

# Impact of terrorism on the development of posttraumatic stress disorder (PTSD) among the residents of Khyber Bazaar and its immediate surrounding areas in Peshawar, Khyber Pakhtunkhwa, Pakistan

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**Abstract:** This study evaluated the prevalence of posttraumatic stress disorder (PTSD) and the severity of PTSD symptoms in survivors, rescuers and witnesses of terrorist attacks on Khyber bazaar, Qissa Khawani bazaar, and All Saints Church in Peshawar city area. Cross-sectional survey is carried out on a sample of one hundred survivors, rescuers and witness of terrorist attacks using structured interviews to assess the severity of posttraumatic stress, five months after the attacks. The study period extended from January 24, 2014 to March 24, 2014 which constitutes a total of period of 8 weeks. PTSD symptoms are measured using Posttraumatic Symptom Scale Interview (PSSI) and conferred to a diagnosis of PTSD at 5 months. Additionally, the severity of PTSD symptoms were determined using PSSI scores, severity ranged from 0-51. Of the one hundred survey respondents, 88% were males and 12% were females. Forty percent (40%) had attained 10 years of education, matriculation, but irrespective of the gender or educational status, all had some degree of PTSD. Sixty-six (66%) percent respondents are diagnosed as having moderate PTSD while 11% of the sample suffered from severe PTSD level. Age, gender, occupation and education level did not have any correlation with PTSD development. The contemporary findings indicate that any person who has witnessed or survived catastrophes of terrorist activities like bomb blast or being exposed to suicide attacks is at risk for developing PTSD, and there is necessity to deliver specialized post-disaster mental health facilities to the people having substantial levels of PTSD after calamities of such great intensity.

**Keywords:** Post traumatic stress disorder, terrorism, survey.

## INTRODUCTION

Pakistan is a developing country and it has remained, exposed to extreme form of terrorism after the September 9/11 attack on the United States. Pakistan extended its full support to the war against terror and assisted in the U.S invasion of Afghanistan to topple the Taliban regime. The result was mass migration of terrorists and extremists into the country through the porous North-Western border. The mass retaliation by the Taliban regime came in words and strikes where the purpose was to disturb the law and order of the state and cause chaos, the province most affected by such activities was Khyber Pakhtunkhwa. The province has constantly remained under the threat of terror attacks and terror incidents like suicide bombings and bomb blasts occurred with unimaginable frequency. The worst of this wave transpired in the provincial capital Peshawar. These circumstances have exposed the general population of the area to scenes of extreme violence and gore as people witnessed death and destruction on massive scales, due to which impact such terrorist activities on the mental health of the people needs further exploration. These terrorist activities result in physical, emotional and psychological trauma, exposure to such trauma may consequence in the development of mental

disorders among survivors, witnesses and rescuers.

Mental health is an important dimension of an individual's overall health as noted by the WHO's definition of health. In recent years, terrorism emerged as a threat to the normality of mental health globally, causing an increase in the rate of mental illnesses like stress, anxiety and depression. Exposures to terrorist attacks like suicide bombings and bomb blasts have exposed civilians to death and destruction on massive scale, causing an increase in the rates of PTSD. Terror-struck nations like Pakistan need to address this sweltering issue, to decrease the burden on morbidity and mortality. The study discusses and explains PTSD in detail, focusing on the literature available, the work done so far and the present gaps, which need addressing via future researches.

Posttraumatic Stress Disorder (PTSD), a type of anxiety disorder, is most likely to transpire in individuals exposed to terror events such as bomb blasts. First detected in war veterans the disorder received its official acknowledgement as a genuine medical condition in 1980, when the American Psychiatric Association (APA) published its description and diagnostic criteria in the Diagnostic and Statistical Manual of Mental Disorders Version III (DSM-III). According to (Hetrick, Purcell, Garner, & Parslow, 2010) PTSD is a unique psychiatric

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disorder in the sense that it requires presence of an external stimulus, a traumatic experience that results in its symptoms. Currently two systems exist for diagnosing PTSD, the International Classification of Diseases tenth revision (ICD-10) published by the WHO in 1993 and the DSM-IV, although a newer version DSM-V is also now available. Some similarities are present across both diagnostic systems, which include exposure to a traumatic event, persistent re-experiencing of the event, avoidance symptoms and hyper-arousal symptoms.

