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Promoting Client Nutrition in Urban Utah Food Pantries

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PROMOTING CLIENT NUTRITION IN URBAN UTAH FOOD PANTRIES

by

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ABSTRACT

Promoting Client Nutrition in Urban Utah Food Pantries

by

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Food insecurity refers not only to insufficient quantities of food but also to inadequate amounts of nutritious foods needed to live an active and healthy life. Food insecure Americans are often at risk for malnutrition, which is associated with a multitude of costly chronic diseases. Food insecure individuals rely on a variety of strategies to have enough nutritious food to last the month. Included in these strategies is often the use of food pantries. Interventions that increase healthy food access in pantries may help improve the diet quality of this vulnerable population. Nutrition programs, such as the Supplemental Nutrition Assistance Program-Education (SNAP-Ed), are beginning to focus their efforts on food pantry settings to improve the dietary choices of low-income Americans.

This thesis includes data collected from six urban food pantries in Utah. Surveys were conducted to identify interest among food pantry users in nutrition programs that improve healthy food access and common barriers to making healthy choices. Additionally, data were collected to evaluate the impact of the SNAP-Ed intervention,

Thumbs Up for Healthy Choices, on pantry clients' selection and use of healthy foods from pantries.

Results from the surveys show that food pantry users in urban Utah settings highly value access to healthy foods in pantries. Lack of availability and limited time to compare products are the most commonly reported barriers to making healthy choices. Additionally, respondents reported that the Thumbs Up for Healthy Choices program did make it easier to make healthy choices. Subsequent improvements in diet quality among survey respondents, and their families were also reported. These positive program impacts were reported by respondents that had been exposed to the program between 1-8 times. These findings suggest that food pantry based nutrition interventions, such as Thumbs Up for Healthy Choices, are an effective use of resources that may positively impact diet quality of food pantry users.

(78 pages)

PUBLIC ABSTRACT

Promoting Client Nutrition in Urban Utah Food Pantries

Casey Coombs

Food pantry clients are at an increased risk of poor diet quality which can lead to a variety of chronic diseases. Identifying nutrition interventions that help improve the dietary intake of this vulnerable population is important to help improve health outcomes. Utah's Supplemental Nutrition Assistance Program-Education (SNAP-Ed), also known as Food $ense, partners with many pantries throughout the state to improve healthy food access. This research was conducted to evaluate the effectiveness of a pantry intervention, Thumbs Up for Healthy Choices, to evaluate its impact on food pantry clients' selection and use of identified healthy foods. In addition to program evaluation, data identifying interest in programs such as Thumbs Up, as well as common barriers that prevent pantry clients from making healthy choices was also collected and analyzed.

This research was funded through a Utah State University (USU) Extension mini-grant for $8,500. The findings will be used to guide future SNAP-Ed initiatives that aim to make the healthy choice the easy choice in food pantries. The results will also be used to build the evidence base for the Thumbs Up for Healthy Choices program, which will allow other SNAP-Ed programs throughout the country to adopt and implement this effective program.

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CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

Abstract

Food insecure Americans are at risk for poor dietary intake which can lead to obesity, type II diabetes, heart disease and certain cancers. Many food insecure Americans receive food assistance from emergency food sites such as food pantries. Nutrition interventions that address the most common barriers that prevent pantry clients from making healthy choices have the potential to improve the dietary quality of this susceptible population. Nutrition intervention developers should consider healthy food availability, visibility and appeal when designing effective programs. Nudge strategies, such as shelf labels that help pantry clients quickly identify healthy options, may provide a sustainable, low-cost intervention that can be easily implemented in a variety of settings.

Introduction

Background

According to the United States Department of Agriculture (USDA) 41.2 million Americans, including 6.5 million children lived in households considered food insecure in 2016 (United States Department of Agriculture [USDA], 2016). Food insecurity is defined by the USDA as an insufficient amount of food to support an active and healthy lifestyle (USDA, 2016). Food insecurity exists in every county of the United States (Weinfeld et al., 2014). Members of food insecure households often utilize several strategies throughout the month to maintain an adequate supply of food (Weinfeld et al.,

2014). These strategies often include one of the three major federal food programs including the Supplemental Nutrition Assistance Program (SNAP), the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and the National School Lunch Program (NSLP) (Weinfeld et al., 2014). Despite resources made available through these federal programs, many households continue to struggle to obtain a consistent, adequate supply of food. In these instances, many individuals turn to emergency food sites such as food pantries, food banks and soup kitchens to keep food in their homes (Weinfeld et al., 2014). Traditionally, emergency sites supplied food for short periods during especially dire times (Weinfeld et al., 2014). However, there has been a shift in the role of food pantries from short-term emergency food suppliers to becoming part of a longer-term food security strategy (Weinfeld et al., 2014). Feeding America, a network of food banks across the nation, collected data on the 46.5 million Americans they serve annually with their charitable food programs. Findings from their 2014 survey indicated that 63% of respondents reported planning to visit the food pantry monthly as part of their food security strategy, rather than visiting the pantry spontaneously when their food supplies and budgets ran out (Weinfeld et al., 2014).

This long-term reliance on food pantries increases the importance of ensuring that pantries not only have enough food for their clients, but also have a variety of nutritious foods. Food insecure Americans often consume diets that contain inadequate amounts of fruits, vegetables and micronutrients, which is associated with increased risk of obesity and chronic diseases such as type II diabetes mellitus, heart disease and certain types of cancer (Champagne et al., 2007; Drewnowki & Specter, 2004; Seligman et al., 2010). Increasing access to healthy choices in food pantries is one important strategy to improve

the nutritional quality of food pantry users' diets, which may help reduce their risk of obesity and related diseases (Akobundo, Cohen, Laus, Schulte, & Soussloff, 2004; Martin, Wu, Wolff, Colantonio, & Grady, 2013; Robaina & Martin, 2013; Simmet, Depa, Tinnemann, Stroebele-Benschop, 2017a).

Improving access to healthy foods in food pantries is one important step in reducing the health disparities experienced by many low-income Americans (Akobundo et al., 2004; Byker Shanks, 2017; Kaiser, Hermsen, 2015; Knoblock-Hahn, Murphy, Brown, Medrow, 2017; Martin et al., 2013; Robaina & Martin, 2013, Simmet et al., 2017a). However, simply increasing the availability of healthy foods does not ensure that food pantry clients will select and ultimately consume them (Wilson, Just, Swigert, & Wansink, 2016). Recently, the use of behavioral economic strategies known as nudges have been examined as a means to encourage individuals to select more nutritious foods (Wilson et al., 2016). Although using nudges to specifically encourage healthy food selection is a relatively new concept, food retailers have successfully used nudges for product promotion, placement and price to promote targeted items for a long time (Glanz, Bader & Iyer, 2012). A growing area of interest is the use of these nudge strategies in client-choice food pantries. Client-choice food pantries are those in which clients select their own foods from a variety of available items (Remley, Zubieta, Lambea, Quinonez, & Taylor, 2010; Wilson et al., 2016). This is in contrast to food pantry settings where clients receive a prepackaged box of food. Two studies have been conducted to determine the impact of nudge strategies on the movement of healthful food items in client-choice food pantries (Rivera et al., 2016; Wilson et al., 2016). The interventions nudged clients to select targeted items through the use of product placement and/or promotion using

shelf labels and posters (Rivera et al., 2016; Wilson et al., 2016). They measured the movement of these items before and after the nudge interventions were in place (Rivera et al., 2016; Wilson et al., 2016). Results showed that more pantry users selected the targeted items after the nudges were introduced (Rivera et al., 2016; Wilson et al., 2016). Researchers concluded that certain nudges do increase the likelihood that individuals will select the targeted item in food pantries (Rivera et al., 2016; Wilson et al., 2016). However, since food pantries primarily serve food insecure Americans, it is important to confirm that these nudge interventions are not exacerbating food insecurity by nudging food pantry users to select items they will not consume at home. To date, no study has surveyed pantry clients to determine if they are not only selecting the nudged items, but also consuming the foods at home.

Supplemental Nutrition Assistance Program-Education (SNAP-Ed)

Many public health agencies aim to improve the health outcomes of low-income Americans including SNAP-Ed. SNAP-Ed provides nutrition services to adults and youth eligible to receive SNAP benefits. The goal of SNAP-Ed is to increase the likelihood that low-income Americans will make healthy food and lifestyle choices (USDA, 2017). SNAP-Ed implements multi-level strategies to improve both participants' knowledge and skills necessary to make healthy lifestyle choices, as well as improves access to nutritious foods and physical activity opportunities (USDA, 2017). SNAP-Ed is funded through the federal government and is implemented in every state in the nation (USDA, 2017). In Utah, the SNAP-Ed program, Food $ense, is delivered through the Utah State University Extension system. Individual knowledge and skills are enhanced through direct nutrition education and cooking classes that teach participants how to implement the Dietary

Guidelines for Americans and My Plate recommendations. In addition to direct education, Utah's SNAP-Ed program also implements several policy, systems and environmental (PSE) strategies that aim to make the healthy choice the easy choice in a variety of settings (USDA, 2017). One target setting for Utah's PSE work is food pantries, where many SNAP-Ed eligible participants receive assistance. One PSE strategy implemented in food pantries is the Thumbs Up for Healthy Choices nudge program, which increases the visibility and appeal of healthy foods within the pantry. Since SNAP-Ed requires that all program components be evidence based, new programs, such as the Thumbs Up program, must be evaluated to assess its impact and effectiveness (USDA, 2017). Once determined to be an effective program, interventions can then be submitted to the national SNAP-Ed toolkit. The SNAP-Ed toolkit includes approved strategies that can be adopted by SNAP-Ed programs throughout the country.

