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# Predictors of Post traumatic growth among breast cancer patients in Nepal

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## ABSTRACT

**Objective:** The main objective of this study is to investigate the prevalence, correlates and predictors of posttraumatic growth among breast cancer patients in Nepal. **Method:** A cross-sectional descriptive design was used. Structured form for socio-demographic and disease related information, Post traumatic growth Inventory (PTGI) and Hospital Anxiety and Depression Scale (HADS) were used to collect information from 120 participants. Study was carried out in various departments: out-patient department, chemo therapy department, radiation department, surgical department and palliative department of Bhaktapur cancer hospital, Nepal from May 2013 to August 2013. Data were analyzed using a Statistical Package for Social Sciences (SPSS) 16. **Result**: Mean post traumatic growth (PTG) score was 54.62 (S.D=13.66). 19.2% of respondents had no or low level of PTG and 80.8% had moderate to high levels of PTG. Among the factors of PTG, majority of respondents (85%) showed growth in relating to others, followed by appreciation of life (74.2%), spiritual change (67.5%), personal strength (63.3%), and new possibilities (45.8%). Post traumatic growth was found to be significantly positively correlated with educational status of respondents (r=0.220, P=0.016) and negatively correlated with year since diagnosis (r=-0.253, P=0.005), anxiety level of respondents (r=-0.286, P=0.002) and depression level of respondents (r=-0.200, P=0.029). Age of respondents (P=0.003, B=-0.331 and Beta=-0.247) and depression level of respondents (P=0.000, B=-1.968 and Beta=-0.401) accounts for 25.1% of variance in post traumatic growth of respondents. **Conclusion**: Holistic approach in breast cancer treatment is a need to address psychological morbidities which have been found to be determining factors for post traumatic growth, quality of life and finally survival of the patient.

**Keywords**: post traumatic growth, breast cancer, Nepal

## Introduction

### Background of the study

Despite of being a curable cancer, breast cancer has led serious impact on the survival and the quality of life of the patients in developing world. It has been the point of argument that cancer is not just a single event with a certain end but a permanent condition characterized by ongoing ambiguity, potentially delayed or late effect of the disease or its treatment and concurrent psychological issues. [1] Despite from normal emotional impact of the diagnosis of a life threatening illness, 20%-25% of cancer patients are estimated to meet diagnostic criteria for major depression or anxiety, treatable psychiatric conditions which have serious detrimental effects on their quality of life. [2]

This lead to the point where having breast cancer can be perceived as some traumatic event by the sufferer. Traumatic events are characterized by its capacity to provoke fear, helplessness or horror in response to the threat of injury or death. [3] There are many evidences showing traumatic events produces negative physical and psychological consequences. Reaction to and symptoms of trauma can be wide, varied and differ in severity from person to person. [4] Experiencing major life crises or traumatic events leads to variety of responses including acute reactions like helplessness, confusion, anxiety, shock, disbelief, severe anger. [5]

Experiencing or learning about traumatic event (breast cancer diagnosis) challenges person's sense of safety, leading to feeling of vulnerability and powerlessness. [6, 7] Low self –esteem, feeling of despair, physical

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and mental exhaustion and severe depression are often produced by such crisis event. [4, 5, 8]

Despite all the negative reactions, the frightening and confusing aftermath of trauma where fundamental assumptions are severely challenged, can be fertile ground for unexpected outcomes that can be observed in survivors: post traumatic growth (PTG). (Tedeschi & Calhoun 2004)The term post traumatic growth refers to positive psychological change experienced as a result of the struggle with highly challenging life circumstances. It represents something new and positive that is believed to surpass what was present before the trauma. [9] Also known as benefit-finding [10, 11, 12] or stress related growth, [13] which refers to reinterpretation of trauma as an opportunity for personal growth.

