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PSYCHIATRIC MORBIDITY AMONG VICTIMS OF TERRORIST ATTACKS: COMPARATIVE STUDY

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Abstract:

To assess the prevalence of psychiatric morbidity (post-traumatic stress disorder (PTSD); mood state; (state of depression, anxiety and stress) and its impact on general health among victims of terrorist attacks (mild injuries, severe injuries & amputation) in Peshawar, Khyber Pakhtunkhwa. This research was a cross sectional correlational study conducted on three groups of admitted patients; those injured in the attacks (with mild injuries, severe injuries & severe injuries along-with amputation) after one week during the period of November 2021 to September 2022, who had direct exposure to terrorist attacks and seek treatment from combined military hospital, Peshawar, Pakistan. The sample included all the survivors who sought medical assistance from the hospital. Questionnaire included Impact of event scale revised (IES-R 22) General health questionnaire (GHQ-12), and Depression, anxiety and stress scale (DASS-21). PTSD has positive association with Depression anxiety and stress and negative association with General health among terrorists' attack victims. The terrorist attacks victims had significantly higher psychiatric morbidity than non-exposed participants. Psychiatric morbidity was found to be highest in the victims of survivors of bomb blasts.

Keywords:

Psychiatric Morbidity, Mood State, General Health, Terrorist Attacks

Introduction:

Unfortunately, Pakistani nation has been the target of suicide bomb blasts by the terrorists in the last two decades and resulting directly into death and injuries of innocent citizens and created massive feelings of stress, anxiety, depression and mental trauma among the survivors. In this war on terrorism 80,000 (https://tribune.com.pk/story/860790/80000-pakistanis-killed-in-us-war-on-terror-report), Pakistani have been scarified their costly lives from 2004 to 2022 and large number was taken to emergency of various hospitals. This enormousness of substantial destruction after a terrorist attacks was exceptional in the Asia.

As terrorism had become growing trend in the Pakistan so it resulted into many mental health issues. Research conducted by the country witnessed (Dawn, 2001-2011) an almost 100% increase in the incidence of mental illnesses, especially stress-related disorders, and depression.

This happened after the September 9/11 attacks on the United State. Pakistan is exposed to extreme terrorism because this country supported United States in the war against terrorism. This caused into mass penetration of terrorist from North-Western boundary due to which thousands of Pakistani people sacrificed their lives due to war on terrorism. In this concern most affected province of Pakistan was Khyber Pakhtunkhwa and it constantly remained under terrorist attacks and worst of the wave unfortunately appeared in its capital city Peshawar.

Post-traumatic stress disorder (PTSD) is one of the most recurrent and devastating psychological illness reported in the repercussion of terrorist attack (Galea, 2002 & North, 1999). Numerous researches have displayed high load of PTSD in precise groups such as adults in the general public (Galea, 2002), direct sufferers of terrorist assaults (Norris, 2002), or rescue workers (North, 1999) subsequently tragedies. The researches about other psychological significances of tragedies is much more limited, even though it has been displayed depression, anxiety disorders other than PTSD and panic disorders are more prevailing after disasters than in non-disaster situations (Norris, 2002).

A research work conducted by Glad, et al. (2017) concluded that higher frequency of exposure to trauma reminders lead to higher severity of PTSD, anxiety disorders and major depressive disorders. Another study (Cozza et al., 2019) summarized that comorbid psychiatric situations amplified the risk of developing PTSD, major depressive disorders and anxiety disorders. Moreover, post-traumatic stress disorder, acute stress reaction, anxiety disorder and depression were significantly higher in injured by landmines than in the general population (Sinici et al., 2004 & Gunaratnam et al., 2003). Additionally, landmine injuries established as a risk factor for worse mental health and poorer social functioning outcomes (Cardozo et al., 2004)

A large number of literature focused on PTSD and depression in military individual during war zone (Creamer et al., 2011) however, many other civilians personals e.g. emergency responders, police officers, ambulance service individuals and fire fighters developed PTSD (Sterud et al., 2006; Berger et al., 2007; Maguen et al., 2009) and many other disorders including somatization, anxiety disorders and general psychopathology (Sterud et al., 2006; Lilly et al., 2009). Researches have concluded that prevalence of PTSD in survivors of the terrorist attacks increased 12% to 39% and post-disaster depression increased from 41% to 51% (Galea & Resnick, 2005; Shalev & Friedman, 2005; Farhood & Nourredine, 2003). Another study showed more prevalence of depression, anxiety disorders, panic disorders other than PTSD after disaster than in non-disaster situations (Norris et al., 2002). A study conducted on landmine injuries summarized that survivors presented 90% post-traumatic stress disorder and high percentage of anxiety and depression (Gunaratnam et al., 2003).

