



Five years later: Recovery from post traumatic stress and psychological distress among low-income mothers affected by Hurricane Katrina

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ABSTRACT

Hurricane Katrina, which struck the Gulf Coast of the United States in August 2005, exposed area residents to trauma and extensive property loss. However, little is known about the long-run effects of the hurricane on the mental health of those who were exposed. This study documents long-run changes in mental health among a particularly vulnerable group—low income mothers—from before to after the hurricane, and identifies factors that are associated with different recovery trajectories. Longitudinal surveys of 532 low-income mothers from New Orleans were conducted approximately one year before, 7–19 months after, and 43–54 months after Hurricane Katrina. The surveys collected information on mental health, social support, earnings and hurricane experiences. We document changes in post-traumatic stress symptoms (PTSS), as measured by the Impact of Event Scale-Revised, and symptoms of psychological distress (PD), as measured by the K6 scale. We find that although PTSS has declined over time after the hurricane, it remained high 43–54 months later. PD also declined, but did not return to pre-hurricane levels. At both time periods, psychological distress before the hurricane, hurricane-related home damage, and exposure to traumatic events were associated with PTSS that co-occurred with PD. Hurricane-related home damage and traumatic events were associated with PTSS without PD. Home damage was an especially important predictor of chronic PTSS, with and without PD. Most hurricane stressors did not have strong associations with PD alone over the short or long run. Over the long run, higher earnings were protective against PD, and greater social support was protective against PTSS. These results indicate that mental health problems, particularly PTSS alone or in co-occurrence with PD, among Hurricane Katrina survivors remain a concern, especially for those who experienced hurricane-related trauma and had poor mental health or low socioeconomic status before the hurricane.

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Introduction

Hurricane Katrina struck the Gulf Coast of the United States on August 29, 2005, producing widespread property loss and exposing numerous citizens to traumatic experiences. New Orleans residents were particularly hard-hit. Not only did the storm produce direct damage, but also levee breaks created extensive flooding that led to the exodus of residents from the city. Those who did not return had to build lives in new locations; those who returned had to contend with a severely damaged city and, in many cases, homes and neighborhoods that had been devastated.

The adverse effects of Hurricane Katrina on the mental health of Gulf Coast residents became apparent shortly after the storm.

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Assessments of evacuees indicated that many were experiencing symptoms of emotional distress (Brodie, Weltzien, Altman, Blendon, & Benson, 2006; Mills, Edmondson, & Park, 2007). Displaced residents who were interviewed early in 2006 also exhibited high, distress levels (Abramson, Stehling-Ariza, Garfield, & Redlener, 2008). Studies conducted in the year after the hurricane continued to indicate that hurricane exposure was associated with mental health problems. A population-based study conducted during this time period indicated that individuals who had lived in the affected Gulf Coast area had elevated levels of psychological distress but, surprisingly, lower-than-expected levels of suicidality (Kessler, Galea, Jones, & Parker, 2006). Another study followed a sample of displaced or greatly affected individuals from 6 to 12 months after the hurricane, to 20–24 months after the hurricane, and found high levels of mental distress that did not decline between the two surveys (Abramson et al., 2008). These results are

broadly consistent with studies of other large-scale natural disasters (Bourque, Siegel, Kano, & Wood, 2006; Frankenberg et al., 2008; Galea, Nandi, & Vlahov, 2005; Norris et al., 2002, Part I; Norris, Friedman, & Watson, 2002, Part II).

This study examines the long-run mental health consequences of Hurricane Katrina for a sample of low-income mothers who lived in New Orleans at the time of the hurricane. Earlier research using this sample found that they displayed high levels of psychological distress (PD) and post-traumatic stress symptoms (PTSS) between 7 and 19 months after the storm (Rhodes et al., 2010). Using data from a re-survey of this sample 43–54 months after Hurricane Katrina, we document changes in symptoms of PTSS, PD, and the co-occurrence of PTSS and PD, and study the determinants of mental health trajectories.

Our results contribute to an understanding of how vulnerable populations have fared since Hurricane Katrina. Although our sample is not representative of the New Orleans population before the hurricane, it is of particular interest given the large literature that indicates that women, parents, and those who are economically disadvantaged are at particular risk of developing PTSD and other mental health problems after natural disasters (Galea et al., 2005; Norris et al., 2002, Part I; Norris et al., 2002, Part II). Within this context, we sought to identify both the pre-hurricane resources, such as higher socioeconomic status and better mental health, associated with faster recovery, and the hurricane-related experiences associated with a more delayed recovery.

