FOOD INSECURITY & HUNGER IN THE U.S. NEW RESEARCH

FOOD RESEARCH & ACTION CENTER CHILDREN'S HEALTHWATCH

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In This Issue:
The Effectiveness of the Supplemental Nutrition Assistance Program

Welcome to the sixth issue of Food Insecurity and Hunger in the U.S.: New Research, a periodical created by the Food Research and Action Center (FRAC) and Children's HealthWatch.

IN FOCUS for this issue is "The Effectiveness of SNAP: The Latest Research on Participant Characteristics and Program Impacts," which focuses on the characteristics and circumstances of SNAP participants, and emerging evidence of SNAP's effectiveness in reducing food insecurity and improving health. The second section of the issue – on NEW RESEARCH – highlights eight recent studies related to food insecurity, including those addressing mental health, child health, and material needs.

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IN FOCUS

The Effectiveness of SNAP: The Latest Research on Participant Characteristics and Program Impacts

The Supplemental Nutrition Assistance Program (SNAP, also known as Food Stamps) is our nation's first line of defense against food insecurity and undernutrition. A number of studies released within the past year alone demonstrate the program's effectiveness in improving food security and health among participants. One such study found that participating in SNAP for six months reduced the percentage of SNAP households that were food-insecure by up to 17 percent. In addition, the U.S. Department of Agriculture (USDA) has released a number of reports which reinforce earlier evidence that SNAP reaches those most in need of food assistance in our country, including children, the elderly, people with disabilities, those who are very poor, and working adults struggling to make ends meet. This brief more fully describes these recent findings on participant characteristics, and the associations between SNAP and food security and health.

What are the Characteristics and Circumstances of SNAP Participants?

Based on several recent USDA reports, the characteristics and circumstances of SNAP participants show how deep the need is (Gray, 2014; Leftin, Wemmerus, Mabli, Godfrey, & Tordella, 2014). Broadly, in an average month in federal fiscal year 2014, 46.5 million people received SNAP benefits with an average per-person benefit of $125. But what else is known about SNAP participants? First, SNAP primarily serves those who are most in need. More than 60 percent of participants are children, the elderly, or people with disabilities. Second, many SNAP households include at least one working adult. About 43 percent of participants live in a household with a working adult. Third, those who receive SNAP benefits are very poor. On average, SNAP households have incomes less than 59 percent of the poverty level (59 percent is about $14,250 annually for a family of four). Fourth, new SNAP participants stay on the program for a short time (less than 12 months on average), and most join the program because of a job loss. Finally, SNAP reaches an estimated 83 percent of those eligible (Cunnyngham, 2015).

What Impact Does SNAP Have on Food Security and Health?

Earlier evidence has shown that SNAP plays a critical role in alleviating poverty and food insecurity and in improving dietary intake, weight status, health, and well-being (e.g., Hartline-Grafton, 2013; Ratcliffe & McKernan, 2010; Sandel et al., 2014). This is especially true when benefits are closer to adequate. For example, the temporary increase in SNAP benefit levels from the 2009 American Recovery Reinvestment Act (ARRA) helped reduce the food insecurity rate by 2.2 percentage points and reduce very low food security by 2.0 percentage points among low-income households between December 2008 (pre-ARRA) and December 2009 (about eight months post-ARRA) (Nord & Prell, 2011). In addition, two years after the temporary ARRA boost, young children in households receiving SNAP benefits were significantly more likely to be "well" than children from non-participating low-income households; such a difference was not observed prior to the benefit boost (March et al., 2011). In terms of health and economic outcomes, exposure to SNAP in utero or in early childhood reduced the incidence of metabolic syndrome (obesity, hypertension, diabetes, heart disease) in adulthood and, for women in adulthood, increased economic self-sufficiency (e.g., educational attainment, earnings), based on a study of people who grew up in disadvantaged families and were born between 1956 and 1981 (Hoynes, Schanzenbach, & Almond, 2012).

Now, a spate of recent studies – as detailed below – grows the evidence base for SNAP's effectiveness.

