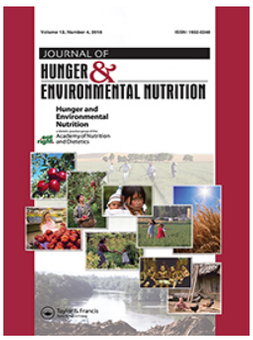

Journal of Hunger & Environmental Nutrition

ISSN: 1932-0248 (Print) 1932-0256 (Online) Journal homepage: https://www.tandfonline.com/loi/when20

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To cite this article: Patricia A. Sharpe, Angela D. Liese, Bethany A. Bell, Sara Wilcox, Brent E. Hutto & Jessica Stucker (2018) Household food security and use of community food sources and food assistance programs among food shoppers in neighborhoods of low income and low food access, Journal of Hunger & Environmental Nutrition, 13:4, 482-496, DOI: 10.1080/19320248.2017.1364188

To link to this article: https://doi.org/10.1080/19320248.2017.1364188

Published online: 24 Oct 2017.

JOURNAL OF HUNGER & ENVIRONMENTAL NUTRITION
2018, VOL. 13, NO. 4, 482–496
https://doi.org/10.1080/19320248.2017.1364188

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Household food security and use of community food sources and food assistance programs among food shoppers in neighborhoods of low income and low food access

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ABSTRACT

Food insecurity exceeds the 14% national level in severely disadvantaged households, and food shoppers seek food sources and assistance. In 513 predominantly African American households in South Carolina, food security was a significant predictor of sources used, adjusted for sociodemographic characteristics (least squares means = high food security, 2.10; marginal, 2.96; low, 2.91; very low, 3.40). The top sources were churches/social services, food bank/pantry, farmers' market, family/friend/neighbor, soup kitchen/shelter, and hunting/fishing/trapping. Adjusted odds were significantly greater among households of lower food security levels compared to high food security for food from church/social services, food bank/pantry, family/friend/neighbors, soup kitchen/shelter, and community/school/church garden.

KEYWORDS

African American; emergency food; food access; food security; poverty

Introduction

In the United States, about 14% of households experienced low or very low food security during 2014, "meaning that the food intake of one or more household members was reduced and their eating patterns disrupted at times during the year because the household lacked money and other resources for food."[1(p4)] During the same year, children were food insecure and not receiving adequate, nutritious food in 9.4% of U.S. households with children. Household food insecurity is usually episodic rather than chronic; however, these national data do not include homeless families or individuals, so the statistics likely underestimate the burden of food insecurity.[1] Households

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with food insecurity rates above the national average included those with incomes below 185% of the federal poverty level (FPL); those with children, and especially those with a single head of household; those with a black or Hispanic head of household; and women living alone.[1] Compared to other regions nationally, the highest prevalence of household food insecurity was in the South.

The U.S. Department of Agriculture's (USDA) Economic Research Service reported that in 2014, 61% of food insecure households participated in at least one of the 3 largest federal food assistance programs, the Supplemental Nutrition Assistance Program (SNAP); the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); and the National School Lunch Program (NSLP).[1] The USDA has described federal nutrition assistance programs, particularly SNAP, as providing a safety net to assist people in times of "livelihood shocks and stresses," increasing family purchasing power, reducing the risk of food insecurity, and reducing the depth and severity of poverty.[2(p1),3] As the name indicates, SNAP was intended as supplemental, yet families in poverty may have found it especially difficult to feed themselves during the economic recession and continuing high unemployment in some U.S. communities, even with SNAP benefits.[4,5] Nationally, the average monthly benefit per person was $133 in FY 2013 and $125 in FY 2014,[6] or about $4.00 per day. Further, the economic barriers to sufficient, nutritious food are compounded in some disadvantaged communities by poor geographic access, including the distance to food outlets that offer a variety of affordable foods and/or the lack of a family vehicle or other reliable transportation for food shopping.[7]

Many food insecure households use community-based emergency and supplemental food programs (e.g., food banks, emergency kitchens) as well as federal food and nutrition assistance programs. Among U.S. households with income at or below 185% FPL, 26.1% of food insecure households had gotten food from a church, food pantry, or food bank in the past 12 months, compared to 1.6% among the food secure during 2014. For emergency soup kitchens, the use was 0.1% among food secure households and 3.3% among food insecure households.[1,8] These estimates excluded the homeless or tenuously housed.

