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Fruit and Vegetable Availability, Nutrition Education and Access Amongst Food Pantries in California, Maine, Mississippi and South Dakota

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Fruit and Vegetable Availability, Nutrition Education and Access Amongst Food Pantries in California, Maine, Mississippi and South Dakota

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ABSTRACT

This descriptive study explored the views of food pantry directors in four states regarding pantry fruit and vegetable stock and supply, nutrition education offered, and current practices and perceived barriers to providing access to food pantries to low-income individuals and families in need. This study examined these variables by surveying staff at the food pantries who have direct contact with the individuals and families who utilize the pantries. All survey responses were collected utilizing Qualtrics software and then analyzed in SPSS. There were 87 respondents from four different states, California, Maine, Mississippi, and South Dakota.

The reporting for both fresh fruits and fresh vegetables was similar across states, with California and Maine having a higher supply of fresh produce. Mississippi and South Dakota reported that the percentage of their fresh fruits and vegetables was between 0-25% at all participating pantries, no pantries reported that their stock of fresh produce was over 25% in these two states.

Overall, the largest need was for dark-green vegetables, 43% (*n*=37), red and orange vegetables, 46% (*n*=40) and fruit, 38% (*n*=33) reported an insufficient supply. The majority reported a sufficient supply of starchy vegetables, 70% (*n*=61) other vegetables, 60% (*n*=52) and legumes, beans and peas, 62% (*n*=54).

There were multiple barriers reported across states that have made it challenging to provide individuals and families access to their pantry. The primary barriers in

California, Maine and Mississippi were: limited staffing and volunteers, limited operating hours, and lack of transportation to the pantry.

All pantries in this study reported taking steps to make it easier for clients to access their agency. Some of the ways they have done this is through expanding operating hours, increasing staff, providing information on public transportation to pantry clients, reducing the documentation requirements and providing delivery to home services.

It is very apparent through this research that food pantries are aware of the challenges that both they and their clients face. The participating pantries in this study reported that they have made changes in order to better accommodate individuals and families in need.

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Background of the Problem

According to recent data, 70% of the American population is living with a chronic disease and 2 out of 3 Americans live with more than one chronic condition (Kuebler, 2015). While physicians prescribe medications for many of these conditions, each individual has the ability to improve their health through a healthier diet and increased exercise (Centers for Disease Control and Prevention [CDC], 2015).

Fruit and vegetable consumption is one dietary approach in which individuals have the ability to prevent and treat chronic disease with nutrition (Salinardi et al., 2013) and yet so many people fail to do so. Diets high in fruit and vegetables, nuts, whole grains, and soy protein consumption have been shown to be anti-inflammatory and have a protective effect on health due to increased amounts of antioxidants and phytochemicals in these foods (Winston, 2010). Individuals who eat a more plant-based diet have lower blood lipid levels and lower risk of chronic disease (Winston, 2010). In the United States, there is a very high rate of chronic disease including diabetes, metabolic syndrome, hypertension, hyperlipidemia, coronary artery disease, peripheral artery disease, heart failure and many more common medical conditions (CDC, 2015). There is evidence that these foods improve health and prevent disease. In a study conducted on people with advanced heart disease, patients who followed a plant-based

diet, primarily low in fat and cholesterol, died at a rate of four times lower than those who did not follow the plant-based diet (Campbell & Campbell, 2006).

The recommended amount of fruits and vegetables a day is 8-10 servings for adults or 4-5 servings from each group (American Heart Association, 2016). The average American is not getting anywhere near this amount. In a survey of 2126 women and 1911 men in the United States, the reported consumption of fruits was 1.04 times a day for women and .98 a day for men. The reported consumption of vegetables was 1.98 a day for women and 1.88 a day for men (Tamers, Agurs-Collins, Dodd & Nebeling, 2009). Those with higher levels of education consumed more servings of both fruits and vegetables (Tamers et al., 2009).

In the United States there are a great number of adults who are both overweight and undernourished, who are not consuming the vitamins and nutrients their bodies need and in turn are developing health problems at a very young age. In fact, one research study examined prevalence rates of type 2 diabetes in US adolescents, aged 10-19 years of age; researchers found that between 2001 and 2009 there was a 35% increase in type 2 diabetes prevalence amongst this age group, (Dabelea et al., 2014). This is one example of a rapidly increasing chronic health disease over the short span of 9 years that can be prevented through nutrition and lifestyle (Dabelea et al, 2014).

A longitudinal study by Tucker and colleagues (2005) researched the impact of a diet high in fruits and vegetables and low in saturated fats on 501 men beginning at age

34-80 and through death. The research reviewed the impact of fruits and vegetables and saturated fat intakes separately and together. Findings indicated that a combination of both the high fruit and vegetable consumption and low levels of saturated fats had the greatest health impact as evidenced in lower risk of death to all causes (Tucker et al., 2005). The risk of death due to any cause was thirty-one percent less and the risk of death due to coronary heart disease was seventy-six percent less among the group of men who consumed a diet both high in fruits and vegetables and low in saturated fats. Fruit and vegetable intake alone indicated that the all cause mortality risk decreased by six percent and the coronary heart disease risk of mortality decreased by twenty-one percent for each additional serving of fruits and vegetables consumed (Tucker et al., 2005). These findings help to highlight the impact that a diet high in fruits and vegetables and low in saturated fats can have on health, also suggesting a savings of healthcare dollars in preventing non-communicable diseases and minimizing hospitalizations.

Many, if not most, low-income individuals and families are not getting sufficient fruits and vegetables in their diets, a step that could help ward off illness, combat disease and also reduce costly medical bills (Mirmiran, Noori, Zavareh, & Azizi, 2009). One study looked at the cost of medical care among hospital patients based on their nutritional status; researchers found that hospital patients who were malnourished had increased medical costs up to 308.9% (Correia & Waitzberg, 2003). This study helps to highlight the impact that lack of nutrition can have on medical costs alone.

Haynes-Maslow, Parsons, Wheeler and Leone (2013) investigated the barriers to fruit and vegetable consumption amongst low-income communities. Six barriers were identified and these included: "cost, transportation, quality, variety, changing food environment and changing society norms on food" (Haynes-Maslow, Parsons, Wheeler, & Leone, 2013, p.3). Of these six barriers, cost was cited four times more than any other barrier (Haynes-Maslow et al., 2013).

Due to the great need for improved nutrition amongst low-income individuals and families, Feeding America developed a framework, known as Foods to Encourage (F2E). This framework consists of fruits, vegetables, whole grains, lean meats and low-fat dairy products and was developed for food banks and food pantries to use as a guideline for collecting and distributing foods and serves as a recommendation, rather than a requirement (Feeding America, 2015).

In addition to offering healthy food options, nutritional education is one important tool that can be utilized to improve health outcomes and food choices in low-income individuals and communities. According to the National Healthcare Disparities Report (United States Department of Health and Human Services [USDHHS], 2012), low-income, obese adults were less likely to receive advice from their physician about healthy eating than high-income, obese adults. Of all age groups, obese adults between the ages of 18-44 years were the least likely group to receive advice from their doctor on healthy eating (USDHHS, 2012). Often times, the decision-maker for meals and food choices in a family is the parent who falls within this age range. The important

discussion on health and nutritional guidance from their physician that low-income, obese adults are receiving less frequently than high-income obese adults (USDHHS, 2012), in turn, not only affects the individual but often times their family.

Evidence has shown that people who live in areas with less access to grocery stores have increased rates of obesity. One study conducted on 1,372 households in Pittsburgh, Pennsylvania neighborhoods found that for each additional mile needed to travel to get to a grocery store, obesity risk increased by 5% (P<. 05) (Ghosh-Dastidar, Cohen, Hunter, Zenk, Huang, Beckman & Dubowitz, 2014).

Many people in low-income communities lack transportation and access to nearby grocery stores (Algert, Agrawal & Lewis, 2006). They live in food deserts which are communities with low-access to grocery stores, specifically more than 1 mile in urban areas and more than 10 miles in rural areas (United States Department of Agriculture, 2015a). These food deserts are often times full of fast food chains and convenience stores, both of which offer few nutritious foods and many high calorie, low nutrient dense foods which quickly lead to weight gain and a myriad of health problems. The United States Department of Agriculture estimates that well over half of the people living in food deserts are low-income (13.5 million people) (USDA, 2015a). While there are millions of low-income people living in food deserts, in the United States in 2014, there were 46.7 million people at or below the poverty level (United States Census Bureau, 2015).

The purpose of this study was to examine the views of food pantry directors in four states regarding pantry fruit and vegetable stock and supply, nutrition education offered, and current practices and perceived barriers to providing access to food pantries to low-income individuals and families in need.

