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Acute illness and positive life changes: Can critical health problem lead to personal transformation?

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Abstract: Experiencing acute illness usually associated with psychological distress. However, some survivors also experience positive psychological development in the post disorders period. **Aim:** The present study aimed to investigate the extent of perceived post traumatic growth among acutely ill patients. **Research design:** Quantitative descriptive research design was utilized to carry out this study in acute care units at King Abdulaziz University Hospital. **Sampling:** A purposive sampling technique was used to select 100 adult patients who admitted with acute illness and were conscious and have history of recurrent acute episode. **Data collection tools:** two tools were used to conduct the study; the first tool “Growth related factors assessment sheet” was developed to assess factors affecting personal growth. The second tool “Arabic post traumatic growth inventory short form scale” was adopted and translated into Arabic to evaluate the extent of post traumatic growth. **Results:** The results show higher levels of post traumatic growth during acute illness episodes; the mean score was (43.34±4.56). In-addition, there was a significant association ($p<0.05$) between growth related factors (e.g. diagnosis, psychological assistance, living style, management received) and perceived post traumatic growth. **Conclusion:** highly extent of post traumatic growth can developed during acute illness and affected with personal features, psychosocial support, and type of management received. **Recommendation:** Guiding the acute care nurses to start stress management interventions early during acute episode and focused on identifying positive outcomes and meaning in patient’s experiences.

Keywords: Post traumatic growth, Positive life changes, Acute illness, Critical health problem, Personal transformation

INTRODUCTION

Acute illness is a life-threatening condition associated with multisystem disorders that significantly increasing morbidity or mortality incidence (Robertson, & Al-Haddad, 2013). A diagnosis of life threatening illness may act as stimulator for positive growth. It has been established that dealing with life threatening events, like motor cycle accidents, disinheritance, sexual violence, dangers burn injuries and head trauma can resulting in positive personal changes (Tsai, El-Gabalawy, Sledge, Southwick, & Pietrzak, 2015). A various terms have been established to identify the positive changes experienced by a trauma patient involving posttraumatic growth (PTG), benefit finding, stress-related growth, positive consequences, positive changes, finding meaning and adversarial growth. PTG is defined as “positive change that experienced by traumatized person as a result of the exposure to adversity or trauma”. PTG is including positive change in five main scopes; utmost admiration of life and a change in sense of priorities, familiar interpersonal relationship, major feel of self power, understanding of new chances or track for one’s life, and spiritual evolution (Shakespeare-Finch, Martinek, Tedeschi, & Calhoun, 2013).

Kaur et al., 2017 observed that the extent of growth is relying on the assessment tool that is utilized. Different questionnaires have been developed to assess positive changes after several traumatic events such as Posttraumatic

Growth Inventory (PTGI), the Stress-Related Growth Scale, the Benefit Finding in Multiple Sclerosis Scale and Silver Lining Questionnaire (Danhauer et al., 2015). The main disadvantage of these tools is that some of the questionnaire sections may not be pertinent to the experience of living with disease. The most commonly used questionnaire is the PTGI. However, PTGI is inappropriate for assessing acutely ill patients due to nature of disorders affecting them, which stimulate researchers to develop a short form of inventory. The PTGI short form “PTGI-SF” is a questionnaire used to assess patients who cannot capacitate too much physical effort, and where the time for data gathering is limited (Lamela, Figueiredo, Bastos, & Martins, 2013; Kaur et al., 2017).

Recent researches have increasingly concentrated on PTG as it relevant to personal physiological and psychological health (Hanley, Garland, & Tedeschi, 2017; Orejuela-Dávila, Cann, & Tedeschi, 2017; Ramos et al., 2018). It has been noted that PTG improving quality of life, promote mood, enhanced physical outcome and reduced mortality rate (Siqueland, Nygaard, Hussain, Tedeschi, & Heir, 2015; Taku, Cann, Tedeschi, & Calhoun, 2017). Also, Huffman et al., 2011 studied 97,000 women diagnosed with heart disease and found that positive mental condition, like optimism, are correlated with a significantly decreased coronary heart disease occurrence, coronary death rate, and readmissions and increased survival following cardiac surgery.

Significant of the study:

Traumatic event can has deleterious impact on patient, family or community. Response to this event varied between individuals. Post-traumatic growth may lead to physiological and psychological avails, while the PTC studies are in its early stage. Regardless increasing focuses on this topic, the construction and extent of this trend has not been decided (*McBride, Schroevers, & Ranchor, 2009; Tedeschi, Blevins, & Riffle, 2017*). A variety of studies exist relating the negative consequences of physical illness on health-relevant quality of life (*Teixeira, & Pereira, 2013; Compson, 2014*). While, the general prominence of such negative consequences, like life limitations, social seclusion, sense of being dependent and load on relevant, usually is reduced. Some of these researches showed discrepant results relating to the extent of PTG which are resulting from the researcher’s bias to some PTG assessment scale (*McBride, Schroevers, & Ranchor, 2009; Tedeschi, & Calhoun, 2016*).

