THE PERCEPTION OF THE FOOD PANTRY CUSTOMER RECEIVING
DIABETES-FRIENDLY FOOD BOXES

A Thesis

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ABSTRACT

Food insecurity is on the rise in the United States, and food insecure individuals are more likely to have diabetes than those who are food secure. Diabetes self-management may be impaired as a result of food insecurity, and there are limited studies that examine the effect food distributed by food pantries can have on the management of diabetes. A greater understanding of what types of foods provided by food pantries will be most beneficial to food insecure individuals with diabetes could have a significant impact on better meeting the individual's medical needs to assist diabetes control. The objective of this study was to identify both the positive outcomes and the challenges of receiving diabetes-friendly (low-glycemic index) food boxes developed for food insecure individuals with type 2 diabetes using food pantries. The analysis is based upon three focus groups and one interview with participants of an on-going study, conducted from October through November 2012. An open-ended question thread was utilized during the focus groups and interview. The data was transcribed from the audio-recorded sessions and analyzed by identifying, coding, and categorizing primary patterns/themes in the data. Participants cited similar responses resulting in six overarching themes: (1) participants are grateful for the food boxes, (2) participants share food box items with multiple people, (3) participants provided support to the fellow group members, (4) participants noted exposure to new foods, (5) perceptions of diabetes health improved due to the food boxes, and (6) the process for pick-up affected participants' lives. The

findings suggest the diabetes-friendly food boxes are beneficial for food insecure individuals with type 2 diabetes by exposing them to new food items and improving their diabetes management as stated by the participants. Also the findings indicate and increased need for supplemental information regarding food preparation and recipes as well as further diabetes education classes and/or materials.

Key Words: food pantry customer; diabetes; food insecurity; food boxes

Dedicated to Grandma and Grandpa Groseclose
and Grandma and Grandpa Klamfoth

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CHAPTER 1

INTRODUCTION

Background of the Problem

Food insecurity is defined by the United States Department of Agriculture (USDA) as a household-level economic and social condition of limited or uncertain access to adequate food.¹ The definition also includes ranges of food security including low food security and very low food security.¹ Individuals experiencing food insecurity has been on the rise in the United States since 1999. According to the USDA annual, nationally representative survey, in 2011 an estimated 14.9 percent of American households, representing 33.5 million adults and 16.7 million children, were food insecure during the year.² Recent studies indicate that food insecurity rates are higher among individuals who are younger,³ from a racial or ethnic minority group,^{3,4} have a lower educational level,³ have incomes near or below the Federal poverty line,^{3,4} and live in households with children headed by a single parent.⁴

Food insecure individuals often employ coping strategies in an attempt to meet their food needs. Often, foods purchased by food insecure individuals are inexpensive, highly processed convenience foods that are quick to prepare.⁵ Additional coping strategies include preparing food in bulk, consuming leftovers, utilizing what is on hand, and freezing foods for later use. Some food insecure individuals also used food

substitutions such as powdered milk for fresh, reduced or omitted unaffordable ingredients in recipes, and used fillers ingredients such as potatoes or noodles in recipes.⁵ Individuals also shopped at multiple stores, used a combination of discount coupons and advertised sales for food ingredient purchases⁵ and acquired stamps from other individuals.⁶ A prominent and often necessary coping strategy for many food insecure adults is to reduce the amount of food they consume to ensure their children are eating an adequate amount to support their needs.⁵⁻⁷ Studies have reported that families will acquire cash advances or delay paying bills, rent/mortgage,^{5,8} and/or medical bills and other supplies^{9,10} causing additional struggles in order to guarantee there is enough food to last throughout the month.

People experiencing food insecurity have two primary options for support: government and nonprofit, private emergency food assistance.¹¹ Due to the government food assistance programs not meeting all the food needs, food insecure individuals are turning to emergency food assistance programs to fill the gap.¹¹⁻¹⁴ In 2011, 5.1 percent of all households in the United States (6.1 million households) accessed emergency food from a food pantry at least once.² Although many of these organizations were created to address a short term emergency food need, many individuals are using them on a long-term basis.^{7,11,12,14} Most food pantries receive donations of food items from various sources,^{11,12} and historically many donations have been predominately energy dense foods.¹⁴

Food insecure individuals have a higher risk of developing diabetes,¹⁵ are more likely to have diabetes,¹⁵ and have higher HbA1c levels^{9,15,16} than those who are food

secure. Once an individual has developed diabetes, food insecurity may impair diabetes self-management.^{8,9,15,16} Individuals with diabetes who have access to nutritional counseling are often instructed to limit and/or avoid foods that have a high proportion of added fats, added sugars, and refined carbohydrates in order to have better blood glucose control, however, food insecure individuals often purchase these inexpensive energy-dense foods.^{9,15,16} Blood glucose levels may fluctuate as a result of inconsistent caloric and carbohydrate intake in food insecure individuals.⁹ In addition, the cost of foods appropriate for individuals with diabetes may compete with the costs of diabetes medication, supplies, and/or medical management as a result of the inherent financial limitations associated with food insecurity.^{8,9,15} Self-efficacy, defined as one's confidence in one's ability to complete specific tasks, may also influence the health outcomes of those persons who are food insecure and have diabetes. A lower self-efficacy has been reported in food insecure individuals with diabetes in light of the extra burdens/or emotional distress regarding diabetes self-management.^{9,15,16}

Statement of the Problem

Food insecurity exists in every county in America² and more individuals are consuming a diet that is often lower in essential nutrients.^{8,17} Consequently, the risk of chronic diseases, such as diabetes, is increased¹⁵ and managing the disease may be increasingly difficult due to the extra burden of financial restriction for food insecure individuals.^{8,9,15,16} The most cost-efficient means to consume calories is with oils and sweets, bread, rice, and pastas. The most expensive means to obtain calories is with fresh

fruits and vegetables.^{6,16} Food insecure participants often describe being frustrated with the inability to purchase appropriate foods to help manage their diabetes.⁶

Food pantries have the unique ability to address both food insecurity and inadequate nutritional intakes by providing more nutritious and fresh foods at no cost to those that qualify for services.¹⁸ Some pantry donors report neglecting nutrition quality when choosing food items to donate, and others cite the dire economic crisis with impacting the variety and nutritional quality of food purchased for food pantries.¹⁴ In addition, food pantry clients have expressed that a greater variety of food choices would help them meet their dietary recommendations for chronic diseases such as diabetes.⁷

The types of foods distributed to food pantry clients are an important element for diabetes management in food insecure individuals. Currently there is a lack of research on how to effectively use food to help food insecure individuals with diabetes to manage their disease or delay progression of disease. Particularly, there are limited studies that examine the effect food distributed by food pantries can have on the management of type 2 diabetes. A greater understanding of what types of foods provided by food pantries will be most beneficial to food insecure individuals with diabetes could have a significant impact on better meeting the individual's medical needs to assist diabetes control.

Purpose of the Study

The purpose of this study was to identify both the positive outcomes and the challenges of receiving diabetes-friendly (low-glycemic index) food boxes developed for food insecure individuals with type 2 diabetes. The process of receiving the food boxes

and utilization of the food provided will be assessed to inform future recommendations on how to improve the process for the food pantry customer.

Objectives of the Study

This study will address the following objectives:

1. To identify the positive outcomes, barriers, and challenges of providing diabetes-friendly food boxes to food pantry customers.
2. To determine the food pantry customers' perceptions of a process that provides diabetes-friendly food boxes and the actual foods provided.
3. To identify how foods provided in a diabetes-friendly food box to food insecure customers are being used.
4. To identify perceptions of outcomes by food pantry clients of receiving diabetes friendly food boxes.

Definition of Terms

The following section describes the terms and variables used throughout the study.

Choice Food Pantry- a food pantry organized in a way that allows eligible clients to choose items based on preference and/or need.¹⁹

Dietary Guidelines for Americans- evidence-based nutrition information and advice for healthy Americans age 2 and older. These guidelines serve as the basis for the Federal food and nutrition education programs. The United States Department of Health and Human Services and the USDA have jointly published the Dietary Guidelines every five years since 1980.²⁰

Emergency food assistance/providers- charitable feeding programs whose services are provided to clients who are typically in short-term need of emergency food assistance.

Emergency food programs include food pantries, soup kitchens, and shelters.²¹

Feeding America: the United States' leading domestic hunger-relief charity. Through the assistance of local and national food assistance programs, Feeding America is able to provide nutritious, fresh foods to Americans struggling with hunger; safe and nurturing places for children to have a meal; emergency assistance for disaster victims; as well as a chance at self-sufficiency for adults trying to break the cycle of poverty and hunger.²²

Food bank- a charitable organization that solicits, receives, inventories, and distributes purchased and donated food products pursuant to industry and appropriate regulatory standards. The products are distributed to charitable human-service agencies, which provide the products directly to clients through various programs.²¹

Food boxes(operational definition)- Average low-glycemic index foods (diabetes-friendly) are being included in the box and given to participants twice a month.

Food desert- areas that lack access to affordable fruits, vegetables, whole grains, lowfat milk, and other foods that make up the full range of a healthy diet.²³

Food insecurity- a household-level economic and social condition of limited or uncertain access to adequate food.¹

Food security- zero to two reported indications of food-access problems or limitations with little or no indication of changes in diets or food intake.¹

HbA1c- a biomarker that measures the percentage of glycated hemoglobin in the blood and is associated with long term blood glucose control.²⁴

Healthy Eating Index- a measure of diet quality that assesses adherence to Federal dietary guidance. The food group equivalents are based on the recommendations found in MyPlate.²⁵

Healthy People- provides science-based, 10-year national goals and objectives for improving the overall health of Americans.²⁶

Low Food Security: reports of reduced quality, variety, or desirability of diet with little or no indication of reduced food intake.¹

National Health Examination and Nutrition Examination Survey (NHANES)- a national study designed to collect data on the health and nutritional status of adults and children in the United States. The survey is unique in that it combines interviews and physical examinations.²⁷

MyPlate- developed by the USDA as an effort to promote healthy eating to consumers. The icon is easy to understand and it helps to promote messages based on the 2010 Dietary Guidelines for Americans.²⁸

Pantry (food pantry, food shelf)- a charitable distribution agency that provides clients with food and grocery products for home preparation and consumption.²¹

Poverty- the Census Bureau uses a set of money income thresholds that vary by family size and composition to determine who is in poverty. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. The official poverty thresholds do not vary geographically, but they are updated for inflation using Consumer Price Index (CPI-U). The official poverty definition uses

money income before taxes and does not include capital gains or noncash benefits (such as public housing, Medicaid, and food stamps).²⁹

Soup kitchen- a place where prepared meals are offered free or at very low cost to the needy.²¹

Supplemental Nutrition Assistance Program (SNAP)- (formally known as Food Stamp Program) the largest federal nutrition assistance program that provides financial assistance for purchasing food to low-income individuals. Eligibility depends on the number of people in the household, income, and resources (cash, bank accounts, etc).³⁰

Traditional food pantry- food pantry set up in a way that eligible clients are given a box or bag of preselected items.¹⁸

Women, Infants, and Children (WIC)- a Special Supplemental Nutrition Program for women, infants, and children that serves to safeguard the health of low-income pregnant, postpartum, and breastfeeding women, infants, and children up to age five who are at nutritional risk by providing nutritious foods to supplement diets, information on healthy eating including breastfeeding promotion and support, and referrals to health care.³¹

Work First- Washington's welfare reform program designed to help low-income parents get what they need to prepare for and go to work. It is a partnership between state agencies and communities to work together to provide the necessary services and resources families need to be successful.³²

Very low food security- reports of multiple indications of disrupted eating patterns and reduced food intake.¹

CHAPTER 2

REVIEW OF LITERATURE

Food Insecurity in America

Food insecurity exists when there is a limited or uncertain access to adequate food.¹ It is a household-level economic and social condition¹ that is often triggered by an event that stresses the household budget, such as losing a job or assistance benefits, gaining a household member, or medical and health costs.⁸ The United States Department of Agriculture (USDA) monitors the extent and severity of food insecurity in United States households through an annual, nationally representative survey^{4,33} In 2011, an estimated 14.9 percent of American households, representing 33.5 million adults and 16.7 million children,² were food insecure during the year. This includes 5.7 percent with very low food security which indicates food intake of one or more household members was reduced and their eating patterns were disrupted at times because the household lacked money and other resources for food.⁴ The prevalence of very low food security returned to the level observed in 2008 and 2009, which indicates a statistically significant increase from the 5.4 percent level of 2010.⁴ Food insecurity exists in every county in America² and the number of food insecure households (those with low and very low food security) in the United States has been increasing since 1999,³ however, the change from 2010 was not statistically significant.⁴

According to the 1999 to 2002 National Health Examination and Nutrition Examination Survey (NHANES), food insecure individuals were overall younger, more likely to be from a racial or ethnic minority group, were poorer, and had achieved less educational attainment than food secure individuals.³ Similar results were reported in the USDA's 2010 report stating rates of food insecurity were substantially higher than the national average for households with incomes near or below the Federal poverty line, and food insecurity was also higher in Black non-Hispanic households (25.1 percent) and Hispanic households (26.2 percent), households with children (20.2 percent) compared to those without children (11.7 percent), and especially households with children headed by single women (35.1 percent) or single men (25.4 percent).⁴ A study by Nnakwe³³ with low-income families participating in community food assistance programs (n = 236) in a mid-sized, Midwestern town also found that African Americans were more likely to be food insecure than Caucasians ($p < .05$) and households with children experienced food insecurity more than households without children ($p < .01$).³³

Food Insecurity Consequences

Healthy People 2020 envisions a “society in which all people live long, healthy lives.”⁸ The proposed overarching goals of Healthy People 2020 are to eliminate preventable disease, disability, injury, and premature death; achieve health equity, eliminate disparities, and improve the health of all groups; create social and physical environments that promote good health for all; and promote healthful development and healthful behaviors across every stage of life.^{8,34} Food insecurity, however, has been associated with increased risk of certain birth defects with food insecure mothers, adverse

health, growth, and development outcomes among children aged 0 to 18 years, behavioral and psychological problems, including suicide risk in adolescents, as well as poorer academic performance and achievement in children and adolescents.^{8,34} Among adults, food insecurity has been associated with poor physical and mental health status, as well as depression in women, and risk for and incidence of chronic diseases.⁸ Therefore in order for HealthyPeople 2020 to reach their overarching goals, the 33.5 million adults and 16.7 million children² who are food insecure must decrease and hunger must be eliminated.

