Routledge
Taylor & Francis Group

Ecology of Food and Nutrition

ISSN: 0367-0244 (Print) 1543-5237 (Online) Journal homepage: https://www.tandfonline.com/loi/gefn20

Food insecurity and healthcare decision making among mobile food pantry clients in Tampa Bay

Sarah Bradley, C. Ann Vitous, Aria Walsh-Felz & David Himmelgreen

To cite this article: Sarah Bradley, C. Ann Vitous, Aria Walsh-Felz & David Himmelgreen (2018) Food insecurity and healthcare decision making among mobile food pantry clients in Tampa Bay, Ecology of Food and Nutrition, 57:3, 206-222, DOI: 10.1080/03670244.2018.1455673

To link to this article: https://doi.org/10.1080/03670244.2018.1455673

Published online: 03 Apr 2018.

ECOLOGY OF FOOD AND NUTRITION
2018, VOL. 57, NO. 3, 206–222
https://doi.org/10.1080/03670244.2018.1455673

Routledge
Taylor & Francis Group

Food insecurity and healthcare decision making among mobile food pantry clients in Tampa Bay

Sarah Bradley[a], C. Ann Vitous[a], Aria Walsh-Felz[a], and David Himmelgreen[b]

[a]Anthropology and Public Health Departments, University of South Florida, Tampa, Florida, USA; [b]Anthropology Department, University of South Florida, Tampa, FL, USA

ABSTRACT

This article examines the relationship between food insecurity and health-care decision-making among mobile food pantry clients in Tampa Bay, Florida. Results show a high rate of food insecurity, high stress levels, and chronic health conditions among mobile pantry clients, many of whom are long-term users of food pantry services. The fruits and vegetables supplied by the pantry allow clients to manage chronic health conditions and mitigate some of the financial burden of health-care costs. Research was conducted in cooperation with the Anthropology Department at the University of South Florida, Feeding Tampa Bay, and WellCare.

KEYWORDS

Food access; food insecurity; health inequality; mobile food pantry

Introduction

On a March morning in Tampa, Florida, around 7 a.m., the sun is just beginning to peak over the edge of the horizon. The touch of warmth in the chilly morning air provides a preview of the hot day to come. A neon orange chair and a blue metal rolling cart lean against a fence enclosing a community-center park, acting as placeholders for clients of the mobile food pantry which begins at 9 a.m.

While many food pantry services require families to travel to a distribution center, mobile pantries bring food directly to an area based on the level of food assistance need. Mobile food pantries are often run by organizations dedicated to food assistance and deliver a variety of foods including in-season produce. Mobile food pantry distributions change locations, and may only occur in the same location monthly or bi-monthly. The clientele of this mobile food pantry and others like it are part of the 17% of Florida residents who live with food insecurity (Feeding America 2015). In order for a household to be food secure, all members of a household must have enough food for an active, healthy lifestyle. Food security includes, at a minimum, the ready availability of nutritionally adequate and safe foods as well as the assured ability to acquire acceptable foods in socially acceptable ways (American Nutrition Association 2015). Conversely, food insecurity occurs when the availability of nutritionally

CONTACT Sarah Bradley sarahbradley@mail.usf.edu Anthropology and Public Health Departments, University of South Florida, Tampa, Florida, USA.

adequate and safe foods or the ability to acquire such foods in a socially acceptable way is limited or uncertain (Bazerghi, McKay, and Dunn 2016; Radimer 2002).

Understanding how pantry clients balance health care and nutrition is particularly important considering the evidence that food insecurity affects mental health, contributes to poor physical health and school outcomes for children, and increases morbidity and mortality for adults (Coleman-Jensen 2010; Mammen, Bauer, and Richards 2009). Food insecurity has been linked to self-reports of poor health (Alvarez et al. 2015; Seligman et al. 2012; Siefert et al. 2001; Stuff et al. 2004; Tarasuk et al. 2015). It has also been linked to higher rates of mental health issues (Gundersen and Ziliak 2015; Heflin, Siefert, and Williams 2005; Heflin and Ziliak 2008; Whitaker, Phillips, and Orzol 2006). Additionally, it has been shown that individuals living in food insecure households have higher rates of emergency room visits and hospitalizations than food secure households (Kersey et al. 1999; Kushel et al. 2006; Tarasuk et al. 2015). This can lead to higher health-care expenditures overall.

This article documents how food insecurity impacts the lives of clients using these mobile pantries, specifically in relation to balancing nutritional needs and health-care needs, at two mobile food pantry sites in Tampa Bay, Florida. The mobile food pantries are designed to bring fresh food and produce to food deserts where there are many food insecure households. Food deserts are areas with limited access to affordable foods that contribute to healthy eating due to physical availability or economic burdens (USDA 2009).

While mobile food pantries have been introduced in a number of areas across the country, there have been very few evaluations of the reach and effectiveness of these programs and their impact on food insecurity. This evaluation is one of few projects which include a qualitative analysis of the effects mobile pantries have in the lives of people facing food insecurity by using participant observation, questionnaires, and semi-structured interviews. This article aims to address two objectives: (1) to evaluate the impacts of mobile food pantries on food insecure populations; and (2) to examine the relationship between food insecurity and health-care decision-making among adult clients of mobile food pantries in Tampa Bay. This includes addressing enrollment in assistance programs, health issues, stress, and medical status. Such evaluations are necessary if mobile pantry programs are to be improved, expanded, and replicated.