Statement of the Problem

Fruit and vegetable intake in lower-income communities is lower than the recommended amount (Robinson, 2008). Diets low in fruits and vegetables contribute to higher rates of disease and increased medical costs (WHO, 2004). Some contributors to these increased rates of disease in low-income communities include: diets low in fruits and vegetables, lack of nutrition education, and issues of access to food pantries that supply nutrient-dense foods (Algert et al., 2006.)

Many people in low-income communities seek food through food pantries. In fact, 33.48 million people at or below the poverty level utilize food pantries and rely on food assistance (Feeding America, 2016b). Of the people relying on food pantries for assistance, fifty-eight percent report having high blood pressure and thirty-three percent report having diabetes (Feeding America, 2016c). An important point to consider is that many people living at or below the poverty level and/or relying on food assistance may not seek routine medical care and thus these numbers may be higher.

One in seven people in the United States utilized food banks in 2014 (Feeding America, 2016c). These food banks are the major suppliers of food pantries, which are

the organizations that have direct contact with customers. Compared to previous years, people are now relying on food from food banks on a more regular basis, whereas in previous years they were utilized more often for emergency food needs. Fifty four percent of clients, from over 61,000 surveyed, reported visiting a food pantry six or more months within the past year (Feeding America, 2015b). At the same time a large shortage exists in the diet of most adults and children in their consumption of highly nutritious foods such as fruits and vegetables. According to the Centers for Disease Control and Prevention, the average adult in the United States consumes 1.1 servings of fruits per day and 1.6 servings of vegetables per day, (CDC, 2013). Low-income families have cited cost as a large barrier to consumption of fruits and vegetables.

This study will examine the views of food pantry directors in four states regarding pantry fruit and vegetable stock and supply, nutrition education offered, and current practices and perceived barriers to providing access to food pantries to low-income individuals and families in need.

Significance of the Problem

"Unhealthy diets and physical inactivity are thus among the leading causes of the major non-communicable diseases, including cardiovascular disease, type 2 diabetes and certain types of cancer, and contribute substantially to the global burden of disease, death and disability. Other diseases related to diet and physical inactivity, such as dental caries and osteoporosis, are widespread causes of morbidity" (WHO, 2004, p. 2). While

infectious diseases used to account for the biggest threat to morbidity and mortality, non-communicable diseases that are preventable through diet and exercise have quickly arrived at the forefront. In fact, there are six risk factors for non- communicable disease and four of these risk factors are related to diet (WHO, 2004).

In the United States, non-communicable diseases account for eighty-seven percent of all deaths and that number continues to grow (Anonymous, 2011). In terms of healthcare costs in the United States, individuals with one or more chronic medical conditions, or non-communicable diseases, account for 86% of total healthcare spending dollars (USDHHS, 2010). This number increases greatly depending on the number of chronic conditions; individuals with five or more chronic conditions have healthcare costs that are 13.5 times greater than those with no chronic conditions (USDHHS, 2010).

Unless some serious changes at a community level are made, this trend is going to be difficult to halt or reverse. Nutrition is an important component in reversing this trend and in health science as a discipline. This is an area in which there are many answers in terms of what constitutes a healthy diet, but there are additional factors to consider in understanding the psychology, economics, structural and social barriers that prevent people from following a healthy diet. Many low-income families have cited financial barriers to purchasing fresh fruits and vegetables (Haynes-Maslow et al., 2013) and millions live in food deserts with no nearby access to these healthy food groups (USDA, 2015a). In addition, there are barriers to access of information regarding

nutrition education (USDHHS, 2012).

In efforts to prevent major non-communicable diseases, the World Health Organization (WHO) has made a list of some key goals and objectives. They strongly urge nations to use these recommendations as a guideline when developing their national policies for nutrition and physical activity. WHO has four main nutrition goals that include: limiting saturated fats & trans fatty acids, limiting sugars, limiting salt and increasing fruit and vegetable intake, including legumes, whole grains and nuts (World Health Organization [WHO], 2004).

The goal of this research is to examine the views of food pantry directors in four states regarding pantry fruit and vegetable stock and supply, nutrition education offered, and current practices and perceived barriers to providing access to food pantries to low-income individuals and families in need. This will help health education specialists and public policy decision-makers to better understand current fruit and vegetable supply, nutrition education and issues of access to food pantries and in turn work towards systemic improvements.

Questions to be Answered Among Sampled Participants in Four Selected States:

I. To what extent do food pantries report sufficient supply/stock of fruits and vegetables?

I. To what extent is nutrition education offered to individuals utilizing food pantries?

II. What barriers do food pantries face with providing access to individuals and families who do not live near a food pantry or have access to transportation?

III. What steps are being taken by food pantries to address issues of access to their food pantry for those individuals and families who do not live near a pantry or have access to transportation?

Limitations

Limitations of this research include a few variables. Use of an electronic questionnaire may have affected the number of participants who responded to the questionnaire. Many people may have chosen not to respond due to an influx of emails into their inbox and this study may not have been a high priority for those individuals. Inability to identify the coordinator or director for some food pantries was another limitation. In these cases where identification of the coordinator or director was a challenge, an email was sent to the general pantry inbox in hopes of being completed by a staff member or a volunteer. While the goal was to have the coordinator or director complete the questionnaire, there were instances were the pantry was so small that no specified director or coordinator existed, such as when the pantry was operated out of a

church by church staff, or times were the email was forwarded to the most appropriate person to answer the questions, such as a pantry warehouse manager. Many food pantries are quite small and have very limited hours of operation, which could have also impacted the ability to reach participants. Lastly, there were an uneven number of participants per state, which provided disproportionate response rates and thus, results are not generalizable.

Delimitations

The participants chosen for this study were reached via electronic mail; this method most likely reduced response rates but was chosen as it allowed a greater participant network to be contacted for participation. This method was also chosen, as it is the most efficient manner in which to reach participants given the brief timeframe for research collection. While some of the questions in the questionnaire have high validity due to being used in a survey of over 61,000 households (Hunger in America, 2014), there were also 16 questions that were composed by the researcher and were not tested for validity. An additional delimitation of the research is that it was conducted in February, which could affect responses to the quantities of seasonal produce at the food pantries. There is a possibility if the research were to be completed in a summer or fall month, there would be increased amounts of fresh fruits and vegetables.

Assumptions

It was assumed participants would answer questions honestly and as accurately as possible. Additional assumptions included that they took the time to give their true "best guess", without providing biased answers for research. It was also assumed that coordinators and directors of the food pantries being surveyed had thorough knowledge of their clientele as well as the structural aspects of the organization. In the instances where the email was completed by someone other than the coordinator or director, it was assumed that the participant was the most appropriate person to complete the survey and provided knowledgeable answers to survey questions.

Definition of Terms

Food Bank: "A food bank is a 501(c)(3) charitable organization that solicits, stores, and distributes donated food. Food banks' primary role is to supply food pantries, soup kitchens, and other smaller agencies with the food to meet the needs of their communities, with some food banks serving hundreds of smaller agencies across multiple counties" (California Association of Food Banks, 2016b, para. 1)

Food Desert: Low-income communities with low-access to grocery stores (more than 1 mile in urban areas and 10 miles in rural areas). (USDA, 2015a).

Food insecurity: households with limited or uncertain access to food

- Low food security: "reduced quality, variety, or desirability of diet. Little or no

indication of reduced food intake" (USDA, 2015b, para. 3).

- Very low food security: "multiple indications of disrupted eating patterns and reduced food intake" (USDA, 2015b, para. 3).

Food Shelf/Food Pantry: An agency or organization that supplies food to individuals and families in need directly (California Association of Food Banks, 2016b).

CHAPTER 2

Review of Related Literature

Introduction

Food pantries are agencies and organizations that collect and supply food from a combination of food banks, government assistance and other various donations to individuals and families in need. Currently in the United States there are over 63,000 food pantries (USDA, 2013) and over 46 million people utilize food pantries and rely on food assistance annually (Feeding America, 2016c). With so many individuals relying on food pantries, it is important to consider the dietary recommendations in order to provide them with adequate nutrition. The USDA provides guidelines and recommendations for all food groups. They recommend at mealtime that half of the plate consist of fruits and vegetables, or 2 cups of fruits and 2.5 to 3 cups of vegetables per day for adults (USDA, 2016).

This chapter explores existing literature and research that has been conducted amongst food pantries specifically investigating: fruit and vegetable availability, the impact of nutrition education, and identified issues with access to food pantries. The existing literature reviewed is based on research conducted throughout food pantries in the United States within the past ten years.

Fruit and Vegetable Consumption and Availability in Food Pantries

While many efforts have been made to bring increased amounts of fruits, vegetables and other highly nutritious foods to households utilizing food pantries (Feeding America, 2016a), this study will explore up-to-date information regarding availability of these food groups. In addition, this study will explore four different states in order to gather whether or not this increased availability of fruits and vegetables in food pantries is universal.