Study objectives and hypotheses

The objectives and hypotheses of this study include:

1. To examine if the use of nudge strategies increases the selection of targeted healthy foods by pantry users in six urban Utah food pantries. It is hypothesized that identifying healthy food items with shelf labels will increase the selection of these items by pantry users and that the likelihood of participants reporting they selected these items will increase the longer they have been exposed to the program. These hypotheses were tested by directly surveying clients about their selection of nudged healthy items.
2. To examine if nudge strategies that promote healthy foods improves the dietary quality of food pantry users. It is hypothesized that choosing more healthful foods

will improve the diet quality of food pantry users and that the impact of the Thumbs Up program on healthy food consumption will improve with increasing exposure to the program. These hypotheses were assessed by directly surveying pantry clients about their exposure to the program and use of Thumbs Up items at home.

3. To identify the level of interest in a variety of strategies that promote client nutrition among food pantry users not familiar with the Thumbs Up nudge program in place. It is hypothesized that pantry users do value access to healthy foods in food pantries. This hypothesis was tested by surveying food pantry users.

Study rationale and significance

The significance of this study includes:

- This study adds to the small body of literature regarding the impact of nudges in food pantry settings on client selection of healthy food items.
- This study is the first to determine the impact of the nudges on reported use and intake of the selected items by food pantry clients.
- This study is the first to survey food pantry clients on strategies they feel will be helpful in making healthy choices more visible and appealing in a pantry setting.

Literature Review

Diet quality and health among food pantry clients

Over 46.5 million Americans utilize food pantry services each year. This group is comprised of a diverse range of ages, ethnicities, races, employment statuses and educational backgrounds (Weinfeld et al., 2014). Eighty-four percent of the individuals surveyed measured as food insecure, which is associated with an increased risk of obesity and related chronic diseases (Laraia, 2013; Weinfeld, et al., 2014). Food insecure Americans often report having limited funds to purchase nutritious foods associated with improved health outcomes (Robaina & Martin, 2013). These individuals frequently rely on food banks and pantries for access to healthy foods, yet the quality and quantity of such foods varies greatly among locations (Akobundo et al., 2004; Handforth, Hennink, & Schwartz, 2013; Robaina & Martin, 2013; Simmet et al., 2017a). A study conducted in Massachusetts analyzed the contents of 133 food pantry bags from 19 pantries. Based on Daily Values (DVs) and Recommended Dietary Allowances (RDA) the bags were determined to supply adequate amounts of protein, iron and folate yet were deficient in calcium, vitamins A and C (Akobundo et al., 2004). The majority of food servings came from fats, oils and sweets, with the fewest number of servings from the fruit, vegetable and dairy groups (Akobundo et al., 2004). More recently, a meta-analysis of nine articles published between 1980-2015 about the nutritional quality of food bags provided by pantries also found that the majority of bags supplied inadequate amounts of vitamins A, C and calcium (Simmet et al., 2017a). In general, bags were also limited in the amount of milk products, such as cheese, liquid milk and yogurt (Simmet et al., 2017a). The articles included in the meta-analysis focused on pre-packaged bags from traditional food

pantries, and therefore did not include analysis of foods available in client-choice pantries. The authors concluded that pantry offerings were often inadequate to support a balanced diet increasing the risk for malnutrition among vulnerable, low-income populations. The authors recommended that pantries consider adopting policy changes that would help them offer a wider variety of fresh fruits, vegetables and dairy products (Simmet et al., 2017a). The findings from these articles suggest that both a lack of access to and a limited selection of nutritious foods impact the diet quality of food pantry clients. Nutrition interventions that address both issues are necessary to improve the nutritional quality of food pantry clients' diets.

Due to the poor dietary quality often associated with food insecurity, food pantry users are at an increased risk of experiencing multiple long-term health problems including, but not limited to obesity, high blood pressure and type II diabetes mellitus (Seligman et al., 2010; Simmet, Depa, Tinnemann, & Stroebele-Benschop, 2017b). Among weekly food pantry clients in Hartford, Connecticut, having low or very low food security was correlated with an inadequate intake of fruits, vegetables and fiber when compared to more food-secure pantry clients (Robaina & Martin, 2013). The mean body mass index (BMI) score of this study's participants was 29.5, which is above the healthy BMI range of 18.5-24.9 and associated with increased risk of some chronic diseases (Robaina & Martin, 2013). Sixty-seven percent of participants reported having high blood pressure and 26% reported having at least one diabetic member of their household. These findings are similar to that of the 2014 Hunger in America report, which reported 58% of households surveyed had a member with high blood pressure and 33% had a member with diabetes (Weinfeld et al., 2014). Another study conducted in Eastern

Alabama also found compromised nutritional status among female food pantry users (Duffy, Zizza, Jacoby, & Taylie, 2009). Researchers administered a 24-hour diet recall to determine participants' healthy eating index (HEI) score (Duffy et al., 2009). HEI scores identify how closely an individual's intake resembles the Dietary Guidelines for Americans (DGA) (Guenther, Reedy, & Krebs-Smith, 2005). The HEI scale is 0-100, with 100 representing compliance with all the recommendations made in the DGA (Guenther et al., 2005). Researchers reported that the majority of respondents had poor diet quality, with only 29% of respondents scoring an HEI greater than 50 (Duffy et al., 2009). The food groups most lacking included fruit, whole grains, dark green or orange vegetables and legumes (Duffy et al., 2009). While the researchers did recognize the limitations placed on the findings by the small sample size and analysis of only a single 24-hour food recall, they did conclude that, in addition to the poor diet quality, food pantry use by participants was associated with high rates of obesity and self-reported food insecurity (Duffy et al., 2009). These consistent findings of poor nutritional status and related health outcomes of food pantry users support the importance of implementing interventions that improve access to foods such as fruits, vegetables, low-fat dairy products and whole grains in food pantries. These types of foods have the potential to help reduce pantry users' risk of these often preventable diseases (Sacks et al., 2001; Simmet et al., 2017b).

Obesity, high blood pressure and diabetes are among the most prevalent chronic diseases among adults in the United States (Centers for Disease Control and Prevention [CDC], 2016). Fortunately, improved dietary patterns can directly impact the likelihood, duration and magnitude of each of these diseases (Sacks et al., 2001). Food-secure

individuals wanting to make dietary improvements can often go to the grocery store to buy more foods recommended by the Dietary Guidelines for Americans. However, this is not the case for many food-insecure Americans who have limited resources to implement these changes, making it more difficult to change their health trajectory. Low-income Americans face many barriers to making healthy food decisions, including lack of time, limited access to and cost of nutritious foods and lower confidence in their cooking abilities (Aggarwal, Monsivias, Cook, & Drewnowski, 2011). Despite having concerns about their nutritional value, food pantry focus group participants in Washington State commonly reported preparing inexpensive, highly processed, convenient foods for their families because they are quick to prepare and are highly palatable (Hoisington, Shultz, & Butkus, 2002). Hoisington et al. (2002) also reported that food pantry clients find it difficult to focus on nutrition when their family is hungry. Study participants expressed concerns about the nutritional value of the foods they serve their children and reported wanting to serve their families healthier items (Hoisington et al., 2002). Nutrition education that improves the self-efficacy of low-income families to stretch their food dollar and make healthy foods that taste good were reported by participants as having the potential to change their food preparation habits and, potentially, the health and wellness of their families (Hoisington et al., 2002). Additionally, the researchers concluded that changes to food environments, including food pantries, that improve the availability of healthy foods may also be helpful to improve their health outcomes (Hoisington et al., 2002).

Participants in a similar study, which also used focus groups to assess the needs of a diverse group food pantry users, expressed a desire to receive more seasonal fresh fruits

and a greater variety of fresh vegetables, dairy products and meat (Verpy, Smith, & Reicks, 2003). These participants also reported an interest in having access to low sodium and low added sugar products, specifically for pantry users that have health conditions such as hypertension and diabetes (Verpy et al., 2003). Furthermore, a Connecticut-based study concluded that food pantries do, in fact, hold the potential to change the health outcomes of its users by improving diet quality (Martin et al., 2013). A food pantry program, Freshplace, aims to improve diet quality and food security by offering clients a variety of healthy food options, as well as other services that focus on improving food security (Martin et al., 2013). Freshplace pantries offer fresh, whole foods including fruits and vegetables and limits items that are high in sodium, fat and sugar (Martin, Shuckerow, O'Rourke, & Schmitz, 2012). One study compared the intake of fruits and vegetables (FV) between clients using Freshplace pantries and a control group that utilized a traditional pantry using the Block Food Frequency Screener (Martin et al., 2012). Researchers found a significant increase in fruit and vegetable (FV) consumption among Freshplace clients that was sustained over the study period of eighteen months while a decreased FV intake was found in the control group (Martin et al., 2013). These results led researchers to conclude that food pantries are an appropriate setting to positively influence the diet quality of low-income individuals.

These studies all suggest that there is not just a need but also a desire for improved offerings of nutritious foods in pantries. Additionally, pilot programs, such as Freshplace, suggest that it is plausible to improve dietary quality through improved offerings in pantries (Martin et al., 2013). These findings build a foundation of evidence

that supports the continued development, implementation and evaluation of programs that aim to make the healthy choice the easy choice in food pantries.

