



Client Preferences for Nutrition Interventions in Food Pantries

Kristen Cooksey-Stowers, Katie S. Martin & Marlene Schwartz

To cite this article: Kristen Cooksey-Stowers, Katie S. Martin & Marlene Schwartz (2018): Client Preferences for Nutrition Interventions in Food Pantries, Journal of Hunger & Environmental Nutrition, DOI: [10.1080/19320248.2018.1512929](https://doi.org/10.1080/19320248.2018.1512929)

To link to this article: <https://doi.org/10.1080/19320248.2018.1512929>



Published online: 11 Sep 2018.



Submit your article to this journal [↗](#)




Article views: 15



View Crossmark data [↗](#)



Client Preferences for Nutrition Interventions in Food Pantries

Kristen Cooksey-Stowers^a, Katie S. Martin ^b, and Marlene Schwartz^c

^aPostdoctoral Fellow UConn Rudd Center for Food Policy and Obesity, University of Connecticut, Hartford, CT, USA; ^bVice President and Chief Strategy Officer, Foodshare, Bloomfield, CT, USA; ^cUConn Rudd Center for Food Policy and Obesity; Professor of Human Development and Family Studies, University of Connecticut, Hartford, CT, USA

ABSTRACT



A racial and ethnically diverse sample of clients ($N = 230$) visiting four food pantries were surveyed about: (a) their level of support for interventions designed to promote healthy food choices in pantries; (b) why they select specific items in pantries, and (c) how shopping at the food pantry fits into their monthly food acquisitions. While there was fairly high overall support for strategies to promote nutrition in pantries, Black clients were significantly more supportive of nutrition interventions than clients belonging to other ethnic and racial groups. Study participants from all ethnic and racial subgroups rated nutrition as the most important factor when selecting pantry items, and stated that they worry most about running out of meat, dairy, and produce. Clients reported that they visit pantries as often as they go to the grocery store, and more frequently than they go to dollar stores, supercenters, and convenience stores. These findings suggest that food pantry clients care deeply about the nutritional quality of the food options in pantries and are supportive of strategies to help them make healthier choices

KEYWORDS

Food environments; food pantry clients; nudges; nutrition interventions

Introduction and background

In the United States, 12.3 percent of households are estimated to be food insecure due to having limited access to adequate food due to a lack of money and resources.^{1,2} While federal food programs provide critical support, many food insecure households still experience a budget shortfall each month and cannot meet their food needs.³ As a result, the food banking system, commonly referred to as the emergency or charitable food system, has emerged as an important source of food for food insecure families.⁴ The Feeding America network, which reaches 46 million people annually, is the largest hunger-relief organization in the country and is comprised of a network of over 200 food banks and 60,000 food pantries and meal programs.^{3,4}

CONTACT Kristen Cooksey-Stowers  kristen.cooksey@uconn.edu  Postdoctoral Fellow UConn Rudd Center for Food Policy and Obesity University of Connecticut, One Constitution Plaza, Suite 600 Hartford, CT 06103

Color versions of one or more of the figures in the article can be found online at www.tandfonline.com/when.

Research suggests that clients rely on food pantries chronically rather than on an “emergency” basis, with the majority of food pantry clients seeking charitable food assistance once a week or more.^{5,6}

Although the food banking system provides a necessary safety net, not all foods within the system provide optimal nutrition.^{7–10} Simmet and colleagues reviewed the literature on the foods available in pantries and found that studies consistently report poor overall nutritional quality, including an inadequate supply of foods high in micronutrients (e.g., vitamins, iron, calcium).¹¹ Relatedly, in a review of the research on food pantry clients’ overall diet quality, the findings suggest that pantry participants generally have nutritionally inadequate diets.¹² This is a concern because people who are food insecure are at greater risk for developing diet-related chronic diseases including obesity, Type II diabetes, and hypertension, and exhibit lower ratings of self-reported health.^{3,13}

Food pantries play a meaningful role in the overall community-level food environment, which reinforces the importance of improving the nutritional quality of the foods they provide.^{14–17} Results from a national study by Malbi and colleagues showed 40 percent of high-poverty census tracts with no supermarket had at least one food pantry.¹⁴ Another study conducted in Minneapolis and St. Paul, Minnesota found that geographic areas with higher proportions of racial and ethnic minorities had shorter distances to the nearest food pantry than areas with fewer minority residents.¹⁷ Finally, a study of hospital-based food pantries showed greater use among cancer patients who are immigrants, older, and have more severe stages of the disease, highlighting the impact of this source of food for these vulnerable patients.¹⁵ To further understand the role pantries play in clients’ overall food access, it is important to learn how frequently clients acquire food from pantries *relative* to other food sources (e.g., grocery stores, convenience store, fast food establishments). If pantries are a frequent source of food, efforts to promote healthy choices are a worthwhile investment.