Our study contains two main objectives. First objective was that victims who survived after the bombs/ terrorists attacks sustain some irreversible consequences such as amputations, burns, blindness, multiple fractures and injuries, wounds and many lost their life. Hence study will explain the

prevalence of psychiatric morbidity (PTSD, Depression, anxiety & stress and general mental health) in three groups among survivors (mild injuries, severe injuries & amputation) during the period of November 2021 to September 2022. Second goal of study is to develop psychological guidelines for the survivor in the light of symptoms and problems depicted during interaction (interview) due to terrorist suicide attacks after the completion of the study. In this concern many state of the art hospitals and rehabilitations centers were built to treat and restore the physical trauma for the war wounded people in Pakistan but unfortunately very little work has been done to address the awareness regarding mental trauma of victims of bomb blast especially for amputees and severe injured patients. So, the aim of research is to cover the gap between physical and psychological trauma aspects and further to develop bridge which need addressing via future study work.

Endeavor has been made to gather maximum researches but one of the major challenges in simplifying from the adversity literature is that very limited research work have concurrently considered the psychological implication of adversity among various groups simultaneously and research approaches.

Method

This was retrospective cohort cross-sectional study, conducted from September 2021 to September 2022 with purposive sampling along-with quantities survey method was used for study. During this tenure twenty two incidents of terrorists bomb blasts have been reported so far. A total of two hundred and thirty one victims were brought to the accident-emergency services of Combined Military Hospital, Peshawar. Out of two hundred and thirty one patients only ninety were selected through simple random sample for this research. Each registered victim has admission numbers. Registered numbers were selected according to a table of random numbers and all patients were admitted to the Intensive Care Unit (ICU) for more than one week.

Sample

The total sample was 120 participants (only salary person) who were divided into two major groups. The first group was patients with injuries due to bomb blast (n=90). These were hospital admitted (n=90) patients who were injured due to terrorist attacks. This group was further divided into three categories. The first category of patients was (n=30) participants with minor injuries, the second category was those patients who were with major injuries and third category of patients (n=30) were with major injuries along with imputation. The purpose and the methods of the study were explained and informed consent obtained from the individuals. Every participant was approached once shifted from Intensive Care Unit (ICU) to Trauma Ward so that he can get maximum comfort and respond to psychological questioners in face to face interaction. The second group of non-injured (n=30) also completed the interview and questioners. They were selected randomly from different clinics that came for non-curative purposes. They did not have any exposure to the bomb blast in the past. Initially demographic information including age, marital status, permanent address, education, siblings, parental status, family structure (Nuclear/ joint) and head of family was taken from the patients. Family psychiatric history, substance-abuse history and any previous past psychiatric history was excluded. Then General Health Questioner (GHQ-12), Impact of Event Scale-22 (IES-R-22) and Depression, Anxiety and Stress Scale-21 (DAS-21) were completed by the consulted clinical psychologist to eliminate any selection bias.

Objectives

The following were the objective of the study.

- To assess the prevalence of psychiatric morbidity among victims of terrorist attacks
- Post-traumatic stress disorder (PTSD)
- General mental health
- Mood state; state of depression, anxiety, and stress) among three samples (mild injuries, severe injuries & amputation) victims of terrorist attacks in Peshawar, Khyber Pakhtunkhwa
- To study the relationship among variables

- To inspect the mediating role of stress, anxiety and depression in the relationship between PTSD and general health.
- To explore the mean group difference on the basis of study variables.
- To develop quick guidelines/ treatment for the patients of PTSD

Instruments: Measures

The following measures were used in this study:

(1) Demographic Information Form
(2) General Health Questioner (GHQ-12)
(3) Impact of Event Scale Revised (IES-R)
(4) Depression, anxiety, Stress Scale (DASS-21)

Demographic Information Form is consisted of demographic information which focused on the subject's (age, sex, marital status, education, occupation, number of siblings, family structure, birth order, parent's education, and occupation, earning member's, languages etc.), presenting problems, history of problem, psychopathology in family, medical, family, school, social / friendship, sexual history, and symptoms of psychological disorders/personality disorder. It is a qualitative measure which usually takes 20-30 minutes to administer.