An individual's way of understanding the world is restructured due to cognitive engagement that occurs as a result of a traumatic event that leads to significant psychological distress, thus producing growth. (Janoff - Bulman 1992; Calhoun & Tedeschi 1999). [14, 15]

Post traumatic growth has been documented in relation to variety of natural and human made traumatic events including life threatening diseases, serious medical conditions, war, abuse, immigration and death of loved ones. [16 ,17,18]

Benefit finding or PTG reports has been suggested to be coping strategies used to manage distress.[19] Benefit Finding can be explained as the form of transformation in an individual's perception of the self, the self in relation to others and changes in life philosophy.[20]

PTG occurs concomitantly with the attempts to adapt to highly negative sets of circumstances that can endanger high levels of psychological distress. For a minority of people who experience them, major life crisis can serve as the catalyst for the development or exacerbation of significant psychiatric difficulties. Growth doesn't occur as a direct result of trauma instead it is individual's struggle with the new reality in the aftermath of trauma that is important in determining the extent to which PTG occur. Also reports of growth experience in the aftermath of traumatic events far outnumber reports of psychiatric disorders, since continuing personal distress and growth often coexist. [9]

**Research Design**

Non randomized, cross sectional study of patients with breast cancer was conducted in May 2013 - August 2013 at Bhaktapur cancer hospital, Nepal. All patients diagnosed with breast cancer and who were involved in their treatment and follow ups in surgical ward, chemo therapy ward, radiation ward, palliative ward and outpatient department of Bhaktapur cancer hospital were included in the study.

Bhaktapur cancer hospital is one of the 7 major hospital providing cancer treatment in Nepal. Bhaktapur is located nearby capital city Kathmandu so people from all over the country prefer to visit Bhaktapur cancer hospital for cancer treatment. As a result patients from different zones were included in the study.

Among all breast cancer patients who met inclusive criteria 120 patients volunteered to participate in the study. Patients diagnosed with cancer other than breast cancer, diagnosed with DSM-IV major mental disorder, diagnosed with depression before diagnosis of breast cancer and not willing to participate in the study were excluded from the study.

Permission was taken from hospital director as well as from involved department heads of Bhaktapur cancer hospital before data collection. Informed consent was taken from the participants. The purpose of the study, objectives, procedures, and confidentiality agreement was clearly explained to the respondents before collecting the data. Participants who agreed to take part were given the questionnaires to fill. The subjects were assured of confidentiality that only the researcher will have access to the collected data.

Literate participants filled the form themselves, researcher assisted illiterate participants to complete the form. For the patients who were in follow up list of radiation ward, chemotherapy ward, surgical and medical outpatients ward were telephoned and interviewed by researcher herself to fill the questionnaire, only if they agreed to participate in the study.

A structured form related to socio-demographic information and disease related information of the participants which included age, sex, marital status, education level, occupation time since diagnosis of cancer, treatment adopted of the participants, Hospital Anxiety and Depression Scale (HADS) and Post Traumatic Growth Inventory (PTGI) were used for the collection of information.

The HADS is a screening tool for anxiety and depression in non-psychiatric clinical population. HADS was originally developed by Zigmond and Snaith in 1983.HADS consist of 14 items (7 each for anxiety and depression). [21] An analysis of score on the two subscales supports the differentiation of each mood state into four ranges: "mild cases" (score 8-10), "moderate cases" (score 11-15) and "severe cases" (score 16 or higher). (Zigmoid & Snaith, 1994) [22]

**Posttraumatic Growth Inventory (PTGI)**

Posttraumatic growth inventory is an instrument for assessing positive outcomes reported by person who have experienced traumatic events. This was developed by Tedeschi and Calhoun in 1996. This scale includes 21 items representing new possibilities (5 items), relating to others (7 items), personal strength (4 items), spiritual change (2 items) and appreciation of life (3 items). Participants will be asked to rate on a scale of 0 (not at all) to 5(very great degree). Responses to the item are summed to produce a total score (range=0-105). [23]

**Table 1: Dichotomization of the response levels of the Post Traumatic Growth Inventory (PTGI)** [24]

| Response levels | Scores | Dichotomization |
|---|---|---|
| Not at all | 0 | No PTG or low level of PTG |
| Very small degree | 1 | |
| Small degree | 2 | |
| Moderate degree | 3 | Moderate to high level of PTG |
| Great degree | 4 | |
| Very great degree | 5 | |

Most of the questions on socio-demographic and disease related variables were multiple choice questions and some were close ended questions. Similarly questions on HADS had to be rated on a four point scale. And questions on PTGI had to be rated on a 6 point scale ranging from 0-5.