Nursing staff can facilitate patients’ rehabilitation from stressful events and prevent deleterious effects on patients, families and communities. Fostering psychological rehabilitation can be achieved through early identification of traumatic stress response and PTG level and by giving psychological care that meet patients needs. Although recognizing traumatic event manifestations, assessing personal features, stress level, coping mechanism and social support is important for all nurses. Nurses should help acutely ill patients to achieve their potentials by fostering the level of social support and to deal efficiently with inner conflicts. In addition, they should educate the patients about psychological rehabilitation and enhancing measures which improving patient’s PTG level (*Inci & Boztepe, 2013; Cui, Wang, An, & Jin, 2017*). Several researches reported PTG experience among chronic ill patients and their family (*Leong et al., 2015; Şimşek Arslan, & Buldukoglu, 2018; Ahuja, & Sathiyaseelan, 2018*). However, prospective researches of PTG in acutely ill patients have been uncommon, and few are recognized about the PTG lifespan including clinical perspectives like diagnosis and management.

Aim of the study:

This study aimed to assess the extent of post traumatic growth among acutely ill patients.

Research question:

- Does acute illness leading to post traumatic growth (PTG)?
- What is the extent to which acutely ill patient experienced a positive outcome as a result of a traumatic event?
- Is there a relationship between PTG and growth related factors?
- Is there an association between PTG and length of hospital stay?

SUBJECTS AND METHOD

Subjects:

Study Design:

Quantitative descriptive design was used in this study.

Study setting:

The study was conducted at acute care settings (emergency department “ER”, medical intensive care unit “ICU”, surgical ICU and coronary care unit) at King Abd-Alaziz University Hospital, Jeddah, Saudi Arabia. Each ICU contains 10 beds in addition to 44 beds in the ER. The acute care settings are receiving patients with acute traumatic and non traumatic disorders.

Subjects of the study:

A purposive sampling of 100 adult patients who were admitted to predetermine acute care settings between September 2017 and February 2018 were selected. Participants of both genders who were age 18 years or older, conscious (GCS 15), having no handicap as to hearing, sight, understanding and perception, and patients had previous admission to hospital in the last 12 months with recurrent acute illness were included in the study. Patients were excluded from the study if they have suicidal ideation history, thought disorder, or psychosis.

Sample size equation:

Sample size was calculated online using: <https://www.dssresearch.com/KnowledgeCenter/toolkitcalculators/samplesizecalculators.aspx> provided that: From a previous study (*Smith, 2017*) mean post-traumatic growth was 36.24± 15.42. Alpha error level is 5%. Beta error level is 20%. So, sample size was 95 at least. To compensate for non-responders, we increased sample size by 10%. So, sample size was 105.

Tools of data collection:

Two tools were used to collect data; Post traumatic growth related factors questionnaire and Arabic Posttraumatic Growth Inventory Short Form (APTGI-SF). **Post traumatic growth related factors questionnaire** was developed by the researchers to assess factors affecting PTG. The questionnaire contains two parts; Patient’s Demographic Data and Clinical Profile part and growth associated factors part. The first part was developed to gathered information on demographic data involving gender, age, educational level, marital status, and occupation and clinical profile as medical diagnosis, APACHE II score, management received, aggressive intervention and length of stay. The second part contains ten questions which concluded the main factors affecting life growth after trauma exposure; illness associated factors and psychosocial factors. Illness associated factors include number and duration of previous hospitalization, duration of disorder, & co-morbidities. Psychosocial factors include psychological assistance received, number of siblings, living style, social support, coping mechanism and substance abused.

Posttraumatic Growth Inventory was developed by *Tedeschi and Calhoun, 1996* and modified to PTGI-SF by *Can et al., 2010*. PTGI-SF is a questionnaire used to evaluate level of experienced positive change which perceived by a traumatized patients. It including 10-questions, each one is answered using 6-point Likert-scale; with 0 refers to I did not experience this change as a result of my crisis, 1 for I experienced this change to a very small degree, 2 for I experienced this change to a small degree, 3 for I experienced this change to a moderate degree, 4 for I experienced this change to a great degree and 5 for I

experienced this change to a very great degree. The PTGI-SF sum score is ranges from 10 to 50. PTGI-SF has been reflected good internal reliability "Cronbach's alpha 0.89" (Cann et al., 2010). The questionnaire was translated into Arabic and reviewed by a jury of 5 expertises in emergency and critical care nursing and medicine, and psychiatric medicine.

