Mental Health Consequences of Disasters
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Abstract
Disasters (e.g., floods, transportation accidents, hurricanes, earthquakes) are traumatic events that are experienced by many people and may result in a wide range of mental and physical health consequences. Keeping in view the recent earthquake in northern Pakistan that devastated millions physically as well as emotionally, this article is an attempt to raise awareness amongst the primary care physicians regarding the identification as well as the management of affected survivors.

Key words: disaster, survivors, earthquake, mental health.

INTRODUCTION
Disasters are mass traumatic events that involve multiple persons and are frequently accompanied by loss of property and economic hardship on a large scale. Globally, people in less developed countries are more likely to be affected by natural disasters such as earthquakes, hurricanes, and tsunamis. Of the three billion people worldwide who were affected by disasters from 1967 to 1991, about 85% lived in Asia. Although there are reports on the prevalence and physical consequences of such disasters, there is still scarcity of data on the mental health effects of natural disasters especially in developed countries.

QUAKES IN HISTORICAL CONTEXT
The tsunami earthquake in 2004 was the fourth most powerful and devastating earthquake recorded since 1900, with the confirmed death toll of 200,000. The hue and cry, the anguish of the survivors is still audible in one’s memory. Millions were made homeless; thousands were crippled by a giant wave that left a great psychological impact on all the survivors, which could take ages to resolve.

The deadliest earthquakes since 1900 were the Tangshan, China earthquake of 1976, in which at least 255,000 were killed; the earthquake of 1927 in Xining, Qinghai, China (200,000); the Great Kanto earthquake which struck Tokyo in 1923 (143,000); and the Gansu, China, earthquake of 1920 (200,000). The deadliest known earthquake in history occurred in 1556 in Shaanxi, China, with an estimated death toll of 830,000, though figures from that time period may not be reliable.

NORTHERN PAKISTAN EARTHQUAKE
The Kashmir earthquake (also known as the Northern Pakistan earthquake or South Asia earthquake) of 2005 was a major seismological disturbance (earthquake) that occurred at 08:50:38 Pakistan Standard Time (03:50:38 UTC, 09:20:38 India Standard Time, 08:50:38 local time at epicenter) on October 8, 2005 with the epicenter in the Pakistan-administered region of the disputed territory of Kashmir in South Asia. It registered 7.6 on the moment magnitude scale making it a major earthquake similar in intensity to the 1935 Quetta earthquake, the 2001 Gujarat Earthquake, and the 1906 San Francisco earthquake.

The Pakistani government’s official death toll on the eighth of November was of about 87,350. Some estimate that the death toll could reach over 100,000. 1,300 deaths had also been confirmed in India. Pakistani television reported widespread severe damage to Balakot (almost completely wiped out), Garhi Habibullah, Rawalakot, and Muzaffarabad (near the epicenter) where 30,000 were reported to have lost their lives.

Thousands of shelterless women, debilitated elderly, hungry and weeping children were scattered among the rubbles, lying under the open sky, struggling hard to face the chilling breeze and continuously pouring rain showers. According to the United Nations, half of the 73,000 people who died in the 8th October quake were children. Some 18,000 of these victims were students, killed as more than 6,000 buildings collapsed on top of them.

“My house is now like a graveyard. My husband and three children died in the quake. Now there is just me and my six-year-old daughter, Attiya. She is still traumatized, and does not play like ordinary children,” said Zeenat Mehmood, 30. In real terms, this devastating loss translates into villages where there are only a few children, or in some cases, none at all. In many quake villages, each new birth is celebrated with much rejoicing by the entire community. “We have distributed sweets, even though my wife has given birth to a girl. Usually it is only for boys that we celebrate in this fashion. But...
Relief Work
A great deal of humanitarian aid was needed because of the widespread damage to the infrastructure, shortages of food and water, and other basic amenities. Epidemics were of special concern due to the high population density and the climate of the affected areas.

