Abstract:
Emergency health care providers are often the first to respond to the needs of children after a disaster. Although there has been an increase in research related to the impact of disasters, including terrorist events, on children's mental health, physicians continue to cite a need for additional information and training on the topic. This article provides an overview of recent literature on disasters and mental health, covering children's stress reactions, mental health problems that may arise, and risk factors that affect these reactions. Practical guidance for pediatric emergency health care providers is emphasized, including psychological first aid, recommendations for screening questions to facilitate mental health triage, and an overview of effective mental health interventions. It concludes with a discussion of the impact of providing care in the aftermath of a disaster on the health care professional.

Keywords:
disaster; children; emergency health care; mental health; posttraumatic stress disorder

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Addressing Disaster Mental Health Needs of Children: Practical Guidance for Pediatric Emergency Health Care Providers

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Emergency health care providers are often the first to respond to the needs of children after a disaster, and effective services hinge on their abilities to provide for the physical and mental health concerns of patients.[1] However, recent surveys of physicians found approximately three quarters of respondents felt unprepared to respond to a bioterrorist event and its overall aftermath, including mental health concerns.[2] A survey of providers in the aftermath of Katrina found that most health care respondents wanted

increased help in identifying and meeting mental health needs of their patients.[3]

For the past decade, in response to terrorist events such as the attacks on September 11, 2001, and major natural disasters both in the United States and worldwide, there has been an increase in research examining the mental health impact of disasters and large-scale traumas on children.[4] This is critical as a recent Institute of Medicine report[5] concluded that children are among those with the highest risk for psychological trauma, including significant behavioral difficulties, after a disaster. One of the largest studies of children after disaster was conducted by Hoven and colleagues[6] approximately 6 months after the terrorist attacks of September 11, 2001, in New York City. They surveyed anonymously more than 8200 children attending grades 4 to 12 in New York City public schools. Among other variables, they obtained children's self-reports of current mental health problems and self-reported impairment in functioning (such as not being able to do usual activities, having parents or teachers often upset with them, having unexplained problems with school work). Children were felt to have a "probable psychiatric disorder" only if they reported symptoms consistent with diagnostic criteria and also reported impairment in functioning; as such, the prevalence estimates for probable disorders were felt to be conservative. Despite this, they found that 10.6% of the children qualified for probable posttraumatic stress disorder (PTSD); other disorders were also at least 2 times higher than rates in other US communities surveyed before September 11, 2001, as follows: agoraphobia, 14.8%; separation anxiety, 12.3%; conduct disorder, 12.8%; and depression, 8.1%. In other research, psychosomatic complaints were associated with PTSD symptoms.[7] As with previous research,[8,9] exposure was related to child anxiety and depression. Other risk factors for mental health problems reported in other studies include loss of a family member and living with a parent with significant posttraumatic stress reactions.[6,10] The association between parental stress reactions and their children's stress reactions tends to increase over time.[10] Galea and colleagues[11] also investigated children's outcomes after the terrorist attacks. Parents in their sample reported children having problems with attention and concentration (40%), being unhappy/sad/depressed (31%), and having difficulties getting along with others (21%). In general, though, parents generally underestimate their children's reactions to a disaster.[12]

Research after Hurricane Katrina, which devastated the Gulf Coast region in 2005, further supported and advanced the knowledge about the impact of disasters on children. Marital stress, presence of domestic violence, and parental mental health problems were found to increase after the disaster; when these issues are present, it becomes harder for children to maintain a sense of safety and feelings of connectedness to others.[9,13] Post-Katrina, Scheeringa and Zeanah[14] found that mental health problems in preschool children were significantly correlated with new mental health problems in their caregivers and a similar relationship was found between maternal psychological distress and problems in their school-aged children.[15] It has been hypothesized that the overall parental distress and impairment in parental functioning significantly contributes to the development of mental health problems in children.[16]

Although reactions of children are significant postdisaster, children are not likely to be brought for mental health treatment.[17] Unfortunately, without treatment, posttraumatic stress reactions generally persist at a significant level over time.[18] For example, 3 months after Hurricane Andrew, 30% of children met criteria for PTSD; 13% continued to meet criteria at 10 months posthurricane.[18] In the aftermath of a cruise ship accident, 52% of surviving children developed PTSD at some point in the 8 years of follow-up studies,[19] with most developing PTSD within 6 months of the disaster. Approximately 33% of children who developed PTSD continued to exhibit symptoms even 5 years later. Agashe[20] found that sleep disturbances persisted 18 months after an earthquake in India, and Vijayakumar et al[21] found significant anxiety and somatic complaints in children 1 year after the tsunami in Southeast Asia in 2004.