METHOD

Ethical consideration:

The study proposal was independently reviewed and approved by the Research Ethics Committee of the Faculty of Nursing, King Abdulaziz University. Informed consent was obtained from the patients after explaining the aim and details of the study. The patients were assured that refusal to participate in the study would not affect the treatment or care they receive. To enhance confidentiality, codes were used on data documents instead of recording patients' identifying information (e.g., name & address).

Validity of the tools:

Content validity was tested by five experts in the field of emergency and critical care nursing and medicine, and psychiatric medicine. The questionnaire was modified according to the expert's comments and recommendations.

Reliability: internal consistency was done using the Cronbach's alpha test. Good internal consistency was confirmed in the current study (Cronbach's alpha was 0.90).

Pilot study:

A pilot study was conducted on 10 acutely ill patients (10% of the sample size) at acute care units at King Abdulaziz University Hospital in Jeddah city to test the applicability and feasibility of the study tools and the required modification were made. The modifications include paraphrasing of some sentences. The pilot sample was excluded from the study.

Field of Work:

Eligible patients who met the inclusion criteria were selected to participate in the study. The researchers collected patients' demographic data and clinical profile from the patient's medical file after admission to acute care setting. Studied patients were interviewed for 20 minutes. During interview time researchers asked patient about factors affecting post traumatic growth that arranged in form of 5 closed end questions that need yes or no answer (psychological assistance received, co morbidities, coping mechanism, social support and substance abused) and 3 multiple choice questions (Hospital visit numbers, disease onset, and living style) and 2 open end questions (number of siblings, hospitalization period). Patient's answers were documented in part two of tool one. After that patients were asked to rate a degree of experienced changes that result from their traumatic event using a 6-point Likert-scale for each question.

Statistical Analysis:

Data were analyzed statistically using the Statistical Package for Social Sciences version 16. Qualitative data were described as numbers and percentages. Quantitative data were described as means (SD) or medians, as appropriate, after testing for normality by Kolmogorov-Smirnov test. In

the normally distributed variables, independent samples t-test and one way ANOVA test with LSD post-hoc multiple comparisons were used for comparison between groups, as appropriate. "p value ≤ 0.05 " was considered to be statistically significant.

RESULTS

One hundred and five patients were matched inclusion criteria of the study. Five patients were eliminated during data collection period due to deterioration in their physical and mental condition as three of them were suddenly arrested, and other two become hypoxemic with decreased of consciousness level. One hundred patients remained in study until end of study.

The distribution of studied sample according to patient's demographic and clinical information is explored in **Table 1**. The majority of patients were males (52%) with a mean age of 39.82 ± 1.40 years. Fifty-five percent of patients were married, and most patients were worked at the time of study (52%). Forty-six percent of the sample graduated from secondary school. More than quarter of patients were diagnosed with acute cardiac disorders (27%, n=27). The mean APACHE II score of participants was 18.63 ± 6.71 . The majority of the patients received medical management for their disorders (87%, n=87), the remaining patients (13%, n=13) received a combination of medical & surgical management. The number of patients received aggressive management include mechanical ventilation, hemodialysis, chemotherapy during their hospitalization period were 37. The mean length of hospital stay was 4.02 ± 1.53 days.

Table 2 represents factors that can affecting PTG of the studied sample, including psychosocial and illness associated factors. Most patients (55%) registered that the number of hospital visits due to recurrent acute symptoms of disease during the last 12 months were ranged from 4 to 6. The majority of patients (60%) were diagnosed with current disorder since more than 6 years. With regard to psychological assistance, most patients did not received assistance (73%) and the majority of them were lived with their families (74%). Fifty-one percent were treated from other disease like hypertension and diabetes mellitus. The patients reported that the mean length of hospital stay during previous hospitalization was 2.35 ± 1.45 days. More than half of patients (62%) received social support. Seventy-one percent of patients did not perform pre-hospitalization arrangement. The majority of sample (88%) had not history of substance abuse. The mean sibling numbers was 2.31 ± 1.94 .

To assess the dimension of experienced PTG that perceived after an acute illness the PTGI-SF questionnaire was used. **Table 3 & figure (1)** illustrates that the total mean score of PTGI rated by studied sample was 43.34 ± 4.56 . The highest subscale mean score was spiritual changes (9.94 ± 0.23) followed by appreciation of life (9.44 ± 0.96). While the lowest subscale mean score was new possibilities (7.74 ± 1.38).