Khyber bazaar is a busy market place located in the heart of Peshawar city. Some consider this area the hub of all major trade with in Peshawar and most areas of Khyber Pakhtunkhwa. Just adjacent to Khyber bazaar is another market, perhaps one of the oldest market places in Asian subcontinent, the Qissa Khwani bazaar literally meaning 'the market of story tellers'. These markets have been badly hit by some extreme terrorist activities. The current circumstances demand for a large-scale study, to provide empirical data on the effects of terrorism on the prevalence of PTSD amongst the general population of Peshawar. This study aims to address this burning issue while serving as a strong foundation for future research studies. Khyber bazaar was the area of interest for this study, because of its significance in Peshawar. In September 2013, terrorists targeted this very area twice within a week, the twin blasts at all Saints church on September 22 and the QissaKhawani bazaar blast on September 29. The increased frequency of terrorist activities and bomb blasts in the area place the general population at high risk of developing PTSD, thus the study included residents of this area in its scope. The research question that this study seeks to answer is, "what is the impact of terrorism on development of posttraumatic stress disorder (PTSD) among the residents of Khyber bazaar and its immediate surrounding areas?" The hypothesis for this study is that 'terrorist activities lead to increase in the rates of PTSD'. The objectives of this study are; (i) To determine the prevalence rate of PTSD among people exposed to terrorist attacks (ii) To analyze the effects of terrorism on the prevalence rate of PTSD (iii) To illustrate the severity of the PTSD symptoms in persons exposed to terrorism (iv) To detect the number of people suffering from PTSD.

This research effort is a cross-sectional study belonging to the class of descriptive epidemiological studies. The study aims at determining the prevalence of a disease in the community. The study simultaneously look at the exposure i.e. the causative agent and the outcome i.e. disease, yet it cannot establish a relationship between exposure and outcome using this method. Advantage of this study design include cost-effectiveness, generalizability of the results on the population and less time to complete than Epidemiological studies of other designs.

### **Literature review**

Vietnam War veterans drew the attention of the American Psychiatric Association (APA) on the influence of war on mental health, which then yielded the inclusion of post-traumatic stress disorder in the Diagnostic and Statistical Manual of Mental Disorders Version III (DSM-III). A more detailed definition of PTSD was later provided in the revised version of DSM-III (APA, 2000: Ford, 2009: Figley, 1981).

Rosner & Powell (2009) in their study show that both systems ICD-10 and DSM-IV differ from one another in terms of diagnostic criteria for the disorder, for example the event criterion, in DSM-IV system involves "threat to life", alongside with feelings of horror, helplessness and fear, while the ICD-10 system assume that certain events, such as being in a war zone, automatically satisfy the criterion. Research done by Rosner, Powell & Butollo (2003) on the comparison of the two diagnostic systems, for the diagnosis of PTSD, concluded that DSM-IV better portrays the theoretical constructs of the disorder than the ICD-10, with the rate of diagnosis being almost double for the ICD-10 when compared to DSM-IV. Therefore, this study chose the DSM-IV criteria as the set standard for diagnosing PTSD. Although researchers have done many studies on the prevalence of PTSD in Pakistan, most of them being in Khyber Pakhtunkhwa, almost all of them have focused on natural disasters, such as earthquake and floods, as the primary source of trauma. The literature reviewed acknowledged that experts consider the magnitude of this problem in terror struck regions, like Pakistan to be high but lack empirical evidence to back this up, as they wait for new researches that demonstrate the prevalence of PTSD following bomb blasts and suicide attacks (Gadit, 2010).

Studies done after 9/11 attacks, reported high levels of PTSD symptoms in the residents of New York City, which demonstrated a steady decline after a period of six months (Galea *et al.*, 2003: Lynn E. DeLisi, *et al.*, 2003). Many studies also demonstrated that some cases of PTSD achieved spontaneous recovery within the first year of trauma exposure (Kessler, Bromet, Hughes, & Nelson, 1995). Population based studies conducted after mass-traumatic events, 9/11 attacks on the United States, for assessment of severity and presence of PTSD symptoms, concluded that 5.3% of New York City residents satisfied the sub-syndrome criteria of PTSD even after 6 months. This rate was even higher (14.3%) among rescue workers exposed directly to the trauma (Galea, *et al.*, 2003), other studies also showed similar results (Johnson, 2008). Several studies conducted on the development on PTSD among war veterans revealed that 21% of males and 27% of females developed PTSD once in their lifetime (Kulka, 1990). Another study conducted on the Gulf War veterans reported prevalence rate of 12% (Han, Mahan, Lee, & Murphy, 2003), identifying chronic cases at assessment

