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POST-TRAUMATIC STRESS DISORDER AND HEALTH-RELATED QUALITY OF LIFE IN BREAST CANCER SURVIVORS: MODERATING ROLE OF POSTTRAUMATIC GROWTH

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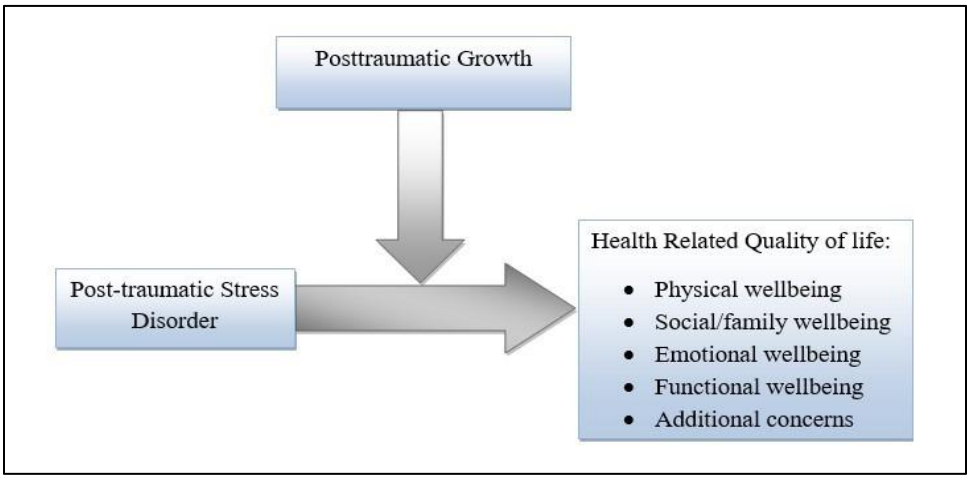
ABSTRACT

Objective
The objective of study was to determine relationship between post-traumatic stress disorder and health-related quality of life in breast cancer survivors and investigating role of moderation in posttraumatic growth.
Study Design
This correlational investigation was conceded at hospitals affiliated by PIMS (Pakistan Institute of Medical Sciences) and NORI (Nuclear Medicine, Oncology and Radiotherapy Institute).
Methods
The study's target population consisted of a total sample of 150 patients of breast cancer patients. Informed consent were taken from breast cancer survivors, who were taking the treatment of chemotherapy and radiotherapy. A pre-designed proforma was used to record the patient's information, which included their age, gender, qualification, stage of illness, duration of illness, mode of treatment, any other psychological disease, any other physiological disease, family history, monthly income and family system/structure. For assessment of breast cancer survivors' post-traumatic stress disorder (PTSD), health-related quality of life (HRQOL) and posttraumatic growth (PTG), post-traumatic checklist (PCL-5), functional assessment of cancer treatment (FACT-B), and posttraumatic growth inventory (PTGI) scales employed. Purposive sampling technique was used and with the help of G-Power sample size was determined. The data was analyzed on IBM SPSS 21.
Results
The findings show that PTSD and PTG (new opportunities, personal growth) have a significant negative relationship, while positive relationship between HRQOL (physical and emotional well-being) and PTSD among breast cancer survivors receiving radiotherapy. PTSD has a strong positive correlation with PTG (connected to interpersonal relationships and individual strength) and HRQOL (physical and emotional well-being) in breast cancer survivors who had chemotherapy. Moderate correlation between PTSD, HRQOL, and PTG (Physical and Emotional well-being). The link between PTSD and HRQOL was altered by PTG to the tune of 4%. Relationship between PTSD and emotional health was modulated by PTG. In the model, it increased variance by 6%. Physical and mental well-being increased as the number of survivors of breast cancer with increased PTG. The occurrence of PTSD, HRQOL, and PTG, as well as different sub scales and treatment modalities like radiography and chemotherapy, can all be linked to a significant disparity in the treatment outcomes of breast cancer survivors. PTG, an essential moderator, markedly improved the status of breast cancer survivors.
Conclusion
This study identified high prevalence of PTSD among breast cancer survivors which affected their overall HRQOL. PTG played a significant role of moderator between PTSD and HRQOL. Furthermore, forecasting changes in breast cancer survivors may make use of a variety of scientific data, awareness and other factors.
Keywords
Breast cancer, posttraumatic growth, post-traumatic stress disorder, health-related quality of life