The role of nudges in obesity prevention

Identifying effective obesity prevention strategies is a focus of many professionals in the public health nutrition sector. Historically, obesity prevention strategies were primarily based on direct nutrition education guided by the assumption that if people had greater knowledge about the importance of making healthy food and lifestyle choices they would change behaviors accordingly (Schmitz & Jeffery, 2000; Story, Kaphingst, Robinson-O'Brien, & Glanz, 2008). Over the past several years, however, it has been emphasized that knowledge is only one of many factors that needs to be influenced in order to initiate and sustain healthy behavior change in most individuals (Gittelsohn & Lee, 2012; Story et al., 2008). It is becoming more common for nutrition programs to take a comprehensive approach to obesity prevention and incorporate both educational and environmental changes that support healthy lifestyles (Baranowski, Cullen, Nicklas, Thompson, & Baranowski, 2003; Gittelsohn & Lee, 2012; Story et al., 2008). Educational components often include information shared with consumers by nutrition professionals about how to identify, select and use healthy food choices. Environmental changes include alterations to the physical setting of a store, food pantry or restaurant that increase the availability and/or visibility of healthy foods. One environmental change strategy that has received increased attention is the use of nudges. Nudges are defined as changes to the choice environment that alter an individual's behavior and/or decision (Thaler & Sunstein, 2009). However, nudges do not reduce the options available to the individual (Thaler & Sunstein, 2009). In regard to healthy food choices, nudges are

strategies that increase the visibility and appeal of healthy options in an attempt to motivate people to make those choices. As mentioned, a key tenet of nudges as a dietary intervention is that they do not limit the amount and variety of options available (Gittelsohn & Lee, 2013). This tenet makes the use of nudges appealing to retailers and emergency food site managers who may have concerns about limiting the variety offered to their patrons (Gittelsohn & Lee, 2013).

Nudges that are commonly used as part of nutrition interventions include product promotion, placement and price (Gittelsohn & Lee, 2013; Guthrie, 2017). There have been several studies where these nudges have shown to effectively change food purchasing behaviors in various settings (Arno & Thomas, 2016; Gittlesohn & Lee, 2013; Guthrie, 2017; Jilcott-Pitts et al., 2016; Kroese, Marchiori, & de Ridder, 2015). These nudges are often used as part of a more complex intervention that includes direct nutrition education, such as information booths or recipe samplings, as well as environmental strategies such as an increase in the number of healthy options available. While this multi-component style of intervention makes it difficult to identify the specific impact of the nudges, some studies do have evidence that nudges resulted in greater selection of targeted items. The Baltimore Healthy Stores program, implemented by the Johns Hopkins Bloomberg School of Public Health, used shelf labels to identify healthy foods on the shelves, as well as educational displays and posters to motivate consumers to purchase healthier items in corner stores in two low-income areas in Maryland (Gittelsohn et al., 2010). These components were part of a larger intervention that involved improved access to healthy foods, and interactive educational sessions promoting the foods. Healthy options for this intervention were defined as items low in

fat and sugar and high in fiber. Overall, exposure to the intervention was positively associated with improved healthy food intentions. For example, participants that were the most exposed to the program components reported intent to select, prepare and eat more nutritious foods when compared to their baseline scores ($p<.001$). Participants in the intervention group, as compared to the comparison group, reported a significant improvement in healthy cooking methods used ($p=.046$). Conversely, the intervention was not associated with significant changes in healthy food knowledge ($p=.12$) or label reading ($p=.46$). Participants also did not report a change in their self-efficacy regarding healthy eating ($p=.57$). In other words, they did not feel more confident in their ability to eat more healthfully. While these improvements in health intentions and behaviors cannot be attributed to nudges, the study participants also specifically reported that the shelf labels identifying healthy options did increase their purchase of the targeted items ($p=.02$) (Gittelsohn et al., 2010). Multi-level interventions like the Baltimore Healthy Stores program may be effective to change consumers' habits. Additionally, the use of shelf labels should be considered as a low-cost tool to influence consumers' purchasing habits (Gittelsohn et al., 2010).

The Navajo Healthy Stores intervention found a similar positive improvement on consumers' healthy food intentions ($p\leq0.01$), food preparation methods ($p\leq0.05$) and purchase of healthy foods that were promoted using shelf signs ($p\leq0.01$). These findings were identified among participants who had the highest level of exposure to the program. A significant reduction in body mass index (BMI) was also associated with this group of participants ($p\leq0.01$) (Gittelsohn, Kim, He, & Pardilla, 2013). Significant changes were not found between any exposure groups' scores of healthy food knowledge, nutrition

label reading, healthy food self-efficacy, cooking methods or unhealthy food getting (Gittelsohn et al., 2013). Similar to the Baltimore Healthy Stores, this program included educational booths that offered cooking demonstrations, nutrition information and recipe samples as well as shelf labels that identified healthy options (Gittelsohn et al., 2013). Also, similar to previous studies, the improved changes reported by consumers that were exposed to the program components most frequently suggests that exposure matters (Gittelsohn et al., 2013). These types of interventions should not be a one-time event. Returning to the stores to educate consumers multiple times will likely have the most impact.

Some of the findings of the Baltimore and Navajo Healthy Stores studies were consistent with the results of a national consumer survey conducted in 2010. The survey aimed to identify effective ways in which food retailers could promote the selection of healthy food by consumers. The results found that 66% of respondents reported interest in strategies that help them make healthier selections beyond just offering more nutritious options. Some of the strategies that participants identified as the most helpful included shelf tags labeling healthy items and product and recipe sampling (Catalina Marketing, 2010). These studies suggest that when the healthy choice becomes an easier choice, consumers are more likely to make healthier selections.

While these studies show that nudges, when used in conjunction with direct nutrition education, can positively influence an individuals' shopping behaviors, there are fewer studies that evaluate the effectiveness of nudge programs alone (Kroese et al., 2015). One study that examined the sole use of nudges to encourage healthier food purchases comes from an experiment conducted at a train station in the Netherlands.

Researchers placed healthier options in a more prominent location at the snack stands within the train station (Kroese et al., 2015). The sale of the nudged items over one week indicated that the snack stand that utilized the placement nudge sold significantly more of the nudged snack item than the control stands ($p=0.02$) (Kroese et al., 2015). This increase in the sale of the nudged items spanned both weekdays and weekends, suggesting that its impact was not related to the type of customer at the train station (Kroese et al., 2015). Unlike many other interventions, this study did not include any other educational or environmental changes. This study suggests that placing healthier options in a convenient and visible place may be an impactful, low-cost strategy to increase the selection of healthy items in certain environments (Kroese et al., 2015).

The impact of nudges in food pantry settings

While the use of nudges in traditional food retail settings such as supermarkets and smaller convenience stores is not a new practice, these strategies are only beginning to be implemented in emergency food sites such as food banks and food pantries. Nudges help pantry managers ensure they are providing their clients with a variety of options while also giving them the opportunity to make selections that will support their health (Wilson et al., 2016). With the nature of most pantries being non-profit organizations run largely by volunteers, it is essential that any proposed dietary intervention be both low in cost and time required for implementation. Many types of nudges fit both of these criteria making it unsurprising that their use in pantries is gaining recognition.

To date, Cornell University and Feeding America have lead the evaluation of nudge strategies in food pantries. One study examined the impact of two nudges, product placement and packaging, on the selection of protein and granola bars in a client-choice

food pantry (Wilson et al., 2016). Researchers found that the strategic placement of the product at the beginning of the aisle significantly increased the selection of these items when compared to selection of the item without the placement nudge ($p<.05$) (Wilson et al., 2016). Similarly, when these products were kept in their original packaging rather than removed from the box to be distributed individually, clients were more likely to select them ($p<.01$) (Wilson et al., 2016). Additionally, when the interventions were combined, there was a significant increase in the selection of the packaged products placed at the front of the aisle ($p<.001$) (Wilson et al., 2016). The researchers suggest that the placement of the healthier options at the beginning of the line makes the healthy choice easier to make. It is also mentioned that keeping products in their original packaging reduces the stigma often associated with receiving food from the food pantry. Overall, these low input interventions may improve the selection of nudged items among food pantry clients. Additionally, the ease of implementation make the use of nudges viable for a wide variety of food pantry settings (Wilson et al., 2016).

Feeding America conducted eight additional nudge experiments in food pantry settings. While the findings of these experiments are not peer-reviewed, they do provide some of the first and only supporting evidence for the use of nudges specifically in food pantries. The experiments found that some nudges are more impactful than others. Impact of the nudges was determined by identifying the rate of selection of the targeted item before and after the nudge intervention (Rivera et al., 2016). Some of the most impactful nudges included priming signage and shelf labels at the point of selection (Rivera et al., 2016). The use of shelf labels, which included an appealing image of the promoted food as well as a nutritional benefit associated with the product, had the strongest impact on

product selection (Rivera et al., 2016). Just this nudge alone increased the amount of the product distributed by 146% with clients being three times as likely to take the product than prior to the shelf label nudge (Rivera et al., 2016). Priming signage, which included posters promoting a product at a location within the pantry where people spend time waiting, also had a positive impact on the selection of the item (Rivera et al., 2016). This priming nudge increased the selection of the product by 28% (Rivera et al., 2016). Multiple exposure to a product also increased the likelihood of selection by a significant amount. Multiple exposure refers to the placement of the promoted item at several points throughout the distribution area (Rivera et al., 2016). This nudge was used to promote whole wheat bread and increased the likelihood that a client would take the product by 90% and resulted in an increase in the distribution of the product by 160% (Rivera et al., 2016). As mentioned, some nudges did not have a significant impact on clients' selection of the item. These strategies included posters that were placed in close proximity to the product they were nudging. The posters featured an appetizing application of the item, in this case onions. However, the research team concluded that most pantry users (85%) already selected onions before the nudge posters were added, suggesting limited room for improvement. Product order also did not have a large impact on selection (Rivera et al., 2016). In the experiment, carrots were placed first in the produce section of the pantry. This placement actually resulted in a 40% decrease in the number of carrots taken. However, the research team noted that the original intent of the order nudge was to place the product at the very beginning of the food pantry. But due to space constraints, they could only place it at the beginning of the produce section. For this reason, the researchers concluded that further experiments about the order nudge should be

conducted (Rivera et al., 2016). Overall, the researchers suggested nudges should be considered as a new style of nutrition program in food pantries. Based on their results, they concluded that many types of nudges have the potential to improve diet quality and subsequent health outcomes for food insecure individuals using food pantries (Rivera et al., 2016).

