

Chronic Health Condition Influences on Client Perceptions of Limited or Non-choice Food Pantries in Low-income, Rural Communities

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Objectives: Food insecurity and diet-related chronic health conditions are interrelated problems in rural communities. The population facing such outcomes may rely on food pantries as a way to gain access to food. Many food pantries use a traditional distribution model that restricts choice. Yet, dietary recommendations and the need to economize food resources place many challenges on households. In this research, we sought to determine whether clients self-reporting chronic health conditions in their households have unique perceptions about food pantries and their ability to meet needs. **Methods:** We surveyed clients (N = 612) of limited or non-choice rural pantries, each representing a unique household. We classified clients into 3 groups: no chronic condition; one chronic condition or more, but no diabetes; one chronic condition or more including diabetes. We compared group perceptions of pantries. **Results:** All conditions desired more choice, and more preference for certain food groups such as produce and dairy. Clients with chronic conditions and diabetes in their household had a greater percentage of negative comments about the choices offered and were less comfortable talking to volunteers. **Conclusions:** Rural pantries may serve clients with chronic health conditions by offering client choice and by engaging with them regarding needs and preferences.

Key words: client-choice food pantries; chronic health conditions; food insecurity; food pantry perceptions; diabetes

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Food insecurity and chronic health conditions are interrelated problems in the United States (US), especially in rural communities. In 2016, 12.3% of all US households, and 15% of rural households were food insecure at some point during the year, meaning they lacked “access at all times to enough food for an active, healthy life for all household members.”^{1,2} Food insecure groups have a greater risk of developing diabetes and other chronic conditions.³ Approximately 9.3% of the US population lives with diabetes⁴ and almost half of all adults live with at least one chronic condition; moreover, 25% live with 2 or more chronic conditions.⁵ Food insecure populations with chronic

conditions may be forced to choose between food needs and competing medication or medical supplies (blood glucose test strips, etc) when budgets are limited, compromising both food security status and chronic disease management.⁶ Food insecure persons with diabetes, for example, experience a multi-burden of emotional and financial challenges related to disease management, including lower self-efficacy for managing their conditions, more emergency room visits for hypoglycemia,⁷ and higher average blood sugars and increased risk of complications³⁻⁹ compared to food secure individuals. Coping strategies to avoid hunger may include consuming less costly and low-nutrient dense foods

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(fewer fruits and vegetables, high fat, high sodium, or high carbohydrate foods), eating a small variety of foods, using food waste avoidance, and binging when food is abundant.^{2,7-9} Such strategies compromise overall diet quality and ability to manage the dietary aspects of the chronic disease. Rural populations experiencing food insecurity and chronic disease may have limited access to large grocery stores and public transportation, affecting their ability to acquire a variety of foods at low cost.^{10,11}

Food pantries were originally designed only to meet emergency food needs. However, many individuals and families rely on these resources to access food on a regular basis. On average, clients use a pantry for 5.5 years (66 months).¹² Previous studies report that food pantries often have low inventories of key food groups such as fruits, vegetables, and dairy products.¹³⁻¹⁵ Therefore, food pantries might be an important venue for nutrition interventions aimed at improving client long-term dietary quality and health. Some interventions have focused on social marketing strategies to promote high dietary quality within pantries such as offering more nutrient-dense choices¹⁶⁻²⁰ and providing nutrition education.¹⁶ Seligman et al provided diabetes-friendly food boxes, offered screening and referrals, and conducted diabetes self-management training within the pantry settings.³ Client choice at food pantries also might promote high-dietary quality, allowing clients to select the appropriate foods for individual health conditions and manage dietary selection from a variety of sources.²¹ Remley et al described how some food pantries have converted to client choice, and are organized according to the MyPlate²² food groups along with integrated nutrition education programs.²³ Often, choice models are preferred by volunteers and clients,^{24,25} and offer a shopping experience where clients have the opportunity to choose foods that meet their dietary needs. Yet, providing client choice and promoting nutrition may not be priorities in many food pantries.²¹ A large proportion of the foods distributed at pantries are donated. As such, food pantries cannot select foods based on client desirability or their dietary fit with the 2015 Dietary Guidelines for Americans.^{22,26} Pantry staff find it difficult to turn away donated food, including unhealthy items.^{25,27} Food pantries are also limited by community resources and staff training in nutrition and food procurement skills.²⁵ Furthermore, pantry clients may not know how to prepare certain

foods,^{24,28} especially in the context of a chronic disease management meal plan.

Dialogue between food pantry staff or volunteers and clients, related to client food needs and preferences, along with a client-choice distribution model, may promote client dietary quality and health further. Documented client perceptions include a desire for the ability to choose^{24,25,29-31} more culturally relevant foods^{25,29} and more healthful items such as produce, meats, and dairy products.^{24,31-33} Food pantry clients have reported mixed perceptions of staff and volunteer dispositions. Some clients express gratitude towards helpful staff, whereas others describe staff/volunteer interactions as rude, prejudiced, and/or condescending.²⁸ Spanish-speaking clients of choice food pantries have expressed frustration related to their inability to communicate with English-speaking volunteers.³⁴ However, there remains a dearth of studies investigating perceptions of food pantry clients living with chronic conditions within rural communities. Such studies are important to justify and guide future interventions, especially those targeting clients living with chronic conditions. Socio-ecological theory provides a foundation for the study because it suggests that policies, communities, organizations, interpersonal relationships, and intrapersonal factors all influence one another.³⁵ In other words, pantries can influence dietary behaviors of clients by their provisions, yet clients also can advocate for their preferences toward food, or the pantry operation itself (how food is distributed, etc). Our goal was to understand the multi-directional influences amongst the pantry environment, volunteers/staff, and clients within rural communities. Thus, the research questions that this study attempts to address are:

- How do perceptions of rural food pantry clients who live with chronic disease and/or diabetes in their household compare to those without chronic disease regarding the foods provided (amount, variety, food group) by the pantry?
- How do perceptions of rural food pantry clients who live with chronic disease and/or diabetes in their household compare to those without chronic disease regarding their interpersonal relationships with pantry volunteers and staff?