National data on the use and sources of free or partially subsidized food, though important for informing a national perspective, do not describe the experience of residents in communities with more severe disadvantage in income and food access. Though the prevalence of household food insecurity in South Carolina (13.9%) is not significantly different from the U.S. level,[1] the data for our analyses came from in-person interviews with food shoppers from neighborhoods with higher levels of food insecurity and poverty than the state level. The purpose of this study was to describe the use of community-based emergency and supplemental food assistance and to test the association of food security status with use of emergency and supplemental

food sources in South Carolina neighborhoods of high poverty, low food access, and a majority of African American residents.

Methods

Setting and recruitment

Recruitment focused on 7 urban census tracts in 2 South Carolina cities that included 7 resident-identified neighborhoods, with a combined population of 19,117 in 6,459 households. These tracts comprised the service area for a community food hub initiative and a matched comparison community. Interviews were conducted prior to the food hub's construction and opening. Though food desert designation was not a criterion for inclusion, 6 of the 7 tracts met the USDA definition of an urban food desert.[9] Data from the U.S. Census Bureau's American Community Survey 5-Year Estimates revealed that from 28% to 62% of households in each tract had income below the FPL, 64% to 89% had a female head of household, and 29% to 59% had no household vehicle.[10] Between 43% and 100% of the tracts' residents were African American, with 0% to 2% reporting a race other than white or African American.

Because census tract boundaries do not necessarily match residents' self-identified neighborhood boundaries, strict adherence to census tract boundaries to define the geographic inclusion criterion can negatively affect contextual validity in community-based research by creating inclusion criteria that are contrary to residents' perceived boundaries of their neighborhood. We therefore extended the inclusion boundary by 1 mile past the 7 recruitment tracts' boundaries into 12 additional tracts adjacent to the original tracts, with the criterion that the adjacent tract had ≥16% of households below the FPL (i.e., were at or above the state's prevalence of poverty). Six of the additional 12 tracts met the definition of low income and low food access; that is, an urban food desert. Thus, of 19 tracts in total, 12 tracts (63.2%) met the urban food desert definition. Across all 19 tracts, from 17% to 62% of households had income below the FPL.

Community-based staff persons recruited, screened for eligibility, and interviewed participants from November 2013 to May 2014. The first step was a recruitment flier addressed to the "family food shopper," mailed to the residential addresses in the 7 census tracts described above in November 2013 and based on lists purchased from a professional survey sampling firm. Following the initial mass mailing, staff persons implemented face-to-face, written, and electronic recruitment strategies, which included outreach recruiters at community events, community centers, and other busy locations; 2 follow-up mailings to households; posters in community locations and buses; fliers sent home in children's book bags and distributed at public

housing sites; and notices on community organizations' websites. In the recruitment materials, the primary family food shopper was invited to participate in a study of food access and food shopping in the neighborhoods. Eligibility screening occurred by telephone and in-person at community centers. A second mailing was sent in April 2014. Eligibility criteria included residence within the identified geographic boundaries at least 3 weeks per month and no plans to move outside the area; residence in a noninstitutional setting (i.e., in control of food purchases); aged 18 or older; shopper for at least half of the household's food; no impairments that would preclude in-person and telephone interviews, with accommodation. Only one person per household, the primary food shopper, could participate. The Institutional Review Board of the University of South Carolina approved the study.

