POSTTRAUMATIC GROWTH AMONGST SURVIVORS OF A SUICIDE BOMBING ATTACK IN NORTHERN PAKISTAN

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ABSTRACT

Objective: This study examined the relationship of demographic characteristics, and post traumatic disorder, with posttraumatic growth among individuals exposed to a suicide bombing attack.

Design: Cross Sectional Study.

Place and Duration of study: The collection of data was undertaken at the auditorium of POF Wah and the study was conducted from February to May 2009.

Subjects and Methods: Fifty two workers of an ordnance factory in the town of Wah in Northern Pakistan who survived the suicide attack were studied. Standardized measures of post traumatic growth and post traumatic disorder on Post Traumatic Growth Inventory PTGI and Impact of Event Scale IES-R respectively were used.

Results: The presence of post traumatic growth trends in all the survivors with 57% (n=30) having high PTG scores. 79 % (n=41) scored more than the cut off score of 22 on IES-R. No significant relationship between Posttraumatic Growth scores and severity of Post Traumatic Stress symptoms was however noted. A significant positive correlation between three subscales of PTGI, and hyperarousal (a crucial symptom of PTSD) measured on IES-R was established. There also existed a significant but negative relationship between sub-scale of intrusion (IES-R) and personal strength (PTGI) and a positive significant relationship between subscales appreciation of life (PTGI) and avoidance (IES-R).

Conclusion: High PTG scores are seen in more than half of the survivors of a suicide bombing attack and PTSD and PTG can coexist in survivors of terrorist activities.

Key words: Posttraumatic Growth (PTG), Suicide bombing attack, Northern Pakistan

INTRODUCTION

The Post Traumatic Growth (PTG) amongst survivors of trauma as a coping process during the positive reinterpretation of the traumatic events is well recognised since 1990s[1]. The same was supported by works of Tedeschi et al on the presence of resilience and post traumatic growth (PTG) in trauma survivors[2]. While the latter initially assumed that growth occurs largely due to the struggle with highly challenging life events[3], the more recent studies suggest that there are numerous other factors that contribute to PTG. These include maturational processes, extent of stress, positive events in a person's life and most importantly struggle in the aftermath of trauma. It has also been found that 'coping' is positively associated with PTG[4]. Bellizi and Blank demonstrated that women with active coping adjust more positively to their illness and have better expectations about treatment, in their study on patients with breast cancer[5]. Similarly another study on PTG declared that positive coping is strongly related to PTG while negative coping is a better predictor of Posttraumatic Stress[6]. Linley and Joseph added dimensions such as cognitive processes, positive affect, personality and time since the traumatic event, as contributors towards PTG[1]. Younger age, higher level of education, presence of social support during and after the trauma, female gender and absence of psychopathology in the life before the exposure to the traumatic event have all been proposed as predictors of post traumatic growth and resilience[4].

Since its independence in 1947, Pakistan has been exposed to various kinds of natural and man made disasters. The act of terror in the form of a suicidal bomb blast in Pakistan Ordnance Factory that occurred on 26th August 2008 was one of the many man made disasters that civil and military personnel have suffered in the last decade. The site of the attack presented gory scenes, cluttered with blood and flesh. The injured were traumatized physically as well as psychologically. The injured

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were evacuated to the POF Hospital Wah, a tertiary care health facility a few hundred yards away. Psychosocial cover was provided alongside the surgical and emergency treatment provided to the injured by the NUST Centre for Trauma Research and Psychosocial Interventions (CTRPI) at Department of Psychiatry, Military Hospital Rawalpindi in collaboration with the Department of Psychiatry and Behvioural Sciences, POF Hospital, Wah. All the survivors were registered for follow up. The survivors who consented took part in a series of studies aimed at psychosocial aspects of the trauma experienced by them.

This study on the survivors of the POF Wah blast aimed at examining the relationship of demographic characteristics and Post Traumatic Disorder with Post Traumatic Growth among individuals exposed to a suicide bombing attack. While considerable work on the issue has been done in Palestine, this is probably the first time that a study on PTG is being reported from this part of the world on survivors of a suicide bomb blast.

