



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

Obesity and Hunger Threaten the Foundations of Child Health

Sandra G. Hassink, MD, MSc; Gerry Fairbrother, PhD

From the Sandra G Hassink, MD, LLC (SG Hassink), Wilmington, Del; and Fairbrother Policy Studies, LLC, Policy and Health Services, Academic Pediatrics (G Fairbrother), Santa Fe, NM

The authors have no conflicts of interest to disclose.

Address correspondence to Sandra G. Hassink, MD, MSc, 2602 Pennington Dr, Wilmington, DE 19810 (e-mail: shassink@aap.net).

Received for publication June 3, 2020; accepted August 6, 2020.

ACADEMIC PEDIATRICS 2020;XXX:1–5

ON THE FACE of it, childhood obesity and child hunger seem like very different problems. However, a deeper look reveals that the root causes of each are intertwined and overlapping. Both are conditions of poverty, both result from lack of nutritious food, and both lead to disease and affect large numbers of children. Childhood obesity and food insecurity can co-occur, and in some children food insecurity is associated with an increased risk of obesity.^{1,2} Further, and especially important now, both obesity and food insecurity confer increased risk from coronavirus disease 2019 (COVID-19) and are potentially exacerbated by the stress of food scarcity during the pandemic.

BOTH OBESITY AND FOOD INSECURITY HAVE THEIR ROOTS IN POVERTY

Food insecurity and obesity in children co-exist with childhood poverty and both are most prevalent in the poorest regions.^{3–5} In 2017, nearly 35% of households with children and incomes below 185% of the federal poverty level, were food insecure compared to <6% among more affluent households.⁴ A study of 68 school districts in Massachusetts found an independent relationship between community income status and rates of childhood overweight/obesity indicating that the economic status of a family may be more important than race and ethnicity in childhood obesity prevalence.⁶ Common systemic factors that may lead to both obesity and food insecurity in economically disadvantaged populations include, poorer access to and higher cost of nutritious foods and a shared food system that advantages lower-cost, high energy dense foods.⁷

Not surprisingly given the connection with poverty, food insecurity rates vary with economic conditions, with greater food insecurity in economic downturns. In the Great Recession, food insecurity in households with children jumped from 15.8% in December 2007 to a high of 21.3% in June of 2009. By 2018, pre-COVID-19, the

overall rate dropped to 13.9%.⁸ With the sharply enhanced and continuing rise in unemployment due to COVID-19 restrictions, food insecurity has increased and may even exceed levels seen in the Great Recession.⁹

BOTH OBESITY AND FOOD INSECURITY RESULT FROM LACK OF NUTRITIOUS FOOD

Childhood obesity and food insecurity co-exist but their relationship is complex. No consistent theories have yet emerged to explain these relationships. However, we know that availability of nutritious food is key to reducing both obesity and food insecurity in children.

The underlying causes of food insecurity and obesity have to do with our inability to ensure that all children have a daily food intake that “contains an appropriate density of nutrients, is sufficiently diverse that it supplies adequate but not excessive amounts of nutrition, is palatable and culturally acceptable, affordable and available year round and overall supports normal growth and development.”¹⁰ Food insecurity may compromise nutritional quality with the purchase of cheaper, more energy dense foods.¹¹ Findings suggest prices of fruits and vegetables and fast food may have some influence on consumption in certain subgroups, such as children and low-income families.^{12,13} In a longitudinal study, children’s weight was positively related to fruit and vegetable prices with children in poverty and children at risk for overweight the most price sensitive.¹⁴ Affordable food pricing for nutritious foods should be considered when policy makers look at economic strategies to drive purchasing.¹³

BOTH OBESITY AND FOOD INSECURITY LEAD TO DISEASE

Both obesity and food insecurity negatively affect child and later adult health and well-being. Children in food-insecure households have worse general health and are more likely to have asthma, chronic skin conditions and

depressive symptoms, colds, stomach problems,¹⁵ and stress.^{16,17} Compromise in immune functioning associated with food insecurity may also compromise overall child health status.¹⁸ In addition, children who are food insecure have a greater risk of hospitalization, and food-insecure households have higher mean health care expenditures than food-secure households.¹⁹