Data collection procedures

Research staff persons used a standardized interview guide to explain the study, determine eligibility, and obtain contact information and initial interest. After obtaining informed consent, interviewers conducted in-person interviews using a questionnaire with sociodemographic, economic, attitudinal, behavioral, and health-related questions. Interviews took place at the research field offices and community centers. Participants received a $15 gift card. For ethical reasons, at the end of the interview, each participant received a list of community resources and services, including food assistance.

Measures

Food security status

A valid and reliable 18-item USDA Household Food Security questionnaire measured household food security status[11] in the past 12 months and was scored to create 4 food security categories of high, marginal, low, and very low food security.[12] By these definitions, high food security indicates no limitations or problems in food access. Marginal food security indicates one or 2 responses indicating problems, such as anxiety of food insufficiency or shortage, but no indication of changes in food intake. Low food security includes responses indicating reduced food quality, variety, or desirability but little or no indication of lowered food intake. Very low food security is defined by multiple responses indicative of disrupted eating and lowered food intake.[12]

Use of community food sources and assistance programs

Participants responded yes or no/not applicable to 12 questions regarding emergency, supplemental, or subsidized food sources, as follows:

Besides the places where you bought food that you have already told me about, did you or others in your household get food from any of the following places in the past year (yes, no)... . Again, think of the people in your household for whom you do most of their food shopping: Food bank or food pantry; friend, family or neighbor; your own garden or animals at your home; community, school, or church-based garden; food box or basket from a church or service organization; food provided free where you work; home-delivered meals; free or reduced school breakfast or lunch; food at an after-school or summer program for children; meals eaten at a senior center; food from hunting, fishing, or trapping; and food from a soup kitchen or shelter.

They also responded "yes" or "no" to having shopped at a farmers' market during the past year's farmers' market season. We included farmers' market because of opportunities to obtain some free food through programs such as the Seniors' Farmers' Market Nutrition Program vouchers, the WIC Farmers' Market Nutrition Program vouchers, and/or a Double SNAP incentive program.

Participant characteristics

Sociodemographic characteristics included gender, race, marital status, age, educational level, receipt of SNAP benefits in the past year, receipt of WIC benefits in the past year, household size, self-rated health (excellent, very good, good, fair, and poor), adults in the household, dependent children < 18 years of age, number of people for whom the shopper shopped for food, transportation to primary food store, and body mass index.

For self-reported, annual household income category in the past year, participants were asked for the sum of all sources of income, including salaries; wages; government assistance, benefits, and vouchers; child support; and alimony. The interviewer assisted the participant in naming these sources and summing the amounts. The sum was then categorized as $0 to $9,999, $10,000 to $19,999, $20,000 to $29,999, $30,000 to $39,999, $40,000 to $49,999, or $50,000 or more.

To obtain body mass index (BMI), staff persons measured height without shoes to the nearest quarter inch with a Seca stadiometer and weight to the nearest 1/10 pound with a Seca 882 electronic scale (Seca North America, Chino, CA, USA). Weight was converted to kilograms and height to meters to calculate BMI as weight in kilograms divided by height in m^2 and categorized using National Heart, Lung, and Blood Institute categories of obese BMI (≥30), overweight BMI (25–29.9), or normal/underweight BMI (≤24.9).[13]

Data analysis

We used the Statistical Analysis System (Version 9.4, SAS Institute, Cary, NC, USA) to compute descriptive statistics (frequencies and means) for individual and household-level sociodemographic, economic, and health-related characteristics. To describe the association between food security

and SNAP benefits, a multiple logistic regression model computed adjusted odds ratios (AORs) and 95% confidence intervals (CIs) for SNAP receipt in marginal, low, and very low food security households compared to high food security (referent category), adjusted for the food shopper's gender, race, and education; number of people for whom the food shopper shopped; and household income level.

To describe the association between household food security and annual income, a multiple logistic regression model computed the AOR and 95% CI for having household income ≥ $20,000 in food secure households (high/marginal) compared to food insecure households (low/very low; referent category), adjusted for the food shopper's gender, race, and education and number of people for whom the food shopper shopped. Because the ordinal measure of annual household income was highly skewed toward lower income, we collapsed the 6 income categories to create a dichotomy of less than $20,000 versus $20,000 or more. Food security was coded as a dichotomous variable of food secure versus food insecure for this model.

