Psychological Preparedness for Disaster

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Abstract

When disaster strikes, individuals and organizations must not be only logistically ready, but psychologically prepared. This paper discusses how the public and emergency responders can better prepare for the psychological impact of disaster. Topics that are explored include (1) how and why reactions to terrorism and natural disaster differ, (2) the myths and misperceptions of behaviors during a disaster, (3) the psychological responses to disaster, and (4) disaster intervention strategies. It is suggested how these factors may be implemented in emergency plans. Disaster research studies find that accounting for the misperceptions and the psychological aspect of disaster is vital for an effective response and recovery. Implementing the strategies provided may limit the psychological impact of disaster.

KEYWORDS: Psychological, disaster, preparedness, strategies

1. INTRODUCTION

How does one psychologically prepare for disaster? Experts in the field of crisis management have proposed various strategies to help the public better prepare for the psychological consequences of disaster. These strategies are intended to enhance resilience and limit the psychological impact of disaster. However, they are not always incorporated into disaster response initiatives. This impact needs to be factored into emergency plans.

Preparing for and mitigating the emotional effects of disaster may be approached in the following way. First, it is important that emergency planners understand that the reactions to a terrorist attack and natural disaster may differ. Acknowledging these differences and understanding why they exist will allow planners to form realistic expectations about the responses and recovery period of affected individuals and organizations. Second, emergency planners can address the common myths and misperceptions of disaster response behavior; this will promote active participation in psychological preparedness activities. Third, rescue and relief workers can be trained to recognize the early psychological responses to disaster; this will help both the public and responders deal with the immediate trauma of an event, and may help to minimize the long-term effects. (IOM, 2003) Finally, emergency responders and health professionals can use disaster intervention strategies to mitigate the psychological effects of disaster; this will facilitate the recovery of the public and first responders.

For psychological preparedness strategies to be effective there must be better use of mental health resources and improved lines of communication between the public and private sectors. This approach will help the public, first responders, and companies to psychologically prepare for the next 9/11 and other disasters.

1.1 Defining Disaster

Quarantelli (2005) classifies "disaster" into three distinct types: emergencies, disasters, and catastrophes. Each type of "disaster" is qualitatively distinct in terms of the scale of the event, the scope of the damages, the level of preparedness required by the public and government, and the decision making involved in each of the stages of the event. (Harrald, 2005) A catastrophe, for example, would require more resources and logistical support than a disaster or everyday emergency. This implies that some terrorist events may be labeled a disaster, while others a catastrophe.

More importantly however, is that these labels do not take into account people's perceptions and subjective experience of a "disaster." One person's disaster may be another person's catastrophe. For example, a regional flood may be categorized as a disaster, but for someone who has lost most of their property or loved ones, the event may be catastrophic. It is possible then, for a disaster or

small-scale emergency to have a greater psychological impact than a catastrophe. Therefore, it may be more fitting to distinguish between disaster and catastrophe for the purpose of assessing logistical rather than psychological needs.

For the purposes here, the term disaster can be defined by five key characteristics. A disaster 1) involves damage to property, persons, or loss of life; 2) has adverse affects on a large population; 3) is outside the realm of everyday experience; 4) is traumatic enough to cause most people stress, and 5) is time-limited. (Rosenfeld, Caye, Ayalon, & Lahad, 2005) This definition separates disasters from everyday emergencies.

1.2 Terrorism vs. Natural Disasters

Terrorism and natural disasters vary in many ways. They differ in their causation, level of predictability, and in the survivors' appraisal of the event. The differences between these characteristics help explain why terrorist attacks and natural disasters bring about different psychological responses. (Rosenfeld et al., 2005) This section looks at the differences between terrorism and natural disaster, and how they relate to the psychological impact of disaster.

Causation

Terrorist attacks are unlawful, deliberate, sociopolitical acts, carried out through force, violence, or intimidation, by an individual or group. (Bullock, Haddow, Coppola, Ergin, Westerman & Yeletaysi, 2005; DeWolfe, 2004) Moreover, terrorists use terror as a psychological weapon. Natural disasters, however, are asocial events that are caused by the forces of nature. Such events may be exacerbated by human actions, but they are due to error rather than ill intent.