Although direct exposure is one of the primary risk factors associated with the development of mental health concerns after a disaster,[22] there is growing evidence that even those children not physically present can also be significantly impacted. Findings after the bombing in Oklahoma City as well as post-9/11 indicated that increased media exposure to the disaster was correlated with increased posttraumatic stress reactions.[23-26] Lengua and colleagues[27] examined children in Washington state after the terrorist attacks of September 11, 2001. Worries were significant (77% worried about the attacks; 55% worried about safety of self, family, and friends; 33% worried about future attacks), and 8% of those without any direct exposure met criteria for PTSD. Given these data, health care providers in communities far removed from a disaster will need to assess mental health reactions in children in the face of any national or regional disaster.

Skill in supporting children and families who are having emotional and psychological difficulties related to emergent medical needs and the associated evaluation and treatment is something of high value in the everyday clinical practice of emergency health care providers. Unfortunately, many emergency care professionals have limited training and experience in pediatric patient assessment, recognition of clinical problems, and initiation of appropriate treatment in response to physical and mental health needs of children in the aftermath of a disaster.[1] Efforts toward increasing the knowledge base about children's mental health and disaster readiness as well as training in understanding and meeting the needs of children is critical.[3,4] Those providers who appreciate the impact of stress on children and their families and are skilled in offering effective strategies to promote adjustment and coping of their patients and their families on a day-to-day basis will be best prepared to meet the more challenging needs that will present in the aftermath of a major disaster.

Physicians are often perceived as addressing the physical needs of patients. However, the distinction between physical health and mental health is, in many ways, a false dichotomy. The biopsychosocial model underlines the interrelatedness of these 2 areas. Within an emergency medicine setting, psychological distress often presents with somatic complaints such as disorientation, confusion, tachycardia, tachypnea, or complaints of pain that suggest serious physical conditions.[7,28] This may be particularly relevant in young children whose parents provide the medical report leading to disaster somatization by proxy (endorsing physical complaints for their very young children after a disaster).[4] These young children are thought to be a particularly high-risk group for mental health concerns after disaster.[15] Unfortunately, using the Diagnostic and Statistical Manual of Mental Disorders — IV — Text Revision criteria[29] for PTSD, young children with significant concerns may be missed. Using alternative criteria,[30,31] in a study of preschool children post-Katrina, 50% were found to have PTSD as opposed to 15% when traditional criteria were used.[14] In most cases, PTSD was found to be comorbid with at least 1 of 4 other disorders (attention-deficit/hyperactivity disorder, major depressive disorder, separation anxiety disorder, and oppositional defiant disorder). Even when symptoms may emanate from physical etiologies, psychological distress may worsen or alter the symptoms and complicate medical evaluation and treatment. When children and their families are under stress, they have more difficulty providing accurate information and are less apt to cooperate with the treatment prescribed. An agitated child, or adult family member, may refuse necessary treatment or otherwise disrupt care being delivered to others in the emergency department.[32,33]

PRACTICAL ASSISTANCE

In the aftermath of a disaster, pediatric emergency health care providers will need to be able to provide psychological first aid to children and their families, conduct a brief assessment for the presence of adjustment problems and risk factors for difficulties with adjustment, and provide rapid and effective triage for mental health concerns. Preparedness efforts should also focus on identifying systems of care that are suited to hospital settings for the screening and management of emotional and psychological problems in the aftermath of a major community event. Indeed, addressing mental health concerns should be a part of all phases of preparedness planning—preparedness, response, and recovery—especially when children are involved.[3]

PSYCHOLOGICAL FIRST AID

The American Red Cross defines *psychological first aid* (PFA) as "the practice of recognizing and responding to people who need help because they are feeling stress, resulting from the disaster situations within which they find themselves".[34] Psychological first aid is practical assistance that includes offering emotional support, providing information and education, encouraging the practice of positive coping, and recognizing when more help is needed and helping individuals to get this extra help. Whether initial contact with victims of a disaster is out in the field or in an emergency department setting, health care providers have the potential to provide psychoeducation and supportive services that can foster normative coping and accelerate the natural adjustment and healing process for children and their families. Emotional support can be enhanced when those providing the support convey a sense that they are in control and present themselves with an air of confidence about handling the current situation. They should respond to families in a gentle, compassionate, and supportive manner. Children and families can sense when health care professionals are panicked or anxious and may, in turn, become more anxious. In sum, everyone who interacts with children and their families, whether they be professional or support staff, have the opportunity to be a source of support;

if ill informed or poorly prepared, they may become a source of further distress.[35]