While limited research has been published regarding the use of nudges in food pantries, the evidence that is available consistently supports the use of certain nudges to encourage food pantry clients to choose healthier foods. Additionally, nudges are relatively simple strategies to implement, making them a plausible addition to food pantry interventions that aim to improve client nutrition.

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CHAPTER 2

UTAH URBAN FOOD PANTRY USERS' INTEREST IN MAKING HEALTHIER FOOD CHOICES

ABSTRACT

Objective: To determine whether urban food pantries users in Utah are interested in making healthy food choices at pantries, as well as identify common barriers to making healthy choices.

Methods: Clients in six urban food pantries in Utah (n=235) were surveyed about their level of interest in programs that improve healthy food access. Chi-square tests were used to determine associations between demographic characteristics and responses.

Results: The majority of food pantry users surveyed agreed or strongly agreed that making healthy choices in the pantry is important to them. The most common reported barriers included lack of availability of healthy foods, as well as limited time to compare products.

Conclusions and Implications: Nutrition interventions that improve the availability of healthy food choices in urban Utah pantries would be valued by pantry clients. Successful interventions that increase the availability and visibility of healthy foods in pantries may improve dietary quality of this vulnerable, food-insecure population.

INTRODUCTION

Food insecurity is defined by United States Department of Agriculture (USDA) as inadequate access to sufficient amounts of a food that allow for an active and healthy lifestyle.[1] Food insecurity is a persistent problem in America and exists in every county

of the nation.[2] While there are three major federal food programs that aim to reduce food insecurity and hunger in the United States, including the Supplemental Nutrition Assistance Program (SNAP), Special Supplemental Nutrition Program for Women, Infants and Children (WIC), and the National School Lunch/Breakfast Program, 41.2 million Americans, including 6.5 million children, still struggle with hunger.[1] In these instances, many turn to local emergency food sites, including food pantries, food banks and soup kitchens to ensure they have enough food to last the month.[2] Historically, emergency food sites supplied food for short periods during dire times.[2,3] However, many pantries have noticed a shift in their role as temporary food suppliers toward a longer-term strategy to fight food insecurity.[2,3] This longer-term reliance on pantries to fight food insecurity increases the importance of interventions that improve the availability, appeal and visibility of healthful foods for pantry clients.

This need for healthy foods at emergency food sites is further heightened by the poor diet quality of many low-income, food-insecure Americans.[4-9] This poor diet quality contributes to an increased risk of obesity and related chronic diseases such as type II diabetes mellitus, heart disease and certain cancers.[10-12] Several studies have found that adult food pantry users, specifically, are at a high risk for these malnutrition related health outcomes.[6,9,13,14] Furthermore, children who experience food insecurity during developmental years are at an increased risk for worse academic performance, higher body mass index (BMI) and poorer emotional development when compared to food secure counterparts.[9,15] Since many low-income Americans are turning to food pantries more frequently, these health disparities could potentially be reduced by offering a wider variety of nutritious foods in emergency food sites. While the availability of healthful

foods varies greatly among pantries, many pantries offer inadequate amounts of nutritious foods.[5,16] In response to this need, nutrition programs such as the Supplemental Nutrition Assistance Program-Education (SNAP-Ed) have begun exploring and implementing multi-level interventions that aim to make the healthy choice the easy choice in pantry settings.[17]

However, while this need for interventions is accepted by many public health professionals and agencies, few studies have looked at the desire for these types of programs among food pantry clients themselves. Thus, the objective of this study was to assess the desire for healthy foods in pantry settings, barriers to making healthy selections and program components of interest among Utah's urban food pantry clients.

METHODS

Study Design

The researchers surveyed clients of six urban food pantries in Utah to assess if food pantry users were interested in making healthy choices within a pantry setting. Survey respondents were also asked about common barriers to making healthy choices, as well as the types of program components they felt would be the most valuable. The protocol for this study was approved by the Utah State University Institutional Review Board (IRB). The study was funded through a Utah State University Extension grant awarded in April 2017.

A convenience sample of six food pantries in Utah were selected for this study. Inclusion criteria for the food pantries included being located in an urban setting and having an established partnership with Utah's SNAP-Ed program for at least four months. Urban pantries are defined as those located in an area with more than 50,000

residents.[18] The partnering requirement was due to the researchers concurrently evaluating a SNAP-Ed intervention, the Thumbs Up for Healthy Choices nudge program, implemented at the pantry. Food pantries were offered an incentive valued around $250 for allowing researchers to survey their clients. In order to maximize research resources, the number of visits to each pantry was determined by the number of potential survey respondents. Pantries were visited 2-4 times for data collection.

Survey respondents were required to be 18 years of age or older. Potential participants were approached by researchers directly in the food pantry where they received services. Data collection was conducted in pantry waiting areas as clients waited to enter the pantry. Researchers approached all clients in waiting areas. Potential participants were given a letter of information for review. Letters of information were available in both English and Spanish, the predominant languages of Utah.[19] Once reviewed, researchers obtained participant consent to participate in the survey. Clients who agreed to participate could fill out either a paper or electronic survey. Electronic surveys were available on tablets via a Qualtrics platform. Respondents were offered an incentive, valued around $10.00, for their participation. Incentives included either a cookbook or small kitchen tool. No identifying information such as name or address was collected from participants.

Data and Instrumentation

The survey used in the study contained two tracts of questions. One tract was for survey respondents who were familiar with the SNAP-Ed nudge program logo and the other was for clients unfamiliar with the program. Both tracts included seven questions that were answered by all respondents. These questions included demographics,

frequency of food pantry use and the recognition of the logo used by the SNAP-Ed nudge program, Thumbs Up for Healthy Choices. One question asked about prior participation in the survey. One question asked respondents to rate the importance of making healthy choices within the pantry on a 5-point Likert scale. The survey was developed by a graduate student in the Nutrition, Dietetics and Food Science Department and reviewed by faculty at Utah State University.

Participants who did not recognize the nudge program logo were directed to a set of four questions. The questions included level of interest in programs that make healthy choices easier, which participants answered using a 5-point Likert scale. Participants were also asked to identify barriers they experienced to making healthy choices in the pantry. Six barrier options were presented including limited availability, no time to compare products, unsure how to identify healthy foods, uncertain how to prepare healthy foods, do not like healthy foods and not interested in making healthy choices. They were able to select more than one, as well as manually enter any barriers not listed. Finally, they were asked about specific types of program components they felt would be the most valuable to make it easier to make healthy choices. Program components listed included strategies that the SNAP-Ed program could implement. Options participants could choose from included shelf signs/labels, posters, recipe cards, nutrition classes and recipe samples. Again, respondents could select more than one option and manually enter program components not listed. Findings from this set of questions is the main focus of this chapter. The results and analysis of the tract of questions for participants familiar with the nudge program logo are discussed in Chapter 3.

Data Analysis

Results of the paper surveys were entered into an Excel spreadsheet. Results from the electronic surveys were exported as an Excel file and compiled with paper survey results. All data was then imported into SPSS 25.0 for analysis (version 25.0, Inc, Chicago, IL, 2017).

Frequencies of responses were identified and used for program development and improvement. Chi-square associations were used to identify associations between a variety of categorical variables including demographic characteristics of gender, age, ethnicity and race, frequency of pantry use and responses to the questions of program interest, barriers to making healthy choices and valuable program components.

RESULTS

Two hundred thirty-five unique survey respondents reported not being familiar with the SNAP-Ed nudge program logo. Missing data were dispersed randomly throughout the survey. The most consistently skipped question was the demographic question regarding race. Twenty percent of survey respondents did not respond to this question. The majority of survey respondents were non-Hispanic females with ages distributed evenly from 25 years old to 55 or older (Table 1). Eighteen to twenty-four years old was the age range least represented. Ninety-three percent of respondents agreed or strongly agreed that making healthy choices at the food pantry was important to them. Age and ethnicity did not significantly impact response to this question ($p=.55$, $p=.23$). However, there was an association between gender and the importance of making healthy choices in a food pantry ($p=.002$). Females were more likely to agree or strongly agree with the statement than males. Seventy-eight percent of respondents also agreed or

strongly agreed that they were interested in seeing programs that make selecting healthy foods easier in the food pantry. Age and gender were not associated with response to this question. However, ethnicity was significantly associated with the response (p=.025). Hispanic respondents showed more interest in these types of programs than non-Hispanics.

Respondents were also asked to choose common barriers that prevented them from making healthy choices at the pantry (Figure 1). The most commonly reported barrier was lack of healthy choices available, followed closely by not having time to compare foods. Unsure how to identify and prepare healthy foods were also selected as common barriers. The least commonly chosen barriers were not liking to eat healthy foods, and lack of interest in making healthy choices. The most commonly added barrier (15%) included comments about healthy options being available but being partially spoiled or outdated by the time the pantry client received it. There were no significant associations found between gender or ethnicity and experienced barriers. However, there was a significant association between age group and not having time to compare foods (p=.014). Age did not significantly affect response to the other barriers. No significant associations were found between frequency of pantry use and reported barriers.