Predictability

While both terrorism and natural disaster may occur suddenly, natural disasters are often more predictable. This is because some natural disasters have a slower onset and occur in known geographical regions and seasons. Moreover, weather forecasting technologies can help predict when and where an event will occur. Because of these tools, the public can be given advance warning, hours and even several days before the event occurs, and can take action accordingly. A terrorist attack, on the other hand, occurs suddenly and without any real warning; terrorist threats are made often, but they can be difficult to authenticate, and may not offer information as to the location and day of the strike.[1]

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[1] One exception is the New York subway terror threat disclosed to the public in a nationally televised announcement on October 7, 2005 by Mayor Michael Bloomberg. The threat, considered as credible by City officials, warned of two dates as possible days for the attack.

Appraisal of Event

Natural disasters are seen as unpreventable events of nature, whereas terrorist attacks are human-caused events, and are therefore seen as preventable. When disasters are seen as preventable, people express outrage and blame the group responsible, and may even "assign blame to the person, group, or organization" that should have worked to prevent the attack. (Rosenfeld et al., 2005, p. 164) Natural disasters however, are often seen as "acts of God," and as a result, anger and blame is often directed towards "agencies and individuals responsible for prevention, mitigation, and disaster relief." (DeWolfe, 2004) Furthermore, terrorist attacks can result in people feeling that social order has been violated. (DeWolfe, 2004) On a more positive note, disasters can bring about a great sense of national unity and pride. Table 1 compares terrorism and natural disasters.

TABLE 1
COMPARISON OF TERRORISM AND NATURAL DISASTERS

Dimension	Terrorism	Natural Disasters

Examples	• Bombing • Bioterrorism
	• Mass shooting • Airplane
	• Hostage Hijacking
	  taking • Kidnapping
	• Arson &
	  Sabotage
		• Hurricane • Volcanic
		• Earthquake eruption
		• Tornado • Wildfire
		• Flood • Drought

Causation	• Include evil human intent, deliberate sociopolitical act, human cruelty, revenge, hate against a group, or mental illness.	• Is an act of nature; severity of impact may be exacerbated or mitigated by human actions.
Predictability Factors	• Event occurs without early warning or specification of a definite target. • Human intelligence is used to determine threat and foresee event.	• Disasters often occur with early warning and in the same geographic areas. • Scientific instruments can be used to predict disaster.
Appraisal of Event	• Event seems incomprehensible and senseless. • Some view as uncontrollable and unpredictable, others view as preventable. • Social order has been violated.	• Expectations defined by disaster type. • Awe expressed about the destructive power of nature. • Disasters with warnings increase sense of predictability and controllability. • Recurring disasters pose ongoing threat.

(Note: Adapted from DeWolfe, 2004)

Most emergency planners neglect to factor these differences in their plans. For an emergency plan to be comprehensive, it should account for these differences. Understanding how these threats differ is an essential aspect of psychological preparedness for disasters.

2. PUBLIC PERCEPTIONS

People form personal definitions about risk based on what they hear, understand, believe, and personalize. (Dynes & Tierney, 1994) This information is then used to make decisions about what actions to take. Therefore, it is important that emergency planners understand and address these perceptions and other common disaster myths. However, many people comfortably believe that disasters are events that happen to others. When people are in denial of certain threats, they can become complacent and less likely to prepare. It is essential that these perceptions be eliminated, "since it is not if, but when" a disaster will occur. (Jones, 2000) Psychological preparedness as a disaster management strategy can only be effective with the public's support and participation.

What types of behaviors can be expected in a disaster situation? It is a common belief that survivors will flee in panic, be incapacitated by fear, or be too disoriented to know what to do—this is not always the case. (Fischer, 1998) Misinformation can cause false expectations about what to expect during a disaster and put a strain on response efforts. The next section explores common myths and misperceptions of disaster response behavior, and how they could be addressed by emergency planners.