Methods

The project team, consisting of University of South Florida Anthropology Department researchers, utilized surveys, interviews, and participant

observation in this study. Research team members were graduate students in the departments of Anthropology and Public Health. Participants were recruited by members of the research team from two mobile food pantry locations in Tampa Bay, during the mobile food pantry distribution. This was done to ensure that participants were users of food assistance services. The two sites chosen for participant recruitment were Feeding America mobile pantry distributions funded by WellCare. Informed consent was obtained from all study participants. Researchers made clear that participation was completely voluntary and would not affect their relationship with or services provided by Feeding Tampa Bay or any health insurance plan. All surveys and interviews were de-identified to protect participant confidentiality, audio recorded, and transcribed verbatim. The study protocol was approved as an evaluation by the University of South Florida Institutional Review Board.

Data collection methods were broken into two phases; Phase I and Phase II. Phase I consisted of survey collection, and surveys were conducted with clients as they waited in line at the mobile pantry distributions. All clients of the food pantry over the age of 18 were invited to participate. During Phase II, every 10th client in line was invited to complete a semi-structured interview. In order to ensure confidentiality, selected participants were invited to come to an on-site sheltered picnic area after they collected their food. Due to the length of the interview, participants were compensated $15 for their participation. Participant observation occurred alongside both phases of this research project. All data were collected between July 2016 and April 2017.

Data collection and analysis

Phase I consisted of verbally administered or independently filled out questionnaires that were completed with 79 adult users of the mobile pantry according to client preference in either English or Spanish. The target sample size for surveys was 25% of the average attendance of a mobile food pantry distribution. The questionnaire used in this evaluation included several valid reliable measures, including the 18-item USDA Household Food Security Survey (HFSS), the World Health Organization (WHO) single-item global health measure, Cohen's Perceived Stress Scale (PSS), and demographic information (age, gender, race/ethnicity, household size, and social services enrollment). All data for Phase I were collected between July 2016 and December 2016. Phase II of the evaluation consisted of longer interviews with 19 adult users of the mobile pantry. The target sample size for semi-structured was based on when thematic saturation was reached. Interviews during this phase were meant to expand upon individual experiences of food insecurity and health-care decision-making. Interview participants ranged in age from 30 to 89 years old. Participants were eligible for participation if they were over 18 years old and a user of the mobile food pantry. Interviews also

collected demographic information including age, employment status, military service, household size, and whether households included children under 18. All data for Phase II were collected between January 2017 and April 2017. All participants were selected based on their placement in the line for food, with every 10th user of the mobile pantry being eligible for participation.

Participant observation is considered a foundational anthropological method and appropriate for exploratory research: it is key for enhancing the quality and interpretation of data, encourages the formulation of new research questions, and offers opportunities to understand experiences that are not verbalized in interviews (Bernard and Gravlee 2014). The goals of participant observation for this project were to familiarize ourselves with the locality of the food distribution sites, understand the various ways in which clients experience and navigate food insecurity, and to understand the outcomes that these experiences have on mental and physical health. The research team recorded detailed field notes during or after each distribution event. These field notes were reviewed and coded for emerging themes, supplementing the data collected from the surveys and semi-structured interviews.

Households were considered to be food secure or food insecure based on the USDA Food Security Classifications and Definitions for households with and without children under 18 (American Nutrition Association 2015). Based on their responses to the USDA HFSS, participants' households were scored as having (1) High food security – no reported indications of food-access problems or limitations; (2) Marginal food security – one or two reported indications, typically of anxiety over food sufficiency or shortage of food in the house, little or no indication of changes in diets or food intake; (3) Low food security – reports of reduced quality, variety, or desirability of diet, little or no indication of reduced food intake; or (4) Very Low food security – reports of multiple indications of disrupted eating patterns and reduced food intake.

The Cohen's PSS is a popular tool for measuring psychological stress by evaluating the degree to which participants feel their life has been unpredictable, uncontrollable, or overloaded in the last month (Cohen, Kamarck, and Mermelstein 1983). The PSS is also used in health assessments, as higher levels of psychological stress (as measured by the PSS) have been associated with a myriad of conditions including suppressed immune function, greater susceptibility to infection, and slower healing (Cohen and Janicki-Deverts 2012). According to this measure, stress is defined as the extent to which persons perceive that demands in their lives exceed their ability to cope. Based on responses, participants were scored as having a stress level that is average, above average, or very high. Responses were also analyzed based on whether or not households included children under 18.

The WHO Single-Item Global Health Measure uses a single question and response to quickly evaluate a participant's perception of their own health status. When asked how they would rate their health today, participants rated their own health as Very Good, Good, Moderate, Bad, or Very Bad.

Analysis of semi-structured interviews and fieldnotes was carried out using qualitative data software Dedoose (version 7.6.6). Quantitative analysis was performed using Dedoose and SPSS software (version 23.3). Themes were established among three researchers based on the research objectives and data collected. Interrater reliability was established through an iterative process of consensus building between two researchers for consistent and accurate qualitative analysis. Gender-ambiguous pseudonyms have been assigned to each participant.