The average food insecure household cycles through being food secure to food insecure many times a year.⁸⁻¹⁰ Cyclic food restriction is often associated with preferences for energy-dense foods, increased body fat, and decreased lean muscle mass.¹⁰ During the times of adequate food supply, overconsumption is likely to occur and possibly due to the anticipation of future food scarcity which can lead to fat accumulation.¹⁰ Individuals who worry about adequate money for food may substitute preferred foods for cheaper alternatives³ and reduce food variety in their diet.¹⁰ Low-cost food alternatives tend to be less nutritionally dense which may promote an increased caloric intake from nutritionally inadequate food sources and subsequent weight gain^{3,6,10,35} The most cost-efficient means to consume calories is with oils and sweets, bread, rice, and pastas. The more expensive means to obtain calories is with fresh fruits and vegetables.^{6,16}

One observational study described the association between diet quality and costs by assessing diets consumed by adults in the United States using the NHANES data from

2001 to 2002. Individuals who completed a reliable 24-hour recall ($n = 4744$, adults ≥ 19 years), retail food prices paid by members of the Nielsen Homescan Consumer Panel during the same period, and data from the demographic questionnaire and Food Security Survey Module were used in the analyses. The Healthy Eating Index-2005 (HEI-2005) was used to measure the overall diet quality based on consumption of two nutrients (sodium and saturated fat) and nine food/beverage groups (total fruit, whole fruit, total vegetables, dark green and orange vegetables, milk, total grains, whole grains, meat and beans, and oils) and a measure of empty calories (SoFAAS). Higher HEI-2005 scores indicate better diet quality. The researchers found that higher consumption of total vegetables, dark-green/orange vegetables and legumes, and whole fruit among both men and women was associated with higher costs. Total grains, whole grains, and milk and milk products, however, were largely cost neutral. Living in a food-secure household was associated with higher energy-adjusted diet cost and higher HEI-2005 when compared with individuals who lived in a household with any degree of food insecurity. There was a significant association between diet cost and HEI-2005 score for the entire United States population even after adjustments for additional sociodemographic factors. The authors concluded that the association between diet cost and diet quality observed in the study may be one mechanism that contributes to diet-related health disparities.³⁶

Similarly, a study by Nnakwe³³ with a convenience sample ($n = 236$) from eleven different food assistance sites such as soup kitchens, food pantries, and homeless shelters in 2002 and 2003 found the consumption of food from the food groups of the USDA Food Guide Pyramid (currently MyPlate) of the same time period decreased as the

presence of food insecurity increased in all households ($p < 0.01$). It is possible, however, to maintain a healthy diet within financial constraints, but such diets may require considerably more time, motivation, planning, and knowledge than many food insecure individuals can comfortably handle.¹⁶

Food in the Home

The food that is available in the home is a factor when one makes a decision of what food to consume which ultimately affects nutritional health. There are multiple factors, however, that influence household food availability such as household size, household income, income/resource cycle, refrigeration/storage facilities, transportation,^{37,38} and access to food outlets.³⁹ Individuals without transportation may need to rely more heavily on corner stores and convenience stores for food purchases. Convenience foods tend to be less nutrient dense and more expensive which may further limit purchases of healthy food items.^{15,33} In a 2009 focus group study to assess how low-income rural residents living in food deserts access normal food systems, defined as retail food establishments such as grocery stores, supermarkets, restaurants, and other eateries, within their communities, a participant made the comment, “But if you can’t afford to pay the price of the food that they have in town, then you probably can’t afford to drive to another town to pay cheaper prices, so you’re kind of stuck either way you look at it.”³⁸

A household food inventory pilot study was conducted from July through August 2008 in nine Texas homes over a thirty-day period with five in-home visits at seven day intervals. Women with at least one child under 18 years of age and living in the same

household were recruited through flyers and word of mouth. During the first in-home visit, an interview-administered questionnaire was given over three categories of sociodemographic characteristics, food-related activities, and food security. One-third ($n = 3$) were considered food secure, 44.4 percent ($n = 4$) were classified as having very low food security, and six households participated in at least two food assistance programs. Each in-home assessment included an observational survey conducted by two trained researchers to determine the amounts and types of foods present and a follow-up questionnaire to identify food-related activities since the last assessment.³⁹

Only three households had fresh fruit or vegetables in the home on all five assessments, four households had no fruit or vegetables on 1 to 4 occasions, and the very low food secure households were found to have the least consistent presence of weekly fresh fruit. Apples and bananas were observed most frequently for fresh fruit, however, the amount of apples in the households ranged from 1 to 14 apples. The most common canned vegetables were tomatoes, green beans, green peas, carrots, and corn, however, their presence was not consistent throughout the month. White bread was present on four to five assessments in six of the homes, and sweetened breakfast cereal was present in all households on four to five assessments. Regular chips were available in all the households on at least four occasions and one household had prepared desserts (e.g. donuts or regular cookies) available during all five assessments. Two households had whole milk and one had low fat milk on all five occasions, and 44 to 55 percent had different amounts of whole or low fat milk present on 1 to 3 inventory occasions. Grocery store trips varied with each participant, and those who did not purchase groceries on a

regular basis had less food at certain times of the month. One participant did not purchase groceries each week for the household, and instead consumed fast food two to three times each week. Total expenses for groceries (sum of grocery experiences within seven days of all home assessments) was less than \$300 for three households, \$300 to \$420 for five households, and greater than \$450 for one household. Although a small sample size was used, the authors conclude the findings from this study add to the body of research on household food availability by providing detailed information on monthly variability.³⁹

Food Insecurity and Food Pantries

People experiencing food insecurity have two primary options for support; government and nonprofit, and private emergency food assistance.¹¹ States offer various forms of support in partnership with the federal government such as Supplemental Nutrition Assistance Program (SNAP, formally known as Food Stamp Program), Women, Infants and Children Program (WIC), School Meals Program, the Child and Adult Care Food Program, the Elderly Nutrition Program, and Food Assistance for Disaster Relief.¹¹ In 2010, 59.2 percent of food-insecure households participated in at least one of the three major Federal food assistance programs (SNAP, The National School Lunch Program, and WIC).² Government food assistance programs help individuals struggling with food insecurity to obtain food, however, not all the individuals' needs are met. As a result of this gap, individuals with food insecurity are turning to emergency food providers to supplement their needs.¹¹⁻¹⁴ Emergency food providers are community organizations including food banks, food pantries, and soup kitchens.¹¹ In 2010, 4.8 percent of all households in the United States (5.6 million

households) accessed emergency food from a food pantry one or more times.² Although many of these organizations were created to address a short term food need, many individuals need these services on a long-term basis.^{7,11,12,14}

Food Pantry Clients

A study in North Carolina collected 30 or more randomly selected client files at each of ten participating non-profit food pantries, for a total of 463 files. The client files obtained data from 2005 to 2008, and not all of the pantries in the study collected the same information on the clients; therefore analyses have different total observation numbers and use different variables dependent on the questions involved. The study found that the average food pantry client used the food pantries for 1,823 days.¹² Majority of pantry clients were from homes with incomes at or slightly higher than the federal poverty line. This can indicate that food insecurity is not always directly related with poverty. Job-related demands, such as transportation, childcare, and uncovered health care costs, can force choices between food and other needs.^{11, 12}

This study also supported previous findings that when a client receives government support through food stamps this tends to lengthen the time a client seeks assistance from a food pantry rather than shorten it,¹² demonstrating that food stamp benefits are not enough to meet the needs of those who are food insecure.^{11,12,40} The study also identified that although Hispanics and African Americans made up only 20 percent of the different counties' population in the study, in all but two of the counties these groups were the majority of participants at the food pantries.¹² The data also shows that most of food pantry clients were between the ages of 20 to 65 years. These findings

supports the data from the 1999 to 2002 NHANES survey that food insecure individuals are likely to be from a racial or ethnic minority groups and younger in age.³

A study by Berner et al¹¹ found similar results. Clients receiving assistance from the largest nonprofit food pantry in Iowa, Cedar Valley Food Pantry (CVFP), were asked to complete a voluntary, two page survey each time they came to the pantry. The survey was made up of closed-ended questions on employment, housing, occurrence and type of crisis events, special dietary needs, and receipt of government-paid benefits including food stamps, welfare, and Social Security. Demographic information was not collected due to the CVFP's belief that the questions present a potential barrier for its clients. A sample of 1,897 usable surveys from food pantry clients from July 2004 to April 2006 was analyzed in this study. Approximately half of the CVFP respondents receive government benefits, and most of the respondents are enrolled in only one program. Eighteen percent of the respondents, however, reported receiving more than one type of benefit from the government. Of the respondents who currently hold a job, more than 13 percent receive more than one of these types of government support.

The survey data also determined that rather than easing financial burdens, having a job appears to increase the weight of an individual's responsibilities and that employees in all sectors are at risk of becoming food insecure. One client reported coming to the pantry because of having "not enough Food Stamps and not enough work hours." The clients with jobs reported at higher rates than those without jobs being unable to purchase food because of having to pay rent or mortgage, to buy clothes for themselves and their children, to pay for medical bills and prescriptions, pay utility bills, and to pay

for car-related expenses. This study concludes that many citizens rely on help from both government and nonprofit organizations and those who are working and receiving benefits are almost as likely to need long-term assistance as those who only receive benefits or those who do not receive benefits and are not working.¹¹

Food Pantry Characteristics

Food pantries have the potential to address both food insecurity and poor diet quality by distributing healthy foods at no cost to low-income families.¹⁸ Traditional pantries give clients a box or bag of preselected items, and choice food pantries are similar to a grocery store allowing clients to choose from a wider selection of food and nonfood grocery items based on their household size.^{11,18} Many food pantries receive and buy most of their food from food banks in addition to donations from individuals, businesses, churches, local charities, or foundations.^{11,13}

A study was conducted in 2004 to 2005 by Hoisington et al¹³ to develop a procedure for analyzing nutritional quality of emergency foods in Oregon and elsewhere. The procedure uses a measurement unit called a “MyPyramid Day,” based on the 2005 Dietary Guidelines for Americans and MyPyramid (currently MyPlate). The 36.4 million pounds of food distributed by the Oregon Food Bank was measured in a one-year period and assigned to one of five MyPyramid groups (grains, fruit, vegetables, milk, and meat/beans) or four additional groups (variety, condiments, discretionary, and combination). MyPyramid food units were converted from as-purchased form into edible portion and totals for the MyPyramid food groups were calculated using units of measure from MyPyramid. About 24.2 million as-purchased pounds (66 percent) were from the

five MyPyramid food groups with fruit and dairy distributed in the smallest quantities, and approximately 12.2 million as-purchased pounds (34 percent) were variety, condiments, discretionary, and combination foods. The authors suggest the tool outlined here could be used by other state food banks to determine the quality of the food being distributed throughout their state. Emergency food networks can conduct targeted food drives requesting donations of nutritious foods from food groups donated in low quantity, or purchase targeted foods for distribution so that food boxes better meet the 2005 Dietary Guidelines for Americans.