Latest Research on SNAP and Food Security

Several studies published within the last year examined SNAP participation and food insecurity among households, adults, and children. Many of these studies resolved study design issues that have been a concern in past examinations of SNAP. For instance, two studies led by Mabli tried to estimate SNAP's effect on food insecurity while minimizing "selection bias." Selection bias, the influence on the study when those who are struggling the most with food insecurity are more likely to seek out assistance from SNAP, could mean that those participating in the program appear to be doing worse than others (e.g., have higher rates of food insecurity) when SNAP may actually be lowering rates and helping them. The researchers tried to address this problem by making two sets of comparisons using SNAP Food Security Survey data: 1) a cross-sectional (one point in time) comparison group comparing households approved for SNAP but not yet receiving it to households that had participated for about six months; and 2) a longitudinal (over the course of time) comparison of SNAP households at program entry and that same group about six months later. In a study on household food insecurity by Mabli and Ohls (2015), participation in SNAP for six months reduced the percentage of SNAP households that were food insecure by six percent and 17 percent, respectively, in the cross-sectional and longitudinal analyses. The reductions in severe food insecurity (i.e., very low food security) were 12 percent and 19 percent, respectively.

In a separate study by Mabli and Worthington (2014) on child food insecurity, participation in SNAP for six months was associated with a lower likelihood of child food insecurity in both the cross-sectional and longitudinal analyses (36 percent and 38 percent lower, respectively). These findings are consistent with a longitudinal study by Li and colleagues (2014) that used national, monthly data from the Panel Study of Income Dynamics and concluded participation in SNAP reduced the probability of child food insecurity.

While these recent findings demonstrate SNAP's effectiveness in alleviating food insecurity, new research also suggests that high food prices and poor food access may diminish the beneficial impacts of program participation. Based on USDA and Census data, SNAP participation, in general, was found to reduce household, adult, and child food insecurity prevalence by about 34 percent, 25 percent, and 70 percent, respectively (Gregory & Coleman-Jensen, 2013). However, a ten dollar increase in the price of the study's market basket increased household, adult, and child food insecurity prevalence among SNAP households by 5 percent, 5 percent, and 12 percent, respectively. And those SNAP households living in areas with the highest food prices were 15 to 20 percent more likely to be food insecure than those SNAP households living in areas with the lowest food prices. In other words, higher food prices may further stretch limited food budgets and, thereby, increase food insecurity, particularly among SNAP participants.

In another study using USDA data in cross-sectional and longitudinal analyses, participating in SNAP for six months was associated with reductions in household food insecurity and child food insecurity in both urban and rural areas, and the magnitudes of the reductions did not differ by how urban or rural the location was (Mabli, 2014a). However in a companion study, SNAP participation reduced food insecurity by a larger amount for urban households that had high (compared to low) geographic access to food (Mabli, 2014b). (Food access was examined using a variety of measures, including distance to the nearest supermarket and the number of supermarkets in each household's local area.) Among rural households, the analyses provided mixed results for differences in the association between SNAP and

food insecurity based on food access. Overall, more research is needed to better understand the role food access plays in the relationship between SNAP participation and food insecurity, especially given the interest in the public health and anti-hunger communities to improving food access in underserved communities.

Latest Research on SNAP and Health

A number of recent studies have examined the impact of SNAP participation on participants' health, and there is growing evidence in support of the notion that, at least when it comes to families receiving SNAP, "food is medicine." Using national data and accounting for selection bias, Gregory and Deb (2015) found that SNAP improves adult health in terms of increasing the probability of reporting excellent or good health, as well as having fewer sick days, office-based doctor's visits, and outpatient visits. SNAP also may have a positive impact on mental health outcomes. In a national sample of low-income adults, low food security and very low food security were both associated with higher odds of depression among SNAP participants, but the odds were not as great as those for similarly situated non-participants (Leung, Epel, Willett, Rimm, & Laraia, 2015). And while SNAP participants had a higher prevalence of depression, the odds of depression were lower for food insecure, SNAP participants than for food insecure, non-participants.

Children's HealthWatch released several studies over the past year addressing SNAP's effectiveness among families with young children, including studies set in their Boston, Philadelphia, and Minnesota hospitals. More specifically, mothers in food insecure households that received SNAP benefits were less likely to experience maternal depressive symptoms and less likely to be in fair or poor health compared to mothers in food insecure households that were not receiving SNAP benefits (Goldman, Ettinger de Cuba, Sheward, Cutts, & Coleman, 2014; Sheward, Ettinger de Cuba, Cook, Pasquariello, & Coleman, 2014). Young children in food insecure households that received SNAP benefits were less likely to be at developmental risk, in fair or poor health, and overweight compared to children in food insecure households that were not receiving SNAP benefits (Goldman, Ettinger de Cuba, Sheward, Cutts, & Coleman, 2014; Sheward, Ettinger de Cuba, Cook, Pasquariello, & Coleman, 2014). On the other hand, families with young children whose SNAP benefits were recently lost or reduced due to an increase in income had higher odds of poor child health, household food insecurity, forgoing medical care for family members, or making health care trade-offs (compared to families who consistently received SNAP benefits) (Bovell, Ettinger de Cuba, Scully, Chilton, & Coleman, 2014).