Results

Food security

Data on food insecurity in Florida, collected by Feeding America, indicates approximately 17% of households in Florida are considered food insecure (2015). Client responses to the USDA HFSS (USDA 2012) indicated that 90% of households utilizing the mobile pantry distribution sites included in this study are considered food insecure (n = 72). Table 1 demonstrates food security status based on all 79 households which responded to the USDA HFSS. According to the USDA Food Security Classifications and Definitions, 4% of households had high food security (n = 3), 6% of households had marginal food security (n = 5), 26% had low food security (n = 21), and 64% had very low food security (n = 51). The columns showing results for families

Table 1. Food security at mobile food pantry locations.

	Total sample (n = 80)		Families without children (subset n = 46)		Families with children (subset n = 34)	
	n	%	n	%	n	%
Food Secure (FS) (High and Marginal Food Security)	8	10%	3	7%	5	15%
Food Insecure (Low and Very Low Food Security)	72	90%	43	93%	29	85%
High FS	3	4%	1	2%	2	6%
Marginal FS	5	6%	2	4%	3	9%
Low FS	21	26%	12	26%	9	26%
Very Low FS	51	64%	31	68%	20	59%

*USDA Food Security Classifications and Definitions (USDA 2015): (1) High food security – no reported indications of food-access problems or limitations, (2) Marginal food security – one or two reported indications, typically of anxiety over food sufficiency or shortage of food in the house. Little or no indication of changes in diets or food intake, (3) Low food security – reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake, (4) Reports of multiple indications of disrupted eating patterns and reduced food intake.

without children and families with children are subsets of the total sample. During the interviews, 74% of participants (n = 14) discussed economic barriers to food access including transportation, stability over time, health-care expenses, and the affordability of fresh produce. The interviews also found that 63% (n = 12) of participants specifically listed transportation as a barrier to food access. When asked if their food security status would change without services like the mobile pantry which bring free food directly to high-need neighborhoods, clients like Julian assert; "Yeah, it would change a lot. Because we get extra meals, meat and everything that basically gets you over the hump." Another client, Devon, described, "Sometimes it's up and down. Because you have that light bill to pay again, then you think about coming to the food pantry so you can make something and be able to pay the bill then." For Devon, times of the month when their bills are due are the times of the month when they most need food assistance. At other times, it is simpler to meet their food needs. Similarly, Payton explained, "I can get it with my stamps, but sometimes I run out before I can get my stamps because I don't get them until around the 12th of the month. So that's a whole half of the month before I get my stamps." Sometimes, clients rely on services like the mobile food pantry to get by during these times.

Perceived stress scale

Totally, 76 out of 79 questionnaire respondents completed the PSS. Of those who completed the PSS, 68% of all clients surveyed experience above average stress levels, 42% of all clients surveyed experience very high stress levels, 75% of households with children experience above average stress levels, and 34% of households with children experience very high stress levels (Table 2). Very high stress levels are considered severe and in need of stress reduction techniques. The average PSS score was 17.96 for male respondents and 18.12 for female respondents, both of which would be considered above average stress. This score is higher than the average PSS score in the general US population, which was found to be 15.52 for men and 16.14 for women (Cohen and Janicki-Deverts 2012).

Table 2. Results from Cohen's perceived stress scale.

	Total sample (n = 76)		Families without children (subset n = 44)		Families with children (subset n = 32)	
	n	%	n	%	n	%
Average	24	32%	16	36%	8	25%
Above Average	20	26%	7	16%	13	41%
Very High	32	42%	21	48%	11	34%

Findings from the USDA HFSS and PSS survey indicate a significant positive correlation between perceived stress and food insecurity (Pearson's correlation two-tailed test, $r = 0.293$, $p = 0.010$).[1] Furthermore, at one mobile food pantry location, a significant positive correlation was found between increasing stress and the increase in food insecurity ($r = .380$, $p = 0.038$). These results highlight the critical link between food insecurity and higher levels of stress, suggesting that as a population experiences low to very low food security, their stress levels rise.

Enrollment in assistance programs

Mobile food pantry distribution clients often face economic hardship and receive (or are in need of) governmental assistance to meet their food needs. Of the 19 respondents interviewed, 8 (42%) explicitly mentioned the use of programs such as Women, Infants, and Children (WIC) and Supplemental Nutrition Assistance Program (SNAP) to supplement their food needs. Of the 79 participants surveyed using the questionnaire, 84% were enrolled in an assistance program. Specifically, according to self-reported responses, 8% of clients received WIC, 26% received SNAP, 10% received Temporary Assistance for Needy Families (TANF), 33% received Social Security Income (SSI), 46% were enrolled in Medicaid, 43% were enrolled in Medicare, 16% were not enrolled in any program, and 1% chose not to respond.

While many participants were enrolled in assistance programs, almost half (42%, $n = 8$) expressed that their household food needs were not being met by the assistance they received. This sentiment is reflected in comments like the one from Lee who asserted: "I get $16 a month for food stamps. That buys like… a gallon of milk and bread. You know, well, that will get us like lunch meat and maybe a few things that we can't get at a food pantry. But that's per month, so, it doesn't go far."