A study in 2008 was conducted in an effort to capture the impact of potential donor fatigue on the variation of foods available in the food pantry inventories and the constriction of the diets of the urban poor. Urban areas were chosen for this study because Feeding America's data from 2007 showed 57.4 percent of America's hungry live in urban areas. Urban residential blocks tend to be dominated by fast food stores, small convenience markets or bodegas, or liquor stores, therefore food pantries are often used to help meet food needs for the urban poor. The pantries who met the inclusion criteria (located in urban areas and 80 percent or more of pantry items must be obtained through direct donation rather than food bank disbursement) (n = 196) were randomly chosen from Feeding America's records of food banks in America. All of the pantries were run by a faith-based organization and a majority of the pantries (78.6 percent, n = 154) were located at a site of worship.¹⁴

A complete inventory of all donations for the month of September was requested because September represents a neutral month in between higher donation periods

associated with holidays and cold months and lower donation periods associated with the summer months. A majority of their food supplies came from organized food drives by local groups such as scout troupes, congregation members, or special interest groups in their area. The data showed that corn kernels is the most common and numerous canned food item, averaging 19.4 percent of inventory stock. All pantries note that they have the largest supply of corn kernels at any given time. The most common bagged food items noted were egg noodles (16.9) and pastas (15.2) and spaghetti/pasta was also noted as the most common boxed item (28.1). Volunteers at the pantries reported a decrease in the variety of donated items and several pastors noted that they were seeing less assortment and more consistent donations of very basic staple goods. One pastor stated, “We are really in a crisis mode. Our congregants, they have been the bulk of our traditional donors, have fewer resources to spare what with gas and food costs. They have been trying to keep donating the same amounts, so they are buying more of the cheaper items to help keep food on the shelves. So, we really just don’t have the same types of foods that we’ve had in the past.” All pantries included in this study reported a consistent need/desire for items that they used to have but are not often donated anymore. The majority of pantries (78 percent) expressed the desire for a greater selection of canned fruits and vegetables. The authors concluded by noting that the donations reported in this survey were dominated by energy-dense but nutrient-poor foods and that additional research should focus on constrictions that the state of the economy is placing on the nutritional quality of the foods being purchased by food pantries.¹⁴

A focus group study conducted by Remley et al¹⁸ to explore the benefits and challenges of converting a traditional food pantry to a choice food pantry from a consumer point of view by recruiting low income pantry clients at a large choice pantry in Hamilton, Ohio. Two focus groups were conducted, one included English speaking clients (n = 10, 7 Caucasian and 3 African American) and the other included Spanish speaking clients (n = 10).

The perceived benefits of choice food pantries by both focus groups included the act of choice, more variety of food to choose from than the traditional model, and less waste by not receiving food items they would not use. A Spanish-speaking client stated, “Well I like it now, and keep it that way, because before they gave us things we won’t use. And now we can take rice, and what we need the most!” The English-speaking focus group also discussed the benefits of being able to choose more nutritious items and the social benefits of being able to interact with volunteers and share ideas.¹⁸

One of the biggest perceived challenges was that choice food pantries did not address the needs of the Latino clients and their food preferences. Although they thought the choice model offered more variety, Spanish-speaking clients suggested that culturally appropriate foods were not always available. Many did not know how to use the foods that were available. Many Spanish-speaking clients also reported language difficulties and they could not understand volunteers and had difficulty reading labels on cans. One Spanish-speaking client said, “I took a can thinking it was tomato sauce and when I opened it I found out it was sliced tomatoes. It has happened to many people here; they take home a can and then realize it was not what they thought it was.” Other barriers

discussed by both focus groups included long waiting lines and inconsistency of operations. An English-speaking client commented that, “One month we’ll come in on one day, but on another month we’ll come in on another day, and they’ll be a totally different group of volunteers, and different groups do things different ways.”¹⁸

The English-speaking clients enjoyed the food demonstrations, nutrition workshops, and occasionally used nutrition information and recipes given at this food pantry. They also liked how the pantry was organized based off of the food group categories (currently MyPlate), but did not know specifically why it was important. The Spanish-speaking participants in the focus group, however, did not understand nutritional concepts and did not participate in food demonstrations because they do not think they are culturally relevant.¹⁸

The authors conclude that overall, both Spanish- and English-speaking clients preferred the choice food pantry model over the traditional mainly because they could choose food they prefer and did not have to waste unwanted food. The greatest barrier discussed was related to culture, including volunteer and client communication problems, cultural foods not available, and nutrition education not relevant. The authors suggest that pantry administrators should consider recruiting Latino clients or Latino community members to serve on planning committees to facilitate the transition to choice in a culturally accepted manner. Nutrition education provided within the choice pantries needs to be culturally relevant as well.¹⁸

Diabetes and Food Insecurity

Development of Diabetes

Food insecurity has been associated with a less-healthy diet as a result of lower dietary intakes of essential nutrients,^{8,17} fruits and vegetables, and milk and milk-based products in adults.⁴¹ A cross-sectional study investigating the diet quality of adult female food pantry clients (n = 48) in 2006 in Lee County, Alabama found that all respondents had incomes below the federal poverty thresholds. The majority of respondents reported no fruit consumption, no whole fruit consumption, no whole grain consumption, and no consumption of dark green or orange vegetables or legumes. The only category in which most respondents received the maximum score on the HEI- 2005 was for meat and beans.⁴² Continuous suboptimal intakes could increase one's risk of developing diet-related chronic diseases.^{8,13,14,17,18,37,41} A high fat, sugar, and refined carbohydrate diet often observed in studies of those who are food insecure^{9,15,16} has been associated with the development of diabetes.³ In addition, the cyclic nature of food insecurity can lead to binge eating^{3,10,41} and the overconsumption and an under-consumption pattern of dietary intake has been linked to insulin resistance, a precursor for diabetes.^{3,10,33}

Seligman et al¹⁵ stated food insecurity appears to be more strongly associated with diabetes than other diseases, such as hypertension and hyperlipidemia, due to a number of reasons. Diabetes may be more highly sensitive to diet, whereas hypertension and hyperlipidemia may be more highly sensitive to medication adherence. Replacing fruits and vegetables with inexpensive carbohydrate sources such as refined starches, increases dietary glycemic load and may increase the risk of developing diabetes. The thrifty gene

hypothesis suggests the human body is adaptive to more efficiently accumulate fat when food is unpredictable, which is common due to the cyclic nature of food insecurity. This hypothesis may also imply that peripheral insulin resistance, a precursor to diabetes, may be adaptive to food insecurity by allowing for the preservation of muscle tissue during food restriction¹⁵. In addition, food insecurity is both an emotionally and physiologically stressful state, and stress is associated with elevated cortisol levels. High cortisol levels have been linked to visceral adiposity which is a strong risk factor for diabetes.^{3,15} One focus group participant from Smith and Morton's study in 2009³⁸ stated, "Well, it's all part of the story. Stress is from food just as much as it is from worry, hard work, no work, no money. You can get stress from food just as easily as you can get stress from worry."

Management of Diabetes

Once an individual has developed diabetes, food insecurity might impair diabetes self-management.^{8,9,15,16} Individuals with diabetes are counseled to limit and/or avoid foods that have a high proportion of added fats, added sugars, and other refined carbohydrates in order to have better glycemic control, however, food insecure individuals often purchase or are given these energy-dense, nutritionally-poor foods.^{9,15,16} Blood glucose levels may be unpredictable as a result of inconsistent caloric and carbohydrate intake and then complicate the development of optimal medication and insulin regimens. Hypoglycemia may result due to skipped meals or inadequate carbohydrate intake due to the inability to afford food. Hyperglycemia may result due to consumption of inappropriate foods for individuals with diabetes, overconsumption during food adequacy, and reduced or lack of medication adherence.⁹ As a result of

financial limitations associated with food insecurity, the cost of food may compete with costs of diabetes medication and supplies.^{8,9,15} Studies have found that participants put off buying either food or diabetes testing supplies and medication in order to buy the other.^{9,10} Individually, self-efficacy may interfere with the necessary actions to control medical illness which may already be reduced due to food insecurity and/or emotional distress regarding diabetes management.^{9,15,16} Both of these factors could potentially hinder one's ability to manage his or her diabetes.

Seligman et al¹⁵ collected data from the 1999 to 2004 NHANES for participants ages 18 to 65 years reporting household incomes less than or equal to 200 percent of the federal poverty level. Food security was determined as part of NHANES and by using the Food Security Survey Module, a well-validated questionnaire developed by the USDA, over the prior 12 months. Clinical evidence of diabetes, also obtained from NHANES, was considered to be either a fasting plasma glucose greater than or equal to 126 mg/dL (6.99 mmol/L), consistent with American Diabetes Association and World Health Organization guidelines, or self-reported use of insulin or oral hypoglycemic medication. Inadequate control of diabetes was defined as HbA1c greater than seven percent. The data showed the risk of clinical diabetes was approximately 50 percent higher among adults living in food insecure households compared with adults living in food secure households (crude $P = 0.03$; adjusted $P = 0.09$). They found there were higher self-reports of diabetes in adults living in food insecure households (10.6 percent) compared to food secure households (6.7 percent) (CRR 1.54; 95% CI, 1.07–2.24; ARR 1.52; 95% CI, 1.04–2.25). There was also a higher prevalence of clinical diabetes in adults living in a

food insecure household (10.2 percent) who did not self-report compared to adults in food secure households (7.4 percent). The authors suggest this could be due to the disease being undiagnosed which can lead to inadequate diabetes control. This study also found among adults who self-reported a diagnosis of diabetes ($n = 428$) the mean HbA1c was 8.1 percent among adults living in food insecure household and 7.4 percent among adults living in food secure households (crude $P = 0.09$, adjusted $P = 0.1$).

A study conducted by Seligman et al⁹ found similar results through their six-month telephone survey of 40 eligible participants with diabetes from a previous study conducted between July 2006 and August 2007. Food security was determined by the Food Security Survey Module, self-reported diabetes was confirmed by a medical chart review, and self-efficacy was measured using a five-item chronic illness general self-efficacy scale with a higher number indicating greater self-efficacy. Food-insecure participants reported being more likely to put off paying for testing supplies (44.4% vs. 4.6%, RR 2.76, $p < 0.001$) and diabetes medications (38.9% vs. 9.1%, RR 2.19, $p = 0.01$) so that they would have enough money to buy food. Food insecure participants also reported being more likely to put off buying food in order to have enough money for testing supplies (33.3% vs. 9.1%, RR 2.00, $p = 0.03$) and diabetes medicines (55.6% vs. 18.2%, RR 2.32, $p = 0.01$). There were statistically significant relationships between food insecurity and poor adherence to blood glucose monitoring and lifetime history of hypoglycemia-related emergency department visits indicating poor diabetes self-management. Thirty-seven patients had an HbA1c recorded in their medical charts and the mean value was 7.7 percent among food secure participants and 9.1 percent among

food insecure participants ($p = 0.08$). Among food-secure participants the mean diabetes-specific self-efficacy score was 41.2 and 34.4 among food-insecure participants (mean score 38.9, SD 8.6; $p = 0.02$).⁹ Similar findings were also seen in children with type 2 diabetes.¹⁶

A cross-sectional survey study by Seligman et al¹⁶ to assess factors related to successful self care in food insecure individuals with diabetes, recruited 711 patients receiving care from safety net clinics in San Francisco and Chicago. The participants had to have a type 2 diabetes diagnosis in their medical record, be 18 years of age or older, English or Spanish speaking, and self-identification as white, African American, or Mexican/Mexican American. From 2008 to 2009, a survey was orally administered and the USDA's Food Security Survey Module was used to measure food insecurity. HbA1c measurement within the last year was collected from medical records and poor glycemic control was defined as an HbA1c greater than or equal to 8.5 percent. Using a five-point Likert response, the researchers assessed difficulty following a diet for diabetes by assessing agreement with the following statement, "It has been difficult following the diet (diabetic foods) the doctor ordered for me." Diabetes-specific self-efficacy was assessed using a scale assessing confidence in one's ability to manage numerous self-care behaviors. A mean score was generated from the 10-point Likert response options (range 1–10), with higher scores indicating greater self-efficacy. Emotional distress related to diabetes was measured using the emotional burden subscale of the Diabetes Distress Scale (five items). A mean score (range 1–5) was generated, with higher scores indicating more distress. Medication adherence was used as a covariant and assessed using the

Modified Morisky Scale of Medication Adherence, a four-item scale (range, 0–4 points). This scale has been validated with pharmacy claims data among patients with diabetes.