The magnitude of the disaster was so vast that the Government alone couldn’t provide relief to the people affected. The response of the people of Pakistan to help had been overwhelming in the form of cash, material goods, food items, and also blood donations. There were long queues seen in Karachi alone of people coming to donate whatever they could, school children handing over their pocket money, housewives giving food items, men giving their salaries, and there were girls who had donated their dowry to help the affectees. People from all walks of life, irrespective of age, gender, religious or cultural differences were seen in huge numbers alongside the NGOs, government personnel and other rescue workers. These people once again proved that we as a nation stand united in times of crises.

A Year After
A year after the quake, at least 1.8 million people were still living in makeshift shelters and tents, as reported by Oxfam. Other agencies’ estimates are lower, but the numbers still run into hundreds of thousands. Survivors are now facing a second Himalayan winter, which relief workers fear will be harsher than last year. The U.N. refugee agency UNHCR reports of about 36,000 people still residing in 44 official camps, as of September 2006. Pakistan will take at least a decade to fully recover from the disaster, according to Kathleen Craver, the U.N. Global Director for Crisis Prevention and Recovery. Aid experts believe urban populations who lost their homes may have to spend several years in temporary accommodation. Some towns have been so badly damaged they will have to be rebuilt from scratch.

The quake destroyed a quarter of the livestock and a third of the crops not harvested before the disaster. Families also lost seed stocks, tools and fertilizer. Some people’s fields disappeared in landslides or cannot be cultivated because they have huge cracks. Irrigation systems were also damaged or buried.

PSYCHOLOGICAL RESPONSE TO A DISASTER
As for those who had been fortunate enough to have survived the last year’s quake, still face loss, in the shape of physical handicap, material loss, loss of loved ones and most importantly, psychological trauma which was significant.

Everyone has their own way of reacting to disastrous events; it can range from a mere state of disbelief to severe agitation or a sense of disorganization. A person goes through a series of phases when faced with a catastrophe, not everyone may pass through all the phases but generally the following is the emotional response to a disaster:

Impact phase
During the first few days, individuals often feel stunned. In the first week, disbelief, numbness, fear, and possibly confusion to the point of disorganization may occur.

Crisis phase
After the initial impact has been absorbed, individuals can experience a number of feelings. Individuals may alternate between feelings of denial of the event or intrusive thoughts of the disaster with hyper arousal.

They may experience emotional reactions such as shock, daze, anxiety, helplessness, shame, emptiness, anger, irritability, apathy, worry, and social withdrawal associated with cognitive reactions like confusion, disorientation, indecisiveness, or may experience somatic symptoms like fatigue, dizziness, headaches, nausea, difficulty in sleeping, exaggerated startle response, tension, fatigue, irritability, aches and pains, tachycardia, nausea, change in appetite and libido. They may also exhibit interpersonal problems like distrust, conflict, withdrawal, work or school problems, decreased intimacy, domineering demeanor, feelings of rejection or abandonment.

Children may exhibit different behavioral problems like becoming clingy or oppositional. Individuals may be angry with caregivers who fail to...
solve problems or who are unable to respond in a fully organized way in the chaos of the crisis.

Resolution Phase
Grief, guilt, and depression are often prominent during the first year as individuals continue to cope with their losses.

Reconstruction Phase
During this phase, reappraisal, assignment of meaning, and the integration of the event into a new self-concept occur. Time being a great healer, most people get over the different stages of grief and gradually return to their previous level of functioning.

Psychiatric disorders amongst the survivors
Apart from these expected reactions to such a trauma many patients may develop certain psychiatric illness following such a tragedy. Health professionals and aid workers have reported widespread psychological trauma associated with the tsunami victims. Traditional beliefs in many of the affected regions state that a relative of the family must bury the body of the dead. Some psychologists interpret this as evidence of psychological trauma.