Data were analyzed using a Statistical Package for Social Sciences (SPSS) 16. Standard deviation, mean, percentage, frequency, range were used to describe the demographic data, anxiety and depression of the participants. Chi- square test spearman's rho correlation and multiple regressions were used.

## Results

### *Socio-demographic and disease related characteristics of respondents*

The mean age of respondents was 51.92 (S.D=10.178) years. Only one respondent was male all others were female. Among the 14 administrative zones of Nepal, respondents from 11 zones participated in the study with an exception of Karnali, Seti and Mahakali zones. Majority (85%) of the respondents were married. Also majorities (94.2%) of respondents live in joint family. Half (50.8%) of the respondents were illiterate. Among the literate, only 4.2% had university education. Almost half (45.8%) respondents were home makers. Majority of participants (60%) were newly diagnosed; between 1 month to one year. Followed by 28.3% of respondents diagnosed between 1- 2 years, 5% between 2- 3 years, 3.3% between 3- 4 years, 2.5% between 4- 5 years and 0.8% between 5- 6 years respectively. Distribution of respondents according to their anti-cancer treatment shows that majority (64.2%) of respondents had surgery along with chemotherapy and radiation therapy.

### *Anxiety and depression*

The mean depression score was 11.266 (S.D=2.782) and mean anxiety score was 11.81 (S.D=3.47).

### *Post Traumatic Growth*

Mean PTG score was 54.62 with S.D=13.66, minimum score 13 and maximum score 90. According to dichotomization of the response levels of the Post Traumatic Growth Inventory, 23 respondents (19.2%) had no or low level of PTG and 97 (80.8%) had moderate to high levels of PTG.

Kruskal-Wallis test found that post traumatic growth is not significantly associated with any of the socio-demographic and disease related variables of the study as calculated P value is greater than 0.05. Level of PTG of respondents is significantly associated with anxiety level of respondents (P= 0.014) and also it is significantly associated with depression level of respondents (P=0.049)Post traumatic growth was found to be positively correlated with educational status of respondents (r=0.220, P=0.016) and negatively correlated with year since diagnosis (r=-0.253, P=0.005), anxiety level of respondents (r=-0.286, P=0.002), depression level of respondents (r=-0.200, P=0.029) and age of respondents (r=-0.210, P=0.021). Multiple regression analysis found that age of respondents (P=0.003, B=-0.331 and Beta=-0.247) and depression level of respondents (P=0.000, B=-1.968

and Beta=-0.401) accounts for 25.1% of variance in post traumatic growth of respondents.

***Factors of Post Traumatic Growth***

Majority of respondents (85%) shown growth in relating to others, followed by appreciation of life (74.2%), spiritual change (67.5%), personal strength (63.3%), and new possibilities (45.8%).

Relating to others was found to be negatively correlated with family structure of respondents (r=-0.026, P=0.001), occupation of respondents (r=-0.183, P=0.045), anxiety level of respondents (r=-0.216, P=0.018).

Regression analysis found that depression level (P=0.001, B=-0.600 and Beta=-0.296), occupation (P=0.007, B=-1.517 and Beta=-0.228) and age of respondents (P=0.016, B=-0.113 and Beta=-0.204) accounted for 23% of variance in growth in relating to others.

New possibilities was found to be negatively correlated with treatment done for the respondents (r=-0.198, P=0.030) and depression level of respondents (r=-0.287, P=0.001). Depression level (P=0.000, B=-0.482 and Beta=-0.371) and age (P=0.004, B=-0.086 and Beta=-0.241) accounted for 22.3% of variance in growth in new possibilities.

Personal strength was positively correlated with educational status of respondents (r=0.208, P= 0.022). Depression level (P=0.001, B=-0.346 and Beta=-0.291) and age (P=0.001, B=-0.90 and Beta=-0.277) accounted for 18.5% of variance in growth in personal strength.