The DASS is 21 items self-reported scale which is aimed to assess the negative state of depression, anxiety, and stress (Lovibond & Lovibond, 1995). The DASS was primarily developed by using the 504 student responses taken from 950 university students. These questioners were conducted on outpatient groups for validity who were suffering from anxiety, depression and many other mental disorders. The DASS-21 has been comprehensively normed with the sample of 1794 non-clinical adults (Henrey & Crawford, 2005). DASS-21 has acceptable to excellent ranges internal consistency and concurrent validity with DASS-42. It is consist up of three subscales: Depression, Anxiety and Stress scale and each subscale having 14 items with four possible optional responses (a) Did not apply to me at all (0), (b) Applied to me some degree, or some of the time (1), (c) Applied to me a considerable degree, or a good part of time (2), (d) Applied to me very much or most of the time (3).

Impact of Event Scale-Revised-IES-R (Weiss & Marmar, 1996) is 22 item self-rating measure (DSM-IV). It measures suffering caused by traumatic events. It is a revised version of the previous version (Horowitz, Wilner & Alvarez, 1979). Participants are asked to recognize a stressful life event and then indicate how much stress they bothered during the past seven days. It is a five-point rating scale which ranges from 0 (not at all) to 4 (extremely). The IES-R depicts a total score ranging from 0 to 88 and its subscales can also be intended for the three subscales (Intrusion, Avoidance & Hyper arousal).

General Health Questionnaire (GHQ-12) (Goldberg, 1978) is a self-administered scale, developed to assess a person's mental well-being. It was established as a screening instrument to measure psychiatric disorders, and also measures common mental health issues e.g., anxiety, somatic symptoms, and social dysfunction. It is easy to administer and requires less than 7 minutes to complete. The GHQ is available in variety of versions using 12, 28, 30 and 60 items and is now considered one of the best broadly used measures across a number of health professional. Scoring is 4-point ordinal scale (0 to 3) with higher scores suggestive of more suffering.

Hypotheses:

- There was a positive association of PTSD with stress, anxiety & depression whereas negative association with general health.
- PTSD, stress, anxiety, and depression would be more in amputated and severe injuries participants as compared to other group.
- Amputated participants would have lower general health as compared to other group.
- Participants from nuclear family would have more PTSD, stress, anxiety and depression and lower general health as compared to other group.

Results

Table 01

Demographic Characteristics of the Participants (N=120)

Variables	*F*	%	*M*	*SD*
Age			30.39	8.15
Group Belongs				
Normal individual	30	25		
With Minor Injury	15	12.5		
With Mild Injury	15	12.5		
With Severe Injury	15	25		
Amputated	30	25		
Marital Status				
Single	37	30.8		
Married	83	69.2		
Education				
Under matric	8	6.7		
Matric	66	55.0		
Intermediate	38	31.7		
Graduation	5	4.2		
Master	2	1.7		
Family Structure				
Nuclear	49	40.8		
Joint	71	59.2		

Table 1 demonstrated the mean and standard deviation of participants' age. This table also showed frequencies and percentages of the demographic attributes of the sample of study. It depicted participants' group belonging, ranks, marital status, educational qualification, and family system of victim of terrorists' attack.