Separate logistic regression models were computed for the odds of receiving food from each community food source by food security level, adjusted for the food shopper's gender, race, education, number of people for whom the food shopper shopped, and household income level. We then computed a general linear model, with the same set of covariates, to compare the mean number of food sources in the past year by food security in the past 12 months. We compared the least squares means for marginal, low, and very low food security households to high food security households with the Dunnett-Hsu adjustment for multiple comparisons.

Results

Of 928 people who inquired, staff persons were unable to reach 65 people who had asked to be contacted after multiple attempts. They screened the remaining 863 people for eligibility, and 527 eligible participants enrolled in the study. Of these, 85.2% lived in the 7 recruitment tracts, and 14.8% lived in tracts from the expanded inclusion boundaries. Of the 527 participants, 82.5% lived in census tracts that met the low-income, low-food-access definition of an urban food desert.

The final sample for these analyses was $n = 513$, which included those who responded to the food security items, the food sources items, and the covariates. Health and sociodemographic characteristics showed a majority of participants' characteristics as unmarried, African American, female, overweight or obese, food insecure (low and very low), SNAP recipients, high school educated or lower, with fair or good self-rated health, and with self-reported household income below $20,000. See Table 1.

Table 1. Individual and household characteristics among shoppers in communities of low income and low food access (n = 513).[a]

Characteristic	n	Mean	SD	Min	Max
Age	513	52.32	14.28	19.00	94.30
Adults in household	513	1.73	0.84	1.00	6.00
Dependent children[b] < 18 in household	171	1.81	1.10	1.00	8.00
Number household members shopped for	513	2.25	1.38	1.00	11.00
		Total n		n	%
Gender		513			
Women				410	79.92
Men				103	20.08
Race		513			
African American/black				474	92.40
White				26	5.07
Others or >1 race				13	2.53
Marital status		512			
Married/cohabitating				88	17.19
Not married[c]				424	82.81
Children in household		513			
≥1 child				171	33.33
Education		513			
<High school				156	30.41
High school diploma/GED				194	37.82
Some post–high school				135	26.32
College degree, ≥4 years				28	5.46
Annual household income		513			
<$10,000				240	46.78
$10,000–$19,999				162	31.58
≥$20,000				111	21.64
Household received SNAP, past year?		511			
Yes				335	65.56
WIC recipient in household, past year?		512			
Yes				48	9.38
Household food security status		513			
High				86	16.76
Marginal				106	20.66
Low				166	32.36
Very low				155	30.21
Transportation to primary food store		480			
Drive own vehicle				218	45.42
Get a ride with someone				169	35.21
Walk or ride bicycle				48	10.00
Take a bus or taxi				45	9.38
Body mass index weight category[d]		502			
Underweight/normal				108	21.51
Overweight				118	23.51
Obese				276	54.98
Health status, self-reported		512			
Poor				38	7.42
Fair				181	35.35
Good				178	34.77
Very good				76	14.84
Excellent				39	7.62

[a]SNAP indicates Supplemental Nutrition Assistance Program; WIC, Special Supplemental Nutrition Program for Women, Infants, and Children. n = 7 pregnant women excluded.
[b]Households with one or more children.
[c]Separated, divorced, widowed, or never married.
[d]Body mass index categories are: underweight/normal ≤ 24.9, overweight 25.0–29.9, obese ≥ 30.

To describe the households' economic status further, we examined the association between the shoppers' household food security and SNAP benefits (yes, no) in the past year. The percentages who had received SNAP by food security level were as follows: high, 45.35%; marginal, 68.57%; low, 66.08%; and very low, 74.19%. The adjusted multiple logistic regression results showed that, compared to the high food security referent group, adjusted odds of SNAP receipt were as follows: marginal, AOR = 1.71 (95% CI, 0.86–3.38); low, AOR = 1.50 (95% CI, 0.80–2.80); very low, AOR = 2.04 (95% CI, 1.06–3.91). For household income, the adjusted multiple logistic regression results showed that food secure households (high/marginal) had adjusted odds of 1.91 (95% CI, 1.21–3.02) times that of food insecure (low/very low) households for having annual household income ≥ $20,000.