In addition to the eight respondents who mentioned qualifying for food assistance programs, four mentioned that despite being eligible for other government-sponsored plans like social security and/or Medicaid, they are ineligible for food assistance programs. When asked if they receive governmental assistance, Morgan asserted: "No, I'm one of those unfortunates where I get just enough money that I don't get any help at all." Clients like Morgan described how factors such as unexpected injuries, medical bills, and taking care of family members place them in a precarious financial situation.

Other clients described specific ways of managing their food needs despite not qualifying for government assistance. Clients mentioned strategies such as stretching and sharing food, using food pantries, and strategic shopping techniques. Cassidy shared:

[1]Correlation is significant at the 0.05 level (two-tailed).

> And since I get Social Security Disability I guess I might not. I don't know if it's cents or dollars or whatever, whatever their system says. So, I don't get that. So mostly I use food pantries, and once a month when I get my Social Security check, I'll go shopping with the list I have and then if I can stretch some out I do. It's just a planning process, and then my daughter she gets SSI and so she doesn't get SNAP either, but she did apply this month. They told her it would take 30–45 days, and so she buys a little portion and I'll buy a portion, then we planned it out so that we can kind of stretch it.

When asked if a lack of access to services like the mobile pantry would change their level of food security, many of the clients asserted that it would. For example, Jordan stated; "Yeah, because that does help me a great deal. Because now with the food stamps they changed my date from the 10th to the 18th, so it's such a long span, I'm like oh, no, you've got to plan it to last you 30 days. I had gotten so used to on the 10th, getting my food, now it's a week later, and it's like [gasp] so I really stretch my food, I have to."

Not all clients felt that they were dependent on food assistance from organizations like Feeding America, but had other routes for meeting their food needs. Although most of the clients asserted feeling that not having access to food pantry services would change their food security status, a few reported that even without the services, they would find a way to make it work. For example, 68% (n = 13) of respondents indicated that they participate in food sharing between friends, family, or neighbors. These clients described how strategies such as relying on their social connections would ensure adequate access to food. For example, Corey explained, "I don't think so because I have family. So, I'm sure family and friends, they're not going to let me go hungry."

Food assistance services are just one of many routes that food insecure families use to fulfill their food needs. A number of different strategies were described by clients, including getting free food through methods like dumpster diving, and by getting free food from restaurants. Clients mentioned arrangements that they had made with managers at grocery stores, where they could explain their situation and were able to purchase highly discounted foods. However, the interviews conducted provide evidence that access to programs like the mobile food pantry have an effect on clients' perceptions of their own food security.

Health issues

Clients at the mobile food pantry distribution face a multitude of health issues. Totally, 17 of 19 interview respondents (89%) reported at least one health issue that they manage for themselves or a family member. These health issues included: type II diabetes, high blood pressure, high cholesterol, organ transplant, limited mobility, arthritis, cancer, and chronic lung disease.

In managing these health issues, some clients relied more on medication than others. Insurance status was key in acquiring necessary medications, and reliable access to nutritious food played a clear role in helping maintain health. In addition, some clients stated that they had dietary preferences, such as low carb or low sugar diets to maintain their health.

The WHO Single-Item Health Measure (WHO 2002), included in the interview guide, asks clients to describe their health as very good, good, moderate, bad, or very bad. Despite the high numbers of self-reported health conditions among clients interviewed, no respondent described their health as "bad" or "very bad." Interviews revealed that 5% of clients described their health as "very good," 26% described their health as "good," and 68% described their health as "moderate."

Health concerns discussed by participants were primarily chronic conditions, including diabetes, high blood pressure, high cholesterol, cancers, and organ transplants. However, clients stated that they have been able to partly manage their chronic conditions through the use of mobile pantry services. Payton, a client who manages more than one health condition, explained that eating more fruits and vegetables acquired through the mobile food pantry and SNAP has made a difference in their chronic disease management: "It's all in how you eat. Because last month when I went to the doctor he said my sugar went down and I said, 'Can't I stop taking the pills?' and he said, 'No. No, not yet,' so I said, 'Ok,' but he said, 'You're doing good. Whatever you're doing, keep it up.' [I'm eating] more fruits and vegetables." For this pantry client, the foods they eat, careful planning, and innovative food preparation help manage their diabetes.

Some clients listed the cost of health care as a burden to food access. This issue was explicitly discussed by 32% (n = 6) of respondents. For example, one client explained that the co-pay for medical care cuts into other costs: "I have a copay. And it's $35 for all expenses, and that kind of puts me back. Takes away some of my food money. You know, that goes towards my groceries. Sometimes I have to get stuff, you know." For this client, receiving food from the mobile food pantry helps balance the need to pay for health care and purchase groceries.

Some medications must be taken with food to be effective, and food insecurity has been listed as a reason for noncompliance among patients who are food insecure (Young et al. 2013). For example, Cassidy explained:

> You go to the doctor's office and they ask, 'Why you didn't take the medications?' and you be wanting to say, 'because I didn't have nothing to be taking it with!' You know, I have no food. So, it [the food pantry] does affects a lot, makes a big difference. It really does…You have to tell, when the doctor asks you why - I don't have anything to eat it with - he says, 'Well drink milk'…uh, like milk is really [expensive]… these medications they are already expensive with the copayment then [the medication] say, 'Please take the food'…so what choice do you have, just

> wait until you get something and THEN you can take the medicine and you can see the difference. So that is what happens. A lot of us don't take [the medicine].