almost ten years after the war. Recent studies have been able to study development of PTSD during war using Iraq and Afghanistan veterans, reporting that soldiers deployed to Iraq had 20% increase in PTSD symptoms compared to their comrades stationed at home (Hoge, Messer, McGurk, Cotting, & Koffman, 2004). A subsequent study reported that female soldiers displayed more psychological problems than males (Hoge & Milliken, 2006); both studies directly associated the severity of PTSD symptoms with the amount of trauma exposure. Terrorist strategically designed attacks targeting the masses causing people to feel violated and distressed and eroding all sense of safety and security. The frequency and sophistication of such attacks remarkably increased during the last decade inflicting substantial damage in terms of the lives lost and property damage (Bongar, 2006). Many individuals considered terrorist attacks of 9/11, on the World Trade Center (WTC), New York City, and the Pentagon, Washington, as life-altering experience posttraumatic symptoms showed marked increase in studies conducted immediately after these attacks on the population of United States (Neria, Gross, & Marshall, 2006; Mark, *et al.*, 2001; Neria & Adams, 2001). A cohort study done upon residents of New York City after the 9/11 attacks also established a steady decline in the PTSD symptoms, using a base line rate of 71% its showed that during the 12 months prevalence declined 5% and by 24 months this value reached 3.8%(Neria & Adams, 2001; Adams & BJ, 2006).

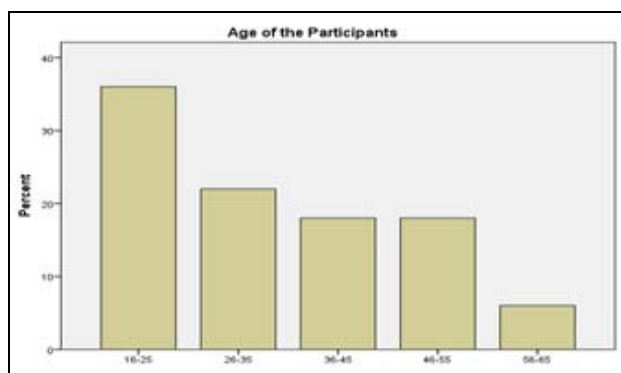


Fig. 1: Analysis of Sample Age Distribution

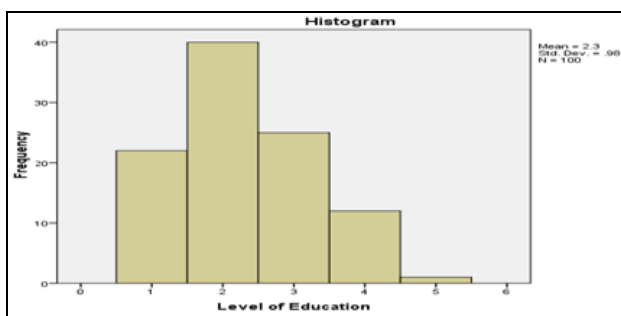


Fig. 2: Frequency Histogram of Educational Status

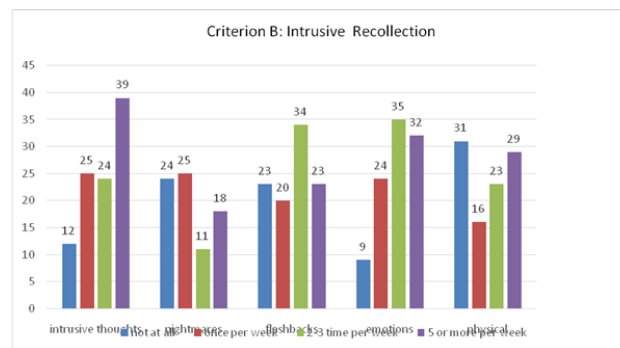


Fig. 3: Data Analysis of DSM-IV Criterion B

Studies conducted by Neria & Adams (2001); Galea, Resnick, Kilpatrick, Cucuvalas, Gold, & Vlahov (2002); Schlenger, *et al.* (2002); Adams & BJ (2006); DiGrande, Brackbill, Pulliam, & Galea (2011) identified a number of factors that expressively amplified the risk of PTSD, including certain demographics such as young age, female gender or Hispanic ethnicity. The study identified that direct exposure to the traumatic event significantly related to PTSD development, this included direct physical exposure such as sustained injury, distance from the world trade center at the time of the attacks (Galea, *et al.*, 2003; Adams & BJ, 2006; DiGrande, *et al.*, 2008). Moreover, witnessing of dreadful scenes (e.g. watching people who jumped off the buildings) exposure characteristics such as direct exposure (e.g., injury on 9/11, exposure to the dust cloud resulting from tower collapses) and high time spent watching 9/11 incidents on the television during the initial days subsequent to the attacks were also reported to increase PTSD.

