Mental Health Consequences of Chemical and Radiologic Emergencies

A Systematic Review

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KEYWORDS

• Mental health • Disasters • Psychological impacts • Somatic symptoms • Psychosocial interventions

KEY POINTS

- Mental health assessments should focus on identifying the spectrum of problems ranging from moderate distress to acute psychiatric illness in disaster-affected groups.
- Clinical mental health assessment following technological disasters is resource intensive; therefore, it is necessary to keep screening methods uncomplicated and broad based.
- Minimally, assessments should cover the individual's disaster experience, a brief mental status examination, and history of preexisting disorders, and other trauma exposures/stressors.
- Triage should identify those who need immediate linkage to formal mental health intervention, treatment, or care.
- Informal psychosocial community interactions should not be used in place of formal treatment of those who are at risk of developing more serious psychological illnesses.

INTRODUCTION

A disaster can be defined as any event that causes substantial loss of life, physical damage, or widespread change in the environment and leads to economic, political, and social consequences.[1–3] The United Nations expands the definition to include the inability of the affected community to cope with the aftermath.[1] Researchers differentiate disasters into two distinct categories: natural versus technological or man-made. Natural disasters are caused by naturally occurring events, such as hurricanes,

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earthquakes, or tsunamis. Technological disasters, however, are the result of man-made processes, triggered by human error or accidents. Examples include oil spills, releases of radioactive isotopes, and chemical spills.

Although disasters can have considerable impact on physical wellness, property, and economics, they also can have significant and far-reaching psychosocial impacts. The primary focus of most disaster responses generally concentrates on physical damage, whereas emotional and psychological effects in the affected population are often overlooked.[4] An increase in symptoms of psychological distress and psychiatric illness, including substance abuse and domestic violence, tends to follow most major natural and technological disasters. Examples of specific disasters where increased symptoms were documented include Hurricane Katrina, the 2004 Indian Ocean tsunami, the Deepwater Horizon oil spill in the Gulf of Mexico, and the September 11, 2001 terrorist attacks.[4–6] Even though the increase in psychological distress and psychiatric symptomatology in the aftermath of disasters has been well documented, the consequences of these increases have not received extensive emergency planning consideration in the United States. This is despite a consensus among most experts that disasters result in a substantial psychological burden for those affected[1,7–9] and that early behavioral health interventions should be routinely incorporated into the response to disasters.[4,10] For instance, the 2006 Chernobyl Forum Report evaluating the effects of the Chernobyl nuclear disaster concluded that mental health was the most common public health problem unleashed by the accident, with issues including depression, anxiety, posttraumatic stress disorder, medically unexplained somatic symptoms, and stigma.[1,11,12]

Although attention has been given to the mental health effects of natural disasters,[13] there is a more limited, albeit growing, literature on the mental health effects of technological disasters, specifically those resulting from chemical and radiologic releases. This article provides a comprehensive review of the literature on the immediate psychological and mental health consequences that emergency department physicians and first responders may encounter in the aftermath of a technological disaster. A disaster does not need to be as severe as those of Bhopal or Fukushima to result in a significantly large, affected population. First responders and first receivers can see a wide spectrum of psychological distress, including acute onset of psychiatric disorders, the exacerbation of existing psychological and psychiatric conditions, and widespread symptomatology even in the absence of a diagnosable disorder. Furthermore, the informal community support systems that may exist after a natural disaster may not be available to communities affected by a technological disaster, leading to a need for more formal mental health supportive services.[2,14]

Estimates suggest that much of the population of the United States will be exposed to a natural or technological disaster in their lifetime. The immediate and lasting trauma from these disasters has underlined the need for not only an effective community response to immediate physical effects, but also mental health effects.[10,15] The importance of integrating mental health into disaster preparedness response plans has become more recognized since the September 11, 2001 terrorist attacks and the Fukushima Daiichi nuclear power plant accident.[16–18] Recent advances in the recognition and understanding of the mental health consequences of disasters have led to advancements in individual treatment options, population-based approaches, and public health intervention strategies for disaster-affected communities.[19] However, most of the literature has historically focused on the mental health consequences after natural disasters as opposed to technological disasters, such as chemical or radiologic releases, resulting in general guidelines developed to help prepare for and respond to most disasters in a homogenized all-hazard fashion. This is despite that