Table 4 shows significant association between PTG and marital status ($p = 0.014$), gender ($p = 0.018$), occupation ($p = 0.000$), educational level ($p = 0.004$), diagnosis ($p =$

0.000), general management ($p = 0.040$), and aggressive intervention ($p = 0.012$). Concerning gender comparison, women reported significantly higher mean levels of PTG (44.45 ± 4.10) more than men (42.30 ± 4.76). Also total mean score for PTG was higher in the married participants' more than unmarried participant (45.51 ± 5.46 vs 43.00 ± 0.38). In addition working participants reported higher levels of total PTG mean score than nonworking. Regarding level of education, Bachelor graduates precipitated highest PTG score (44.76 ± 5.09). Also patients suffering from cardiovascular disorders documents higher level of PTG (48.00 ± 1.92) than other disorders. Whether, there were non-significant association between PTG and age ($p = 0.716$).

The third research question was based on relevant literature regarding association between PTG and growth related factors. As shown in **Table 5**, disease duration, substance abuse, sibling numbers and pre-hospitalization arrangements were not significantly associated with PTG score ($p = 0.29, 0.73, 0.53, 0.21$ consequently). However, the association analysis revealed that number of hospital visits ($f = -14.014, p = 0.000$), Psychological assistance ($t = 0.346, p = 0.000$),

living style ($t = 10.476, p = 0.000$), average hospitalization period ($f = -7.427, P = 0.001$) and presence of other disease ($t = -1.969, p = 0.052$) were significantly associated with PTG score. In other word, there was a significant negative association between PTG score and number of hospital visits as decrease number of hospital visits was increased PTG score. While there was a positive association between psychological assistance received and PTG score. Participants who live with their families had higher PTG score than who live alone or with partners. Regarding management, medical management increased PTG score more than both medical and surgical management. Also, there was a significant negative association between PTG score and aggressive intervention as aggressive intervention was decreased PTG score. Finally, decreased hospitalization period associated with elevated PTG score. **Table 6**, displays correlation between total mean score of PTG and length of stay in the hospital. The table shows significant negative correlation between two variables ($r = -0.277, p = 0.005$).

Table 1. Patient's demographic & clinical information distribution of the studied sample

(N=100)

Variables	Frequency	%
Age (years)		
20 – 40	46	46.0
41 – 60	54	54.0
Mean \pm SD	39.82 \pm 1.40	
Gender		
Male	52	52.0
Female	48	48.0
Marital status		
Single	31	31.0
Married	55	55.0
Widow	7	7.0
Divorced	7	7.0
Occupation		
Full hours	36	36.0
Partial hours	16	16.0
Not-working	48	48.0
Level of education		
Illiterate	7	7.0
Primary	13	13.0
Secondary	46	46.0
Bachelor	34	34.0
Diagnosis		
Pulmonary disorders	25	25.0
Cardiac disorders	27	27.0
Endocrine disorders	7	7.0
GIT disorders	2	2.0
Renal disorders	20	20.0
Hematological disorders	19	19.0
APACHE II score		
mean \pm SD	18.63 \pm 6.71	
Length of stay (days)		
1 – 4	41	41.0
>4	59	59.0
mean \pm SD	4.02 \pm 1.53	
Management received		
Medical	87	87.0
Medical and surgical	13	13.0
Aggressive intervention		
Yes	37	37.0
No	63	63.0

GIT= Gastrointestinal tract APACHE= Acute Physiology And Chronic Health Evaluation

SD= standard deviation

Table 2. Number and percentage distribution of studied sample according to factors affecting post traumatic life growth (N=100)

Factors	Frequency	%
Number of the hospital visits		
1-3	38	38.0
4-6	55	55.0
more than 6	7	7.0
Disease duration (year)		
1-3	26	26.0
4-6	14	14.0
more than 6	60	60.0
Psychological assistance		
Yes	27	27.0
No	73	73.0
Living style		
Live alone	6	6.0
live with my partner	20	20.0
my family	74	74.0
Treated from any other diseases		
Yes	51	51.0
No	49	49.0
Length of stay for previous hospitalization		
mean \pm SD	2.35 \pm 1.45	
Pre-hospitalization arrangements		
Yes	29	29.0
No	71	71.0
Social support received		
Yes	62	62.0
No	38	38.0
Substance Abuse		
Yes	12	12.0
No	88	88.0
Siblings numbers		
1-3	52	52.0
>3	48	48.0
mean \pm SD	2.31 \pm 1.94	

SD= standard deviation

Table 3. Mean score of the Post Traumatic Growth Score among studied sample (N=100)

