



Food Insecurity and Family Well-Being Outcomes among Households with Young Children

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Objectives To investigate associations between household food insecurity and multiple family well-being variables in an effort to illuminate previously understudied, policy-amenable mechanisms through which food insecurity threatens healthy development.

Study design Data are drawn from the nationally representative Early Childhood Longitudinal Study—Birth Cohort. The Early Childhood Longitudinal Study—Birth Cohort contains longitudinal data on household food insecurity and several family well-being factors including maternal physical and mental health, positive parenting practices and disciplinary strategies, and frequency and severity of spousal conflict. We use regression models with lagged dependent variables to estimate associations between food insecurity and family well-being outcomes, on a subsample of low-income families (N ≈ 2100-4700).

Results Household food insecurity was significantly associated with poorer maternal physical health; increased depressive symptoms and use of harsh discipline strategies; and greater frequency and negativity of conflict between parents. Associations were strongest and most consistent when children were preschool aged. Transitions into food insecurity between toddlerhood and preschool were also associated with significantly worse parental physical and mental health outcomes, and more family conflict, with similar though slightly weaker and less consistent associations for transitioning into food insecurity between infancy and toddlerhood.

Conclusions Food insecurity is associated with significant decreases in family health and well-being. Clinicians and other public health officials play a critical role in assessing risk for children and families, and linking families with supportive services. Screening families experiencing or at risk for food insecurity and connecting them with resources is an avenue through which public health practitioners can support family health. (*J Pediatr* 2018;196:275-82).

In 2015, more than 13 million US children lived in food-insecure households, meaning they lived in homes where they lacked access to sufficient food to support a healthy and active lifestyle.¹ This is worrisome because a large body of literature links food insecurity with a range of adverse child outcomes, including health.²⁻⁸ Emerging research suggests that food insecurity during the earliest childhood years may be especially damaging to children's cognitive, social-emotional, and mental and physical health.⁹⁻¹¹ Indeed, the harm food insecurity can inflict on child health and wellbeing was recently articulated in an American Academy of Pediatrics policy statement.¹²

Beyond direct effects of food insecurity on child brain development, which could arise if food insecurity contributes to nutritional deprivation leading to iron deficiency and protein-energy malnutrition,¹³⁻¹⁵ an additional yet underexplored possible pathway from food insecurity to reduced child well-being is via disrupted parental well-being and family functioning. Biological models imply that when nonhuman primates experience unpredictable access to food, mothers exhibit signs of distress, which then appear to impair interactions with their young.¹⁶ Similarly, theoretical models from psychology¹⁷ suggest that lacking consistent access to food is likely to increase parental stress and depression,^{18,19} potentially also interfering with parental physical health,²⁰ use of positive parenting practices and sensitive (vs harsh) disciplinary strategies, and parents' relationships with each other.²¹⁻²⁷

These disruptions in family well-being are potentially most alarming when exposure occurs during the first 5 years, a highly sensitive period of development characterized by rapid brain growth.^{15,28} Parents are the primary providers of the support and stimulation needed to promote growth in the brain regions underlying key cognitive and social skills.²⁹ If food insecurity interferes with parental well-being and family functioning during this time, reducing the quality of environmental inputs, that could explain prior research finding negative associations between food insecurity and children's well-being.

The few existing studies that explore links between food insecurity and family well-being have focused on a relatively narrow set of potential outcomes: maternal depression and parenting practices. Household food insecurity is associated with increased maternal depression and poorer parent-child interaction quality

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Supported by a RIDGE Food Assistance Scholars grant (to A.J.), from the Institute for Research on Poverty (IRP) at the University of Wisconsin, Madison. The authors declare no conflicts of interest.

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<https://doi.org/10.1016/j.jpeds.2018.01.026>

among mothers of infants,^{23,30} increased maternal depression and anxiety among mothers of young children,^{7,11} and increased parental stress among mothers of 3- to 5-year-olds.¹⁹ To date, however, few studies have extended this inquiry beyond a limited set of family well-being variables to include other theoretically important pathways through which food insecurity could negatively impact young children's development, such as parental physical health,¹⁷ the frequency and degree of interparental conflict, and parents' use of harsh disciplinary practices, all of which are amenable to public health policy interventions. In addition, few prior studies have considered such a comprehensive suite of family well-being factors across the entirety of the "sensitive" early child developmental period: infancy, toddlerhood, and preschool. Moreover, only select prior studies have examined whether transitions around food insecurity during these key developmental phases is negatively linked to family well-being during the same period.