- How do perceptions of rural food pantry clients who live with chronic disease and/or diabetes in their household compare to those without chronic disease regarding the ability to choose their own food?
- How do perceptions of rural food pantry clients who live with chronic disease and/or diabetes in their household compare to those without chronic disease regarding how the pantry helps or how it should improve?

We examined diabetes separately because of the intensive nature of dietary management often needed, and to assess if perceptions and opinions differ from those in households where other chronic conditions are present.

METHODS

This study is a secondary analysis of data from a longitudinal comparison-intervention study collected as part of a multi-state project called Voices for Food. In this integrated research and Extension project, we investigated the feasibility and efficacy of a socio-ecological intervention to address food insecurity and healthy food access in low-income, rural communities. Extension programs through land-grant universities in 6 states, Indiana, Michigan, Ohio, Nebraska, South Dakota and Missouri, partnered in this project. We selected 4 rural counties (defined as non-metropolitan statistical areas in 2010 US Census)³⁶ with poverty rates higher than 16% from each state. Pantries within these communities were preferentially recruited if they used a limited or non-choice distribution system based on recommendations for MyPlate-guided choice food pantries.^{34,37} Non-choice or limited choice pantries provide most of their foods to clients pre-selected in boxes or bags, whereas MyPlate-guided pantries allow for client food choice within each of 5 food groups (vegetable, fruit, dairy, grain, protein). We recruited participants (N = 612) representing unique households from all states using a convenience sampling strategy in a cross-sectional longitudinal design. The sample size was determined by a power analysis.

Recruitment

Pantry users eligible for the study were age 18 or

older (19 or older in Nebraska), able to read and speak English, and were accepting food at the pantry on the day of the survey and at least once before within the previous 12 months. In accordance with institutional review board (IRB) guidelines, once they qualified, participants were provided an informational sheet about the study with the exception of Ohio, where informed consent was obtained. All data for this study were collected through confidential questionnaires (in English) by paper and pencil during September-November 2014. An identification (ID) code linked a separate participant contact form to each survey. We kept data linking contact information to survey responses through the ID codes in secure files. Trained research assistants were also on hand to help clients with limited literacy, or could interview clients, if needed.

Questionnaire Description

In addition to demographics and food security status, survey questions addressed food pantry clients' perceptions and experiences within food pantries. All questions and responses were taken from a questionnaire used to evaluate the Voices for Food project. The 18-item USDA household food security survey³⁸ was used to assess food security status and categorized respondents into food secure (including food secure and marginal) and insecure (low and very low). Demographic questions, including a chronic condition status question, were derived from NHANES.³⁹ To measure household chronic condition status, respondents were asked if they had been told by a doctor or other health professional that they, or anyone in their household, had any of the following health conditions: diabetes, high blood pressure, high cholesterol, obesity, food allergies, or don't know.³⁸ Perceptions/opinions relating to several aspects of the pantry experience, including 5 forced multiple choice questions and 3 open-ended questions (one had both) that related specifically to the research questions, were analyzed (Table 1). The perception questions were developed based on the work of Verpy et al,²⁵ whose qualitative study reported on client preferences, and by socio-ecological theory.

The 5 forced multiple-choice questions assessed satisfaction with the variety of food received, desire for foods not offered, perceptions of volunteer/staff respectfulness, and level of comfort talking with vol-

Table 1
Perception Questions

1. How satisfied are you with the amount of food that you and others in your household receive at this food pantry. Are you...
 - a. Very satisfied
 - b. Somewhat satisfied
 - c. Somewhat dissatisfied
 - d. Very dissatisfied
 - e. Don't know
2. How satisfied are you with the variety of food that you and others in your household receive at this food pantry? Are you...
 - a. Very satisfied
 - b. Somewhat satisfied
 - c. Somewhat dissatisfied
 - d. Very dissatisfied
 - e. Don't know
3. When you come to this food pantry, how comfortable do you feel talking with pantry workers about your food and other needs?
 - a. Very comfortable
 - b. Somewhat comfortable
 - c. Not comfortable
 - d. Don't know
4. When you come to this food pantry, how often are you treated with respect by the people who distribute food?
 - a. Very often
 - b. Sometimes
 - c. Never
 - d. Don't know
5. Which types of foods do you want but do not usually get from this food pantry?
 - a. Fresh fruits and vegetables
 - b. Low-fat protein food items such as lean meats
 - c. Skim or low-fat dairy products, such as milk, yogurt or cheese
 - d. Whole grain foods
 - e. I get all the types of foods I want at this food pantry
 - f. Don't know
6. How satisfied are you with the amount of choice you have in the foods you can take home from this food pantry? Are you...
 - a. Very satisfied
 - b. Somewhat satisfied
 - c. Somewhat dissatisfied
 - d. Very dissatisfied
 - e. Don't know

Please explain your answer.

7. If there is anything else you would like to tell us about how this food pantry helps you, please include here.

8. If there is anything else you would like to tell us about what should be improved at this food pantry, please include here.

unteers/staff about food needs. One question was a mix of forced multiple-choice and open-ended responses and assessed satisfaction with the amount of food choice they received at the pantry, with an opportunity to comment. Two questions were exclusively open-ended and asked how the pantry generally helps them and how it might be improved.