The latter study by Bovell and colleagues suggests that the adequacy of SNAP benefits is important in achieving favorable outcomes; this is consistent with the research on the ARRA boost highlighted above. In addition, there is new research on the impact of SNAP benefit adequacy on dietary intake. Prior to the temporary ARRA boost in SNAP benefits, Todd (2014) found that caloric intake declined by as much as 25 percent at the end of the month among SNAP participants; however, the temporary boost in benefits eliminated this decline. Todd concluded that "now that the ARRA-induced benefit boost has been eliminated, it is likely that SNAP recipients are again experiencing a monthly cycle in caloric intake."

SNAP Supports Food Security, Health, and Economic Stability

SNAP is a critical support to poor and hungry families across the country. Research demonstrates the program's effectiveness in improving food security, health, and economic stability. Increasing access to SNAP and improving SNAP benefit levels would further enhance SNAP's role in addressing these issues.

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NEW RESEARCH

Mental Health

Household food insecurity is positively associated with depression among low-income Supplemental Nutrition Assistance Program participants and income-eligible nonparticipants

The odds of depressive symptoms increase as the severity of food insecurity increases, according to a study in the *Journal of Nutrition*. Using data from the National Health and Nutrition Examination Survey (NHANES), depression, food security, and SNAP (Supplemental Nutrition Assistance Program) participation status were examined among 3,518 men and women whose incomes were at or below 130 percent of the federal poverty level. Sixteen percent of the sample reported marginal food security, 23.5 percent low food security, and 13.8 percent very low food security; approximately 42 percent received SNAP in the previous 12 months and 9.3 percent were depressed.

There were no differences in odds of depression by gender. However, there was a dose-response relationship between each depressive symptom and food insecurity – as the severity of food insecurity increased, so too did the prevalence of depressive symptoms. For instance, those who were very low food secure had odds of depression 3 times higher than those who were food secure. In addition, depressive symptoms and food insecurity were examined separately among SNAP participants and non-participants. Non-participants who were very low food secure had odds of depression five times greater than non-participants who were food-secure. Among SNAP participants, low food security and very low food security were both associated with higher odds of depression, but the odds were not as great as those for non-participants. Though SNAP participants had a higher prevalence of depression, the odds of

depression were lower for food-insecure SNAP participants than for food-insecure non-participants, which suggests SNAP may have a protective effect on mental health.

Leung CW, Epel ES, Willett WC, Rimm EB, Laraia BA. Household food insecurity is positively associated with depression among low-income Supplemental Nutrition Assistance Program participants and income-eligible nonparticipants. *Journal of Nutrition*. 2015; 145(3): 622-627.

Association of moderate and severe food insecurity with suicidal ideation in adults: national survey data from three Canadian provinces

Moderate and severe food insecurity are associated with increased odds of suicidal ideation among adults, according to a study in the journal *Social Psychiatry and Psychiatric Epidemiology*. Based on data from 5,270 adults (aged 18 years or older) in three Canadian provinces, researchers examined if those who lived in households that were moderately food insecure or severely food insecure had higher odds of suicidal ideation (i.e., seriously considered committing suicide in the last 12 months) compared to those living in food-secure households. Before accounting for differences in sociodemographic factors (e.g., income, sex, age), the prevalence of suicidal ideation within food secure, moderate food insecure, and severe food insecure households was 16.5, 30.0, and 35.5 percent, respectively. After accounting for sociodemographic factors, the analysis showed that moderate and severe food insecurity (compared to food security) were, respectively, associated with a 32 percent and 77 percent increase in the odds of suicidal ideation. The authors conclude that interventions that address household food insecurity might also reduce suicidal ideation.

Davinson KM, Marshall-Fabien GL, Tecson A. Association of moderate and severe food insecurity with suicidal ideation in adults: national survey data from three Canadian provinces. *Social Psychiatry and Psychiatric Epidemiology*. 2015; [Epub ahead of print].

Food insecurity is associated with poor sleep outcomes among US adults

Food insecurity is associated with poor sleep outcomes in adults, with some variations by gender, according to a study in the *Journal of Nutrition*. Based on a sample of 5,637 men and 5,264 women (older than 22 years of age) who participated in the National Health and Nutrition Examination Survey (NHANES) 2005–2010 survey, study authors examined associations between adult food security status and sleep duration, sleep latency (length of time to transition from full wakefulness to sleep), and sleep complaints reported to a health care professional.