INTRODUCTION

Breast cancer is the most dominant malignancy among women (Bray et al., 2018). Breast cancer is the utmost recurrent malevolence that affects women globally, and it is more prevalent in emerging nations as a result of rising life expectancy, urbanization, and adoption of the western way of life (Niu et al., 2014). The ephemerality of illness has significantly declined as a result of recent improvements in detection and treatment (van Schoor et al., 2011). In consequence, breast cancer has altered since fatal to physically and psychologically incapacitating illness (DeSantis et al., 2019). One of leading causes of illness and mortality worldwide, predominantly among women, is breast cancer. Half of the 9.1 million cancer-related fatalities and 18.1 million new cases in 2018 were women (IARC, 2018). PTSD is a mental disorder categorized by intensely remembering traumatic event (Criterion A), invasive reminiscences and nightmares (Criterion B), avoiding reminders of event (Criterion C), negative cognitive also mood changes (Criterion D), hyper vigilance towards possible extortions in surroundings (Criterion E), and in more or less circumstances, persistent otherwise recurring symptoms (American Psychiatric Association, 2013). Growing amount of studies have found that cancer survivors exhibit symptoms related to trauma. (Cordova et al., 2017). PTSD was more repeatedly detected in survivors with cancer than in the overall population (Swartzman et al., 2016). In a sample of 71 women, Lueken et al. (2004) examined pervasiveness of PTSD during six months after the diagnosis. Just 3% of population satisfied the requirements for PTSD brought on by breast cancer (Luecken et al., 2004). In the study by O'Connor, symptoms of PTSD in survivors with breast cancer were assessed in third and fifteenth months after surgery, on the other hand duration of diagnosis is unquestionably more subtle period (O'Connor et al., 2011). Researchers focused on PTSD symptoms in breast cancer survivors who had recently received their diagnosis. Aged between twenty-one and thirty years, 23% initially diagnosed survivors with breast cancer experienced symptoms of PTSD in the first 2-3 months after the diagnosis, with symptoms waning during the ensuing three months. Individuals have an increased chance of getting signs of PTSD (Vin-Raviv et al., 2013). The term 'quality of life' or more specifically HRQOL refers toward a patient's assessment of mental, social and physical health as it remains partial by their diagnosis, treatment, post-treatment, and survivorship measured through means of instruments that have undergone rigorous validation (Mokhatri-Hesari & Montazeri, 2020). On the other hand, traumatic event can have a positive impact on survivors, a phenomenon termed as posttraumatic growth (PTG). Tedeschi and Calhoun first put forth the concept of PTG in 1996 (Tedeschi & Calhoun, 1996). PTG is the constructive development that results from overcoming extremely difficult life crises (Tedeschi & Calhoun, 2004). Three themes, including spiritual development, greater personal strengths, and appreciation of life, were examined in study on PTG in breast cancer survivors. These themes were then followed by the dimensions in the Tedeschi and Calhoun theory of PTG. Organized and carried out interventions recommended by the authors to aid and enhance PTG (Fallah et al., 2012). Breast cancer survivors who had PTSD and PTG had a low prevalence of PTSD whereas most of them PTG. Age, qualification, socioeconomic status, support from close friends and family, and effective coping mechanisms were among the elements linked to the phenomenon. Other from that, there was no connection between PTG and PTSD (Koutrouli et al., 2012). PTSD and PTG are independent constructs, they reflected a small positive relationship. In our study it is showing negative relationship but due to the lack of given relevant studies it remains unclear how PTSD and PTG are associated with each other (Shand et al., 2014). Further studies suggested that there is no significant relationship between