Table 2

Psychometric properties for scales used in study (N =120)

Scale	*K*	*α*	*M*	*SD*	Range		Skew	Kurt
					Actual	Potential		
IES-R	22	.99	20.95	23.64	00-88	00-83	0.99	-0.32
DASS	21	.98	13.13	14.44	00-63	00-44	0.82	-0.69
GHQ	12	.96	11.09	7.47	00-36	00-31	0.21	-0.29

Note: IES-R = Impact of Event Scale- Revised, DASS = Depression, Anxiety, Stress Scale, GHQ = General Health Questionnaire

Table 2 showed mean, standard deviation, alpha reliability coefficient, range of potential and actual scores, skewness, and kurtosis. Result showed that the values of skew and kurtosis are within acceptable range. Cronbach's alpha reliability coefficient values are above .95, which means that all the scales were highly reliable.

Table 03

Descriptive statistics and correlation for main study variables (N = 120)

Variables		*M*	*SD*	*1*	*2*	*3*
1.	IES-R	20.95	23.64	-	.90***	-.71***
2.	DASS	13.13	14.44		-	-.78***
3.	GHQ	11.09	7.47			-

Note: IES-R = Impact of Event Scale- Revised, DASS = Depression, Anxiety, Stress Scale, GHQ = General Health Questionnaire. ***$p < .001$.

Table 3 revealed the patterns of relationship among the study variables, and it is evident that all the relationship's patterns are in the desired directions. Results showed that Impact of a negative event had significant positive relationship with depression, anxiety and stress. Whereas it had a significant negative relationship with general health. Same as Depression, anxiety and stress had significant negative relationship with general health.

Table 05 (Annexure A)

Table 05 showed the impact of negative event and depression, anxiety and stress on General Health in survival victims of terrorist's attack. In the Step 1, the R^2 value

of .21 revealed that the negative event impact explained 51% variance in the General health with F (1,118) = 122.61, p < .001. The findings revealed that Impact of Negative Event negatively predicted General Health (β = -.71, p < .001). In the Step 2, the R^2 value of .61 revealed that the Event impact and Depression, anxiety and stress explained 61 variances in the General Health with F (2, 117) = 91.53, p < .001. The findings revealed that Event Impact (β = -.06, p > .05) non-significant and Depression, anxiety, and stress (β = -.73, p < .001) significant negatively predicted General health. The ΔR^2 value of .10 revealed 10% change in the variances of model 1 and model 2 with ΔF (1, 117) = 30.16, p < .001. The regression weights for Event's impact subsequently reduced from model 1 to model 2 (-.71 to -.06) and became non-significant which confirms the full mediation. That means, event impact had indirect effect on General health through depression, anxiety, and stress.

One-way analysis of variance (ANOVA) was conducted to analyze the group mean differences on study variables with reference to group belonging of the participants

Table 06 (Annexure B)

Significant mean differences were observed on all the variables as shown in table 6. It was found that amputated participants were most effected by the trauma by showing high score on impact of event scale, depression anxiety and stress scale and general health questionnaire as compared to other groups followed by severe injury, minor injury, and mild injury respectively.

Independent sample t test was run to find out mean differences across family system of participants in relation to Impact of event, Depression, anxiety and stress and their general health effected

Table 07 (Annexure C)

Result showed in table 7 that there were non-significant differences on all the scales between these two groups.

It was hypothesized that Impact of an event will affect more to the participants belongs to nuclear family as compared to joint family structure where are results were quite different, there were no significant differences between two groups.

Independent sample t test also was run to find out mean differences across marital status of participants in relation to Impact of event, Depression, anxiety and stress and their general health effected.

Table 08 (Annexure D)

Result showed in the table 8 that there were no significant differences on all the scales between these two groups

Discussion

The results of study are persistent with the evidence that after terrorist bomb attacks there is significant burden of variety of mental disorders (Galea et al., 2002) and individuals injured by disasters have high rates of post-event psychiatric issues than persons (Norris et al., 2002; North et al., 1999; North et al., 2002 & Genjian, 2001) who did not expose to bomb blast.