Spiritual change was negatively correlated with family structure of respondents (r=-0.207, P= 0.023) and depression level of respondents (r=-0.208, P= 0.022). Depression level (P=0.003, B=-0.239 and Beta=-0.270) accounted only for 7% of variance in growth in spiritual change.

Appreciation of life was positively correlated with educational status of respondents (r=0.258, P=0.004) and treatment done for the respondents (r=0.228, P=0.012). And it is negatively correlated with occupation of respondents (r=-0.323, P=0.000) and depression level of respondents (r=-0.291, P=0.001). Depression level (P=0.001, B=-0.226 and Beta=-0.282), occupation (P=0.021, B=-0.509 and Beta=-0.194) and age of respondents (P=0.003, B=-0.055 and Beta=-0.194) accounted for 23.1% of variance in appreciation of life.

**Discussion**

This is descriptive cross sectional study. Non random (convenience) sampling technique was used to include 120 respondents having breast cancer in the study. Similar method has been used by many studies conducted among breast cancer patients for the exploration of post traumatic growth also were non randomized studies. Most of them were cross sectional only few being longitudinal. [10] [25-35]

Women are the main victim of breast cancer in Nepal with only one male patient in this study. The mean age of respondents was 51.92 years. 80.8% of respondents had moderate to high level of PTG.

Current study found that majority of respondents show growth in relating to others, appreciation of life, spiritual change and personal strength. These findings are supported by other similar studies comparing PTG among women with breast cancer and breast cancer free women, findings showed that women with breast cancer experienced significantly more PTG in the domains 'appreciation of life' , 'relating to others' and 'spiritual change' (Brix et al., 2013, Cordova et al., 2001). [36, 25]

This study found PTG to be significantly positively correlated with educational status of respondents and negatively correlated with year since diagnosis, anxiety level of respondents and depression level of respondents. This is consistent with other studies; Greater PTG was associated with educational level (Danhauer et al., 2013), [37] similarly next study found time since diagnosis was inversely related to PTG (Weiss, 2004). [27] Individuals who were high in PTG tended to show a low level of depressive symptoms (Jansen L et al, 2011). [38- 40] Although, some studies found time since diagnosis being positively associated with PTG score (Danhauer et al., 2013, Cordova et al., 2001), [37, 26] And level of education being inversely related to PTG score (Weiss, 2004). [27]

Age of respondents (P=0.003, B=-0.331 and Beta=-0.247) and depression level of respondents (P=0.000, B=-1.968 and Beta=-0.401) accounts for 25.1% of variance in post traumatic growth of respondents. Age was positively associated with PTG but education was identified as a predictor of PTG (Weiss, 2004). [27] Also another study found significant association between PTG with patient's age (P=0.001). Age and marital statue were found to be significantly predicting post traumatic growth (Mystakidou et al., 2008). [28] Studies including survivors with different cancer sites

reported that younger survivors experienced more PTG than older survivors (Gotay and Muraoka, 1998; Lechner et al, 2003; Morris et al, 2007). [41- 43]

Regression analysis found that depression level, occupation and age of respondents accounted for 23% of variance in growth in relating to others and 23.1% in appreciation of life. Depression level and age accounted for 22.3% of variance in growth in new possibilities, 18.5% in personal strength. This study found depression as a strong predictor of PTG itself as well as the strong predictor of factors of PTG. Significant negative association was observed between new possibilities and HADS-Depression ($r=-0.314$, $p<0.05$) (Mystakidou et al., 2008). [28] Similarly study conducted in breast cancer survivors found that age at diagnosis, marital status, employment, education, perceived intensity of disease and active coping accounted for 34%, 35% and 28% of the variance in growth in relating to other, new possibilities and appreciation of life (Bellizzi et al., 2006). [44] Similarly age was found to be significant predictor of new possibilities, appreciation of life (Mystakidou et al., 2008). [28]

Study found that total PTG and the factor 'appreciation of life' were significantly positively associated with global quality of life and physical functioning, although the correlations were small. Respondents having moderate to high PTG reported significantly higher mean global quality of life. [40]

PTG is theorized to help individuals assimilate a traumatic event into previous assumptions about oneself and the world; it is related only inconsistently with improved mental health and wellbeing. As a result health care providers should be supportive of survivors who report PTG, but with the awareness that the effects of perceived growth on psychological outcomes are largely unresolved.