The idea that food pantries should become a model of healthy food choices is gaining traction nationally.¹⁸ Some food banks have created nutrition policies that set goals for the nutritional quality of food distributed and restrict the distribution of less healthy foods such as candy or sweetened beverages.^{19–21} Other efforts towards this goal include increasing the distribution of fresh produce and ensuring that pantries have the capacity to refrigerate perishable foods.²² There has also been a proliferation of nutrition education materials for use in food pantries, many of which can be found on Feeding America’s Health and Hunger Hub website.²³

In response to interest in promoting healthier choices in pantries, there is emerging research on a variety of different ideas based on the use of “nudges.”^{18,22,24,25} Broadly, nudges work by changing the environment so that people are more likely to automatically select the healthy choice. For

example, foods can be arranged so the more nutritious ones are also more salient.^{22,25} In an experiment testing this idea in a pantry, Wilson and colleagues manipulated the placement of targeted items (e.g., granola bars) to the front instead of the back of the lines, which resulted in increased uptake of the targeted items.²⁴ In another study, people using shopping carts with sections specifically designated for fruits and vegetables exhibited an increase in the selection of fruits and vegetables.²⁶ Another idea to increase uptake of healthy foods is bundling healthy ingredients into meal kits (e.g., whole wheat pasta, spaghetti sauce and a vegetable together).^{25,27} In a recent pilot study in a food pantry, this strategy was associated with greater selection of kale and whole grains.²⁷ Finally, basic marketing strategies such as attractive packaging, labeling foods as healthy, and providing taste testing are ideas that could be tested in pantries.^{22,25}

Our research team was interested in testing some of these ideas in food pantries. As community-engaged researchers, our first step was to solicit input from community members prior to testing interventions.^{28–30} The academic literature provided some insights into how food pantry clients feel about nutrition.^{20,31} For example, Campbell and colleagues conducted a survey of clients at the Food Bank of Central New York and found that 98 percent of respondents felt that having nutritious food in their food pantry was either “very important” or “important.”²⁰ Further, when asked to rank items in order of preference, meat, poultry, and fish were at the top of the list, followed by fruits and vegetables; soda, candy and snacks were ranked at the bottom.²⁰ Researchers had also identified some of the barriers clients face in incorporating healthier food items into their diets.³² While developing a recipe-focused intervention, Evans and colleagues learned that the fluctuating supply of fresh produce, limited access to herbs and spices, and limited literacy skills made it difficult to cook healthy meals.³³ Similarly, Dave and colleagues identified cost, time, and lack of kitchen equipment and cooking skills as challenges to making healthy food choices for food pantry clients in Houston.³⁴ Taken together, these studies suggest that clients care about nutrition but also need support.

Study objectives

The purpose of this formative research was to obtain client input prior to designing a research project testing new nutrition interventions in food pantries. Specifically, the aims were to ask clients about: (a) their level of support for interventions designed to promote healthy food choices in pantries; (b) why they select specific items in pantries, and (c) how shopping at the food pantry fits into their monthly food acquisitions. In addition, we were interested in exploring whether there were differences in these attitudes among clients from different race and ethnicity groups.

Methods

The study was approved by the Institutional Review Board at the University of Connecticut.

Sample

There are two food banks in Connecticut, and two food pantries were recruited from each for participation in the study. All four participating food pantries were client-choice and were located in different towns. Two of the pantries were in towns with median incomes of approximately \$30,000, one was in a town with a median income of \$40,000, and the fourth was in a town with a median income of over \$95,000.

Procedure

Data collection occurred between October 2016 and June 2017. We consulted the food pantry directors to determine the best method of data collection for their clientele. In three out of four sites, all clients visiting the pantry during normal hours of operation over several days were approached by a member of the research team and asked to participate in the study while waiting in line to shop. Food pantry clients were informed that the research team was visiting the pantry to help gather their feedback on how to improve the pantry. If the client expressed interest in the study, they were asked whether they preferred the English or Spanish version of the survey and whether they preferred to complete the survey on their own or have the questions read by the researcher. In the fourth site, the pantry director suggested that we have a food pantry staff member ask clients to complete the survey while waiting for their turn to shop. The pantry director believed that the clients had high reading ability and computer literacy, so we provided clients the option of completing the questionnaire on paper or online. On average, it took clients 15–20 min to complete the questionnaire. All participants provided written consent and received a \$10 gift card to a large grocery retailer located near each pantry.

Measures

The 36-item survey assessed client (a) demographics and health conditions; (b) support for a variety of nutrition interventions and nudging strategies; (c) considerations for food choices at pantries; (d) food and beverage preferences; and (e) food acquisition behaviors.

Pre-testing and Cognitive Interviews. Prior to data collection, cognitive interviews were conducted with five food pantry clients to test all survey questions with an emphasis on pre-testing the questions on support for nutrition interventions. The think-aloud cognitive interview approach was utilized to ensure that clients interpreted our questions as we intended and we were measuring what we intended to measure (i.e., content validity).³⁵ Each interview lasted between 45 min and 1 hr and clients received \$20 gift cards to a local grocery retailer. Further, two food pantry directors and three members of a food bank's leadership team reviewed the wording and overall flow of the survey instrument. The questionnaire and administration process were modified based on feedback.

Demographics and health conditions

Clients were asked about their race, ethnicity, employment status, highest level of education completed, marital status, vehicle access, and whether they have a smartphone. Study participants were also surveyed about their number of children, number of people living at their address, and the primary language spoken at home. In addition, clients were asked whether they or others in their household had diabetes, high blood pressure/hypertension, or high cholesterol.