SUBJECTS AND METHODS

The study was conducted on individuals employed in Pakistan Ordinance Factory, exposed to a bomb blast in Wah Cantt six months earlier. The research was started by taking official permission from the POF authorities. All members of the study group, comprising of individuals who survived the attack were approached irrespective of their age, gender and social class. They were provided brief introduction to the research and its purpose. Written consent was taken from them and they had complete freedom of accepting or refusing to participate in the research. While the total number of survivors consisted of 70 people, 53 gave consent, with eventually 52 completing all the instruments. The participants were requested to come to the auditorium of Pakistan Ordinance Factory (POF) Hospital, Wah Cantt for the purpose of collection of data in the sixth month after the attack. Each participant took at least 30 minutes to fill the forms. The psychometric tools used were self report measures so they were filled independently by the participants though help was provided in case of ambiguity or difficulty in comprehending the questions. For the convenience of participants, the Urdu translated versions of scales were used. Data was collected from participants maintaining strict confidentiality. Ethical approval of the study was obtained by the ethical committee at the Armed Forces Institute of Mental Health, the parent organization of the NUST Centre for Trauma Research and Psychosocial Interventions.

Measures

Demographic data: This included, age, sex, religion, marital status, education, occupation, birth order, number of siblings, family system and income.

Impact of Event Scale-Revised: IES-R developed by Daniel et al[5] in 1997 is a self report instrument that measures how a stressful event effects a person and provides current level of subjective distress (including PTSD symptoms) related to a specific event. It is composed of 22 items and three subscales which are avoidance subscale, hyper arousal subscale and intrusion subscale. Over all score can be calculated by taking the sum of all three subscales, with a cut off score of more than 22 as suggestive of PTSD.

Posttraumatic Growth Inventory (PTGI): The Posttraumatic Growth Inventory was developed by Richard eat al[6] in 1996. It measures extent of positive changes a person experiences after crisis or traumatic event. It has five subscales which are: relating to others, new possibilities, personal strength, spiritual change, and appreciation of life. These subscales measure the extent of growth in corresponding areas of life.

Data analysis

Total scores of all participants on PTGI were examined to determine the frequency of posttraumatic growth using SPSS 15. The relationship between posttraumatic growth and posttraumatic stress related symptoms was established with the help of graphical representation as well as by calculating the Pearson product moment correlation between the scores of PTGI and IES-R and also between the subscales of both psychometric tools. The difference in the demographic characteristics of participants on the basis of scores on PTGI was established by making Demographic Profiles. The profiles were made by computing Chi Square with demographic variables.

RESULTS

Participants' characteristics

All participants were male they belonged to the same profession and worked in the same organization. They ranged from 21 to 53 years of age. ($\bar{X}$ = 36.69, *SD* = 9.77) Most of the participants were married (73%) and lived in a joint family system (67%). Majority had income (40 %) falling within the range of Rs 5000 to Rs 9999 and were educated to matriculation level (39%). 79% were PTSD positive 21% were PTSD negative.

Relationship between PTG and IES-R

The results demonstrate the coexistence of Posttraumatic Growth and Post traumatic Stress Disorder, in the study group. It further establishes a positive but statistically insignificant relationship ($r = 0.225$, $p = 0.11$) between Posttraumatic Growth and Posttraumatic stress.

Table 1

Mean, median and standard deviation of scores on PTGI and IES-R (n = 52)

n = 52	Mean score	Median	SD
PTGI	72.07	72	11.98
PTSD	37.98	39	15.72

Table 2

Mean scores, *t* and *p* value of participants who are PTSD positive and PTSD negative on PTGI (n = 52)

Scores on IES-R	Mean scores on PTGI	*t*	*p*
PTSD positive	73.12	-1.220	0.228
PTSD negative	68.18		

p<0.05

Table 2 shows higher PTGI scores in PTSD positive group as compared to the group with a score of less than 22 on IES R.