Our results showed that patients with severe physical injuries and amputation due to terrorist attacks presented higher rate of psychiatric morbidity which was also well established in literature. According to research analysis prevalence of mental disorders was 57.5% among injured, major depression was 31.5% (95% CL, 23.5-40.3) among injured, agora phobia was 23.8% among injured, GAD was 13.4% among injured, panic disorder was 9.4% among the injured, comorbid disorders anxiety and depressive disorders were 52.8% among injured and most comorbid disorders were PTSD and depression (Gabrial et al., 2006). Another research concluded the same findings that the severity of the symptoms of anxiety disorders, major depressive disorder (MDD) were worsen in those individuals who were exposures to bomb blast (Glad et al., 2017). Higher rate of anxiety disorder were found in physically injured individuals than the general population (Zhang et al., 2016). High prevalence of PTSD (30%) was found in directly exposed to terrorist attacks (Paz Garcia-Vera et al., 2016), even after 14-15 years of attack it was 4.1% (Adams et al., 2019). Research conducted after the bomb blast of 14-15 years which concluded that major depressive disorder (MDD) was 6.8% alone while 8.9% had comorbid MDD and

PTSD (Jacobson et al., 2018 & Adams et al., 2019) and 68.2 % also had comorbid MDD (Adams et al., 2019). Explanation can vary in its nature because data sample was salary persons who were worried about security of their future, secondly amputation and sever injuries resulted into prolong admission in the hospital and further may develop dependency on relatives, other people and doctors.

Patients with mild physical injuries due to terrorist attacks presented low scores on PTSD and depression, anxiety & tress and general health scale as compared to severe injured and amputation as we speculated. Its possible reasons may include rapid recovery from the hospital, less pain and good support by their organization as all sample were salary persons. However, shockingly literature does not fully support our hypothesis. It depicted a lot of variation as documented in many studies. Research (North et al., 20015) analyzed that individuals who were even in the vicinity of attacks, reported 26% symptoms of Major Depressive Disorder and rates of MDD were typed amongst rescue workers (15.3) 10-15 years post attack (Jordon et al., 2019) 17.2% in non-traditional rescue workers respectively. PTSD was found very high in volunteers (Jacobson et al., 2018 & Horn et al., 2016) after the post attack of 5-7 years. PTSD in direct victims was found 15-26% even 6-7 years of attack (Paz Garcia-Vera et al., 2016). Even PTSD in relief workers was found very high 21.9% (Chen et al., 2020) and in close relatives it was found 23% of the victims who were injured in terrorist attacks (Paz Garcia-Vera et al., 2016).

We also hypnotized that PTSD would be first and depression would be second most common disorders reported by the three groups of patients because our sample was restricted to injured persons and deaths and injuries were due to terrorist attacks were frequent in the Peshawar region and surrounding area. Researchers also pointed out the same results (Zhang et al., 2016) that depression was, after PTSD, the second most common mental disorder reported. However, severity of symptoms on scale was not high and sample reported under-reported psychological symptoms. There are two possible reasons that in combined military hospital majority of the patients were trained soldiers, policemen and law enforcement forces persons who are well trained for such emergency situations. Secondly sample had previous participation in the terrorist operations.

Our last hypothesis was that; participants from nuclear family would have more PTSD, stress, anxiety and depression and lower general health as compared to other group which was not proved. One of the possible reasons was that data collected right after the shifting of patients from ICU to trauma ward, where nursing care and the social support system was already present. Moreover, these participants were already first line worker who were mentally prepared for such incidents. High level of role clarity and predictability may be another factor in this concern.

Importance of the Research

This research will provide baseline evidence for policy makers to establish a well-equipped psychological rehabilitation facility for victims of terrorist attacks.

All mental professional who are serving in civil hospitals and military will benefit from the findings of the research.

The emergency response system, including the public health system, must be prepared for a terrorist attack and have strategies in place to minimize its psychological consequences.

Finally, strategies for preparedness need to address the mental health consequences of a terrorist attack as well as the issues of physical health.

References

Adams, S. W., Bowler, R. M., Russell, K., Brackbill, R. M., Li, J., & Cone, J. E. (2019). PTSD and comorbid depression: Social support and self-efficacy in World Trade Center tower survivors 14–15 years after 9/11. *Psychological trauma: theory, research, practice, and policy*, *11*(2), 156-164.

Berger, W., Figueira, I., Maurat, A. M., Bucassio, E. P., Vieira, I., Jardim, S. R., Coutinho, E. S. F., Mari, J. J., & Mendlowicz, M. V. (2007). Partial and full PTSD in Brazilian ambulance workers: prevalence and impact on health and on quality of life. *Journal of Traumatic Stress: Official Publication of The International Society for Traumatic Stress Studies*, *20*(4), 637-642.