Totally, 18 of the 19 clients interviewed chose to answer whether or not they had experienced changes in their health since accessing food at the mobile food pantry. Of those respondents, 72% said that they had experienced improvements in their health or could maintain their health, and 28% stated that they did not experience a change in health. For the 72% of interview respondents who reported that they could maintain their health, or experienced a positive change in their health owing to the mobile food pantry, many cited the quantity and quality of vegetables and the variety of foods provide in each box. For example, Cassidy (a long-term pantry user) explained that food from the mobile food pantry has improved their energy level because the food helps them "eat right": "I feel better, got more energy. I am not as… feeling weak and stuff, you know when you are not eating right. You don't have enough, you know. But then when I do the food pantry, I can get enough - and if it is healthy stuff it really makes you feel better and… you are really good and thinking better." For clients like Cassidy, keeping up good nutrition while taking medication for high cholesterol is key to maintaining their health and well-being.

Other comments from clients included that they could gain weight when needed. Some clients specifically mentioned that it helped their children gain weight. Others explained that the healthy foods at the pantry helped them stay healthy (if they did not already have a health condition), that the pantry foods helped them "eat right" and maintain a balanced diet, that the foods positively impacted the health of family members, and that clients managing a variety of chronic health conditions received foods appropriate for their health needs at the mobile food pantry.

Discussion

As indicated by the survey and interview data above, the population that utilizes mobile pantry services has high rates of food insecurity according to the USDA HFSS. Additionally, clients at the mobile food pantry often face economic hardship and receive (or are in need of) governmental assistance to meet their food needs. Despite the fact that SNAP is designed to be one of the first lines of defense against food insecurity in the United States, it is not perceived by all clients as being an adequate strategy for meeting household food needs. Some households who appear to be eligible for food stamps because of their income level are deemed ineligible due to other factors, including assets like household holdings or even vehicles. Difficulty in accessing SNAP services has been found in previous studies of similar populations (Gundersen and Oliveira 2001). Clients expressed frustration

when they felt that they make too much to receive assistance, but not enough to meet their household needs. Some families may choose not to enroll in SNAP because of a fear of stigma or a lack of awareness about benefits, another issue that has been seen in previous studies of food insecure populations (Bhattarai, Duffy, and Raymond 2005). If clients perceive that the benefits of SNAP do not outweigh the perceived cost, they are unlikely to consider SNAP an acceptable route for food assistance.

Pantry client experiences highlight how food insecurity and eligibility for government-sponsored assistance and health-care plans are intertwined. Food insecurity is not limited to those individuals and families who qualify for governmental assistance programs. Of the total clients who participated in this evaluation, most are enrolled in at least one assistance program. Clients not enrolled in services sometimes cited cumbersome paperwork, delays in paperwork, or did not qualify for government-sponsored assistance but did not have sufficient economic resources to adequately cover basic costs of living.

Relationship between food insecurity and health-care decision-making

An objective of this evaluation aimed to examine the relationship, if any, between food insecurity and health-care decision-making among the adult clients of the mobile food pantries. The fact that most clients rated their health as very good, good, and moderate health may indicate that despite the existence of health conditions among 89% of interview participants, clients of the pantry have found ways to manage their conditions at least partly through the use of mobile food pantry services. Food insecurity has been associated with a number of chronic conditions, including hypertension and diabetes, that are sensitive to individual diet and are often managed through food choice (Seligman, Laraia, and Kushel 2009). Food insecurity can exacerbate existing conditions because individuals may have to skip meals, and also because the food they can access may not ensure balanced meals (Nord, Andrews, and Carlson 2009). Therefore, the ability to manage one's diet because of the options available in the mobile pantry has important health consequences for clientele. Furthermore, some health conditions require medication to be taken with food. As stated by clients, some use the pantry schedule to coordinate and ensure that they can take their medication and manage their disease. This suggests that access to food assistance can promote compliance among patients who must take medications with food.

The clients interviewed consistently expressed that they were grateful for the fruits and vegetables supplied by the mobile food pantry because it allowed them to eat in the way that they "knew they should." The ability to "eat right" is not always available for food insecure households who must depend on whatever food is immediately accessible to them.

Access to nutritional foods also makes a difference for clients who have regular health-care expenses, because the money that is not being spent on food can be used on health care. For example, households who include a disabled family member are more likely to be food insecure (Brucker 2016; Coleman-Jensen and Nord 2013; Heflin and Ziliak 2008). Afulani et al. (2015) have shown that the high cost of medications can contribute to food insecurity among those who have chronic conditions, especially for those who do not have access to Medicare or Medicaid. The mobile food pantry can mitigate some of these challenges.