Childhood obesity is a multisystem chronic disease and children with obesity are more likely to have high blood pressure, nonalcoholic fatty liver disease, asthma,²⁰ type 2 diabetes mellitus, polycystic ovary syndrome, sleep apnea, musculoskeletal disorders, and psychological problems.²¹ These underlying disease states make children more vulnerable to adverse outcomes if they do contract COVID-19. Cardiovascular disease and type 2 diabetes in adulthood are linked to obesity in childhood.^{22,23} Childhood obesity results in increased health care costs from prescription drugs, emergency room visits, and outpatient expenditures.²⁴

It is important to appreciate that access to healthy food is not only crucial to prevention of childhood obesity and hunger, it also constitutes treatment for childhood obesity²⁵ and the health effects of hunger.²⁶ Withholding healthy food from children with obesity and obesity-related comorbidities is essentially withholding treatment for their disease.

BOTH AFFECT LARGE NUMBERS OF CHILDREN

Both obesity and food insecurity affect large numbers of children. In the United States in 2015 to 2016, the prevalence rates for childhood obesity were 13.9% in children 2 to 5 years, 18.4% in children 6 to 11 years, and 20.6% in adolescents 12 to 19 years with an overall prevalence of 18.5%.²⁷ In 2018, 13.9% of households with children under 18 years were food insecure. If these households were headed by a single man or woman, rates of food insecurity increased to 15.9% and 27.8%, respectively.²⁸ Childhood obesity rates have progressed steadily upward from 5% to 6% in the 1970s to 18.5% in 2016.²⁷ In contrast, food insecurity rates vary with economic conditions as described earlier.

PROGRAMS THAT PROVIDE FOOD FOR LOW-INCOME CHILDREN AND FAMILIES

Not surprisingly, given the level of food insecurity among low-income households, there are a number of federal programs that provide food for low-income children and families—15 in the US Department of Agriculture (USDA) alone.²⁹ Specific federal programs which “serve as critical supports for the physical and mental health and academic competence of children” are SNAP, WIC, Child and Adult Care Food Program (CACFP), School breakfast and lunch program, and the Summer Food Service Program.²⁶ Food programs like these are opportunities to provide healthy food for children most at risk for food insecurity and obesity. These programs serve a critical role, but they are lacking in important ways, primarily in

having inadequate levels of funding and in having requirements that make it difficult for families to access the benefit.

SUPPLEMENTAL NUTRITION ASSISTANCE PROGRAM (SNAP) AND SPECIAL SUPPLEMENTAL NUTRITION PROGRAM FOR WOMEN, INFANTS, AND CHILDREN (WIC)

Both SNAP and WIC are important sources of nutrition for children and infants. SNAP is the largest federal nutrition assistance program. It provides benefits to eligible low-income individuals and families via an electronic benefits transfer (EBT) card. This card can be used like a debit card to purchase eligible food in authorized retail food stores. WIC provides federal grants to states for supplemental foods, health care referrals, and nutrition education for low-income pregnant, breastfeeding, and nonbreastfeeding postpartum women, and to infants and children up to age 5 who are found to be at nutritional risk.^{29,30}

In fiscal year 2017, SNAP served an average of 8.6 million households with children each month, representing 42% of all SNAP households.³¹ Since the 2008 recession, SNAP caseloads have declined with 45 states having fewer SNAP recipients in 2018 than in 2013. In 10 states by 2018, SNAP participation had fallen to prerecession levels and was expected drop even further because of the improving economy.³² Instead, in response to widespread unemployment, school and child care closures due to COVID-19, SNAP enrollment is expected to increase for the foreseeable future.³³ SNAP is even more crucial in the economic downturn because increased access to and participation in SNAP reduces the rise in food insecurity for children³⁴ and risk of obesity in children under 3.³⁵ Households that experience reduction of SNAP benefits have increased household food insecurity, child food insecurity, housing instability, and energy insecurity.³⁶