Cardozo, B. L., Talley, L., Burton, A., & Crawford, C. (2004). Karenni refugees living in Thai–Burmese

border camps: traumatic experiences, mental health outcomes, and social functioning. *Social science & medicine*, *58*(12), 2637-2644.

Chen, C., Salim, R., Rodriguez, J., Singh, R., Schechter, C., Dasaro, C. R., ... & Feder, A. (2020). The burden of subthreshold posttraumatic stress disorder in World Trade Center responders in the second decade after 9/11. *The Journal of clinical psychiatry*, *81*(1), 20194.

Count, B. Casualty Figures after 10 Years of the "War on Terror" Iraq Afghanistan Pakistan, International Physicians for the Prevention of Nuclear War, First international edition, March 2015.

Cozza, S. J., Fisher, J. E., Fetchet, M. A., Chen, S., Zhou, J., Fullerton, C. S., & Ursano, R. J. (2019). Patterns of comorbidity among bereaved family members 14 years after the September 11th, 2001, terrorist attacks. *Journal of traumatic stress*, *32*(4), 526-535.

Creamer, M., Wade, D., Fletcher, S., & Forbes, D. (2011). PTSD among military personnel. *International Review of Psychiatry*, *23*(2), 160-165.

Farhood, L. F., & Noureddine, S. N. (2003). PTSD, depression, and health status in Lebanese civilians exposed to a church explosion. *The International Journal of Psychiatry in Medicine*, *33*(1), 39-53.

Gabriel, R., Ferrando, L., Cortón, E. S., Mingote, C., García-Camba, E., Liria, A. F., & Galea, S. (2007). Psychopathological consequences after a terrorist attack: An epidemiological study among victims, the general population, and police officers☆. *European Psychiatry*, *22*(6), 339-346.

Galea, S., & Resnick, H. (2005). Posttraumatic stress disorder in the general population after mass terrorist incidents: Considerations about the nature of exposure. *CNS spectrums*, *10*(2), 107-115.

Galea, S., Ahern, J., Resnick, H., Kilpatrick, D., Bucuvalas, M., Gold, J., & Vlahov, D. (2002). Psychological sequelae of the September 11 terrorist attacks in New York City. *New England journal of medicine*, *346*(13), 982-987.

Glad, K. A., Hafstad, G. S., Jensen, T. K., & Dyb, G. (2017). A longitudinal study of psychological distress and exposure to trauma reminders after terrorism. *Psychological trauma: theory, research, practice, and policy*, *9*(S1), 145-152.

Global Terrorism Index: measuring the impact of terrorism, Sidney. (2018). *Institute for Economics & Peace*. The START, USA.

Goenjian, A. K., Molina, L., Steinberg, A. M., Fairbanks, L. A., Alvarez, M. L., Goenjian, H. A., & Pynoos, R. S. (2001). Posttraumatic stress and depressive reactions among Nicaraguan adolescents after Hurricane Mitch. *American journal of psychiatry*, *158*(5), 788-794.

Goldberg, D. P. (1978). Manual of the General Health Questionnaire. Windsor. *England: NEFR Publishing*.

Gunaratnam, H. R., Gunaratnam, S., & Somasundaram, D. (2003). The psychosocial effects of landmines in Jaffna. *Medicine, conflict and survival*, *19*(3), 223-234.

Henry, J. D., & Crawford, J. R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *British journal of clinical psychology*, *44*(2), 227-239.

Horowitz, M., Wilner, N., & Alvarez, W. (1979). Impact of Event Scale: A measure of subjective stress. *Psychosomatic medicine*, *41*(3), 209-218.

Hussain, S. (2017). Analyzing the war–media nexus in the conflict-ridden, semi-democratic milieu of Pakistan. *Media, War & Conflict*, *10*(3), 273-292.

Index, G. T. (2015). Institute of Economics and Peace. *Disponible en el Web: http://www. visionofhumanity. org/#/page/indexes/global-peace-index [Consulta: 1 mayo 2016]*.

