

Food Insecurity During Early Childhood: Marker for Disparities in Healthy Growth and Development

Rachel S. Gross, MD, MS, Alan L. Mendelsohn, MD

Food insecurity is an important social determinant of health,¹ a key indicator of limited resources and material hardship,^{2,3} and a source of significant stress as parents and other caregivers seek to provide healthy child nutrition.⁴ As such, food insecurity would be expected to adversely affect child growth^{5,6} and health and development more broadly.^{7,8} However, there has been limited study of associations between food insecurity and child outcomes during the critical period of early childhood.^{9–11}

The authors of “Food Insecurity, Health and Development in Children Under Age Four Years” aim to address this gap by using a large sample of families at high risk for both food insecurity and child health disparities.¹² Contrary to the authors’ hypotheses, limited relations between food insecurity and child obesity or other growth parameters were found in the study. The only significant associations were for children between 25 and 36 months old, for whom household food insecurity was associated with increased adjusted odds of obesity. In contrast, no significant associations were found after adjustment for covariates at other ages or in relation to child food insecurity.

An important strength of the study was the inclusion of >28 000 racially and ethnically diverse families from across 5 cities in the United States. The inclusion of children from birth to 4 years enabled separate analyses of each year of life from infancy to early

preschool. This is notable because food insecurity likely has different impacts at different ages. However, the study’s cross-sectional design limits causal inference, especially in the context of previous work documenting a broad range of family impacts relevant to healthy growth.

In accumulating research, it has been shown that food insecurity affects feeding practices^{13–15} and styles^{16–18} that contribute to early child obesity. In quantitative analyses, it has been shown that food insecurity is associated with greater consumption of low-cost, high-energy-dense foods; reduced consumption of fruits and vegetables¹⁴; and greater focus on quantity rather than quality.¹⁵ Studies have also shown that food insecurity is associated with more nonresponsive maternal-infant feeding styles, including controlling, indulgent, and laissez-faire.^{16–18} At a granular level, recent qualitative research of mothers with significant material hardships has documented their lived experience feeding their young children.¹⁹ In early infancy, mothers with food insecurity reported engaging in decreased breastfeeding because of perceived poor maternal diet and high stress. Specifically, they reported concerns about breast milk quantity and quality, resulting in supplementation with formula or discarding of breast milk. In late infancy and toddlerhood, mothers with food insecurity described limiting expensive healthy foods, including fruits and vegetables. Taken together,

Divisions of General Pediatrics and Developmental-Behavioral Pediatrics, Department of Pediatrics, School of Medicine, New York University, New York, New York

Opinions expressed in these commentaries are those of the authors and not necessarily those of the American Academy of Pediatrics or its Committees.

DOI: <https://doi.org/10.1542/peds.2019-2430>

Accepted for publication Jul 24, 2019

Address correspondence to Rachel S. Gross, MD, MS, Division of General Pediatrics, Department of Pediatrics, New York University School of Medicine, 462 First Ave, New York, NY 10016. E-mail: rachel.gross@nyulangone.org

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

Copyright © 2019 by the American Academy of Pediatrics

FINANCIAL DISCLOSURE: The authors have indicated they have no financial relationships relevant to this article to disclose.

FUNDING: No external funding.

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

COMPANION PAPER: A companion to this article can be found online at www.pediatrics.org/cgi/doi/10.1542/peds.2019-0824.

To cite: Gross RS and Mendelsohn AL. Food Insecurity During Early Childhood: Marker for Disparities in Healthy Growth and Development. *Pediatrics*. 2019;144(4):e20192430

both quantitative and qualitative findings provide strong evidence for potential linkages between food insecurity and key pathways related to child obesity.

As noted by the authors, the cross-sectional design limited the study's capacity to demonstrate causal relations. This is especially important because mechanisms linking food insecurity and child obesity are likely complex, longitudinal, and cascading. In particular, because food insecurity has been shown to fluctuate over time,²⁰ relations between food insecurity and feeding styles and practices vary depending on timing and duration across pregnancy and early childhood,¹⁷ and obesity develops over time in the context of cumulative unhealthy behaviors.²¹ As such, interventional and longitudinal study will be needed to establish causal pathways, and negative findings from this study should be interpreted with caution.