PTSD and PTG, however, some argue that high levels of distress can result in more significant gains in PTG, while others contend that PTSD symptoms inhibit growth or that their relationship is curvilinear especially in (new possibilities and personal strength) were observed (Zebrack et al., 2014). Moreover, studies revealed that there was a significant positive psychological impact on breast cancer. Results suggested high spiritual growth, high appreciation of life and more sympathy from family and others. Survivors of breast cancer stated constructive changes in activities, diet, exercise and religious beliefs (Singletary et al., 2004b). Using trauma as a springboard for personal development is possible. In spite of this, the presence of it does not guarantee that cancer's side effects, like PTSD, would be felt. Distress and a lack of well-being can be seen in PTG individuals (Alkan et al., 2020). Women with breast cancer who underwent radiography considerably had higher HRQOL than non-radio graphic controls. breast cancer survivors reported feeling less tired than usual. The findings revealed that demographics characteristics take considerable impact on QOL in survivors with breast cancer receiving radiotherapy (Muszalik et al., 2016). Females with higher levels of education who are under 50 years old have significantly improved HRQOL. Yet, they outperformed individuals over 50 in respect to physical, social/family, functional, and emotional health (Shen et al., 2012). Chemotherapy recipients demonstrated notable outcomes and improved social and emotional functioning in the areas of HRQOL (Chee Chean et al., 2016). Using (FACT-B) questionnaire, women receiving chemotherapy treatment suggested a potential improvement in HRQOL during the treatment (Dano et al., 2019). The current notional example of posttraumatic growth in an oncological disease is supported by a PTG-based study that reveals mean of PTG of 76.61±13.45. The findings indicated that breast cancer survivors who have experienced trauma may develop growth. According to a comprehensive evaluation of 47 publications, survivors of breast cancer who received chemotherapy or radiotherapy exhibit progress that is certainly connected with a greater appreciation for life, changes in one's sense of oneself, and improved interpersonal relationships (Michalczyk et al., 2022). According to a qualitative phenomenological research of PTG in survivors of breast cancer, most of them with positive perspective reported having experienced spiritual development, a greater respect for life, and an enhancement in their personal strengths. Moreover, PTG processes and effects in reaction to stress might be brought on by the requirement of chemotherapy and surgery. These techniques can alter the degree of trauma, which in turn can mark the likelihood and severity of PTG (Fallah et al., 2012b). According to a study, people receiving chemotherapy for breast cancer showed signs of optimism. According to the results, chemotherapy treatment offers a good chance of success and is statistically significant. Hope is attributed to characteristics including depression, low self-esteem, and beginning of breast cancer symptoms (Cristina & Aurora, 2016). In breast cancer, PTG acted as a mediator between PTSD and HRQOL. Symptoms of PTSD have been associated to depression and a poor quality of life. Results indicated that post-traumatic stress symptoms (PTSS) were satisfied among women who approved of PTG and that they were associated to symptoms of increased depression and negative quality of life (Lederberg et al., 2015). Study conducted in which survivors with breast cancer were evaluated through PTG, PTSD, quality of life and symptoms of depression. PTG moderates between these variables. Results suggested that survivors with improved financial and educational status had good well-being. Though breast cancer is life-threatening event to women but their world view, having a perception role of female, substantial sources of successful health and bodily image affect their responses to breast cancer (Meryam Schouler-Ocak, 2015).



Conceptual Framework of the study

METHODOLOGY

Participants

It was a cross-sectional study that was authorized by the institutional ethical council and conducted at the NORI and PIMS. The oncology department was used to select the required 150 breast cancers survivors through informed consent. Age, gender, education level, stage of illness, length of illness, form of treatment, presence of any other physical or psychological conditions, family history, monthly income, and family system/structure were all noted on a demographic data sheet for each person. Participants of the research were briefed about the study and its purpose and after their consent they were included in the study. Furthermore, they were ensured about the confidentiality of their response. They were informed about their right that they can withdraw at any stage they want. Participants completed the questionnaires. Participants were free to ask any questions they had about the products or the scale-related instructions. An individual typically needs between 15 and 20 minutes. The hospital/institution administration and attendees were thanked for their cooperation at the conclusion. Statistical software for social sciences was used to examine the results (SPSS-IBM Version 21). The demographically variables' frequency, mean, and percentages were calculated using descriptive statistics. The hypotheses were tested using correlation, ANOVA, t-tests, and moderation analysis. P-values below 0.05 were measured statistically significant.

Instruments

Three instruments were used in assessing the breast cancer survivors. PCL-5 was developed by Weathers et al in (2013) which measures PTSD. The scale has 20 items and has a test retest reliability of .82. For the present study Urdu translated version was used which was translated by Gohar in (2017). Post Traumatic Growth Inventory_PTGI was developed by Tedeschi & Calhoun in (1996). An instrument measuring positive results reported by person who experienced traumatic events. Post Traumatic Growth has 21 items with test retest reliability of .96. The scale is translated by Saghir & Kausar in 2007. Post traumatic growth is five-point likert scale. Functional Assessment of Cancer Therapy (FACT-B) was developed by

Brady et al in (1997). Scale has 5 subscales. i.e. physical wellbeing, social/ family wellbeing, Emotional wellbeing, Functional wellbeing and additional concerns. FACT-B has 37 items scale designed to measure multidimensional quality of life in Breast cancer patients. It was translated in Urdu version in 2017. Its test retest reliability is .90.