Nutrition Interventions

Study participants were asked to indicate their level of support for 14 nutrition interventions on a 5-point Likert scale ranging from Strongly Oppose (equal to 0) to Strongly Support (equal to 4). The list of interventions included a range of traditional and nudging strategies (listed in Table 2). The question read: *"There are a lot of different ideas on how to help people at food pantries choose nutritious options. You may like some of these ideas and not like other ideas. Thinking about what would be most helpful for you, we want to know how much you support (like) or oppose (don't like) the following changes in food pantries?"* This scale demonstrated high internal reliability using Cronbach's alpha ($\alpha = .93$).

Consideration of food choices and preferences

Two sets of questions were adapted from research by Campbell and colleagues to assess why clients choose different foods at pantries.²⁰ First, clients were asked to identify the food characteristics that were most important to them when they selected food in their pantry: nutrition, taste, filling, medical needs, brand, expiration date, and preparation time. Next, clients were asked to select 5 out of a list of 16 food categories that they would like to see more of in their pantry. The 16 food categories were identified by the research team based on previous research on foods frequently available in pantries.³⁶

Food acquisition behaviors and food security

Questions on food security were adapted from the Current Population Survey (CPS) Food Security Supplement, a large-scale federal survey.^{37–39} The module measuring food security underwent rigorous cognitive assessment and field testing to establish validity, reliability and representativeness of different types of households.^{40–42} The item we used asked clients to indicate how often they worried about running out of the following food groups in the last 12 months: Meat, Dairy, Fruits and Vegetables, Grains/Breads, Sweets/desserts, Salty/Snacks and Soda. This scale demonstrated high internal reliability using Cronbach's alpha ($\alpha = .89$).

Questions about food acquisition behaviors were adapted from the USDA's National Household Food Acquisition and Purchase Survey (FoodAPS), a large scale national study,^{43–46} Study participants were asked: Thinking about all of the food your household needs in an average month, how many times over the month do you get food from each of the following places? I get food for my household from (a grocery store, supercenter, discount store, etc.); During a typical week, how many days do you do the following (Cook at home, Eat at a fast-food restaurant or Eat at a full-service restaurant).

Data analysis

Data were analyzed using Stata IC/15. Descriptive statistics (frequencies or means) were calculated for each survey item. Support ratings for all 14 interventions were summed to create a composite score, referred to as the "Nutrition Intervention Index."

Two sample t-tests with equal variances were conducted to test differences in the average scores of the Nutrition Intervention Index for (a) White, non-Hispanic clients versus all racial and ethnic minorities; (b) White, non-Hispanic clients versus Black, non-Hispanic food pantry clients; (c) White, non-Hispanic clients vs. Hispanic food pantry clients; and (d) Black, non-Hispanic clients versus Hispanic food pantry clients. Ordinary least squares (OLS) regression analyses were used to model Nutrition Intervention Index scores as a function of gender, race, ethnicity, age, household size, and number of children. OLS models were also clustered by zip code as a proxy for the food pantry service area. The purpose of clustering by zip code was to statistically adjust for characteristics that are unique to each food pantry's geographical service area and may influence an individual client's support for nutrition interventions. As noted, one food pantry was located in a higher income area than the others, so

clustering by zip code helps to adjust for this. We also compared standardized and nonstandardized linear regression results.

See the regression model below:

$$\text{Nutrition Intervention Index} = \beta_0 + \beta_1 (\text{female}) + \beta_2 (\text{Hispanic}) + \beta_3 (\text{Black, non-Hispanic}) + \beta_4 (\text{Other race, non-Hispanic}) + \beta_5 (\text{age}) + \beta_6 (\text{number of children}) + \beta_7 (\text{household size}) + \epsilon$$

Mean scores and standard deviations were calculated to evaluate clients' self-reported food acquisition behaviors. Chi-square tests were employed to assess the statistical significance of racial and ethnic differences in (a) top foods clients want to see at pantries; and (b) key factors driving clients' food item selection in pantries.

Table 1. Food pantry clients select demographics (N = 230).

	%
Age	
18–29	3.6
30–49	27.8
50–59	26.3
60 and over	42.0
Gender	
Female	69.2
Race/Ethnicity	
Black, non-Hispanic	34.6
White, non-Hispanic	30.4
Other race, non-Hispanic	3.1
Hispanic	31.9
Employment	
Employed	18.5
Unemployed and looking for work	15.0
Out of workforce and not looking for work because:	
Retired	22.5
Disabled	23.5
Education level	
Some high school or less	17.1
High school diploma/GED	38.9
License, certificate or degree beyond high school	14.5
Some college or 2 year college degree	19.2
4 year college degree or higher	10.4
Marital status	
Married	30.4
Widowed	14.7
Divorced	20.6
Separated	9.3
Never married	25.0
Number of children ¹	
0	11.4
1–2	40.7
3–4	31.7
5+	16.2
Select health conditions	
Respondent or household member with diabetes	25.2
Respondent or household member with high blood pressure	33.9
Respondent or household member with high blood cholesterol	27.4

Table 2. Clients' support for traditional nutrition interventions and nudging strategies in pantries.