Relationship between subscales of PTGI and IES-R:

Further analysis reveals a significant positive relationship of three subscales of PTGI, relating to others, appreciation of life and new possibilities, with hyper arousal (IES-R). It also shows a significant but negative relationship between sub-scales intrusion (IES-R) and personal strength (PTGI) and a positive significant relationship between subscales appreciation of life (PTGI) and avoidance (IES-R).

Relationship between PTG and demographic variables

Demographic profile of people having higher PTG scores show significant differences among participants in terms of age *(p = 0.028)* and marital status *(p = 0.03)*. Individuals who are married and younger show higher levels of growth after trauma. They are also more likely to belong to joint family system, matriculate in education and belong to an income bracket of Rs 5000 to 9999 rupees.

DISCUSSION

The results of the study suggest the presence of PTG amongst the survivors of a man made trauma, a suicide bomb. While the degree of growth varies, all the survivors showed some degree of post traumatic growth and resilience after six months of their exposure to the trauma. This finding is consistent with the results of other studies conducted to explore the phenomena of PTG in people exposed to various kinds of trauma the results of the studies established that growth does occur in the aftermath of crisis and brings highly positive changes in the lives of survivors. In this study the *mean* score on PTGI of participants is 72.07 (*SD* = 11.98*,* Range= 39-105) which is higher than that reported in other studies examining PTG after traumatic events such as stroke ($\bar{x}$ = 50.93, *SD* = 19.92),[7] bone marrow transplantation (= 64.67, *SD* =21.3)[8] and natural disaster (=65.11, *SD* = 11.87)[9]. However the current body of literature searched by the authors has not revealed any other study in which PTG has been studied in survivors of suicide bombing in this part of the world. PTG seen in patients surviving cancer and life threatening illnesses[9] may therefore be different from that resulting from PTG following a suicide bombing attack. It may therefore be safe to speculate that the type of trauma, its dose and intensity, and its meaning to the survivors may play a part in determining the degree of growth amongst the survivors. One explanation of the low PTG scores reported by study done on stroke survivors could be on account of the difference in age between the two samples as that study was conducted on an older population (= 71.67)[7] as compared to a comparatively younger age in our sample (= 36.69). The study on children has already shown the relationship of age with the degree of PTG[9]. This finding supports the proposition that specific level of cognitive maturity is necessary to find meaning or identify salient changes or benefits as a result of trauma and its aftermath. Extremes of age may thus limit this capacity on account of the compromises caused by age on higher mental functions.

$\bar{x}$

One of the reasons of high scores on PTGI in the present study may well be the availability of physical

Table 3

Correlation and p values of subscales of Impact of Event Scale-Revised (IES-R) and Posttraumatic Growth Inventory (PTGI (n=52)

IES-R	Hyper arousal		Intrusion		Avoidance	
PTG	*R*	*p*	*r*	*p*	*r*	*p*
Relating to others	0.318*	0.21	0.226	0.107	0.182	0.196
New possibilities	0.329*	0.017	0.154	0.276	0.192	0.173
Personal strength	-0.232	0.098	-0.278*	0.046	-0.113	0.424
Spiritual change	-0.030	0.84	-0.075	0.595	-0.063	0.656
Appreciation of life	0.373**	0.006	0.180	0.200	0.393**	0.009

*p<0.05 ** p< 0.01

and psychological help made available to the survivors following the disaster. The participants were provided with adequate medical, and surgical aid by POF Hospital soon after the blast occurred. In addition to physical assistance they were also provided with psychosocial help by trained psychiatrists, psychologists and social workers from CTRPI.

Occupational support was also provided by their employer and all of them returned to their respective jobs on recovery from their physical injuries. Bellizi and Blank have shown the positive impact of employment in enhancing growth after trauma[9]. All the survivors studied were meaningfully employed with POF Wah. This could be one of the factors positively contributing towards the degree of PTG seen in them. Bellizi and Blank have shown that either full or part time, employment can be an important contributing factor to Posttraumatic Growth[9]. Although Widows et al. found contrary results establishing no significant relationship between PTG and employment status[10] but it is conceivable that support provided by co-workers offers a beneficial support system to help people cope with the situation and facilitates growth.

