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Research Article

### SCREENING OF EARTHQUAKE VICTIMS AT RISK OF POSTTRAUMATIC STRESS DISORDER AT MEDICAL CAMP

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**Abstract:**

**Objective:** To screen earthquake victims at risk of Posttraumatic Stress Disorder (PTSD), at 1 month after the event, and to anticipate the service needs at medical camps.

**Methodology:** The design of study was descriptive cross-sectional, conducted at Pakistan Islamic Medical Association Medical Camp, held in Mian Muhammad Bukhsh Academy, Pulmunda, Mirpur, Azad Kashmir, on 20th October, 2019. Earthquake victims who presented at medical camp were selected randomly and screened through face-to-face clinical interviews by medical officers using Trauma Screening Questionnaire (TSQ) modified to relate to the earthquake, using cut-off value of 6. Considering the ethical issues, our study was intended to be kept as close to routine clinical practice as possible. Cross tabulations were used to analyze the variables with bivariate analysis of factors involved.

**Results:** A total of 45 patients were screened, out of which 37 met the inclusion criteria. 6 (16.2%) were males and 31 (83.8%) were females, with the mean age of the sample being 38±16 years. Out of 37, 28 (75.7%) were found to be susceptible to developing Posttraumatic Stress Disorder (PTSD) out of which 3 were males and 25 were females. The mean Trauma Screening Questionnaire score of samples was 6.9±2.0.

**Conclusion:** Evidence of high frequency of susceptibility to developing Posttraumatic Stress Disorder (PTSD) in earthquake victims demands for a system of screening of at-risk individuals at medical camps and their active monitoring and cognitive therapy as required.

**KEYWORDS:** Posttraumatic Stress Disorder, earthquake victims, Trauma Screening Questionnaire

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**INTRODUCTION:**

The lifetime prevalence of Posttraumatic Stress Disorder (PTSD) varies widely across epidemiologic studies, with rates that range from virtually 0% (e.g., Nigeria) to negligible (1.30% 12-month prevalence for subthreshold PTSD in Switzerland) up to approximately 7.4% (in the Netherlands), and as high as 37% in post conflict countries (37.4% in Algeria, 28.4% in Cambodia, 15.8% in Ethiopia, and 17.8% in Gaza) [1]. Variations in prevalence may be largely attributed to deviating risks of exposure to potentially traumatic events and the type of event (e.g., physical assault versus war exposure), to co-occurring depression and anxiety disorders, alcohol and drugs abuse, to socioeconomic differences, but also to differences in study methodology, i.e., differences in definition of Potentially Traumatic Event (PTE), time frame reference (lifetime versus six-month or one-week), assessment strategies for Posttraumatic Stress Disorder (PTSD), and population sampling [1]. The WHO Global Burden of Disease Study estimates that mental and addictive disorders are among the most burdensome in the world [2]. The world mental health survey of twenty-eight countries found a lifetime DSM diagnosis using CIDI (WHO Composite International Diagnostic Interview) among more than one-third of respondents in five countries (Colombia, France, New Zealand, Ukraine, United States). The US world mental health analysis estimated that fully one-third of all the days out of role associated with chronic-recurrent health problems in the US population are due to mental disorders. This amounts to literally billions of days of lost functioning per year in the US population. Despite that, only a small minority of people with seriously impairing mental disorders receive treatment in most countries and that even fewer receive high-quality treatment [3]. Studies of people who experienced devastating loss in major natural disasters consistently document high prevalence of mental illness [4]. In a cohort study, members with high levels of exposure to the earthquakes had rates of mental disorder that were 1.4 (95% CI, 1.1-1.7) times higher than those of cohort members not exposed. This increase was due to increases in the rates of major depression; posttraumatic stress disorder; other anxiety disorders; and nicotine dependence [5].

A study done on days 12 to 19 after Katrina Hurricane, 2005 showed that as much as 62% of the evacuees' sample met Acute Stress Disorder (ASD) threshold criterion. Projections based on the predictive power of ASD to posttraumatic stress disorder (PTSD) suggested that 38% to 49% of the sample will meet Posttraumatic Stress Disorder criteria 2 years post-disaster [6]. Another study on population aged between 8 and 16 years showed overall prevalence rates of 12.4% for PTSD, 13.9%

for depression, and 4.2% for their co-occurrence, at 15<sup>th</sup> month after Sichuan earthquake, 2008 [7]. However, in the study, done 5 months after the worst earthquake hitting Pakistan in 2005, interestingly, Posttraumatic Stress Disorder (PTSD) was conspicuously absent. Most common psychiatric morbidity was Depression followed by Generalized Anxiety Disorder (30 % and 16% respectively) in primary care attendees in affected areas. According to the authors, this might have been due to the fact that they did not use a specific PTSD rating scale because focusing too narrowly on PTSD in the aftermath of disasters may make researchers miss other common mental health presentations [8].