As shown in Table 2, the 6 sources of emergency, supplemental, or subsidized food that the greatest proportions all shoppers received were food boxes/baskets from churches or social services organizations); food bank or pantry; farmers' markets; family, friend, or neighbor; soup kitchen or shelter; and hunting, fishing, or trapping animals for food. Among participants with children in the household, there was high participation in nutrition assistance programs for children across all levels of food security.

Table 3 provides AORs of having received each source of emergency, supplemental, or subsidized food for the marginal, low, and very low food security households compared to the high food security referent group. AORs were statistically significant in all 3 food security groups compared to the food secure households for food from churches/social services and food banks/pantries. AORs were significant for those of low and very low food security for having gotten food from a family/friend/neighbor and community/school/church garden, with large adjusted odds ratios; for soup kitchens/shelters, AORs were significant among those with marginal and very low food security.

A food sources score was created as the summed yes responses to the 13 food source items shown in Table 2. A general linear model (n = 508) adjusted for shopper's gender, education, and race; household size for whom the shopper shopped; and household income showed that food security level was a significant predictor of the food sources score, $F_{13,494} = 9.09$, $p < 0.001$. The least squares (LS) means for the summed food sources by food security level were as follows: high = 2.11; marginal = 2.96; low = 2.94; and very low = 3.39. Compared to the LS mean for high food security, 2-tailed t tests showed that the LS means were significantly different in households with marginal, $t_{494} = 3.24$, $p = 0.004$, low, $t_{494} = 3.36$, $p = 0.002$, and very low, $t_{494} = 5.01$, $p < 0.001$, food security.

Table 2. Use of food sources by food security status among shoppers in communities of low income and low food access (n = 513).

Food source				High food security n = 86		Marginal food security n = 106		Low food security n = 167		Very low food security n = 154	
Did you or anyone in your household get food from any of the following places in the past year? (yes)	Total n	Yes n	Yes %	n	%	n	%	n	%	n	%
Church/social services food box or basket	512	275	53.71	26	30.23	60	56.60	97	58.43	92	59.74
Food bank or pantry	513	273	53.22	20	23.26	61	57.55	88	53.01	104	67.10
Farmers' market[a]	513	226	44.05	39	45.35	40	37.74	78	46.99	69	44.52
Family, friend, neighbor	513	179	34.89	15	17.44	29	27.36	58	34.94	77	49.68
Soup kitchen or shelter	513	115	22.42	9	10.47	29	27.36	25	15.06	52	33.55
Hunting, fishing, trapping animals	513	97	18.91	18	20.93	18	16.98	32	19.28	29	18.71
Community, school, church garden	513	61	11.89	2	2.33	12	11.32	24	14.46	23	14.84
Home garden or animals	512	51	9.96	9	10.47	16	15.09	13	7.83	13	8.44
Senior center meals	512	39	7.62	6	6.98	8	7.55	15	9.04	10	6.49
Food provided at work	512	38	7.42	5	5.81	9	8.49	13	7.83	11	7.14
Home-delivered meals	513	27	5.26	2	2.33	5	4.72	6	3.61	14	9.03
Households with children[b]											
Free or reduced school breakfast or lunch	171	122	71.35	12	60.00	26	72.22	44	70.97	40	75.47
Food at an after-school or summer program	170	48	28.24	3	15.00	12	33.33	16	25.81	17	32.69

[a]Some farmers' markets accepted Supplemental Nutrition Assistance Program, Special Supplemental Nutrition Program for Women, Infants, and Children Farmers' Market Nutrition Program vouchers, and Seniors' Farmers' Market Nutrition Program vouchers and/or provided a Supplemental Nutrition Assistance Program incentive program.
[b]Households with one or more children, n = 171.