Strategy	Mean	SD
Bring more healthy items into the food pantry	3.39	0.69
Add new refrigerators at the food pantry for fresh fruits and vegetables	3.35	0.75
Make healthy foods more noticeable on shelves	3.24	0.81
Labeling approved foods for people with diet-related illness (i.e., diabetes-friendly)	3.22	0.91
Make meal kits that "bundle" food items together including more fruits and vegetables	3.19	0.91
Have staff provide nutrition information and advice to clients	3.14	0.95
Serve samples of healthier food items in the pantry for taste testing	3.03	0.99
Label foods with 0, 1, 2, or 3 stars to show how nutritious the food is, with more stars showing better nutrition	3.02	0.94
Create new signs that tell you the top ten most popular healthy items other people choose from your pantry	3.00	0.98
Offer cooking demonstrations (i.e., introducing new recipes or adding fruits and vegetables to popular dishes)	2.99	1.00
Label foods with a traffic light to say how often you should eat it (Green = eat often, Yellow = eat in moderation, and Red = eat rarely)	2.91	1.04
Divide shopping carts/bags to include sections for fruits and vegetables	2.68	1.11
Create a smartphone app that tells me how nutritious something is before I choose it	2.64	1.08
Do not accept unhealthy donations (e.g., candy and soda)	2.39	1.30

Higher scores indicate higher level of support for nutrition intervention.

Scale is as follows: 0 = Strongly oppose; 1 = Oppose; 2 = Neutral; 3 = Support; 4 = Strongly support

Results

Characteristics of respondents

The demographic profiles of the food pantry clients ($N = 230$) are listed in Table 1. Approximately 35% of the sample identified as Black, non-Hispanic (referred to as Black), 30% identified as White, non-Hispanic (referred to as White) and another 32% identified as Hispanic. Among clients who reported their ethnicity as Hispanic, they reported their race as Black (13%), White (20%), or Other (56%). The remaining 11% of Hispanic clients did not answer the race question.

The majority of the study participants were women, over the age of 50, with one to two children. Almost half of the sample were either retired or disabled. Notably, approximately 43% of respondents reported an education level beyond high school. Between a quarter and a third of the sample reported that they or a household member had diabetes, high blood pressure, or high cholesterol.

Clients' level of support for nutrition interventions

Table 2 presents the mean scores for the 14 interventions in descending order of support. Average client support for the all of the strategies was between Neutral (equal to 2) and Strongly support (equal to 4). The top ranked strategies were: bring more healthy items into the food pantry; add new refrigeration for fresh fruits and vegetables; make healthy foods more

noticeable on shelves; and label approved foods for people with diet-related illness (i.e. diabetes-friendly). Implementing a policy to restrict unhealthy donations was ranked lowest in level of support, with 27% of respondents either opposed or strongly opposed, 24% neutral, and 48% expressing support.

A Nutrition Intervention Index was computed by summing each client’s scores for all 14 interventions for a possible score between 0 and 56. The index scores ranged from 10 to 56, with a mean of 42 and standard deviation of 9.6. Index scores were compared using *t*-tests across the different racial and ethnic groups. There was a significant difference in the scores for White clients ($M = 36.52, SD = 8.61$) and clients that identified as racial and ethnic minorities ($M = 44.81, SD = 8.87$) conditions; $t(181) = 6.10, p = 0.000$. There were no statistically significant differences between Hispanics and Black, non-Hispanic food pantry clients.

Regression analyses were used to identify characteristics of clients who expressed greater overall support for nutrition interventions. As shown in Table 3, linear regression results reveal positive relationships between Nutrition Intervention Index scores and Black clients ($\beta_{\text{Black}} = 7.56; p < 0.01$) as well as clients’ number of children ($\beta_{\text{children}} = 1.29; p < .05$). Results also show a negative association between age and overall support for Nutrition interventions ($\beta_{\text{Age}} = -.10; p < .05$), indicating stronger support among younger clients.

Food acquisition

As reflected in Table 4, food pantry clients report that they visit pantries as often as they go to the grocery store and more frequently than they go to dollar stores, supercenters, and convenience stores. Clients did not report

Table 3. Linear regression results of client’s sociodemographic characteristics on support for nutrition interventions index scores^a (N = 122).

Variable	β (95%CI) ^b	ρ
Female	-0.16 (-3.63, 3.31)	0.92
Hispanic	3.82 (-1.58, 9.23)	0.15
Black	7.65 (2.81, 12.47)	0.00
Other race	2.2 (-4.20, 8.60)	0.48
Age	-0.10 (-.19,-.003)	0.04
Number of children	1.29 (.29, 2.3)	0.02
Household size	-0.64 (-1.40, .12)	0.94
Constant	40.74 (34.47, 46.99)	0.00
R^2 ^d	0.27	

^aNutrition Intervention Index scores were calculated by summing support ratings for all 14 nutrition interventions. Index values range from 0 to 56.;

^bBeta coefficients with 95% Confidence Intervals represent results of Ordinary Least Squares (OLS) Regression Analyses clustered by zip code;

^cStandardized beta coefficients represent results of OLS Regression models without clustering by zip code;

^dR-squared is the variance in the outcome that is explained by the variables in the model.

Note: **Bold** indicates statistically significant at $p < 0.05$.

Table 4. Food pantry clients' food acquisition and eating habits (N = 230).