Measures of severity of exposure to disaster-related stressors are among the strongest risk factors for Posttraumatic Stress Disorder (PTSD) in post-disaster surveys [5,9,10]. But epidemiological research has found the rate of exposure to trauma to far outweigh the prevalence of Posttraumatic Stress Disorder (PTSD). Risk factors for the development of psychopathology following trauma exposure fall into three categories: 1) pre-trauma, 2) peri-trauma and 3) post-trauma factors. Pre-trauma factors can include age, gender, race/ethnicity, education, prior psychopathology, and neurobiological factors. Peri-trauma factors can include the duration/severity of trauma experience and the perception that the trauma has ended. Post-trauma factors can include access to needed resources, social support, specific cognitive patterns, and physical activity [11].

Similarly, there are several resilience factors that help coping with stress in an appropriate way. Charney and colleagues have identified six psychosocial factors that promote resilience in individuals: 1) optimism, 2) cognitive flexibility, 3) active coping skills, 4) maintaining a supportive social network, 5) attending to one's physical well-being, and 6) embracing a personal moral compass [12]. Most of the predictor variables exert small to moderate effects, and it is the combination or additive total of risk and resilience factors that informs Posttraumatic Stress Disorder (PTSD) outcomes. This important conclusion emphasizes the necessity for timely and appropriate psychosocial help for disaster victims [12].

Pakistan is a developing country with a large number of people coping with stressful situations even in daily routine. So, pre-trauma risk factors are almost always there, and a natural disaster may result in a catastrophic effect on mental health as there are a wide variety of stressors associated with it, such as community disruption, injury, loss of life, job and property. While attending to their physical needs, keeping in view these psychological aspects is essential but during medical camps, the team of medical specialists usually lacks psychologists so

this aspect is undermined in patient assessment by healthcare professionals. The recent earthquake of 5.8-magnitude in Pakistan occurred on 24<sup>th</sup> of September, 2019. The epicenter was near the city of Mirpur, 5 kilometers north of the city of Jhelum and it left 38 dead, 723 injured and 454 houses damaged [13]. Certainly, this crisis left a lot of people coping with acute stress disorder (ASD) which has the potential to linger on, culminating into post-traumatic stress disorder (PTSD). ASD and PTSD are similar except that ASD typically begins immediately after the trauma and lasts from 3 days to 1 mo, whereas Posttraumatic Stress Disorder (PTSD) lasts for > 1 mo, either as a continuation of ASD or as a separate occurrence that begins up to 6 mo after the trauma [14]. Logistic regression indicates that both a diagnosis of acute stress disorder and high levels of reexperiencing or arousal symptoms made independent contributions to predicting Posttraumatic Stress Disorder (PTSD) [15].

NICE guidelines recommend screening of people involved in a major disaster, refugees and asylum seekers by those responsible for coordinating the disaster plan by routine use of a validated, brief screening instrument for PTSD at 1 month after the disaster. It is also recommended to consider active monitoring for people with subthreshold symptoms of Posttraumatic Stress Disorder (PTSD) within 1 month of a traumatic event, and to arrange follow-up contact to take place within 1 month. Despite no consistent evidence for effective interventions to prevent Posttraumatic Stress Disorder (PTSD) in people with subthreshold Posttraumatic Stress Disorder (PTSD) symptoms within 1 month of a traumatic event, committee made this recommendation because some people develop chronic symptoms if intervention is not provided early. If there is co-occurring depression, it is recommended to usually treat the Posttraumatic Stress Disorder (PTSD) first because the depression will often improve with successful Posttraumatic Stress Disorder (PTSD) treatment. But if depression is severe enough to make psychological treatment of the Posttraumatic Stress Disorder (PTSD) difficult, or there is a risk of the person harming themselves or others, then depression is treated first [16]. Adults with a diagnosis of Posttraumatic Stress Disorder (PTSD) or clinically important symptoms of Posttraumatic Stress Disorder (PTSD) who have presented more than 1 month after a traumatic event, should be offered an individual trauma-focused CBT intervention, which may include cognitive processing therapy, cognitive therapy for Posttraumatic Stress Disorder (PTSD), narrative exposure therapy and prolonged exposure therapy [16]. Bryant *et al* have demonstrated successful treatment of ASD with CBT and its efficacy in preventing chronic Posttraumatic Stress Disorder