The recommended amount of fruits and vegetables a day is 8-10 servings for adults or 4-5 servings from each group (American Heart Association [AHA], 2016). The average American is not getting anywhere near this amount. In one survey of 2126 women and 1911 men in the United States, the reported consumption of fruits was 1.04 times a day for women and .98 a day for men while the reported consumption of vegetables was 1.98 a day for women and 1.88 a day for men (Tamers et al., 2009).

In recent years, steps have been taken across the country to bring more fresh fruits and vegetables to lower income families and individuals in need, with certain states leading in this endeavor. Many low-income individuals and families cite cost as a primary barrier to consuming high nutrient foods such as fruits and vegetables (Haynes-Maslow et al., 2013). One urban research study provides a good example of how greatly cost influences choices to purchasing healthy foods; in this study 40% of residents reported they were unable to afford healthy foods (Breland, McAndrew, Gross,

Leventhal, & Horowitz, 2013).

Campbell, Hudson, Webb, and Crawford (2011) examined food preferences amongst 15 different food pantries. Both clients and directors of the food pantries were surveyed. At least 90% of the clients surveyed stated that fruits and vegetables were either 'very important' or 'important' to them to receive at the pantry (Campbell et al., 2011). Researchers also noted inventory and found that, a little less than half of the food offered amongst these 15 pantries had fresh vegetables and only a third offered fresh fruit on the day data was collected.

In Alabama a cross-sectional study explored diet quality, food insecurity and obesity amongst women utilizing a food pantry. Roughly 68% of the women surveyed reported no consumption of fruits, dark green and orange vegetables, legumes or whole grains within the past 24 hours, however women on Women, Infants, and Children (WIC), the federal supplemental nutrition program, were found to have an increased consumption of these foods (Duffy, Zizza, Jacoby & Tayie, 2009). Researchers found that people had poor diet quality, high food insecurity and high rates of obesity (Duffy et al, 2009).

In reviewing existing literature, a common theme has become evident. Many food banks and food pantries acknowledge the need for improved nutrition. One of the challenges they face is creating boundaries with food donors who historically have not responded well to donation guidelines, while also supplying adequate amounts of food

to those in need (Campbell et al., 2011). Since Feeding America initiated the framework for nutritional guidelines, Foods to Encourage (F2E), 68 percent of food distributed by food banks to food pantries in the United States now fall into this healthy category, which was also developed utilizing the USDA's dietary guidelines (Feeding America, 2016a).

While certain food pantries in the study in Alabama are facing challenges with diet quality, food insecurity and obesity (Duffy et al., 2009); other food pantries are proactively making changes to stop this obesity paradox amongst low-income families in need. One food pantry in Eagan, Minnesota called Open Door is affiliating itself with Homegrown South. Homegrown South is hoping to become a model for other food pantries and is not only working towards improving the nutrition for customers but also to help support local farmers (Bitters, 2015). Homegrown South is focused on sustainable farming and on improving access of healthy produce to those in need. Through this program, farmers supply the food pantry with fresh fruits and vegetables. Additionally, the pantry has eliminated certain unhealthy foods, such as canned pastas, cakes, cookies, chips and sugar-filled drinks (Bitters, 2015).

Homegrown South program began in July 2015, based on the observation of the health disparities between the middle and upper classes and the lower socioeconomic class. Janelle Waldock, director of the Center for Prevention at Blue Cross and Blue Shield of Minnesota, which helps fund Homegrown South, worded this nicely; "we have the luxury of living in one of the healthiest states in the nation, but at the same time,

when you take a close look at health data, we also have a lot of work to do in terms of health disparities -- the big gap that exists between the healthy and the unhealthy" (Bitters, 2015, p. 1).

Similarly, Farm to Family, originating in San Francisco, California in the 1990s, by a lone food bank volunteer, has now expanded to the entire state due to its success (CAFB, 2016a). Due to advocacy efforts of the California Association of Food Banks, tax credits are now given to farmers who donate a portion of their crops that otherwise would have been plowed over or thrown away. In fact, farmers distribute 140 million pounds of fresh produce annually which would have otherwise been wasted (CAFB, 2016a). With this program, food banks in California are currently able to supply low-income families with fresh fruits and vegetables. Over half of their distributed food now consists of these fresh fruits and vegetables (CAFB, 2016a).

Lastly, the type of food pantry can make a big impact on the types of foods a person consumes. There are two main types of food pantries: traditional or choice model pantries. A traditional model pantry, is one in which each household is provided with a presorted box or bag of food which eliminates the client's ability to choose their own food. A choice model pantry is one in which clients are able to choose their own food, allowing them the freedom to choose foods they like, that fit into their ethnic background and address any dietary preferences, allergies or intolerances to foods they may have (Martin et al., 2013).

Nutrition Education

Nutrition education is an area in which food pantries can make a positive impact, as lack of knowledge around both how to prepare healthy foods and the importance of these foods is also cited as a barrier to increased consumption (Martin, Wu, Wolff, Colantonio & Grady, 2013). This is an area where a little guidance and information goes a long way.

Martin and colleagues (2013) conducted a randomized parallel-group study that explored the role of nutrition education along with food offerings between choice model and traditional model pantries over the course of two years. The choice model pantry in this study, Freshplace, offered primarily fresh foods, provided members with a monthly coaching appointment to set goals, conducted motivational interviewing to increase self-sufficiency and food security and offered cooking classes. The traditional model pantry, or the control group, provided customers with a pre-selected bag of food and did not offer the monthly coaching appointments. After 1 year, compared to the control, Freshplace members were less than half as likely to suffer very low food security and had increased fruit and vegetable consumption by one serving a day (Martin et al., 2013).

A similar quasi-experimental study examined food pantry clients' perception of whole grain foods and their self-efficacy to choose and prepare whole grain foods. Nutritional education counseling was offered along with a recipe tasting and

demonstration of how to prepare the meal using whole grain foods. Clients were then supplied with the ingredients and the recipe for the meal to be prepared at home. The group that received the intervention reported increased consumption of whole grain foods by 78%, while the control group that received the recipe card but did not taste the dish at the pantry, reported an increase of 51% (Yao et al., 2013). Further, one month following the intervention, there was a significant increase in continued consumption of whole grain foods in the intervention group compared to the control group (Yao et al., 2013).

Access to Healthy Foods

One large challenge to consumption of fruits and vegetables is access to healthy foods for individuals who live in rural areas or in urban areas with no nearby food pantry, which is defined as a food desert (USDA, 2015a). Research conducted in New York City examined access to food pantries for medically ill cancer patients in need of nutritious foods. This is a population in great need of nutritious foods to help fight their cancer diagnosis and strengthen their immune system. It was found, however that certain issues of access posed a large challenge. The main challenges were the ability to contact the pantry by phone, hours of operation, documentation requirements and food availability at the pantries (Gany et al., 2013).

A mailed survey study conducted in seven rural counties in Central Texas examined issues of access to fruits and vegetables amongst the non-Hispanic white and

the black populations. Researchers found that amongst the black population, the probability of consuming two or more servings of fruit a day decreased three percent and the probability of consuming three of more vegetables a day decreased by 1.8 percent for each additional mile needed to travel to the nearest grocery store, (Dunn, Wesley, Johnson, Leidner, & Sharkey, 2012). However, distance to the closest grocery store was not found to be significant amongst the non-Hispanic white population.

Summary

In summary, there is research that demonstrates the challenges faced by low-income families in acquiring healthy foods and also having the nutritional education necessary, to make healthy choices and prepare these foods. Due to the improvements in the way food banks and food pantries operate and the changes in the types of foods they offer, there is a lack of up-to-date research regarding pantry fruit and vegetable stock and supply, nutrition education offered, and current practices and perceived barriers to providing access to food pantries to low-income individuals and families in need.

CHAPTER 3

Methodology

Introduction

This study explored the views of food pantry directors in four states regarding pantry fruit and vegetable stock and supply, nutrition education offered, and current practices and perceived barriers to providing access to food pantries to low-income individuals and families in need. These organizations are highly utilized on a regular basis by the lower socioeconomic population, which also has a very high percentage of obesity and disease.

Research Design

This was a descriptive study that explored the views of food pantry directors in four states regarding pantry fruit and vegetable stock and supply, nutrition education offered, and current practices and perceived barriers to providing access to food pantries to low-income individuals and families in need. This study examined these variables by surveying staff at the food pantries who have direct contact with the individuals and families who utilize the pantries. Coordinators and directors of food pantries were surveyed through electronic questionnaires in order to collect information about these topics. For instances in which there was no known coordinator or director, an email was sent to the general food pantry email address. The email

explained the study, informed consent and asked for their participation by completing a brief survey. Permission to conduct this study was approved by the Institutional Review Board. See Appendix A for a copy of the IRB Approval Letter.

