

Food Acquisition Strategies, Food Security, and Health Status Among Families With Children Using Food Pantries

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Social workers working with families must consider the relationship between food insecurity and health. Low-income households often have limited food options and rely on food acquisition strategies to stretch food dollars. This study included 532 adults with children who completed surveys at one of 40 food pantries in 26 counties. This study highlights the ways families acquired food to meet their needs, what health issues were prevalent, and the relationship between food acquisition strategies and food security. Despite using multiple acquisition strategies, 74% were in food-insecure households and 80% were overweight or obese. This study provides evidence that food security and health should be considered when conducting assessments, testing interventions, and developing policies across practice settings.

IMPLICATIONS FOR PRACTICE

- Practitioners working with families in multiple settings should consider the use of brief food security assessments in conjunction with mental and physical health assessments.
- Practitioners should consider ways to incorporate food security strategies that encourage self-reliant food acquisition and capitalize on social networks sharing food knowledge and resources in communities.

Millions of Americans are experiencing uncertainty about their ability to regularly provide meals that will meet their family's dietary needs (Nord, Coleman-Jensen, Andrews, & Carlson, 2010). This study was conducted following the 2007–2009 U.S. recession, which resulted in massive reductions in employment, wages, and employment-based benefits (Bureau of Labor Statistics, 2012). The recession resulted in a 2% decline in median income between 2009 and 2010 and an increase in households living at or below the federal poverty level (FPL; DeNavas-Walt, Proctor, & Smith, 2011), which contributed to the fact that the number of households struggling to meet their food needs increased to its highest level in 14 years (Nord et al., 2010).

Households with children are especially vulnerable when adults are not fully employed and families are at a greater risk of experiencing food insecurity (Coleman-Jensen & Nord, 2013). Food insecurity has been associated with poor physical health, poor child cognitive and emotional development, and adult depression (Adams, Grummer-Strawn, & Chavez, 2003; Alaimo, Olson, & Frongillo, 2001), all of which can lead to long-term consequences like an impaired workforce, high health care costs, and the creation of generational

poverty (Cook & Jeng, 2009). Households with limited food budgets are forced to make dietary decisions, which often result in reduced quantity or nutritional quality of food consumed (McGranahan, 2008).

While households often purchase food at grocery stores and make food choices based on location, availability of food items, and cost of food, many use government food programs (i.e., Special Supplemental Nutrition Program for Women, Infants, and Children [WIC], Supplemental Nutrition Assistance Program [SNAP], and National School Lunch Programs) or alternate strategies (i.e., hunting, fishing, scavenging, gardening, and relying on social networks; Campbell, 1991). Obtaining food through a variety of sources is a coping strategy for low-income households (Hoisington, Armstrong Shultz, & Butkus, 2002). Many households are turning to emergency food services (e.g., food pantries and free meals) to supplement their diminished wages, resulting in a 46% increase in the use of these services since 2006 (Mabli, Cohen, Potter, & Zhao, 2010).

This study is part of a larger project that uses a food systems approach to address obesity among food pantry clients. Consumption and negative health outcomes related to diet must be considered in relation to food acquisition strategies. Food banks and food pantries can be considered as components of a larger food system or as discrete systems that can play an important role in low-income household diets. This research helps place emergency food providers at the helm in leading the way to improve families' access to healthy food options. Exploratory questions were asked in order to help the team design interventions that would have an impact on families through a food systems approach that accounted for food pantry clients as beneficiaries of organizational-level interventions and individual- and family-level behavioral changes

to decrease food insecurity, obesity, and diet-related chronic diseases.

The questions included: (a) What food acquisition strategies did food pantry clients who were living in households with children use to meet their monthly food needs? (b) What are the relationships between the usage of various food acquisition strategies and the level of household food security in households with children who met some of their dietary needs through the use of a food pantry? (c) What was the prevalence of chronic diet-related health issues and overweight or obesity in food pantry clients who were living in households with children?