	Mean	SD
Frequency of visits in an average month¹		
Food pantry	3.82	1.58
Grocery store	3.76	1.78
Dollar store	2.79	2.13
Supercenter	2.38	2.11
Convenience store	2.43	2.38
Fast food restaurant	2.02	2.18
Food from friends and family	2.15	2.15
Farmers market	1.83	2.15
Sit down restaurant	1.45	2.11
Number of days clients eat the following during a typical week²		
Cook at home	5.94	2.51
At a full-service restaurant	2.15	1.99
At a fast-food restaurant	2.05	1.61
Worry about running out of food in the last 12 months (by category)³		
Meats	1.40	0.71
Dairy	1.33	0.73
Fruits and vegetable	1.31	0.72
Grains/breads	1.22	0.77
Sweets/desserts	0.97	0.81
Salty snacks	0.96	0.82
Soda	0.81	0.82

Notes: ¹Higher scores = more frequent food shopping visit in an average month. Scale values are as follows: 0 = Never, 1 = Less than once a month, 2 = Once a month, 3 = Once every other week 4 = Once a week, 5 = 2 to 4 times a week, 6 = 5 to 6 times a week, and 7 = every day.

¹Respondents were asked the following question: "How many children do you have?" Thus, this figure is not limited to the number of children clients have living at home.

²Higher scores mean more frequent consumption during a typical pantry week. Scale is 0 days–7 days.

³Higher scores = More worry about running out of food in each category. Scale values are as follows: 0 = Never, 1 = Sometimes true, 2 = Often true

frequently obtaining food from friends and family, farmers' markets or sit-down restaurants. Instead, results showed clients typically cook about 6 days out of the week and eat at a fast food restaurant approximately two days a week. Finally, clients worry most about running out of meats, followed by dairy and produce. On average, respondents indicated they were least worried about running out of sweets/desserts, snacks, and soda.

How clients navigate food environments within pantries

Preferred food categories in pantries

The top five products that the full sample of clients reported wanting to see more of were fruits and vegetables (70%), meats/fish (53%), 100% juice (41%) whole grain bread (41%), and dairy products (39%). Very few clients want to see more regular soda (9%), salty snacks (6%), and baby food (14%).

Chi-square analyses were used to examine differences in preferred food categories by race and ethnicity. As noted in [Figure 1](#), Black and Hispanic

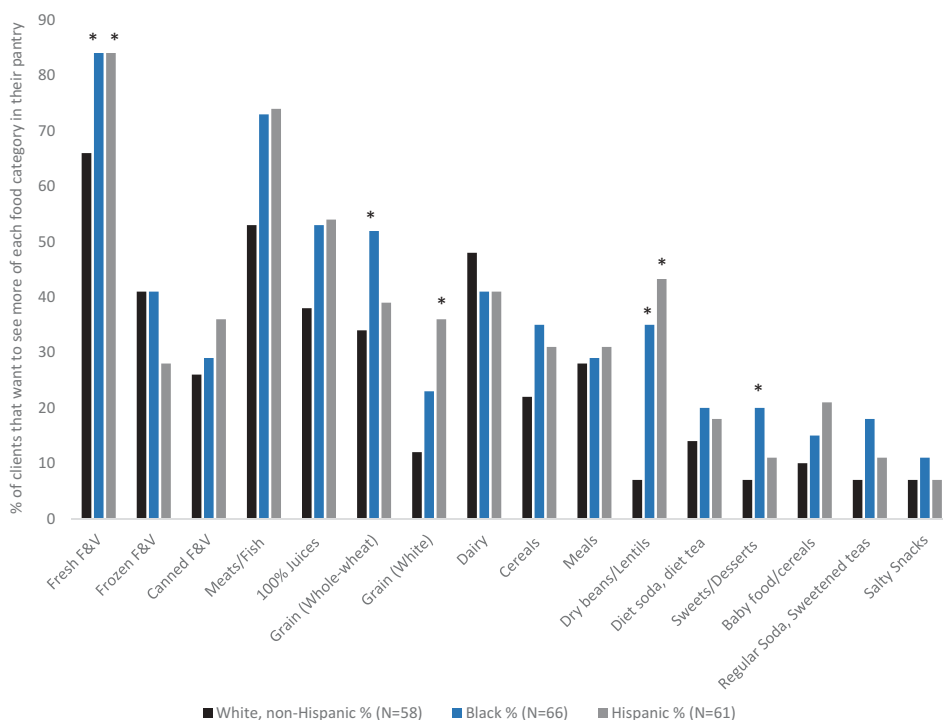


Figure 1. Proportion of clients that want to see more of each food category in their pantry, by race and ethnicity.

Results shown* * here represent the proportion of food pantry clients that self-identified as White, Black and Hispanic and ranked each food category as top five items that they want to see more of in their pantry. Statistically significant differences by race and ethnicity were tested using Chi-square statistical analyses. *indicates statistically significant difference from Whites food pantry clients at $p < .01$.

clients expressed a significantly greater desire than White clients for more fresh fruits/vegetables [Black vs. White: $X^2(1, N = 144) = 5.79, p = .016$; Hispanic vs. White $X^2(1, N = 107) = 4.53, p = .033$], and dry beans/lentils [Black vs. White: $X^2(1, N = 144) = 13.38, p = .000$]; Hispanic vs. White $X^2(1, N = 107) = 22.57, p = .000$]. Compared to White clients, Black clients expressed a desire for more sweets/desserts [$X^2(1, N = 144) = 4.36, p = .037$] and whole grains [$X^2(1, N = 144) = 4.20, p = .040$], and Hispanic clients desired more white grains [$X^2(1, N = 107) = 11.63, p = .001$].