A descriptive study was chosen in order to gather information from individuals who serve clients in food pantries and have direct access to them on a daily basis. Participants surveyed were able to provide valuable data to better understand the availability of fruits and vegetables, nutrition education offered and some of the most challenging struggles faced by the food pantries in providing access to the pantry.

Participant Selection

This study used a random cluster sampling. States were grouped into clusters based on geographic location and one state from each cluster was randomly drawn. The clusters were chosen based on the United States Census Bureau's four designated regions, which include: the Northeast, South, Midwest and West. Each of the fifty states, and the District of Columbia, were entered into an online random name picker called miniwebtool.com, per designated region, and had an equal chance of being chosen. Regions were selected as a way to gather information from pantries from different geographic areas in the United States. The four states that were randomly drawn include: Maine (Northeast), Mississippi (South), South Dakota (Midwest) and California (West). Participants included directors and coordinators of food pantries from the four different states.

Food pantries were chosen over food banks as they have direct contact with individuals and families who utilize the pantries. Food banks supply their collected and

donated food to various food pantries, which in turn are distributed to those in need and thus have direct contact. Foodpantries.org, an online database of food pantries and their corresponding website information was used to research the pantries. This database was utilized to obtain pantries' websites, and contact information for coordinators and directors. There were instances where a contact person was not listed and in these circumstances, an email was sent to the general food pantry email. While there are many food pantries in the United States, many are quite small and have very limited hours of operation, so it was anticipated that contact and participation may have been difficult with these pantries.

Survey Instrument

The survey used for this study consisted of twenty questions. There were four questions previously used by Feeding America in a large national survey conducted on over 15,000 agencies, titled Hunger in America 2014, along with sixteen questions that were developed for this research. See Appendices B and C for a copy of the email obtaining permission to use survey questions from Hunger in American 2014 survey and for the Agency Survey containing all survey questions.

Four survey questions assessed basic pantry information including: the type of agency (choice or traditional model), city and state it is located, how many clients it serves each month and also the participant's role at the agency. In addition to this information, the survey consisted of sixteen closed-ended questions with the option to include additional information if it applied, for example, with 'Other' options. The questions asked what percentage of the total food that the agency currently has in stock

consists of fruits and/or vegetables, in addition to what percent of this was fresh, canned and frozen and the extent to which supply of different types of fruits and vegetables currently in stock was sufficient. Two questions assessed nutrition education, asking specifically which of the following activities about nutrition or eating better does your agency do with clients and provided eight options that the participants could select to indicate steps that are currently being taken to provide education. There were three questions that assessed access and two of these were open-ended questions. Three questions asked participants what the challenges were to providing access to their pantry and also what steps had been taken to make it easier for individuals to access the agency. See Appendix C for survey.

Data Collection

In order to collect data from the various food pantries, electronic surveys were emailed to directors and coordinators of these organizations using Qualtrics, an electronic survey system. Email was chosen, because it was an efficient manner to collect data and it provided participants with the flexibility to complete the survey at their convenience

In February 2016 a series of two emails were sent to the coordinators and directors of food pantries, explaining the study and asking for their participation by completing a brief survey. Both emails included the survey along with an explanation of the research. The second email was sent six days after the first, in efforts to gain additional participants. All participants were provided with information regarding the

study and informed consent disclosure explaining their voluntary participation. See Appendix D for a copy of the consent form.

Data Analysis

After gathering the data using Qualtrics, survey responses were analyzed using SPSS, Version 11.9.15. As this was a descriptive study, the research provided percentages for the quantitative data and descriptive summaries for the qualitative data. Survey responses were reviewed to explore the views of food pantry directors in each of the four states regarding pantry fruit and vegetable stock and supply, nutrition education offered, and current practices and perceived barriers to providing access to food pantries to low-income individuals and families in need.

CHAPTER 4

Findings

Data Analysis

All survey responses were collected utilizing Qualtrics software. The survey responses were downloaded from Qualtrics into SPSS where they were then analyzed. The data were separated by state (California, Maine, Mississippi and South Dakota) and frequencies and percentages were calculated for all items.

There were 87 respondents, which included food pantry coordinators and directors but also included managers, administrative assistants and pastors (as it is common for food pantries to operate out of churches). Response rates by stated varies from 12% to 22%. In California 44 out of 264 participants responded (17%), 28 out of 136 participants in Maine responded (21%), in Mississippi 7 out of 60 participants responded (12%) and in South Dakota 8 out of 36 participants responded (22%). This disproportionate response rate and small sample size is a limitation to the research and thus results are not generalizable.

The range of the number of people served by food pantries varied greatly from 16 to 140,000 people per month. Forty-four of the participants were from California pantries (51%), twenty-eight were from Maine (32%), seven were from Mississippi (8%) and eight were from South Dakota (9%). So while this report will give percentages please keep in mind that the percentages given for all states are from a small population

of participants and thus may not accurately reflect a sample population from these geographic regions.

Sixty-eight participants (78%) reported that it 'very important' and 18 participants (21%) reported that it was 'somewhat important' that their pantry gives out and serves healthier foods like fruits, vegetables, low-fat milk, whole grains, and lean meats. There was only one participant who reported that giving out and serving healthier foods was 'not important' to their pantry.

The split between choice model pantries and the traditional pre-packaged bag or box of food was right down the middle, with roughly half of the pantries being choice and half of the pantries being traditional, in the states of California and South Dakota. Maine reported a larger proportion of choice model pantries, with twenty pantries being choice model pantries in this state (71%). Mississippi reported the opposite, that all eight of the pantries in this study (100%), were the traditional pre-packaged bag or box of food.

Table I

Importance of Giving Out and Serving "Healthier" Foods to Pantry Clients

	Very Important *n* (%)	Somewhat Important *n* (%)	Not Important *n* (%)
California	35 (79.5%)	9 (20.5%)	-
Maine	23 (82.1%)	5 (17.9%)	-
Mississippi	3 (42.9%)	3 (42.9%)	1 (14.3%)
South Dakota	7 (87.5%)	1 (12.5%)	-
Total	68 (78.2%)	18 (20.7%)	1 (1.1%)

Food Pantries Stock and Supply of Fruits and Vegetables

Across all states, the majority of the pantries reported that the percentage of the total food that their agency currently had in stock that consisted of fruits and vegetables was between 1-25%. There were three pantries in both California and Maine that reported that their total percentage of food in stock that consisted of fruits and vegetables was between 76-100%. Beyond the total stock and supply of fruits and vegetables, the study was broken down further into both fruits and vegetables that are fresh, canned and frozen.

Table II

Percentage of the Total Food at the Pantries that Consists of Fruits and Vegetables

	0% *n* (%)	1-25% *n* (%)	26-50% *n* (%)	51-75% *n* (%)	76-100% *n* (%)
California	-	9 (20.5%)	18 (40.9%)	14 (31.8%)	3 (6.8%)
Maine	-	4 (14.3%)	18 (64.3%)	3 (10.7%)	3 (10.7%)
Mississippi	-	2 (28.6%)	3 (42.9%)	2 (28.6%)	-
South Dakota	-	2 (25.0%)	5 (62.5%)	1 (12.5%)	-
Total	-	17 (19.5%)	44 (50.6%)	20 (23.0%)	6 (6.9%)

The reporting for both fresh fruits and fresh vegetables was similar across states, with California and Maine having a higher supply of fresh produce. Mississippi and South Dakota reported that the percentage of their fresh fruits and was between 0-25% at all participating pantries, no pantries reported that their stock of fresh produce was over 25% in these two states. Forty-three percent (*n*=19) in California reported that both their fresh fruits and vegetables was over 25% of their total stock of fruits and vegetables. For Maine, 18% (*n*=5) reported that their stock of fresh fruits was over 25%

of their total fruit stock and 11% (*n*=3) reported that their stock of fresh vegetables was over 25% of their total vegetable stock. However, there were many pantries in these two states that reported that their fresh produce made up between 1-25% of their fruit and vegetable supply for both their fruits and their vegetables. Please see tables for additional information.