Table 3. Odds of using food sources by food security status among shoppers in communities of low income and low food access (n = 513).[a]

Food source	Odds ratio (referent = high food security) Odds for having used the source by food security category											
	Marginal food security				Low food security				Very low food security			
		95% CI				95% CI				95% CI		
Got food from any of the following places, past year[b]	OR	Lower	Upper	p	OR	Lower	Upper	p	OR	Lower	Upper	p
Church/social services food box or basket	2.55	1.36	4.78	0.004	2.75	1.52	4.96	<0.001	2.89	1.57	4.78	<0.001
Food bank or food pantry	4.08	2.06	8.06	<0.001	3.30	1.74	6.27	<0.001	5.94	3.06	11.53	<0.001
Farmers' market	0.85	0.46	1.57	0.60	1.19	0.68	2.11	0.54	1.15	0.64	2.11	0.60
Family, friend, neighbor	1.57	0.76	3.22	0.22	2.16	1.11	4.22	0.02	4.03	2.16	7.90	<0.001
Soup kitchen or shelter	2.74	1.17	6.41	0.02	1.25	0.53	2.94	0.61	3.56	1.56	8.09	<0.01
Hunted, fished, trapped	0.82	0.39	1.77	0.62	0.97	0.48	1.94	0.93	0.96	0.46	1.97	0.90
Community, school, church garden	3.95	0.84	18.52	0.08	5.01	1.13	22.28	0.03	5.03	1.12	22.65	0.04
Your own garden or animals	1.74	0.69	4.39	0.24	0.79	0.31	2.05	0.63	0.86	0.32	2.27	0.75
Senior center meals	1.33	0.41	4.27	0.63	1.83	0.63	5.33	0.27	1.29	0.42	3.99	0.66
Home-delivered meals	1.73	0.30	9.89	0.54	1.56	0.30	8.58	0.61	3.66	0.73	18.33	0.11
Households with children[c]												
Free or reduced school breakfast or lunch	1.09	0.31	3.83	0.90	1.19	0.38	3.73	0.77	1.23	0.37	4.09	0.73

[a]CI indicates confidence interval; OR, odds ratio; Models adjusted for gender, race, educational level, number of people shopped for in household, and household income.
[b]Logistic regression convergence criteria were not satisfied for 2 items because of poor distribution and/or small numbers of "yes" responses in some food security categories: food provided free at work and food at an after-school or summer program for children.
[c]Households with one or more children, n = 171.

Discussion

This sample of food shoppers from predominantly African American neighborhoods in South Carolina experienced high levels of household food insecurity, SNAP participation, and transportation challenges for food shopping. It should be noted that though we used the high food security households as the referent group in these analyses, they too had gotten food from 2 of the food sources on average, about one source fewer than the households with lower food security. The top food sources were church or social services; food bank or pantry; farmers' market; family, friend, or neighbor; soup kitchen or shelter; and hunting, fishing, or trapping. Compared to food insecure households overall in the United States, this sample relied more on the top 2 sources: more than twice the percentage of food insecure households (low and very low food security) in this sample had gotten food from church/social services (58%–60%) or a food bank/pantry (53%–68%), compared to food insecure U.S. households with income at or below 185% FPL (26.1% received food from any one of these).[1,8] Further, a much larger percentage of food insecure households in this sample (15%–34%) had gotten food from a soup kitchen/shelter than the 3.0% of the U.S. households that received food from a soup kitchen in the past 12 months.[1,8]

In addition to these familiar food sources, it is notable that about 20% of households had gotten food from hunting, fishing, or trapping animals. This may seem high among participants from urban census tracts; however, in the 2 counties that encompass these tracts, 61.5% and 72.6% of the county population is urban, and only 8.1% and 27.0%, respectively, of the county land area is urban.[14] Further, both counties provide accessible fishing banks and piers in publicly owned parks in the city or within a few miles of the city.[15]

The study has limitations. Food sources scores must be interpreted with caution, because not all families met eligibility criteria for all sources of food. Some households were not eligible for services to older adults or children, and most food assistance services have eligibility criteria that not all households can meet. We did not have information to allow adjustment for eligibility.