Panic Flight

Panic flight refers to the belief that people will panic and behave irrationally in a disaster situation. While this is often the scene in Hollywood films, in reality, it is not very common. (Quarantelli, 1978, as cited in Fisher, 1998) Panic flight behaviors only occur during extraordinary disaster situations, such as evidenced on 9/11 when people trapped in the World Trade Center towers jumped out of windows to their deaths in a desperate attempt to escape. Panic behaviors are not the norm for most disaster situations.

Disaster Shock

It is often believed that during a disaster, people will be too dazed and disoriented to function or know what to do. Due to this misperception, victims are thought to be in need of direction. However, it is quite common for disaster victims to guide themselves and others to safety. Disaster response studies show that survivors are often active in assisting the injured, assessing damages, and initiating search and recovery efforts before emergency workers arrive and take over. (Fischer, 1998)

It is also common for responders to misinterpret the body language of individuals at a disaster site as a sign of disaster shock. (Fischer, 1998) Victims and responders often appear to be disoriented and incapacitated by fear when in fact they may just be exhausted. The rate of disaster shock is, in fact, very low and usually short-lived. (Auf der Heide, 2004)

Evacuation Behavior and Shelter Use

According to Fischer (1998), potential evacuees hesitate to evacuate due to the concern that they may be mauled by people fleeing in panic, or to avoid what they assume to be mass hysteria. However, it has been evidenced that people are quite capable of behaving in an orderly, calm and collected manner in a disaster situation. During a disaster, the major problem is not panic flight, but getting residents to follow evacuation instructions.

Another misperception is that most disaster victims evacuate to public shelters. Due to this belief, people often assume that the shelters are likely to be overcrowded, and therefore, seek other options. Emergency planners should address these concerns and recognize that the majority of citizens do not evacuate to public shelters, but rather, often seek shelter with friends, relatives, or neighbors.

Emergency planners can address the misperceptions of disaster response by educating the public on the facts of disaster response. This could be done by making informational materials available on websites, and public announcements on radio and television.

3. RESPONSES TO DISASTER

The psychological consequences of disaster can manifest immediately or long after the event. Understanding this impact is a significant aspect of psychological preparedness. How we cope can have an impact on disaster response and recovery efforts. Therefore, it is vital that emergency planners understand how psychological health is affected by disaster. The following section will deal with the psychological impact of disaster and the differences between the impact of natural disasters and terrorism.

3.1 Stages of Psychological Response

The psychological impact of a disaster can be conceptualized in three stages: the rescue stage, the inventory stage, and the recovery stage. Throughout these stages, survivors often go through a roller coaster of emotions. In figure 1, DeWolfe (2004) illustrates the dynamics of the emotions survivors often report working through the response process.
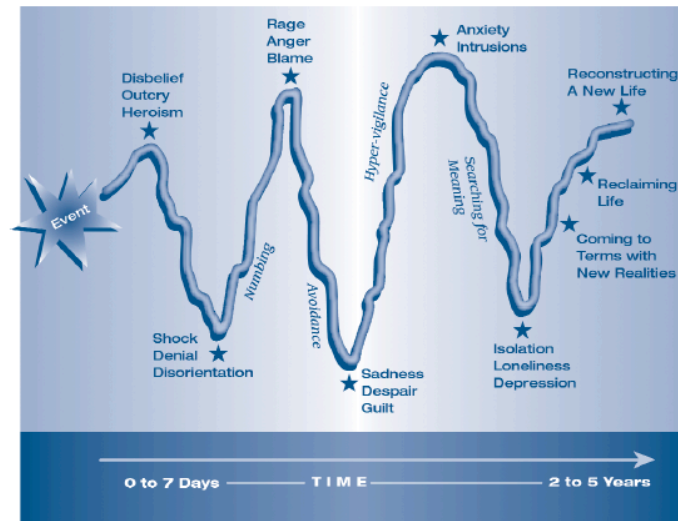
Figure 1: Model of Responses to Trauma and Bereavement.
[Source: DeWolfe]