Table III

Percentage of Fresh Fruits

	0% *n* (%)	1-25% *n* (%)	26-50% *n* (%)	51-75% *n* (%)	76-100% *n* (%)
California	6 (13.6%)	19 (43.2%)	6 (13.6%)	4 (9.1%)	9 (20.5%)
Maine	12 (42.9%)	11 (39.3%)	3 (10.7%)	-	2 (7.1%)
Mississippi	4 (57.1%)	3 (42.9%)		-	-
South Dakota	5 (62.5%)	3 (37.5%)		-	-
Total	27 (31.0%)	36 (41.4%)	9 (10.3%)	4 (4.6%)	11 (12.6%)

Table IV

Percentage of Fresh Vegetables

	0% *n* (%)	1-25% *n* (%)	26-50% *n* (%)	51-75% *n* (%)	76-100% *n* (%)
California	5 (11.4%)	20 (45.5%)	7 (15.9%)	4 (9.1%)	8 (18.2%)
Maine	8 (28.6%)	17 (60.7%)	1 (3.6%)	1 (3.6%)	1 (3.6%)
Mississippi	4 (57.1%)	3 (42.9%)	-	-	-
South Dakota	5 (62.5%)	3 (37.5%)	-	-	-
Total	22 (25.3%)	43 (49.4%)	8 (9.2%)	5 (5.7%)	9 (10.3%)

Canned fruits and vegetables were of the highest supply across states. Even though participants in all states reported that canned fruits and vegetables made up their highest supply of produce, pantries in California reported the smallest percentage of canned produce. They reported that their canned fruit made up 1-25% of their fruit supply in 41% of their pantries (*n*=18). Participants from Mississippi reported that their

portion of fruits that are canned fall somewhere between 26-75% in 72% of the pantries (*n*=5). The reported portions of vegetables that are canned in Mississippi fall between 76-100% in 43% of the pantries (*n*=3). Maine and South Dakota's reported stock of canned fruits and vegetables was more spread out than the other states. See Table V and Table VI for detailed information.

Table V

Percentage of Canned Fruits

	0% *n* (%)	1-25% *n* (%)	26-50% *n* (%)	51-75% *n* (%)	76-100% *n* (%)
California	3 (6.8%)	18 (40.9%)	9 (20.5%)	7 (15.9%)	7 (15.9%)
Maine	-	13 (46.4%)	4 (14.3%)	3 (10.7%)	8 (28.6%)
Mississippi	-	1 (14.3%)	3 (42.9%)	2 (28.6%)	1 (14.3%)
South Dakota	-	3 (37.5%)	-	2 (25.0%)	3 (37.5%)
Total	3 (3.4%)	35 (40.2%)	16 (18.4%)	14 (16.1%)	19 (21.8%)

Table VI

Percentage of Canned Vegetables

	0% *n* (%)	1-25% *n* (%)	26-50% *n* (%)	51-75% *n* (%)	76-100% *n* (%)
California	2 (4.5%)	14 (31.8%)	13 (29.5%)	7 (15.9%)	8 (18.2%)
Maine	-	5 (17.9%)	11 (39.3%)	4 (14.3%)	8 (28.6%)
Mississippi	-	1 (14.3%)	2 (28.6%)	1 (14.3%)	3 (42.9%)
South Dakota	-	3 (37.5%)	-	1 (12.5%)	4 (50.0%)
Total	2 (2.3%)	23 (26.4%)	26 (29.9%)	13 (14.9%	23 (26.4%)

Frozen fruits and vegetables had the lowest percent in all states. Participants across all states reported that their supply was either 0% or 1-25% of frozen fruits and vegetables, with the majority having no frozen produce. Of all 87 participants 63% (*n*=55) reported that their supply of frozen fruit was 0% and 76% (*n*=66) reported that their supply of frozen vegetables was 0%.

Overall, sufficient stock and supply of fruits and vegetables was assessed. The large majority of pantries in this study reported that they had either an 'insufficient' or a 'sufficient' supply of fruits and vegetables, there were very few pantries that reported having an 'excess' supply. The largest need as reported by 'insufficient' supply was for dark-green vegetables, 43% (*n*=37), red and orange vegetables, 46% (*n*=40) and fruit, 38% (*n*=33). The majority of participants reported a 'sufficient' supply of starchy vegetables, 70% (*n*=61) other vegetables, 60% (*n*=52) and legumes, beans and peas, 62% (*n*=54).

Table VII

Supply of Fruits and Vegetables by Category

Food Group	Insufficient Supply *n* (%)	Sufficient Supply *n* (%)	Excess Supply *n* (%)
Vegetables			
California	10 (22.7%)	27 (61.4%)	6 (13.6%)
Maine	7 (25.0%)	21 (75.0%)	-
Mississippi	2 (28.6%)	5 (71.4%)	-
South Dakota	1 (12.5%)	6 (75.0%)	1 (12.5%)
Total	20 (22.9%)	59 (67.8%)	7 (8.0%)
Dark-Green Vegetables			
California	17 (38.6%)	23 (52.3%)	2 (4.5%)
Maine	14 (50.0%)	14 (50.0%)	-
Mississippi	4 (57.1%)	3 (42.9%)	-
South Dakota	2 (25.0%)	6 (75.0%)	-
Total	37 (42.5%)	46 (52.8%)	2 (2.2%)
Red and Orange Vegetables			
California	18 (40.9%)	21 (47.7%)	1 (2.3%)
Maine	13 (46.4%)	15 (53.6%)	-
Mississippi	6 (85.7%)	1 (14.3%)	-
South Dakota	3 (37.5%)	5 (62.5%)	-
Total	40 (45.9%)	42 (48.2%)	1 (1.1%)

Supply of Fruits and Vegetables by Category (continued)

Food Group	Insufficient Supply *n* (%)	Sufficient Supply *n* (%)	Excess Supply *n* (%)
Legumes, Beans and Peas			
California	10 (22.7%)	27 (61.4%)	5 (11.4%)
Maine	9 (32.1%)	15 (53.6%)	4 (14.3%)
Mississippi	-	7 (100.0%)	-
South Dakota	3 (37.5%)	5 (62.5%)	-
Total	22 (25.2%)	54 (62.0%)	9 (10.3%)
Starchy Vegetables			
California	9 (20.5%)	31 (70.5%)	2 (4.5%)
Maine	6 (21.4%)	18 (64.3%)	3 (10.7%)
Mississippi	-	5 (71.4%)	1 (14.3%)
South Dakota	1 (12.5%)	7 (87.5%)	-
Total	16 (18.4%)	61 (70.1%)	6 (6.9%)
Other Vegetables			
California	13 (29.5%)	24 (54.5%)	1 (2.3%)
Maine	8 (28.6%)	18 (64.3%)	-
Mississippi	2 (28.6%)	4 (57.1%)	-
South Dakota	2 (25.0%)	6 (75.0%)	-
Total	25 (28.7%)	52 (59.7%)	1 (1.1%)
Fruits			
California	15(34.1%)	28 (63.6%)	1 (2.3%)
Maine	12 (42.9%)	16 (57.1%)	-
Mississippi	3 (42.9%)	5 (71.4%)	-
South Dakota	3 (37.5%)	5 (62.5%)	-
Total	33 (37.9%)	54 (62.0%)	1 (1.1%)

Seventy-seven participants (89%) reported that there were no policies that prevented their pantry from accepting fruits and vegetables. Eight pantries in this study reported that there were some policies that prevented them from accepting and distributing fruits and vegetables. “Any indication of mold or decay means automatic disposal. Typically if fruit or potatoes are donated in a bag and there's one or two moldy items, then the whole bag is usually thrown out” (California). Some pantries reported that imported fruits and vegetables, unmarked and expired produce were not accepted.

Many pantries reported that they were not able to accept anything “canned, frozen or preserved at home”. In addition, many pantries reported that much of their produce was donated from farms or local individuals gardens and trees. One pantry explained that this process of accepting fresh fruits and vegetables from residential trees and gardens used to be banned but they are now fortunate to be able to accept these local and highly nutritious foods. One noted barrier to smaller food pantries acquiring fresh produce is that often times farmers supply the food banks with their produce, and food banks in turn sell their product in bins or pallet amounts to the food pantries and these bin or pallet amounts are more than some smaller pantries need. In turn the smaller pantries end up getting the leftovers when they are nearing bad. In addition, some pantries reported that they did not have storage or refrigeration and thus were limited to the fruits and vegetables they were able to get the day of their distribution from their distributing food bank.

There were some noted barriers to being able to supply healthier foods to pantry clients. Some of the barriers reported by most participants included: that it costs too much money to purchase healthier foods, difficulties with getting healthier foods through their distributing food bank and the inability to store healthier foods. Also noted were that clients do not choose the healthier foods and/or do not know how to prepare healthier foods. One rural participant noted that their local grocery store donates a lot of their near spoiled produce and also their marked down meats. This same pantry noted that their clients were not interested in trying foods they were not

familiar with, such as lamb, veal or in the case of prime rib, they were unsure of how to prepare it.

Nutrition Education

All states reported providing nutrition education to a certain extent to clients. The range in which nutrition education was provided varied slightly among states with Maine offering the most education (79% of the pantries), and then followed by Mississippi (71% of the pantries), South Dakota (63% of the pantries), and California (57% of the pantries). Pantries across all four states reported offering fliers or written materials on nutrition and health (ranging from 71 to 88% of the pantries), along with referring clients to activities related to nutrition or eating better at other locations (ranging from 25 to 43% of the pantries).