Possible areas of growth and change	X	SD
I: Relating to Others		
1. I have a greater sense of closeness with others.	3.92	1.00
2. I learned a great deal about how wonderful people are.	4.29	0.76
Total	8.21	1.56
II: New Possibilities		
1. I am able to do better things with my life.	3.79	0.93
2. I established a new path for my life.	3.95	0.71
Total	7.74	1.38
III: Personal Strength		
1. I know better that I can handle difficulties.	3.93	0.95
2. I discovered that I'm stronger than I thought I was.	4.08	1.08
Total	8.01	1.95
IV: Spiritual Change		
1. I have a better understanding of spiritual matters.	4.94	0.23
2. I have a stronger religious faith.	5.00	0.00
Total	9.94	0.23
V: Appreciation of Life		
1. I changed my priorities about what is important in life.	4.51	0.81
2. I have a greater appreciation for the value of my own life.	4.93	0.25
Total	9.44	0.96
Total Growth Inventory Score	43.34	4.56

X: mean

SD: standard deviation

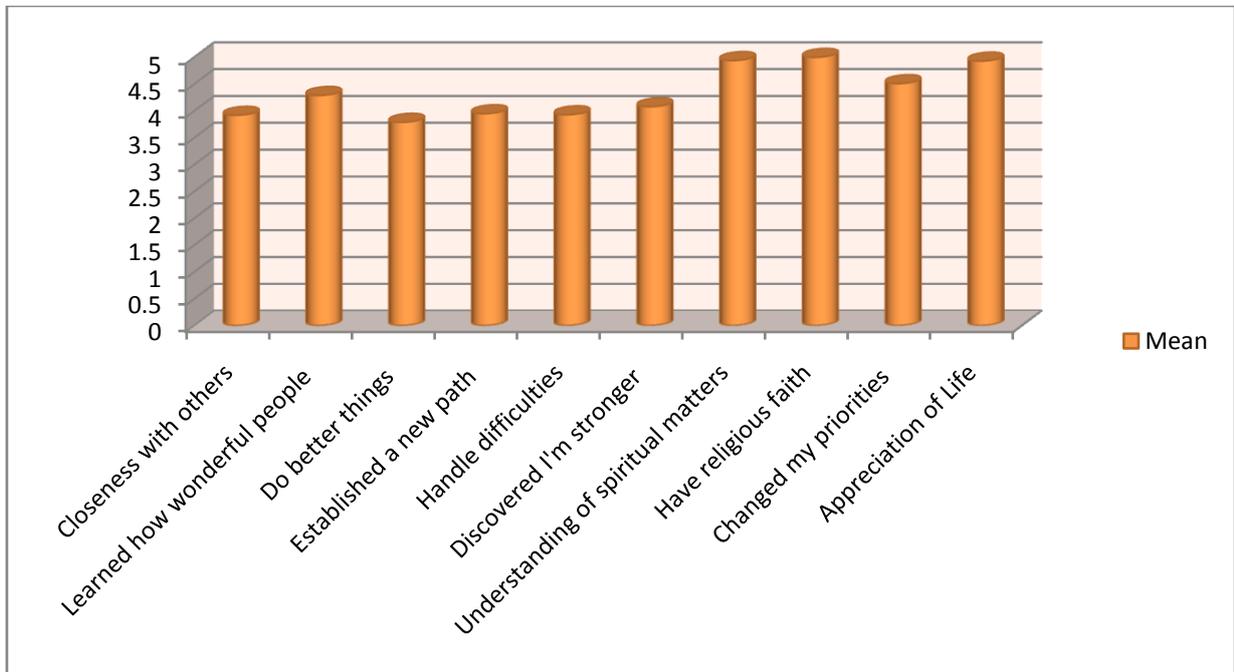


Figure 1. The total mean score of the sub scale of Post Traumatic Growth Inventory short form among studied sample (N=100)

Table 4. Association between demographic and clinical data and total post traumatic growth mean score among studied sample

Variable	Post Traumatic Growth score		Test of significant	
	X	SD	T/F	P
Age (years)				
20 < 40	43.52	5.58	0.366	0.716
40 - 60	43.18	3.52		
Gender				
Male	42.30	4.76	-2.408	0.018**
Female	44.45	4.10		
Marital status				
Single	43.00	0.38	3.747	0.014**
Married	45.51	5.46		
Widow	42.00	0.51		
Divorced	42.32	4.20		
Occupation				
Full hours	43.75	3.46	23.557	0.000**
Partial hours	46.50	0.57		
Not-working	35.50	0.52		
Level of education				
Illiterate	40.84	4.66	4.774	0.004**
Primary	41.75	2.15		
Secondary	42.00	0.00		
Bachelor	44.76	5.09		
Diagnosis				
Pulmonary disorders	47.00	1.38	6.007	0.000**
Cardiac	48.00	1.92		
Endocrine disorders	43.48	4.61		
GIT disorders	43.60	0.74		
Renal	42.85	2.88		
Hematology	40.47	6.70		
General management				
Medical	43.70	4.29	2.079	0.04*
Medical and surgical	40.92	5.70		
Aggressive intervention				
Yes	40.43±	5.36	-1.533	0.01**
No	44.87±	3.97		