In order to answer the research questions, we first present literature emphasizing the correlates of food security, use of food acquisition strategies, and the relationship between food insecurity and poor health outcomes. We then provide a description of variables used in this study and present results from univariate and chi-square analyses. Last, we discuss the results in light of other related research, the context of this study, and provide implications for practice.

Literature Review

Correlates of Food Security

Poverty is the greatest predictor of food insecurity (Nord, Andrews, & Carlson, 2008). Merely looking at income, however, does not accurately reflect expenditures, such as health care, housing, and food (Rose, 1999). Risk factors include economic impacts due to job loss, low or nonexistent food stamp (SNAP) benefits, household composition, health crises, debt, reduced incomes due to death or divorce of a partner, not owning a home, and limited savings and access to credit to buffer economic disturbances (Gross & Rosenberger, 2005; Gundersen & Gruber, 2001; Olson, Anderson, Kiss, Lawrence, & Seiling, 2004; Olson, Rauschenbach, Frongillo, & Kendall, 1997; Rose, 1999).

Results from studies conducted with food pantry users highlight similar correlates to food security. Food pantry clients were more likely to be food insecure if they did not own a car (Daponte, Lewis, Sanders, & Taylor, 1998) and often faced compounding economic hardships associated with health, utility, and housing hardships (Bartfeld, 2003), as well as unemployment and loss of benefits (Biggerstaff, McGrath Morris, & Nichols-Casebolt, 2002).

Food Insecurity and Health

Households with inadequate income experience more food insecurity, limited physical functioning, chronic health conditions, and mental health concerns (Vozoris & Tarasuk, 2003), all of which are important issues to human service professionals. Connections also exist

among food security, obesity, and higher rates of depression, anxiety, heart disease, high blood pressure, and low self-esteem (Adams et al., 2003; Dietz, 1995; Hamelin, Habicht, & Beaudry, 1999; Houston et al., 2009; Petry, Barry, Pietrzak, & Wagner, 2008; Tarasuk & Beaton, 1999). The proportion of obese persons in low-income households shows an increased vulnerability and prevalence (U.S. Department of Health and Human Services [DHHS], 2001).

Several studies have shown how food insecurity impacts dietary intake, highlighting both consumer decisions made at the point of purchase and adjustments made within families. Low-income families have less money to spend and often purchase high-calorie, low-nutrient foods (Kozikowski & Williamson, 2009). Adults in households with children often feed their children first and decrease their own food consumption and nutritional dietary intake to ensure that their children's diets are consistent, resulting in anxiety about restricted food supplies and decreased quality of life for the adults (Kempson, Kennan, Sadani, & Adler, 2003; McIntyre et al., 2003; Radimer, Olson, Greene, Campbell, & Habicht, 1992).

Food Acquisition Strategies

Many households have become adept at employing multiple strategies to decrease food expenses and reduce food insecurity and its related health consequences. It is outside the purview of this study to include other coping and management strategies related to nonfood acquisition strategies (e.g., pawning items, buying households items with credit, making trade-offs in terms of what bills are paid, or making multiple shopping trips; see Hamelin et al., 1999) and extensive information about the relationship between food security and governmental programs like SNAP and WIC (see Mabli, Ohls, Dragoset, Castner, & Santos, 2013; Metallinos-Katsaras, Gorman, Wilde, & Kallio, 2011). Households access food through other sources, beyond traditional markets like restaurants or grocery stores (Michalski, 2003). They obtain food through the social economy (i.e., voluntary and charitable organizations like food banks) and the *informal economy*, the network of social relationships with extended family, coworkers, friends, and neighbors (Michalski, 2003).