A study by Rahman & Siddiqui (2013) aimed at identifying the psychological effects of displacement in IDPs and evaluating their psychological state, carried out at the temporary shelters for IDP's in Jamshoro and New SabziMandi Hyderabad, reported that 9% of the participants suffered from PTSD. It was cross sectional study, conducted one month after the flood, on the Internally Displaced Persons (IDP's). The study concluded that Pakistan was geographically at high risk of facing natural catastrophes, focusing on the effects of flood on the mental and physical health of the people and advised development of strong contingency plans.

In a study (Ahmad & Munir, 2011) used the 'Impact of Event Scale-Revised (IES-R)' to measure PTSD among the schoolchildren impacted by flood in Pakistan. They concluded high occurrences of PTSD in displaced secondary school students, when compared to non-displaced students and female students developing PTSD more easily than the males.

In a study (Ali, Bhatti, & Kuroiwa, 2012) opine that even after a considerable period the prevalence of PTSD

remained high among the participants, with certain characteristics predisposing to PTSD development such as unemployment, earning stumpy revenue, head of the household and living in provisional accommodations all threat towards PTSD. Moreover, having an ample social support in the form of friends and family proved to be protective against PTSD as well as having strong religious disposition.

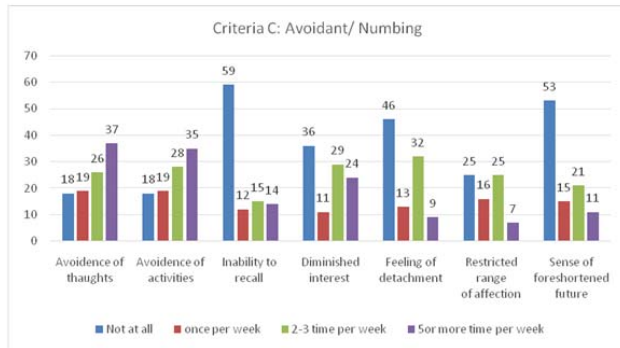


Fig. 4: Data Analysis of DSM-IV Criterion C

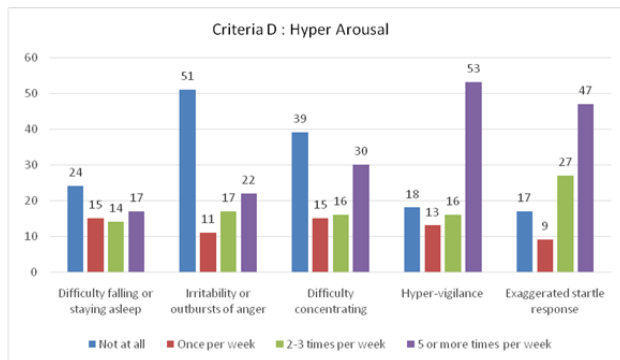


Fig. 5: Analysis of Criterion D DSM-IV

Another notable study (Sana, 2014) inquired the respondents about their experience of the calamity and assessed their subjective perceptions related to the trauma. The research tool used for this purpose was a seventeen-item symptom scale used for the assessment of PTSD.

### Research methodology

The target population for this study are residents of Khyber Bazaar and its neighboring zones areas (including QissaKhawani Bazaar, Kochi Bazaar and All Saints Church, map given in annexure), owing to high levels of exposure to traumatic events such as target killings, bomb blasts and suicide attacks. Only those individuals are included who 'experienced, witnessed or were confronted by the terrorist bombings that occurred recently in the month of September in 2013 at QissaKhawani bazaar and the blast of Khyber bazaar, which occurred on the October 9, 2009. This study excluded from its scope all foreign nationals, such as Afghan citizens living or working in the area. The population accessible for study included all the

participants, of the target area who willingly took part in the study, provided they satisfied the inclusion criteria.

