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RESEARCH ARTICLE

Mothers' Adverse Childhood Experiences and Their Young Children's Development

Jing Sun, MD, MPH, PhD,[1] Falguni Patel, MPH,[2] Ruth Rose-Jacobs, ScD,[3] Deborah A. Frank, MD,[3] Maureen M. Black, PhD,[4,5] Mariana Chilton, PhD, MPH[2]

Introduction: This study examined how mothers' Adverse Childhood Experiences (ACEs) relate to their children's developmental risk and assessed how the association is mediated through mothers' depressive symptoms and fair/poor health.

Methods: Mothers of children aged between 4 months and 4 years were recruited from the emergency department of a children's hospital between March 2012 and June 2015 and interviewed about ACEs, mothers' depressive symptoms and health status, and children's developmental risk (screened via Parents' Evaluations of Developmental Status [PEDS]). Between August and November 2016 a Cochran–Armitage test assessed trend of PEDS by ACEs. Multinomial regression models examined differences in PEDS by ACEs severity. Mediation by mothers' depressive symptoms and self-rated health was also assessed.

Results: Of 1,293 mothers, 56.7% reported one or more ACEs. Mothers also reported developmental risk (20.4% overall): 120 (9.2%) reported one concern and 144 (11.2%) reported two or more concerns on the PEDS. Mothers who reported household substance use, mental illness, or an incarcerated household member during childhood were more likely to report at least one child developmental concern on the PEDS. After controlling for covariates, odds of one PEDS concern were 1.86 (95% CI=1.16, 3.00) for ACEs, one to three versus none, and 2.21 (95% CI=1.26, 3.87) for ACEs four or more versus none. Adjusted odds of two or more concerns were 1.70 (95% CI=1.07, 2.72) for ACEs, one to three versus none, and 1.76 (95% CI=1.02, 3.05) for ACEs, four or more versus none. Mothers' depressive symptoms and self-rated health were potential mediators.

Conclusions: Mothers' ACEs are significantly associated with their children's developmental risk. If replicated, findings suggest that addressing intergenerational trauma through focus on childhood adversity among young children's caregivers may promote child development.

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INTRODUCTION

Adverse childhood experiences (ACEs), including exposure to physical, sexual, and emotional abuse, physical and emotional neglect, and household stressors, such as witnessing a mother/stepmother being abused or having an incarcerated parent, are traumatic events linked to lifelong negative adult physical and mental health outcomes[1–6] including chronic diseases,[7,8] adult depression,[9,10] and risk for attempted suicide.[11] Outcomes occur through multiple routes, including epigenetic pathways whereby traumatic events can modify gene expression in the prefrontal

From the [1]Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland; [2]Department of Health Management and Policy, Drexel University Dornsife School of Public Health, Philadelphia, Pennsylvania; [3]Boston University School of Medicine and Boston Medical Center Department of Pediatrics, Boston, Massachusetts; [4]Department of Pediatrics, University of Maryland School of Medicine, Baltimore, Maryland; and [5]RTI International, Research Park, North Carolina

Address correspondence to: Mariana Chilton, PhD, MPH, Drexel University Dornsife School of Public Health, 3600 Market Street, 7th Floor, Philadelphia PA 19104. E-mail: mmc33@drexel.edu.

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cortex,[12] cause inflammation,[8] and trigger allostatic responses to stress that alter the nervous, endocrine, and immune systems[13] in ways that may disrupt parenting and economic success.[14–16]

Mothers' ACEs are associated with maternal mental and physical health problems.[17–19] Research has demonstrated that adversity may transfer from one generation to the next in the form of abuse/neglect, housing risk, and poor socioemotional health.[16,20,21] Additionally, mothers' history of adversity is associated with depressive symptoms before and after giving birth, and with their infants' maladaptive socioemotional symptoms.[22] However, the mechanisms underlying these patterns are not clear, particularly because there may be reciprocal effects in two-generation relationships, with mothers' reacting to their infants' maladaptive symptoms.[23,24] Overall, the relationship between mothers' adverse childhood experiences and their children's developmental risk demands further investigation.

