

Invited Commentary

**Resilience, Self-Compassion, and Mental Health Outcomes: Rebuilding Eastern North Carolina after Natural Disasters**

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Electronically published September 1, 2020.

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0029-2559/2020/81508

**Abstract**

Natural disasters are occurring more frequently in Eastern North Carolina in recent years. Evidence supports that repeated exposure to natural disasters may have lasting mental health impacts among vulnerable populations. Greater access to mental health services may aid in ensuring equitable access to needed care and promote resilience.

Hurricane Matthew (2016), Hurricane Florence (2018), and Hurricane Dorian (2019) have affected the 41 counties that comprise Eastern North Carolina (ENC) in significant ways. To date, North Carolina has spent more than \$3.5 billion in state and federal funding for recovery from hurricanes Matthew and Florence, with a combined estimated damage of \$21 billion (\$4.8 billion from Matthew and \$17 billion from Florence). [1-4]

FEMA has approved more than \$18.6 million for Hurricane Dorian expenses [5]. ENC counties, such as Robeson, Columbus, Cumberland, Craven, New Hanover, and many others, have received repeated record-breaking flooding within the last five years. Individuals can apply for FEMA assistance to help with recovery [3, 4]. Those requesting individual assistance after Hurricane Dorian included 14.8% of households in poverty and 44% of households uninsured [5]. Repeated flooding in rural communities in ENC inflicts social and economic hardship on those already burdened by poverty and poor health. Thirty-one of the 41 counties in ENC are classified as Tier 1 counties, those with the most economic distress [6]. The health status of the

area lags behind the rest of North Carolina for premature mortality and many other health indicators.

Creating community resilience to natural hazards has been an important focus of North Carolina governmental agencies in recent years [7]. While there are several definitions of resilience [8, 9], in the context of disaster recovery, *individual resilience* is a person's ability to withstand, adapt to, and recover from adversity [8 10]. The federal government notes that resilient individuals can care for themselves and others, access resources efficiently and effectively, and work through strong emotions that come from coping through an adverse event. [10] The individual can then return to a state of mental health well-being, including managing behaviors, thoughts, and actions that promote personal well-being [10]. While individuals live in and comprise communities, various subgroups of people who live in disaster-stricken areas are not affected equally [11], and individual resilience likely influences the success of building community resilience, as individuals are a key component of communities. Resilience has been documented in populations exposed to disasters. There is a growing consensus, that resilience does not indicate the complete absence of any psychological symptoms after traumatic event exposure; rather, it describes the ability to “bounce back.” Resilient individuals generally experience distress for a short period and quickly return to pre-disaster levels of functioning, distinguishing them from those who experience a longer period of dysfunction and a more gradual return to baseline functioning (“recovery”) [ 12]. Those who lack resilience to “bounce back” can go on to develop posttraumatic stress disorder (PTSD), depression, anxiety, and substance use problems.

### **The Longer-term Impacts of Hurricane Exposure**

The mental health impact of natural disasters is well documented and often continues over a substantial period of time [13, 14 ]. This mental health decline may be most notable following initial recovery efforts when support wanes as the outside community and media lose interest. Prior research following devastating hurricanes has consistently documented the significant and persistent mental health impacts of hurricane exposure. For example, a large survey of over 1,500 university employees in New Orleans conducted six months after Hurricane Katrina found that 19% were experiencing clinically significant hurricane-related PTSD symptoms [ 15]. As another example, Lowe and colleagues found that low-income mothers in New Orleans experienced substantially increased rates of probable mental health disorders one year post-hurricane as compared to the year prior to the hurricane (37% versus 23%) [16]. Similarly, a survey of residents living in the inundation zone of Hurricane Sandy conducted five to seven months post hurricane found that 11% reported current hurricane-related PTSD [17].

There is also growing evidence that a substantial number of disaster-exposed individuals experience a pattern of worsening adjustment in the longer-term, likely due to the impact of chronic stress in the post-disaster recovery context (e.g., economic impacts related to job loss/long-term displacement; new or worsened health conditions due to exposure to mold or contaminants). A large survey study of Hurricane Katrina survivors assessed five to eight months and one year post-hurricane found that rates of PTSD (15% versus 21%), serious mental health problems (11% versus 14%) and suicidality (3% versus 6%) increased from the first to second assessment[18]. Of the cases of PTSD and suicidality identified at the one-year assessment, 27% of the PTSD cases and 47% of suicidality cases represented a delayed onset of significant distress [18]. Similarly, a smaller longitudinal study of displaced Hurricane Katrina survivors assessed at six months and one year post-hurricane found that while 25% reported chronic

hurricane-related adjustment problems, 17% experienced a pattern of deteriorating adjustment at one year post-hurricane [ 19].

