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Protecting Children’s Mental Health During Disasters

Natural Disasters
Disaster

Latin Roots:
“Dis” means “against”
“Astrum” means “stars”

Disaster:
“The stars are evil”
Classification of Disasters

- Human-Generated Disasters
  - Mass Violence
  - Terrorism

- Natural Disasters
Natural Disasters

- Hurricanes
- Tornadoes
- Earthquakes
- Floods
- Pandemics
Stressors Associated with Natural Disasters
Stressors Associated with Natural Disasters

- Threat of harm
- Actual personal harm or injury
- Encounter with death and destruction
- Exposure to the grotesque
- Exposure to noxious agents
Stressors Associated with Natural Disasters

- Separation from loved ones
- Loss of loved ones
- Witnessing harm to loved one and others
Stressors Associated with Natural Disasters

- Loss of home and shelter
- Dislocation and relocation
- Loss of schools
- Loss of personal and valued items
- Loss of community
- Loss of social support
Stressors Associated with Disasters

- Lack of food and water
- Loss of health care
- Loss of utilities
- Lack of information
Stressors Associated with Disasters

Traumatic reminders:

- Overcrowded homes and schools
- Damaged buildings and rubble
- Relocated friends and family
- Unavailable basic needs (electricity, clean water)

La Greca and Prinstein (2003)
Children and Adolescents: Disaster Stressors

- Death or separation from caretakers
- Disruption of normal routines
Children and Adolescents: Disaster Stressors

- Challenge to basic assumptions of safety
- Witnessing fear, terror, or shock in usually confident, protective adults
Natural Disasters

Psychological consequences of disasters are related to:

1. Predictability
2. Potential for physical harm
3. Human vulnerability

La Greca and Prinstein (2003)
## Disaster Features

<table>
<thead>
<tr>
<th>Disaster type</th>
<th>Predictability</th>
<th>Duration of Impact</th>
<th>Damage extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hurricane</td>
<td>Yes</td>
<td>Variable</td>
<td>Widespread</td>
</tr>
<tr>
<td>Tornado</td>
<td>+/-</td>
<td>Brief</td>
<td>Variable</td>
</tr>
<tr>
<td>Earthquake</td>
<td>No</td>
<td>Brief</td>
<td>Usually localized</td>
</tr>
</tbody>
</table>

La Greca and Prinstein (2003)
Hurricanes
Hurricanes

- U.S. land-falling hurricanes:
  - 5 every 3 years
  - 2 “major”
- Hurricane season: June - November
- Diameter: up to 400 miles

La Greca and Prinstein (2003)
Hurricanes

- **Hurricane watch:** storm is between 24-36 hours of possible landfall
- **Hurricane warning:** storm is within 24 hours of possible landfall
- Storms may be tracked for weeks before reaching land
Hurricanes

- Predictable
- Trackable
- Warnings provided
- Extensive damage
- Families can evaluate risk and prepare

Hurricane Isabel, August 2003
Over 100,000 people evacuated
North Carolina’s coasts
Hurricanes: Stressors

- Ominous wait for hurricane to strike
- Prolonged impact phase
- Extensive damage
Earthquakes
Earthquakes

- Unpredictable
- No warning
- Localized damage
- 20,000/year worldwide
- 10% in the U.S.
- Most damage caused by failure of human-made physical structures
Earthquakes: Stressors

- Unpredictability
- Inability to get to a safe place to avoid harm
- Brief, extreme violence of earthquakes
- High casualty rate
- Inability to rescue trapped relatives and friends
- Hearing cries for help
Earthquakes: Stressors

Traumatic Reminders:

- Aftershocks
- Cracks in the wall
- Smell of fire
- Radio and TV news
- Funerals
- Anniversaries
Tornadoes

- Unpredictable path
- Brief warning
- Focalized extreme damage
- In the U.S.:
  - East of the Rocky Mountains
  - Spring or summer
- 800 tornadoes/year
  - 1,500 injuries
  - 80 deaths