Another main finding from this study is the association between food insecurity and concerns about child health and development, underscoring food insecurity as a risk for health outcomes and a marker for family vulnerability more broadly. This finding is consistent with both theoretical considerations ("family stress model")²² and empirical evidence that material hardships likely result in adverse child outcomes through experience of family stressors.⁴ Such a stressor could be maternal depressive symptoms, which this study found to be more than doubled in the context of food insecurity.²³ Furthermore, a broad literature has documented how parent perception of child vulnerability can be a barrier to supportive parent-child interactions, attachment, and child mental health.²⁴ Findings from this study of associations between food insecurity and child health and development beginning in infancy in a population-level sample of high-risk families

represent a major contribution to the understanding of toxic stress and its impacts on families.²⁵

Comprehensive policies to reduce poverty-related disparities in early childhood are reinforced in this new study. First, findings support the American Academy of Pediatrics recommendations to screen for food insecurity and refer to nutrition assistance programs and emergency food services.²⁶ Second, findings support recommendations for primary prevention of obesity and developmental disparities through parenting support in the context of family poverty, including food insecurity. Finally, pathways linking food insecurity to physical health and development likely include mechanisms related to nutrition and stress.^{5,24} As such, findings from this study suggest that primary care preventive interventions^{27,28} need to simultaneously target parenting across feeding and developmental domains to maximally reduce poverty-related disparities.

REFERENCES

1. Coleman-Jensen A, Gregory C, Singh A. *Household Food Security in the United States in 2013*. Washington, DC: US Department of Agriculture, Economic Research Service; 2014
2. Gundersen C, Kreider B, Pepper J. The economics of food insecurity in the United States. *Appl Econ Perspect Policy*. 2011;33(3):281–303
3. Gershoff ET, Aber JL, Raver CC, Lennon MC. Income is not enough: incorporating material hardship into models of income associations with parenting and child development. *Child Dev*. 2007;78(1):70–95
4. McCurdy K, Gorman KS, Metallinos-Katsaras E. From poverty to food insecurity and child overweight: a family stress approach. *Child Dev Perspect*. 2010;4(2):144–151
5. Bronte-Tinkew J, Zaslow M, Capps R, Horowitz A, McNamara M. Food insecurity works through depression, parenting, and infant feeding to

influence overweight and health in toddlers. *J Nutr*. 2007;137(9):2160–2165

6. Metallinos-Katsaras E, Sherry B, Kallio J. Food insecurity is associated with overweight in children younger than 5 years of age. *J Am Diet Assoc*. 2009; 109(10):1790–1794
7. Cook JT, Frank DA. Food security, poverty, and human development in the United States. *Ann N Y Acad Sci*. 2008; 1136:193–209
8. Lee JS, Gundersen C, Cook J, Laraia B, Johnson MA. Food insecurity and health across the lifespan. *Adv Nutr*. 2012;3(5): 744–745
9. Cutts DB, Meyers AF, Black MM, et al. US Housing insecurity and the health of very young children. *Am J Public Health*. 2011;101(8):1508–1514
10. Frank DA, Casey PH, Black MM, et al. Cumulative hardship and wellness of low-income, young children: multisite surveillance study. *Pediatrics*. 2010; 125(5). Available at: www.pediatrics.org/cgi/content/full/125/5/e1115
11. Jacknowitz A, Morrissey T, Brannegan A. Food insecurity across the first five years: triggers of onset and exit. *Child Youth Serv Rev*. 2015;53:24–33
12. Drennen CR, Coleman SM, Ettinger de Cuba S, et al. Food insecurity, health and development in children under age four years. *Pediatrics*. 2019;144(4): e20190824
13. Orr SK, Dachner N, Frank L, Tarasuk V. Relation between household food insecurity and breastfeeding in Canada. *CMAJ*. 2018;190(11):E312–E319
14. Drewnowski A, Specter SE. Poverty and obesity: the role of energy density and energy costs. *Am J Clin Nutr*. 2004;79(1): 6–16
15. Matheson DM, Varady J, Varady A, Killen JD. Household food security and nutritional status of Hispanic children in the fifth grade. *Am J Clin Nutr*. 2002; 76(1):210–217
16. Gross RS, Mendelsohn AL, Fierman AH, Racine AD, Messito MJ. Food insecurity and obesogenic maternal infant feeding styles and practices in low-income families. *Pediatrics*. 2012;130(2): 254–261
17. Gross RS, Mendelsohn AL, Messito MJ. Additive effects of household food