Forty-six percent ($n = 325$) of the participants were food insecure and compared to food secure participants were generally younger, had lower household incomes ($< \$25,000$ annually), and were more likely to be White. Food insecurity was associated with an increased difficulty following a diet for diabetes, lower mean self-efficacy scores, and higher emotional distress scores (all $p < 0.001$). Food insecure participants had a mean HbA1c of 8.54 percent and food secure participants had a mean HbA1c of 8.09 percent ($p = 0.007$). Difficulty following a diet for diabetes, self-efficacy, and emotional distress were weakly correlated to diabetes (correlation coefficients 0.23–0.27). Difficulty following a diet for diabetes ($p < 0.001$), self-efficacy ($p < 0.001$), and emotional distress related to diabetes ($p < 0.001$), however, were each associated with HbA1c. Those participants with a higher HbA1c level were observed with more difficulty following a diet for diabetes, lower self-efficacy scores, and greater emotional distress related to diabetes.¹⁶

Focus Groups

Focus groups are a research method used to extract the opinions and experiences of different stakeholders in a variety of health and social care settings. This increasingly used method utilizes language as the explanatory level and as a place for theory building. The aim of a focus group is not to arrive at a coherent group opinion about a topic because differences of opinions are when some of the most valuable insights might surface. Instead, the aim is to stimulate options or ‘voice’ of participants. Participants are

encouraged to speak of what comes to mind, and focus group facilitators should refrain from telling participants to ‘speak one at a time’ to encourage a true reflection of the group. The facilitator also needs to balance the urge to prompt the group towards generating research data, while creating an atmosphere that encourages speech.⁴³

The focus group facilitator should also build rapport in the group before beginning to ask questions, ask questions in a way to maximize the number and variety of responses, ask open-ended questions, begin with broad questions then narrow the focus, and limit the total number of questions to no more than twelve.⁴⁴ It is recommended that a circular layout is used to maximize eye contact, and use of a table makes participants feel more secure and a sense of personal space. If name tags are used, first names should only be shown to provide a sense of privacy.⁴⁵ The facilitator should also take all steps possible to ensure confidentiality and inform the participants that the actions of the group participants outside of the focus group are out of his/her control.⁴⁶

Low-Income Focus Group Studies

Fourteen 90-minute focus groups were conducted with 92 low-income mothers or female guardians with at least one child aged 9 to 13 years in the household. This study was conducted in a 20-mile radius of St. Paul, Minnesota to investigate factors affecting food choice and health beliefs among low-income women in the context of their weight and socioeconomic status. Participants were recruited by flyers posted at community sites including libraries, WIC offices, grocery stores, and food shelves/pantries.

Approximately one third of the sample was purposefully recruited from homeless shelters in order to include the poorest members of the community. The mean age of the

participants was 37 years and nearly half were African American, 27 percent were Native American, 13 percent were White, 84 percent received food stamps, over 75 percent were either overweight or obese (body mass index calculations based on measured heights and weights), and most rated their diet and health as only “fair” to “good.”⁶

Those participants on food stamps felt their current benefits were not sufficient to make it through the month without spending cash or using other food assistance programs to feed their families. Some participants stated they bought additional food stamps from friends, family, or strangers as a strategy to increase their food dollars. A Native American participant suffering from liver problems said she could not adhere to the diet recommended for her condition because, “I can’t afford to ’long as my kids eat. I’m blessed that they eat. I buy food stamps every chance I get.” Some participants who were employed with food stamps struggled with the trade-off between earned wages and having their food stamp benefits reduced or terminated. One participant stated working full time was not worth her time and she’d rather get the \$400 from food stamps than work. Another participant claimed she needed to work to pay for bills, rent, car insurance, etc but then had no money left over for food and did not qualify for food stamps.⁶

The stress of being low income was addressed in the focus groups and had a major effect on parental attitude. When food was scarce, a common policy was that the children ate first. One woman explained, “[S]tress plays a factor, you know, you being on the brink of being ... homeless, plays a huge factor in my appetite ... when I know there’s very little money and a lot of kids to feed, I will fast or not eat just so my babies

can eat ... I sacrifice myself so they can eat, 'cause they didn't ask to be born here on this earth.”⁶

Addressing health concerns and maintaining health was a challenge for participants both financially and emotionally. The health concerns most frequently discussed among participants were diabetes, hypertension, high cholesterol, and weight status (mostly overweight/obese). Many participants reported being frustrated because they could not afford more healthful food items such as lean meats and fresh fruits and vegetables. One participant stated she struggled with treating her diabetes through dietary modifications because, “I still have to buy the same amount of food, I still have the same amount of kids to feed, so I can't set myself aside and get all the right, proper, \$3 tomatoes and broccoli and cauliflower... I don't have the money for it, so, and yes, I do know what I'm supposed to eat.”⁶

Another study was conducted as a component of the first phase of a larger intervention project with six groups of low-income children to determine motivators and barriers to healthy eating behaviors. Participants were recruited through flyers, snowball sampling, and recruiting participants. Participants were informed that a meal would be served to the family before the discussion group and \$15 cash would be given to participants after the discussion concluded. Thirty-seven children (54 percent male) from north, central Florida ages nine to twelve years from families with an annual household income less than or equal to \$40,000 and self-identified as White, Black, or Hispanic by their parent/guardian were included in the study. An information questionnaire, completed by each participant and her/his parent/guardian, was used to assess

demographic and health information. The number of participants per focus group ranged from four to seven (median = five) and the focus groups were as follows: (a) a Black female group, (b) a Black male group, (c) a Hispanic female group, (d) a Hispanic male group, (e) a White female group, and (f) a White male group. Focus groups included the children only and were conducted at community locations (e.g. library).⁴⁴

Four out of six focus groups reported being motivated to eat healthy foods for the purpose of being healthy and having a healthy body. A motivator for eating healthy foods discussed across all six focus groups was availability of healthy foods. In addition, the prevalence of unhealthy foods at home, school, social events, and other locations (e.g. friend's house) was discussed as a barrier to making healthy choices in four of six groups. Another barrier discussed among three of six groups was being more familiar with unhealthy foods or less familiar with healthy foods. Participants described this familiarity as being "used to," "not used to," or even "attached to" particular foods or types of foods. Three of six focus groups reported lack of availability and lack of variety of fruits and vegetables at home as a barrier to consuming fruits and vegetables. The children also reported being "bored of" or "tired of" the fruits and vegetables they are repeatedly presented which could prevent them from eating more of these types of food.⁴⁴

Food Pantry Focus Group Studies

Another study conducted at various locations throughout St. Paul/Minneapolis, Minnesota area in 2001 to explore the attitudes and behaviors of individuals who donate foods to food shelves (seven groups, n = 64) and the perceived needs of the clientele using the food shelves (five groups, n = 31) in terms of cultural, health, and nutritional

concerns. Clientele participants were recruited through flyers at traditional food shelves and telephone calls made from the food shelf staff members. The participants completed an anonymous survey to provide demographic information. Food shelf clients who participated were mostly middle-aged and older adults and included more women (n = 22) than men (n = 9). The majority of clients had at least a high school education. There was diversity in ethnic backgrounds, with minority groups comprising approximately half of the groups. The Supplemental Nutrition Assistance Program (SNAP) was used by 61 percent, and several reported participating in WIC and had children participating in the School Meal Programs. Focus groups for clientele were held at fairly large food shelves at several times of the day to address the possible limiting effects of sample selection. Donors were recruited through electronic mail announcements, postal mail invitations, and existing church group meetings. Most of the donor participants were White and about half were 56 years old or older. Most had completed high school and/or college and about one-third reported incomes greater than \$50,000. Donor focus groups were held at food shelves, community centers, churches, and a local university.⁷

During the focus groups with the food shelf clientele, increasing the food choices for clients was an identified need in all five groups. The groups explained the importance of meeting individual food preferences (likes and dislikes), ethnic and religious dietary needs, medical conditions, and to obtain age-appropriate foods. One woman stated, "...a lot of older people are diabetic too. My dad's a diabetic, and so, you know,...he eats a little bit different than me..." In all focus groups, individuals reported that they either donated back the prepackaged food items or gave it to others in need that were unfamiliar

to them or items that they could not use. Although these participants seemed to not waste the food, they pointed out that it lessened their own food supply and felt they should exchange those undesirable or unfamiliar food items for items they would use. Many clients expressed the need for nonfood items in addition to food items because they were very costly and could not be purchased with food stamps. Clients in the focus groups also felt that food shelves could use more volunteers, which would allow more time to interview clients to address the issue of special needs, reduce the time that they spent in line, and enable the system to pack the bag while they were present to see what was packed.⁷

During the focus groups with the food shelf donors the majority reported giving food or money at least once a month or more, through food drives or directly to a food shelf. The major motivating influence reported by the donors was knowing there were hungry people in need of food. The types of items donated were based on two major factors including whether the donors purchased items specifically for donation based on a list created by the food shelf or donated from existing supplies within their home. Some donors felt that money was the best option because food shelf operators were able to get more food for the same amount of money and could buy specific foods that were culturally appropriate or necessary for special diets. Others, however, preferred to donate food items because they knew the food was going directly to the clients. Many donors did not consciously consider nutrition when deciding which foods to donate and some indicated that they knew some products were not nutritious but wanted to provide “treats” for children such as cookies, chips, candy, or cereal high in sugar. Many donors also

stated they did not know what was needed or preferred or where to find the particular foods, such as culturally specific foods, and felt that the best way to receive information concerning items to donate was through printed material.⁷

Hoisington et al⁵ conducted a focus group study at nine different food pantries located in different demographic and geographic areas of Washington State. Up to 20 participants were recruited for the study at each food pantry (n = 90) by posters. In order to qualify for the study, participants needed to purchase their household's food, prepare meals for the family, have at least one child under the age of 18 in the home, had worked in the past year, or were currently working, or enrolled in Work First, and were English speaking. The average age was 34 years old (range of 16 to 56 years), and most of the participants were female (69 percent) and White (79 percent). Participants were given a \$40 gift certificate for groceries, and snacks were served at each session. Demographic information was collected through a questionnaire and participants answered six questions from the national food security scale.

Fifty-three percent of the participants said that they had been hungry in the past 12 months but did not eat because they could not afford food. Sixty-three percent had at times eaten less than they felt they should, and 72 percent reported that they or other adults in the household had skipped meals, with 25 of 65 reporting skipping meals almost every month. There were multiple circumstances that led participants to change their eating habits and patterns and some of these included loss of income owing to a lay-off, loss of food-related income (e.g. food stamps running out at the end of the month), or a money drain elsewhere (e.g. injury requiring expensive medication). One participant

explained, “Well, I've got three teenagers to feed, and they eat like horses, so it's kind of like feast and famine around our house. When the food stamps show up it's feast, and then towards the end of the month it's macaroni and cheese famine.”⁵

Through the focus groups, food coping strategies used by the participants were discovered such as making food in bulk, consuming leftovers, utilizing what is on hand, and freezing foods for later use. The individuals also used food substitutions such as powdered milk for fresh, canned or frozen vegetables for fresh, dried beans for canned, and cheaper cuts of meat for more expensive cuts. Unaffordable ingredients such as meat in recipes were also reduced or omitted and inexpensive, filling ingredients such as potatoes or noodles were used. The participants also shopped at multiple different stores and used a combination of discount coupons and sales in order to obtain their food and ingredients. Several of the adults stated they cut back on how much food they consume to make sure their children are eating enough. The worry of having enough food for older children and getting younger children to consume unfamiliar and disliked foods were of concern.⁵ Similarly, in a focus group study by Verpy et al⁷ a female food shelf client commented, “And you know when you have your children, it's somedays...if my freezer is low...where I have one or two packets of meat in there, I won't eat. I'll let my kids eat. I'd rather have my kids eat than me....” In the study by Hoisington et al,⁵ many participants related difficulty in managing work, school, or both with preparing meals for the family. The authors stated that other studies found that ensuring there was enough food throughout the month could cause families additional struggles by getting cash advances, putting off paying other bills and/or rent/mortgage,^{5,8} and cutting back on

nonfood grocery items such as paper goods.⁵ A focus group participant stated, “If I have to not pay any other bills I buy food for my kids, and I always go to the food banks so that I have that.”⁵

The focus groups participants explained barriers to getting more food or money for food such as the local bargain stores did not accept food stamps and some could not afford the newspaper to obtain food coupons. Several participants stated lack of storage space as a barrier to stocking low-cost items. Participants described the food they did purchase as inexpensive, highly processed convenience foods that were quick to prepare, such as noodle soups and ready-to-prepare skillet dinners. Favorite foods such as macaroni and cheese, instant noodle soup mixes, spaghetti, and beans and rice, were sometimes the same foods eaten in the household when money was limited. The authors were surprised by the limited variety of foods and the similarities of the favorite foods reported in all focus groups. The participants’ view of foods eaten in less than acceptable quantities included fruits and vegetables, salads, milk, and meat.⁵

The researchers also asked the food pantry participants about nutrition information. Participants stated they used relatives, friends, and family members for information about food. They also used commercial items, personal experiences, and classes they took through WIC or the food bank for education. Participants had the greatest interest in learning about “shopping and stretching the food dollars,” “cooking and making tasty, low cost food,” “healthful foods and nutrition,” and “feeding kids and getting them to eat.” The participants were also interested in support groups and employment counseling.⁵