Participants in California (10 pantries), Maine (2 pantries), and Mississippi (1 pantry) reported offering workshops or classes on nutrition, health issues or shopping on a budget. Some pantries in California and Maine also reported providing cooking demonstrations or tastings of healthier foods (21 and 26% respectively), in addition to cooking classes and training on gardening skills (9 and 11% respectively). There was one pantry from California and one pantry from Mississippi that offered one-on-one meetings with a dietician or other person trained to help people with nutrition and health. Lastly 18% of participating food pantries from California reported offering workshops or classes on specific health problems related to nutrition (e.g. diabetes). One pantry also reported that when they stock foods that they are not sure their clients will know how to prepare, they will find a recipe for the client that shows them how to

prepare these items. Additionally, this same pantry is looking to add training about nutrition in their newly expanded space.

Table VIII

Activities Performed by Food Pantries to Offer Nutrition Education

Activity	*n* (%)
Fliers or written materials on nutrition and health	
California	31 (70.5%)
Maine	23 (82.1%)
Mississippi	5 (71.4%)
South Dakota	7 (87.5%)
Total	66 (75.9%)
Cooking demonstrations or tastings of healthier foods	
California	9 (20.5%)
Maine	8 (28.6%)
Mississippi	-
South Dakota	-
Total	17 (19.5%)
Workshops or classes on nutrition, health issues or shopping on a budget	
California	10 (22.7%)
Maine	2 (7.1%)
Mississippi	1 (14.3%)
South Dakota	-
Total	17 (19.5%)
Cooking classes	
California	4 (9.1%)
Maine	3 (10.7%)
Mississippi	-
South Dakota	-
Total	7 (8.0%)
Workshops or classes on specific health problems related to nutrition (e.g., diabetes)	
California	8 (18.2%)
Maine	-
Mississippi	-
South Dakota	-
Total	8 (9.2%)

Activities Performed by Food Pantries to Offer Nutrition Education (continued)

Activity	*n* (%)
Training on gardening skills	
California	4 (9.1%)
Maine	3 (10.7%)
Mississippi	-
South Dakota	-
Total	7 (8.0%
One-on-one meetings with a dietician or other person trained to help people with nutrition and health	
California	1 (2.3%)
Maine	-
Mississippi	1 (14.3%)
South Dakota	-
Total	2 (2.2%)
Referring clients to activities related to nutrition or eating better at other locations	
California	15 (34.1%)
Maine	7 (25.0%)
Mississippi	3 (42.9%)
South Dakota	2 (25.0%)
Total	27 (31.0%)

Barriers to Providing Access to Food Pantries

There were multiple barriers reported across states in providing individuals and families access to their pantry. The primary barriers in California, Maine and Mississippi were: limited staffing and volunteers, limited operating hours, and lack of transportation to the pantry. In addition, California and Maine reported some language barriers (the need for translation and/or interpretation services) and in Mississippi, lack of proper identification was a large barrier (in 57% of the pantries). South Dakota pantries reported very few barriers but did report some challenges with limited operating hours, lack of transportation to the pantry and one pantry reported that it

served six towns in one county and driving to the pantry could pose a challenge for rural clients.

There were also some additional challenges noted by participants. Some of these individual pantry barriers include: zip code restrictions imposed by the local food bank which limits individuals who are able to access the pantry, a small parking lot space that affects accessibility, and lack of verifiable information on the part of the client. Pantries in Maine reported that many of their clients are either "homebound and we do not deliver" or they are homeless, and/or lack transportation. Also weather can prevent individuals from coming to the pantry. In addition, it was expressed that pride can be a factor, pointing out that many individuals do not utilize the pantry as they do not want to accept charity.

Table IX

Challenges with Providing Access to the Food Pantry to Individuals in Need

Challenge	*n* (%)
Limited staffing and volunteers	
California	14 (31.8%)
Maine	6 (21.4%)
Mississippi	1 (14.3%)
South Dakota	-
Total	21 (24.1%)
Limited operating hours	
California	15 (34.1%)
Maine	9 (32.1%)
Mississippi	4 (57.1%)
South Dakota	1 (12.5%)
Total	29 (33.3%)

Challenges with Providing Access to the Food Pantry to Individuals in Need (continued)

Challenge	*n* (%)
Language barriers – the need for translation and/or interpretation services	
California	9 (20.5%)
Maine	4 (14.3%)
Mississippi	-
South Dakota	-
Total	13 (14.9%)
Lack of transportation to the pantry	
California	17 (38.6%)
Maine	14 (50.0%)
Mississippi	5 (71.4%)
South Dakota	1 (12.5%)
Total	37 (42.5%)
Lack of proper identification	
California	3 (6.8%)
Maine	2 (7.1%)
Mississippi	4 (57.1%)
South Dakota	-
Total	9 (10.3%)
Other	
California	4 (9.1%)
Maine	3 (10.7%)
Mississippi	1 (14.3%)
South Dakota	1 (12.5%)
Total	9 (10.3%)
There are no challenges	
California	12 (27.3%)
Maine	7 (25.0%)
Mississippi	-
South Dakota	4 (50.0%)
Total	23 (26.4%)

Steps Taken by Food Pantries to Address Issues of Access to their Food Pantry

All pantries in this study reported taking steps to make it easier for clients to access their agency. Pantries that reported providing information on public transportation are very similar across the board: California (25%), Maine (25%), Mississippi (29%) and South Dakota (25%). Those that reported expanding their operating hours include California (34%), Maine (25%), Mississippi (14%) and South Dakota (25%). Participants by state who reported increasing staff or volunteers to increase access to pantry clients include: California (30%), Maine (25%), Mississippi (43%) and South Dakota (13%). Additionally there were participants in each state that reported providing delivery to home services, California (27%), Maine (36%), Mississippi (14%) and South Dakota (25%). Pantries in California (36%), Maine (25%) and South Dakota (63%) also reported reducing the requirements for documentation or identification to utilize the pantry.

Pantries in both California and Maine reported that they have also allowed substitute people to pick up their client's food in cases where the individual is not able. Some pantries reported increasing the number of locations so that they were closer to low-income neighborhoods and clients did not have to travel as far. A pantry in California reported translating fliers and registration documents into different languages. Pantries in California and Maine reported adding weekend service hours, monthly distributions and waiving the need for documentation on the initial visit. Lastly, one pantry in Maine reported that they have even offered taxi fares to some.

Table X

Steps That Have Been Taken to Make it Easier for Individuals to Access the Food Pantries

Step	*n* (%)
Providing information on public transportation	
California	11 (25.0%)
Maine	7 (25.0%)
Mississippi	2 (28.6%)
South Dakota	2 (25.0%)
Total	22 (25.2%)
Expanding operating hours	
California	15 (34.1%)
Maine	7 (25.0%)
Mississippi	1 (14.3%)
South Dakota	2 (25.0%)
Total	25 (28.7%)
Increased staff or volunteers	
California	13 (29.5%)
Maine	7 (25.0%)
Mississippi	3 (42.9%)
South Dakota	1 (12.5%)
Total	24 (27.6%)
Reducing the requirements for documentation or identification	
California	16 (36.4%)
Maine	7 (25.0%)
Mississippi	-
South Dakota	5 (62.5%)
Total	28 (32.2%)
Delivery to home services	
California	12 (27.3%)
Maine	10 (35.7%)
Mississippi	1 (14.3%)
South Dakota	2 (25.0%)
Total	25 (28.7%)
Other	
California	7 (15.9%)
Maine	3 (10.7%)
Mississippi	1 (14.3%)
South Dakota	-
Total	11 (12.6%)

Steps That Have Been Taken to Make it Easier for Individuals to Access the Food Pantries (continued)

Step	*n* (%)
No steps have been taken	
California	5 (11.4%)
Maine	5 (17.9%)
Mississippi	2 (28.6%)
South Dakota	2 (25.0%)
Total	14 (16.1%)

Summary

The findings from this study point out that supplying fruits and vegetables, providing nutrition education and addressing issues of access to food pantries is a multifactorial issue, including economical, societal, and psychological factors and thus not an easy solution. However, a good portion of participating pantries made it apparent that food pantries are aware of challenges they and their clients face and have made changes in order to better accommodate these individuals and families. One pantry even noted that they are proactively trying to encourage donations of more healthful foods; they provide their donors examples of cost effective and yet still nutritious foods.

Canned fruits and vegetables were of greatest supply between fresh, canned and frozen in all four participating states, however pantries have been increasing their supply of fresh fruits and vegetables and continue to do so. Specifically, the largest need as reported by 'insufficient' supply was for dark-green vegetables, red and orange vegetables, and fruit. The majority of participants reported a 'sufficient' supply of starchy vegetables, other vegetables, and legumes, beans and peas.