Informal support systems have been studied as a means to acquire food to sustain an adequate household diet. Kempson et al.'s (2003) study highlighted strategies that included cooking with others, obtaining food from coworkers, and borrowing food and money. Structured meals and events, like church potlucks, school meals, and food pantries are also important strategies (Kempson et al., 2003; Rose, 2011; Swanson, Olson, Miller, & Lawrence, 2008). Gross and Rosenberger (2005) provided insight into how households

assisted one another with child care, carpooling, and food sharing.

Households also decrease expenses through food procurement activities (e.g., gardening, hunting, and fishing; Kempson et al., 2003; Wright Morton & Smith, 2008). In a study of Latino migrant farmworkers, obtaining food through hunting and fishing resulted in greater food security (Quandt, Arcury, Early, Tapia, & Davis, 2004). Dean, Sharkey, Nalty, and Xu's (2014) study found evidence to support that low-income residents who gardened consumed more vegetables and were more likely to be food secure, especially in rural areas.

This study sought to understand how families with children who obtained food from pantries acquired food to meet their monthly food needs, what health issues were prevalent among emergency food pantry users, and the relationship between food acquisition strategies and food security. The following section describes the methods used for this study.

Methods

Sample and Data Collection

The original sample included 1,084 adults who participated in surveys at one of 40 food pantries in a 26-county food bank geographic distribution area between May and August 2010 (1,167 surveys were originally completed; due to missing data or outliers, we had a sample of 1,084 usable surveys). The overall completion percentage was 76% for all contacts (*N* = 1,167), with 22% refusals and 2% incomplete surveys. Households without children were excluded, resulting in a sample size of 532 for this study. Over 80% of the pantries are in designated Office of Management and Budget (2003) nonmetropolitan counties. The food bank and the University of Missouri Institutional Review Board approved the final study design. Clients were interviewed by trained students while standing in line or in a facility waiting room during food distribution.

Measures

Household food security. The six-item short form of the U.S. Department of Agriculture (USDA) U.S. Household Food Security Survey Module was used to measure food security (USDA, 2014). This short module is based on the full 18-item module and is considered a suitable surrogate when researchers find the length of the full module a constraint and burden to respondents (USDA, 2014). Food-secure households responded affirmatively to zero or one question. Low food-secure households responded affirmatively to between two and four questions, while very low food-secure households responded affirmatively to between five and six questions.

TABLE 1. Sociodemographic Information by Household Type (*N* = 532)

Variables	<i>n</i>	%
Gender		
Female	447	84
Male	85	16
Race		
White	452	85
African American	44	8
Other	36	7
Marital status		
Married	229	43
Living with partner	101	19
Separated/ divorced	106	20
Other	96	18
Education		
< High school (HS)	125	24
HS grad or GED	219	41
> HS education	188	35
All household income		
Part-time employment (< 35 hours/week)	110	21
Full-time employment (> 35 hours/week)	233	44
Child support	97	18
TANF	50	9
SSDI, veterans benefits	136	26
Social Security, pension, retirement	81	15
Unemployment, workers compensation	62	12
Household income as % of federal poverty level (FPL) ^a		
0–50% FPL	232	44
51–100% FPL	198	37
Over 101% FPL	102	19
Household metropolitan status		
Nonmetro	342	64
Metro	190	36
Food security status		
Food secure	136	26
Low food secure	206	39
Very low food secure	190	35
Federal government assistance programs		
SNAP	353	66
WIC	144	27
	<i>M</i>	(<i>SD</i>)
Age	38	(12)
Household income	\$1,277	(\$1,036)
Household size	4	(2)

^a Household income does not add to 100% because households may have multiple sources of income.

Food acquisition strategies. The survey asks respondents to answer how many times during the past 12 months that their family used different food sources (relatives outside household, friends/coworkers, neighbors, hunting/fishing, or gardens). These relate to social support networks and food procurement. Due to the bimodal distribution of responses (never and every month during the last 12 months), use for each food source was categorized using dummy coding into dichotomous variables (0 = *did not use*, 1 = *used at least once*).