Diabetes Focus Group Studies

People of Latino origin develop noninsulin-dependent diabetes mellitus (NIDDM) at higher rates and at earlier ages than do non-Hispanic Whites.⁴⁷ A focus group study was conducted to identify nutrition and exercise practices, perceptions of diabetes, and the range of factors affecting diabetes management in Caribbean Latinos in Boston, Massachusetts. Participants were recruited using flyers posted at health-care centers, community stores, and churches. Participants were required to be Latinos from Puerto Rico and the Dominican Republic with diabetes, greater than 20 years of age, and receiving health care at Boston City Hospital or one of two neighborhood health centers. Four focus groups were created with the 30 Latinos with NIDDM (65 percent female) who participated in the study. The median age of the participants was 51 years (range 23 to 86 years) and the majority was from Puerto Rico (94 percent). There were more women than men in three of the four focus groups, and most were unemployed (88 percent). The median duration of diabetes was 15 years, indicating the focus group participants had several years of experience living with diabetes. The focus group sessions lasted for two hours and were conducted over a 12 week period between June and August 1992.⁴⁷

Diabetes was considered to be inevitable by the participants if it was in the family, and it was viewed as a problem that worsened health that one had to endure. Nearly all participants agreed that diabetes had a strong negative social impact on their lives and were unable to participate fully in daily activities. Participants complained of dizziness, fatigue, exhaustion, disrupted sleep, and leg cramps as a result of their

diabetes. They believed that diabetes adversely affected other medical conditions, including high blood pressure, asthma, and arthritis and feared disabling complications such as blindness and amputations the most. Self-monitoring one's blood glucose levels was not believed to be important for avoiding diabetic complications, and there was a consistent opinion that high but stable blood sugar levels were more desirable in terms of health impact than were varied glucose levels closer to the normal range. The use of traditional nonmedical remedies (native herbs, liquid mixtures or extracts, specific Latino foods, tropical fruits, and folk medicines) to treat diabetes was widely prevalent. Insulin was believed by many to increase the severity of the disease through affecting the eyes and feet and causing weight gain, dizziness, nausea, and memory loss. Overall, many participants believed standard medical therapies were viewed as having undesirable side effects, whereas traditional Latino remedies were perceived as being acceptable and useful.⁴⁷

Almost all participants were unaware that dietary patterns or physical inactivity played roles in the development of diabetes, its treatment, or its prognosis. Standard diet therapy for diabetes was regarded as unappealing, irrelevant, and unrelated to Latino culture and lifestyle. The participants agreed that it was impractical to cook different foods for the person with diabetes and for the rest of the family, and the traditional Latino foods (rice, beans, meats, tropical fruits, and fresh vegetables) formed the foundation of the diet. They described moderation in food intake as the best approach to manage glucose levels, yet reported difficulties with controlling portion sizes. The participants perceived diets for diabetes as restrictive and boring because they did not allow enough

variety to enjoy oneself. All participants believed that exercise was important for someone with diabetes but was not aware that exercise would greatly improve their prognosis. Walking and dancing were the two favorite ways to exercise discussed, however, barriers of location, access, safety, and supervision prevented participants to engage in the activities.⁴⁷

Summary of Literature Review

The increase in the number of food insecure individuals in the United States continues to climb, and those individuals continue to struggle to obtain adequate food and nutrition. Consistent suboptimal intakes of essential nutrients can increase one's risk of developing diet-related chronic diseases, such as diabetes. Diabetes can be a life threatening disease if not controlled through dietary and/or pharmaceutical measures which both can be challenging for those who are food insecure. Food pantries are a resource for low-income families to obtain food at no cost and can address food insecurity and poor diet quality. Food pantries, therefore, could potentially help food insecure individuals manage their type 2 diabetes through diet. Focus groups have been successful in the past and can be used to identify barriers for food pantry clients to utilize the resources to improve and manage their own health.

CHAPTER 3

METHODS

The purpose of this study was to identify both the positive outcomes and the challenges of receiving diabetes-friendly (low-glycemic index) food boxes developed for food insecure individuals with type 2 diabetes. The process of receiving the food boxes and utilization of the food provided was assessed to inform future recommendations on how to improve the process for the food pantry customer. This chapter will discuss the research design, subject selection, data collection, and data analysis. Approval for this study was obtained from the Human Subjects Institutional Review Board at The Ohio State University.

Research Design

A descriptive research design was used for this study. An open-ended question thread with follow-up questions was utilized within focus groups and an interview to determine the positive outcomes and the challenges in receiving diabetes-friendly food boxes developed for food insecure individuals with type 2 diabetes to make recommendations on how to improve the process for the food pantry customer. Qualitative studies have been successful in the past to identify attitudes, behaviors, and perceptions of needs with low-income individuals.^{5-7,18,44}

Subject Selection

Participants for the focus groups and interview were recruited from an ongoing study by a personal phone call. A follow-up letter (Appendix A and B) explaining the focus group and containing a consent form (Appendix C and D) was mailed. Participants were provided the following information: individuals will be asked to participate in an audio taped discussion group during which they will be asked about the diabetes-friendly food boxes received. Participation will require approximately two hours, and two \$25 gift cards will be given to participants after the discussion concludes. It was also stated that: (a) participants will be asked to sign a written consent form; (b) researchers will keep all materials confidential; (c) members in a discussion group will be similar in terms of primary language spoken and time frame they began receiving diabetes friendly foods; (d) participants can choose not to respond to any question or could choose to discontinue participation at any point in time with no adverse consequences. Reminder phone calls were made. Phone calls and letters were conducted through the overarching study manager.

Data Collection

Three focus groups and one interview were conducted in October and November 2012 at three sites at various times in the day. Three sessions consisted of English-speaking participants (n= 3, n=2, n=1), and the other group (n = 2) consisted of Spanish-speaking participants. A focus group leader, familiar with focus group methodology, facilitated each focus group and interview (Appendix E). For the focus group that was conducted in Spanish, a translator assisted. A graduate student assisted during the focus

groups by recording conversations and taking notes of relevant nonverbal behaviors and interactions observed.

The question thread was as follows:

1. What is the first thing that comes to mind, when I say the food boxes?
2. What is the best part of the food boxes?
3. When you think of the process of receiving the food boxes, were there challenges or barriers [problems] in receiving [getting] the boxes?
4. How would you improve the process of receiving [getting] the food boxes?
5. What foods in the food box did you like the most?
 - a. Why?
6. Which foods did you like the least?
 - a. Were there any challenges [problems] in using the foods in the box?
 - i. Were you in need of any additional equipment?
 - b. What did you do to overcome these challenges [problems]?
 - i. Were there any foods that you did not know how to cook?
 - ii. Were there any foods you could not prepare [cook] because you needed other ingredients?
 - iii. Did anyone else eat the foods in the box?
 - a. If so, who?
 - b. Which foods did you share?
7. Do you have any ideas on how to make the food boxes better?
 - a. Are there other items you need that the food boxes did not provide?

8. What advice would you give others receiving [getting] the food boxes?
9. Do you believe this food box has helped your diabetes?
 - a. How?
10. Do you believe your diabetes is under control?
11. How confident are you that you can control your diabetes?
12. Do you have any other comments that you wish to tell us?

Data Analysis

The audiotape recordings from both the English-speaking and Spanish-speaking focus group and interview sessions were transcribed. Major trends, observations, and issues that developed were discussed by the leader and assistant after each session. The transcriptions, along with the notes recorded by the leader and assistant comprised the data for analysis. The research team reviewed the data and coded the responses searching for patterns and themes. Pertinent quotes which characterize major trends and issues were included in the final summary in order to illustrate the findings.

CHAPTER 4

RESULTS AND DISCUSSION

Three focus group interviews and one individual interview occurred from October 18, 2012 through November 8, 2012. A sample of eight participants was included in interviews at various locations in Central Ohio. The majority of the participants were female (n=5) and English speaking (n=6). The first focus group was conducted at a university (n=3), the second was at a community health center (n=2), and the last two were conducted at a Food Bank (n=2; n=1). Six overarching themes were identified from participant focus groups including (1) participants are grateful for the food boxes, (2) participants share food items with multiple people, (3) participants provided support to the fellow group members, (4) participants noted exposure to new foods, (5) perceptions of diabetes health improved due to the food boxes, and (6) the process for pick-up affected participants' lives. Summary data for the overarching themes found are described in Table 4.1

Participants are Grateful for the Food Boxes	
Themes	Participant Quotes Supporting Themes
Participants expressed general thankfulness for the food boxes. (N=5)	<p>I really admire and the program and the process.</p> <p>... the food boxes are very helpful to our health and the contents of the food boxes help us and are helpful to us.</p> <p>Let me tell you what I'd tell somebody, get the box you'll be grateful. Cause you'll take it home and in due time you'll use it all and that's for sure.</p> <p>That really helps you know.</p> <p>Well I guess thank you guys. It is very interesting and helpful to us, people of this condition. And I hope you continue...</p> <p>It's worth it. You know even if you're working, it really would help.</p>
The food boxes provide food for the participants, and these food items could not be afforded if they were not provided by the food boxes. (N=5)	<p>Yeah some of the foods that are in the boxes I probably wouldn't buy. Like the brown rice, cause it's expensive.</p> <p>... the meat is a higher quality, like, they gave us beef, grilled hot dogs, and I saw well, we would have gotten the dollar package of hot dogs.</p> <p>The best part of the food boxes is just going to get some food.</p> <p>Yes. It's a great thing. You know you probably wouldn't expect to buy some of this stuff.</p> <p>For me that's why I eat. I don't buy no other food.</p> <p>... I never realized how much fresh fruit and produce cost.</p> <p>Mmmhuh it's just so expensive! So now I have an appreciation for fruits and vegetables now.</p> <p>The box really helps, like I said I lost my job in September and I look forward to getting a box.</p>

Table 4.1 Overarching Themes from Participant Focus Groups and Interview
Determining the Positive Outcomes and the Challenges in Receiving Diabetes-Friendly Food Boxes

Continued

Table 4.1 (continued)

<p>Some participants have to choose between buying food and paying other bills and expenses. (N=4)</p>	<p>You know we got to go to work, what I think about is, uh, the house note, the light, the gas, and the water. You don't think about the food until it is time to eat. And sometimes you just can't do it. That's how it is with me.</p> <p>Most of the food that we receive in the boxes that we would then buy on our own but now we can no more buy cause you guys are supplying in the box. So it's very interesting.</p> <p>Well I am sure there is a lot of people interested in this and like I told you earlier, when you say food box the first thing I think of is food. And the money you were going to use on this is not money that you don't have to spend. For example, all the money you were going to spend in vegetables now you don't have to buy in vegetables. Like the money that you use to be spending on vegetables you know now you can be spending on other things like your blood glucose strips.</p> <p>You know on the weeks that I get the food boxes, I don't have to go to the grocery store that much, I just really have to spend very little on what I need.</p> <p>But now I have been able to buy my medicine and I've been taking it regularly.</p>
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Continued

Table 4.1 (continued)

Participants Share Food Items with Multiple People	
Themes	Participant Quotes Supporting Themes
Participants share foods with all persons in their house. (N=8)	<p>I put on a pot of beans and that is where my grandkids they will eat some of the beans.</p> <p>Whenever I cook, some like it and some don't.</p> <p>And I have 2 grandsons that live with me and they usually don't like the vegetables that I cook. So they'll eat the beans. So they'll eat if they like it.</p> <p>Yeah my family loves all, basically they love it, whatever I cook.</p> <p>Well there are some foods that you are going to share in general because you're going to like, make a pot of...</p> <p>Well I got 2 grand babies, 2 boys, and if I don't cook peanut butter and jelly and even me at night I get hungry, I'll eat peanut butter and jelly.</p> <p>With everybody at home.</p> <p>Yes I shared with my wife and my son as well.</p> <p>Yeah she eats what I fix, sometimes. She's 17 so you know how that goes.</p> <p>There are only three of us in the house, so usually it's enough to feed because diabetes is kind of going down the line from my grandmother, my great-grandmother, mother, me, and I'm just trying to get my daughter to eat like I'm eating as far as the diabetes is concerned.</p> <p>Um, you know I could probably use a case of green beans. Cause she and I (referring to toddler) eat them a lot and she likes them.</p> <p>She loves (referring to toddler) the unsweetened applesauce, so it's usually gone as soon as the box gets home.</p> <p>No, one time we got like three carrots and you know, she was thrilled (referring to toddler). She likes to eat apples, I like to eat apples.</p>

Continued

Table 4.1 (continued)

<p>Participants share foods with friends and neighbors. (N=3)</p>	<p>Yes a friend of mine from work who is currently out of work. I gave him like 4 cans... I gave him 4 cans because I really didn't like those.</p> <p>If I like everything, you know. If not, you know, I just pass it to the next person, like to my neighbor or something. Because you know I don't just want to throw it away. Or let it collect dust.</p> <p>... Well I don't even eat that, so I give that away.</p> <p>Well, I don't cook from scratch, like baked breads and stuff. But my neighbor, when I give her the zucchini, she might make me some zucchini bread.</p> <p>Well my neighbor she does cook the squash and zucchini and stuff, so uh, maybe I have to just try it.</p> <p>Um, like the greens I had to give to my neighbor because I couldn't cook them. Um, so I don't let anything go to waste.</p>
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Continued