Factors driving clients' food item selection

Sixty-four percent of respondents indicated Nutrition is the most important factor when choosing a food item at the pantry. A Chi-square analyses revealed Black clients were slightly more influenced by Nutrition than White clients $X^2(1, N = 94) = 4.75, p = .029$. There were no other significant differences driving clients' food item selection by race and ethnicity.

Discussion and conclusions

Findings from the present study suggest that clients are generally supportive of many types of nutrition interventions in food pantries. There were no nutrition interventions that received an average score lower than a 3 (i.e., Support). While a policy to restrict unhealthy donations received the least support, it is important to note nearly half of the sample supported restrictions on unhealthy food items, and approximately one-quarter indicated they neutral, and another quarter indicated that they opposed or strongly opposed the intervention. This finding supports previous research by Campbell and colleagues which concluded that a “No Soda No Candy” policy may be justified in light of client food item preferences and director perspectives on the types of food that should be available in pantries.²⁰ The food pantry clients in the current study worry most about running out of meats, fruits, vegetables, and dairy each month, which is also consistent with previous work indicating that clients value healthier food items in pantries.⁴⁷

It is notable that there were a few differences in client perspectives by race and ethnicity – Black and Hispanic clients were more supportive of most nutrition interventions than White clients. We consider this result a “myth-buster,” as it contradicts stigmatizing perceptions that people of color with low-income are less interested in healthy eating interventions than others. In their article, “Stigma as a fundamental cause of population health inequalities,” Hatzenbuehler and colleagues demonstrate how stigmatizing characteristics like racial and ethnic minority status perpetuate health inequities.⁴⁸ This occurs when superior resources, such as fresh produce or investments in grocery store nutrition rating systems, are first allocated to settings where Whites and higher-SES individuals are served.⁴⁸ Our findings suggest that pantries that serve people of color should not assume that their clients are not interested in healthy foods or help identifying the most nutritious products.

These findings also reinforce previous research on the importance of considering the cultural acceptability of the food supply across the food environment.⁴⁹ While there were consistent preferences for healthy foods across the three racial and ethnic groups represented in the sample, Black and Hispanic clients were significantly more likely to choose fresh produce and lentils/beans in their list of top five desired food categories. At the same time, Black clients were the most likely to report a desire for more sweets/desserts. These findings may be helpful for researchers and practitioners interested in tailoring healthy eating interventions or making procurement decisions to better accommodate client needs. For example, if a pantry serves predominately Black clients, education about healthy dessert options may be well received.

In addition to documenting client support for nutrition interventions in food pantries, the present study contributes new empirical evidence regarding overall food acquisition behaviors of pantry clients. Prior research using FoodAPS data found that regardless of SNAP participation status, people living in food-insecure households primarily shop for food at grocery stores or supermarkets, not convenience stores and fast food establishments.^{50,51} The current study reinforces these findings and adds that food pantry clients shop at pantries about as frequently as grocery stores, and usually cook at home instead of eating out. This supports previous work documenting the tremendous importance of food pantries to clients, especially racial and ethnic minorities, foreign-born residents, older adults and individuals burdened by medical challenges.^{14,15,52} These findings also challenge the myth that it is not important to improve the nutritional quality in food pantries because they only provide a small portion of a household's groceries.

Strengths and limitations

To our knowledge, this is the first study to assess food pantry clients' support for a variety of nutrition interventions, their food acquisition behaviors at non-emergency food sources, and compare attitudes of Black, Hispanic, and White clients. Limitations of this study include the restricted geographic area represented by the sample. Recruitment for pantries and clients within each pantry occurred on a voluntary basis, so the participants were not randomly selected. We were able to achieve a racially and ethnically diverse sample of food pantry clients by partnering with food pantry directors with diverse clientele. Still, the sample in this current study is older, more educated, and slightly less burdened by diabetes, hypertension or heart disease than study participants included in Feeding America's client survey.⁴ This may be because the study was conducted in an affluent state. However, previous research documents the importance of considering relative poverty and the unique challenges individuals with low-income face when living in communities with higher income levels.⁵³

Future research

Future studies should recruit a larger sample of Asian and Hispanic food pantry clients to allow statistical analyses by country of origin or acculturation. Separately, it is unclear why a higher proportion of Black clients both wanted to see more fresh fruits and vegetables, whole grains product and plant-based proteins in combination with more desserts, sweetened beverages and white grains. Future research should employ qualitative research methodology to better understand resource constraints, preferences, or social norms driving this result.

Funding

This work was supported by the Robert Wood Johnson Foundation.