3.1.1 The Rescue Stage

In the first hours and days following a disaster, search and rescue activities continue as relief efforts become initiated. Relief activities include stabilizing the situation, providing provisions for survivors, and tending to their medical, shelter, and other needs. During this period, survivors may exhibit the following symptoms:

- *Psychological Numbing:* Survivors may seem dazed and confused; exhibit superficial calmness; or feel a sense of unreality, as though the event is not really happening.
- *Heightened Arousal:* Survivors may experience intense feelings of fear, be easily startled, or experience physiological arousal (e.g., heart pounding and muscular tension).
- *Diffuse Anxiety:* Survivors may feel anxiety over separating from their loved ones, or be unable to relax.
- *Survivor Guilt:* Survivors blame themselves or feel shame for having lived when others have not.
- *Conflicts over Nurturance:* Survivors may emotionally distance themselves, feeling that others cannot understand what they have gone through, or that they must keep a "stiff upper lip." (Ehrenreich, 2001)

These are normal responses for survivors. Rescue and relief workers should be briefed on the type of behaviors they may encounter at a disaster scene.

Without prior briefing, rescue workers and caregivers may respond with frustration and withdraw from victims.

3.1.2 The Inventory Stage

For some survivors of a disaster, the trauma continues long after the incident has been "resolved." In the weeks that follow a disaster, victims will assess the reality of their new situation and the lasting consequences. It is during this period that they may begin to exhibit symptoms that are characteristic of Acute and Post-Traumatic Stress Disorder (ASD and PTSD), Generalized Anxiety Disorder (GAD), and Post-Traumatic Depression. Other symptoms that can arise are phobias and obsessive-compulsive behaviors, secondary traumatization, distraction and denial. However, it is important to note that only a minority of victims develop conditions that reach the clinical level for PTSD, Post-Traumatic Depression, and anxiety. (DeWolfe, 2004) The following section deals with the psychopathology that disaster victims may develop.

Acute and Post-Traumatic Stress Disorders

By definition, a traumatic event is the cause of ASD and PTSD. The disorders are essentially the same except that the criteria for ASD describe symptoms that occur within the first 4 weeks subsequent to a traumatic stressor, whereas PTSD includes problems that extend to or begin at least 1 month following the traumatic event, and are longer lasting. The symptoms of ASD and PTSD can manifest in the following forms:

- ***Re-experiencing***: Flashbacks or intrusive images pertaining to the event.
- ***Avoidance***: Marked avoidance of certain places or situations that bring back memories of the event.
- ***Arousal or Anxiety***: Hypervigilance, irritability, exaggerated startle response, and violent outbursts.
- ***Dissociative Symptoms***: Depersonalization, derealization, and dissociative amnesia.
- ***Depression***: Difficulty falling or staying asleep, and difficulty concentrating.
- ***Impairment in Functioning***: Significant impairment in social, occupational, or other sleep problems. (DSM-IV-TR, American Psychiatric Association [APA], 2000)

McFarlane & de Girolamo (1996) found that 20-40% of those who directly experience a terrorist attack are at risk of developing PTSD. (As cited in Pyszynski et al., 2003, p. 125). Of those who cope, 10-30% are at risk for

developing long-lasting psychological disorders. (Stout, 2004) Moreover, people suffering from PTSD often meet the diagnostic criteria for depression, anxiety disorders, or substance abuse. (National Center for Post Traumatic Stress Disorder, 2005)
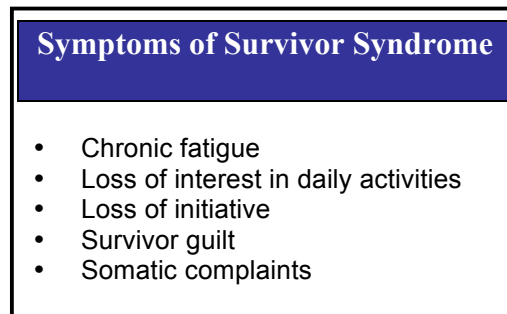
Post-Traumatic Depression
Prolonged depression that occurs following a traumatic event is referred to as Post-Traumatic Depression. This disorder often accompanies PTSD because, as Ehrenreich (2001, p.20) states, a traumatic event can "produce or exacerbate pre-existing depression." The symptoms of Post-Traumatic Depression include sadness, slowness of movement, fatigue or loss of energy, irritability, and difficulties concentrating. Furthermore, traumatic events often remind people of their mortality, which may lead to a cycle of negative thinking or rumination. As a result, sufferers of post traumatic depression may also have a pre-occupation with loss, guilty rumination, feelings of helplessness and hopelessness, social withdrawal, and a diminished or excessive appetite.