(PTSD) [17]. There are many tools for screening and active monitoring of at-risk individuals e.g. Primary Care Posttraumatic Stress Disorder (PTSD) Screen for DSM-5 (PC-PTSD-5), SPAN, SPRINT and Trauma Screening Questionnaire (TSQ) [18]. Screens are to be used to determine possible problems, and only indicate that a patient may have Posttraumatic Stress Disorder (PTSD) or trauma-related problems, so further investigation of trauma symptoms by a mental health professional is warranted for positive cases by follow up assessment with a structured interview for PTSD like Clinician-Administered Posttraumatic Stress Disorder (PTSD) Scale for DSM-5 (CAPS-5), Posttraumatic Stress Disorder (PTSD) Checklist for DSM-5 (PCL-5), Life Events Checklist for DSM-5 (LEC-5), Primary Care Posttraumatic Stress Disorder (PTSD) Screen for DSM-5 (PC-PTSD-5), Posttraumatic Diagnostic Scale for DSM-5 (PDS-5) and Posttraumatic Stress Disorder (PTSD) Symptom Scale - Interview for DSM-5 (PSS-I-5) [19]. Only a trained assessor can distinguish accurately among various symptoms and in the presence of co-occurring disorders. However, behavioral health professionals without specific assessment training can still serve an important role in screening for possible mental disorders using established screening tools [20].

#### **MATERIAL AND METHODS:**

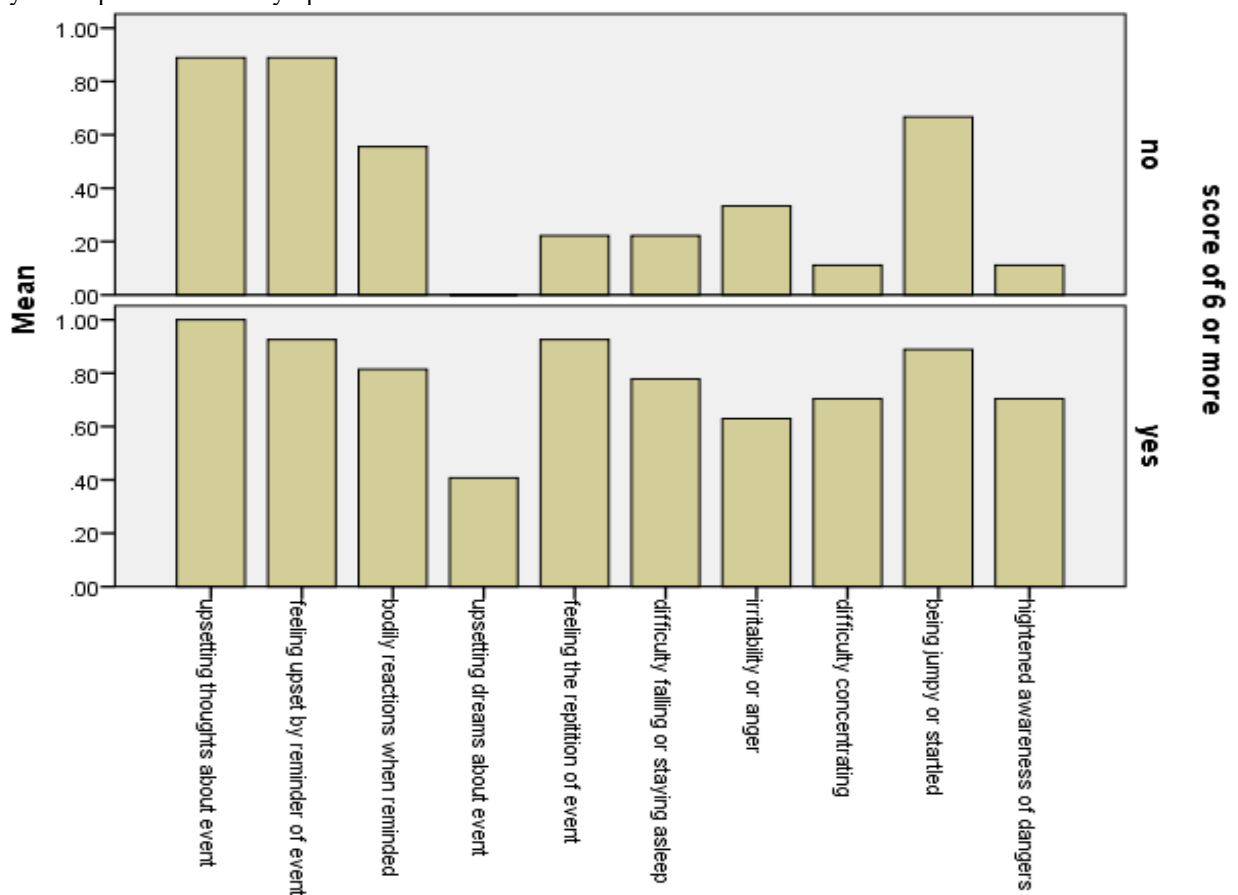
A descriptive cross-sectional study was conducted at Pakistan Islamic Medical Association Medical Camp, held in Mian Muhammad Bukhsh Academy, Pulmanda, Mirpur, Azad Kashmir, on 20th October, 2019, at almost one month of the traumatic event. Earthquake victims who presented at medical camp were selected randomly with implied consent and screened through face-to-face clinical interviews by medical officers using Trauma Screening Questionnaire (TSQ), which is a closed ended questionnaire, translated in Urdu language and modified to relate to the recent earthquake. Trauma Screening Questionnaire was selected because contrary to clinical diagnostic interviews which are relatively time-consuming and resource-intensive, it is considerably shorter and has been used in recent years to assess trauma-related psychopathology in disaster and related settings, and result accuracy is found to be comparable with previous studies [21]. Trauma Screening Questionnaire is a straightforward and easily scored instrument to identify who is progressing well, and who may need additional help. Furthermore, Trauma Screening Questionnaire is a good instrument for predicting the severity of complaints. Used 3-4 weeks after the Potentially Traumatic Event, it consists of ten simple questions about recent symptoms. It contains five re-experiencing and five arousal items from the DSM V Posttraumatic Stress Disorder (PTSD) criteria. Re-experiencing is scored using symptoms