The objective of this study is to examine associations between mothers' reports of ACEs and their children's developmental risk as identified via a validated maternal-reported screening instrument. Two hypotheses are tested: (1) a higher number of mothers' ACEs is associated with increased odds of children's developmental risk, and (2) the association between mothers' ACEs and children's developmental risk is mediated by mothers' reported depressive symptoms and fair/poor health. Because the association between maternal ACEs and children's Parents' Evaluations of Developmental Status (PEDS) score has not been examined previously, sentinel sampling—where predictors and outcomes are more prevalent than in the general population[25]—provides a preliminary framework to identify possible relationships that may be replicated in nationally representative samples.

METHODS

Study Population

This study used a sentinel cross-sectional sample of families seeking services in the Emergency Department of a large children's hospital in Philadelphia that serves >50,000 children a year, 86% of whom receive Medicaid and live in high poverty areas. Caregivers of children aged <4 years not in critical condition were approached (March 2012 to June 2015) by interviewers while families were waiting to be seen by a healthcare professional. Eligibility included English and Spanish speakers, state residency, and knowledge of the child's household. After securing verbal consent, interviewers asked participants about the household, caregiver, and their youngest child, using a computer-based survey. The first phase included questions about demographics, caregiver's depressive symptoms, and caregiver reported concerns of child developmental risk as determined by screening using the PEDS. Following additional consent at the second phase, interviewers asked caregivers to respond to questions related to their childhoods (ACEs) using a paper-based survey. This analysis was limited to respondents who (1) had children aged >4 months, the earliest age at which the PEDS is consistently sensitive and valid (excluded 344); (2) were the child's biological mother, to reduce variability in knowledge of the child's development (excluded 210); (3) were U.S.-born, to reduce unmeasured variability in mothers' potential exposure to negative life events related to home country or immigration (excluded 477); and (4) responded to the ACEs survey (excluded 193), leaving a final sample of 1,293 participants (Figure 1). This study was approved by the Drexel University IRB.

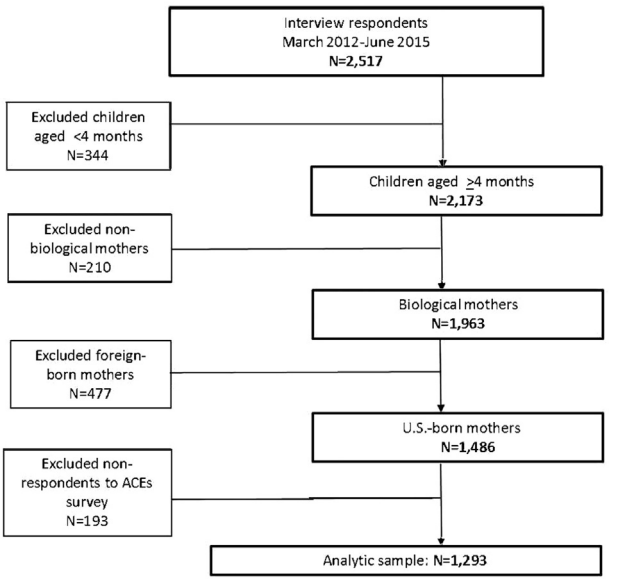

Figure 1. Description of analytic sample selection.

Measures

Descriptions of data collection procedures have been published previously[16,26,27] and are summarized here. The survey contains questions about caregiver's demographic characteristics and household public assistance participation. Caregiver and child health were rated by the caregiver with standard questions from National Health And Nutrition Examination Survey.[28] Household food security status was evaluated and categorized using the 18-question Household Food Security Survey Module.[29]

Depressive symptoms were assessed using a three-item validated screening tool that asks about feeling depressed, sad, or blue in the last week, ≥2 weeks in previous year, and ≥2 years in one's lifetime. Depressive symptoms were indicated by an affirmative response to at least two questions. This screener has 100% sensitivity, 88% specificity, and 66% positive predictive value of presence of depression when compared with the Rand Screening tool for depressive/dysthymic disorders.[30]

Children's developmental risk was assessed with PEDS, a validated ten question parent-reported screening instrument of children's development.[31,32] PEDS sensitivity and specificity are better for children aged ≥4 months than for newborns; therefore, the sample was restricted to children aged ≥4 months to 4 years.[33,34] Parents reported any concerns (*no*, *yes*, or *a little*) in response to questions about the child's development in expressive