Finally, respondents were asked to choose what types of program components they felt would be helpful in making the healthy choice the easy choice in a food pantry (Table 2). The most commonly selected component was shelf signs and the least commonly selected component was recipe samples. There was not a significant association between ethnicity and program components of interest. Sample sizes of race groups were too small to identify significant associations. However, age did have a

significant association with the program components of shelf signs/labels (p=.041) as well as nutrition and cooking classes (p=.007). The youngest age group, 18-24, was the least likely to select shelf signs as a useful intervention. Interest in nutrition classes decreased as age increased, with the age group of 55 and older being the least interested in having access to nutrition classes.

DISCUSSION

Multiple studies regarding promoting client nutrition in food pantries have advocated for interventions that improve availability of healthful foods, yet few have reported input from food pantry users themselves.[5,16,20] The findings of this study suggest that food pantry clients, especially female clients in Utah, highly value access to healthy foods in pantry settings. This reported value spanned across ethnicities and age groups. Similarly, the vast majority of respondents, especially Hispanic respondents, expressed interest in programs that make healthy choices easier to make. These consistently reported values of healthy foods and interest in such programs suggest that interventions that improve visibility and access to healthy foods would be well received at many Utah pantries regardless of the specific demographic characteristics of clients. Identifying and reporting food pantry clients' interest in these types of programs could further justify the development and funding of effective programs aimed at improving access and appeal of healthy foods at emergency food sites. This is helpful information for programs such as SNAP-Ed that often develop a base program that can be tailored to a variety of locations.

The findings of this study also identified the most commonly experienced barriers and program components of interest among food pantry users in urban Utah. Some of the most commonly reported barriers were environmental factors, such as limited access to

healthy foods and not enough time within the pantry to compare products. Others included individual characteristics such as the skills necessary to identify and prepare healthy foods. In order to help pantry clients overcome barriers at both the individual and environmental level, multi-level interventions would likely be the most effective.[21-24] Multi-level interventions, following the socio-ecological model, may be more effective at helping pantry users overcome these barriers.[21-24] Availability of healthful foods could be addressed through a variety of strategies. Food pantries often receive the majority of their food from central distribution centers such as large food banks and individual donations.[25] Pantries could work with community partners to conduct healthy food drives to request the donation of specific, nutritious items. In addition to community based healthy food drives, policy changes that address the donation of foods from central suppliers such as food banks or corporate donors hold the potential to significantly improve the nutritional quality of items available to pantry clients. As healthy options in the pantry become more available, nudge strategies such as product placement and promotion should be implemented to increase the visibility of these items. This study suggests that the use of shelf labels that help pantry clients quickly identify healthy foods and recipe cards educating clients on how to utilize the products may be effective. Nutrition educators could also provide education directly in the pantry. Education that is specific to the needs of food pantry clients should be identified and offered. Other studies that assessed interest in nutrition education among pantry users identified topics such as stretching food dollars, making low-cost meals that taste good and health and nutrition as being of the most interest to pantry clients.[26] These types of multi-level approaches have shown promise to improve the selection of healthy items by consumers in a variety of

retail settings.[22,27-29] Similar outcomes may also be experienced in client-choice food pantries.

Several previous studies have evaluated the nutritional quality of items available in different settings as well as the health disparities experienced by pantry users. [9,14,16] However, to the authors' knowledge, few studies have surveyed pantry users about the importance of healthy food access and barriers to making healthy choices in the pantry. These findings can help direct the development and implementation of strategies that help food pantry clients overcome these barriers by utilizing respondents' input on the most effective program components. Another strength of this study is its recognition of the importance of using multi-level interventions that affect both the environment and the individual characteristics of people being reached. Improving the food environment is equally as important as improving the knowledge and self-efficacy of individuals. The use of these types of interventions are gaining the interest of national nutrition programs including SNAP-Ed. This study helps justify the use of resources to implement and evaluate these types of interventions in pantry settings.

In addition to the strengths of the study, there were also limitations. Although respondents of the survey reported valuing access to healthy foods in food pantry settings, the term healthy was not explicitly defined. Future studies should further evaluate exactly what food pantry users define as healthy since it may have different connotations to different demographic groups.[25] While respondents reported that shelf labels would be the most effective program component, they were surveyed in a pantry that had the SNAP-Ed Thumbs Up program, which utilizes large shelf labels, in place for at least four months. However, participants were not asked how long they had used the

specific pantry services. Lack of familiarity could have been related to being new to the pantry, or it could suggest that shelf labels are not visible enough to be noticed by all clients and should be accompanied by larger marketing pieces such as posters and banners. Another limitation is the large proportion (20%) of survey respondents that did not complete the question regarding race. Ninety-eight percent of respondents that did not select a race selected Hispanic as their ethnicity. This low response rate resulted in sample sizes that were too small to rigorously evaluate the impact of race on survey responses. In 2015, the Census Bureau reported possible confusion among Hispanic individuals who do not identify with any of the listed races resulting in high rates of no response to questions regarding race when ethnicity questions are also asked.[30] For the 2020 census, alterations to demographic questions may be made. Future studies should utilize the recommendations from the Census Bureau to reduce respondent confusion regarding race and ethnicity. A final limitation of the study was participant confusion in the design of the paper survey. Depending on how participants responded to the question regarding recognition of the SNAP-Ed program logo, they were directed to complete a specific set of questions. Some respondents completed the entire survey. A possible solution would be the sole use of electronic surveys which directed respondents to the appropriate set of questions.

IMPLICATIONS FOR RESEARCH AND PRACTICE

It is important that nutrition programs such as SNAP-Ed utilize evidence-based programming to serve their target populations.[17] This study supports the need for interventions that improve access and visibility of healthy choices in food pantries by determining that pantry users in Utah do value healthy food access and are interested in

programs that make the healthy choice the easy choice. It also identifies common barriers that should be considered when designing pantry strategies. The findings could also be used as support to drive policy changes that improve the nutritional quality of foods donated to pantries through a variety of sources.

This study provides a foundation for moving forward with the development of pantry-based healthy food access programs, but future research should be conducted to evaluate specific programs. Program evaluations should focus not only on the rate of selection of healthy foods from the pantry but also consumption of those products at home. Furthermore, as programs that improve the diet quality of food pantry users are identified, longitudinal studies that evaluate health outcomes would be valuable.

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Table 1. Demographic Characteristics of Survey Respondents (n=**235)**		
Gender	**No. of Respondents**	**Percent of Total**
Female	144	61%
Male	91	39%
Age, years		
18-24	9	4%
25-34	54	23%
35-44	56	24%
45-54	52	22%
55 or older	59	25%
No response	5	2%
Race		
American Indian/Alaskan native	8	3%
Asian	3	1%
Black	7	3%
Native Hawaiian/Pacific Islander	5	2%
White	182	77%
No response	30	13%
Ethnicity		
Hispanic	65	28%
Non-Hispanic	159	68%
No response	11	5%

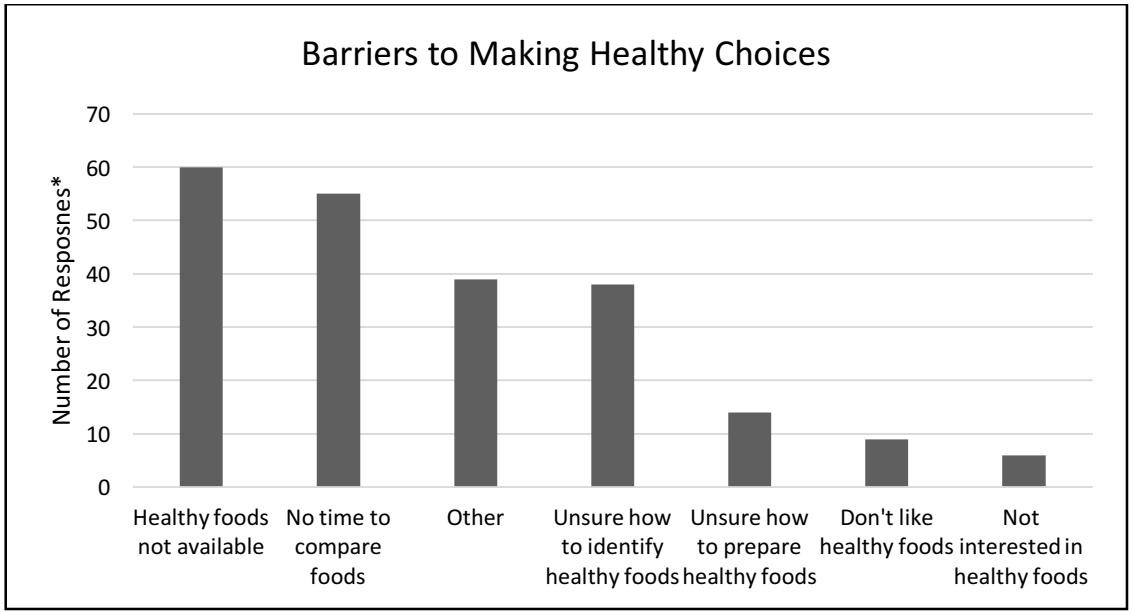

Figure 1. Reported barriers to making healthy choices in food pantries (n=235). *Survey respondents could choose among six barriers to making healthy choices, or could add barriers not included in initial list.

Program Components of Interest (n=235)		
Component	**No. of Respondents**	**% of Total**
Shelf signs/labels	160	41%
Recipe Cards	68	18%
Posters	65	17%
Nutrition/cooking classes	55	14%
Recipe samples	40	10%

Table 2. Program components of interest (n=234). Survey respondents were asked what type of program components they felt would be most valuable in helping make healthier choices easier to make in food pantries. Respondents could select from a list of five components, or add other suggestions. *Respondents could select more than one component; total is greater than sample size.

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CHAPTER 3

NUDGING URBAN FOOD PANTRY USERS IN UTAH TOWARD HEALTHIER CHOICES

ABSTRACT

Objective: To evaluate the impact of a nudge program on food pantry clients' selection and use of healthy foods.