In contrast, WIC participation initially dropped with the onset of the COVID pandemic due to in person visit requirements, closure of WIC offices, and enrollment timing limitations.³⁷ These added to known barriers to WIC participation which include 1) eligible families not knowing they can apply, 2) at risk families not perceiving a need for the program,³⁸ 3) fears that WIC participation may threaten immigration status³⁹; 4) fear of stigma from receiving government aid,⁴⁰ 5) difficulty with transportation, 6) need to miss work, 7) stress, and 8) language concerns.⁴¹ Making WIC widely accessible to families hit hard by COVID-19 is crucial because WIC has been shown to both reduce the prevalence of food insecurity^{42,43} and obesity⁴⁴ and is an important contributor to early childhood health.

CACFP PROGRAMS TARGETING EARLY CHILD CARE AND EDUCATION SITES

In contrast to SNAP and WIC, which provide funds to households so that they might buy food, other programs provide food directly to recipients in specific sites. Both

types of programs lessen the burden of food costs on families. The Child and Adult Care Food Program (CACFP), one of the latter types of programs, provides cash reimbursement to family day care, child care centers, homeless shelters, and after-school programs for meals and snacks served to children.⁴⁵ Attending a CACFP-participating center has been associated with reduction of underweight and overweight with a possible reduction in food insecurity.⁴⁶ There have been successful multicomponent intervention trials in child care centers which have prevented excess weight gain especially for children higher weight categories and children with lower socioeconomic status.⁴⁷ Both center and home-based child care are subject to state and sometimes local or federal regulatory control, representing an opportunity to influence nutrition and feeding practices in a systematic way.⁴⁸

SCHOOL AND SUMMER FOOD PROGRAMS

Participation in school meal programs decreases food insecurity of low-income students during the school year^{49,50} and decreases risk of overweight for girls who have food-insecurity.⁵¹ School closures due to the COVID-19 pandemic have exacerbated food insecurity by reducing children's access to school meals. Summer food assistance via electronic benefit cards reduced the prevalence of very low food security among school aged children by one third and improved children's dietary quality.⁵²

POLICY RECOMMENDATIONS

Food insecurity and obesity are damaging to child health and negatively impact their health as adults. Focusing on policies and programs that take aim at the double burden of food insecurity and obesity is a population health priority. This is especially urgent in light of the effects of COVID-19 on availability and access to healthy food.

SET A NATIONAL PRIORITY TO ELIMINATE CHILD FOOD INSECURITY AND INCREASE THE QUALITY OF NUTRITION FOR ALL CHILDREN

Poor diet is now the leading cause of poor health in the United States, causing more than half a million deaths per year.⁵³ The country needs to correct this. The COVID-19 pandemic is laying bare the inequalities in availability of and access to nutritious food. Federal nutrition assistance programs should provide access to the healthiest possible nutrition for children and should ensure that all eligible children and families have healthy nutrition year round.

INCREASE FUNDING AND RELAX REQUIREMENTS FOR FEDERAL FOOD PROGRAMS

Overall funding for both SNAP and WIC needs to be increased, and specific benefits to families need to rise as well. SNAP benefits to families were derived from the most meager of USDA's 4 food plans, and even before the pandemic, were inadequate and needed to be increased.^{54,55} The flexibility of SNAP-Ed to assist in

food distribution and enrollment in SNAP and the pandemic electronic benefit transfer should be increased through and beyond the pandemic.⁵⁶

To maximize the health impact of this program particularly in light of the COVID-19 pandemic, barriers to enrollment and participation should be aggressively addressed by state and federal agencies as well as health care systems.

INCENTIVIZE HEALTHY EATING IN FEDERAL PROGRAMS

Studies have shown that adults receiving SNAP benefits improved their diet quality with an increase of fruit and vegetable intake when they received incentives such as; for every dollar of SNAP benefits the household spent on fruits and vegetables in participating retailers, 30 cents in SNAP benefits was added back to their EBT card.⁵⁷⁻⁵⁹ Incentives for healthy food are supported by both adult SNAP participants and eligible nonparticipants.⁶⁰ SNAP is an ideal vehicle for incentivizing healthy eating both within program requirements and in SNAP education. States should view increasing participation and lowering barriers to participation part of their public health strategy. Health care systems should consider SNAP enrollment part of chronic disease treatment.