In the aftermath of a disaster, families will seek information from trusted sources, often the health care provider. This PFA step of being a conduit of information includes providing clear, simple, direct, and honest explanations in a developmentally appropriate manner about the nature of the disaster and what is being done to help those impacted. The focus should be on providing information that is relevant to the individual; graphic details are unnecessary and may be sensitizing and, therefore, should be avoided. Often, it is best to begin by asking children what they have already heard or come to understand. After being given a brief explanation of the basic facts, children can be invited to ask questions for further information or clarification. Young children, as well as even older children and adults in a crisis setting, may be confused about even the basic facts and experience difficulty attending to and understanding explanations given and accepting the realities inherent in the disaster. Therefore, the information may need to be repeated several times with the provider listening for and gently correcting misinformation, misperceptions, and misattributions. Efforts should be made to create a safe environment where children feel comfortable expressing their fears and worries and asking their questions. The creation of a dedicated area for pediatric care that can address the physical needs of children and families as well as their mental health and behavioral needs without exposure to disaster reminders is recommended, particularly if decontamination is required as part of treatment.[36]

The following are some practical suggestions on how to keep children physically and psychologically as safe as possible.[33]

- Avoid unnecessary exposure to frightening images or sounds (eg, remove or turn off televisions in treatment spaces and waiting rooms and close doors and curtains to minimize exposure to others who are wounded or having pain; be conscious that children often overhear adult conversations and even very young children can sense when people are upset or talking about troubling news).
- Allow parents or other caring adults to stay with children whenever possible (eg, assign volunteers who can provide consistent support to injured children if other family members are not available).
- Minimize the use of painful or invasive procedures and treatments.
- Explore coping strategies that the children have used successfully in the past, such as distraction or guided imagery (eg, telling stories), and encourage them to try those approaches now.
- State explanations in positive terms of what you are doing to keep them safe or healthy rather than by emphasizing the potential risks (eg, “we are giving you this medicine so that your body will heal faster” rather than “if you don't take this medicine, your body won't be able to heal”).

CHILDREN'S IMMEDIATE AND SHORT-TERM REACTIONS TO DISASTER

How children react in the setting of a disaster depends on a number of factors, including the nature and extent of their direct involvement, their preexisting vulnerabilities and coping skills, and their age and developmental/cognitive level.[3,4,33] Some common reactions that hospital staff may observe in children in the immediate and short-term aftermath of a disaster[8,12,22] include the following:

- Fears. After a disaster, children may develop fears related to the particular event (eg, after an earthquake, children may worry that the hospital building will collapse and injure them), or demonstrate an increase in developmentally appropriate fears (such as a fear of darkness) that may not be clearly associated with the event. Because of their limited experience, knowledge, and tendency toward misunderstanding and misattribution, children's fears and worries may be very different than those of adults and difficult to anticipate based on the particular event. To reassure children, it is necessary to first understand their unique concerns. This is often best accomplished by asking them directly and observing their behaviors.
- Worries and anxieties. Worries about a repetition of the disaster are common, as well as a general state of anxiety. Children may become anxious about separation from family and other caregivers or more concerned about the health and well-being of themselves or family members and friends. Medical evaluations in the emergency department should therefore be conducted, to the extent possible, without requiring separation from family members.
- Sadness and tearfulness. Especially if children experienced losses as a result of the

event, they become sad and tearful. If a friend or family member died, bereavement and grief may become the most salient reactions. Children may become withdrawn and resist interactions, especially with unfamiliar adults.
- Regressive behavior. At times of stress, children often function as they did at an earlier age and may momentarily lose recently acquired skills. Children may "baby talk," suck their thumb, or experience toileting accidents. Calm reassurance and support is usually what is most indicated in the emergency department, but limits should be set on aggressive behavior (such as biting or hitting) that is harmful to others or self.
- Social regression. Children may become more childish, more demanding, less tolerant to waiting or sharing, or more irritable.
- Difficulty concentrating and focusing. Some children may even appear disoriented and confused. Provide direct and simple explanations, with repetition as needed, and orienting comments. Invite questions and explore comprehension around key points (eg, "could you explain back to me exactly how you take the medicine?").
- Physical symptoms, such as headaches or abdominal pain, may be associated with stress.
- Exacerbations of underlying disorders. This is especially likely if the underlying medical condition is associated with a psychoneuroendocrine pathophysiology (eg, stress may prompt asthma attacks or a worsening of blood glucose control in children with diabetes).