Methods: Clients of six urban food pantries in Utah were surveyed about their experience with the Thumbs Up for Healthy Choices nudge program. Chi-square tests were used to identify associations between demographic characteristics and program impact. Logistic regression was conducted to determine the role of variables in predicting responses to impact questions.

Results: Eighty-five percent of respondents agree that the nudge program made it easier to make healthy choices. Sixty-five percent reported a healthier diet since the program's implementation. Exposure was associated with increased selection of targeted foods ($p=.002$), use of foods ($p<.001$) and recipes at home ($p<.001$).

Conclusions and Implications: Nudge programs are effective at increasing the selection of healthy foods among pantry clients in Utah. Nutrition education programs should consider implementing these low-cost strategies to improve dietary quality of food pantry users.

INTRODUCTION

Multiple factors influence an individual's food selection.[1,2] These factors include individual characteristics such as knowledge and preference, as well as environmental

factors including availability and accessibility.[1,2] Recently, nutrition education programs, including the Supplemental Nutrition Assistance Program-Education (SNAP-Ed), have begun implementing interventions, often referred to as policy, systems and environment (PSE) work that improve the availability, visibility and appeal of healthy food choices.[3] These interventions often aim to make the healthy choice the easy choice.[3] One source of research for this type of interventions is rooted in behavioral economic theory.[4-7] Behavioral economic theory suggests that many factors influence a person's decisions, including their food decisions. These factors include, but are not limited to, immediate gains versus distant gains, access to pertinent information about options available and ease of decision making.[4,6,7] The use of behavioral economic theory to develop strategies that affect these common influencers in order to encourage consumers to make healthier food selections is gaining increased attention in the field of nutrition education.[4,8] Utilizing these principles may help nutrition program developers better understand and impact what motivates individuals to choose certain foods.[4,5] A specific behavioral economic strategy that holds promise in the field of nutrition education is the use of nudges.[9-11] Nudges, in regard to food choices, refer to strategies that increase the visibility and appeal of certain items in order increase the frequency of selection of those items.[5] These strategies nudge consumers towards a targeted choice without reducing the amount of options available.[12] Using nudges to influence individual food choices is not a new concept. Nudges are known to be effective at influencing the dietary choices of adults in a variety of settings.[9,10,13] Product placement, promotion and price are nudge techniques that have long been used by food retailers to increase the selection of targeted

items.[14] However, the use of these strategies to promote healthy foods is relatively new, and using nudges in food pantry settings is an exciting area of research.

Few studies have looked at the impact of nudges on the dietary choices of low-income individuals utilizing food pantry services. The few studies and reports that have been published have looked quantitatively at the movement of targeted items before and after the introduction of nudge interventions.[9,11] The objective of this study was to build upon the previous research about the use of nudges in food pantry settings and to gain a better understanding of pantry clients' perception of the nudges and the impact of the nudge program on their selection and reported use of targeted healthy foods.

METHODS

Study Design

Clients of six urban food pantries in Utah were surveyed about their experience with the Thumbs Up for Healthy Choices program. The Thumbs Up for Healthy Choices program is a nudge program that was developed and implemented by Utah's SNAP-Ed program in pantries throughout the state. The goal of the program is to make it easier to make healthy choices in a food pantry setting. Thumbs Up for Healthy Choices used highly visible shelf labels to promote foods consistent with the United State Department of Agriculture's (USDA) 2015-2020 Dietary Guidelines for Americans. Nutrition criteria identify foods that are low in sodium, added sugar, saturated and trans-fats and rich in fiber, vitamins and minerals.[15] The study protocol was approved by the Institutional Review Board (IRB) at Utah State University (USU). The research was funded by a USU Extension mini-grant.

Inclusion criteria for selected pantries included an established partnership with the Thumbs Up for Healthy Choices program for at least four months. The four-month threshold was chosen in order to increase the likelihood that clients had been exposed to the program. The pantries included in the research allow clients to receive services only once per month. Pantries were also required to be client-choice pantries where people move through the pantry and select their own items, as opposed to receiving a pre-packaged bag of food. As an incentive for pantries to participate in the research, a shelving or display unit valued around $250.00 was offered. Survey respondents were required to be ≥18 years of age. Pantries were visited 2-4 times for data collection. For the efficient use of resources the number of visits to each pantry was determined by the number of potential respondents. A convenience sample of participants was actively recruited by researchers directly in the food pantry where they received services. Pantry clients were approached by researchers as they waited to enter the food pantry. Potential participants received a letter of information describing the study in detail, and researchers were available to answer any additional questions. Letters of information and surveys were available in English and Spanish, the predominant languages spoken in Utah. Pantry clients who agreed to participate were given either a seven-page paper survey or a tablet to complete the survey electronically using a Qualtrics platform. No identifying information such as name or address was collected about survey participants. The survey took approximately 5-10 minutes to complete. Survey respondents were offered an incentive, valued around $10.00, for their participation in the survey. Incentives included a cookbook or a small kitchen tool.

Data and Instrumentation

The survey used in this study contained seven initial questions that were answered by all respondents. These questions included demographics, frequency of food pantry use and recognition of the Thumbs Up program logo, which is included on all program shelf labels and printed materials. All participants were also asked to rate the importance of making healthy food choices at the pantry using a 5-point Likert scale. Participants were allowed to take the survey more than once, as long as they were completed during different visits to the pantry. These participants were asked how many previous times they had taken the survey.

Participants that recognized the Thumbs Up program logo were then asked a series of twelve questions. The questions included how many times the participant had seen the Thumbs Up program and if the program impacted their selection and use of promoted items. Questions about the overall impact of the program on their (and their families, if applicable) diet quality were also asked. Participants also had the opportunity to include additional comments about the program. Data from these questions are included in this chapter. Results and analysis from respondents not familiar with the Thumbs Up program logo are discussed in chapter 2.

Data Analysis

Data collected from paper surveys were entered into individual pantry spreadsheets and then compiled into one comprehensive file in Microsoft Excel. The file was then imported in SPSS 25.0 for analysis. Frequencies and descriptive statistics were analyzed.

Chi-square associations were used to identify associations between a variety of categorical variables including of demographic characteristics of gender, age, ethnicity and race and responses to program impact questions.[16] Chi-square associations were also used to identify associations between frequency of pantry use and response to program impact questions. Only the responses from the first time a respondent took the survey are reported in the frequencies and chi-square associations. Finally, logistic regression was conducted to determine the effect of exposure to the Thumbs Up program and responses to program impact questions. Responses from all surveys completed by respondents that took the survey multiple times were included in the logistic regression analysis. All data analyses were conducted in SPSS 25.0 (version 25.0, SPSS Inc, Chicago, IL, 2017).

RESULTS

A total of 195 (43%) of the 457 survey respondents reported recognition of the Thumbs Up logo and program. Eighteen percent of respondents had taken the survey multiple times, resulting in 160 unique respondents familiar with the Thumbs Up program logo. Not all surveys were completely filled out and most missing data were dispersed randomly throughout the surveys. Most notably, 20% of respondents did not respond to the question regarding race. Additionally, 16% of survey respondents stated they were not familiar with the Thumbs Up logo but still responded to program impact questions. These responses were not included in the final analysis. The majority of participants who recognized the Thumbs Up logo were non-Hispanic females (Table 1). Ages of respondents were distributed throughout the ranges, with the majority selecting 35-44 or 55 or older. The mean exposure to the program was determined to be 2.08 times (S.D. 2.015). There was no significant association between age, gender or ethnicity and

recognition of the Thumbs Up logo. Sample sizes for races including American Indian/Alaskan Native, Asian, Black/African American and Native Hawaiian/Other Pacific Islander were too small to identify associations between race and survey responses.

Of the 160 unique survey respondents, 85% agreed or strongly agreed that the Thumbs Up program made it easier to make healthy choices in the food pantry. Hispanics were more likely to report the Thumbs Up program made it easier to make healthy choices than non-Hispanics (Table 2). Sixty-five percent of the same respondents reported they eat healthier since the Thumbs Up program was introduced in their pantry. Sixty-eight percent of respondents reported their family eats healthier since the program was implemented in the pantry. Sixty-nine percent agreed or strongly agreed they were more likely to choose an unfamiliar food if it had a Thumbs Up shelf label. Finally, 60% reported using the Thumbs Up foods at home. There were no significant differences between the demographic characteristics of gender or age, and responses to these questions.

There was a significant association between ethnicity and several program impact questions including choosing unfamiliar foods because of the Thumbs Up shelf labels ($p=.046$), selecting but not using Thumbs Up foods at home ($p=.025$) and reporting that they and their families eat healthier since the program was implemented ($p=.002$, $p<.001$) (Table 2). For these impacts, Hispanics were more likely than non-Hispanics to agree or strongly agree to the statements. This association between ethnicity and response was not significant for other questions, including use of Thumbs Up recipes at home or selecting foods targeted with Thumbs Up in the food pantry.

Respondents were also asked to report how many times they had seen the Thumbs Up program. Exposures ranged from 1-8 times with a mean exposure of 2.08 for participants familiar with the Thumbs Up logo. After controlling for age, ethnicity and gender, program exposure was significantly associated with using targeted foods at home ($p<.001$), preparing Thumbs Up recipes ($p<.001$), and selecting foods with Thumbs Up signs ($p=.002$) (Table 3). Program exposure was not significantly associated with other impact questions.