Data Analysis

To address the research questions, we used a mixed-methods convergent parallel design to identify convergent and divergent themes. The quantitative and qualitative data were examined simultaneously and separately across 3 groups according to household chronic condition status. One group had at least one person with diabetes and possibly other chronic conditions in their household; the second had chronic condition(s) but not diabetes; and the last group did not have any chronic conditions.

Quantitative analyses were conducted using Stata version 13. Chi-square tests were used to determine if demographic characteristics and questions with multiple responses varied by condition group. When group sizes were small, we used Fisher's exact test. We dichotomized categorical outcomes and used logistic regression to determine odds ratios and confidence intervals for condition groups while controlling for age (which varied by condition group). Satisfaction responses were dichotomized into more satisfied and less satisfied. Level of significance was set at $p < .05$.

We used qualitative methods to examine perceptions and opinions related to the open-ended question responses and allowed for a naturalistic approach to the research, situating the researcher inside the world of the research participant.⁴⁰ By using qualitative methods, we were able to focus more closely on research participants' point-of-view. Open-ended questions related to client satisfaction and their opinions on what could be improved within the pantry were analyzed by 2 researchers directed by grounded theory.^{41,42} We used an iterative process to categorize individual pantry client responses into themes and subthemes for 3 open-ended questions. Each of these researchers read the responses separately from all 3 questions and identified a set of overall themes and subthemes. We then convened to agree upon a common set of themes and subthemes.

We read the responses separately and categorized them into the agreed upon themes and subthemes. Finally, we reconvened to build consensus on where responses were categorized. If we could not come to an agreement upon which theme a response belonged, a third researcher would break the tie. After finalizing the coding of survey responses, we carried out content analysis to identify the most common themes in the data and examine the frequency of themes across each of the questions and for each of the chronic condition groups.

To address the research questions, we examined the quantitative findings and compared them with the qualitative content analysis. Two authors with experience in quantitative methods, and 2 authors with experience in qualitative methods, determined where there were convergent and divergent results between the 2 methods. In addition, we decided how the qualitative data might have explained the quantitative results or uncovered new themes in the context of the food pantry.

RESULTS

Quantitative Data

Table 2 reports the participant characteristics. Most participants (81.2%) were over age 35, female (71.1%), and non-Hispanic (96.4%). Nearly one-fourth of participants were classified as having high or marginal food security. A greater proportion of those reporting no chronic condition were younger compared to those with a chronic condition (no diabetes) or diabetes (with or without one or more chronic conditions). No other demographic characteristics differed among condition groups.

In general, pantry participants responded that they were satisfied with pantry food choices. After controlling for age, we found no differences among condition groups in terms of satisfaction with the amount or variety of food received. Compared to those with no chronic conditions, those with diabetes (with or without one or more other chronic conditions) had lower odds of being satisfied with the amount of choice (OR = .45, $p = .05$).

There were no group differences in the desire for specific food groups from the pantry (Table 3), and those who reported getting all the types of foods they want from the food pantry ranged from 19% to 29%. There were no differences among groups in reports of being treated with respect by pantry

Table 2
Participant Characteristics of a Sample of Midwestern Food Pantry Clients
from Low-income, Rural Communities

	Overall N = 612 N (%)	No Chronic Condition N = 182 N (%)	Chronic Condition (no diabetes) N = 233 N (%)	Diabetes (with or without 1 or more chronic conditions) N = 197 N (%)	p-value*
Age (y), N = 522		ab	a	b	.000**
18-34	98 (18.8)	53 (34.2)	23 (12.0)	22 (12.5)	
35-54	193 (37.0)	48 (31.0)	81 (42.4)	64 (36.4)	
55 and older	231 (44.2)	54 (34.8)	87 (45.6)	90 (51.1)	
Sex, N = 516		-	-	-	.433
Male	149 (28.9)	48 (31.6)	56 (30.0)	45 (25.4)	
Female	367 (71.1)	104 (68.4)	131 (70.1)	132 (74.6)	
Hispanic, N = 504		-	-	-	.544***
Yes	18 (3.6)	4 (2.7)	9 (4.8)	5 (2.9)	
No	486 (96.4)	143 (97.3)	177 (95.2)	166 (97.1)	
Race		-	-	-	.08
American Indian or Alaska Native	42 (8.2)	17 (11.2)	10 (5.4)	15 (8.6)	
Black or African-American	43 (8.4)	8 (5.3)	22 (11.8)	13 (7.5)	
White	398 (77.7)	116 (76.3)	148 (79.6)	134 (77.0)	
Other	29 (5.7)	11 (7.2)	6 (3.2)	12 (6.9)	
Education, N = 515		-	-	-	.155
Did not graduate HS	133 (25.8)	49 (32.0)	40 (21.4)	44 (25.1)	
HS grad or GED equivalent	219 (42.5)	65 (42.5)	83 (44.4)	71 (40.6)	
Trade, some college or associate degree and Bachelor's degree or higher	163 (31.7)	39 (25.5)	64 (34.2)	60 (34.3)	
HH Income, N = 560		-	-	-	.154
<\$10,000	295 (52.7)	91 (58.7)	121 (54.5)	83 (45.6)	
\$10,000-25,000	222 (39.6)	55 (35.5)	86 (38.6)	81 (44.5)	
>\$25,001	43 (7.7)	9 (5.8)	16 (7.2)	18 (9.9)	
Adult Food Security Status		-	-	-	.209
Food Secure/Marginally Food Secure	138 (22.7)	46 (25.6)	44 (18.9)	48 (24.5)	
Low Food Secure/Very Low Food Secure	471 (77.3)	134 (74.4)	189 (81.1)	148 (75.5)	

Note.