Even if very worried or afraid, children may show few or no reactions in the immediate aftermath of a disaster or demonstrate symptoms predominantly outside the hospital setting (eg, they may have nightmares or difficulty sleeping when they return home). Professionals who are unfamiliar with the children's usual personality and style of interacting will be at a particular disadvantage in identifying more subtle changes that family members might otherwise be able to detect. Children who were directly impacted by the disaster (such as those who were seriously injured or experienced the death of a family member or friend) require more careful observation and should be considered for referral for services even in the absence of acute symptoms.

Just as health care professionals need to understand common reactions in children after a disaster, it is important to also share this information with parents. Understanding how their children may react can increase their patience and support after the event. Furthermore, this psychoeducation increases their ability to monitor and accurately report concerns to a health care professional.[37] As some children may not manifest reactions until long after the event,[3] parents will need to continue to observe their children's coping and long-term recovery.

As noted, children who have experienced a traumatic event that is associated with intense fear, helplessness, or horror may develop acute stress symptoms and subsequent PTSD. This is particularly true if there is direct exposure to the event and/or loss of a family member. To qualify for the diagnosis of PTSD, children must manifest symptoms in 3 core domains for at least one month's time as follows: reexperiencing of the traumatic event, avoidance of stimuli associated with the trauma, and a state of increased arousal.[15]

- Reexperiencing of the traumatic event may be manifested by intrusive images (ie, flashbacks), the sense that the event is recurring, traumatic dreams, or intense distress at physical or psychological reminders.
- Avoidance of stimuli associated with the trauma results in persistent attempts to suppress thoughts or feelings associated with the event. As a result, in the absence of active screening, recognition may be delayed for months or years because individuals with PTSD resist thinking about, let alone acknowledging or discussing, their feelings.
- Increased arousal may result in an exaggerated startle reaction, hypervigilance, difficulty concentrating, sleep problems, irritability, or outbursts of anger.

The most common non-PTSD disorders for health care professionals to be aware of after a disaster include anxiety disorders (including separation anxiety), behavior and sleep disturbances, and attention and learning problems.[38]

MENTAL HEALTH TRIAGE

As soon as possible after initial medical stabilization and evaluation, assessment for adjustment reactions should be initiated. Without active screening, many children with mental health problems are not likely to be identified.[39] This secondary triage will help clarify whether the symptoms observed are likely to represent an underlying physical condition, permit initial brief intervention and support for

distress already evident, and identify children most likely to benefit from referral for additional mental health services. Children who are demonstrating the following symptoms in the immediate aftermath should be considered at higher risk of having long-term problems: dissociative symptoms (such as detachment, derealization, and depersonalization); panic, helplessness, or intense fear or anxiety; intense grief; extreme cognitive impairment resulting from the disaster with confusion, impaired decision making, and difficulty concentrating; and significant somatization. In addition to screening for such extreme reactions and more common reactions as noted in the section above, triage also involves identifying additional risk factors as outlined below:[8,40]

- direct victims, especially if physically injured;
- a family member or friend who died or was seriously injured;
- exposure to injury, death, or destruction;
- perception that one's life was in jeopardy, even if that perception is inaccurate;
- separation from parents or other important caregivers;
- loss of home, pets, or personal belongings;
- disruption in day-to-day activities resulting from disaster;
- multiple moves/evacuations/relocations;
- preexisting mental health problems or serious medical conditions;
- prior losses or traumatic experiences; and
- parents who are demonstrating difficulty coping or are unable to provide needed support to the children.