ORCID

Katie S. Martin  <http://orcid.org/0000-0001-8381-3709>

References

1. Coleman-Jensen A, Gregory C, Singh A Household food security in the United States in 2013. *IDEAS Working Paper Series from RePEc*. 2014.
2. Coleman-Jensen A, Rabbitt MP, Gregory C, Singh A Statistical supplement to household food security in the United States in 2016. 2017.
3. Gundersen C, Dewey A, Crumbaugh AS, et al. Map the meal gap 2017: Highlights of findings for overall and child food insecurity. 2017.
4. Weinfield NS, Mills G, Borger C, et al. Hunger in America 2014.
5. Robaina KA, Martin KS. Food insecurity, poor diet quality, and obesity among food pantry participants in Hartford, CT. *J Nutr Educ Behav*. 2013;45(2):159–164. doi:10.1016/j.jneb.2012.07.001.
6. Daponte BO, Lewis GH, Sanders S, Taylor L. Food pantry use among low-income households in Allegheny County, Pennsylvania. *J Nutr Educ*. 1998;30(1):50–57. doi:10.1016/S0022-3182(98)70275-4.
7. Akobundu UO, Cohen NL, Laus MJ, Schulte MJ, Soussloff MN. Vitamins A and C, calcium, fruit, and dairy products are limited in food pantries. *J Am Diet Assoc*. 2004;104(5):811–813. doi:10.1016/j.jada.2004.03.009.
8. Teron AC, Tarasuk VS. Charitable food assistance: what are food bank users receiving? *Canadian Journal Public Health/Revue Canadienne De Sante'e Publique*. 1999;90(6):382–384. <http://www.jstor.org/stable/41994160>.
9. Starkey LJ. An evaluation of emergency food bags. *J Can Diet Assoc (Canada)*. 1994;55.
10. Ross M, Campbell EC, Webb KL. Recent trends in the nutritional quality of food banks' food and beverage inventory: case studies of six California food banks. *J Hunger Environ Nutr*. 2013;8(3):294–309. doi:10.1080/19320248.2013.816992.
11. Simmet A, Depa J, Tinnemann P, Stroebele-Benschop N. The nutritional quality of food provided from food pantries: a systematic review of existing literature. *J Acad Nutr Diet*. 2017;117(4):577–588. doi:10.1016/j.jand.2016.08.015.
12. Simmet A, Depa J, Tinnemann P, Stroebele-Benschop N. The dietary quality of food pantry users: a systematic review of existing literature. *J Acad Nutr Diet*. 2017;117(4):563–576. doi:10.1016/j.jand.2016.08.014.
13. Gregory CA. *Food Insecurity, Chronic Disease, and Health among Working-Age Adults*. Washington, D.C: United States Department of Agriculture, Economic Research Service; 2017.
14. Mabli J, Jones D, Kaufman P. Characterizing food access in america: considering the role of emergency food pantries in areas without supermarkets. *J Hunger Environ Nutr*. 2013;8(3):310–323. doi:10.1080/19320248.2013.786663.
15. Gany F, Lee T, Loeb R, et al. Use of hospital-based food pantries among low-income urban cancer patients. *J Community Health*. 2015;40(6):1193–1200. doi:10.1007/s10900-015-0048-7.

16. Hosler AS, Michaels IH, Buckenmeyer EM. Food shopping venues, neighborhood food environment, and body mass index among guyanese, black, and white adults in an urban community in the US. *J Nutr Educ Behav*. 2016;48(6):361–368. e1. doi:10.1016/j.jneb.2016.03.003.
17. Caspi CE, Lopez AM, Nanney MS. Geographic access to food shelves among racial/ethnic minorities and foreign-born residents in the Twin Cities, Minnesota. *J Hunger Environ Nutr*. 2016;11(1):29–44. doi:10.1080/19320248.2015.1066735.
18. Byker Shanks C. Promoting food pantry environments that encourage nutritious eating behaviors. *J Acad Nutr Diet*. 2017;117(4):523–525. doi:10.1016/j.jand.2016.12.020.
19. Handforth BN, Hennink M, Schwartz MB. A qualitative study of nutrition-based initiatives at selected food banks in the Feeding America network. *J Acad Nutr Diet*. 2013. doi:10.1016/j.jand.2012.11.001.
20. Campbell E, Hudson H, Webb K, Crawford PB. Food preferences of users of the emergency food system. *J Hunger Environ Nutr*. 2011;6(2):179–187. doi:10.1080/19320248.2011.576589.
21. Stein P. Want to donate junk food? the region's largest food bank will reject it. *The Washington Post*. August 25, 2016. Available from: https://www.washingtonpost.com/news/local/wp/2016/08/25/want-to-donate-junk-food-the-regions-largest-food-bank-will-reject-it/?utm_term=.21393a1ddc4d. Accessed 2017 August 1.
22. Rivera C, Alford S, Isham M, et al. The power of nudges: making the healthy choice the easy choice in food pantries. Chicago, IL: Feeding America. 2016.
23. Feeding America. Healthy food bank hub. Feeding America Web site. <https://hungerandhealth.feedingamerica.org/>. Updated 2017. 2017 February 1.
24. Wilson NL, Just DR, Swigert J, Wansink B. Food pantry selection solutions: a randomized controlled trial in client-choice food pantries to nudge clients to targeted foods. *J Public Health (Bangkok)*. 2016;fdw043. doi:10.1093/pubmed/fdw043.
25. Wilson N. When the cupboards are bare: nudging food pantry clients to healthier foods. *J Assoc Consumer Res*. 2016;1(1):125–133. doi:10.1086/684476.
26. Payne CR, Niculescu M, Just DR, Kelly MP. Shopper marketing nutrition interventions. *Physiol Behav*. 2014;136:111–120. doi:10.1016/j.physbeh.2014.03.029.
27. Stein E, Cooksey-Stowers K, Schwartz MB, McCabe M, White MA. *Healthy Meal Bundles and Samples: A Food Pantry Pilot Study to Increase Preferences and Convenience for Healthy Foods*. (American Public Health Association Annual Meeting & Expo, Washington, DC); 2017.
28. Mikesell L, Bromley E, Khodyakov D. Ethical community-engaged research: a literature review. *Am J Public Health*. 2013;103(12):e7–e14. doi:10.2105/AJPH.2013.301605.
29. Martin K, Shuckerow M, O'Rourke C, Schmitz A. Changing the conversation about hunger: the process of developing Freshplace. *Progress Community Health Partnerships: Research, Education, Action*. 2012;6(4):429–434. doi:10.1353/cpr.2012.0056.
30. Dutta MJ, Anale A, Jones C. Voices of hunger: addressing health disparities through the culture-centered approach. *J Commun*. 2013;63(1):159–180. doi:10.1111/jcom.2013.63.issue-1.
31. Hoisington A, Shultz JA, Butkus S. Coping strategies and nutrition education needs among food pantry users. *J Nutr Educ Behav*. 2002;34:326–333.
32. Jones CL, Ksobiech K, Maclin K. “They do a wonderful job of surviving”: supportive communication exchanges between volunteers and users of a choice food pantry. *J Hunger Environ Nutr*. 2017;1–21. doi:10.1080/19320248.2017.1337535.
33. Evans SH, Clarke P, Koprowski C. Information design to promote better nutrition among pantry clients: four methods of formative evaluation. *Public Health Nutr*. 2010;13(3):430–437. doi:10.1017/S1368980009990851.