Very low food security was associated with sleeping half an hour less among women; however, no relation was found among men. Conversely, food insecurity was associated with prolonged sleep latency (4-5 minutes) among men, yet no association was observed among women. Although the results for sleep duration and latency were divergent by gender, the study authors found both men and women in households with very low food security were twice as likely to report sleep complaints to a health care professional, compared to food secure households. Poor sleep outcomes may predispose food insecure adults to poor health outcomes. Therefore, the study authors recommend that in addition to encouraging participation in food and nutrition assistance programs, health promotion efforts for food-insecure adults should incorporate advice about healthy sleep habits.

Ding M, Keiley MK, Garza KB, Duffy PA, Zizza CA. Food insecurity is associated with poor sleep outcomes among US adults. *Journal of Nutrition*. 2015; 145(3): 615-621.

Influence of maternal depression on household food insecurity for low-income families
According to a longitudinal study published in *Academic Pediatrics*, maternal depression is an independent risk factor for household food insecurity in low-income families with young children. Maternal depression was used to predict household food insecurity among a sample of 2,917 low-income mothers who were food secure when their children were nine months old (baseline), but food insecure when their children were 24 months old (follow-up). The authors used data from the nationally representative Early Childhood Longitudinal Study - Birth Cohort. The largest proportion of the study's sample of low-income mothers was white (37.5 percent), and most were unemployed (59.7 percent), born in the United States (71.8 percent), and received WIC (86.7 percent). Sixteen percent of mothers were depressed at baseline, and 39 percent received SNAP.

Researchers measured the association between baseline maternal depression and sociodemographics, and household food insecurity at follow-up. At follow-up, 11.8 percent of mothers reported household food insecurity. After adjusting for covariates, mothers with depression at baseline were found to have 50 percent higher odds of household food insecurity compared to mothers without depression at baseline. While maternal depression at baseline was significantly associated with food insecurity at follow-up, the mechanisms by which maternal depression may lead to increased food insecurity were not clear. The authors suggest more studies are needed to understand and address the complex relationship between poverty, maternal depression, social safety nets, and food insecurity. The authors also recommend identifying mothers with depression and linking them to community-based mental health and food resources through multidisciplinary interventions embedded within and outside the pediatric medical home.

Garg I, Toy S, Tripodis Y, Cook J, Cordella N. Influence of maternal depression on household food insecurity for low-income families. *Academic Pediatrics*. 2014; [Epub ahead of print].

Child Health

Child experience of food insecurity is associated with child diet and physical activity
A study published in the *Journal of Nutrition* finds that self-reported food insecurity is associated with poor dietary quality and less physical activity among California elementary students in high-poverty schools. Researchers examined the relationship between child self-reports of food insecurity (CFI) and a variety of dietary and physical activity outcomes among 3,605 fourth- and fifth-grade children whose schools participated in the Network for a Healthy California – Children's PowerPlay! social marketing initiative. The initiative targeted ethnically diverse, low-income students and their families.

Sixty percent of children in the sample reported being food insecure during the past school year, as measured by the 5-question Child Food Security Assessment that was recently developed and validated by researchers at the University of South Carolina. Among all of the children, 34.6 percent reported cognitive awareness of food insecurity (e.g., not getting wanted food), 39.5 percent reported physical awareness (e.g., hunger), and 45.4 percent reported emotional awareness (e.g., worry). Furthermore, higher levels of CFI were associated with higher consumption of total energy, sugar, fat, and fiber and lower intake of vegetables, after accounting for age and gender. Greater levels of CFI also were associated with fewer minutes of physical activity and greater perceived barriers to physical activity (e.g., too tired to be physically active). Given the nutritional and non-nutritional consequences of CFI, the authors conclude that health, social work, educational and other practitioners working with children should evaluate CFI when assessing child physical and mental health.

Fram MS, Ritchie LD, Rosen N, Frongillo EA. Child experience of food insecurity is associated with child diet and physical activity. *Journal of Nutrition*. 2015; 145(3): 499-504.

Increased food insecurity among mothers of 2 year olds with special health care needs
Maternal food insecurity is associated with having a young child with special health care needs (SHCN), according to a study in the *Maternal and Child Health Journal*. Based on data from Oregon's Pregnancy Risk Assessment Monitoring System, mothers reported their food insecurity status before their child's birth (i.e., baseline food security status) and again when their child was two years old (i.e., follow-up food security status). To classify children as having or not having special health care needs, mothers also were asked about the ongoing health needs of their two-year-old child (e.g., specialty health care, physical therapy, special diets, use of assistive devices). At baseline, 9.7 percent of the 1,768 respondents were food insecure; at follow-up, 11.2 percent of the 1,812 respondents were food insecure and 11.6 percent had a child with SHCN. The odds of food insecurity at follow-up were 2.6 times greater for mothers with a child with SHCN compared to mothers without a child with SHCN, based on statistical models that accounted for maternal marital status, maternal education, lifetime residence in the U.S., annual household income, maternal health, and baseline food security status. The authors note that healthcare providers do not routinely screen for household food insecurity, but that these findings support the importance of screening parents of children with SCHN to potentially reduce the prevalence and effects of food insecurity among these vulnerable families.