After exposure to a traumatic event, determining if the etiology of somatic complaints is predominantly emotional or physical can be difficult. In addition to the physical examination and assessment of risk factors, consider the child's coping and current adjustment to the event to help in this determination. If there are major risk factors present, consider further exploration of underlying psychological adjustment while addressing the immediate somatic complaints—evaluating both psychological and physical etiologies concurrently is likely to have the highest yield in both diagnosis and response to treatment. It is also important to remember that the reasons for symptom presentation are not mutually exclusive—a child may have a physical etiology for the complaints and also be experiencing significant emotional distress that warrants referral for mental health services. Efforts to promote coping and adjustment are rarely "wasted"—even if the etiology of the somatic complaints is entirely attributable to physical causes. Helping children learn coping techniques and enhancing family communication and support will also be of benefit as children and their families attempt to cope with the challenges imposed by the physical condition.

MENTAL HEALTH INTERVENTIONS

There are evidence-based interventions for children with PTSD and trauma-related disorders after any type of trauma, including disasters. Trauma-focused Cognitive Behavioral Therapy has been strongly recommended as the treatment for children experiencing PTSD and adaptations to this treatment have recently been made to incorporate traumatic grief.[41] Children who experience the death of a family member or friend may benefit from bereavement counseling or support. Health care professionals will be best able to help families who need such treatment if they have a list of resources with expertise in effective trauma treatments and bereavement services for the short- and long-term.[3] Medication may be considered as an adjunct to therapy in children with PTSD who do not respond to cognitive behavioral therapy and/or who demonstrate extreme reactions and major impairments in daily functioning (eg, medication for sleep may be considered in children with severe and prolonged sleep difficulties). It is recommended that a qualified mental health professional be consulted about the use of psychotropic medications in children with refractory PTSD.

Medications are rarely indicated for acute stress reactions, especially because most reactions will abate in the absence of any treatment. The use of benzodiazepines is controversial for acute posttraumatic stress reactions and is generally not indicated. "Drugging" children to suppress the acute stress reactions impairs their ability to understand and integrate the experience. Extreme reactions that result in persistent and serious impairments in daily functioning may warrant the judicious use of medication for specific symptoms such as anxiety, difficulty sleeping, and others.

IMPACT OF DISASTER ON PROFESSIONAL STAFF

When a disaster strikes a community, it is important to remember that providers along with their patients often have significant losses.[3] Health care providers may need to respond to a dramatic surge in the number and level of acuity of patients at the same time they may be worried about the

well-being of their family or friends and feel torn by these competing obligations. It is therefore helpful for professionals to have in place family disaster preparedness plans, so that alternative mechanisms for attending to the most likely needs of family members is considered ahead of time. Professionals should be provided support in the immediate aftermath of the disaster in contacting their loved ones and ensuring their safety and well-being. Hospitals may, for example, need to consider options for providing childcare and/or eldercare for disasters that can be anticipated (eg, forecasted hurricanes) or when the disaster results in the protracted need for high-level staffing. Assistance should be provided for health care providers to minimize the impact of the loss of home or belongings on their daily functioning.

It is important to acknowledge that the same adjustment reactions that may be seen in children and adults in the aftermath of a disaster can occur in health care providers. Especially when a disaster results in a large number of deaths or massive destruction, health care providers can be impacted by the magnitude of destruction of life, the witnessing of extreme grief in surviving family members, the expressions of large-scale pain of victims, or the exposure to particularly disfiguring injuries. Supportive services should be available and offered to health care providers in the immediate aftermath and over time as the community (and professional staff) recover. An environment should be created where it is safe for health care providers to express their distress and receive assistance with meeting basic needs, understanding effective and positive coping strategies, and obtaining supportive services. Those professionals experiencing marked distress, persistent adjustment difficulties, or maladaptive coping techniques (including abuse of alcohol/drugs) should have ready access to counseling services, such as through an employee assistance program, that would provide free evaluation and short-term counseling, paid for by the employer but offered confidentially (without notification of the employer of the identify of those who were provided assistance). Additional support by mental health providers to address emotional and psychological needs of patients, such as accompanying health care providers with death notification (practical guidelines on providing death notification in the context of a disaster can be found elsewhere),[42] is often of benefit not only to the patients but also the health care providers.[43]

As communities rebuild after a major disaster, health care providers may find personal satisfaction in helping children and families adjust. Pediatric emergency medical providers also have opportunities to assist in preparing for community responses to a disaster to help children adjust over time. For example, they may provide training to school-based staff in first aid and emergency response or become an active member of a school crisis response team.[44] As well-known to all health care providers, assisting others in times of need can be a particularly fulfilling experience.

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