In this study the extent of social support was measured with the help of marital status and nature of family system. No added advantage was seen in individuals living in the joint family system, however the married had a higher PTG score. It is surprising to note that the joint family system does not appear to facilitate more growth as compared to nuclear family system. The positive role of marriage as a form of social support promoting PTG has been supported in this study, A significant relationship between PTG and nuclear family where children lived with their parents has however been shown before[11]. Another important finding of the study is that participants were already provided with strong social support, in terms of physical and psychological assistance as well as occupational support from Pakistan Ordinance Factory and CTRPI. These factors may have contributed towards PTG in our sample.

Economical and social resources are influential in determining the consequence of trauma. Lack of resource availability heightens the threat of traumatic event and results in more adverse consequences. It was found that people showing high levels of growth had low incomes and results showed insignificant differences among people with low and high incomes. These findings are consistent with findings of study done on cancer patients suggesting insignificant relationship between income and PTG[8]. These findings of the present study can be justified on the basis that majority of participants had low incomes and only a few had high incomes. Factors such as free access to health facilities, mobilization of community support, response of media and other similar factors can also be taken into consideration to identify the role of contextual and economical factors.

An important finding in our study is the high level of PTG amongst those who also scored on IES-R the measure of PTSD in our study. This suggests that there is likelihood that high level of growth is possible even with high emotional distress and presence of PTSD symptoms. The individuals with high scores (= 73.12, *SD* =11.18) on PTGI also scored high (=43.5, *SD* =12.6) on IES-R. This finding is consistent with the finding of Park et al. (2008) who established that a high level of PTG is associated with high level of distress (r =.48, p < .001). This supports the notion that more disruption not only brings more distress but also more opportunities for growth. Association of stress symptoms with high levels of growth signifies that Posttraumatic Growth is not synonymous with an increase in the well being of an individual or a mere decrease in distress. The relationship between scores of PTGI and IES-R was however not linear and also not statistically significant (r = 0.22, p = 0.11). The correlation of PTG with PTSD is thus a more complex phenomenon. Our finding in this regard is in contrast to the study that has shown higher levels of growth associated with lower levels of distress[12]. The study done on cancer patients demonstrated that there is no relationship between measures of personal growth and measures of psychological distress[10].

The study also indicates relationship between subscales of IES-R and PTGI. It was found that a significant positive relationship exists between three subscales of PTGI, relating to others, appreciation of life and new possibilities, with hyper arousal (IES-R). The positive *correlation* suggests that growth in above mentioned areas increases with an increase in hyper-arousal. There also existed a positive significant relationship between subscales of appreciation of life (PTGI) and avoidance (IES-R).This finding can be justified by demonstrating an insignificant but positive relationship between scores of IES-R and PTGI in the present study that suggests that high level of distress is associated with high level of growth. There also exists significant but negative relationship between sub-scales intrusion (IES-R) and personal strength (PTGI). This suggests that an individual acquires personal strength when intrusive thoughts decrease.

Limitations of the study

The sample size was small and it was relatively homogeneous as majority of participants had similar specifications in terms of age, income and educational status so sample can not be considered true representative of trauma survivors. Another limitation of the study is the absence of study of cultural dimension such as religiosity, ethnic backgrounds etc. The availability of psychosocial support to the survivors by the workers of CTRPI may serve as a confounding variable, by exaggerating the scores on PTGI. The unique occupational and social characteristics of our study population may also limit the generalization of the findings on to the

'mixed group' of survivors when a blast takes place in a market place or a public place.

Clinical Implications

The coexistence of PTG and PTSD in this study calls for a consistent effort on the part of mental health professionals working with the survivors of disasters to identify the phenomena on a more regular basis. This may particularly help them assist the survivors to come to terms with the disaster, improve their resilience, and change their cognitions. The impact of PTG on the prognosis of PTSD could be an important area of research in the future.

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