It is important to note that despite statistically significant findings, there were relatively small samples for some models within food security categories; thus, the findings must be interpreted with this in mind. Further, potential participants were not selected by probability sampling; however, the main food shopper at all residential addresses in the recruitment census tracts was invited to contact the field office to learn more about the study and see whether he or she met the criteria to participate. Additionally, the questions did not measure the frequency of use for the food sources or the amount of food obtained; therefore, the relative ranking of the sources of

food assistance is based on the percentages of households that used the sources at least once in the past year. Some of the lower-ranked sources may have provided greater amounts of food or more frequent access over the year than those ranked above them based on any use (i.e., yes, no).

Differences in interpretation of the questions could have affected responses. For example, the food security questions asked about the "past 12 months," whereas the SNAP question and the use of sources of food assistance asked about the past year. For those who interpreted "past year" as the calendar year rather than the preceding 12 months, there may have been a different time period in reference to the food security items than for SNAP benefits and the use of food assistance sources. Though reference to a year or 12 months is common in this area of research, accurate recall for this long a time period may be compromised. As the interviews started in November 2013, a cut in SNAP benefits had just occurred,[13] which was likely at the forefront in the SNAP participants' minds and may have influenced their responses.

Since the interviews took place, there have been changes in federal and state food assistance policies that affect SNAP benefits. When the 2009 American Recovery and Reinvestment Act's boost to SNAP benefit levels during the Great Recession expired, the cut in SNAP benefits for the new fiscal year on November 1, 2013, averaged $36 per month for a family of 4.[16] In April 2016, a reinstated work requirement in South Carolina (and other states) for adults aged 18 to 50 without children or a disability will limit SNAP benefits to 3 months every 3 years unless the recipient works 20 or more hours per week.[17] Both cuts in SNAP benefit levels and food price inflation have been shown to increase national rates of very low food security.[18] Though SNAP is not the only influence on household food security, these changes in benefit levels and eligibility may have worsened the economic circumstances and food security status among some households since we conducted the interviews.

When changes in food assistance policies result in SNAP benefits cuts that are not accompanied by increases in household income, the demand for community-based emergency and supplemental food may increase, with implications for household food security and diet quality. Though more food insecure households in disadvantaged circumstances might benefit from seeking local sources of food, such as food banks/pantries, churches/social services, and farmers' markets (with SNAP, WIC, and Seniors' incentive and voucher programs), barriers to full utilization remain. Many local food banks, churches, and soup kitchens place limits on the frequency with which recipients may obtain food and may be unprepared to meet increased demand. Planning and logistical challenges underlie local organizations' abilities to manage the donated food supply chain to meet the needs of food insecure communities.[19] Those that rely heavily on a volunteer workforce may be especially challenged

to provide effective and efficient services. Further, despite recent attention to improving the quality of emergency and supplemental food,[20,21] there remain concerns about service providers' abilities to do so.[22]

Conclusions

Overall results indicate that lower levels of food security are associated with greater use of supplemental, emergency, and subsidized sources of food in disadvantaged communities. This conclusion may illustrate the food shoppers' resourcefulness in meeting household needs; even among households with high food security in this sample, use of community food sources was common, with 30% receiving food from churches or social services.

Acknowledgements

The authors appreciate the work of the project's staff and students and assistance from the Hub City Farmers' Market, Butterfly Foundation, Northside Development Group, Via College of Osteopathic Medicine, Spartanburg and Florence city government, the Soulfully Fit Committee, and many community leaders and organizations in conducting this research.

Funding

This research was supported by the National Cancer Institute of the National Institutes of Health under Award Number R01CA180336. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Cancer Institute or the National Institutes of Health.

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