STRENGTHEN NUTRITIONAL STANDARDS IN FEDERAL FEEDING PROGRAMS

School meals and snacks may fulfill up to 2 of 3 of a child's daily nutritional requirements⁶¹; however, the nutritional content of these meals can be highly variable.⁶² Policies need to assure that all children will receive a healthy high-quality school meal and snack in their school setting. Emergency relief during COVID-19 should include requiring Federal Emergency Management Agency in conjunction with the USDA to coordinate meal distribution through the course of the pandemic, similar to natural disaster relief, extend the expanded EBT through and beyond the pandemic, provide funding relief for school nutrition programs to cover losses incurred during school closures and allow free meals to all children to allow time for processing of new school meal applications in the transition back to school.⁵⁶

ADDRESS-SPECIFIC BARRIERS TO FOOD ACCESS FACED BY IMMIGRANTS

Compared to nonimmigrant families, immigrant families are more likely to experience food insecurity.⁶³ One quarter of children under 5 (5,577,000 children in 2018) have at least 1 parent who is an immigrant with 93.6% of children in these families born in the United States.⁶⁴

Adults who are documented immigrants who are not part of specific exempt groups, ie, refugees, lawful permanent residents, and have been in the United States fewer than 5 years cannot receive SNAP benefits.⁶⁵ However, these families have the right to apply for SNAP their US citizen children.⁶⁶ Nevertheless, studies have shown that

eligible children of parents who are immigrants are less likely to participate in SNAP when their parents are ineligible.⁶⁷

A recent study documented a decrease in SNAP participation among immigrant families and the authors and others suggest that fear among immigrant families related to participation in SNAP due to public charge rulings, lack of education about enrollment of citizen children, need for assurances of data confidentiality of applicant families, and need to reduce anti-immigrant rhetoric are all important strategies to address food insecurity in this population.^{68,69}

CONCLUSION

Food insecurity and obesity are damaging to child and adult health. Childhood, a time when optimal nutrition essential for healthy growth and development, is being compromised by systemic factors that we can change. Understanding the impact and overlap of obesity and food insecurity on child health can help us focus on policies that address the overall state of nutrition-related illness that compromise the health and well-being of our population.

