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Maternal depression as a risk factor for children's inadequate housing conditions

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ABSTRACT

Depression among mothers with young children is an important public health issue that not only has implications for their own well-being, but can also potentially affect their children's health and developmental trajectories. This study explored the extent to which maternal depression is a risk factor for inadequate housing conditions related to utilities, a noteworthy risk factor for poor child health. Using data on 2965 mothers and children from a national urban cohort of U.S. births in 1998–2000, we estimated multivariate logistic regression models of associations between maternal depression during the postpartum year and a U.S. Department of Housing and Urban Development (HUD) measure of severely inadequate housing due to heating issues, as well as a broader measure of energy insecurity that encompasses various types of utility problems. We also considered outcomes that incorporated housing instability and food insecurity in conjunction with housing inadequacy. Mothers who experienced depression had about 60% higher odds of experiencing severely inadequate housing due to heat (OR: 1.57) and 70% higher odds of experiencing energy insecurity (OR: 1.69) compared to mothers who did not experience depression. Maternal depression was even more strongly associated with multiple hardships in the forms of housing inadequacy plus housing instability and/or food insecurity than it was with housing inadequacy. This study provides robust evidence that maternal depression is a risk factor for inadequate housing and multiple hardships during a critical period of children's development. The findings suggest that policy efforts should not occur in mental health, housing, and food security silos.

1. Introduction

Depression is a major public health issue, particularly among new mothers. According to an expert panel convened by the Center on the Developing Child at Harvard, 10–20 percent of mothers experience depression at some time during their lives, over 10 percent of infants have a mother who experiences major depression in their first year of life, and depression among new mothers often goes unidentified and rates of treatment are low (Center on Developing Child, 2009). According to the authors of the report, maternal depression can have potentially far-reaching, adverse effects on parenting and child development (Center on Developing Child, 2009). As such, maternal depression not only affects the mothers' own well-being, but it also potentially affects their children's health and developmental trajectories.

Most studies of the effects of maternal depression on children have focused on mother–child interactions or children's psychological well-being (Hwa-Froelich et al., 2008; Jacob and Johnson, 1997; Conners-Burrow et al., 2014; Cummings and Davies, 1994). Very few studies in developed countries have investigated effects of maternal depression on their children's physical health. One recent exception, which used the Early Childhood Longitudinal Survey—Birth Cohort from the U.S., found that children of mothers who had moderate-to-severe depression during the postpartum period had worse growth trajectories up to age 6 (Surkan et al., 2014). Another study (Casey et al., 2004), using a convenience sample of mothers of very young children (0–2 years), found no associations between maternal depression and child growth but that children of depressed mothers were more likely to be in fair or poor health and to have hospitalizations. Other studies found that young children with depressed mothers are at risk for receiving inadequate preventive healthcare (Chung et al., 2004; Flynn et al.,

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2004; Logan et al., 2008; Minkovitz et al., 2005), that maternal depression has negative effects on management of childhood asthma (Perry, 2008), and that maternal depression has adverse associations with child safety practices (e.g., putting infants to sleep on their backs) and use of safety devices (e.g., smoke alarms, electrical outlet covers, car seats) (Balbierz et al., 2015; Conners-Burrow et al., 2012; Chung et al., 2004; McLennan and Kotelchuck, 2000).

Studies of the effects of maternal depression on the physical environment in which children live are virtually non-existent, despite the fact that housing situations are associated with an array of exposures that affect health and the reality that mothers' resources, behaviors, and decisions generally dictate those conditions for children. Among the housing exposures that have been linked to poor health of children (and adults as well) are asbestos, lead paint, rodents, dust mites, lack of heat, and dangerous physical structures (e.g., Breysse et al., 2004; Krieger and Higgins, 2002; Jacobs et al., 2009; WHO, 2006). We know of no studies that have examined the effects of maternal depression on household environmental factors other than parental behaviors surrounding child safety.

Cold homes in particular have been linked to circulatory diseases, respiratory conditions, mental ill-health, the common cold and flu, arthritis and rheumatisms, and at the extreme, mortality (Marmot et al., 2011). Children, the elderly, and people with long-term illness are at particular risk, due to both underlying frailty and because they spend more time at home (Marmot et al., 2011). In a systematic review, Liddell and Morris (2010) found that lower-than-recommended indoor air temperatures are adversely related to infants' weight gain and children's hospital admission rates, caregiver-rated developmental status, and severity and frequency of asthmatic symptoms. In a recent review of ambient temperatures and children's health, Xu et al. (2012) found that very young children, especially those less than 1 year old, are particularly vulnerable to hot and cold temperatures in terms of their risk for infectious diseases, respiratory diseases, pediatric allergic diseases such as eczema, renal disease, and fever and electrolyte imbalance; however, the studies reviewed did not focus on indoor temperature.

