Are We Prepared to Handle the Mental Health Consequences of Terrorism?

Research examining the psychological consequences of the 1995 Oklahoma City bombing and the terrorist attacks on September 11, 2001, has found relatively high rates of posttraumatic stress disorder (PTSD) in individuals closest to and directly impacted by the attacks (e.g., 37% of survivors who were in the Word Trade Center towers at the time of the attack [1] and 34% of direct blast survivors of the Oklahoma City bombing [2]). Population-based estimates have suggested that 1 month after 9/11, 15% of directly affected and 5% of non-directly affected adult New Yorkers probably met diagnostic criteria (1) but that victims displayed a relatively rapid decline in symptom severity, with prevalence rates of 0.6% and 4.7% for PTSD and subsyndromal PTSD, respectively, 6 months after 9/11. Although these incidence rates may seem surprisingly low, extrapolated to population sizes, they suggest that 91,000 New Yorkers probably met diagnostic criteria for PTSD and 322,000 met subsyndromal levels during the months following 9/11 (1). Thus, a significant number of terrorism victims develop clinically significant levels of posttraumatic distress and impairment in functioning. However, the good news is that the vast majority of those exposed to terrorism either display remarkable resiliency or quickly recover.

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Terrorist attacks also take a toll on the mental health of individuals not directly affected by the attack. With today's constant, up-to-the-minute television and Internet news, susceptible individuals in places remote from the actual event can develop substantial symptoms of distress. Within days of 9/11, 44% of a nationally representative sample of Americans reported being bothered by at least one symptom of PTSD (3), and 4% of a Web-based national sample met probable PTSD diagnostic criteria 1–2 months after the attacks (4); both studies found that the number of hours spent viewing television news of the attacks was associated with severity of PTSD symptoms. Approximately one-third of New Yorkers who developed probable PTSD after 9/11 were not directly exposed to the attacks (1). Symptom reporting in non-directly exposed individuals appears to decline as fast as or faster than that of direct victims, so that by 4 months after 9/11, about 1% of non-directly exposed individuals met probable PTSD criteria and less than 3% met subsyndromal criteria (1).

Despite high levels of resiliency and relatively fast recovery in terrorism victims with respect to psychological symptom reporting, the findings of Tucker and colleagues in this issue of the *Journal* suggest that heightened autonomic reactivity to trauma reminders may persist for many years in highly exposed survivors. Approximately 7 years after the Oklahoma City bombing, survivors and age- and gender-matched comparison subjects did not differ in self-reported depressive symptoms but did differ in PTSD symptoms. Mean symptom reporting was below levels considered clinically relevant, although 15% of the survivors and only 2% of comparison subjects met diagnostic criteria for PTSD. Although on average, victims reported rarely experiencing PTSD symptoms, a number of differences in autonomic activity were noted between groups. Survivors had a significantly higher mean baseline heart rate than comparison subjects as well as larger

increases in heart rate and blood pressure levels in response to an interview about the bombing. These results are consistent with other findings of elevated sympathetic activity despite no or subclinical levels of stress reporting in trauma victims (5) and suggest that physiological alterations may persist long after resolution of psychological symptoms. However, additional research is needed to determine whether persistent heightened arousal and reactivity in terrorism victims reflect pathological responses or simply adaptive hyperarousal and vigilance to the threat of terrorist activity (6).

Perhaps the most striking aspect of Tucker and colleagues' findings is the higher mean baseline heart rates among bombing survivors than among matched comparison subjects, which is suggestive of persistent basal hyperactivity. Whereas initial physiological hyperarousal or persistent reactivity to traumatic reminders may be adaptive soon after a traumatic event or during similar threats, a stronger argument can be made that the persistence of these responses for years after the event may have a consequent impact on the cardiovascular system and health.

Research on the impact of terrorism on the mental health of Americans has highlighted a number of issues in desperate need of further research (see reference 7). Although terrorist attacks can have a wide reach, with substantial numbers of directly and non-directly exposed victims, the proportion of victims who develop psychopathology after a terrorist attack is quite low, and it is unclear how to effectively target those who are most likely to develop persisting posttraumatic symptoms. Additional research is needed to identify risk factors for persistent posttraumatic distress as well as to determine the point at which possibly adaptive acute phase response becomes maladaptive and suggestive of psychopathology. Better identification of at-risk individuals (both directly exposed and non-directly exposed) will aid in the efficient provision of limited resources.

There appears to be little consensus on the most appropriate way to effectively respond to mass-casualty terrorist attacks from a mental health perspective. Not enough research has been done to allow the development of established recommendations of empirically supported therapies that can be administered soon after a trauma. After 9/11, well-intentioned therapists and mental health providers sought ways in which they could help. However, most were inadequately trained to deal with mental health issues that might arise in the wake of terrorism-related trauma, and the number of affected individuals greatly surpassed the availability of mental health professionals. Little is known about what type of intervention, if any, should be offered to trauma victims during the acute phase of responding to a traumatic event. The once popular critical incident stress debriefing has been found to be ineffective in preventing PTSD, and in some cases it is detrimental (see reference 8 for a review). Given that the majority of victims of terrorist attacks display resilience or recover quickly, the best first line of defense may be watchful waiting in the days following the event, along with the provision of psychological first aid (9). Approximately 2 weeks after the trauma, cognitive behavior interventions have been found to be superior to supportive counseling in preventing PTSD in victims who meet acute stress disorder criteria (10). Currently, secondary pharmacological trials are being conducted to examine the extent to which various medications administered soon after exposure may buffer the development of PTSD symptoms; however, more research is needed to examine the efficacy and appropriate timing of novel early interventions.

Terrorism significantly and persistently affects a small percentage of both directly and non-directly exposed individuals. Despite relative mental health resilience and fast recovery, heightened autonomic arousal and reactivity in victims of terrorism may persist for years after the event. However, our knowledge of how best to identify at-risk victims and how and when to intervene to reduce or prevent the development of posttraumatic psychopathology is limited. More research is needed to inform public health policy and to guide efficient identification and treatment efforts following terrorist attacks.

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