Throughout the interviews with the 17 clients managing health issues, it is clear that food insecurity and health-care decision-making are intertwined. Each client has a slightly different situation regarding insurance, health-care needs, and regular, affordable access to nutritious foods. Clients widely recognize that the food they pick up at the mobile food pantry is of high quality, nutritious, and aids in their ability to alleviate some of the pressure to balance the costs of their food and health-care needs. It should also be noted that households with high rates of food insecurity are more likely to have higher health-care costs. Food insecurity leads to higher rates of diabetes hospitalizations, more hospital readmissions, poorer compliance and adherence with medical treatment plans, and higher incidences of chronic disease (Berkowitz, Seligman, and Choudhry 2014, Fitzpatrick et al. 2015, Seligman et al. 2014). For this reason, programs like the mobile food pantry can also help lower overall health costs in a community by preventing unnecessary treatments and hospitalizations. For example, Quilliam et al. (2011) have found that an average inpatient admission costs $17,564, while feeding a family of four for 12 months costs $7888. Maintaining food security is much more cost effective overall.

Mobile food pantries and food insecurity

While 90% of clients who responded to the HFSS scored as being food insecure, perceptions of food insecurity among project participants did not mirror this measure. Nearly 50% of clients interviewed at the mobile food pantry reported feeling somewhat food secure. When asked to elaborate, clients described how their situations often varied based on factors such as employment status, time of month, and other financial responsibilities. Assessments of food security do not always include a consideration of how accessibility of food can change from one week to the next. In their review of food security in developed nations, Ashby et al. add a fourth dimension to food security: stability over time (2016). This addresses situations where access to food may currently be available, but may imminently be limited. This recognizes that food availability may be limited by seasons or other

temporary change. This applies to individuals who, like the mobile pantry clientele, have access to food earlier in the month when they receive monthly government benefits, but whose access decreases at the end of the month when those benefits have run out. The lived experience of food access must take into consideration that availability of food resources can change from week to week, or even from day to day.

An additional 25% of clients reported feeling very food secure. These clients described how using techniques such as food stretching, food sharing, bargain shopping, food pantries, and other mitigation strategies provide their households what is needed to meet their food needs. It is important to note that access to food assistance services, like the mobile pantry, was considered to be a significant part of food security for those clients who self-identified as food secure.

In the United States, food assistance is generally a temporary stopgap while clients have a chance to get back on their feet. Most poor people who use a U.S. government safety net program like SNAP are off benefits within three years (Loveless 2012). However, there are some populations for which food insecurity is long term or permanent, including veterans, the disabled, and the elderly (Loveless 2012). Most of the clients interviewed had been using the pantry for three or more years. This long-term use of food pantries was often anecdotally linked to struggles obtaining other governmental services, and inflation of food and housing prices combined with stagnant, low-wage, and inconsistent employment. Of the 19 clients who interviewed, most had been using food pantry services for three or four years, followed by clients who had been using the pantry for one or two years.

The site of the mobile food pantry also provides a location for socialization and community building. The social aspect of the mobile food pantry distributions was referenced in several of the interviews. Higher levels of belongingness and social support are correlated to greater health outcomes (Berkmanand Glass 2000; Cohen 1988; Tomaka, Thompson, and Palacios 2006). For this reason, the mobile food pantry's ability to aid social support in a population with high rates of chronic health conditions should not be disregarded, although it is beyond the scope of this article.

Conclusions and recommendations

Data from this project show that there is a high rate of food insecurity among mobile food pantry users in Tampa Bay. Among this population, the question is often not whether food assistance or government assistance services exist, but to what extent they can be accessed. In many of the interviews, it became clear that the criteria used to determine eligibility for programs like SNAP may exclude individuals who would benefit from the support. For example, eligibility does not take into consideration expenses such as

supporting other family members through informal financial arrangements. In addition, some participants described making at or near the income limit, making them either ineligible for assistance or only eligible for the minimum monthly benefit of $10. There is a need to reevaluate the criteria for food assistance programs, taking into consideration the additional expenses households may be responsible for as well as what income levels should qualify for support.

A significant percentage of clients of the mobile food pantries reported having chronic health concerns despite not necessarily identifying as being in poor health. The access to fruits and vegetables provided by the mobile food pantry allows individuals who lack sufficient medical care to partly mitigate health concerns through diet. Having access to mobile food pantries also allows for clients to spend money on health-care-related expenses such as medications and doctor's visits. There is evidence that programs like the mobile food pantry that lead to higher rates of food security can lead to lower health costs for individuals who have chronic health conditions. Maintaining programs like the mobile food pantry is relatively inexpensive when compared to the costs of hospitalizations and emergency room visits.

In addition to the food provided by the mobile pantries, the sites also serve as an opportunity for people to increase food security, potentially alleviating health concerns related to social isolation and stress. There appears to be a need for resources and referrals for people regarding health maintenance and follow-up services. While clients know what is wrong with them, they struggle to obtain follow-up and preventive care necessary to consistently manage disease and illness. Additionally, there is a need for additional research which connects food security with positive health outcomes. There is also a lack of available literature that addresses whether or not government-received benefits are actually fulfilling the household food needs of clientele. Finally, there is a need for greater education about physicians and caregivers concerning specific health issues related to populations experiencing long-term food insecurity, including issues of noncompliance.