Results

Table 1. Socio-demographic characteristics of breast cancer survivors (N=150)

Variables		f	%	M	SD
Age				45.37	11.40
Qualification	Uneducated	43	28.7		
	Primary	24	16.0		
	Middle	17	11.3		
	Matric	31	20.7		
	Intermediate	16	10.7		
	Bachelors	19	12.7		
Stage of Illness	Stage 1	45	30.0		
	Stage2	45	30.0		
	Stage 3	41	27.3		
	Stage 4	19	12.7		
Mode of Treatment	Radiography	23	15.3		
	Chemotherapy	127	84.7		
Any other Psychological Disease	Yes	34	22.7		
	No	116	77.3		

Any other Physiological Disease	Yes	54	36.0		
	No	96	64.0		
Family History	Yes	52	34.7		
	No	98	65.3		
Monthly Income					
				27786.67	15421.41
Family System	Nuclear	75	50.0		
	Joint	75	50.0		

Table 1 is about the demographic characteristics of the sample.

Table 2. Psychometric properties of scales and subscales of PCL-5 (post-traumatic checklist), posttraumatic growth inventory (PTGI), and functional assessment of cancer therapy (FACT-B).

Variables	No. of items	α	M	SD	Range		Skewness	Kurtosis
					Minimum	Maximum		
Posttraumatic Checklist	20	.90	29.96	15.22	.00	68.00	-.14	-.73
Posttraumatic Growth Inventory	21	.88	71.56	15.87	20.00	105.00	-.79	.43
Physical Well being	7	.84	16.25	5.70	2.00	28.00	-.18	-.39

Social/ Family well being	7	.67	20.76	4.65	1.00	28.00	-.92	2.15
Emotional Well being	6	.79	13.99	4.17	.00	23.00	-.60	.85
Functional Well being	7	.77	17.44	5.42	2.00	28.00	-.46	-.18
Additional Concerns	10	.71	22.53	6.83	4.00	40.00	-.35	-.16

In table 2 the psychometric properties are demonstrated which are indicating that instruments are psychometrically sound in nature.

Table 3. Pearson bivariate inter-scale correlation between participants of breast cancer survivors, posttraumatic growth inventory (PTGI), post-traumatic stress disorder (PTSD), and health-related quality of life (HRQOL)with reference to radiotherapy and chemotherapy (N=150)

	1	2	3	4	5	6	7	8	9	10	11	12
1. Posttraumatic stress	-	.17	-.52**	-.41*	-.38*	-.17	-.29	.74**	-.11	.47*	-.32	.24
2. Related to others	.17*	-	.40*	.26	.41*	.40*	.73**	.10	.12	.06	.29	.15
3. New Possibilities	.05	.53**	-	.60**	.77**	.41*	.81**	-.42*	.16	-.18	.60**	.01
4. Personal strength	.15*	.55**	.67**	-	.72**	.63**	.76**	-.39*	.28	-.30	.66**	.32
5. Appreciation of life	.16*	.50**	.52**	.70**	-	.65**	.87**	-.39*	.11	-.44*	.58**	.09
6. Spiritual Change	.10	.42**	.53**	.54**	.34**	-	.66**	-.15	.05	-.39*	.36*	.41**
7. Post-traumatic growth	.16*	.83**	.82**	.85**	.76**	.63**	-	-.32	.21	-.27	.65**	.18
8. Physical well-being	.44**	.15*	-.09	-.05	-.12	.05	.01	-	-.06	.67**	-.59**	.37**
9. Social well-being	.09	.30**	.10	-.02	.07	-.06	.16*	.20*	-	.09	.39*	.11
10. Emotional well-being	.46**	.03	-.11	.01	-.06	-.16*	-.05	.57**	-.01	-	-.32	.35**
11. Functional well-being	-.03	.18*	.31**	.30**	.27**	.01	.28**	-.16*	.39**	-.03	-	.14
12. health-related Quality of life subscales	.39**	.29**	.14	.22**	.19*	.09	.26**	.42**	.30**	.40**	.072	-

Above the diagonal are individuals with breast cancer receiving radiographic treatment
Below the diagonal are individuals with breast cancer receiving chemotherapy treatment

Table 3 results indicated that among breast cancer survivors receiving radiotherapy, a positive correlation between HRQOL (physical and emotional well-being) and PTSD. However, a significant negative correlation between PTSD and PTG (new possibilities, personal strength). PTSD has a strong positive correlation with PTG (connected to relationships with others and inner strength) and HRQOL (physical and emotional well-being) in breast cancer who had chemotherapy.