Adams EJ, Hoffmann LM, Rosenberg KD, Peters D, Pennise M. Increased food insecurity among mothers of 2 year olds with special health care needs. *Maternal and Child Health Journal*. 2015; [Epub ahead of print].

Income and Material Needs

The impact of cumulative family risks on various levels of food insecurity
Cumulative family risks, such as financial strain and parenting disruptions/conflict, are useful for predicting severity of food insecurity, according to research published in *Social Science Research*. Using data from the Fragile Families and Child Well-Being Study, the study examined the association between severity of household food insecurity and four cumulative family risks: 1) financial strain; 2) maternal poor health and risky behaviors; 3) family disruption and conflict; and 4) parenting disruption.

The sample consisted of 2,025 households with young children (aged 5 years or younger) that lived in 20 large cities in the U.S. All data for the current analysis were collected from the mothers in the household. Each of the four risks was measured using three to four markers of hardship. Markers of financial strain included: economic hardship, maternal unemployment, health problems/disability that limit employment, and multiple sources of employment. Markers of maternal poor health and risky behaviors included: poor health, depression, anxiety, and illicit drug use. Markers of family disruption and conflict included: single mother household, paternal incarceration, mother-father relationship conflict, and intimate partner violence. Markers of parenting disruption included: multiple partners, poor co-parenting support, and maternal role strain.

Financial strain, maternal poor health and risky behaviors, and parenting disruptions were all associated with at least a 25 percent increase in the odds of experiencing food insecurity (vs. food security). In addition, in analyses among non-poor households (i.e., those with incomes at or above 200 percent of

the federal poverty level), financial strain predicted which households were marginally food secure households (vs. food secure). Finally, maternal poor health and risky behaviors were most useful for predicting food insecurity from food security, and predicting very low food security from low food security. The author concludes that future studies should use more refined levels of food security to tease out possible differential associations and that the Supplemental Nutrition Assistance Program (SNAP) could help reduce the severity of food insecurity.

Hernandez DC. The impact of cumulative family risks on various levels of food insecurity. *Social Science Research*. 2015; 50: 292-302.

Material need insecurities, control of diabetes mellitus, and use of health care resources: results of the Measuring Economic Insecurity in Diabetes Study

Material need insecurities – inadequate access to or inability to afford food, medication, housing, and utilities – are associated with worse diabetes control and increased use of health care resources, according to a study in the *Journal of the American Medical Association - Internal Medicine*. The goal of the study was to understand associations between use of health care resources (i.e., emergency department (ED)/inpatient visits, outpatient visits) and diabetes control. Among 411 adult patients with diabetes mellitus in four Massachusetts health clinics, 19.1 percent reported food insecurity, 27.6 percent cost-related medication underuse, 10.7 percent housing instability, and 14.1 percent energy insecurity. At least one material need insecurity was reported by 39.1 percent of participants and 46 percent had poor diabetes control (i.e., unstable blood sugars and high blood pressure).

Compared to adults in food secure households, adults in food insecure households were 97 percent more likely to have poor diabetes control and 19 percent more likely to have outpatient visits. Those who reported cost-related medication underuse, compared to those who did not, were more likely to have poor diabetes control and increased ED/inpatient hospital visits. Housing instability and energy insecurity were associated with increased outpatient visits. The number of insecurities also negatively impacted health outcomes – there was a 39 percent increase in the odds of poor diabetes control, a 9 percent increase in the odds of outpatient visits and a 22 percent increase in the odds of ED/inpatient visits for each additional material need insecurity. Strategies that increase access to health care resources should be paired with those that address material need insecurities, especially food insecurity and cost-related medication underuse, to best manage diabetes.

Berkowitz SA, Meigs JB, DeWalt D, Seligman HK, Barnard LS, Bright OM, Schow M, Atlas SJ, Wexler DJ. Material need insecurities, control of diabetes mellitus, and use of health care resources: results of the Measuring Economic Insecurity in Diabetes Study. *JAMA – Internal Medicine*. 2015; 175(2): 257-265.