*p-value determined using chi-square test; when significant, group differences determined using Dunn's pairwise comparison of groups

**similar letters indicate significant difference between groups

***Fisher's exact test used

Table 3
Odds Ratios and Confidence Intervals for Which Types of Foods
Participants Want but Usually Do Not Get from the Pantry

	No Chronic Conditions N = 182	Chronic Condition (no diabetes) N = 233	Diabetes (with or without 1 or more chronic conditions) N = 197
Fresh fruits and vegetables	Ref	1.4 (.85 to 2.30)	1.50 (.90 to 2.49)
Low-fat protein food items such as lean meats	Ref	1.48 (.83 to 2.62)	.89 (.48 to 1.66)
Skim or low-fat dairy products, such as milk, yogurt or cheese	Ref	.86 (.48 to 1.54)	1.11 (.62 to 1.96)
Whole grain foods	Ref	.56 (.18 to 1.75)	1.05 (.38 to 2.89)
I get all the types of foods I want at this pantry	Ref	.59 (.34 to 1.03)	.59 (.33 to 1.04)

workers; however, compared to individuals with no chronic conditions, both those with a chronic condition (no diabetes) and diabetes (with or without one or more chronic conditions) were less likely to report feeling comfortable talking with pantry workers about food and other needs (OR = .52, $p = .024$ and OR = .43, $p = .004$, respectively).

Qualitative Data

Fifteen themes were identified during the qualitative analysis of open-ended questions. Inter-rater reliability between our coders for themes was 77%. Table 4 provides a list of response themes and sub-themes identified for the 3 open-ended questions and examples of responses from each theme. Responses were categorized into “positive” or “negative” subthemes based on the opinion expressed about a particular topic. For example, the theme of “Variety” pertained to a perception regarding the variety of non-specific foods offered within the pantry. A comment related to “Variety” would be coded “positive” if it was complementary towards the pantry and “negative” if the comment was critical.

How Satisfied are You with the Amount of Choice You Have in the Foods You Can Take Home from this Food Pantry?

Table 5 presents the top themes for the responses to this question (positive and negative). The top themes for responses across all groups related to the ability to choose (choice), the availability of specific food groups (food group availability), and the variety of foods offered (variety). Although only 53% of participants wrote a comment, of those who did,

the chronic condition and diabetes-plus group had a larger percentage of overall negative comments than the group with no chronic condition (Table 6).

The ability to choose. When analyzing the specific themes, those within the 2 chronic condition groups had larger percentages of negative comments related to whether food choice is actually allowed within the pantry, as compared to the no chronic condition group. Some expressed frustration that they were getting foods they would not use, and others wanted the ability to make choices based on ingredients. Exemplar quotes from individuals living with chronic conditions include:

- Sometimes I get things that I won't use and think that others should/could use it more than I will. We don't have a choice in what is received, we just get what is packed for us.
- I would like to have choices so that I could read the ingredients.
- It would be nice to pick out low sodium food.
- Concerns about the lack of specific food groups.

Individuals within the 2 chronic disease groups had a greater percentage of concerns about the availability of specific food groups (protein, fresh produce, dairy) as compared to those without chronic conditions. Although some desired canned; or shelf-stable products, most desired fresh. Some exemplar quotes include:

- Not a lot of meat options, lacking in fresh

Table 4
Themes Identified in Open-ended Questions: How Satisfied are You in the Amount of Choice that You Have? How Could the Pantry Improve? How Does the Pantry Help You?

Theme	Subthemes	Exemplar Quotes	
Amount A perception about the amount of food offered	Positive	<i>I appreciate the extra food, it makes a big difference</i>	
	Negative	<i>Sometimes I wish that they give more than 2 days.</i>	
Fatalistic Expression Fatalistic attitude or perception	Negative	<i>Because I am low-income, the choices available are what they are and I must accept and choose what is available.</i>	
	Positive	<i>I'm a picky eater and think there is enough choice to meet need.</i>	
Choice Perceptions related to whether food choice is allowed	Negative	<i>Sometimes I get things that I won't use and think that others should/could use it more than I will. We don't have a choice in what is received, we just get what is packed for us.</i>	
	Positive	<i>They help me survive and get by. Anything I get from here means I have more money for gas and utilities.</i>	
Contribution to Household Income Perception that pantry extends food resources or frees up resources that would otherwise be used for food	Positive	<i>They help me survive and get by. Anything I get from here means I have more money for gas and utilities.</i>	
Dietary Needs and Health Perception related to the availability of foods to accommodate specific diets such as gluten-free, sugar free, allergy free, etc.	Negative (No comments coded as positive)	<i>More consideration for diabetics in regards to the food available.</i>	
Food Access, Affordability Perception relating to accessing food, or expanding food resources	Positive	<i>They have a lot of food that is higher cost at the store and healthy.</i>	
Food Quality Perception related to healthfulness, appearance, freshness, or safety	Positive	<i>They do a good job of getting nutritious foods in the boxes.</i>	
	Negative	<i>I would love healthier food choices.</i>	
Pantry Operations Perceptions related to general logistics such as crowds, wait times, aisle space, cleanliness, lighting, etc.	Positive	<i>I think it's clean and very well structured.</i>	
	Negative	<i>they always run out if you are not the 1st in line</i>	
Pantry Policy Perception related to established pantry policies such as pantry hours, food distribution guidelines, client eligibility	Positive	<i>The sign outside was really helpful. It seemed like a sign from God when we saw it. The fact that it says that 'All are Welcome'. You didn't omit anyone. Jesus didn't omit anyone.</i>	
	Negative	<i>Having the food pantry more than once a month</i>	
Specialty Items Perception related to the availability of miscellaneous items such as deodorant, toilet paper, medical supplies, cooking ingredients, etc	Positive	<i>I have needed laundry soap and toilet paper and have gotten it at the food pantry so I was able to take care of my kids.</i>	
	Negative	<i>Would like to have shampoo and conditioners.</i>	
Specific Food Availability Perception related to availability to specific food groups (fruits, vegetable, dairy, etc), and forms (fresh, frozen, canned, dried)	Food Group (Fruits, Vegetables, Dairy, etc.)	Positive	<i>I get fruits. I get vegetables. They try and get us some of each.</i>
		Negative	<i>would like to see more dairy</i>
	Form (Fresh, Frozen, Canned, Dried)	Positive	<i>There are always different types of soups and canned veggies</i>
		Negative	<i>They don't always have canned vegetables.</i>
Staff Disposition Perceptions related to staff or volunteer attitudes, helpfulness, friendliness	Positive	<i>Staff is very caring and helpful.</i>	
	Negative	<i>The staff. They need to be more friendly.</i>	
Thankful/ Happy Expressing thankfulness and gratitude towards the pantry	Positive	<i>I am blessed with everything that they gave us and nothing goes to waste.</i>	
Variety A general perception regarding the variety of different foods offered	Positive	<i>They have a good variety offered.</i>	
	Negative	<i>WE SEEM TO GET THE Same thing all the time.</i>	