34. Dave JM, Thompson DI, Svendsen-Sanchez A, Cullen KW. Perspectives on barriers to eating healthy among food pantry clients. *Health Equity*. 2017;1(1):28–34. doi:10.1089/heq.2016.0009.
35. Willis GB, Artino JAR. What do our respondents think we're asking? Using cognitive interviewing to improve medical education surveys. *J Grad Med Educ*. 2013;5(3):353–356. doi:10.4300/JGME-D-13-00154.1.
36. Martin K, Wolff M, Callahan K, Schwartz MB. Supporting wellness at pantries (SWAP): development of a nutrition stoplight system for food pantries. *J Acad Nutr Diet*. In press;2018.
37. United States Department of Agriculture, Economic Research Service. Current Population Survey Food Security Supplement.
38. Nord M. *Household Food Security in the US 2006*. Washington, DC: Diane Publishing; 2008.
39. Nord M, Coleman-Jensen A. Improving food security classification of households with children. *J Hunger Environ Nutr*. 2014;9(3):318–333. doi:10.1080/19320248.2014.898174.
40. Nord M. *Assessing Potential Technical Enhancements to the US Household Food Security Measures*, Washington, DC. 2012.
41. Hamilton WL, Cook JT Household food security in the United States in 1995: Technical report of the food security measurement project. 1997.
42. National Research Council. *Food Insecurity and Hunger in the United States: An Assessment of the Measure*. Washington, DC: National Academies Press; 2006.
43. Kirlin JA, Denbaly M. Lessons learned from the national household food acquisition and purchase survey in the United States. *Food Policy*. 2017;72:62–71. doi:10.1016/j.foodpol.2017.08.013.
44. Clay M, Ver Ploeg M, Coleman-Jensen A, et al. *Comparing National Household Food Acquisition and Purchase Survey (FoodAPS) Data with Other National Food Surveys' Data*. 2016.
45. United States Department of Agriculture, Economic Research Service. National household food acquisition and purchase survey (FoodAPS): Codebook: Access data – public use file, faps_access_puf. November 2016.
46. Cole N, Baxter C. Lessons learned from the design and implementation of the national household food acquisition and purchase survey (FoodAPS). *Mathematica Policy Research*. 2016.
47. Campbell EC, Ross M, Webb KL. Improving the nutritional quality of emergency food: a study of food bank organizational culture, capacity, and practices. *J Hunger Environ Nutr*. 2013;8(3):261–280. doi:10.1080/19320248.2013.816991.
48. Hatzenbuehler ML, Phelan JC, Link BG. Stigma as a fundamental cause of population health inequalities. *Am J Public Health*. 2013;103(5):813. doi:10.2105/AJPH.2012.301069.
49. Caspi CE, Sorensen G, Subramanian S, Kawachi I. The local food environment and diet: a systematic review. *Health Place*. 2012;18(5):1172–1187. doi:10.1016/j.healthplace.2012.05.006.
50. Morrison RM, Mancino L. Most US households do their main grocery shopping at supermarkets and supercenters regardless of income. *Amber Waves*. 2015;1. Available from: <https://www.ers.usda.gov/amberwaves/2015/august/most-us-households-do-their-main-groceryshopping-at-supermarkets-and-supercenters-regardless-of-income/>
51. Ver Ploeg M, Mancino L, Todd JE, Clay DM, Scharadin B. *Where Do Americans Usually Shop for Food and How Do They Travel to Get There?: Initial Findings from*

- the National Household Food Acquisition and Purchase Survey*. Washington, DC: United States Department of Agriculture, Economic Research Service; 2015.
52. Gany F, Bari S, Crist M, Moran A, Rastogi N, Leng J. Food insecurity: limitations of emergency food resources for our patients. *Journal of Urban Health*. 2013;90(3):552–558. doi:10.1007/s11524-012-9750-2.
 53. Garroway C, De Laiglesia JR On the relevance of relative poverty for developing countries. 2012.