Health. Participants were asked whether they had been told they have diabetes, high blood pressure, or high cholesterol. These were chosen as health indicators that may reflect linkages between food insecurity, poor health, obesity, and chronic diseases (Adams et al., 2003; Dietz, 1995). Participants reported height and weight so that body mass index (BMI), a surrogate for body fat (Centers for Disease Control and Prevention [CDC], 2010b), could be calculated. BMI classifications are underweight or normal (< 24.9), overweight (25.0–29.9), and obese (> 30.0).

Results

Sample Characteristics

Univariate analyses were performed to understand the sociodemographic characteristics of the sample of households with children (*N* = 532). Frequency distributions and means of the study sample's characteristics are provided in Table 1. Nearly 75% of food pantry clients were food insecure. The majority of respondents were female (84%) and White (85%); 43%

were married, 19% lived with a partner, and nearly 20% were separated or divorced. Almost 65% lived in a nonmetropolitan area. The mean monthly income was \$1,277 (*SD* = \$1,036) with 44% of households reporting income 0–50% of the FPL; 37% reporting 51–100% of the FPL; and 19% reporting over 101% of the FPL. Nearly two thirds of households had income from employment, with 44% of households having a household member employed full time. The second largest income source was Supplemental Security Income, Social Security Disability Insurance, or veterans benefits (26%). Almost 12% of households received unemployment benefits.

Food Acquisition Strategies

Frequency distributions were conducted to learn more about the food acquisition strategies food pantry clients who were living in households with children used to meet their monthly food needs (see Table 2). Households often relied on social networks as a regular source of food. Over 40% of households obtained food from relatives or family that lived outside of the household, 20% obtained food from friends, and 8% received food from neighbors or coworkers. Nearly 36% obtained food through hunting or fishing, and 39% gardened.

Food Security and Use of Food Acquisition Strategies

Chi-square analyses were conducted (see Table 3) to answer the research question about the relationships between the usage of various food acquisition strategies and the level of household food security in households with children who met some of their dietary needs through the use of a food pantry. Chi-square analysis is a test of association between variables intended for categorical and ordinal level variables that are independent from one another and have cases in each of the categories (Fisher, 1922).

There was a significant difference in the percentage of households with children who relied on obtaining food from relatives when food security status was considered. Relatives seem to be the first social group that house-

TABLE 2. Food Acquisition Strategies Used By Households (*N* = 532)

Strategy	<i>n</i>	%
Food from relatives	216	41
Food from friends	108	20
Food from coworkers or neighbors	41	8
Hunting or fishing	189	36
Gardening	209	39

TABLE 3. Household Food Acquisition Strategy Use by Household Food Security Status (*N* = 532)

	Food from relatives ** (<i>n</i> = 216)		Food from friends * (<i>n</i> = 108)		Food from neighbors or coworkers * (<i>n</i> = 41)		Hunting and fishing (<i>n</i> = 189)		Gardening (<i>n</i> = 209)	
	Yes	%	Yes	%	Yes	%	Yes	%	Yes	%
Food secure	39	18	18	17	5	12	46	24	57	27
Low food secure	88	41	42	39	14	34	75	40	75	36
Very low food secure	89	41	48	44	22	54	68	36	77	37

**p* < .05 (χ^2 statistic); ** *p* < .01 (χ^2 statistic)

holds with children sought for food assistance, with a significantly larger number of families that experienced low (41%) or very low food security (41%) obtaining food from relatives, $\chi^2(2) = 11.470, p = .003$. Similarly, the largest category of households with children who received food from friends were families who were considered very low food secure (44%), though low food secure families reflected a high usage rate of this acquisition strategy, too (39%), $\chi^2(2) = 7.089, p = .029$. Also significant was the fact that very low food-secure families represented more than half of the small number of families who obtained food from neighbors or coworkers (54%), $\chi^2(2) = 7.351, p = .025$. No statistical significance regarding hunting, fishing, or gardening was found among the three food security categories, with slightly more people who were low food-secure who hunted or fished (40%) and slightly more people who were very low food-secure who gardened (37%).