The diagnosis of acute stress disorder was introduced in DSM-IV. Like posttraumatic stress disorder (PTSD), acute stress disorder (Table 1) is defined in DSM-IV as a disorder that follows experiencing, witnessing, or being confronted with events involving actual or threatened death, physical injury, or other threats to the physical integrity of the self or others. In addition, to meeting the definition of an appropriate stressor (criterion A), the person's response has to involve intense fear, helplessness, or horror. Whereas PTSD (Table 2) reflects disturbance that has lasted for more than 1 month, acute stress disorder must last for a minimum of 2 days and can only be diagnosed up to 1 month after the stressor. Acute stress disorder also differs from PTSD in being explicitly formulated as a dissociative response to trauma. Thus, a diagnosis of acute stress disorder requires at least three dissociative symptoms (criterion B) but only one symptom from each of the reexperiencing (criterion C), avoidance (criterion D), and arousal (criterion E) categories. Impairment (criterion F) is also necessary and is formulated somewhat differently from that specified for PTSD. At this early stage in the formulation of acute stress disorder, little empirical evidence is available for the specific assumptions incorporated in DSM-IV. In one of the first studies investigating PTSD after a natural disaster; Madakasria and O’Brien found a 59% incidence of PTSD among tornado victims.

Researchers have suggested that PTSD may be as prevalent among victims of natural disasters as among victims of man-made disasters and other traumatic experiences; however, the reported rates varied widely, ranging from 1.5% in the population affected by Hurricane Andrew to 67% in Armenian disasters. In the past decade, posttraumatic stress disorder (PTSD) has been a focus of research in post disaster psychopathology. PTSD has been found to be the most prevalent type of psychiatric morbidity after

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<th>Table 1: DSM-IV Diagnostic Criteria for Acute Stress Disorder.</th>
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<td>2. the person's response involved intense fear, helplessness, or horror</td>
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<td>B. Either while experiencing or after experiencing the distressing event, the individual has three (or more) of the following dissociative symptoms:</td>
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<td>1. a subjective sense of numbing, detachment, or absence of emotional responsiveness</td>
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<td>2. a reduction in awareness of his or her surroundings (e.g., &quot;being in a daze&quot;)</td>
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<td>3. depersonalization</td>
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<td>4. dissociative amnesia (i.e., inability to recall an important aspect of the trauma)</td>
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<td>C. The traumatic event is persistently reexperienced in at least one of the following ways: recurrent images, thoughts, feelings, conversations, activities, places, and people.</td>
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<td>D. Marked avoidance of stimuli that arouse recollections of the trauma (e.g., thoughts, feelings, conversations, activities, places, and people).</td>
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<td>E. Marked symptoms of anxiety or increased arousal (e.g., difficulty sleeping, irritability, poor concentration, hypervigilence, exaggerated startle response, motor restlessness).</td>
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<td>F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning or impairs the individual's ability to pursue some necessary task, such as obtaining necessary assistance or mobilizing personal resources by telling family members about the traumatic experience.</td>
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<tr>
<td>G. The disturbance lasts for a minimum of 2 days and a maximum of 4 weeks and occurs within 4 weeks of the traumatic event.</td>
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<tr>
<td>H. The disturbance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition, is not better accounted for by Brief Psychotic Disorder, and is not merely an exacerbation of a preexisting Axis I or Axis II disorder.</td>
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Some researchers have investigated post earthquake psychopathology in adults but few have addressed the prevalence of earthquake-related PTSD. Symptons of depression are frequently observed among survivors but seem to be more intense in those with PTSD. For example, Holocaust survivors with PTSD report more depressive symptoms than those without PTSD. Vietnam veterans hospitalized for PTSD had higher Hamilton Depression Rating Scale scores than veterans admitted for major depression. Significant correlation between the intensity of early PTSD symptoms and the occurrence of depression 19 months later has been documented in survivors of a marine disaster.

Signs that the disaster survivor needs help
So when is the time to seek help? Following is a list of clinical features which would help a caregiver/health professional in seeking appropriate referrals.