REFERENCES

1. Au LE, Zhu SM, Nhan LA, et al. Household food insecurity is associated with higher adiposity among US schoolchildren ages 10–15 years: the healthy communities study. *J Nutr*. 2019;149:1642–1650.
2. Flórez KR, Katic BJ, López-Cevallos DF, et al. The double burden of food insecurity and obesity among Latino youth: understanding the role of generational status. *Pediatr Obes*. 2019;14:e12525.
3. Trust for America's Health State of Childhood Obesity. The State of Obesity 2018: better policies for a Healthier America. Available at: <https://www.tfah.org/report-details/the-state-of-obesity-2018/>. Accessed August 31, 2020.
4. Coleman-Jensen A, Rabbitt MP, Gregory CA, et al. Economic Research Report No. (ERR-270) 47. 2019:1–35. Available at: <https://www.ers.usda.gov/publications/pub-details/?pubid=94848>. Accessed January 12, 2020.
5. Rutten LJF, Yaroch AL, Colon-Ramos U, et al. Poverty, food insecurity, and obesity: a conceptual framework for research, practice, and policy. *J Hunger Environ Nutr*. 2010;5:403–415.
6. Rogers R, Eagle TF, Sheetz A, et al. The relationship between childhood obesity, low socioeconomic status, and race/ethnicity: lessons from Massachusetts. *Child Obes*. 2015;11:691–695.
7. Rutten LF, Yaroch AL, Patrick H, et al. Obesity prevention and national food security: a food systems approach. *ISRN Public Health*. 2012;2012:10.
8. Coleman-Jensen A, Rabbitt MP, Gregory CA, Singh A. Household Food Security in the United States in 2018, ERR-270, United States Department of Agriculture, Economic Research Service. 2019.
9. Feeding America. The impact of the coronavirus on food insecurity. 2020. Available at: <https://www.feedingamerica.org/research/coronavirus-hunger-research>. Accessed August 31, 2020.
10. Allen LH. Causes of nutrition-related public health problems of preschool children: available diet. *J Pediatr Gastroenterol Nutr*. 2006;43(suppl 3):S8–12.
11. Drewnowski A. The cost of US foods as related to their nutritive value. *Am J Clin Nutr*. 2010;92:1181–1188.
12. Powell LM, Chaloupka FJ. Food prices and obesity: evidence and policy implications for taxes and subsidies. *Milbank Q*. 2009;87:229–257.
13. Sturm R, Datar A. Body mass index in elementary school children, metropolitan area food prices and food outlet density. *Public Health*. 2005;119:1059–1068.
14. Sturm R, Datar A. Food prices and weight gain during elementary school: 5-year update. *Public Health*. 2008;122:1140–1143.
15. Thomas MC, Miller DP, Taryn W. Food insecurity and child health. *Pediatrics*. 2019;144:1–9.
16. Casey P, Goolsby S, Berkowitz C. Maternal depression, changing public assistance, food security, and child health status. *Pediatrics*. 2004;113:298–304.
17. Heflin CM, Iceland J. Poverty, material hardship, and depression. *Soc Sci Q*. 2009;90:1051–1071.
18. Carlsson E, Frostell A, Ludvigsson J, et al. Psychological stress in children may alter the immune response. *J Immunol*. 2014;192:2071–2081.
19. Berkowitz SA, Seligman HK, Basu S. Impact of food insecurity and SNAP participation on healthcare utilization and expenditure. University of Kentucky Center for Poverty Research Discussion Paper Series, DP2017-02.2017; 1-65. Available at: <http://www.ukcpr.org/research/discussion-papers>. Accessed January 12, 2020.
20. Sharma V, Coleman S, Nixon J, et al. A systematic review and meta-analysis estimating the population prevalence of comorbidities in children and adolescents aged 5 to 18 years. *Obes Rev*. 2019;20:1341–1349.
21. Reilly JJ, Methven E, McDowell ZC. Health consequences of obesity. *Arch Dis Child*. 2003;88:748–752.
22. Sommer A, Twig G. The impact of childhood and adolescent obesity on cardiovascular risk in adulthood: a systematic review. *Curr Diab Rep*. 2018;18:91.
23. Nianogo RA, Arah OA. Investigating the role of childhood adiposity in the development of adult type 2 diabetes in a 64-year follow-up cohort: an application of the parametric G-formula within an agent-based simulation study. *Epidemiology*. 2019;30(suppl 2):S101–S109.
24. Trasande L, Chatterjee S. The impact of obesity on health service utilization and costs in childhood. *Obesity*. 2012;17:1749–1754.
25. Barlow SE; Expert Committee. Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. *Pediatrics*. 2007;120(suppl 4):S164–S192.
26. Council on Community Pediatrics, Committee on Nutrition. Promoting food security for all children. *Pediatrics*. 2015;136:e1431–e1438. <https://doi.org/10.1542/peds.2015-3301>.
27. Hales CM, Carroll MD, Fryar CD, et al. Prevalence of obesity among adults and youth: United States, 2015–2016. *NCHS Data Brief*. 2017;288:1–8.
28. United States Department of Agriculture Economic Research Service. Food security status of U.S. households in 2018. Available at: <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics.aspx>. 2019. Accessed January 12, 2020.
29. USDA Food and Nutrition Service. USDA nutrition assistance programs. Available at: <https://www.nal.usda.gov/fnic/usda-nutrition-assistance-programs>. Accessed May 28, 2020.
30. USDA Food and Nutrition Service. Supplemental nutrition assistance program. Available at: <https://www.fns.usda.gov/snap/supplemental-nutrition-assistance-program>. Accessed May 28, 2020.
31. Cronquist K, Lauffer S. Characteristics of supplemental nutrition assistance program households: fiscal year 2017, US Department of Agriculture, Food and Nutrition Service, Office of Policy Support. 2017;1-129. Available at: <http://www.fns.usda.gov/ops/research-and-analysis>. Accessed January 12, 2020.
32. Rosenbaum D, Keith-Jennings B. Caseload and spending declines have accelerated in recent years. 2019. Available at: <https://www.cbpp.org/research/food-assistance/snap-caseload-and-spending-declines-have-accelerated-in-recent-years>. Accessed July 24, 2020.
33. USDA Food and Nutrition Service. SNAP data tables. 2020. Available at: <https://www.fns.usda.gov/pd/supplemental-nutrition-assistance-program-snap>. Accessed July 23, 2020.
34. Ettinger de Cuba S, Chilton M, Bovell-Ammon A, et al. Loss of SNAP is associated with food insecurity and poor health in working families with young children. *Health Aff*. 2019;38:765–773.