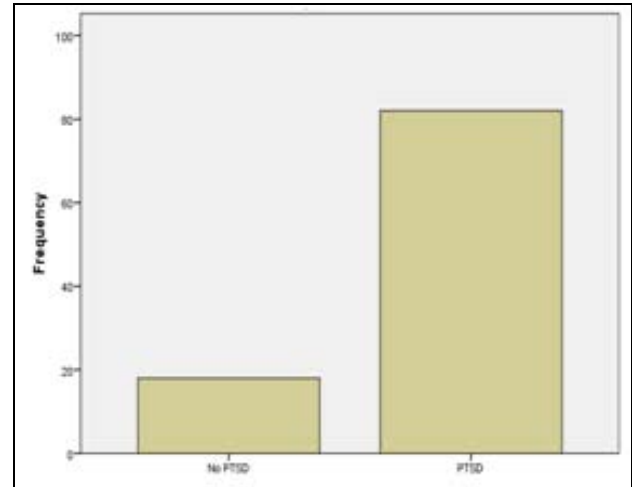


Fig. 6: Frequency of PTSD Prevalence in the Sample

### Sampling technique

The target area divided in to three strata, strata one was Khyber bazaar, strata two was QissaKhawani bazaar, while the third strata consisted of Kochi bazaar and All Saints Church. All strata were representative of the target population, simple random sampling done in each strata for obtaining samples, later added to yield the final sample size.

### Sample size calculations

Sample size calculation for the study done by using the following formula:

$$n = \frac{z_{1-\alpha}^2 P(1-P)}{d^2}$$

n= is the desired sample size.

d= is the margin of error or degree of accuracy desired, set at 5% (0.05) for the purpose of this study.

p = the current prevalence rate of the disease (PTSD) in Pakistan 37%(59) found in the literature review.

z = the standard normal deviation usually set at 1.96 which corresponds to the 95% confidence level.

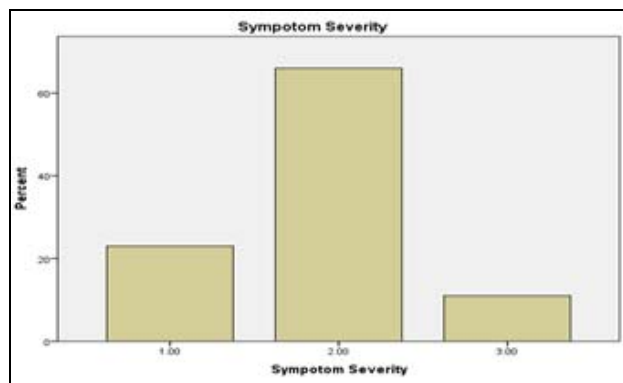
$$n = \frac{(1.96)^2 \times (0.37) \times (1 - 0.37)}{(0.05)^2}$$

$$n = \frac{(3.84) \times (0.37) \times (0.63)}{(0.0025)}$$

$$n = 358$$

Since, an estimated 10% people will be non-respondents an additional margin of 35is taken thus, n=358 +35=393.

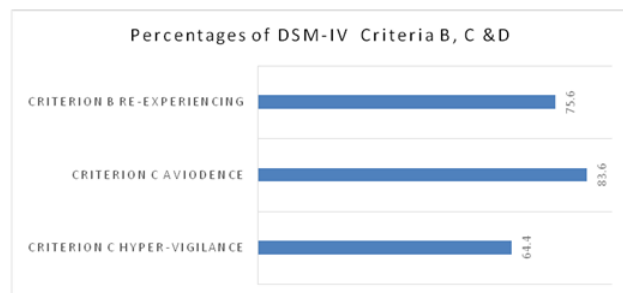
Therefore, the sample size calculated for the study is 393, at a confidence interval of 95% and 5% chance of sample error, with additional 10% increase to cover for the non-response rate.



**Fig. 7:** Severity of Diagnosed PTSD Cases

### Research instrument

This research study conducted utilizing a validated Posttraumatic Symptom Scale Interview (PSSI), based on DSM-IV criteria for PTSD. The instrument utilized with permission from Dr. Edna B. Foa who provided it upon request. The instrument measures 17 variables from three criteria (B, C & D) of DSM-IV. Every scientific research is prone to errors it is the job of good researcher to identify these gaps and take effective measures to overcome them. Validity of the instrument is controlled by a validate PSSI questionnaire for data collection.