Health Status of Food Pantry Users

The study revealed a major health concern for food pantry participants. The prevalence of persons who are obese or overweight in the general U.S. population is 68% (CDC, 2010a), while 80% of the pantry participants with children were overweight or obese. A significantly higher number of pantry participants had diabetes (17%) compared to the U.S. (8%; American Diabetes Organization, 2011). More than 35% had high blood pressure, compared to around 30% nationwide (Yoon, Ostchega, & Louis, 2010). Almost 23% of respondents ages 18–39 years old had high cholesterol, and 43% of those ages 40–59 reported high cholesterol compared to the national averages for people ages 18–39 (< 10%) and ages 40–59 (30%; Fryar, Hirsch, Eberhardt, Yoon, & Wright, 2010).

Discussion

The food pantry clients who were interviewed were extremely low income. Though 62% of participants lived with a partner or were married, only 44% had an adult in the household who was employed full time. Around 12% of the sample had someone in the household receiving unemployment benefits. While it is not clear how recently a member of the household became unemployed or what wages or benefits were lost, it is safe to say that some of the loss of employment occurred during the time just prior to the survey, during the 2007–2009 U.S. recession. Children living in households in which adults are not employed are extremely vulnerable to poverty, food insecurity, and child health outcomes related to poor cognitive development (Coleman-Jensen & Nord, 2013). This can lead to long-term delays that impact educational attainment, which in turn limit future earnings

and can develop into a long-term cycle of poverty (Cook & Jeng, 2009).

More than one fourth of the persons interviewed lived in households in which someone received a monthly check for a disability. If someone is receiving these payments, their income will not be adjusted much for economic conditions. Inflation and high food prices following the 2007–2009 recession created challenges for low-income households by impacting food budgets (Coleman-Jensen & Gregory, 2014), which would be further exacerbated for households that receive monthly checks from the government. On a national level, a decline in unemployment would have resulted in fewer households experiencing food insecurity, but with food prices increasing and inflation, household budgetary items became more costly and impacted families' abilities to meet their basic needs (Coleman-Jensen & Gregory, 2014). It is likely that these other items, such as fuel, transportation, and rent, are related to experiences of food insecurity, based on previous research (Biggerstaff et al., 2002; Rose, 1999).

The majority of the people interviewed live in rural communities. Bernell, Weber, and Edwards (2006) posited that social networks in rural communities may provide a buffer to food insecurity, and although 40% of households received food from relatives and 65% of the sample came from rural areas, 75% of people interviewed were living in food-insecure households. Interestingly, only 8% received food from neighbors or coworkers. There are many plausible considerations for the low number of people using this food acquisition strategy. As we already learned, unemployment and underemployment are both evident in this study, so access to a network of coworkers is not as likely. Nooney et al. (2013) noted that it appears that increased need for emergency food assistance after the 2007–2009 recession may be contributing to lower social stigma in rural communities. However, it is likely that some of the sample may be newer food pantry users, and there still may be stigma attached to asking for help from others. Last, rural households may not have neighbors nearby and may have transportation limitations to access neighbors due to the aforementioned inflation that has likely impacted household budgets.

Hunting, fishing, and gardening were very common in this study sample. Households may be supplementing food purchased in the market economy with food produced at home or in their community by necessity or by choice to meet their household dietary needs, which is reflective of Michalski's (2003) findings. This may be partly due to the more common nature of subsistence practices that exist in rural areas (Sherman, 2009). Future research may consider the scalability of home food production, community gar-

dens, and differences in acquisition strategies used in nonsummer months.