Generalized Anxiety Disorder
The symptoms characteristic of GAD include (1) persistent and excessive anxiety and worry, (2) difficulty in controlling the worry, and (3) anxiety and worry that is associated with at least three of the following symptoms: restlessness or feeling on edge, being easily fatigued, difficulty concentrating, irritability, muscle tension, and sleep disturbance. (APA, 2000) Moreover, the symptoms lead to significant distress or impaired social functioning. Additionally, the level of anxiety is higher when the traumatic event cannot be predicted with certainty; this is more often the case for terrorist attacks than it is for natural disasters.

3.1.3 The Reconstruction Stage
In the year or so following the disaster, the focus shifts to maintaining a stable pattern of life. (Ehrenreich, 2001) Survivors may continue to exhibit the symptoms described in the inventory stage. Furthermore, late-appearing symptoms of "survivor syndrome" may begin to appear. Symptoms of "survivor syndrome" include the following:

Symptoms of Survivor Syndrome

- Chronic fatigue
- Loss of interest in daily activities
- Loss of initiative
- Survivor guilt
- Somatic complaints

According to Ehrenreich (2001), the risk of suicide may increase during this stage. Thus, it is vital that survivors have a strong emotional support network (e.g., family members, friends, and the social community) that they can rely on over the long term to help alleviate these symptoms and prevent other maladaptive behavior.

Recovery may differ for survivors of natural disasters and terrorist attacks. Traumatic stress that occurs after a natural disaster usually resolves over 18 months, whereas the psychological trauma from a terrorist attack can last for a longer period of time. (DeWolfe, 2004) However, this is the case when natural disasters result in few serious injuries and fatalities.

4. DISASTER INTERVENTION STRATEGIES

Preparing for the psychological consequences of terrorism and other disasters includes emphasizing and developing new coping skills in individuals and in the community. The best strategy for limiting the responses to traumatic events is to implement preventive disaster-intervention strategies. (Rosenfeld, et al., 2005) Preventive approaches are effective because they can enhance resilience or prevent the responses caused by traumatic events.

The three phases of preventive care that provide the blue-print for disaster-care delivery include primary prevention, secondary prevention, and tertiary prevention. (Rosenfeld et al., 2005) Figure 3 illustrates how the stages of disaster correspond to the phases of preventive care. This section will discuss how these preventive intervention strategies can be employed during the pre-event, event, and post-event stages of a disaster.
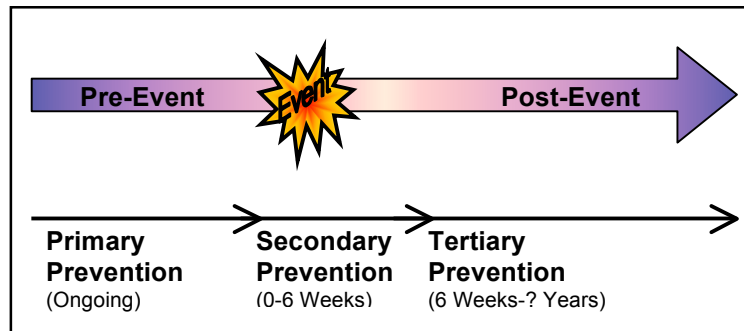
Figure 3: Stages of Disaster and Preventive Care.