**Fig. 8:** Prevalence of Individual DSM-IV Criteria

### Data analysis & discussions

Demographical data collected shows the mean age of the sample population to be 34.1 years, with a standard deviation of 1.2 as represented in the fig. 4:1. The sample consisted of 88% males and 12% females.

Majority of the sample 40% had had ten years of education, matriculation, as shown in fig. 4:2 22% people reported having primary education and 25% had achieved 12 years of education, intermediated, 12% of the sample population were graduates and only 1% had postgraduate education. Thus, the 100% of the population was literate. The criterion B of the DSM-IV consists of five variables. Intrusive thoughts or recollections about the traumatic incident, nightmares or scary dreams of the trauma, flashbacks or reliving of the traumatic experience, getting emotionally upset when reminded of the trauma (e.g. on anniversaries) and physical reactions such as palpitations, sweating or increased heart rate. The fig. 4:3 represents all

these variables and their respective frequencies in the data set.

As represented in the fig. 4:3, 39% of the total respondents still had intrusive thoughts and recollections about the trauma at least 5 or more times per week, whereas 12% of the respondents did not experience this symptom at all. Of all the participants, 24% reported having intrusive thoughts and recollections 2-4 times a week, while 25% people had such thoughts at least once per week. The data presented in fig. 4:3 shows that 18% of the respondents reported having distressing nightmares during sleep more than 5 times in a week, whereas 24% did not experience these at all. While 11% of the participants reported having nightmare about the trauma 2-3time per week, but quarter of the sample 25% reported having nightmares at least once a week, subsequent to trauma exposure. The data presented in fig. 4:3 shows that 34% respondents had flashback of trauma, reliving the traumatic experience all over again 2-3 times per week and 20% had them once per week where as 23% of them had them at least 5 times or more per week. The data presented in fig. 4:3 shows chart shows that maximum of 35% respondents experienced emotional distresses when reminded of the trauma 2-3 times a week, 32% showed it more them five time a week, 24% experienced it at least once a week, whereas only 9 % reported not having any emotions reactions when recalling to trauma. The data presented in fig. 4:3 shows of 31% respondents were able to forget the physical pain of the trauma 23% felt it twice a week, and 29% felt it five times a week minimum of 16% felt it at least once per week. The criterion C of the DSM-IV consists of seven variables, avoidance of thoughts, avoidance of activities and situations related to or reminding about the trauma, trauma induced amnesia, diminished interest in other activities, feelings of detachment restricted range of emotions and a sense of foreshortened future he fig. 4:4 represents them all.

The data presented in fig. 4:3 shows that 37% respondents had trouble avoiding the thoughts associated with the trauma greater than five times a week and 18% had no problems in doing so. The data presented in fig. 4:3 shows that maximum 35% respondents avoided situations and activities related to trauma more than five time a week, 28% avoided them 2-3 time week where as 19% avoided them once per week and minimum of 18 % were not able to avoid them at all. The data presented in fig. 4:3 shows that of 59% of the respondents did not develop trauma-induced amnesia while a minority of 12 % suffered from this condition unable to remember the trauma at all. The data presented in fig. 4:3 shows 11% of respondents diminished their interests in their personal activities after experiencing the trauma where as 36% of respondents encountered no problems in carrying on with their interests. The data presented in fig. 4:3 shows that only 9% of respondents had developed the feeling of detachment after the trauma while 46% did not develop

such feelings. The data presented in fig. 4:3 shows 25% respondents did not restricted their range of affection were as 11% of respondents restricted their affection. The data presented in fig. 4:3 shows 53% respondents said that trauma did not affect their future plans and only 11% respondent's reported having developed a sense of foreshorten future. The criterion D of the DSM-IV consists of five variables, difficulty in falling or staying asleep, irritability or anger outbursts, difficulty concentrating on tasks and increased arousal accompanying exaggerated startle response, the fig. 4:5 represents the analysis of all these variables.

The data presented in fig. 4:5 shows that 51% of respondents did not report any episodes of irritability or anger outburst of anger minimum of 11% had an outburst of anger after the trauma. The data presented in fig. 4:5 shows that maximum of 39% of respondents did not have any difficulty in concentrating and minimum of 15% had difficulty in concentrating. The data presented in fig. 4:5 page 53% of respondents were in a state of hyper-vigilance after exposure to the trauma. The data presented in fig. 4:5 shows that 47% of respondents felt easily startled after experiencing the trauma at least 5 times or more per week and minimum 9% had such responses at least once per week, whereas 18% reported they did not experience such symptoms. Analysis of the data reveals that 80% of the participants suffered from posttraumatic stress disorder (PTSD) and only a minority 20% of the people do not have the disease.