Table 4.1 (continued)

Participants Provided Support to the Fellow Group Members	
Themes	Participant Quotes Supporting Themes
Recipes were provided to each other. (N=6)	<p>I like the beans...I cut up fresh tomatoes and put in there, in a regular pot, and then put the chicken in there. Have you ever had chicken in the beans?</p> <p>Maybe if it was Tuna, you would fix it. But do you know what I did? I fixed the beans and um put the chicken right in there.</p> <p>I put some in my coffee.</p> <p>But I, I use it with my cereal.</p> <p>You can pretty much experiment with the food. I mean you can pretty much experiment. Like the spaghetti sauce I mean it's really like, real watery but it makes good soup! Vegetable soup.</p> <p>You cut them up and eat them. Just slice them up and eat them.</p> <p>Well she he told me to rinse the fruit cup, they were given us the canned fruit cup and it was in thick syrup and she said to rinse it with water.</p> <p>I peeled mine and stew and put cinnamon in them and we eat it on toast or just eat different ways.</p> <p>I'll fix some string beans with some onions and green peppers and put a can of tomatoes too.</p> <p>Put some jelly on it.</p> <p>Yeah. I put butter on it but...</p> <p>I was like zucchini! And you know with some butter and you know, onions, its delicious!</p> <p>I'm going to try that now that you're saying.</p>

Continued

Table 4.1 (continued)

<p>Information was shared between participants. (N=5)</p>	<p>Well, how did you know it went low? That is something that I can't recognize.</p> <p>I'll be shaking, your body will shaking, sweating.... So I have to eat something quick to build it up.</p> <p>What happens is she goes low, so sometimes I get a bite of honey sometimes or they have candies. When you're traveling you should travel with candy so when it's low you can...</p> <p>I would love to see like lettuce, you know because that's free food. So, I don't know about everybody else but I eat a lot of salads since I'm a diabetic so therefore I need something I can eat a lot of because I be hungry! So I like a lot of the free foods and a lot of that is in you green foods!</p> <p>Dr. Oz had a special on showing you how much lettuce you can eat and how much other food did you eat and it was like 20x as much lettuce as you can eat. You're going to get full off of that.</p> <p>So we have to eat foods that are free foods. Any really, only good free foods are your...</p> <p>I think you should let your doctor know about that, if it gets too low...</p> <p>That happens when you don't eat every food and your insulin bothers you.</p> <p>I go back in November and I'm hoping it's really good because I turned myself around. You know, enough is enough! I know what I can eat was good for me and whether it's good for me. I've been fooling around eating what I want to thinking the insulin would take care of it, but it doesn't do the whole job. Cause I have to do it. So that's what I'm doing and hopefully I go back and mine is a 6.</p> <p>Participant 1: I want to know about, I know people have had strokes from being diabetic. What can you do to prevent it? My mother had a slight stroke from being diabetic and I always wanted to know is it the food? Or is it the medicine? Participant 2: I think it's both.</p>
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Continued

Table 4.1 (continued)

	<p>Because it's not the only way that I can control mine. After I eat my oatmeal and milk, I have to go walk.... Because when you start doing exercise and movement, you know, you're uh your sugar goes down.</p> <p>You know, so I was like okay well I'll just eat my breakfast and go for a walk and I don't need any insulin so when I eat my lunch, I know, either I eat no carbs, just free food, salad, baked fish, or baked chicken and I'm good. But I know that I can eat a carb as long as I go and start walking, I can eat a carb. Cause I'd walk it off.</p> <p>Well uh, for my diabetes, my nurses that work with me taught me how to take my medication and give me advice and if you don't abide by their advice you get strokes in your leg. So sometime when I see my toes getting numb then of course I correct my eating habits, I continue my medicine.</p> <p>You get a meter and you test your diabetes, sometimes it's up to 200, 300 and it's high! So I always sometimes, like mine to be in the 100s or 105 or 80 something like that.</p> <p>Most of the time when I check it, it means I'm in the 40s and I eat, all the stuff to get it up.</p>
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Continued

Table 4.1 (continued)

Participants were Exposed to New Food Items Through the Food Boxes	
Themes	Participant Quotes Supporting Themes
Foods would not have been tried without the food boxes. (N=4)	<p>But some of the stuff in the box you might not ever buy, but when you use it you like it.</p> <p>I never thought to even buy zucchini until I seen it in the food boxes. I was like zucchini!</p> <p>I would buy zucchini and yellow squash now and which I would never thought that before...</p> <p>And thanks for exposing us to new foods!</p> <p>'Cause I've never had brown rice until it was in my food box.</p> <p>Yes it's like spices, it's not the same ones we're use to but it gives it kind of like the same flavor.</p> <p>Well in Mexico we're just not use to getting things in cans, they just taste differently.</p> <p>Brown rice.</p> <p>Oh yes, I have never had that chicken that comes in the can.</p> <p>You know I was just never use to eating them [spaghetti and tomato sauce] but now that we get them we have to cook them and eat them.</p> <p>Yes because you know that is just something that we're not use to eating.</p> <p>Yes it definitely varies what we eat, but it just tastes different.</p> <p>You know we're use to buying the pinto ones or the yellow ones.</p> <p>It is very different than the one you buy by the gallon.</p> <p>The type of beans that my wife buys are very different than the ones that we are getting.</p> <p>This is not like the squash we are use to cooking in Mexico. Our pumpkins are little.</p>

Continued

Table 4.1 (continued)

<p>Participants were unsure how to prepare unknown food items. (N=4)</p>	<p>And you know, I keep saying I'm going to go to the library and get a cookbook because they had given me radishes, fresh radishes and I don't know what to do with radishes</p> <p>Yes I didn't know what to do with it.</p> <p>My wife didn't know how to cook it.</p> <p>Yes that one too, my wife boiled it in water. But since we never really eat that type of thing we didn't really know how to cook it.</p> <p>No the purple one went bad before we used it because we didn't know what to do with it.</p> <p>Yeah I just didn't know how to cook it.</p> <p>I just usually tell my wife to make something up and if it's good I guess we'll eat it and if it's not well I might try it.</p> <p>My wife looked at some of those things and said, how do you eat this? How do you cook it? How do you peel it?</p> <p>You know we just kept looking at this big purple thing and kept saying, we'll make it tomorrow, we'll make it tomorrow and then by the end of however long it just went bad because we never knew how to make it.</p> <p>Yeah we didn't know how to cook that.</p> <p>It's not that I didn't like it, it's just that I haven't even tried it because I didn't know how to cook it.</p> <p>Yes because you know my wife will look at me and be like, 'how do I cook this thing?' And I just say you know, just make it up. And if it tastes good then we'll eat it.</p> <p>Yes because whenever we get a box I tell my wife, let's see what you come up with now.</p> <p>I just tell my wife to reach in the box and just cook whatever she picks out.</p> <p>I wanted to know, can the brown rice be microwaved?</p>
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Continued

Table 4.1 (continued)

<p>Participants requested recipes for unknown products. (N=4)</p>	<p>Just even like with the diet, going to the dietitian and stuff like that, they just teach you what foods you should really stay away from or foods what you can't eat but they don't teach how to cook the food. So I mean, you know if you're like me and your use to eating fried chicken and mashed potatoes and gravy and your telling me okay, you need to change your diet, okay now how do I do that. Your telling me what I don't suppose to eat but what can't I eat and once you tell me what I can eat how can I fix it, how do I prepare it?</p> <p>So you know for that purple ball and the yellow ball that we got, it would have been good to have a recipe because my wife didn't know how to make them and we didn't know what to do with them.</p>
<p>Participants' Perception of Diabetes Health Improved due to the Food Boxes</p>	
<p>Themes</p>	<p>Participant Quotes Supporting Themes</p>
<p>Food choices were better as a result of the food boxes. (N=8)</p>	<p>Everything in the box is good for our health.</p> <p>I love my health and I want to eat what is proper for me to eat for the condition I'm in.</p> <p>For me, I'd tell them that the food boxes are very helpful to our health and the contents of the food boxes help us and are helpful to us.</p> <p>Participant 1: For me I would like to say yes too because like she said if you were actually shopping you would buy stuff that you could actually you know. Participant 2: You wouldn't buy zucchini Participant 1: Right Participant 2: Or squash. Participant 1: I wouldn't! Participant 2: You might not buy cabbage Participant 1: I never thought to even buy zucchini until I seen it in the food boxes.</p> <p>For me that's why I eat. I don't buy no other food.</p> <p>Participant 1: You know it also forces you to like, you know at the end of the day I won't have a pastry or something like that, I will eat what is available to me from the box whether it is fruit or something like that. Participant 2: Yeah me too.</p>

Continued

Table 4.1 (continued)

	<p>Yes there are only the options that are in the box. Sometimes when my wife makes salad with tuna and I don't want it, the only other options are like fruits or other things that are in the box.</p> <p>I watch what I'm eating closer. And balance it out, try to balance it out more. Where before, before my husband died, he would want big meals and he could eat them because he wasn't diabetic. But now that it's just me and my granddaughter, I try to, everything I eat I check it out.</p> <p>Yeah, yeah with the diet.</p> <p>Nutritious, healthy foods.</p> <p>...I'm just trying to get my daughter to eat like I'm eating as far as the diabetes is concerned.</p> <p>Well it is healthy, and I do use it.</p> <p>Yeah, it gives you a view of things that, um, you should be eating.</p> <p>Participant 1: It's helped me. It's helped me recognize that I can take charge. Where before I thought, well it's in my family too, and I never did eat good. We ate what we had, we were poor when I was a child and my mother she got diabetes and died. She was 64 and I thought I was kind of doomed. But I am not, so I do not have to keep it. I'm going to overcome it. And the box has helped me because I know now what carbs can do to you and I don't eat them like I use to. You know sweets, of course I use to bake all the time and I don't do that. Family don't like it. But if I can't eat it I'm not baking for them every week. You know they want their pies every week, they are not getting them.</p> <p>Participant 2: I agree with what she said.</p> <p>Well yes because it kind of forces me, my kitchen is small, and you know I kind of trip over the box. So those things are like a visual reminder...</p> <p>See I like that. That way until I feel comfortable in picking out my own foods that's what I'm new at with the diabetes thing. It's nice that a nutritionist has my back so I'm not grabbing something I should not be.</p>
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Continued

Table 4.1 (continued)

<p>Participants perception of disease outcomes were improved due to the food in the boxes. (N=4)</p>	<p>They help, keep our, keep our condition good as diabetics.</p> <p>Because uh, like this morning we're on the go 4:00 my sugar went very low, and I went and got something out of the box, cooked the food and it quickly build my sugar, so it helped me to eat fast food.</p> <p>That's why the food boxes are sending us food.</p> <p>Then the cereal, I eat it! 2 pounds of it! I sweat, I look at my sweat and I say damn I almost die. My sugar went low again.</p> <p>Well the last, 6 months ago it was over 8, 3 months ago it was just below 8. She didn't go up on my insulin, so at this, I go back in November and I'm hoping it's really good because I turned myself around. You know, enough is enough! I know what I can eat was good for me and whether it's good for me. I've been fooling around eating what I want to thinking the insulin would take care of it, but it doesn't do the whole job. Cause I have to do it. So that's what I'm doing and hopefully I go back and mine is a 6.</p> <p>It is very interesting and helpful to us, people of this condition. And I hope you continue...</p> <p>When I started with this program my blood glucose levels were in the 400s. But now I have been able to buy my medicine and I've been taking it regularly. You know my blood glucose, I'll wake up and it'll be 85. And at the end of the day it use to be in the 500s or 600s. And now it is in the 100s and 100 some things. I am talking about 10 years with diabetes.</p> <p>It use to be really high, but it's gotten a little bit better in the past 3 months.</p> <p>Well you know going from 500, 400, or 300 to my levels now.</p>
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Continued

Table 4.1 (continued)

The Process for Pick-Up Affected Participants' Lives	
Themes	Participant Quotes Supporting Themes
It is more convenient when the pick-up location for the food boxes is closer to home. (N=8)	<p>But now they brought it closer to us, they made it to our convenience.</p> <p>It was problem because the gas to go there was farther.</p> <p>Um, the one I go to now is right, close. It's like about less than two miles.</p> <p>You have improved it from Grove City to Main St.</p> <p>No it's been pretty, pretty good, pretty easy. Especially since they moved it from Grove City.</p> <p>No right now it is very comfortable for me. It is a lot closer for me to pick it up. You know the old one use to be very very far away for me</p> <p>But this one is very very close.</p> <p>Yes, this is a lot closer for me.</p> <p>No once they changed me to my area it was better. Because I was having to come down here and I live out west and now I'm on Valley View pickup...</p> <p>That one is a little bit closer, I mean it's easier to get there because I don't have to go on the freeway...</p>