Jacobson, M. H., Norman, C., Nguyen, A., & Brackbill, R. M. (2018). Longitudinal determinants of depression among World Trade Center Health Registry enrollees, 14–15 years after the 9/11 attacks. *Journal of affective disorders*, *229*, 483-490.

Kessler, R. C., Aguilar-Gaxiola, S., Alonso, J., Benjet, C., Bromet, E. J., Cardoso, G., & Koenen, K. C. (2017). Trauma and PTSD in the WHO world mental health surveys. *European journal of psychotraumatology*, *8*(sup5), 1353383.

Kessler, R. C., Aguilar-Gaxiola, S., Alonso, J., Chatterji, S., Lee, S., Ormel, J., & Wang, P. S. (2009). The global burden of mental disorders: an update from the WHO World Mental Health (WMH) surveys. *Epidemiology and Psychiatric Sciences*, *18*(1), 23-33.

Kessler, R.C, and Bromet, E. J. (2013). The epidemiology of depression across cultures. *Annual Review of Public Health*, *34*, 119-138.

Khalily, M. T. (2011). Mental Health Problems in Pakistani Society as a Consequence of Violence and Trauma: A Case for Better Integration of Care. *International Journal of Integrated Care* 11, e128.

Lilly, M. M., Pole, N., Best, S. R., Metzler, T., & Marmar, C. R. (2009). Gender and PTSD: What can we learn from female police officers?. *Journal of anxiety disorders*, *23*(6), 767-774.

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour research and therapy*, *33*(3), 335-343.

Maguen, S., Metzler, T. J., McCaslin, S. E., Inslicht, S. S., Henn-Haase, C., Neylan, T. C., & Marmar, C. R. (2009). Routine work environment stress and PTSD symptoms in police officers. *The Journal of nervous and mental disease*, *197*(10), 754-760.

Nasim, S., Khan, M., & Aziz, S. (2014). Impact of terrorism on health and Hospital Anxiety Depression Scale Screening in medical students, Karachi, Pakistan. *Journal of Pakistan Medical Association*, *64*(275), 49-56

Norris, F. H., Friedman, M. J., Watson, P. J., Byrne, C. M., Diaz, E., & Kaniasty, K. (2002). 60,000 disaster victims speak: Part I. An empirical review of empirical literature, 1981—2001. *Psychiatry*, *65*(3), 207-239.

North, C. S., Nixon, S. J., Shariat, S., Mallonee, S., McMillen, J. C., Spitznagel, E. L., & Smith, E. M. (2013). Psychiatric disorders among survivors of the Oklahoma City bombing. In *The Science of Mental Health: Stress and the Brain* (pp. 159-167). Taylor and Francis.

North, C. S., Pollio, D. E., Hong, B. A., Pandya, A., Smith, R. P., & Pfefferbaum, B. (2015). The postdisaster prevalence of major depression relative to PTSD in survivors of the 9/11 attacks on the world trade center selected from affected workplaces. *Comprehensive Psychiatry*, *60*, 119-125.

North, C. S., Tivis, L., McMillen, J. C., Pfefferbaum, B., Spitznagel, E. L., Cox, J., & Smith, E. M. (2002). Psychiatric disorders in rescue workers after the Oklahoma City bombing. *American Journal of Psychiatry*, *159*(5), 857-859.

Paz García-Vera, M., Sanz, J., & Gutierrez, S. (2016). A systematic review of the literature on posttraumatic stress disorder in victims of terrorist attacks. *Psychological reports*, *119*(1), 328-359.

Regens, J. L., Schultheiss, A., & Mould, N. (2015). Regional variation in causes of injuries among terrorism victims for mass casualty events. *Frontiers in public health*, *3*, 198.

Shalev, A. Y., & Freedman, S. (2005). PTSD following terrorist attacks: a prospective evaluation. *American Journal of Psychiatry*, *162*(6), 1188-1191.

Sinici, E., Yildiz, C., Tunay, S., Ozkan, H., & Altinmakas, M. (2004). The assessment of anxiety levels in patients with posttraumatic stress disorder. *Acta orthopaedica et traumatologica turcica*, *38*(2), 145-148.

Sterud, T., Ekeberg, O., & Hem, E. (2006). Health status in the ambulance services: a systematic review. *BMC health services research*, *6*, 1-10.