In this study, we explore whether and to what extent maternal depression is a risk factor for inadequate housing conditions related to utilities—an outcome that is both important in its own right and a noteworthy risk factor for poor child health. We focus on maternal depression during the postpartum year, which allows us to study housing conditions at a critical period for child health and development. For outcomes, we use the U.S. Department of Housing and Urban Development (HUD) measure of severely inadequate housing due to heating issues as well as a broader measure of various types of utility problems. Studies have found evidence linking physical household conditions to adverse mental health outcomes (Evans et al., 2003), but as far as we know effects in the opposite direction have not been explored.

Recent studies found that maternal depression is a risk factor for other hardships among families with young children, including homelessness (Curtis et al., 2014), housing instability (Curtis et al., 2014), and food insecurity (Noonan et al., 2014), all of which have traditionally been considered almost exclusively as causes, rather than consequences, of poor health. However, physical housing conditions are distinct from housing instability and food insecurity, and the different hardships do not necessarily go hand-in-hand. For example, studies found that housing and food costs are competing demands for many low-income families and that tradeoffs are sometimes made (Bhattacharya et al., 2003; Beatty et al., 2013). To bridge and build on this previous research, we not only investigate links between maternal depression and subsequent housing inadequacy, but also between maternal depression and multiple hardships in the realms of housing and food.

The objective of this study is to identify robust independent associations (if there are any) between maternal depression during the postpartum year and subsequent housing conditions as well as multiple hardships. The findings cannot necessarily be interpreted as causal, but the analyses take important steps in that direction, and regardless of causality, information about which types of hardships (and combinations of hardships) children with depressed mothers face has implications for policy approaches.

2. Methods

2.1. Data

Births were randomly selected from birth logs in 75 hospitals in 20 U S. cities with populations greater than 200,000 as part of the Fragile Families and Child Wellbeing (FFCWB) study, a longitudinal birth cohort survey. The research design is described elsewhere (Reichman et al., 2001). Non-marital births were oversampled. A total of 4898 mothers (86% of those eligible) were interviewed while still in the hospital after giving birth, between 1998 and 2000. Response rates were higher among unmarried mothers than among married mothers (87 vs. 82%) (Bendheim-Thoman Center for Research on Child Wellbeing, 2008). Fathers were also interviewed. Additional information was collected from medical records from the birth hospitalization. Institutional Review Board Approval for the current study was not required because the research was based on previously collected de-identified data.

Of the mothers who completed initial (baseline) interviews, 89% were re-interviewed one year later and 86% were re-interviewed when their children were 3 years old. Of the 3684 mothers with available medical record data (needed to create measures of prenatal factors such as housing problems and mental illness), 3024 completed both follow-up surveys. Of the 3024 mothers, 59 were excluded from the analysis because of missing data on key variables, leaving 2965 cases. Comparisons (at baseline) between the 2965 mothers in the analysis sample to the 1933 mothers not in the sample (available upon request) indicated no significant differences by education, relationship status, race/ethnicity, insurance status, or parity, but that mothers in the analysis sample were less likely to be foreign born (15, versus 20%) and slightly more likely to have been employed prior to pregnancy (81, versus 77%). The mean age difference was significant but substantively trivial.

2.2. Measures

2.2.1. Exposure

Depression during the postpartum year, assessed at 1 year, was measured using an indicator for whether the mother met diagnostic criteria for major depression in the past 12 months, according to the Composite International Diagnostic Interview Short Form (CIDI-SF) Version 1.0 November 1998, an instrument widely used in epidemiologic and population research. Our main measure of depression is based on the number of depressive symptoms from 0 to 7, with a major depressive episode defined as the experience of 3 + symptoms of dysphoria or anhedonia (e.g., being sad, feeling blue, losing interest in things) for most of the day for a period of at least 2 weeks. We also used a less stringent measure in supplementary analyses. Both measures have been validated in the literature (Fragile Families and Child Wellbeing Study, 2014).

Although our measures of maternal depression are based on a validated instrument for assessing diagnostic criteria for major depression and pertain to the postpartum year, they do not capture postpartum depression per se, which is the explicit focus of the