Although members of this group may be vulnerable, there is substantial variation in their post-disaster mental health outcomes. For the purposes of targeting treatment, it is important to understand why some are resilient and others are not. A significant feature of our sample is that, because members were recruited before the hurricane, we could examine how pre-hurricane mental health, social support, earnings and family composition influence recovery trajectories. Because of the unpredictable nature of disasters, very few studies have information on mental health before the disaster, so researchers cannot determine whether and when individuals have returned to their “pre-disaster” levels of psychological functioning. They also do not include information on factors such as pre-disaster social support, which may be important in preventing mental health problems but is difficult to measure after-the-fact. In what follows, we compare the results of our work with those of other longitudinal studies of Hurricane Katrina (Abramson et al., 2008; Kessler et al., 2008; Sastry & VanLandingham, 2009). While these studies have the advantage of representative samples, they lack longitudinal information that spans the hurricane.

In addition to providing information about Hurricane Katrina, this study makes several contributions to the larger literature on the mental health effects of natural disasters. First, it provides information on the longer-run effects of natural disasters on mental health and, more specifically, the factors that influence recovery trajectories. Relatively few longitudinal studies track the course of mental health problems over prolonged periods of time after natural disasters. A 2005 review of the epidemiology of post-traumatic stress noted that the handful of existing longitudinal studies of natural disasters document varied recovery patterns, with some individuals recovering quickly, others developing chronic problems, and some experiencing a delayed onset of symptoms (Galea et al., 2005). Long-term and even delayed symptoms might be due to the fact that natural disasters may produce prolonged and continuing hardship due to property loss, the death of family or friends, and disruptions in living arrangements. Hurricane Katrina, which produced both immediate traumatic experiences and long-term hardship, provides a useful vehicle to examine how these experiences influence mental health trajectories.

A second contribution of this study is that it examines how pre-hurricane and post-hurricane factors separately influence PD, PTSS, and their co-occurrence. The literature on the course of mental health outcomes following natural disasters has given relatively little attention to whether different psychological problems, such as post-traumatic stress, depression and suicidality, follow different trajectories and are influenced by different factors. Some evidence indicates that this is indeed the case. One study of the effects of Hurricane Andrew over 30 months found that depression remained stable, and some components of post-traumatic stress increased whereas others declined (Norris, Perilla, Riad, Kaniasty, & Lavizzo, 1999). This study concluded that less persistent psychological problems were more strongly associated with the experiences of the disaster itself, whereas more persistent problems were more strongly associated with post-disaster stressors. Other studies have noted that anxiety and mood disorders frequently co-occur with post-traumatic stress after disasters: a study of the short-term consequences of Hurricane Katrina found that *all* individuals from New Orleans who were classified as having PTSD also had anxiety-mood disorder (Galea et al., 2007). Because our data contain measures of both PD and PTSS at two points in time, we were able to examine (for example) whether some factors lead to PTSS that gives way to PD, whereas others predict chronic co-occurring PTSS and PD. This nuanced understanding of the determinants of the course of mental health after a major natural disaster may prove useful in targeting appropriate treatment.

Methods

The sample was drawn from the *Opening Doors* study in New Orleans. Conducted by MDRC, *Opening Doors* was a multi-site national study of performance in community college among low-income adults (Richburg-Hayes et al., 2009). The *Opening Doors* program in New Orleans differed from programs elsewhere, in that eligibility was restricted to low-income parents. Between November 2003 and February 2005, the study enrolled 942 women and 77 men when they registered for courses at one of three campuses in New Orleans. This produced a sample consisting primarily of African-American mothers, many of whom were welfare recipients, who were older than typical college students. Given the small number of men in the study, we focused exclusively on women.

Data collection

The 942 women completed a baseline questionnaire at the time of enrollment, which collected information about socioeconomic status and health, and included an assessment of PD. All respondents signed a consent form at enrollment. The study was approved by the Princeton Institutional Review Board.

The first post-hurricane follow-up study, conducted between March 2006 and March 2007, surveyed 667 of the original 942 female respondents (70.8% response rate) by telephone. A second follow-up survey was administered to 720 women (76.4% response rate) between March 2009 and April 2010. These surveys collected information on mental health and individuals' experiences during and after the hurricane. A total of 568 women (60.3%) completed both follow-up surveys. We excluded 9 respondents who moved away from New Orleans between the baseline survey and the hurricane, and another 27 who did not complete all psychological scales we used in our analysis. The final sample size was 532.

The respondents experienced high mobility after the hurricane. At the second follow-up, they lived in 23 states; only 16% resided in their pre-hurricane homes. Given this extraordinary mobility, the response rates that were obtained are remarkably high. In addition, cooperation was high: only 35 women refused to take the second follow-up.

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