There were limitations to this study which should be addressed as the body of literature on mobile food pantries expands. The limited number of studies on mobile food pantries means examinations of this distinctive form of food distribution are just beginning to emerge. Participants were recruited from only two mobile pantry sites in the same urban area, so generalizability of findings would be benefited by similar evaluations in other municipalities. Survey and interview data were self-reported, and responses on topics such as about health status or enrollment in assistance programs were not independently validated.

Finally, data from this project suggest that despite what is often considered a stopgap for populations that are in need, a significant portion of clients using these mobile food pantries are long-term users of food assistance services.

Factors such as the struggles linked to obtaining other services, inflation of food and housing prices, and stagnant, low-wage, and inconsistent employment create a situation where many clients find themselves struggling to maintain food security. Despite their infrequency of service, mobile pantries allow many clients the ability to maintain or experience some improvements to their health during precarious times. Increasing the use or frequency of mobile food pantries could help more populations increase their food security or manage their health. However, until the social and economic factors that exacerbate food insecurity are addressed on a larger scale, food pantry services will continue to be crucial for the health and survival of vulnerable populations.

Funding

This work was supported by the Wellcare Health Plans, Inc.; University of South Florida.

References

Afulani, P., D. Herman, A. Coleman-Jensen, and G. G. Harrison. 2015. Food insecurity and health outcomes among older adults: The role of cost-related medication underuse. *Journal of Nutrition in Gerontology and Geriatrics* 34 (3):319–42. doi:10.1080/21551197.2015.1054575.

Alvarez, C., P. Lantz, J. Shara, and P. Shin. 2015. Food insecurity, food assistance, and health status in the U.S. Community Health Center population. *Journal of Health Care for the Poor Underserved* 26 (1):82–91. doi:10.1353/hpu.2015.0006.

American Nutrition Association. 2015. USDA defines food deserts. *Nutrition Digest* 38 (2). http://americannutritionassociation.org/newsletter/usda-defines-food-deserts

Ashby, S., S. Kleve, R. McKechnie, and C. Palermo. 2016. Measurement of the dimensions of food insecurity in developed countries: A systematic literature review. *Public Health Nutrition* 19 (16):2887–96. doi:10.1017/S1368980016001166.

Bazerghi, C., F. H. McKay, and M. Dunn. 2016. The role of food banks in addressing food insecurity: A systematic review. *Journal of Community Health* 41 (4):732–40. doi:10.1007/s10900-015-0147-5.

Berkman, L., and T. Glass. 2000. Social integration, social networks, social support, and health. In *Social epidemiology*, eds. L. F. Berkman, and I. Kawachi, 137–73. Oxford, UK: Oxford University Press.

Berkowitz, S. A., H. K. Seligman, and N. K. Choudhry. 2014. Treat or eat: Food insecurity, cost-related medication underuse, and unmet needs. *The American Journal of Medicine* 127 (4):303–10. doi:10.1016/j.amjmed.2014.01.002.

Bernard, H. R., and C. C. Gravlee. 2014. *Handbook of methods in cultural anthropology*, *2nd* ed. Lanham, MD: Rowman & Littlefield.

Bhattarai, G. R., P. A. Duffy, and J. Raymond. 2005. Use of food pantries and food stamps in low-income households in the United States. *The Journal of Consumer Affairs* 39 (2):276–98. doi:10.1111/joca.2005.39.issue-2.

Brucker, D. L. 2016. Food security among young adults with disabilities in the United States: Findings from the National Health Interview Survey. *Disability and Health Journal* 9 (2):298–305. doi:10.1016/j.dhjo.2015.10.003.

Cohen, S. 1988. Psychosocial models of the role of social support in the etiology of physical disease. *Health Psychology* 7 (3):269–97. doi:10.1037/0278-6133.7.3.269.

Cohen, S., and D. Janicki-Deverts. 2012. Who's stressed? Distributions of psychological stress in the United States in probably samples from 1983, 2006, and 2009. *Journal of Applied Social Psychology* 42 (6):1320–34. doi:10.1111/j.1559-1816.2012.00900.x.

Cohen, S., T. Kamarck, and R. Mermelstein. 1983. A global measure of perceived stress. *Journal of Health and Social Behavior* 24:385–96. doi:10.2307/2136404.

Coleman-Jensen, A., and M. Nord. 2013. *Food insecurity among households with working-age adults with disabilities*. Washington, DC: USDA Economic Research Service.

Coleman-Jensen, A. J. 2010. US food insecurity status: Toward a refined definition. *Social Indicators Research* 95 (2):215–30. doi:10.1007/s11205-009-9455-4.

Feeding America. 2015. Map the meal gap: Food insecurity in the United States. Feeding America. Accessed March 10, 2017. http://map.feedingamerica.org/.

Fitzpatrick, T., L. C. Rosella, A. Calzavara, J. Petch, A. D. Pinto, H. Manson, V. Goel, and W. P. Wodchis. 2015. Looking beyond income and education: Socioeconomic status gradients among future high-cost users of health care. *American Journal of Preventive Medicine* 49 (2):161–71. doi:10.1016/j.amepre.2015.02.018.

Gundersen, C., and V. Oliveira. 2001. The food stamp program and food insuffiency. *American Journal of Agricultural Economics* 83 (4):875–87. doi:10.1111/0002-9092.00216.