The current study provides additional evidence that pediatricians and other public health officials may find useful in advocating for extended services in the face of food insecurity.¹² Using nationally representative data on a recent US birth cohort, we estimate associations between food insecurity across early childhood and a comprehensive set of family well-being variables known to impact healthy child development during the critical early childhood years.

Methods

Data were drawn from the Early Childhood Longitudinal Study—Birth Cohort (ECLS-B), a nationally representative study of children born in the US in 2001. A total of 14 000 live-birth certificates representing 96 counties or county-clusters generated a baseline sample of approximately 10 700 children. Mothers were interviewed and children were assessed in 2001 (9 months old; wave 1); in 2003 (2 years old; wave 2); in 2005-2006 (preschool; wave 3); and in 2006-2007 (kindergarten). The current study uses data from the first 3 waves, for which response rates were 74%, 93%, and 91%, respectively.

Given that the low-income and food-insecure populations are highly overlapping, analyses focus on the subsample of children with valid food insecurity and outcome data whose household incomes were at or below 185% of the Federal Poverty Line (the income cutoff for the Special Supplemental Nutrition Program for Women, Infants, and Children). Sample sizes ranged from $n \approx 2100$ -4700, depending on the outcome (Tables I and II). Missing data on covariates were multiply imputed using the imputation for chained equations procedure in Stata v 14 (Stata Corp, College Station, Texas); estimates were combined across 10 imputed data sets using MIM. The *svy* command was used in all regression analyses to accommodate constructed survey weights, which account for the study's complex design and survey non-response, and the *subpop* command was applied so that SEs account for cases excluded from the analytic sample because they were not low income. The final weighted analytic sample is representative of all low-income children born in the US in 2001.

Measures

Household Food Insecurity. Mothers completed the full 18-item US Department of Agriculture's Core Food Security Module at each ECLS-B wave. Items ask about household parents' and children's conditions and behaviors when food is limited in quality or quantity during the prior 12 months. At each wave, we constructed a series of 3 dummy variables indicating whether the household experienced food security (0-2 items endorsed; the reference category), low food security (3-7 items endorsed), or very low food security (8-18 items endorsed). For models assessing associations between changes in food security status and family well-being, we constructed a set of 4 dummy variables indicating entry into food insecurity, exit from food insecurity, or stable food insecurity, and compared these with families who experienced stable food security. These variables assessed change (or stability) in food security status between waves 1 (child age 9 months) and 2 (child age 2 years), and separately, between waves 2 and 3 (child age 4 years). Across these change variables, the low and very low food security groups were combined.

Family Well-Being. We examined 6 measures of mother-reported family well-being. Maternal health was assessed with a standard³¹ self-reported measure of physical health, with responses ranging from poor (=1) to excellent (=5) health. Maternal depression was assessed in the ECLS-B using the Center for Epidemiologic Studies Depression Scale at waves 1 and 3, and switching to the Composite International Diagnostic Interview—Short Form at wave 2 only. The Center for Epidemiologic Studies Depression Scale is a widely used, well-validated instrument^{32,33} including 12 items asking mothers to assess for instance whether they had lost their appetite, felt blue, or felt that everything was an effort. Items were coded as "1" if mothers reported feeling this way "occasionally or moderately" or "mostly or all" of the time, 0 if they reported feeling this way "some or a little" or "never." These dichotomized items were summed (range 0-12, $\alpha > 0.80$) and standardized. The Composite International Diagnostic Interview—Short Form is also widely used^{11,34} made up of 2 subscales, 1 for dysphoric mood and 1 for anhedonia. Both subscales used 2 stem questions to ascertain if mothers experienced symptoms of dysphoria or anhedonia for "about half of each day," "almost every day," for 2 weeks over the past year; if stem items were endorsed, mothers responded to follow-up questions about 7 specific symptoms, if the stems are not endorsed, mothers received a score of 0. We summed (range 0-7) and then standardized responses to the stem and subsequent questions. Cognitive stimulation in the home was assessed with the sum of 3 items from the Home Observation for Measurement of the Environment scale³⁵ that measured the frequency with which parents read books, sang songs, or told stories with the child ($\alpha = 0.57$ -0.62); items were summed (range 0-9) and standardized. Harsh discipline is a continuous measure of whether the parent reported using harsh or violent disciplinary strategies¹⁸ including hitting, spanking, making fun of, or yelling at/

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