Some of the challenges faced by food pantries include limited hours, staffing, and financial resources and yet they still strive to find the resources necessary to accommodate their clients. Some of the challenges clients face include lack of transportation, inability to make it to the pantry during operating hours, and also lack of knowledge around how to prepare or choose healthy foods.

CHAPTER 5

Summary, Recommendations and Conclusions

Summary

Examination of some of the current practices and challenges regarding food pantries, helped to provide useful information and insight in this research. These findings may help contribute to advocacy efforts for any potential needed improvements in food pantries to better serve populations in need.

Eighty-seven individuals representing food pantries across four states participated in this study. Due to a small sample size of participants from participating states, generalizations as a whole cannot be made. Amongst all four states, the pantries that participated made clear through their survey responses the importance of providing healthy foods to their clients in addition to their efforts to do so, while also providing some nutritional education and taking steps to improve access to their pantries.

Fruits and vegetables were available to pantry clients primarily through canned and then fresh sources, and all states reported very little frozen fruit and vegetable stock. The highest need was for dark-green vegetables, red and orange vegetables, and fruit amongst most pantries in the study. The largest reported barriers were in regards to acquiring and storing the fruits and vegetables.

Nutrition education was offered amongst all pantries to a certain extent. While all states reported offering fliers or written materials on nutrition and health, along with referring clients to activities related to nutrition or eating better at other locations there

were also some areas of opportunity. Most pantries did not offer cooking classes or demonstrations, classes on nutrition or shopping on a budget, classes on specific health problems related to nutrition, training on gardening skills or one-on-one nutritional counseling. It is understandable that these services are hard to offer, as they require additional resources, however these are areas that could lead to significant health improvements with pantry clients.

There were multiple challenges with being able to provide pantry access to individuals and families in need, however there were also considerable steps taken amongst the pantries in this study to better accommodate their pantry clients. Some of the steps taken across the board included expanding operating hours, increasing staff and volunteers, reducing the identification requirements, providing information on public transportation systems and providing delivery to home services.

Interpretation of Findings

These findings help to highlight the issues that food pantries today are facing and also the many steps they are taking to make improvements. Communities are changing and evolving culturally and over the past few years, the need has changed as more individuals and families relying on food from food pantries on a more regular basis. Food pantries themselves have evolved to encourage healthier food donations and even to change what they are able to accept, as many pantries are now able to accept local farm produce that they were not able to in the past. It is apparent that many food pantries rely heavily on their distributing food bank. Thus some changes within the food

banks and how they distribute their food supply is needed; in addition to expanding nutrition educational resources provided to food pantries could yield positive changes.

A large number of individuals and families rely on food from food pantries and thus this study helped to highlight the role that nutrition plays in helping to either protect or harm the health of those individuals that rely on food pantries. The potential long-term impact that this provided nutrition from food pantries has on the health of pantry clients to treat and prevent chronic diseases is monumental. While more people are relying on food pantries than ever before, food pantries have also evolved a great deal over the years in order to provide healthier foods. While canned fruits and vegetables are still reported in large amounts, participants also reported that fresh fruits and vegetables are now being distributed more than before, many donated from farmers who in previous years were not able to donate a portion of their crop to pantries, due to policies preventing this. In addition, many food pantries are encouraging donations of healthier options and providing cost effective examples of how to do so.

Lastly, one interpretation from the findings and previous research is that there is a high need for increased nutrition education. While most pantries offer nutrition education to a certain extent, most of those services are in the form of fliers or referrals to other services. Increasing cooking classes, nutrition workshops, one-on-one nutrition counseling and other services such as these, could potentially have a great impact on the long-term health of pantry clients.

Recommendations

One recommendation that I have after hearing from several small pantries and the challenges they face with getting a small quantity of quality produce from their distributing food bank, is for food banks to also offer smaller supplies of fresh produce, so that the smaller pantries can in turn offer these foods to their clients. Additionally, both pantry staff and government health officials are encouraged to continue to advocate for policy change that not only allows pantries to accept local produce but also encourages donors to do so through local or residential farms, with possible tax incentives. Another recommendation would be to address the policy that prevents waste of "good" produce when it is in the same bunch as a few bad pieces, this would increase the percentage of fresh produce amongst food pantries.

As food banks are much larger and provide much of their stock to food pantries, perhaps a more collective, universal system for distributing educational information about nutrition in an efficient manner would be beneficial. For example, distributing documents with information about the importance of the different food groups, healthy recipe cards, and information about health specific conditions and how nutrition plays a role could be created. These materials could then be distributed to food pantries through their distributing food bank and in turn to clients for enhanced education. As many pantries do not have a kitchen nor the staff to provide cooking classes or demonstrations, perhaps these could be made available online for clients to watch and learn from their local library. As low-income populations face many health disparities and have been reported to be unsure of how to prepare or choose healthier foods,

increasing their knowledge, confidence and self-efficacy to do so seems to be an important step. Perhaps some community events could be planned partnering food pantries with a mobile health clinic to conduct basic lab work and give information on health. The food pantries could do cooking demonstrations and disperse the ingredients and recipes to make healthy, low-budget meals specific to common health conditions such as high blood pressure, high cholesterol or diabetes. Lastly, as a larger scale initiative, as many clients are homebound or homeless, perhaps partnering with FedEx or the USPS to deliver foods to individuals or drop off locations for those who are unable to access the pantry could be explored. While all of these suggestions include the need for additional resources, it is important to remember the current and future epidemic that this nation is dealing with in terms of health and disease, and the cost savings benefit to healthcare costs as a whole that changes like this could accomplish.

Additionally, while this study examined food pantries, a further study to examine food banks and the challenges and needs they have would be interesting, in order to see what resources the system as a whole needs to better serve clients across all states. Additionally, as participants were recruited via email, many pantries were not invited to participate as no email was listed online. A future study could benefit from phone interviews with additional open-ended questions, in order to gather more in-depth information from additional pantries.

Conclusions

In conclusion, while there are many challenges to providing adequate nutrition, improved nutrition education, and increased access to food pantries to clients who use

them, there are also many areas of opportunity. Food pantries in all four states surveyed reported making changes in these areas in order to better accommodate people they serve. Further suggestions are for pantries to continue to improve nutrition quality using the Foods to Encourage Framework, continue to advocate for policy change and explore ways to creatively collaborate with community leaders. These steps will help food pantries to find new and interesting ways to engage low-income individuals and families in their health through improved nutrition, nutrition education and increasing access to food pantries.

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APPENDIX A

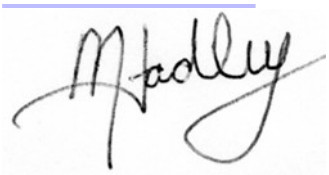
IRB Approval

February 18, 2016

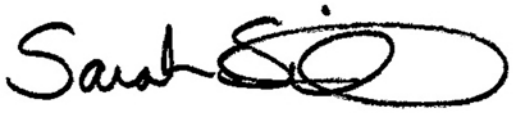
Dear Amy Hedman, PhD:

Re: IRB Proposal entitled "[871131-2] Fruit and Vegetable Availability, Nutrition Education and Access Amongst Food Pantries in California, Maine, Mississippi, and South Dakota" Review Level: Level [I]

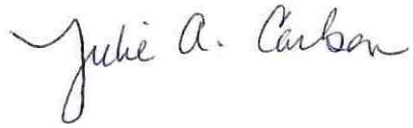
Your IRB Proposal has been approved as of February 18, 2016. On behalf of the Minnesota State University, Mankato IRB, we wish you success with your study. Remember that you must seek approval for any changes in your study, its design, funding source, consent process, or any part of the study that may affect participants in the study. Should any of the participants in your study suffer a research- related injury or other harmful outcome, you are required to report them to the Associate Vice-President of Research and Dean of Graduate Studies immediately. When you complete your data collection or should you discontinue your study, you must submit a Closure request (see http://grad.mnsu.edu/irb/continuation.html). All documents related to this research must be stored for a minimum of three years following the date on your Closure request. Please include your IRBNet ID number with any correspondence with the IRB.
Sincerely,



Mary Hadley, Ph.D. IRB Coordinator



Sarah Sifers, Ph.D. LP IRB Co-Chair



Julie Carlson, Ed.D. IRB Co-Chair

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This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Minnesota State University, Mankato IRB's records.

APPENDIX B

Permission to use the 2014 Hunger in America Survey Questions

Hi, Sarah -

Thanks for clarifying. I'm happy to say that we can share the information you requested! I've attached the survey instruments we used with agency representatives for our 2014 Hunger in America study. Feel free to review and use any of the questions for your research.

A couple things to note:

1) The surveys were completed by agency representatives, not food bank staff. We work with 200 food banks and the food banks partner almost 50,000 local agencies that run food programs such as soup kitchens and food pantries. About 32,000 agencies participated in our 2014 study.