It is of value to explore PTG enhancing strategies in cancer patients to reduce further psychological distress. PTG should be investigated to evaluate the efficacy of interventional strategies among cancer patients in providing holistic care.

**Table 1: Distribution of Respondents According Socio-demographic and disease related variables**

| Age group | Frequency | Percent |
|---|---|---|
| **20-30** | 2.0 | 1.7 |
| **30-40** | 16.0 | 13.3 |
| **40-50** | 43.0 | 35.8 |
| **50-60** | 35.0 | 29.2 |
| **60-70** | 22.0 | 18.3 |
| **70-80** | 2.0 | 1.7 |
| **Marital status** | | |
| **Married** | 102 | 85.0 |
| **Unmarried** | 16 | 13.3 |
| **Widow** | 2 | 1.7 |
| **Family status** | | |
| **joint family** | 113 | 94.2 |
| **single family** | 7 | 5.8 |
| **Educational status** | | |
| **Illiterate** | 61 | 50.8 |
| **Literate** | | |
| **Primary** | 16 | 13.3 |
| **Secondary** | 22 | 18.3 |
| **College** | 16 | 13.3 |
| **University** | 5 | 4.2 |
| **Occupation** | | |
| **Service** | 14 | 11.7 |
| **Agriculture** | 39 | 32.5 |
| **Housewife** | 55 | 45.8 |
| **Business** | 11 | 9.2 |
| **Others** | 1 | .8 |

| | | |
|---|---|---|
| **Years since diagnosis** | | |
| **Up-to 1 year** | 72 | 60.0 |
| **1-2 years** | 34 | 28.3 |
| **2-3 years** | 6 | 5.0 |
| **3-4years** | 4 | 3.3 |
| **4-5years** | 3 | 2.5 |
| **5-6years** | 1 | .8 |
| **Treatment done** | | |
| **Surgery** | 8 | 6.7 |
| **Surgery and Chemo therapy** | 35 | 29.2 |
| **Surgery, Chemo therapy and Radiation therapy** | 77 | 64.2 |

**Table 2: Distribution of Respondents according to Anxiety level and Depression level as per HADS-A, HADS-D**

| **Anxiety level** | **Frequency** | **Percent** |
|---|---|---|
| **0-7(no cases)** | 13 | 10.8 |
| **8-10(mild cases)** | 30 | 25.0 |
| **11-15(moderate cases)** | 58 | 48.3 |
| **16 and above (severe cases)** | 19 | 15.8 |
| **Mean score=11.81 (S.D=3.47), minimum score=2, maximum score=21** | | |
| **Depression level** | Frequency | Percent |
| **0-7(no cases)** | 8 | 6.7 |
| **8-10(mild cases)** | 35 | 29.2 |
| **11-15(moderate cases)** | 72 | 60.0 |
| **16 and above (severe cases)** | 5 | 4.2 |
| **Mean score=11.266 (S.D=2.782), minimum score=3, maximum score=19** | | |

**Table 3: Distribution of Respondents according to the score in PTGI**

| **Post traumatic growth (PTG)** | **Frequency** | **Percentage** |
|---|---|---|
| **No PTG or low level of PTG** | 23 | 19.2 |
| **Moderate to high levels of PTG** | 97 | 80.8 |
| **Mean score (S.D) = 54.6250 (13.66), Minimum score = 13.00, Maximum score=90.00.** | | |

**Table 4: Distribution of Respondents according to the score in the factors of PTG**

| **Factors of PTG** | **Frequency (%)** | | **Mean score (S.D)** |
|---|---|---|---|
| | **No or low level of PTG** | **Moderate to high levels of PTG** | |
| **Relating to others** | 18 (15%) | 102 (85%) | 20.8333 (5.64992) |
| **New possibilities** | 65 (54.2%) | 55 (45.8%) | 10.1500 (3.61986) |
| **Personal strength** | 44 (36.7%) | 76 (63.3%) | 9.9500 (3.31244) |
| **Spiritual change** | 39 (32.5%) | 81 (67.5%) | 5.7500 (2.45720) |
| **Appreciation of life** | 31 (25.8%) | 89 (74.2%) | 7.9417 (2.23154) |