*Statistical significant at $p \leq 0.05$

**Highly statistical significant at $p \leq 0.01$.

LOS: Length of stay

GIT: Gastrointestinal tract

Table 5. Association between growth related factors and total Post Traumatic Growth mean score among studied sample (N=100)

Factors	Post traumatic growth score		Test of significant	
	X	SD	F/t	p
Number of the hospital visits				
1-3	46.07	3.58	-14.014	0.00**
4-6	41.74	4.56		
more than 6	41.00	0.00		
Disease duration (years)				
1-< 3	42.76	5.02	1.233	0.29
3-6	44.03	4.43		
more than 6	44.50	1.55		
Psychological assistance				
Yes	49.02	0.54	0.346	0.00**
No	42.83	4.33		
Living style				
Live alone	39.00	0.19	10.476	0.00**
Live with partner	40.50	2.50		
Live with family	44.45	4.65		
Treated from any other diseases				
Yes	42.47	3.91	-1.969	0.05 *
No	44.24	5.04		
Average hospitalization period				
1-3 days	43.90	4.08	-7.427	0.00**
4-6 days	40.7	6.27		
7-9 days	35.66	1.15		
Pre-hospitalization arrangements				
Yes	42.44	3.24	-1.251	0.21
No	43.70	4.98		
Sibling numbers				
1 - 3	43.61	5.33	0.625	0.533
>3	43.04	3.59		
Substance abuse				
Yes	42.91	4.03	-0.341	0.73
No	43.39	4.65		

*Statistical significant at $p \leq 0.05$ **Highly statistical significant at $p \leq 0.01$.

T: T paired test

F: fisher exact test

Table 6. Correlation between the mean length of hospital stay and total Post Traumatic Growth mean score among studied sample (N=100)

Total PTG score	Length of stay	
	Pearson Correlation	-0.277**
Sig. (2-tailed)	0.005	
N	100	

PTG: Post Traumatic Growth

**. Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

Experiencing potentially traumatic events secondary to acute illness is usually correlated with emotional disorder. Whether, some patients may acquire positive physical and emotional changes in the post traumatic period. Previous studies have documented that perceived post traumatic growth may develop following traumatic events as rapes, cancer, natural disasters (Malhotra & Chebiyan, 2016). Little researches, whether, have studied the dimension of PTG with acute illness.

Previous studies suggest that minority patients are most probably attain advantage and concept from stressful episode (Helgeson, Reynolds, & Tomich, 2006). We examined perceived growth in patients suffering from acute illness, and found that studied patients reported high degree of post traumatic growth. It can be explored by emotional process such as cognitive dissonance corresponding with exposure to acute illness. In other word, acute illness usually associated with severe traumatic experience that stimulate patient to restore sense of meaning to overcome negative psychological event. This is in line with Martz, Livneh, Southwick, & Pietrzak, 2018 who documented that the severe stressful event stimulate person to recall a sense of

meaning and eliminate stress. Also, *Blix, Hansen, Birkeland, Nissen, & Heir, 2013* illustrate that patients' experienced highly stressful events perceived elevated PTG levels compared to patients exposed a mild stressful event. Personal growth was significantly related to traumatic events and associated traumatic reactions. As suggested by *McFarland & Alvaro, 2000* trauma-exposed participants reduced their previous attributes value which resulting in perceived positive changes. Hence, these results assume that PTG perception is caused by a cognitive bias and creates an illusion of positive change that facilitates compensation with the negative effects of trauma. On the opposite side, *Çağlayan, 2016* reported that the type of traumatic life event, severity and effect do not affect posttraumatic growth. Also, *Malhotra & Chebiyan, 2016* stated that growth results from the struggle to cope with the traumatic event and find meaning and not from the traumatic event itself.

The recent study shows that the highest subscale mean score was spiritual changes followed by appreciation of life. While the lowest subscale mean score was new possibilities. This can be attributed to cultural nature of the studied sample that make persons at stressful situation try to be closed with God that used as coping mechanism in the cognitive process of finding meaning. This result is matching with *Shakespeare-Finch, Martinek, Tedeschi, & Calhoun, 2013* who suppose that perceived PTG "especially spiritual change" may be affected by cultural variations. While, *McBride, Schroevers, & Ranchor, 2009* did not agree on this opinion. Also, *Lindstrom, Cann, Calhoun, & Tedeschi, 2013; Malhotra and Chebiyan, 2016* discovered that majority of patients following traumatic events reported spiritual changes like increase in praying, gratitude to God, strengthening of faith.