35. Ettinger de Cuba SA, Bovell-Ammon AR, Cook JT, et al. SNAP, young children's health, and family food security and healthcare access. *Am J Prev Med.* 2019;57:525–532.
36. Leung CW, Blumenthal SJ, Hoffnagle EE, et al. Associations of food stamp participation with dietary quality and obesity in children. *Pediatrics.* 2013;131:463–472.
37. USDA Food and Nutrition Service. FNS response to COVID-19. Available at: <https://www.fns.usda.gov/coronavirus>. Accessed August 31, 2020.
38. Black MM. Special supplemental nutrition program for women, infants, and children participation and infants' growth and health: a multisite surveillance study. *Pediatrics.* 2004;114:169–176.
39. Geltman PL, Meyers AF. Immigration legal status and use of public programs and prenatal care. *J Immigrant Health.* 1999;1:91–97.
40. Stuber J, Schlesinger M. Sources of stigma for means-tested government programs. *Soc Sci Med (1982).* 2006;63:933–945.
41. Liu CH, Liu H. Concerns and structural barriers associated with WIC participation among WIC-eligible women. *Public Health Nurs.* 2016;33:395–402.
42. Metallinos-Katsaras E, Gorman KS, Wilde P, et al. A longitudinal study of WIC participation on household food insecurity. *Matern Child Health J.* 2011;15:627–633.
43. Kreider B, Pepper JV, Roy M. Identifying the effects of WIC on food insecurity among infants and children. *South Econ J.* 2016;82:1106–1122.
44. Pan L, Blanck HM, Park S, et al. State-specific prevalence of obesity among children aged 2–4 years enrolled in the special supplemental nutrition program for women, infants, and children—United States, 2010–2016. *MMWR.* 2019;68:1057–1061.
45. Heflin C, Arbeaga I, Gable S. The child and adult care food program and food insecurity. University of Kentucky Center for Poverty Research Discussion Paper Series, DP 2012-10. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.834.7476&rep=rep1&type=pdf>. Accessed January 12, 2020.
46. Korenman S, Abner KS, Kaestner R, et al. The child and adult care food program and the nutrition of preschoolers. *Early Child Res Q.* 2013;28:325–336.
47. Sisson SB, Krampe M, Anundson K, et al. Obesity prevention and obesogenic behavior interventions in child care: a systematic review. *Prev Med.* 2016;87:57–69.
48. Hassink SG. Early child care and education: a key component of obesity prevention in infancy. *Pediatrics.* 2017;140:e20172846.
49. Huang J, Barnidge E, Kim Y. Children receiving free or reduced-price school lunch have higher food insufficiency rates in summer. *J Nutr.* 2015;145:2161–2168.
50. Bartfeld JS, Ahn HM. The school breakfast program strengthens household food security among low-income households with elementary school children. *J Nutr.* 2011;141:470–475.
51. Jones SJ, Jahns L, Laraia BA, et al. Lower risk of overweight in school-aged food insecure girls who participate in food assistance: results from the panel study of income dynamics child 46development supplement. *Arch Pediatr Adolesc Med.* 2003;157:780–784.
52. Collins AM, Klerman JA, Briefel R, et al. A summer nutrition benefit pilot program and low-income children's food security. *Pediatrics.* 2018;141:e20171657.
53. US Burden of Disease Collaborators. The state of US health, 1990–2016: burden of diseases, injuries, and risk factors among US states. *JAMA.* 2018;319:L1444–L1472.