Table 5
Thematic Categorization of Rural, Midwestern Food Pantry Client Responses
(Top 5 for Each Question)

	Diabetes Plus Other Chronic Conditions	Other Chronic Condition But No Diabetes	No Chronic Condition
“How satisfied are you with the amount of choice you have in the foods you can take home from this food pantry?”	<ul style="list-style-type: none"> Choice: 18 (20.9%) Food Group Availability: 11 (12.8%) Variety: 11 (12.8%) Food Quality: 8 (9.3%) Contribution to Household Resources: 7 (8.1%) Dietary Needs & Health: 6 (7.0%)* 	<ul style="list-style-type: none"> Choice 25 (20.5%) Food Group Availability: 20 (16.4%) Variety: 15 (12.3%) Fatalistic Expression: 15 (12.3%) Thankful/Happy: 9 (7.4%) Dietary Needs and Health: 1 (0.8%)* 	<ul style="list-style-type: none"> Choice: 11 (15.5%) Food Group Availability: 9 (12.7%) Variety: 9 (12.7%) Thankful/Happy: 9 (12.7%) Fatalistic Expression: 8 (11.3%)
“How has the pantry helped you?”	<ul style="list-style-type: none"> Thankful/Happy: 21 (25.3%) Contribution to Household Resources: 21 (25.3%) Staff Disposition: 9 (10.8%) Pantry Policies: 5 (6.0%) Specialty Items: 5 (6.0%) 	<ul style="list-style-type: none"> Thankful/Happy: 20 (28.6%) Contribution to Household Resources: 16 (22.9%) Staff Disposition: 9 (12.9%) Food Access/Affordability: 5 (7.1%) Food Group Availability: 5 (7.1%) 	<ul style="list-style-type: none"> Thankful/Happy: 15 (27.3%) Contribution to Household Resources: 11 (20%) Staff Disposition: 6 (10.9%) Specialty Items: 4 (7.3%) Amount: 3 (5.5%)
“How could the pantry improve?”	<ul style="list-style-type: none"> No/No Comment: 21 (29.2%) Food Group Availability: 15 (20.8%) Staff Disposition: 7 (9.7%) Pantry Operation: 6 (8.3%) Dietary Needs and Health: 5 (6.9%) 	<ul style="list-style-type: none"> Food Group Availability: 23 (25.6%) No/No Comment: 23 (25.6%) Pantry Operation: 5 (5.6%) Pantry Policies: 5 (5.6%) Specialty Items: 5 (5.6%) 	<ul style="list-style-type: none"> No/No Comment: 20 (34.5%) Food Group Availability: 15 (25.9%) Pantry Policies: 6 (10.3%) Food Quality: 5 (8.6%) Thankful/Happy: 4 (6.9%)

Note.

*Theme unique to chronic disease groups

produce and dairy.

- I think they need fresh fruits and vegetables and other healthier items.
- They need to get refrigeration, so we can get milk products and fresh fruits and vegetables.

Fatalistic expression. The third most prevalent negative theme was “Fatalistic Expression.” Comments coded as fatalistic expression represented a fatalistic attitude or perception. Oftentimes, the respondent offers a backhanded compliment toward the pantry. In other instances, the respondent expresses that they do not have the right to be proactive regarding their food preferences because they

are receiving free food, especially in a small town where resources are scarce. Examples of these phenomena include:

- Beggars can’t be choosers.
- Help is good - when you are starved, everything is good.
- Some of the food I don’t like, but I eat it anyway. I am diabetic and shouldn’t eat some of the food they give me.
- I don’t complain because I am desperate for help, but if I were able to feed my family more healthy [sic] and less fattening foods, I firmly believe that my family would be sick

Table 6
Negatively-coded Response Themes by Condition Category from
“How Satisfied Are You with the Amount of Choice You Have in the Foods you can
Take Home from This Food Pantry?”

Theme	Chronic Condition Category			Total
	Diabetes Plus other Chronic Conditions	Chronic Condition but No Diabetes	No Chronic Condition	
Choice	13(26%)	21(28%)	7(18%)	41
Food Group Availability	10(20%)	20(26%)	7(18%)	37
Fatalistic Expression	4(8%)	13(17%)	8(32%)	25
Variety	6(12%)	4(5%)	5(13%)	15
Amount	0	6(8%)	4(11%)	10
Food Quality	5(8%)	2(3%)	3(8%)	10
Pantry Operation	2(4%)	6(8%)	1(3%)	9
Pantry Policies	4(8%)	3(4%)	1(3%)	8
Dietary Needs and Health	6(12%)	1(1%)	0	7
Cooking Ingredients	1(2%)	0	2(5%)	3
Total Negative Comments (% vs positive)	51(60%)	76(62.3%)	38(55.1%)	165

less often. I understand that the food pantries are stuck giving out whatever they are given, so I don't dare complain.