NOAA (2003)
Tornadoes: Stressors

- Limited predictability
- Focalized extreme damage
- Short-term warning
- Unpredictable path may isolate survivors in their experience
Floods
Floods

- **Slow-rising floods:**
  warning period

- **Flash floods:**
  minimal warning

- **Dam breaks:**
  no warning
Floods

• Flash floods: Leading cause of weather-related deaths in the U.S.
  • 200 deaths per year
  • Over 50% of flood-related drownings are vehicle-related

NOOA (2003)
Floods: Stressors

- Flash floods: sudden destruction
- Slow-rising floods: insidious destruction
- Loss of home, crops, livestock, pets
Flooding: Stressors

- Health hazards during recovery period (i.e. contaminated water)
- Massive clean-up of mud
- Mold danger -- must discard valued possessions
Residential Fires
Residential Fires

- Unpredictable
- Uncontrollable
- 500,000/year
  - 5,000 deaths
  - 21,000 injuries
- Exposure to:
  - Extreme heat
  - Flames
  - Noxious fumes
  - Toxic gases

Jones and Ollendick (2002)
Residential Fires: Stressors

- Exposure to fire
  - Witnessing the event
  - Fear of personal injury or death
  - Burns or injuries
  - Injury to others
  - Injury to pets
- Loss associated with the fire
- Single family experience can be stigmatizing

Jones and Ollendick (2002)
Wildfires
Wildfires

- Unpredictable onset
- Warnings provided
- 9 out of 10 wildfires are human-caused
- In 2002:
  - 88,458 fires
  - 7 million acres of land destroyed
Wildfires: Stressors

- Prolonged worry about approaching fire
- Destruction of homes and possessions
- Evacuation and relocation
Epidemics
Epidemics

**Epidemic:** An outbreak of disease clearly in excess of the expected rate.

**Pandemic:** An epidemic that becomes global and widespread in its distribution.
Pandemics in History

- 400 BC: Athens
- 250-600AD: Roman Empire
- 1350 AD: Black Death
- 1500 AD: Smallpox
- 1918 AD: Influenza
- 1980s-Present: HIV
- 2003: SARS
Epidemics: Stressors

- Fear of invisible infectious agents
- Fear of rapidly-spreading epidemic
- Fear of contagion within the family
- Fear of contagion in the community
- Fear of death
Psychological Impact of Natural Disasters on Children and Adolescents
Responses to Natural Disasters

- Serious psychological distress is common in children and adolescents
- **Severity** of responses does not vary by type of natural disaster

La Greca and Prinstein (2003)
Responses to Natural Disasters

Risk Factors for PTSD

- Degree of exposure (dose effect)
- Death or injury of family member
- Response of family members
- Developmental effects
- Life threat
- Threat of bodily harm
- Physical injury
- Proximity
- Gender
Responses to Natural Disasters

Other symptomatology:

- Anxiety
- Behavior problems
- Increased suicidality
- Inattention
- Decreased academic achievement
- Predisaster depression and anxiety may be predisposing factors

La Greca and Prinstein (2003)
Hurricanes

- 30-50% of children experience moderate to severe symptoms of PTSD
- 5-10% meet full PTSD criteria
- Intensely exposed youth: 90% PTSD
- PTSD symptoms decline over the first year
- Reexperiencing - most common symptom cluster
- Numbing/avoidance - least common

La Greca and Prinstein (2003)
Earthquakes

- Severity of grief relates to severity of loss
- Severity of PTSD symptoms relates to severity of earthquake experience
- Children may experience:
  - Loss of trust
  - Loss of sense of safety and security
  - Loss of belief in parent’s protection
- Separation anxiety is widespread
- Post-earthquakes adversities may lead to depression

National Child Traumatic Stress Network
Tornadoes

- Localized path can lead to feelings of guilt in survivors whose properties are spared.
- Children may develop unusual myths about why a tornado did or did not hit their home.