54. Carlson S. *More Adequate SNAP Benefit Would Help Millions of Participants Better Afford Food.* Washington, DC: Center for Budget and Policy Priorities; 2019.
55. Mande J, Willett W, Auerbach J, et al. Report of the 50th anniversary of the White House conference on food, nutrition, and health: honoring the past, taking actions for the future. Boston, MA; March 2020. Diseases, injuries, and risk factors among US states. *JAMA.* 2018;319:L1444–L1472.
56. American Academy of Pediatrics. COVID-19. 2020. Available at: <https://downloads.aap.org/DOFA/COVID-19%20Advocacy%20Report%20April%2015%202020.pdf>. Accessed August 31, 2020.
57. Corcoran, L., Steinley, K. Early childhood program participation, from the national household education surveys program of 2016. (NCES 2017-101.REV). 2019. Available at: <https://nces.ed.gov/pubs2017/2017101REV.pdf>. Accessed January 12, 2020.
58. Harnack L, Oakes JM, Elbel B, et al. Effects of subsidies and prohibitions on nutrition in a food benefit program: a randomized clinical trial [published correction appears in *JAMA Intern Med.* 2017;177(1):144]. *JAMA Intern Med.* 2016;176:1610–1618.
59. Bartlett S, Kerman J, Olsho L, et al. Evaluation of the healthy incentives pilot (HIP): final report: prepared by Abt associates for the US Department of Agriculture, Food and Nutrition Service. 2014. Available at: https://fns-prod.azureedge.net/sites/default/files/ops/HIP-Final_Findings.pdf. Accessed January 13, 2020.
60. Leung CW, Musicus AA, Willett WC. Improving the nutritional impact of the supplemental nutrition assistance program: perspectives from the participants. *Am J Prev Med.* 2017;52(2S2):S193–S198.
61. Dunn CG, Kenney E, Fleischhacker SE, et al. Feeding low income children during the Covid-19 pandemic. *NEJM.* 2020;382:e40.
62. Hopkins LC, Gunther C. A historical review of changes in nutrition standards of USDA child meal programs relative to research findings on the nutritional adequacy of program meals and the diet and nutritional health of participants: implications for future research and the summer food service program. *Nutrients.* 2015;7:10145–10167.
63. Hernandez DJ, College H, Napierala JS. *Children in Immigrant Families: Essential to America's Future.* New York, NY: The Foundation for Child Development; 2012.
64. Migration Policy Institute. Children in U.S. immigrant families. 2018. Available at: <https://www.migrationpolicy.org/programs/data-hub/charts/children-immigrant-families>. Accessed July 24, 2020.
65. USDA Food and Nutrition Service. SNAP policy on non-citizen eligibility. 2013. Available at: <https://www.fns.usda.gov/snap/eligibility/citizen/non-citizen-policy>. Accessed July 24 2020.
66. Baker P, Negus V. MassLegalHelp. Can my children get benefits if I am an ineligible immigrant? 2018. Available at: <https://www.masslegalhelp.org/income-benefits/food-stamps/advocacy-guide/part2/q52-children-of-ineligible-immigrants>. Accessed July 24, 2020.
67. Capps R, Fix M, Ost J, et al. *The Health and Well-Being of Young Children of Immigrants.* Washington, DC: The Urban Institute; 2005.
68. Bovell-Ammon A, Cuba SE, Coleman S, et al. Trends in food insecurity and SNAP participation among immigrant families U.S.-Born young children. *Children (Basel).* 2019;6:55.
69. Yoshikawa H, Chaudry A, García SR. *Approaches to Protect Children's Access to Health and Human Services in an Era of Harsh Immigration Policy.* New York City, NY: New York University; 2019.