In our own work among a sample of over 200 rural Sandhills region residents of North Carolina experiencing daily stress from Hurricane Florence, we found that 40% screened positive for hurricane-related PTSD five to seven months post hurricane. These percentages remained high three (36%) and six months (30%) following thebaseline assessment. [18] [20]. In addition, residents in Robeson County who experienced both Hurricane Matthew and Hurricane Florence expressed that the destruction of informal networks of extended family and friends left many without social support, employment, or permanent housing, leading to greater stress and difficulty coping. When Lumberton flooded after Hurricane Florence, many families were still waiting for FEMA/state assistance resulting from Hurricane Matthew. The long-term impact on adolescents and children displaced from their homes and schools was another repeated concern. Several schools in Lumberton were closed after Hurricane Florence. A pastor in Lumberton feared many adolescent children would not return to his congregation after attending school in other counties, even if their families returned to worship.

Taken together, this pattern of findings supports that many survivors of devastating hurricanes are likely to experience long-term adjustment problems post-hurricane, particularly those exposed to severe and ongoing hurricane stress. Further, some survivors may experience a pattern of worsening adjustment over time, likely related to the impact of exposure to chronic hurricane-related stressors.

### **Interventions to Mitigate Mental Health Adversity**

In It is clear that a stepped care approach is necessary for addressing the mental health impacts of hurricane exposure. First, all hurricane-affected individuals should be provided access

to evidence-based interventions focused on enhancing resilience among children, adolescents, and adults. Such interventions focus on such areas as enhancing coping self-efficacy, building problem solving and emotion regulation skills, and strengthening social support (cites added). To ensure equitable access to these interventions, multiple dissemination strategies should be utilized , including printed materials distributed in multiple locations such as shelters, hurricane-affected neighborhoods, and public health departments, as well as mobile apps pushed out to all residents with mobile devices. Second, interventions should include tools that caregivers can utilize to enhance resilience in their children. Third, brief interventions delivered by trained facilitators focused on promoting recovery and restoring adjustment to pre-disaster levels of functioning should be provided to those experiencing more significant adjustment difficulties in the near- and mid-term post-hurricane. Finally, resources should be allocated to the provision of trauma-focused care for those experiencing significant longer-term psychological adjustment issues, such as chronic PTSD and depression.

### **Self-Compassion May Be Our Best Intervention**

Certain mindsets can be helpful when recovering from a natural disaster. Being self-compassionate is related to better mental health outcomes in times of suffering [21, 22]. By showing themselves kindness and recognizing that they are not alone in suffering, people are better able to manage their intense emotions of sadness, anxiety, and other difficult emotions mental health symptoms. Our research shows that self-compassionate Hurricane Florence survivors experienced less post-traumatic stress symptoms and depression. They also reported feeling more capable of coping with the disaster and more solidarity with their community. In experimental studies, teaching participants about self-compassion has significantly improved their positive identity and decreased their negative affect following imagined trauma [23]. In

longitudinal studies, being more self-compassionate predicts lower trauma symptoms at follow-up as self-compassionate people also tend to be more resilient [ 24]. This connection with resilience suggests that there is a connection between being kind to oneself and having the ability to adapt in the face of threatening stressors. Our research following Hurricane Florence also showed that self-compassion at baseline predicted reduced post-traumatic stress at six months follow-up when controlling for baseline stress. In minority communities, the roles of self-care and community care are closely related. Therefore, exhibiting self-compassion may be closely tied to showing compassion toward others [ 25].

## **Hurricanes and COVID-19**

Compassion for others may emerge as an essential trait during the 2020 hurricane season. In light of COVID-19, preparing for the mental health impacts of the 2020 hurricane season presents unique challenges. As of June, studies are already reporting heightened depression and anxiety due to COVID-19-related concerns, which will only exacerbate the psychological distress that accompanies natural disasters [26]. In particular, while displaced families are usually able to relocate to shelters or the homes of family/friends, social distancing measures and fear of infection may make relocating even more stressful for the affected individual. Additionally, social support plays a key role in recovery, as this connection and the feeling of “coming together as a community” remind people that they are part of a bigger unit. Yet, in the midst of COVID-19, it is possible that this traditional community response may be thwarted by a genuine fear of contracting a disease. One advantage of a hurricane season following COVID-19 is that several improvements have been made in telemedicine in an online environment [ 27]. Therefore, if natural disaster survivors have internet access, then their ability to engage in these

advances should mitigate some of the negative mental health impacts. However, it is important to note that high-speed internet access in rural ENC is not evenly distributed.

## **Conclusion**

As extreme adverse weather events occur more frequently in ENC, there is an urgent need for investment in strategies to promote resilience in the aftermath of hurricanes and other severe weather events, given the significant and persistent mental health impacts associated with exposure to hurricane-related stress. Interventions delivered within a stepped care model are critical in reducing the mental health burden associated with devastating hurricanes. Mitigating mental health outcomes should include affirming an individual's previous experience of overcoming adversity.

In the process of mitigation planning for community resilience, we have an opportunity to boldly include mental health services that influence individual resilience.

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## Acknowledgments

Potential conflicts of interest. The authors report no conflicts of interest.

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