4.1 Pre-Event Stage

During the pre-event stage, there is a focus on primary preventive care. Primary care involves cognitive and organizational preparation for a traumatic event, the promotion of mental health, and risk mitigation. (Oltmanns, Emery & Taylor, 2002; Rosenfeld et al., 2005) Primary prevention strategies include the following:

- *Training in psychological first aid*

    Psychological first aid (PFA) training provides people with skills they can use to help limit the psychological consequences of a traumatic event. PFA training comprises the basics of arousal, behavior, and cognition. This training includes learning about the normal psychological responses to disaster, and provides instruction in how to comfort, reassure, and communicate with survivors. (IOM, 2003) The coping skills learned through PFA training may especially benefit first responders, given that they can be required to perform for 48 hours without outside assistance, and may be more susceptible to job burnout. (Bullock et al., 2005; Kahn, 2005) What is more, PFA training can help individuals cope with the stresses of everyday life, or smaller-scale acts of violence. As a national strategy or community program, PFA can be used to help enhance resiliency and as a vehicle for promoting mental health. It would be beneficial for all relevant health care professionals to receive training in disaster mental health.

- *Psychological immunization*

    Psychological immunization or "stress inoculation," refers to interventions that minimize the psychological impact of an impending trauma. (Rosenfeld et al., 2005) The process involves exposure to powerful stressors that arouse the psychological defenses. This form of primary prevention not only simulates traumatic events, but also invokes the "physical, cognitive, and emotional responses" that often accompany them; this process is conducted in times of normal stress, so as to avoid causing actual psychological harm.

(Meichenbaum & Jaremko, 1983, as cited in Rosenfeld et al., 2005, p. 228) Learning to successfully cope with manageable levels of stress helps build the resistance, or "psychological antibodies" needed to enhance resilience and psychological readiness for disasters. (Rosenfeld, 2005) Psychological immunization can take the form of functional simulations such as drills; full-scale simulations which simulate a real-life situation, including simulated victims; and even virtual reality simulations that use a head-mounted display (HMD). Virtual reality simulations, such as ones that use HMDs, make it possible for the user to experience a multitude of disaster scenarios and environments, without the limits of space, physical resources, and the financial cost of running a full-scale simulation.

- *Preparing adaptive employee family crisis plans*
    Employees can focus on business operations and disaster response during an event only when they are assured of the safety and wellbeing of their family and loved ones. (Chandler, 2004) Organizations can address these concerns in their emergency plans by requiring that employees create a family crisis plan that can adapt to changes in a situation. Having a plan can help reduce the stress and confusion of employees and their families during a disaster, and facilitate disaster response.

- *Integrating mental health into public health planning*
    To ensure that the public health infrastructure is better able to address the psychological trauma caused by disaster, there must be an integration of mental health issues into public health planning. This process involves integrating prevention, health care, and promotional needs, into national, state, and local emergency plans. Figure 5 is a model for integration, which indicates areas in which the mental health and public health community may collaborate; they include community health monitoring, health screening and behavioral health intervention, disaster response training (e.g., PFA and simulations), policy development, public health education, and disaster communication. Furthermore, the model includes research activities as a central aspect of health assessment, response assurance, and policy development. These actions can strengthen the public health infrastructure in its capacity to respond to the psychological impact of disaster.

PROPOSED MODEL

Figure 4: A Model for Integrating Mental Health into Public Health Planning. Note: This model combines Gursky's (2004) proposed model for medical and health support services, health security, and the current health model, with psychological intervention strategies.

- *Preparing information materials for the public and media.*

    It is important that the public feel they are an active participant in preparedness. This can be done by providing the public with basic preparedness information on what to expect and actions they can take to protect themselves in the event of a disaster. Moreover, explanations as to why these strategies were chosen should also be included. Preparedness information can be made available on websites; in newspapers; and through television reports and advertisements, radio announcements, and information hotlines. Furthermore, emergency planners can prepare information materials for the media, as they are an effective vehicle for disseminating information to the public.