DISCUSSION

Effective nutrition interventions in food pantry settings have the potential to positively impact the dietary choices of low-income Americans.[17-23] Low-income Americans are at an increased risk of suffering from a multitude of chronic diseases that are often associated with poor diet quality.[24-26] Improving access to healthy choices in settings such as food pantries may hold potential to help reduce the health disparities often experienced by low-income, food insecure Americans.[17-23]

Results from this study suggest that the use of nudge strategies in urban food pantries in Utah do make it is easier for pantry clients to select healthy items. Furthermore, the majority of participants in this study reported that the Thumbs Up for Healthy Choices program resulted in a healthier diet for themselves and their families. According to the 2014 Hunger in America Report, 63% of individuals surveyed ($n=60,122$) reported planning to use the food pantry as part of their monthly food security strategy.[27] This pattern of reliance on pantries for food supply supports the importance of these types of strategies in pantries. Making healthy food choices easier to make in these settings has the potential to reach many food insecure families and possibly improve their

dietary intake.[17-23,28] Additionally, the Thumbs Up for Healthy Choices had many positive impacts on food pantry users with minimal exposure to the program. While some program impacts, such as the use of Thumbs Up foods and recipes at home and selecting foods with signs, improved the longer participants were exposed to the program, other impacts seemed to be more immediate. Food pantry users that were exposed to the program a single time were just as likely as those exposed multiple times to report that the program made healthy choices easier to make, that they and their family were eating healthier since program was introduced, and that they chose unfamiliar foods because of the shelf labels. This is important to consider since individuals using food pantries are sometimes transient and may not visit the same pantry multiple times.[27] A program that is impactful even after a single exposure is important to help this sometimes hard to reach population.

The results of this study suggest that this type of program equally impacts all genders and age groups. However, the impact of the program was particularly strong for Utah's Hispanic population. Nationwide, Hispanic adults and youth are at an increased risk of obesity, diabetes and other chronic diseases when compared to non-Hispanics.[29] Identifying effective nutrition interventions that improve the selection and use of healthy foods among this population may be an important tool to reduce this particular health disparity.[30,31] Language barriers and level of dietary acculturation may contribute to the impact of this style of program on Utah's Hispanic population.[30,31] Shelf labels that clearly identify healthy choices in Spanish may help Hispanics recognize unfamiliar foods, such as canned fruits and vegetables, as nutritionally sound. In a study conducted in New York City, foreign born Hispanic participants expressed objections to packaged

foods and showed a preference for fresh fruits, vegetables and meats that are common in their native diets.[30] While fresh fruits, vegetables and meats are an important part of a balanced diet, food pantry users may not always have access to them.[18-20, 32] Consuming non-perishable items in these food groups, especially products that are low in sodium and added sugar, may help fill a nutrition gap when fresh foods are not readily available. However, more Hispanics also reported that they selected but did not use the Thumbs Up targeted items at home. While recipe cards are available for a variety of foods in the pantry, they may not always be culturally appropriate. Providing culturally appropriate recipes may help improve Hispanics self-efficacy using unfamiliar items.[31]

This study will add to the growing body of literature supporting the use of behavioral economic theory, specifically nudge strategies, in food pantries to increase the selection of healthy items by pantry users. To the knowledge of the authors, this is the first study to focus on pantry clients' perception of a nudge intervention and program impacts on reported selection and use of targeted items. Results from this study suggest that nudge strategies have the potential to positively impact the selection, preparation and consumption of healthy foods across genders, age groups and ethnicities and warrant additional research. Another strength of this study is the identification of the positive impact of nudge programs for Hispanic populations specifically. Low-income Hispanics experience additional health disparities when compared to other low-income populations.[29] Identifying programs that help foreign-born Hispanics assimilate into the American culture in a healthy way can be a tool to improve health outcomes.[30,31]

In addition to strengths of this study, there are also limitations. Survey respondents were intended to answer a specific set of questions based on their familiarity

with the Thumbs Up logo and program. However, some survey respondents completed both sets of questions. This misunderstanding of proper survey completion could be due to time constraints, literacy-levels or simply poor survey design. While only the responses consistent with the response to the program recognition question were used in the analysis, the results may have been different with a better survey design or by solely utilizing electronic surveys that directed respondents to the proper set of questions. Also, not all respondents completed each question within their tract of the survey resulting in inconsistent sample sizes for the analysis. Intentionally skipping questions, time constraints or literacy levels could explain the missing responses. Finally, all findings are based on self-reporting. Self-reporting food choices and dietary habits has the possibility of being biased. Future studies that aim to evaluate the effectiveness of nudge programs on diet quality should include validated dietary intake measurement tools such as a food frequency questionnaire or a 24-hour food recall.

IMPLICATIONS FOR RESEARCH AND PRACTICE

The SNAP-Ed program, among other nutrition programs, rely on evidenced-based strategies to improve the health outcomes of their target audience.[3] Many of these nutrition programs have limited funds, increasing the importance of identifying low-cost, effective interventions that are known to improve selection of healthy foods. This study provides initial evidence that these pantry-based nudge interventions can increase selection of healthy foods by Utah's urban food pantry clients. Further research should be conducted that utilizes validated measurements of dietary quality and long-term health outcomes among food pantry clients that are exposed to these types of programs.

Multi-level interventions should be considered to further increase the impact of nudge programs on diet quality of food pantry clients.[5] Integrating nudge strategies with activities, such as food donation policy changes or healthy food drives that aim to increase the availability of healthy foods, would likely further increase the selection of healthy foods among pantry clients. Successful interventions in small retail settings similar to the Thumbs Up program have also utilized a direct education component.[5,33,34] Direct nutrition education, offered through SNAP-Ed or other nutrition education programs could offer an opportunity to both further educate and evaluate program impact on healthy dietary patterns. Recruiting participants from food pantries into nutrition education classes would also present an opportunity for further evaluation of the impact of food pantry interventions on clients.

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Table 1. Demographic Characteristics of Survey Respondents (n=195)		
Gender	**No. of Respondents**	**Percent of Total**
Female	132	68%
Male	60	31%
No response	3	1%
Age, y		
18-24	12	6%
25-34	32	16%
35-44	47	24%
45-54	35	18%
55 or older	67	34%
No response	2	1%
Race		
American Indian/Alaskan native	10	5%
Asian	4	2%
Black	6	4%
Native Hawaiian/Pacific Islander	5	2%
White	129	66%
No response	41	20%
Ethnicity		
Hispanic	83	43%
Non-Hispanic	92	47%
No response	20	10%

Table 2. Associations Between Ethnicity and Program Impacts	
Program Impact Statement	**X^2 Associations**
Thumbs Up makes it easier to make healthy choices in the food pantry	$X^2(1, n=139)4.39, p=.036$*
I have selected foods with Thumbs Up sign	$X^2(1, n=140)1.09, p=.296$
Selected Thumbs Up Foods, but did not use them at home	$X^2(2, n=144)7.41, p=.025$*
Choose unfamiliar foods because of the Thumbs Up sign	$X^2(1, n=139)3.97, p=.046$*
I have prepared Thumbs Up recipes at home	$X^2(2, n=144)1.37, p=.513$
I eat healthier since the program was introduced	$X^2(1, n=135)9.25, p=.002$*
My family eats healthier	$X^2(1, n=132)10.59, p<.001$*

*P<.05 considered statistically significant
Statistical Test: Chi-square

Table 3: Logistic Regression Analysis for Variables Predicting Responses to Program Impact Questions (n=195)

	Did use Thumbs Up foods at home		Selected foods with Thumbs Up signs		Prepared Thumbs Up recipes at home	
Characteristic	**OR (95% CI)**	**P**	**OR (95% CI)**	**P**	**OR (95% CI)**	**P**
Gender	1.103(.479-2.540)	.82	.864(.393-1.898)	.72	1.365(.613-3.040)	.45
Age	1.284(.552-2.989)	.56	.665(.300-1.474)	.32	.605(.267-1.372)	.23
Ethnicity	1.409(.660-3.008)	.38	1.561 (.758-3.215)	.28	1.353(.650-2.817)	.42
Exposure	1.933 (1.394-2.679)	<.001*	1.480 (1.148-1.908)	.002*	1.644(1.275-2.210)	<.001*

OR Odds Ratio, CI Confidence Interval
*P<.05 considered significant
Statistical Test: Logistic Regression

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CHAPTER 4

SUMMARY AND CONCLUSIONS

Although several federal nutrition programs exist to reduce hunger in America, many Americans are still unsure where their next meal will come from (United States Department of Agriculture [USDA], 2016). These food insecure individuals often employ multiple strategies to obtain enough food to last the month (Weinfeld et al., 2014). These strategies often include receiving assistance from local food pantries (Weinfeld et al., 2014). Historically, food pantries supplied short-term hunger relief for individuals and households. However, over the past couple of decades, reliance on food pantries has shifted from a short-term solution to a longer-term food security strategy for many individuals (Weinfeld et al., 2014). As people are relying on pantries longer, it has become increasingly important to ensure that they have access not only to enough food, but also the right types of foods that will help them live active and healthy lives. Promoting active and healthy lifestyles is especially important among food insecure population since many individuals utilizing food pantry services have poor diet quality (Champagne et al, 2007; Drewnowski & Specter, 2004; Seligman, Laraia, & Kushel, 2010; Simmet, Depa, Tinnemann, & Stroebele-Benschop, 2017). This poor diet quality leads to higher rates of chronic diseases commonly associated with malnutrition including obesity, type II diabetes, heart disease and certain cancers (Akobundo et al., 2004; Byker Shanks, 2017; Kaiser & Hermsen, 2015; Knoblock-Hahn, Murphy, Brown, & Medrow, 2017; Martin, Wu, Wolff, Colantonio, & Grady, 2013). To address poor diet quality among food pantry users nutrition programs, such as the Supplemental Nutrition Assistance Program-Education (SNAP-Ed), are beginning to implement food pantry

initiatives that aim to improve access to healthy food. An important step to developing effective food pantry initiatives is to have a strong understanding of the needs and interests of food pantry clients themselves. In addition to understanding local pantry users' level of interest and needs for nutrition programs, it is also important to evaluate their effectiveness.

