total										1

RSS, self-esteem; O, optimism; P, pessimism; PCI, proactive coping; F1, relating to others; F2, new possibilities; F3, personal strength; F4, spiritual change; F5, appreciation of life; PTGI, posttraumatic growth total score; *statistically significant at level of 0.01; †statistically significant at level of 0.05

dictor was proactive coping (β=0.394; p<0.01). In the explanation of the third factor, all three blocks explained 29.9% of the criterion, and statistically significant predictors in the explanation of personal strength were self-esteem (β=0.203; p<0.05) and optimism (β=0.329; p<0.01). Also, hierarchic regression analysis showed that the final model explained 17.9% of the variance of the fifth factor, the appreciation of life, and the statistically significant predictor was optimism (β=0.318; p < 0.05).

The obtained results of the hierarchical regression analysis showed that the final model explained 20.4% of the variance of the posttraumatic growth total score (Table 3).

DISCUSSION

Protective factors analysed in this study, e. g. self-esteem, optimism and proactive coping, were statistically positively associated with posttraumatic growth total score: also they contributed (with statistical significance) to the explanation of posttraumatic growth total score and its new possibilities factors, personal strength and appreciation of life.

In other words, people who have a high self-esteem and/or proactively address the problem and who in circumstances such as diagnosis and treatment of cancer, change their life philosophy focusing on new opportunities and possibilities, changing life priorities, paying attention to their own possibilities and strengths. People who proactively faced the problem also felt a greater emotional connection and a sense of closeness with other people.

The protective nature of self-esteem is particularly important in studies dealing with stress and/or physical illnesses in which self-esteem shows various protective functions. According to Mann et al. (12) a high level of self-esteem protects an individual from fear and uncertainty, improves the ability of a person to deal with the disease and recovery after surgery. Self-esteem contributes to resilience (20) and greater likelihood of positive adaptation (21). The use of adaptive coping strategies is one of the most important components in the development of posttraumatic growth (7). Proactive confrontation involves the behaviour of people who in bad situations seek help and support from other people and focus on the opportunities that lead to growth. The results obtained in this study are consistent with previous studies (22) where proactive confrontation is associated with posttraumatic growth, and affects the ability to connect more easily with other people, to look for new opportunities, recognize their own strengths, and experience spiritual changes.

The correlation between optimism and posttraumatic growth was the subject of other research (8,13,23). Optimism not only acts as a resource that protects mental health in the context of traumatic events, but can also protect physical health during recovery and adaptation (23). Optimism is associated with adaptive strategies for confrontation, such as seeking social support, planning and positive reinterpretation (8). According to Carver et al. (8), optimists during stressful situations believe that they can face the problem and that in the end everything will be all right. This view of the future makes it easier to accept the present situation, and hence early reacting and focusing on the present and difficulties.

According to the obtained results, optimism statistically significantly contributed to the explanation of posttraumatic growth. Respondents who were high on the scale of optimism, or rather positively looked at their future, sought to find relevant information, and their positive side was related to posttraumatic growth and all of its factors. Despite the traumatic experience, excessive way of treatment, changed image of themselves and their femininity, the protective factors of psychological resistance, such as self-esteem, optimism and proactive coping have contributed to experiencing posttraumatic growth.

Taking into account the above mentioned, during the traumatic event people who have high level of self-esteem, who are optimistic and/or proactively face stress, experience posttraumatic growth.

There were several limitations to the present study. The first limitation was the potential for sampling bias, also the sample size was small, and furthermore it was longitudinal. More accurate studies are needed in order to confirm this merely preliminary report. It is hard to generalize our findings to all people who have breast cancer or any other type of cancer.

The second point is that we did not consider other psychological problems, such as depression dis-

orders and anxiety that could affect the results. Moreover, for future research, it would be useful to assess if any of the family members have posttraumatic growth after witnessing trauma as bystanders, and its effect on their life.

In conclusion, posttraumatic growth does not mean a decrease in trauma, but leads to a change in the perception and view of life. It refers to more favourable management and use of its own resources, relying on its own strengths and capabilities, identifying new opportunities and connecting with others. Self-esteem, optimism and proactive coping are protective factors in stressful situations or traumatic events and facilitation to posttraumatic growth.

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