'upsetting thoughts or memories about the event that have come into your mind against your will', 'upsetting dreams about the event', 'acting or feeling as though the event were happening again', 'feeling upset by reminders of the event', and 'bodily reactions (such as fast heartbeat, stomach churning, sweatiness, dizziness) when reminded of the event'. Arousal symptoms are 'difficulty falling or staying asleep', 'irritability or outbursts of anger', 'difficulty concentrating', 'heightened awareness of potential dangers to yourself and others', and 'being jumpy or being startled at something unexpected'. A total of 45 questionnaires were filled, among which 6 questionnaires were later found to be incomplete. Two persons had previously known comorbid psychological condition and were thus excluded. Therefore, the total sample size was reduced to 37 among which one person was also a witness of 2005 earthquake. Participants are asked whether or not they had experienced each symptom at least twice in

the past week. We used the cut-off score of 6 where 94% of the people with Posttraumatic Stress Disorder (PTSD) were identified correctly [22,23]. Statistical Analysis was done using SPSS version 21. The variables were analyzed using Simple Frequency and Contrast Frequency. The subjects were confidentially coded to maintain the confidentiality and anonymity of all persons taken as sample.

### RESULTS:

A total of 45 patients were screened, out of which 37 met the inclusion criteria. 6 (16.2%) were males and 31 (83.8%) were females, with the mean age of the sample being  $38 \pm 16$  years. Out of 37, 28 (75.7%) were found to be susceptible to developing PTSD out of which 3 were males and 25 were females. The mean Trauma Screening Questionnaire score of samples was  $6.9 \pm 2.0$ .



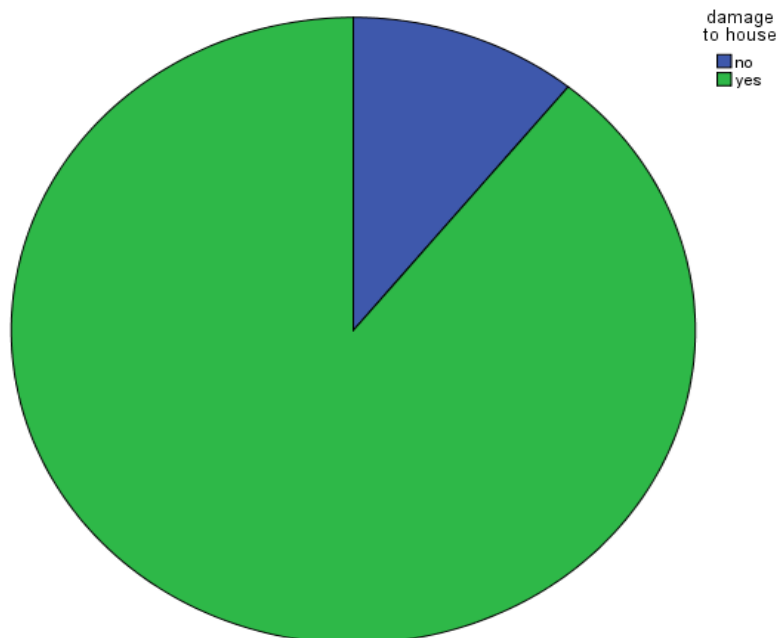
**Fig 1: Frequency of symptoms in relation to TSQ score.**