In responses to this need, Utah's SNAP-Ed program conducted a study in six urban food pantries. The initial goal of the study was to evaluate the effectiveness of an innovative nudge program, Thumbs Up for Healthy Choices, that was developed and implemented by the SNAP-Ed program in the pantries. The Thumbs Up for Healthy Choices program aims to make the healthy choice the easy choice for pantry users. The program employs shelf labels that identify and promote foods that are low in sodium, added sugar and saturated and trans-fat. The survey intended to evaluate the impact of the nudge program on clients' selection and consumption of the healthy items promoted by the program. The use of nudges, such as shelf labels, to encourage food pantry users to select healthier food choices is an exciting area of research in the public health nutrition sector. To the author's knowledge, this is the first study to look not only at the selection of nudged items by pantry users, but also the reported use of the foods at home.

The research team recognized that not all food pantry clients approached with the research would be familiar with the Thumbs Up for Healthy Choices program. For this reason, a second set of questions was added to the survey. All survey respondents were asked if they recognized the Thumbs Up logo and program. Respondents not familiar with the program were directed to set of questions that asked about their level of interest

in programs that improved the process of making healthy choices, barriers to choosing healthy foods and types of program components that felt would be the most helpful.

Key findings from the study suggest that urban Utah food pantry clients highly value access to healthy foods in the pantries. This interest in food access programs validates the use of federal SNAP-Ed funding to support these types of initiatives in Utah. The most commonly reported barriers to making healthy choices in food pantries were a limited availability of nutritious foods and lack of time in the pantry to compare products. This suggests that strategies such as community based healthy food drives or policy changes improving the corporate donation of nutritious foods may be effective at helping pantry users overcome the most common barrier. Secondly, strategies that help pantry clients quickly identify healthy options, such as the shelf labels used by the Thumbs Up for Healthy Choices program, may increase the selection of healthy options by pantry users. Finally, survey respondents reported shelf labels and recipe cards as potentially effective methods to help clients make healthier choices. Again, nutrition interventions designed for pantries should consider the use of these components to improve the effectiveness of their efforts.

The survey results also suggested that the increased selection of healthy foods in the pantry did positively impact overall diet quality of the survey respondents and their families. Respondents that were familiar with the Thumbs Up logo reported improved diet quality for themselves and their families since the program was implemented. This was an important finding as it shows the program is not further adding to clients' food insecurity by encouraging them to take foods that they do not consume at home. Survey respondents also reported that the Thumbs Up for Healthy Choices was effective at

making it easier for them to make healthy choices in the pantry and often resulted in them selecting healthy items because of shelf labels. This suggests that as people became familiar with the program they rely on it as a trusted tool to select foods that improve the diet quality. The recipe cards were also an important component that likely help people utilize unfamiliar products. While these are exciting findings for the program, it must be mentioned that all findings are based on self-reporting which may introduce significant bias. Future program evaluation should include validated measurements to evaluate both the selection of products in the pantry and dietary intake at home.

The program was equally effective among genders and age groups. However, it was especially impactful for Hispanic populations. This particular population was more likely to report that the program made it easier to make healthy choices, choose unfamiliar foods and that they and their families eat healthier since the program was implemented. These findings suggest that pantries with large Hispanic populations should consider using similar programs to help clients navigate potentially unfamiliar food products or overcome language barriers that make identifying healthy choices difficult. Unfortunately, Hispanic respondents were also more likely to report selecting but not using promoted foods at home. Improvements in culturally appropriate recipes should be made to further educate them on how to use new foods.

Overall, the results of this research provide evidence that the use of nudge-based programs such as the Thumbs Up for Healthy Choices program are of interest to food pantry users and should be considered to help improve the diet quality of this vulnerable population. Multi-level interventions that improve the availability of healthy foods, use nudge strategies such as shelf labels to help clients quickly identify these options and

educate them on how to use the items at home may ultimately lead to better food selection, diet quality and long term health improvements among food pantry users.

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APPENDICES

Appendix A: Institutional Review Board Approval Letter

Institutional Review Board

USU Assurance: FWA#00003308

Expedite #7

Letter of Approval

FROM:	Melanie Domenech Rodriguez, IRB Chair Nicole Vouvalis, IRB Administrator
To:	Heidi Leblanc, Casey Coombs
Date:	June 05, 2017
Protocol #:	8391
Title:	Thumbs Up For Healthy Choices
Risk:	Minimal risk

Your proposal has been reviewed by the Institutional Review Board and is approved under expedite procedure #7 (based on the Department of Health and Human Services (DHHS) regulations for the protection of human research subjects, 45 CFR Part 46, as amended to include provisions of the Federal Policy for the Protection of Human Subjects, November 9, 1998):

> *Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.This approval applies only to the proposal currently on file for the period of one year. If your study extends beyond this approval period, you must contact this office to request an annual review of this research. Any change affecting human subjects must be approved by the Board prior to implementation. Injuries or any unanticipated problems involving risk to subjects or to others must be reported immediately to the Chair of the Institutional Review Board.*

This approval applies only to the proposal currently on file for the period of one year. If your study extends beyond this approval period, you must contact this office to request an annual review of this research. Any change affecting human subjects must be approved by the Board prior to implementation. Injuries or any unanticipated problems involving risk to subjects or to others must be reported immediately to the Chair of the Institutional Review Board.

Prior to involving human subjects, properly executed informed consent must be obtained from each subject or from an authorized representative, and documentation of informed consent must be kept on file for at least three years after the project ends. Each subject must be furnished with a copy of the informed consent document for their personal records.

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Appendix B. Survey Tool

Thank for agreeing to take this survey. The survey will take approximately 10 minutes of your time.

Please answer the following questions honestly.

Demographics

1. Gender
    - Male
    - Female
    - Prefer not to answer

2. Age
    - 18-24
    - 25-34
    - 35-44
    - 45-54
    - 55 or older
    - Prefer not to answer

3. Race (choose all that apply)
    - American Indian or Alaskan Native
    - Asian
    - Black or African American
    - Native Hawaiian or Other Pacific Islander
    - White

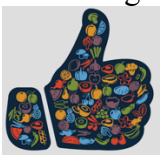
4. Ethnicity
    - Hispanic
    - Non-Hispanic

5. I have taken this survey before (Note: You may take this survey more than once)
    - Yes
        - If yes, how many times have you taken the survey, not including this time
            - 1
            - 2
            - 3
            - 4
    - No

6. How frequently do you visit the food pantry?
    - Everyday
    - More than one time per week
    - One time per week
    - 1-3 times per month

- Less than one time per month

7. I recognize this symbol from the food pantry?



   - Yes
     - If yes, CONTINUE BELOW WITH QUESTION 8
   - No
     - If no, SKIP TO PAGE 5

8. During how many trips to the food pantry have you seen the Thumbs Up image (image above)?
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10 or more

9. Making food choices at the food pantry is important to me
   - Strongly agree
   - Agree
   - Neither agree nor disagree
   - Disagree
   - Strongly disagree

10. I have selected food items with the Thumbs Up sign from the food pantry
    - Yes
    - No
    - Unsure

11. The Thumbs Up sign make it easier to make healthy choices at the food pantry
    - Strongly agree
    - Agree
    - Neither agree nor disagree
    - Disagree
    - Strongly disagree

12. The Thumbs Up sign makes it more likely I will choose an item I am unfamiliar with
    - Strongly agree

- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

13. I specifically choose foods with the Thumbs Up sign at the food pantry, even if I don't know what it is
    - Strongly agree
    - Agree
    - Neither agree nor disagree
    - Disagree
    - Strongly disagree
14. I have used Thumbs Up foods that I have selected at the pantry at home
    - Yes
    - No
    - Unsure
15. I select foods with the Thumbs Up sings, but I do not use them at home
    - Strongly agree
    - Agree
    - Neither agree nor disagree
    - Disagree
    - Strongly disagree
16. I feel I eat healthier because of the Thumbs Up program
    - Strongly agree
    - Agree
    - Neither agree nor disagree
    - Disagree
    - Strongly disagree
17. I feel my family eats healthier because of the Thumbs Up program
    - Strongly agree
    - Agree
    - Neither agree nor disagree
    - Disagree
    - Strongly disagree
    - Not applicable
18. I have prepared Thumbs Up recipes at home
    - Yes
    - No
    - Unsure
19. Please add any additional comments you have about the Thumbs Up program

THE FOLLOWING QUESTIONS ARE FOR PEOPLE UNFAMILIAR WITH THIS IMAGE

* If you answered questions 8-19, you do not need to complete the following questions.

1. Making healthy choices at the food pantry is important to me
    - Strongly agree
    - Agree
    - Neither agree nor disagree
    - Disagree
    - Strongly disagree

2. What are some barriers that keep you from making healthy choices at the food pantry. Choose all that apply.
    - There are not healthy choices available
    - I do not have time to compare different foods
    - I do not know how to prepare healthy foods
    - I do not know how to identify healthy foods
    - I do not like healthy foods
    - I am not interested in making healthy choices
    - Other, please specify

3. I would like to see programs that make selecting healthy choices easier in the food pantry.
    - Strongly agree
    - Agree
    - Neither agree nor disagree
    - Disagree
    - Strongly disagree

4. What types of things would be helpful to make healthy choices easier to make? Choose all that apply
    - Shelf signs or labels
    - Posters
    - Recipe cards
    - Recipe samples
    - Nutrition/cooking classes
    - Other, please specify