The study revealed that while many families participated in subsistence activities like gardening, hunting, and fishing, there was not any significant association with food security status. However, families appeared to participate in social support systems to obtain food, first looking to relatives, then to friends, and less often to neighbors and coworkers. Recognizing that families interact with relatives regularly around food is an important discussion point. Mammen, Bauer, and Richards (2009) discussed the importance of families, especially rural families, in food acquisition. This includes considerations of the nature of social interactions that can build human capital in terms of sharing information about community resources, dietary consumption, and food production (Mammen et al., 2009). Although this study did not ask why certain strategies were chosen, future research may look at patterns of acquisition behavior and why families are reaching out to social networks or participating in food production or subsistence activities and what is being gained in terms of human capital.

Implications for Practice

This study is uniquely contextualized by the 2007–2009 U.S. recession and represents a largely nonmetropolitan, 26-county area in the Midwest. This study was conducted in partnership with a food bank. The study intended to provide researchers, the food bank, and food pantries with a better understanding of how their clients acquired food beyond the use of emergency food programs, what types of diet-related health issues were present, and what the relationship was between food security and each food acquisition strategy that was used.

Food insecurity has severe physical and mental health consequences that impact families. Food insecurity may impact a child's development and ability to participate in school, and impact his or her educational attainment, while parents feel socially isolated and anxious about trying to provide enough food for their families (Cook & Jeng, 2009). Health outcomes resulting in low productivity and decreased social participation (Hamelin et al., 1999) can negatively impact communities experiencing economic hardships.

Practitioners in different settings have many opportunities to assess issues occurring in families and creatively consider different intervention strategies. School social workers may be referred a student who is acting out in class, later to find out that the student has not eaten since lunch the day before. Medical social workers may have to consider whether a hungry child is being neglected or whether the family simply cannot meet the dietary needs due to low wages, losing

a job, or budgetary constraints. Assessments of mental health should be considerate of the impact of food insecurity; including the USDA six-item survey is a fairly easy, reliable starting point.

This study also pointed to the importance of understanding how food pantry clients rely on social support networks to acquire food. Research has begun to move beyond antihunger and emergency food strategies toward community food security (CFS) strategies (Winne, Joseph, & Fisher, 1997). CFS models improve access to affordable, healthy foods through sustainable strategies that help communities retain knowledge and become more self-sufficient (Hamm & Bellows, 2003). An intervention strategy that considers the ways in which people interact around food (e.g., community meals, sharing excess garden produce) and how those trusted relationships can help empower families to work together to share knowledge and resources (e.g., creating a cooperative buying program, sharing tips about where the best food deals are located, discussing food quality) is appropriate for this type of work. This means understanding individuals as part of a broader community with sets of values, priorities, and concerns. Social workers are ideal professionals to assist residents with community organizing, link residents with services, and engage in community outreach.

Last, and most important, is recognizing the potential for interventions at the organizational level to decrease food insecurity and improve diet. Food banks and food pantries obtain some of their donated food from grocery stores and food drives. Donor groups could be targeted to make healthy food donations (e.g., diabetic-friendly, low-sodium food) with the knowledge from this study that the overwhelming majority of clients are overweight or obese and at risk for a number of diet-related diseases. Knowing that clients hunt, fish, and garden is extremely important when considering intervention strategies. Providing families with fishing licenses, educating families about meat-processing facilities, or providing basic gardening materials can serve as food system interventions. Food pantries themselves can be spaces for sharing knowledge and resources. Innovative food banks and food pantries are creating on-site gardens, seed distributions, canning demonstrations, and cooking demonstrations.

Social workers must be aware of the consequences of food insecurity and dietary impacts. This study provides evidence of the importance of considering food security, food acquisition strategies, and health when conducting assessments and developing interventions.

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Authors' note. Funding provided by Agriculture and Food Research Initiative Grant No. 2010-85216-20645 from the USDA National Institute of Food and Agriculture, Human Nutrition and Obesity Program.

Manuscript received: July 3, 2014

Revised: January 22, 2015

Accepted: January 23, 2015

Disposition editor: Susan E. Mason