4.2 Event Stage

During the event stage (also known as the response stage), there is a focus on secondary preventive care. Secondary care occurs during and immediately after a disaster, and involves implementing the planning strategies discussed for the previous stage. The first six weeks following a disaster are critical for secondary preventive intervention. (Rosenfeld et al., 2005) Secondary prevention strategies include the following:

- *Triage*

   The triage process links those who are distressed or "demonstrate a disturbed mental state, cognitive impairment, or behavioral disturbance" to emergency or mental health care professionals. (New South Wales Health, 2000, p. 58) Individuals receive supportive counseling, reassurance, or specific treatment to alleviate and limit the psychological impact of the traumatic event.

- *Implementing psychological first aid.*

   During this stage, the affected population uses the PFA skills learned and information provided during the pre-event stage. (IOM, 2003) PFA can be implemented by those directly affected by the disaster and other disaster-affected individuals.

- *Distributing appropriate information.*

   The public is provided with information that will facilitate their immediate safety and ease feelings of frustration and helplessness. (IOM, 2003) Informational materials may contain information such as evacuation route maps and steps to help contain agents. The media can disseminate this information on the radio, television, internet, and by way of cell phone text-messages; this could be done in cooperation with cellular service providers. Furthermore, this information should communicate risk, proposed response, and most importantly, be actionable; this will help survivors recover a sense of control following the event.

4.3 Post-Event Stage

During the post-event stage (also known as the recovery stage), there is a focus on tertiary preventive care. The aims of tertiary prevention are to minimize the emotional suffering and enhance better long-range coping. (Rosenfeld, 2005) Tertiary prevention strategies include the following:

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│              Post-Disaster Interventions              │
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│                                                       │
│   •   Continuing psychological first aid.             │
│   •   Screening of psychological symptoms.            │
│   •   Treating for acute and long-term effects of     │
│       trauma.                                         │
│   •   Restoring normalcy.                             │
│   •   Therapy or Counseling.                          │
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Post-event interventions for the community include promoting family and community cohesion and support, being familiar with the warning signs that indicate a person needs help, limiting secondary exposure by avoiding images of the attack or disaster, and emphasizing the positive. (IOM, 2003) These strategies limit the psychological impact of disaster, help survivors recover faster, and boost resilience.

The employee assistance programs (EAPs) offer counselors to employees and first responders to help "address workplace fears." (Alexander & Alexander, 2002, p.133) EAPs include the involvement of priests, rabbis, and psychologists in the community. They are able to debrief and counsel disaster survivors, and help them to cope with bereavement over the long term. Prior to September 11, Arlington County established EAPs which operated on site within 3 hours of the Pentagon attack, and continued to benefit first responders and their families in the weeks following the attack. (Bullock et al., 2005)

5. CONCLUSION

When disaster strikes, individuals, companies, and responders should not only be logistically ready, but psychologically prepared. How well one psychologically prepares for an event can have a bearing on the success of response and recovery efforts. Therefore, it is vital that psychological preparedness be factored into emergency plans.

The strategies that have been provided, such as PFA, can make the public and responders more resilient in the face of everyday crises, and better able to deal with the psychological impact of disaster. In addition, the misperceptions of disaster have to be countered by educating the public on the facts of disaster. By clearing up these misperceptions, individuals can make informed decisions in the event of a disaster. This in turn will facilitate evacuation and response.

Moreover, emergency response organizations should consider training rescue and relief workers' in PFA. This training can benefit disaster survivors and responders by helping them to cope with the immediate psychological effects, and to get them into the mental and public health system if needed. An early

response of this type may also mitigate the long-term psychological effects of a disaster.

Finally, it is important that emergency planners include the mental health issues in the planning process. This requires better coordination of public health agencies and services, and increased funding of public healthcare programs that address mental health needs. Increased communication between researchers and emergency response and relief workers will give researchers the opportunity share new findings with practitioners, and for practitioners to relate field experience and provide new directions for further research. (Fischer, 1998) Implementing these actions will help prepare individuals, organizations, and responders psychologically for disaster.

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