Continued

Table 4.1 (continued)

<p>It would be beneficial to have flexibility in the pick-up times. (N=2)</p>	<p>Yes for me, the time of the day doesn't work because I work from nine to six... When we use to go to the other foodbank, we would go on Saturdays and that was a lot better for me... Yes because when I had to go pickup the other day I was late to work and I had to call off too so I lost about three hours that I could have been working.</p> <p>No but I would just really like it to be on a Saturday.</p> <p>Yes, the schedule does not work for me... Yeah, you know I work at nine and with the traffic on the road, I lose like an hour here and a hour there and I have to call off work today. And it's harder when places close at six or something like that and I can't make it... And Saturdays are a lot better because I don't work on Saturdays.</p> <p>The times that they've given me for Salvation Army, the time, I'm in this training class and we go from nine to three. And you got to pick the box up by two o'clock or three. Or, I think. And sometimes our training class, it might be four o'clock. But, I guess that particular class we were in class till 4 and I forgot to pick the box up and I called Kathy and I had called Salvation Army and they told me I could still come and get it.</p> <p>It's just some days are longer than others, so you really, I mean, if they gave you a window.</p> <p>It's just according to what's going on that specific day. Like I was supposed to be at work at 10 o'clock, and so I had to give my hours to someone else so I could be here.</p>
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Continued

Table 4.1 (continued)

<p>Participants prefer to choose items in the food boxes than to receive a pre-selected box. (N=3)</p>	<p>I think I would let them go shopping in the food place and get what they want so they don't have to give it away, give the other stuff away or don't use what they don't need. They would get what they need.</p> <p>And just get how many you can have, they'll let you know what you can have and can't have and go from there... You know what you got in your box you want, you won't be taking nothing home you don't want and you'll enjoy it all. Maybe like you, you might want more fresh vegetables than the cans.</p> <p>Or you can opt out like, instead of two, can I switch these two cans for these two tomatoes.</p> <p>Maybe give us a survey of stuff that we will like? That's, or a list of things that we could choose from... But you know like, that's according to the, for diabetics. That would be uh, you know, healthy for us.</p>
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Summary data for themes found among specific questions from the focus groups and interview question thread are described in Table 4.2.

What is the first thing that comes to mind, when I say the food boxes?	
Theme	Participant Quotes Supporting Theme
Providing food for the participants. (N=4)	<p>Fresh vegetables, I like the fresh vegetables</p> <p>Yeah, I like the fresh vegetable...</p> <p>Yeah some of the foods that are in the boxes I probably wouldn't buy. Like the brown rice, cause it's expensive.</p> <p>And then it's... the meat is a higher quality, like, they gave us beef, grilled hot dogs, and I saw well, we would have gotten the dollar package of hot dogs.</p> <p>So it's, it's serving its purpose.</p> <p>Food!</p> <p>But some of the stuff in the box you might not ever buy, but when you use it you like it.</p> <p>Participant 1: Food. Participant 2: The same.</p> <p>It really helps. The box really helps, like I said I lost my job in September and I look forward to getting a box.</p> <p>Well I like the Kroger's Raisin Bran.</p>
What is the best part of the food boxes?	
Theme	Participant Quotes Supporting Theme
The fresh produce is the best part. (N=7)	<p>Participant 1: The fresh produce. Participant 2: Yeah. Participant 3: Yeah</p> <p>The vegetables.</p> <p>I really like them when they are fresh.</p> <p>Vegetables...and fruit.</p> <p>But the fresh vegetables, I love the onions.</p> <p>... and the fresh produce I like the sweet potatoes and I've always liked apples.</p>

Table 4.2 Focus Groups and Interview Questions Themes from Participant Focus Groups and Interview Determining the Positive Outcomes and the Challenges in Receiving Diabetes-Friendly Food Boxes

Continued

Table 4.2 (continued)

When you think of the process of receiving the food boxes, were there any challenges or barriers [problems] in receiving [getting] the boxes?	
Theme	Participant Quotes Supporting Theme
It is more convenient when the pick-up location for the food boxes was changed to be closer to home. (N=5)	<p>Especially since they moved it from Grove City.</p> <p>But now they brought it closer to us, they made it to our convenience.</p> <p>It was problem because the gas to go there was farther.</p> <p>Um, the one I go to now is right, close. It's like about less than two miles.</p> <p>No once they changed me to my area it was better.</p> <p>Yes, it's very convenient.</p>
The limited times to pick up the food boxes are inconvenient. (N=2)	<p>Yes for me, the time of the day doesn't work because I work from nine to six.</p> <p>When we use to go to the other foodbank, we would go on Saturdays and that was a lot better for me.</p> <p>Yes because when I had to go pickup the other day I was late to work and I had to call off too so I lost about 3 hours that I could have been working.</p> <p>The times that they've given me for Salvation Army, the time, I'm in this training class and we go from nine to three. And you got to pick the box up by two o'clock or three. Or, I think. And sometimes our training class, it might be four o'clock. But, I guess that particular class we were in class till 4 and I forgot to pick the box up and I called Kathy and I had called Salvation Army and they told me I could still come and get it.</p>
How would you improve the process of receiving [getting] the food boxes?	
Theme	Participant Quotes Supporting Theme
The process has already been improved by changing the location closer to homes. (N=6)	<p>Well you have improved it from Grove City to the west side.</p> <p>You have improved it from Grove City to Main St.</p> <p>That one is a little bit closer, I mean it's easier to get there because I don't have to go on the freeway...</p>

Continued

Table 4.2 (continued)

Offering more times and dates to pick-up the boxes. (N=2)	<p>No but I would just really like it to be on a Saturday.</p> <p>It's just some days are longer than others, so you really, I mean, if they gave you a window.</p> <p>It's just according to what's going on that specific day. Like I was supposed to be at work at 10 o'clock, and so I had to give my hours to someone else so I could be here.</p>
What foods in the food box did you like the most?	
Theme	Participant Quotes Supporting Theme
Participants like the fresh fruits and vegetables. (N=6)	<p>For me I like the fresh vegetables. Like the cabbage, the greens, I like that, zucchini, yellow squash. That's the stuff I like the best.</p> <p>The fresh vegetables.</p> <p>Fresh vegetables</p> <p>And uh, collard greens</p> <p>Tomatoes.</p> <p>The vegetables.</p> <p>I really like them when they are fresh.</p> <p>Onions.</p> <p>The collard greens were really good!</p>
Besides fresh fruits and vegetables, there are varying food likes. (N=4)	<p>And uh, the bread.</p> <p>Milk.</p> <p>What I like best is those sauces. The apple ones.</p> <p>I also like those black things... they are like raisins but bigger.</p> <p>I like the rice and the beans.</p> <p>I like the cans of vegetables, I mean fruits.</p> <p>Yes green beans.</p> <p>Canned green beans, Raisin Bran, packaged milk, vegetable soup. So those would be my favorite from the actual box.</p>

Continued

Table 4.2 (continued)

Which foods did you like the least?	
Theme	Participant Quotes Supporting Theme
There were varying food dislikes. (N=8)	<p>The foods I like the least, that's the canned.</p> <p>Well, ... the milk.</p> <p>The canned beans.</p> <p>See I didn't like the beans.</p> <p>Yeah I like the fresh beans rather than the canned beans.</p> <p>The canned meat, I didn't really like the canned meat.</p> <p>It's [milk] not, it's not too too bad, but it is real watery. It's really not that great.</p> <p>The chicken.</p> <p>The chicken, I didn't really like it.</p> <p>Squash.</p> <p>Well the macaroni and cheese.</p> <p>... I just try to avoid too much of canned food.</p> <p>And zucchini.</p> <p>The tuna in water. It tastes really bad.</p> <p>The canned green beans.</p>
Were there any foods that you did not know how to cook?	
Theme	Participant Quotes Supporting Theme
The foods that participants didn't know to cook were varying. (N=3)	<p>And you know, I keep saying I'm going to go to the library and get a cookbook because they had given me radishes, fresh radishes and I don't know what to do with radishes.</p> <p>My wife didn't know how to cook it [eggplant].</p> <p>But since we never really eat that type of thing we didn't really know how to cook it [squash].</p> <p>Yeah we looked for recipes for these little things, like this, that were in the box. They were small and red and they looked like little bulbs.</p>

Continued

Table 4.2 (continued)

Did anyone else eat the foods in the box?	
Theme	Participant Quotes Supporting Theme
Participants share foods with all persons in their house. (N=8)	<p>I put on a pot of beans and that is where my grandkids they will eat some of the beans.</p> <p>Whenever I cook, some like it and some don't.</p> <p>And I have 2 grandsons that live with me and they usually don't like the vegetables that I cook. So they'll eat the beans. So they'll eat if they like it.</p> <p>Yeah my family loves all, basically they love it, whatever I cook.</p> <p>Well there are some foods that you are going to share in general because you're going to like, make a pot of.</p> <p>Well I got 2 grand babies, 2 boys, and if I don't cook peanut butter and jelly and even me at night I get hungry, I'll eat peanut butter and jelly.</p> <p>With everybody at home.</p> <p>Yes I shared with my wife and my son as well.</p> <p>Yeah she eats what I fix, sometimes. She's 17 so you know how that goes.</p> <p>There are only three of us in the house, so usually it's enough to feed because diabetes is kind of going down the line from my grandmother, my great-grandmother, mother, me, and I'm just trying to get my daughter to eat like I'm eating as far as the diabetes is concerned.</p> <p>Um, you know I could probably use a case of green beans. Cause she and I (referring to toddler) eat them a lot and she likes them.</p> <p>She loves (referring to toddler) the unsweetened applesauce, so it's usually gone as soon as the box gets home.</p> <p>No, one time we got like three carrots and you know, she was thrilled (referring to toddler). She likes to eat apples, I like to eat apples.</p>

Continued

Table 4.2 (continued)

Participants share foods with friends and neighbors. (N=3)	<p>Yes a friend of mine from work who is currently out of work. I gave him like four cans... I gave him four cans because I really didn't like those.</p> <p>If I like everything, you know. If not, you know, I just pass it to the next person, like to my neighbor or something. Because you know I don't just want to throw it away. Or let it collect dust.</p> <p>Well I don't even eat that, so I give that away.</p> <p>Well, I don't cook from scratch, like baked breads and stuff. But my neighbor, when I give her the zucchini, she might make me some zucchini bread.</p> <p>Well my neighbor she does cook the squash and zucchini and stuff, so uh, maybe I have to just try it.</p> <p>Um, like the greens I had to give to my neighbor because I couldn't cook them. Um, so I don't let anything go to waste.</p>
Do you have any ideas on how to make the food boxes better?	
Theme	Participant Quotes Supporting Theme
Adding more fresh fruits or vegetables. (N=4)	<p>For me, I would like to see more fresh foods. More uh, stuff like cabbage, green leafy foods, cabbage or greens, you know for your roughage. I like that we get the tomatoes, and the cucumbers, I like that we get the zucchini you know, just more fresh</p> <p>Corns, fresh corn.</p> <p>Corn on the cob.</p> <p>For me it was more of the green, the roughage, I would love to see like lettuce, you know because that's free food.</p> <p>Yes corn... It can be canned but I prefer fresh. I'm okay with either.</p> <p>Just add potatoes.</p>

Continued

Table 4.2 (continued)

<p>Besides fresh produce, there are varying food items suggested to be added. (N=4)</p>	<p>Instead of the potatoes, there is a food that will not raise your blood glucose what so ever. It is called Yautia. There is yellow ones and white ones.</p> <p>Maybe we could get it [tuna] fresh.</p> <p>Oh yes I would really like some cooking oil again.</p> <p>Yeah another box of cereal, another package of milk, um, oh we get the unsweetened applesauce. I would like more of that. And maybe some other fruits.</p> <p>In the box, canned fruit. So I might like to see the box a little bit fuller because it's only about half full.</p>
<p>Allow choice of food items for box. (N=3)</p>	<p>I think I would let them go shopping in the food place and get what they want so they don't have to give it away, give the other stuff away or don't use what they don't need. They would get what they need.</p> <p>I would go into the little places... And just get how many you can have, they'll let you know what you can have and can't have and go from there... You know what you got in your box you want, you won't be taking nothing home you don't want and you'll enjoy it all. Maybe like you, you might want more fresh vegetables than the cans... So you tell them you want two of these and no cans</p> <p>Or you can opt out like, instead of two, can I switch these two cans for these two tomatoes.</p> <p>Maybe give us a survey of stuff that we will like? That's, or a list of things that we could choose from... But you know like, that's according to the, for diabetics. That would be uh, you know, healthy for us.</p>

Continued

Table 4.2 (continued)