Table 4. Moderation analysis of posttraumatic growth on relationship between PTSD and HRQOL

	physical well-being		Family/social well-being		emotional well-being		functional well-being	
step 1	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	B
Constant		16.18***		20.77**		13.93**		17.46
Posttraumatic Growth Inventory ×		.14***		-.01		-.01		.14
Posttraumatic Checklist						.108		-.07
Step 2	.04**		.04		.06**		.007	
Posttraumatic Growth Inventory						.003**		
Posttraumatic Checklist		.005**		-.001				
R^2	.17			.06	.20			.23

In Table 4 the link between PTSD and HRQOL shows that PTG has a moderating effect (physical well-being and emotional well-being). PTG is playing a role of moderator. In the link amongst PTSD and HRQOL, PTG introduces a 4% variation. The findings also showed that PTG moderates the association between PTSD and emotional well-being. The model's variance is increasing by 6% as a result. Results indicates that if the PTSD increases the emotional well-being also increases and this relationship is moderated by PTG. PTG moderates the connection between PTSD and physical well-being. When the breast cancer increasingly has the PTG, the relationship between PTSD and Physical well-being becomes positive, which means that in case of PTG, the PTSD increases, and physical well-being also increases. PTG is a moderator of the link between PTSD and emotional health. When the breast cancer increasingly has the PTG, the relationship between PTSD and emotional well-being becomes positive, which means that in case of PTG the PTSD increases, and emotional well-being also increases.

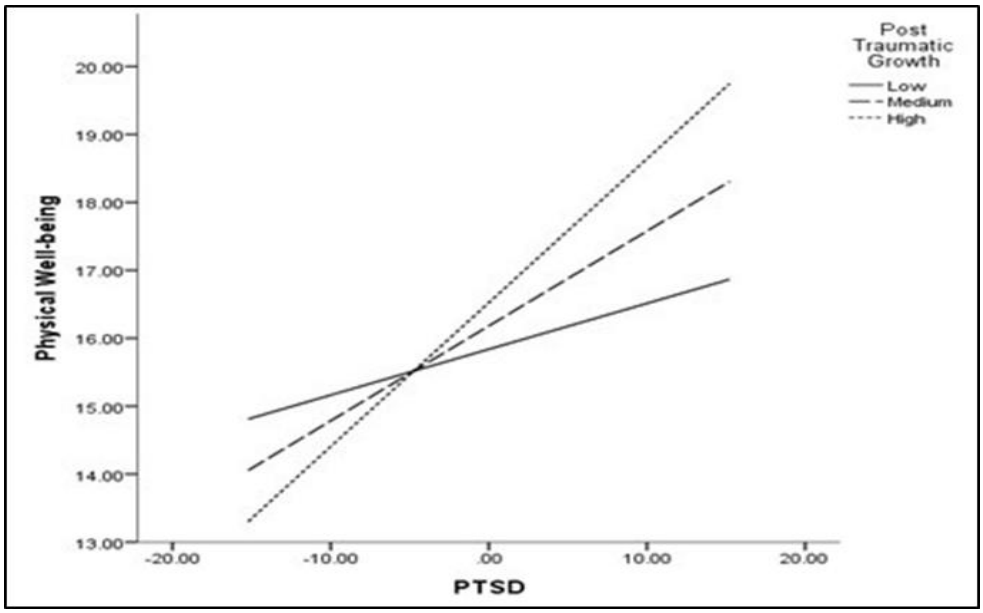


Fig 1: Relationship between PTSD and physical well-being is moderated by PTG in breast cancer survivors. In case of increase in PTG, PTSD and physical well-being becomes positively correlated.