Upsetting dreams about the event, difficulty concentrating and heightened awareness of dangers were the symptoms expressed most (>95%) among those who scored 6 or more.

**Table 1: Frequency of Risk Sample Population in Relation to Symptoms**

Symptom	Frequency (Percent)	At risk of PTSD (percent)
upsetting thoughts about event	36 (97.3%)	28 (77.8%)
feeling upset by reminder of event	34 (91.9%)	26 (76.5%)
bodily reactions when reminded	28 (75.7%)	23 (82.1%)
upsetting dreams about event	11 (29.7%)	11 (100.0%)
feeling the repetition of event	27 (73.0%)	25 (92.6%)
difficulty falling or staying asleep	23 (85.2%)	21 (91.3%)
irritability or anger	21 (56.6%)	18 (85.7%)
difficulty concentrating	21 (56.6%)	20 (95.2%)
being jumpy or startled	31 (83.8%)	25 (80.6%)
heightened awareness of dangers	21 (56.6%)	20 (95.2%)

The P value calculated by the Pearson Correlation for the variables in the table above came out to be  $< 0.00001$ . The result is significant at  $p < 0.01$ . 33 (89.2%) reported damage to their houses, 3 (8.1%) reported injury to self and 9 (24.3%) reported a family member afflicted with injury during earthquake. Out of these, respectively, 27 (81.8%), 3 (100%), and 8 (88.9%) were susceptible to developing PTSD. The P value comes out to be 1 so the result is not significant at  $p < 0.01$  showing that the extent of stressor exposure is not related to the outcomes in this study.