2) The paper versions of the survey are attached, but as part of our study the survey was actually administered electronically via the web.

Hope this is helpful. Good luck with your research!

Shannon Lindstedt

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Our mission is to feed America's hungry through a nationwide network of member food banks and engage our country in the fight to end hunger. Learn more at feedingamerica.org

Together We Can Solve Hunger!T”

APPENDIX C

An Agency Survey of Food Pantries:
Fruit and Vegetable Availability, Nutrition Education and Access

Thank you for taking the time to complete this brief survey. This survey examines food pantries and fruit and vegetable availability, nutrition education and current practices and barriers to providing access to those in need. The questions will either ask you to select the answer that fits best or to fill in the blank, allowing you to write in your response. If there are any answers that you are not comfortable answering or wish to skip, please feel free to do so. This survey is for informational purposes and there are no right or wrong answers. All responses are kept confidential.

1) What percentage of the **total** food that your agency currently has in stock consists of fruits and/or vegetables (fresh, canned, frozen or other)? Please select the most accurate answer.

   0%
   1% to 25%
   26% to 50%
   51% to 75%
   76% to 100%

2) What percentage of the fruits currently in stock is fresh (not canned or frozen)? Please select the most accurate answer.

   0%
   1% to 25%
   26% to 50%
   51% to 75%
   76% to 100%

3) What percentage of the vegetables currently in stock is fresh (not canned or frozen)? Please select the most accurate answer.

   0%
   1% to 25%
   26% to 50%
   51% to 75%
   76% to 100%

4) What percentage of the fruits currently in stock is canned? Please select the most accurate answer.

0%
1% to 25%
26% to 50%
51% to 75%
76% to 100%

5) What percentage of the vegetables currently in stock is canned? Please select the most accurate answer.

0%
1% to 25%
26% to 50%
51% to 75%
76% to 100%

6) What percentage of the fruits currently in stock is frozen? Please select the most accurate answer.

0%
1% to 25%
26% to 50%
51% to 75%
76% to 100%

7) What percentage of the vegetables currently in stock is frozen? Please select the most accurate answer.

0%
1% to 25%
26% to 50%
51% to 75%
76% to 100%

8) For each of the food group items listed below, please indicate the extent to which your agency **currently** has a sufficient supply on hand by placing an 'X' in the box with the most accurate answer for each food group.

Food Group	Insufficient supply	Sufficient supply	Excess supply
Vegetables			
Dark-green vegetables			
Red and orange vegetables			
Legumes (beans and peas)			
Starchy vegetables			
Other vegetables			
Fruits			

9) Are there any policies that prevent the agency from accepting fruits and vegetables (either fresh, canned, frozen or other)? Please select the most accurate answer.

Yes
No

Unsure

a. If yes, please indicate in your own words the policy or policies that limit acceptance of fruits and vegetables.

10) Does your agency do anything to teach clients about nutrition or how to eat better? Please select the most accurate answer.

Yes
No
Unsure

11) Which of the following activities about nutrition or eating better does your agency do with clients? Please select all that apply.

a. Fliers or written materials on nutrition and health
b. Cooking demonstrations or tastings of healthier foods
c. Workshops or classes on nutrition, health issues or shopping on a budget
d. Cooking classes
e. Workshops or classes on specific health problems related to nutrition (e.g., diabetes)
f. Training on gardening skills
g. One-on-one meetings with a dietician or other person trained to help people with nutrition and health
h. Referring clients to activities related to nutrition or eating better at other locations

12) How important is it that your agency gives out and serves "healthier" foods like fruits, vegetables, low-fat milk, whole grains, lean meats, etc.? Please select the most accurate answer.

Very important
Somewhat important
Not important

13) The following list below includes things that may prevent you from giving out and serving "healthier" foods (like fruits, vegetables, low-fat milk, whole grains, lean proteins etc.).

Please select any applicable responses that prevent you from giving out and serving healthier foods.

a. It costs too much money to purchase
b. We can't get healthier foods through our distributing Food Bank

c. We don't have the ability to store/handle healthier foods
d. Clients don't want to eat/choose healthier foods
e. Clients don't know how to handle/prepare healthier foods
f. Clients aren't able to store perishable foods
g. We are not sure what foods are considered healthier
h. Giving out and serving "healthier" foods is not a goal of the agency
i. We can't get healthier foods from other donors/food sources (e.g., food drives, retailers)

14) The following list below includes things that may make it challenging to provide access to your agency to individuals in need.

Please select any applicable responses that make it challenging to provide access to people in need.

a. Limited staffing and volunteers at the agency
b. Limited operating hours
c. Language barriers (the need for translation and/or interpretation services)
d. Lack of transportation to the pantry
e. Lack of proper identification (applicable if your agency requires identification to collect foods)
f. Other _____
g. There are no challenges

15) If applicable, please select any steps that have been taken to make it easier for individuals to access the agency.

a. Providing information on public transportation
b. Expanding operating hours
c. Increased staff or volunteers
d. Reducing the requirements for documentation or identification to utilize the pantry
e. Delivery to home services
f. Other (please list in this space): _____
g. No steps have been taken

16) Is your agency a choice model (people choose their food items) or traditional model (people are given a standard pre-packaged bag or box of food)? Please select the most accurate answer.

Choice (people choose their food items)
Traditional (people are given a standard pre-packaged bag or box of food)

17) Please estimate how many people your agency serves each month?

18) What is your title at the agency?

19) In what city & state is your agency located?

THANK YOU FOR COMPLETING THIS SURVEY! YOU ARE NOW FINISHED☺

APPENDIX D

Internet Email Message and Informed Consent

Hello!

My name is Sarah Fowler and I am a Graduate Student at Minnesota State University, Mankato. I am conducting a research study that looks at multiple food pantries across four states: California, Maine, Mississippi and South Dakota. The research will look at food pantries and their fruit and vegetable availability, the extent that nutrition education is offered and the barriers and current efforts being made in providing individuals in need access to the pantries. I invite you to participate in this research study. If you agree to participate you will be asked questions about your food pantry and its supply of fruits and vegetables, nutrition education and pantry accessibility to individuals and families.

Your participation in this study is completely **voluntary**. You may refuse to participate with no penalty. In addition, you may discontinue participation at any time or decline to answer any question(s) at any time. The survey is completely **confidential** and should take only about 10-15 minutes to complete.

Here is a link to the survey:

https://mnsu.co1.qualtrics.com/SE/?SID=SV_8HzTQesnTUJ3BEF

Your participation is greatly appreciated. Upon your request, I would be happy to send you a summary of the research findings and conclusions of this study.

Please note: details regarding **Informed Consent** are listed below. By participating in this online survey, your consent is implied.

Thank you for your consideration and time.

Sincerely,

Sarah Fowler
Graduate Student
Minnesota State University, Mankato, MN
Phone: (612) 963-2849
Email: sarah.fowler@mnsu.edu

Amy Hedman, PhD
Principal Investigator

Minnesota State University, Mankato, MN
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ONLINE/ANONYMOUS SURVEY CONSENT

You are requested to participate in research supervised by Dr. Amy Hedman on food pantries across four states, California, Maine, Mississippi and South Dakota and any differences that exist among these states in relation to: their fruit and vegetable availability, the extent that nutrition education is offered and the barriers and current efforts being made in providing individuals in need access to the pantry to individuals and families in need.

This survey should take about 10 to 15 minutes to complete. The goal of this survey is to understand food pantry operations related to fruit and vegetable availability, nutrition education, and access. You will be asked to answer questions about that topic. If you have any questions about the research, please contact Dr. Hedman at amy.hedman@mnsu.edu.

Participation is voluntary. You have the option not to respond to any of the questions. You may stop taking the survey at any time by closing your web browser. Participation or nonparticipation will not impact your relationship with Minnesota State University, Mankato. If you have questions about the treatment of human participants and Minnesota State University, Mankato, contact the IRB Administrator, Dr. Barry Ries, at 507-389-1242 or barry.ries@mnsu.edu.

Responses will be anonymous. However, whenever one works with online technology there is always the risk of compromising privacy, confidentiality, and/or anonymity. If you would like more information about the specific privacy and anonymity risks posed by online surveys, please contact the Minnesota State University, Mankato Information and Technology Services Help Desk (507-389-6654) and ask to speak to the Information Security Manager.

The risks of participating are no more than are experienced in daily life. There are no direct benefits for participating. Society might benefit by the increased understanding food pantry operations. Submitting the completed survey will indicate your informed consent to participate and indicate your assurance that you are at least 18 years of age. Please print a copy of this page for your future reference.

MSU IRBNet ID# 871131
Date of MSU IRB approval: 02/18/2016

Researcher's Contact Information:

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