The scoring of PSSI yielded the severity of PTSD symptoms experienced by the individual, range of the severity is in between 0-55 the mean severity of symptoms was 23.91 with a standard deviation of 9.3, the symptom scoring range is divided in to three classes mild (0-17), moderate (18-35) and severe (36-53). The fig. 4:6 on shows the severity of PTSD symptoms, 66% people had of moderate PTSD, 23% had mild PTSD and a minority of 11% had severe PTSD. Severity of PTSD symptoms, 66% people had of moderate PTSD, 23% had mild PTSD and a minority of 11% had severe PTSD.

The fig. 4:8 represents the individual frequencies of three DSM-IV criteria B, C and D, showing that 75.6% people reported having re-experiencing symptoms after the terrorist attacks, 83.6% of the individuals reported having symptoms of avoidance following the trauma while 64.4% of the respondents developed heightened responses and vigilance post to the terrorist attacks.

The results showed no correlation of age, gender and educational status with the development of PTSD. However, the severity of posttraumatic symptoms experienced had positive correlation with development of PTSD. The results of the study show that from the sample of hundred (n=100) survey respondents, 88% were males

and 12% were females and mean age of the sample population was 34.1 years, with a standard deviation of 1.2. Twenty-two percent people reported having primary education while 40% people had attained 10 years of education. Another 25% had received 12 years of education, 12% of the sample population was graduates and only 1% had postgraduate education. Irrespective of the age, gender, occupation or educational status, all had some degree of PTSD and 66% respondents had moderate PTSD while 11% had severe PTSD. After the terrorist attacks 75.6% people had re-experiencing, 83.6% had symptoms of avoidance and 64.4% had heightened responses and hyper-vigilance. The age, gender, occupation and education level did not have any correlation with the development of PTSD.

## CONCLUSIONS

While large-scale terrorist acts frequently result in great many human casualties and corporal devastation, the objective strategy of the aggressors is much more extensive when terrorism strikes communities, in the form of bomb blasts, suicide attacks etc., the resulting experience contrasts from that which is subsequent to natural calamities. Natural disasters expected every so often, and typically affect a certain place during a particular period, thereby facilitating organization of rescue operations such as, supplying food and water, provision of sheltering and arrangement of medical services. Terrorism by distinction occurs suddenly and arbitrarily with regard to place and time, these differences are likely to affect the psychosomatic outcomes amongst individuals exceedingly exposed to terrorist activities. Furthermore, the political, societal, and emotional effects of terrorism are accumulative pervasive, nonspecific, and enduring, affecting great many communities and influencing how the entire nation responds and deals with the impact of such events and how they treat similar threats in the future. Researches of the past decade have established that both the long-term and short-term burden of PTSD associated with terrorism is high. Such terrorist attacks expose the public to extreme violence and gore, severely affecting their mental health making them susceptible to psychological illnesses like PTSD. It is the requirement of the current circumstances to develop resilience factors against PTSD within communities, especially those who are under constant threat of an attack and most exposed to violent aftermaths. Research studies have found religious beliefs, strong interpersonal relations, ample support of family and friends and social support to serve as protective measure against PTSD. Therefore, it is recommend that the people of the community form bonds with themselves, hold community gatherings, share their feelings and help each other to stay optimistic, to overcome the posttraumatic stress and avoid falling into depression or developing other mental illnesses like PTSD. This study evaluated the prevalence

of posttraumatic stress disorder (PTSD) and the severity of PTSD symptoms in survivors, rescuers and witnesses of terrorist attacks on Khyber bazaar, Qissa Khawani bazaar, and All Saints Church in Peshawar city area. PTSD symptoms are measured using Posttraumatic Symptom Scale Interview (PSSI) and conferred to a diagnosis of PTSD at 5 months. Additionally, the severity of PTSD symptoms is determined using PSSI scores, severity ranged from 0-51. The contemporary findings indicate that any person who has witnessed or survived catastrophes of terrorist activities like bomb blast or being exposed to suicide attacks is at risk for developing PTSD, and there is necessity to deliver specialized post-disaster mental health facilities to the people having substantial levels of PTSD after calamities of such great intensity.

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