Until now, little researches have studied the effect of personal characteristics or disease specific factors on the PTG perception among variant disease groups. Previous researches have failed to produce consistent findings regarding the relationship between PTG and growth related factors (*Bellizzi & Blank, 2006*). So the second objective of the recent research was to evaluate the association between growths related factors and PTG among acutely ill patients. It has been documented by *Şimşek Arslan, & Buldukoglu, 2018; Mazor, Gelkopf, Mueser, & Roe, 2016* that patient's sociodemographic features and disorder characteristics did not affect post traumatic growth. These findings are not in agreement with the results of current study. It was found that sociodemographic characteristics of the studied patients were significantly associated with PTG score except patient's age. This result can be attributed to the effect of culture on patient response to a traumatic event.

The recent study explore that females were perceived significantly higher levels of PTG than males. The first probable cause for this finding could be biological variances that present between two genders, the second cause is societal permission for women to talk about their sensations. Indeed, females tend to employ most affection-centered coping (i.e., recalling episode, attempting to perform a sense of meaning, and cognitively working on it) than males, that

can enhance PTG. This finding is matching with *Vishnevsky, Cann, Calhoun, Tedeschi, & Demakis, 2010* whose discovered that higher PTG level was reported by female patients more than male patients after traumatic event and they documented that the causes of this relationship remain unclear. On the opposite side *Ho, Chan, & Ho, 2004* found no empirical evidence for gender differences in their study.

While participant's age did not significantly associated with perceive PTG in the current research because the majority of studied patients were within the same age category. This result is consistent with *Teixeira, & Pereira, 2013* who concluded that PTG was not significantly related to age. Whoever, evidence to the contrary has also been reported by *Cordova et al., 2007* findings, who's assumed that elevated PTG are more likely to occurred for young age patients more than older patients. Also *Vishnevsky, Cann, Calhoun, Tedeschi, & Demakis, 2010* supposed that age and gender are considering important determinants of PTG development.

In relation to marital status, current research demonstrates that married patients had higher PTG score than unmarried patients. This result can be rationalized by the care giving role and emotional support that given by the partners which acting as stimulator to PTG. This finding is congruent with *Rubin & White-Means, 2009; Ahuja, & Sathiyaseelan, 2018* who reported that perceived emotional support from spouses was strongly correlated with higher levels of PTG. While, *Teixeira, & Pereira, 2013; Devine, Reed-Knight, Loiselle, Fenton, & Blount, 2010* disagree with current finding because they reported that PTG was not significantly related to marital status.

The recent study reveals significant positive relationship between education and PTG. This result is matching with *Morrill et al., 2008* who found a relationship between more education and elevated PTG score. On the contrary, however, *Widows, Jacobsen, Booth-Jones, & Fields, 2005* studied a sample of participants undergoing bone marrow transplantation and found that lower educational level had a significant association with elevated PTG score. On the opposite side *Şimşek Arslan, & Buldukoglu, 2018* reported that PTG level did not affected by educational level of patients.

Current research indicated that employment have also been associated with increased PTG. The participants who were worked have an elevated PTG more than not working. This finding is barreled to *Russell, White, & White, 2006* who reported that literacy skills and occupation provoke person curiosity to discover meaning, positive roles and accommodate with traumatic events. While *Şimşek Arslan, & Buldukoglu, 2018* were documented absence of significant association between PTG score and working status.

Regarding disease-related variables, it was identified that varies PTG levels may be happen among various disorders categories (*McBride, Schroevers, & Ranchor, 2009*). The present study illustrates significant positive relationship between type of acute disorders and PTG. In other word

acute cardiac disorders followed by acute respiratory disorders are significantly associated with higher PTG score. This result may be rationalized by increase the severity of these disorders as reflected by higher APACHE II score that significantly has positively association with higher PTG. This finding is matching with *Tedeschi, 2008; Malhotra & Chebiyan, 2016* who reported that more advanced disease stages and increased severity of disease symptoms are often associated with higher levels of growth. Also *Denninger, & Lyubomirsky, 2011* has demonstrated that patients with cardiovascular disorders reported high PTG score. While, *Lechner, Carver, Antoni, Weaver, & Phillips, 2006* found a quadratic association between illness phase and PTG score: lower PTG scores occurred during phase I and IV while higher scores occurred during phase II of cancer disease. Whether, *Urcuyo, Boyers, Carver, & Antoni, 2005* found a negative relationship between illness phases and PTG score. It has been documented by *Şimşek Arslan, & Buldukoglu, 2018; Mazor, Gelkopf, Mueser, & Roe, 2016; Çağlayan, 2016* that disorder characteristics (such as the type of traumatic life event, severity and effect) did not affect posttraumatic growth.