Dietary needs. Individuals living with diabetes in their household perceived that there were not enough choices to fit their dietary needs (Dietary Needs and Health). Some asked for low-sodium or low-sugar items, whereas others mentioned that there were not enough food choices for those with diabetes. One response mentioned wanting more protein. Some exemplar quotes include:

- More consideration for diabetics in regards to the food available.
- They should include more diabetic foods, low sugar, protein foods.
- Pretty well satisfied, except it would be nice to pick out low sodium food.

How Does the Pantry Help You?

Table 5 provides theme counts for “How does

the pantry help you?” Nearly 57% of participants wrote a comment. The response themes were similar across all chronic condition categories. Most expressed thankfulness or gratitude toward the pantry, staff, and volunteers. Others expressed how the pantry helps with their overall household income, helps free up resources for other necessities, or supplements food stamps during the month. However, a few offered a “fatalistic expression” in terms of how the pantry helps them and their families. Some exemplar quotes include:

- They do the best they can for such a small town. You don't get a ton of choices, but hunger makes any choice great.
- It is there when we need it. At least we are not starving to death.

How Can the Pantry Improve?

Table 5 provides theme counts for “How can the pantry improve?” Approximately 63% of participants responded to this question. In addition

to writing “no” or “no comment,” most comments in all groups related to concerns about the availability of certain food groups, especially fresh fruits and vegetables, protein, and dairy. Concerns about pantry operations or pantry policies were common themes across all groups as well. Most expressed concerns that the pantry was not open enough, or that hours were not posted, or that larger families should get more food.

Consistent with the previous question regarding choice, the diabetes group had more comments related to their desire for special foods to help them adhere to meal plans than the other 2 groups. Some had wished there were more sugar-free desserts, or generally thought the foods offered were not appropriate for people with diabetes.

DISCUSSION

The qualitative and quantitative data support the concept that most food pantry clients, regardless of the presence of an individual with chronic condition in the household, prefer the ability to choose their own food, with a preference for more fresh fruits and vegetables, dairy products, protein, and more variety. These findings align with previous literature on preferences for food pantry clients in general. In terms of food choices and preferences, the quantitative analysis did not find that individuals with chronic disease had different preferences than those without chronic disease. However, the content analysis of the qualitative themes suggested that there were unique perceptions specific to people living with diabetes and other chronic conditions in their household. People who lived in households with chronic conditions had a larger percentage of negative statements expressing frustration that they were not allowed to choose, and that there were not enough fresh fruits, vegetables, meats, and dairy.

The quantitative and qualitative results suggested that people living with diabetes in their household also had unique perceptions. The quantitative analysis suggested that they were less satisfied with the amount of choice. The qualitative analysis also suggested that people with diabetes in their household had expressed concerns that many of the foods offered were not appropriate for their meal plans, and they desired more low-carbohydrate, low-sodium items.

Although some individuals with diabetes and/or chronic conditions in their household have expressed preferences for more food choice and healthier options, the quantitative data suggested that they were also less comfortable talking to volunteers than people without a chronic condition, indicating they might not be as proactive. Perhaps individuals living with chronic conditions have more awareness and desire for healthier choices, and therefore, feel less comfortable talking with volunteers about their dietary needs. Also, they might be less willing to share with volunteers and staff that they have a chronic condition, especially in a rural community. Finally, fatalistic attitudes, as evidenced by “fatalistic expression” comments, could be another underlying reason. Because clients are grateful to at least have a food pantry in their community, and because they might feel, as one participant suggested, that “beggars can’t be choosers,” they may not assert their need for healthier choices. Fatalistic attitudes might be more amplified in rural communities, where emergency food resources are possibly scarcer compared to urban communities. Further research is needed to investigate chronic condition influences on the client volunteer/staff interactions at a rural food pantry.

The transition to a full-choice from a limited-choice or non-choice food pantry may serve clients better living with chronic conditions in low-income, rural communities, where there may be fewer food resources. Engaging clients regarding their needs and preferences is also a practical way to gain knowledge of the way that pantries may serve clientele with chronic conditions best, and especially those with diabetes in their households. Staff or volunteers might informally ask clients or possibly survey clients about their dietary needs or food preferences. Chronic condition status can be assessed through anonymous intake or needs assessment surveys. Partnering with local healthcare providers to screen for chronic conditions, such as diabetes, is another strategy that has been successful in communities to link food access at the pantry to food insecure clients.⁴³ Food pantries may be used further as a venue to promote the Supplemental Nutrition Assistance Program – Education (SNAP-Ed). This program provides nutrition education to those who qualify for SNAP or food stamp programs to help clients learn how to make healthy choices at a food pantry setting. SNAP-Ed

has been shown to improve food security and may be particularly effective when provided in a food pantry environment, because clients can gain immediate practice with their newly gained nutrition knowledge and resource management skills.⁴⁴

The lack of client engagement and provision of client choice may be due to food pantry directors, staff, and volunteers having little knowledge or exposure to the ideas, knowledge of nutrition, and healthy dietary selection, and also the dietary constraints of those with chronic conditions. Extension or health education professionals can coach food pantry directors, staff, and volunteers to address diabetes and other chronic conditions among clients and promote healthy nutrition environments. Community coaching⁴⁵ can bring these chronic conditions to the forefront of food pantry directors, and prompt strategies to improve service to this sub-population. Community coaches can help food pantries identify goals and resources (including partnerships), work through logistical issues, monitor goal progress, and offer encouragement to pantry staff and volunteers. Guides are available that offer food pantries strategies to address chronic conditions, convert to choice, and enable them to procure, distribute, and promote healthier foods.²¹ Research also shows that volunteers can encourage clients to eat healthier.⁴⁶