The National Consortium for the Study of Terrorism and Responses to Terrorism. *(*2018). *About START*. Retrieved on the 27th of August 2018 from: http://www.start.umd.edu/about/about-start.

Van de Velde, S., Bracke, P., & Levecque, K. (2010). Gender differences in depression in 23 European countries. Cross-national variation in the gender gap in depression. *Social science & medicine*, *71*(2), 305-313.

Weiss, D. S. (2007). The impact of event scale: revised. *Cross-cultural assessment of psychological trauma and PTSD*, 219-238.

Weiss, D., & Marmar, C. (1996). The impact of Event Scale-Revised. J Wilson, T Keane, (eds) Assessing psychological trauma and PTSD. *New York: Guildford*.

World Health Organization. (2014). *Preventing suicide: a global imperative*. World Health Organization, Geneva,

Zhang, G., Pfefferbaum, B., Narayanan, P., Lee, S., Thielman, S., & North, C. S. (2016). Psychiatric disorders after terrorist bombings among rescue workers and bombing survivors in Nairobi and rescue workers in Oklahoma City. *Annals of clinical psychiatry*, *28*, 22–30.

Table 05 (Annexure A)

Regression analysis for mediation of Depression, anxiety and stress between Negative impact' event and General health (N=120)

Variable	*B*	*95% CI*		*SE B*	*β*	R^2	ΔR^2
Step 1						.51	.51***
Constant	6.37***	[5.10,	7.64]	6.42			
IAS-R	.23***	[.19,	.27]	.02	-.71***		
Step 2						.61	.10***
Constant	5.77***	[4.61,	6.92]	.59			
IAS-R	.20**	[-.06,	.10]	.04	-.06		
DASS	.38***	[.24,	.51]	.07	-.73***		

Note. IES-R = Impact of Event Scale Revised, DASS = The Depression, Anxiety and Stress Scale, GHQ = General Health Questionnaire, CI=Confidence Interval. ***$p < .001$

Table 06 (Annexure B)

Mean difference across Group belonging of participants on study variables (N=120)

Variables	Group Belongs											
	Normal (n=30)		Mild Injury (n=15)		Minor Injury (n=15)		Severe Injury (n=30)		Amputation (n=30)			
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F (4,115)*	η^2
IES-R	0.30	0.70	5.20	5.71	5.60	3.94	22.20	8.68	55.90	15.41	167.11**	.85
DASS	0.33	1.47	4.60	5.12	5.00	5.08	15.50	9.74	31.87	11.11	71.40**	.71
GHQ	3.83	5.17	7.60	5.05	11.53	3.80	12.13	5.06	18.83	5.75	3407**	.54

Note. IES-R = Impact of Event Scale Revised, DASS = The Depression, Anxiety and Stress Scale, GHQ = General Health Questionnaire.

Table 07 (Annexure C)

Mean differences across family system of participants on study variables (N = 120)

Variables	Joint FS *(n = 49)*		Nuclear FS *(n = 71)*				
	M	*SD*	*M*	*SD*	*t (118)*	*p*	*Cohen`s d*

IES-R	17.51	20.28	23.37	25.58	-1.34	.18	-.25
DASS	11.20	12.36	14.45	15.67	-1.21	.29	-.23
GHQ	11.14	7.10	11.06	7.75	.62	.95	.01

Note. IES-R = Impact of Event Scale Revised, DASS = The Depression, Anxiety and Stress Scale, GHQ = General Health Questionnaire

Table 08 (Annexure D)

Mean differences across marital status of participants on study variables (N = 120)

Variables	Unmarried *(n = 49)*		Married *(n = 71)*				
	M	*SD*	*M*	*SD*	*t (118)*	*p*	*Cohen`s d*
IES-R	15.76	22.16	23.27	24.04	-1.62	.11	-.32
DASS	11.03	12.57	14.06	15.18	-1.06	.29	-.21
GHQ	10.32	7.77	11.43	7.35	-.75	.45	.15

Note. IES-R = Impact of Event Scale Revised, DASS = The Depression, Anxiety and Stress Scale, GHQ = General Health Questionnaire.