- insecurity during pregnancy and infancy on maternal infant feeding styles and practices. *Appetite*. 2018;130:20–28
18. Orr CJ, Ben-Davies M, Ravanbakht SN, et al. Parental feeding beliefs and practices and household food insecurity in infancy. *Acad Pediatr*. 2019; 19(1):80–89
 19. Gross RS, Mendelsohn AL, Arana MM, Messito MJ. Food insecurity during pregnancy and breastfeeding by low-income Hispanic mothers. *Pediatrics*. 2019;143(6):e20184113
 20. Nord M, Hopwood H. Recent advances provide improved tools for measuring children's food security. *J Nutr*. 2007; 137(3):533–536
 21. Ward ZJ, Long MW, Resch SC, et al. Simulation of growth trajectories of childhood obesity into adulthood. *N Engl J Med*. 2017;377(22):2145–2153
 22. Conger RD, Conger KJ, Elder GH Jr, et al. A family process model of economic hardship and adjustment of early adolescent boys. *Child Dev*. 1992;63(3): 526–541
 23. Whitaker RC, Phillips SM, Orzol SM. Food insecurity and the risks of depression and anxiety in mothers and behavior problems in their preschool-aged children. *Pediatrics*. 2006;118(3). Available at: www.pediatrics.org/cgi/content/full/118/3/e859
 24. Zaslow M, Bronte-Tinkew J, Capps R, et al. Food security during infancy: implications for attachment and mental proficiency in toddlerhood. *Matern Child Health J*. 2009;13(1):66–80
 25. Shonkoff JP, Garner AS; Committee on Psychosocial Aspects of Child and Family Health; Committee on Early Childhood, Adoption, and Dependent Care; Section on Developmental and Behavioral Pediatrics. The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*. 2012;129(1). Available at: www.pediatrics.org/cgi/content/full/129/1/e232
 26. Council on Community Pediatrics; Committee on Nutrition. Promoting food security for all children. *Pediatrics*. 2015;136(5). Available at: www.pediatrics.org/cgi/content/full/136/5/e1431
 27. Gross RS, Mendelsohn AL, Gross MB, Scheinmann R, Messito MJ. Randomized controlled trial of a primary care-based child obesity prevention intervention on infant feeding practices. *J Pediatr*. 2016; 174:171–177.e2
 28. Gates CB, Weisleder A, Mendelsohn AL. Mitigating the effects of family poverty on early child development through parenting interventions in primary care. *Acad Pediatr*. 2016;16(suppl 3): S112–S120

Food Insecurity During Early Childhood: Marker for Disparities in Healthy Growth and Development

Rachel S. Gross and Alan L. Mendelsohn

Pediatrics originally published online September 9, 2019;

Updated Information & Services

including high resolution figures, can be found at:
<http://pediatrics.aappublications.org/content/early/2019/09/05/peds.2019-2430>

References

This article cites 23 articles, 8 of which you can access for free at:
<http://pediatrics.aappublications.org/content/early/2019/09/05/peds.2019-2430#BIBL>

Subspecialty Collections

This article, along with others on similar topics, appears in the following collection(s):

Obesity

http://www.aappublications.org/cgi/collection/obesity_new_sub

Public Health

http://www.aappublications.org/cgi/collection/public_health_sub

Permissions & Licensing

Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:

<http://www.aappublications.org/site/misc/Permissions.xhtml>

Reprints

Information about ordering reprints can be found online:

<http://www.aappublications.org/site/misc/reprints.xhtml>

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



PEDIATRICS®

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Food Insecurity During Early Childhood: Marker for Disparities in Healthy Growth and Development

Rachel S. Gross and Alan L. Mendelsohn

Pediatrics originally published online September 9, 2019;

The online version of this article, along with updated information and services, is located on the World Wide Web at:

<http://pediatrics.aappublications.org/content/early/2019/09/05/peds.2019-2430>

Pediatrics is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. Pediatrics is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2019 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 1073-0397.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