Other logistical challenges in terms of addressing the needs and preferences of people with chronic conditions include more limited food donations, especially in terms of fresh fruits, vegetables, and dairy products. This is most common in rural communities. Research suggests that rural food pantry inventories are of lower nutritional quality than inventories in urban areas.¹⁴ Community food drives for healthy foods, gleaning, and establishing community gardens are all strategies that pantries could use to improve the healthfulness of their inventories. Pantries can establish community relationships with local or regional food councils and hunger or health coalitions to procure or share resources, ideas, or collectively apply for grants. In many rural communities, these partnerships might need to be established first.

Our study has several implications for research and theory. Socio-ecological theory suggests that interpersonal relationships can influence intrapersonal knowledge, skills, attitudes, self-efficacy, and ultimately, behaviors. Establishing strong interper-

sonal relationships between volunteers/staff and clients might be a great way for pantries to understand health concerns and food preferences, as well as understand where clients' nutrition motivations and cooking skills lie, in order to promote healthy choices in the context of a client choice pantry. Thus, our findings suggest that, within rural settings, food pantry clients might have fatalistic attitudes, and not feel as comfortable speaking with volunteers. Performing additional research may contribute to understanding how to promote positive engagement in a rural environment.

One of the strengths of our study is our large sample size (N = 612) and our use of a mixed-methods analysis to gain breadth and depth of understanding of food pantry perceptions. Mixed-methods approaches combine qualitative and quantitative analytical data to build on each other's strengths while offsetting weaknesses. Limitations to our research include lack of the validity and reliability of some of our perception measures, because the survey was designed as an evaluation unique to the Voices for Food project. Participants might not be honest in their answers if they are afraid to damage their relationship with the pantry, despite the consent process, or they might not have understood key terms. Another limitation common to conducting research in food pantries is low client literacy, and people feeling rushed to get home to put their food away.

In summary, our findings suggest that food pantry clients with chronic health conditions have unique perceptions related to food choice, preferences, and volunteer/staff interactions. Converting to choice, addressing health needs and food preferences through engagement, and providing nutrition education may be strategies to serve those with chronic disease in rural communities.

Human Subjects Statement

We obtained informed consent from all participants before their participation in the study. South Dakota State University and The Ohio State University IRBs approved the study protocol.

Conflict of Interest Statement

All authors of this article declare that they have no conflicts of interest.

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References

- Coleman-Jensen A, Rabbitt MP, Gregory CA, Singha A. Household food security in the United States in 2015. *Econ Res Rep*. 2016;215(September):36. Available at: <https://www.ers.usda.gov/webdocs/publications/err215/err-215.pdf>. Accessed September 25, 2018.
- Coleman-Jensen A. Predictors of U.S. food insecurity across nonmetropolitan, suburban, and principal city residence during the great recession. *J Poverty*. 2012;16(4):392-411.
- Seligman HK, Bindman AB, Vittinghoff E, et al. Food insecurity is associated with diabetes mellitus: results from the National Health Examination and Nutrition Examination Survey (NHANES) 1999-2002. *J Gen Intern Med*. 2007;22(7):1018-1023.
- US Centers for Disease Control and Prevention. National Diabetes Statistics Report, 2014 Estimates of Diabetes and Its Burden in the Epidemiologic estimation methods. 2014. Available at: <https://www.cdc.gov/diabetes/pdfs/data/2014-report-estimates-of-diabetes-and-its-burden-in-the-united-states.pdf>. Accessed September 25, 2018.
- Ward BW, Schiller JS, Goodman RA. Multiple chronic conditions among US adults: a 2012 update. *Prev Chronic Dis*. 2014;11(3):E62.
- Seligman HK, Jacobs EA, López A, et al. Food insecurity and glycemic control among low-income patients with type 2 diabetes. *Diabetes Care*. 2012;35(2):233-238.
- Seligman HK, Schillinger D. Hunger and socioeconomic disparities in chronic disease. *N Engl J Med*. 2010;363(1):6-9.
- 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.
- Hoisington A, Shultz JA, Butkus S. Coping strategies and nutrition education needs among food pantry users. *J Nutr Educ Behav*. 2002;34(6):326-333.
- Mulangu F, Clark J. Identifying and measuring food deserts in rural Ohio: what are food deserts? *J Ext*. 2012;50(3). Available at: http://www.joe.org/joe/2012june/pdf/JOE_v50_3a6.pdf. Accessed March 30, 2018.
- Morton LW, Bitto EA, Oakland MJ, Sand M. Solving the problems of Iowa food deserts: food insecurity and civic structure. *Rural Sociol*. 2005;70(1):94-112.
- Schmitt FF, Topics SP, Philosophy T, Spring G. Characteristics of short and long-term food pantry users. *Michigan Sociol Rev*. 2012;26:58-74.
- Neter JE, Dijkstra SC, Visser M, Brouwer IA. Dutch food bank parcels do not meet nutritional guidelines for a healthy diet. *Br J Nutr*. 2016;116(3):526-533.
- Akobundu UO, Cohen NL, Laus MJ, et al. Vitamins A and C, calcium, fruit, and dairy products are limited in food pantries. *J Am Diet Assoc*. 2004;104(5):811-813.
- Nanney MS, Grannon KY, Cureton C, et al. Application of the healthy eating index-2010 to the hunger relief system. *Public Health Nutr*. 2016;19(16):2906-2914.
- Martin KS, Wu R, Wolff M, et al. A novel food pantry program: food security, self-sufficiency, and diet-quality outcomes. *Am J Prev Med*. 2013;45(5):569-575.
- Shanks C. Promoting food pantry environments that encourage nutritious eating behaviors. *J Acad Nutr Diet*. 2017;117(4):523-525.
- Ries AV, Voorhees CC, Roche KM, et al. A quantitative examination of park characteristics related to park use and physical activity among urban youth. *J Adolesc Health*. 2009;45(3):S64-S70.
- Gittelsohn J, Trude A. Diabetes and obesity prevention: changing the food environment in low-income settings. *Nutr Rev*. 2017;75(Suppl 1):62-69.
- Wilson NLW, 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 (United Kingdom)*. 2017;39(2):366-372.
- Ohio Association of Second Harvest Foodbanks (OASHF). *Making the Switch: A Guide to Converting to A Choice Food Pantry*. Columbus, OH: OASHF; 2006. Available at: <http://www.ohiofoodbanks.org/docs/publications/ChoicePantryGuide.pdf>. Accessed April 25, 2018.
- United States Department of Agriculture. *Dietary Guidelines for Americans 2015-2020*. 8th ed. Available at: health.gov/dietaryguidelines/2015/guidelines. Accessed May 16, 2018.
- Remley DT, Kaiser ML, Osso T. A case study of promoting nutrition and long-term food security through choice pantry development. *J Hunger Environ Nutr*. 2013;8(3):324-336.
- Kuhls P. Current food usage patterns, habits, and preferences of food pantry clients in Central Ohio. [master's thesis]. Columbus OH: The Ohio State University; 2011.
- Verpy H, Smith C, Riecks M. Attitudes and behaviors of food donors and perceived needs and wants of food shelf clients. *J Nutr Educ Behav*. 2003;35(1):6-15.
- 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.
- Handforth B, 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;113(3):411-415.
- Greer AE, Cross-Denny B, McCabe M, Castrogivanni B. Giving economically disadvantaged, minority food pantry patrons' a voice: implications for equitable access to sufficient, nutritious food. *Fam Community Health*. 2016;39(3):199-206.
- Remle DT, Zubieta AC, Lambea MC, et al. Spanish- and English-speaking client perceptions of choice food pantries. *J Hunger Environ Nutr*. 2010;5(1):120-128.
- Greger J, Maly A, Jensen N, et al. Food pantries can provide nutritionally adequate food packages but need help to become effective referral units for public assistance programs. *J Acad Nutr Diet*. 2002;102(8):1126-1128.
- Aragon C, Shultz JA, Bush-Kaufman A, Barale K. Low-income respondents' perceptions about food retail and