**Table 5: Showing the Result of Kruskal-Wallis (H) test done in level of PTG with level of anxiety and level of depression**

| Variable | | No /low level of PTG | Moderate to high level of PTG | total | Chi square (p value) |
|---|---|---|---|---|---|
| **Anxiety level** | No anxiety | 1(0.8%) | 12(10%) | 13(10.8%) | 10.626 (P=0.014) |
| | Mild anxiety | 1(0.8%) | 29(24.2%) | 30(25%) | |
| | Moderate anxiety | 14(11.7%) | 44(36.7%) | 58(48.3%) | |
| | Severe anxiety | 7(5.8%) | 12(10%) | 19(15.8%) | |
| **Depression level** | No depression | 0(0%) | 8(6.7%) | 8(6.7%) | 7.879 (P=0.049) |
| | Mild depression | 5(4.2%) | 30(25%) | 35(29.2%) | |
| | Moderate depression | 15(12.5%) | 57(47.5%) | 72(60%) | |
| | Severe depression | 3(2.5%) | 2(1.7%) | 5(4.2%) | |

**Table 6: Correlates of post traumatic growth and its factors**

| Variable | Correlation coefficient (P-value) |
|---|---|
| **Post traumatic growth** | |
| **Educational status of respondents** | 0.220* (0.016) |
| **Year since diagnosis of breast cancer** | -0.253** (0.005) |
| **Anxiety level of respondents** | -0.286** (0.002) |
| **Depression level of respondents** | -0.200* (0.029) |
| **Age of respondents** | -0.210(0.021) |
| **Relating to others** | |
| **Family structure of respondents** | -0.026** (0.001) |
| **Occupation of respondents** | -0.183* (0.045) |
| **Anxiety level of respondents** | -0.216* (0.018) |
| **New possibilities** | |
| **Treatment done for the respondents** | -0.198* (0.030) |
| **Depression level of respondents** | -0.287** (0.001) |
| **Personal strength** | |
| **Educational status of respondents** | 0.208* (0.022) |
| **Spiritual change** | |
| **Family structure of respondents** | -0.207* (0.023) |
| **Depression level of respondents** | -0.208* (0.022) |
| **Appreciation of life** | |
| **Educational status of respondents** | 0.258** (0.004) |
| **Occupation of respondents** | -0.323** (0.000) |
| **Treatment done for the respondents** | 0.228* (0.012) |
| **Depression level of respondents** | -0.291** (0.001) |

**Table 7: Multiple regressions for post traumatic growth and its factors**

| Dependent variables | Variables | B | Beta | *t* | *P* | $R^2$ | *F* |
|---|---|---|---|---|---|---|---|
| **Post traumatic growth** | depression | -1.968 | -0.401 | -4.952 | 0.000 | 0.251 | **19.631** |
| | Age | -0.331 | -0.247 | -3.051 | 0.003 | | |
| **Relating to others** | Depression | -0.600 | -0.296 | -3.573 | 0.001 | 0.23 | **11.523** |
| | Occupation | -1.517 | -0.228 | -2.746 | 0.007 | | |
| | Age | -0.113 | -0.204 | -2.449 | 0.016 | | |
| **New possibilities** | Depression | -0.482 | -0.371 | -4.496 | 0.000 | 0.223 | **16.748** |
| | Age | -0.086 | -0.241 | -2.928 | 0.004 | | |
| **Personal strength** | Depression | -0.346 | -0.291 | -3.443 | 0.001 | 0.185 | **13.298** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Age | -0.90 | -0.277 | -3.278 | 0.001 | | |
| **Spiritual change** | Depression | -0.239 | -0.270 | -3.051 | 0.003 | 0.073 | **9.307** |
| **Appreciation of life** | Depression | -0.226 | -0.282 | -3.415 | 0.001 | 0.231 | **11.585** |
| | Age | -0.055 | -0.252 | -3.022 | 0.003 | | |
| | **Occupation** | **-0.509** | **-0.194** | **-2.336** | **0.021** | | |

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