National Child Traumatic Stress Network
Floods

Buffalo Creek Disaster, 1972

Children under age 12 (N=11)

Children’s responses related to:

- Child’s developmental level
- Child’s perception of family reaction to the disaster
- Direct exposure to the disaster

Newman (1972)
Floods

Buffalo Creek Disaster, 1972
(N=179 children)

- PTSD: 37%
- Symptoms increase with age
- Avoidance - most common symptom cluster
- Symptoms correlate with:
  - Life threat
  - Gender
  - Mother’s severity of psychiatric symptoms

Green et al. 1991
Wildfires

- Significant PTSD symptoms
- Long-term chronicity of symptoms
- 1/3 had persistent preoccupation with wildfire themes
- 5-15% had significant post-wildfire psychopathology
- Academic and social impairment
- Trauma-related symptoms—reexperiencing and traumatic reminders
- Increases in depression and trait anxiety
Residential Fires

- Children and parents respond in variable ways
- Parents’ responses strongly influence children’s responses

Jones and Ollendick (2002)
Residential Fires

- Children’s responses are not consistently related to:
  - Being at home at time of fire
  - Property value of the home
  - Degree of property loss

- PTSD in 25 – 35% of burn-injured children

Jones and Ollendick (2002)
## Residential Fires

Children's Responses to “Fire Questionnaire”

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Had never experienced anything as bad as a fire</td>
<td>85%</td>
</tr>
<tr>
<td>Felt a lot of fear at the time of the fire</td>
<td>49%</td>
</tr>
<tr>
<td>Should have done something to prevent the fire</td>
<td>30%</td>
</tr>
<tr>
<td>Had not been trained in fire safety skills</td>
<td>22%</td>
</tr>
<tr>
<td>Felt the fire was their fault</td>
<td>18%</td>
</tr>
<tr>
<td>Could have done more to stop fire</td>
<td>16%</td>
</tr>
</tbody>
</table>

Jones and Ollendick (2002)
Children’s Greatest Fears

Postdisaster—children fear:
- Separation from family
- Being left alone
- Disaster recurrence
- Death of loved ones
- Injury to loved ones

Differences Between Child and Adult Responses to Stress

Children may:

- Blame themselves for the disaster
- Not understand the disaster event
- Not understand cause and effect
- React based on developmental level
- Reenact the trauma in play activities
Natural Disasters: Case Examples
Case 1: Hurricane

Site: South Miami, Florida, August 24, 1992
Hurricane Andrew

- 100,000 homes damaged
- 85,000 unemployed
- 35 deaths
- 25% of the school population displaced
Hurricane Andrew

Psychological Effects on an Elementary School Population

- Children in low and high-impact schools
- Ages: 6 - 11
- HI-IMPACT school:
  - Immediate post-disaster decrease in disruptive behavior (shock-like numbing effect)
  - Rebound increase in disruptive behavior 3 - 4 months after hurricane

Shaw et al. (1995)
### Hurricane Andrew

**Individual Patterns in Posttraumatic Stress Disorder Reaction Index Symptomatology**

<table>
<thead>
<tr>
<th></th>
<th>2 - 8 months</th>
<th>2 - 21 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Improved</td>
<td>30</td>
<td>46.7</td>
</tr>
<tr>
<td>% No change</td>
<td>53</td>
<td>46.7</td>
</tr>
<tr>
<td>% Worsened</td>
<td>17</td>
<td>6.6</td>
</tr>
</tbody>
</table>

Shaw et al. (1996)
Hurricane Andrew
Psychological Effects on an Elementary School Population

• HI-IMPACT school: 21 month follow-up
  • 70% with moderate to severe PTSS
  • Increased psychopathology
• Gender differences:
  • Girls: higher levels of PTSS
  • Boys: higher indices of psychopathology

Shaw et al. (1996)