- food pantry shopping environments. *J Hunger Environ Nutr.* 2018 Feb 16; <https://doi.org/10.1080/19320248.2018.1434097>. [Epub ahead of print]
32. Feeding America. Hunger in America, 2014. Available at: <http://www.feedingamerica.org>. Accessed January 1, 2018.
33. Bandura A. Health promotion from the perspective of social cognitive theory. *Psychol Health.* 1998;13(4):623-649.
34. Remley DT, Kaiser ML, Osso T. A case study of promoting nutrition and long-term food security through choice pantry development. *J Hunger Environ Nutr.* 2013;8(3):324-336.
35. McLeroy KR, Bibeau D, Steckler A, Glanz K. An ecological perspective on health promotion programs. *Health Educ Behav.* 1988;15:351-377.
36. US Census Bureau. Census Bureau QuickFacts. State and County QuickFacts. Available at: <https://www.census.gov/geo/reference/ua/urban-rural-2010.html>. Accessed on September 30, 2013.
37. Remley D, Gallagher T, McDowell J, et al. Extension's role in developing "choice" food pantries in Southwest Ohio. *J Ext.* 2006;44(6): 6IAW5. Available at: <http://www.joe.org/joe/2006december/iw5.php>.
38. Bickel G, Nord M, Price C, et al. *Guide to Measuring Household Food Security, Revised 2000*. Washington, DC: US Department of Agriculture; 2000. Available at: <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/survey-tools/#guide>. Accessed on July 15, 2013.
39. National Center for Health Statistics. National health and nutrition examination survey: questionnaires, datasets and related documentation. Available at: <https://www.cdc.gov/nchs/nhanes/Default.aspx>. Accessed March 2, 2017.
40. Denzin NK, Lincoln YS. Introduction: the discipline and practice of qualitative research. Denzin NK, Lincoln YS, eds. *The Sage Handbook of Qualitative Research*. Los Angeles, CA: Sage Publications, Inc; 2011:1-21.
41. Corbin JM, Strauss A. Grounded theory research: procedures, canons, and evaluative criteria. *Qual Sociol.* 1990;13(1):3-21.
42. Charmaz K. *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*. Thousand Oaks, CA: Sage Publications, Inc; 2006:42-72.
43. Seligman HK, Lyles C, Marshall MB, et al. A pilot food bank intervention featuring diabetes-appropriate food improved glycemic control among clients in three states. *Health Aff.* 2015;34(11):1956-1963.
44. Rivera RL, Maulding MK, Abbott AR, et al. SNAP-Education (Supplemental Nutrition Assistance Program-Education) increases long-term food security among Indiana households with children in a randomized controlled study. *J Nutr.* 2016;146(11):2375-2382.
45. Hubbel K, Emery M. Guiding sustainable community change: an introduction to coaching. Available at: <http://www.aecf.org/resources/guiding-sustainable-community-change/>. Accessed on May 15, 2018.
46. Martin K, Wu R, Wolff M, et al. A novel food pantry program. *Am J Public Health.* 2016;45(5):569-575.