**Fig 2: Frequency of Damage Houses**

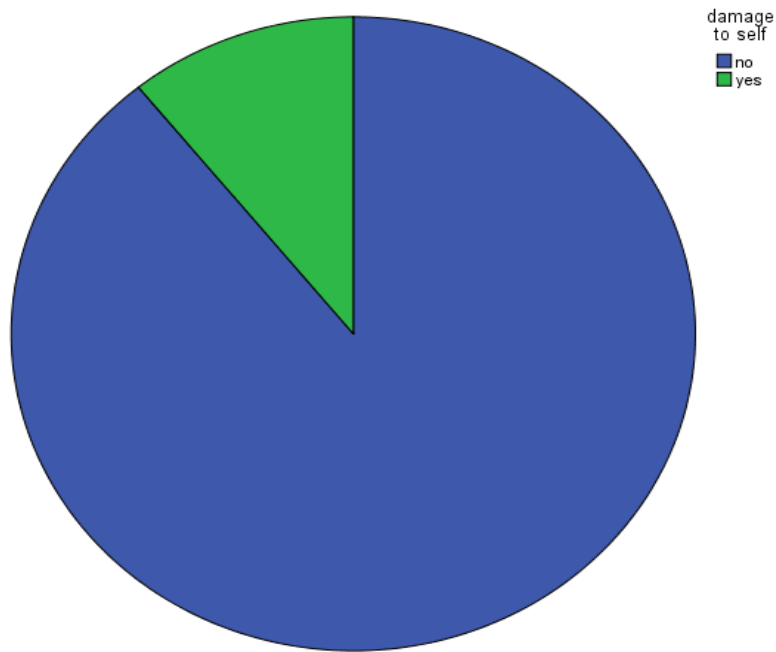


Fig 3: Frequency of Injury Inflicted Sample Population

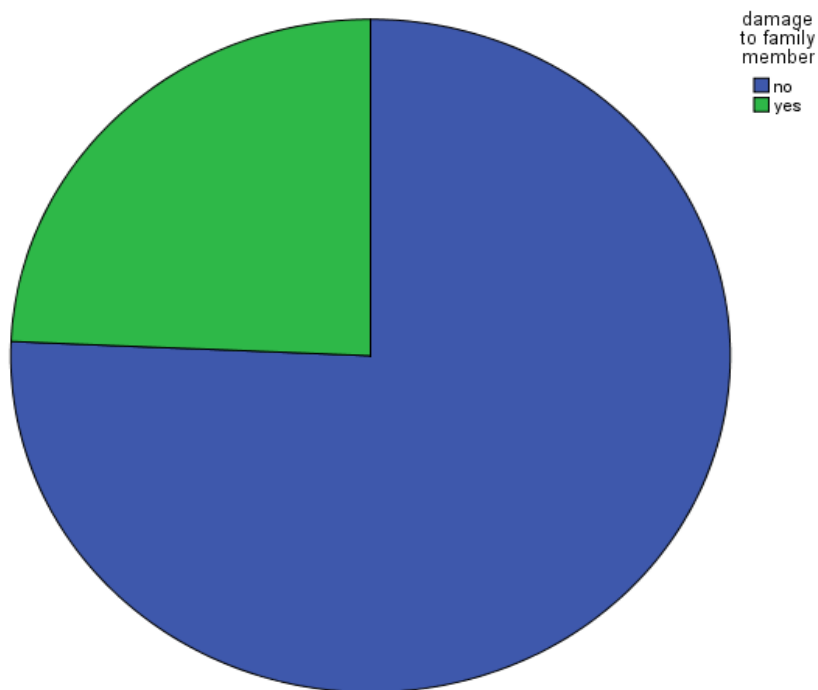


Fig 4: Frequency of Injury to A Family Member of Sample Population

**DISCUSSION:**

A surprisingly high frequency of at-risk individuals identified at the camp shows that the mental health

of earthquake victims is very poor. This could be, in part, due to presence of prior risk factors like lack of social support, interpersonal violence, socioeconomic constraints etc and identifying these associations using more analytical research is crucial. But this study is significant despite its small sample size in terms that it has allowed us to determine the inadequacy of routine medical relief camps in providing emotional first aid to victims of natural disasters. It has highlighted the need for active monitoring of vulnerable individuals presenting at medical camps by healthcare professionals and timely referral to a mental health professional whenever the need. As it is a disaster-focused study held in a medical camp setting, a major limitation was that the sample constituted of patients and did not include the healthy population. Also, no gender or sociodemographic controls were possible, so we cannot exclude the possibility of sampling bias. Although Trauma Screening Questionnaire has proved to be an efficient screening tool in a medical camp setting, limitation of this questionnaire also needs some elaboration. Trauma Screening Questionnaire is highly sensitive (0.94) but low specificity (0.56) results in a significant correlation with depression. As depression is frequently a co-morbid disorder in subjects with Posttraumatic Stress Disorder (PTSD), this finding is not surprising. Furthermore, there is some overlap as two items ('Difficulty falling or staying asleep' and 'Difficulty concentrating') of the Trauma Screening Questionnaire are also symptoms of depression. Thus, it can bias the prevalence rates of Posttraumatic Stress Disorder (PTSD). We could have increased the specificity by taking a cut-off of 7, but at this cut-off value, though specificity increases (0.69), sensitivity decreases (0.87) [23]. This further fortifies the view that a more complete screening by a competent behavioral health professional may be warranted at six or more positive responses. In this study, no follow up survey could be done due to time limitation and financial restraint but we have come to observe that the only viable and sustainable way to address the mental health needs of this affected population is that disaster planning be revolutionized to cater not only to the physical needs of victims but also address the emotional and psychological void. In this regard, it is important that mental health professionals train the local primary care physicians in diagnosing and treating common mental disorders in the short term, and train more local mental health professionals in the long term.

### CONCLUSION:

Evidence of high frequency of individuals susceptible to developing PTSD, observed in this study, calls for more follow up surveys in at-risk populations. This can help healthcare professionals, volunteer organizations and disaster management

authorities to build a more facilitative disaster plan that adheres not just to the physical necessities, but is able to give emotional first aid by introducing a system of screening at-risk individuals and their active monitoring and cognitive therapy as required. Apart from holding an immediate benefit for the community at large, an expansion of psychological assessment and treatment would be a human capital investment not only from a societal perspective but from the employer perspective as well. Government policy-makers should be concerned in this regard as it will create a mental and emotional well-being in the long run, making the people more productive which is the ultimate aim of this study.

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