Duration-related factors increase the assumption of how the time can affect the occurrence and levels of growth. Some studies are hypotheses that growth developed after prolonged experimentations process (*Prati, & Pietrantonio, 2009*), while other researchers report the reverse hypothesis (*Şimşek Arslan, & Buldukoglu, 2018*). The recent study illustrates presence of a non significant positive relationship between duration of illness and perceived PTG level. *Stanton, Bower, & Low, 2006* are congruent with recent results because they claimed that PTG is a gradual process which developed after a period of compensation with new trauma-related variables through major structured changes.

In turn, *Teixeira, & Aperira, 2013* reported that prolonged disorder was a significant foreteller correlated with elevated PTG. While, *Frazier, Conlon, & Glaser, 2001* report that most changes resulting from struggles with adversity occurred between two weeks and 2 months post trauma. On the opposite side *Mosher, Danoff-Burg, & Brunker, 2006* found non-significant correlation. However, *Weiss, 2004* discovered a negative association.

A significant positive relationship was found between treatment type and level of PTG in the recent sample. The result explains that patients received medical and non aggressive management reported higher PTG scores. This may be caused by sense of hopefulness and reduced painful experience that patients feeling which stimulate adversarial growth. This finding is consistent with *Urcuyo, Boyers, Carver, & Antoni, 2005* who found a weak significant relationship between PTG and cancer management. While, *Lechner et al., 2003* study has assumption that major painful or invasive management can promote perceived PTG.

Regarding presence of relationship between PTG score and living style, higher PTG score was reported among patients live with family and partners more than patients live alone. This can be attributing to social support that was received from surrounding persons live with patients. This was

congruent with results showed by *Swickert, & Hittner's 2009*. However, *Joseph, & Linley, 2006* report a weak relationship between these two variables. While, *Teixeira, & Pereira, 2013* study have been found no relationship.

In relation to receiving psychological assistance variable, the current results demonstrate that higher level of adversarial growth was occurred across patients receiving psychological assistant more than patients were not received. This may be resulting from care giving that patients received during psychotherapy which focus on decreasing negative impact of trauma and elevating the concept of using positive view of trauma. In addition, those patients usually have stress disorders following traumatic event which stimulate adversarial growth. This finding is on the same view of *Jeon, Park, & Bernstein, 2017; Jeon, Yoo, Kim, & Lee, 2015* who state that seeking help and management from health care professionals is an important contribution to PTG elevation.

An important outcome of PTG is length of patient's stay in the hospital. The recent study illustrates presence of significant negative correlation between PTG and LOS which may be result from recurrent episode of acute condition. This result is concurrent with *Widows, Jacobsen, Booth-Jones, & Fields, 2005* who studied PTG among 72 patients under bone transplantation surgery and found non-significant negative association between LOS and PTG. They were supposing that specific components of PTG are caused due to passively biased remembering (i.e., derogation) of past features, experience or behaviors'. Also, *Malhotra & Chebiyan, 2016; Lindstrom et al., 2013* were reported that decreased hospitalization period act as stimulant for patient to discovers new avenues for his life, and seeking social support which improving PTG.

CONCLUSION

Nature of acute illness can be correlated with favorable changes in patients' attitude and mental condition that may affect his physiological and psychological wellbeing. Acutely ill patients usually declare minimal outlet to social support during hospitalization period, which can foster social isolation. Early assessment of PTG and stress management interventions must be started & concentrated on determining favorable outcomes and resonance of patient's experiences. These methods can be very important in enhancing hopefulness and reducing fear from upcoming. Our results explore that level of PTG varies depending on socio-demographic, illness related variables and psychosocial attributes of the acutely ill patients.

LIMITATIONS OF THE STUDY

The present study has some limitations that must be acknowledged. Measuring degree of trauma-exposure is challenging, however this meaner cannot differentiate between variant events, that may have variant effect on variant patients. In-addition, trauma experience life span was not studied in the recent research. Also, the exclusive use of self-report measures is another limitation and the matching between perceived and observed PTG was not measured.

RECOMMENDATION

Recent results highlight the importance of investigating the PTG using short form assessment measures during acute illness. Concerning gender differences, the critical care nurse must encourage men to engage in self-disclosure and avoid using self reporting assessment method to evaluate PTG among them. Future studies are required to discover certain disorder-associated variables of PTG and the variant growth mechanisms that can affect PTG and rehabilitation process.

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