Gundersen, C., and J. P. Ziliak. 2015. Food insecurity and health outcomes. *Health Affairs* 34 (11):1830–39. doi:10.1377/hlthaff.2015.0645.

Heflin, C., and J. P. Ziliak. 2008. Food insufficiency, food stamp participation, and mental health. *Social Science Quarterly* 89 (3):706–27. doi:10.1111/ssqu.2008.89.issue-3.

Heflin, C. M., K. Siefert, and D. R. Williams. 2005. Food insufficiency and women's mental health: Findings from a 3-year panel of welfare recipients. *Social Science & Medicine* 61 (9):1971–82. doi:10.1016/j.socscimed.2005.04.014.

Kersey, M. A., M. S. Beran, P. G. McGovern, M. H. Biros, and N. Lurie. 1999. The prevalence and effects of hunger in an emergency department patient population. *Academic Emergency Medicine* 6 (11):1109–14. doi:10.1111/acem.1999.6.issue-11.

Kushel, M. B., R. Gupta, L. Gee, and J. S. Haas. 2006. Housing instability and food insecurity as barriers to health care among low-income Americans. *Journal of General Internal Medicine* 21 (1):71–77. doi:10.1111/j.1525-1497.2005.00278.x.

Loveless, T. A. 2012. *Food Stamp/Supplemental Nutrition Assistance Program (SNAP) receipt in the past 12 months for household by state: 2010 and 2011*. Washington DC: US Department of Commerce.

Mammen, S., J. W. Bauer, and L. Richards. 2009. Understanding persistent food insecurity: A paradox of place and circumstance. *Social Indicators Research* 92 (1):151–68. doi:10.1007/s11205-008-9294-8.

Nord, M., M. Andrews, and S. Carlson. 2009. *Household food security in the United States, 2008*. Washington, DC: USDA Economic Research Service.

Quilliam, B. J., J. C. Simeone, A. B. Ozbay, and S. J. Kogut. 2011. The incidence and costs of hypoglycemia in type 2 diabetes. *The American Journal of Managed Care* 17 (10):673–80.

Radimer, K. L. 2002. Measurement of household food security in the USA and other industrialised countries. *Public Health Nutrition* 5 (6A):859–64. doi:10.1079/PHN2002385.

Seligman, H. K., A. F. Bolger, D. Guzman, A. López, and K. Bibbins-Domingo. 2014. Exhaustion of food budgets at month's end and hospital admissions for hypoglycemia. *Health Affairs* 33 (1):116–23. doi:10.1377/hlthaff.2013.0096.

Seligman, H. K., E. A. Jacobs, A. López, J. Tschann, and A. Fernandez. 2012. Food insecurity and glycemic control among low-income patients with type 2 diabetes. *Diabetes Care* 35 (2):233–38. doi:10.2337/dc11-1627.

Seligman, H. K., B. A. Laraia, and M. B. Kushel. 2009. Food insecurity is associated with chronic disease among low-income NHANES participants. *The Journal of Nutrition* 140 (2):304–10. doi:10.3945/jn.109.112573.

Siefert, K., C. M. Heflin, M. E. Corcoran, and D. R. Williams. 2001. Food insufficiency and the physical and mental health of low-income women. *Women & Health* 32 (1–2):159–77. doi:10.1300/J013v32n01_08.

Stuff, J. E., P. H. Casey, K. L. Szeto, J. M. Gossett, J. M. Robbins, P. M. Simpson, C. Connell, and M. L. Bogle. 2004. Household food insecurity is associated with adult health status. *The Journal of Nutrition* 134 (9):2330–35. doi:10.1093/jn/134.9.2330.

Tarasuk, V., J. Cheng, C. de Oliveira, N. Dachner, C. Gundersen, and P. Kurdyak. 2015. Association between household food insecurity and annual health care costs. *Canadian Medical Association Journal* 187 (14):E429–E436. doi:10.1503/cmaj.150234.

Tomaka, J., S. Thompson, and R. Palacios. 2006. The relation of social isolation, loneliness, and social support to disease outcome among the elderly. *Journal of Aging and Health* 18 (3):359–84. doi:10.1177/0898264305280993.

United States Department of Agriculture. 2009. *Access to affordable and nutritious food: Measuring and understanding food deserts and their consequences*. Washington, DC: U.S. Department of Agriculture, Economic Research Service.

United States Department of Agriculture. 2012. *U.S. Adult food security survey module: Three-stage design, with screeners*. Washington, DC: USDA Economic Research Service.

Whitaker, R. C., S. M. Phillips, and S. M. Orzol. 2006. Food insecurity and the risks of depression and anxiety in mothers and behavior problems in their preschool-aged children. *Pediatrics* 118 (3):e859–e868. doi:10.1542/peds.2006-0239.

World Health Organization (WHO). 2002. *World health survey 2002*. Geneva: World Health Organization.

Young, S., A. C. Wheeler, S. I. McCoy, and S. D. Weiser. 2013. A review of the role of food insecurity in adherence to care and treatment among adult and pediatric populations living with HIV and AIDS. *AIDS and Behavior* 18 (5):505–15. doi:10.1007/s10461-013-0547-4.