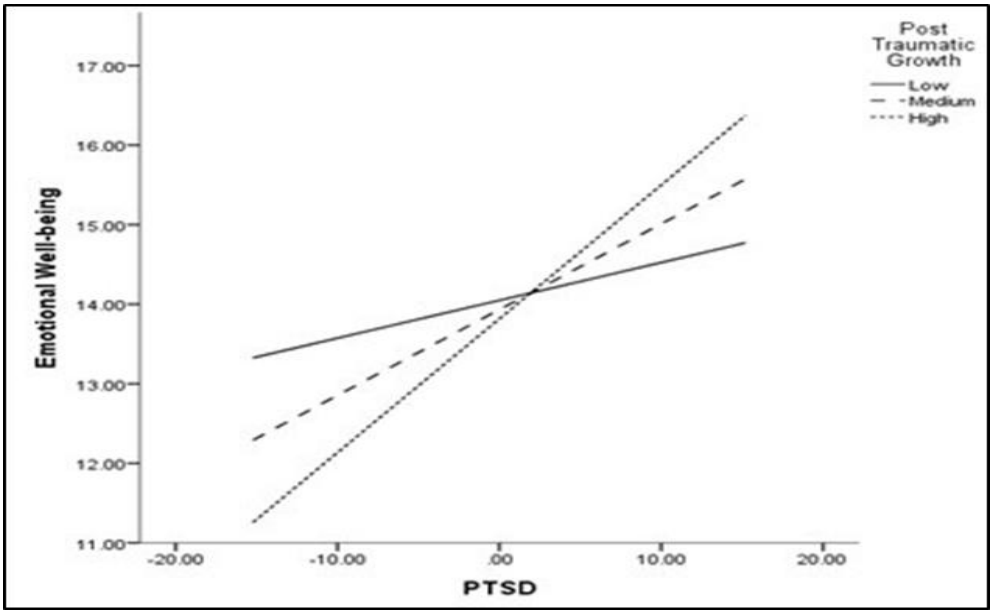


Fig 2: Relationship between PTSD and emotional well-being is moderated by PTG in breast cancer survivors. In case of increase in PTG, PTSD and emotional well-being becomes positively correlated.

DISCUSSION

The study's major goal was to uncover the psychological problems that breast cancer survivors encounter during such traumatic situations, such as the importance of PTSD, PTG after trauma, and their HRQOL. In Pakistan, this is a highly touchy and underutilized subject. The reason behind this is of the stigmatization and offensive response attached with it. Nonetheless, these variables may be useful in making the optimum unit selections and may also account for a substantial portion of the clinical heterogeneity. Symptoms of PTSD were found high among young females. Similar findings were reported in other studies (Vin-Raviv et al., 2013). Moreover, studies revealed that there was a significant positive psychological impact on breast cancer. Results suggested high spiritual growth, high appreciation of life and more sympathy from family and others. Breast cancer survivors stated constructive changes in activities, diet, exercise and religious beliefs (Singletary et al., 2004). Patient weariness appeared to be less severe. Findings showed a substantial relationship between demographics characteristics and the quality of life for survivors receiving radiotherapy for breast cancer (Muszalik et al., 2016). Qualification-wise, highly educated ladies under 50 years old outperformed those over 50 in respect to overall HRQOL and had significantly better outcomes (Shen et al., 2012).

Physical well-being is positively connected with emotional well-being, functional status, and other issues in the HRQOL categories. Breast cancer survivors with chemotherapy showed a significant better emotional and functional well-being (Chee Chean et al., 2016). Also, findings showed that breast cancer who have experienced trauma may undergo growth. According to a comprehensive evaluation of 47 publications, breast cancer survivors who have expected radiotherapy or chemotherapy exhibit growth that is positively connected with a greater appreciation for life, changes in one's sense of oneself, and improved interpersonal relationships (Michalczyk et al., 2022). PTG served as moderator between PTSD and HRQOL among breast cancer survivors. Relationship was generated among PTSS with depression and low quality of life. Results indicated that PTSS was linked to signs of increased depression and poorer quality of life, and this relationship was fulfilled in women who approved of posttraumatic progress (Lederberg et al., 2015).

Limitations and Recommendations: This study included some limitations that needs to be focused. Due to limited resources, the sample of the study has certain limitations like time and geographical constraints. Non breast cancer survivors must be included in the sample to analyze the differences between the variables. Limited research awareness among the masses found. Further research should be expanded to focus on different age groups of breast cancer survivors from diverse cities to examine their trauma and some other variables. Moreover, in future research, large sample selected can help to enhance the generalizability of results and to minimize the biases involved in the study. More demographic variables should be included to expand the study is highly recommended.

CONCLUSION

Breast cancer have a widespread range of characteristics, comprising the potential for PTSD, HRQOL, and PTG, in addition to a variety of sub scales and types of treatment, including chemotherapy and radiotherapy with significant variation. High prevalence of PTSD found among breast cancer survivors. HRQOL got overall effected. The circumstances of breast cancer significantly improved thanks to PTG, a crucial process moderator. Additionally, a plethora of scientific information, awareness, and a variety of other elements may be used to forecast changes in behavior of survivors with breast cancer.

Conflict of interest

The author reports no conflict of interest.

Author contribution statement

Author contributed to the study conceptualization idea and design. Data collection were performed by NH. Manuscript was written by NH. Analysis and final approval of the manuscript was done by NH.

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