- Task-oriented activities are not being performed. (for e.g. not bathing, grooming etc)
- Task-oriented activity is not goal-directed, organized, or effective. (for e.g. a housewife not being able to look after the house and children as efficiently as she used to previously, or a person not able to perform his regular job duties at work)
- The survivor is overwhelmed by emotion most of the time.
- Emotions cannot be modulated when necessary.
- The survivor inappropriately blames himself or herself, and the self-blame generalizes to the entire self.
- The survivor is isolated and avoids the company of others.

How to help for all the affectees

- Reduce stress by all possible means.
  - Ensure that survivors have a safe environment.
  - Promote contact with loved ones and other sources of support (e.g., religious organizations, counselors, social workers).
  - Support self-esteem. Help the individual to understand that their reaction to the trauma is a normal reaction to an abnormal situation, not a sign of weakness or psychopathology.
  - Help the person focus on immediate needs, such as rest, food, shelter, social supports, or sense of community (some feel cut off and detached).
- Teach and Promote coping strategies. Coping strategies serve to reduce the impact of stressful events, thus attenuating the emotional and somatic responses and making it more possible to maintain normal performance. Coping strategies are of two kinds: problem solving such as seeking help, obtaining information or advice that would help to solve the problem and to make adverse circumstances less stressful. The other kind of coping strategy is emotional modulation which attenuates the response to the stressor, by ventilation of emotions, evaluation of the problem and positive reappraisal of the problem by recognizing that it has led to some good- e.g. that the loss of a job is an opportunity to find a more satisfying occupation.
- Avoid increasing stress.
  - Avoid initiating discussion of issues that cannot be resolved.
  - Avoid abreaction (expression and emotional discharge of a depressed emotion) in groups and the resulting contagion effect.
  - Respect defenses, and do not force reality on persons who cannot handle it yet.
  - Debriefing (gathering information after an event) if may be harmful.
  - Share the experience with persons who want to talk about it, and avoid pressuring those who do not want to talk about it.
- Identify persons at high risk: Screen for physical causes of psychiatric problems (e.g., dehydration, head trauma, infection, metabolic abnormality, toxins).
- Have faith in the normal healing processes.
- Promote support networks.

CONCLUSION
It is important for health care providers to be able to differentiate between people who have normal and abnormal reactions to grief, as most people struck by the tragedy get over the phases of grief and return to their normal life. They do experience intrusive thoughts and hyperarousal but do not have significant functional impairment. These people can be helped by counselling, simple stress relieving strategies and reassurance that these symptoms are part of a normal grief reaction. In addition people exhibiting symptoms of ASD or PTSD and depression, or other psychiatric pathology should be promptly identified and referred to a mental health professional.
Posttraumatic Stress Disorder

A. The person has been exposed to a traumatic event in which both of the following were present:
1. the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others
2. the person's response involved intense fear, helplessness, or horror. Note: In children, this may be expressed instead by disorganized or agitated behavior.

B. The traumatic event is persistently reexperienced in one (or more) of the following ways:
1. recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions. Note: In young children, repetitive play may occur in which themes or aspects of the trauma are expressed.
2. recurrent distressing dreams of the event. Note: In children, there may be frightening dreams without recognizable content.
3. acting or feeling as if if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur on awakening or when intoxicated). Note: In young children, trauma-specific reenactment may occur.
4. intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event
5. physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event

C. Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following:
1. efforts to avoid thoughts, feelings, or conversations associated with the trauma
2. efforts to avoid activities, places, or people that arouse recollections of the trauma
3. inability to recall an important aspect of the trauma
4. markedly diminished interest or participation in significant activities
5. feeling of detachment or estrangement from others
6. restricted range of affect (e.g., unable to have love feelings)
7. sense of a foreshortened future (e.g., does not expect normal life span)

D. Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following:
1. difficulty falling or staying asleep
2. irritability or outbursts of anger
3. difficulty concentrating
4. hypervigilance
5. exaggerated startle response

E. Duration of the disturbance (symptoms in Criteria B, C, and D) is more than 1 month.

F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Table 2: DSM-IV Diagnostic Criteria for Posttraumatic Stress Disorder

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