What advice would you give others receiving [getting] the food boxes?	
Theme	Participant Quotes Supporting Theme
The food boxes are overall helpful. (N=5)	<p>For me, I'd tell them that the food boxes are very helpful to our health and the contents of the food boxes help us and are helpful to us.</p> <p>Let me tell you what I'd tell somebody, get the box you'll be grateful. Cause you'll take it home and in due time you'll use it all and that's for sure.</p> <p>Yes. It's a great thing. You know you probably wouldn't expect to buy some of this stuff</p> <p>Most of the food that we receive in the boxes that we would then buy on our own but now we can no more buy cause you guys are supplying in the box. So it's very interesting.</p> <p>It is good. Especially the breakfast stuff like the English muffin and you have your glass of milk. That really helps you know.</p> <p>...when you say food box the first thing I think of is food. And the money you were going to use on this is not money that you don't have to spend. For example, all the money you were going to spend in vegetables now you don't have to buy in vegetables. Like the money that you use to be spending on vegetables you know now you can be spending on other things like your blood glucose strips.</p> <p>The same thing. You know on the weeks that I get the food boxes, I don't have to go to the grocery store that much, I just really have to spend very little on what I need.</p> <p>I'd tell them to go ahead and get it because it's worth it. It's worth it. You know even if you're working, it really would help.</p> <p>Well it is healthy, and I do use it.</p> <p>Um, you know just keep all your appointments and watch what you're eating.</p>

Continued

Table 4.2 (continued)

Do you believe this food box has helped your diabetes?	
Theme	Participant Quotes Supporting Theme
The boxes provided healthier food choices. (N=8)	<p>For me I would like to say yes too because like she said if you were actually shopping you would buy stuff that you could actually you know.</p> <p>New foods.</p> <p>I would buy zucchini and yellow squash now and which I would never thought that before...</p> <p>Well I probably wouldn't have bought it because no one in the house would eat it but me. So I wouldn't have bought it. To bring it home. Now I have it in the box.</p> <p>For me that's why I eat. I don't buy no other food.</p> <p>Participant 1: You know it also forces you to like, you know at the end of the day I won't have a pastry or something like that, I will eat what is available to me from the box whether it is fruit or something like that. Participant 2: Yeah me too.</p> <p>I watch what I'm eating closer. And balance it out, try to balance it out more. Where before, before my husband died, he would want big meals and he could eat them because he wasn't diabetic. But now that it's just me and my granddaughter, I try to, everything I eat I check it out.</p> <p>Yeah, it gives you a view of things that, um, you should be eating. And you can cook them different ways. So it's not like we're limited to certain ways to eat it.</p> <p>Well yes because it kind of forces me, my kitchen is small, and you know I kind of trip over the box. So those things are like a visual reminder, and like I said, I was presently surprised that the Raisin Bran.</p>

Continued

Table 4.2 (continued)

Do you believe your diabetes is under control?	
Theme	Participant Quotes Supporting Theme
No. (N=4)	<p>Well the last, six months ago it was over eight, three months ago it was just below eight. She didn't go up on my insulin, so at this, I go back in November and I'm hoping it's really good because I turned myself around. You know, enough is enough! I know what I can eat was good for me and whether it's good for me. I've been fooling around eating what I want to thinking the insulin would take care of it, but it doesn't do the whole job. Cause I have to do it. So that's what I'm doing and hopefully I go back and mine is a six.</p> <p>Not very much. It use to be really high, but it's gotten a little bit better in the past three months.</p> <p>You know it's not in the 100s but it'll be like 200 or something like that, you know it just varies.</p> <p>Not yet.... I wouldn't take shots for years, so now they give me the shot at night, that slow balance. It's better. So, hopefully that'll... Yeah, yeah with the diet... And I always walk every day, except Sunday. I walk a half an hour or more a day and I think that helps. Because I've lost some weight.</p> <p>No we're getting there though. We're talking about, I use to be 300s in the morning before breakfast and then it finally dropped to 250, then 240, and this week 195. So it's just in a matter of the last two months, oh really the last six weeks it started to drop.</p>
Yes. (N=3)	<p>I just had my A1C so yeah mine is. I'm a six. I'm proud about that.</p> <p>My doctor did my last check-up, everything was fine. In fact she extended my next appointment to three months and I said no doc I want two months. She said, well will you care for yourself and I said yes I want to live I don't want to die. So I need to check every time to know so I have another appointment coming up and I'll know my A1C again.</p> <p>I think so. My level has been like 115 and hasn't been over, it's been under 140.</p>

Continued

Table 4.2 (continued)

How confident are you that you can control your diabetes?	
Theme	Participant Quotes Supporting Theme
Participants are confident they can control their diabetes. (N=4)	<p>Well you know going from 500, 400, or 300 to my levels now...But I know that when I want a dumpling, I will just have a very small portion and I will usually eliminate something of what I eat. And I will drink a lot of water.</p> <p>Oh I know I can.</p> <p>I believe so. Because to be honest, I hadn't been taking the medicine. But I just been watching the carbs and my blood sugar, at the time it was under 130 so I'm like 'yes that's good' but I know I need to take the medicine too. So I started back taking it.</p> <p>Oh yes. I'm very pleased to get under that 200 barrier. And 130 is my next goal. So 195 to 130 is not as big a jump as 300 to 130.</p>
Do you have any other comments that you wish to tell us?	
Theme	Participant Quotes Supporting Theme
Participants are grateful for food boxes. (N=4)	<p>Well I guess thank you guys. It is very interesting and helpful to us, people of this condition. And I hope you continue... And say thank you.</p> <p>Thanks for exposing us to new foods! 'Cause I've never had brown rice until it was in my food box.</p> <p>See I like that. That way until I feel comfortable in picking out my own foods that's what I'm new at with the diabetes thing. It's nice that a nutritionist has my back so I'm not grabbing something I should not be.</p> <p>It's helped me. It's helped me recognize that I can take charge. Where before I thought, well it's in my family too, and I never did eat good. We ate what we had, we were poor when I was a child and my mother she got diabetes and died. She was 64 and I thought I was kind of doomed. But I am not, so I do not have to keep it. I'm going to overcome it. And the box has helped me because I know now what carbs can do to you and I don't them like I use to. You know sweets, of course I use to bake all the time and I don't do that. Family don't like it. But if I can't eat it I'm not baking for them every week. You know they want their pies every week, they are not getting them.</p>

Continued

Table 4.2 (continued)

<p>Varying overall improvement suggestions. (N=3)</p>	<p>And Saturdays are a lot better because I don't work on Saturdays.</p> <p>So you know for that purple ball and the yellow ball that we got, it would have been good to have a recipe because my wife didn't know how to make them and we didn't know what to do with them.</p> <p>So on the internet it just tells you a lot of different ways to cook it, but you know that's because I knew the name but if you don't know the name it would be a lot harder to find the recipe.</p> <p>But I would still like to be educated as far as, I don't know spices... But I'm just curious to learn some more things about cooking and the things to use because I don't have high blood pressure, and I don't want to get it. I want to lower my cholesterol, and of course come off the Metformin and Glyza medicines. So, whatever you guys can suggest or recommend or recommend.</p>
<p>Some food items were unusable due to spoilage. (N=3)</p>	<p>Just this one time we went to the foodbank and we got these cucumbers and they were all in a bag and when I looked inside they were all smushed and kind of rotten and they have gotten in all the other food that were in the box with it. Kind like tomatoes? So I just had to throw everything out.</p> <p>Um, my only complaint was that the bread was so stale this last time, I couldn't eat it.</p> <p>No, one or two apples in the bag had bad spots, but I just cut those out.</p>

Discussion

The results of this study provide insights of positive outcomes as well as the challenges in receiving diabetes-friendly (low-glycemic index foods) food boxes developed for food insecure individuals with type 2 diabetes. Eight subjects completed the study. Subject participation was difficult to attain at times for various reasons, therefore an interview took place instead of a focus group at one session.

The major themes identified from the focus groups included participants reporting they were grateful for the food boxes, they shared some of the food items with multiple people, they provided support to the other participants, they appreciated exposure to new foods, they reported their diabetes health improved due to the food boxes, and the process for pick-up affected their lives. These overarching themes encompass the key findings of the focus group questions as well as reveal the results of the study's objectives.

All of the participants expressed appreciation for the food boxes during each session. Most participants expressed general thankfulness, for the food boxes and many participants stated that the food boxes provide them with food in which many of the food items could not be afforded if they were not provided by the food boxes. Several participants provided examples of food items that they would not normally buy due to the expense but they enjoyed eating such as fresh produce and brown rice. One participant stated that the food box is his primary source of food.

Half of the participants (n=4) expressed that the food boxes allowed them to not have to choose between buying food and paying other bills and expenses. This is consistent with other studies indicating that food insecure individuals often find that the

cost of food may compete with costs of diabetes medication and supplies^{8-11,15} and other bills and expenses.^{5,6,8,10,11} One participant stated she usually pays for the bills first and what is left is used for food, but now with the food boxes she is able to use the left over money to buy blood glucose testing strips. Other participants stated they could buy other food items and medication with the money saved from the food boxes.

During the focus groups, 100 percent of participants stated that they shared the food items with multiple people. All of the participants said they shared the items with other persons in the home, such as their spouse and children. This finding supports other studies of food insecure individuals indicating when food was scarce, a common policy is that the children eat first.⁵⁻⁷ Most participants stated the items were shared by being included in a larger dish, such as soup. One participant stated that diabetes runs in her family, so she wants her daughter to eat similarly in order to prevent the disease. Similar to another study,⁷ three of the eight participants stated giving food items to friends or neighbors because they didn't want to waste food items that they did not like or could not use.

The focus groups provided support to the other participants by offering recipe ideas and sharing information between each other. In all of the focus groups, recipes ideas were exchanged for the food items in the food boxes. The participant in the last session stated, "...I had been hoping that a few other people had been here to tell me how to cook the brown rice." Most of the recipes provided were for food items that the other participants did not know how to cook/use. Additionally, during half of the focus groups, information was exchanged on varying topics including diabetes nutrition and medical

education. A few participants educated others on the signs and symptoms of low blood sugar and provided ideas on how to correct a low glucose. One participant stressed the importance of carrying candy with you at all times in case your blood sugar goes too low. Other participants shared experiences of how to lower one's blood sugar through physical activity and eating "free" foods such as lettuce.

Half of the focus group participants (n=4) stated they tried new foods that they otherwise would not have tried without the food boxes. Most of these items included fresh produce such as zucchini, squash, and eggplant. All of these participants were grateful for the exposure to new food items. Some of the new food items, however, created a barrier to consuming the food because participants were unsure how to cook or prepare the item. All of the Spanish-speaking participants described food items that they did not use as a result of not knowing how to cook the item. This finding coincides with another focus group study involving Spanish-speaking food pantry clients.¹⁸ One Spanish-speaking participant in this study stated an eggplant spoiled because they were unfamiliar with the item and didn't know how to cook it. To overcome this barrier, a participant from each focus group suggested providing recipes for the corresponding food items in the boxes. One of these participants also added that recipes would help because as individuals with diabetes, they are educated on what items to eat but not on how to incorporate these items into meals.

During the focus groups, 100 percent of the participants stated they believed the food boxes are improving their diabetes health. All of the participants stated that the boxes provide better food choices, and they identify the items in the box as healthy.

Almost all of the participants stated the items in the box are a good visual reminder of the items they should be consuming since they are diabetes-friendly foods. Two separate focus group participants said the food box has helped them recognize that they can take charge of their disease and change their eating habits. Three out of eight of the focus group participants said the food box has helped them control their blood sugar levels. Two of these participants stated their blood sugar levels have decreased to the target ranges and one participant said the foods help him correct low blood sugar levels. When asked if they believed their diabetes is under control, one participant said her last HgbA1c was in the target range and she was very proud of this. Another participant responded that her HgbA1c was trending down and she's excited to know what it is now as a result of her diet change.

The process for picking up the food boxes was also discussed by each participant during the focus groups. When asked about challenges and barriers to the process of pick-up, almost all of the participants stated there were no challenges since the location was moved closer to their homes. During the discussion, 100 percent of participants stated the change in location made it more convenient for them to pick up the food box, and one participant commented that the farther location required the use of more gas.

Another suggestion focusing on food box pick up included providing flexible hours for pick-up. Two out of eight participants stressed that they have to miss a few hours of work in order to pick up the food boxes during the designated times. Another suggestion about the overall process from three participants included allowing participants to choose the food items in the box instead of the items being pre-selected

and packed. These participants stated that this would prevent wasting food and/or giving items away. One participant recommended providing participants with a survey of diabetes-friendly items they could choose from to fill their box. The desire to have a choice in food selection is similar to findings from a focus group study exploring the benefits and challenges of converting a traditional food pantry to a choice food pantry from a consumer point of view.¹⁸ This theme, however, contradicts the participants' excitement of exposure to new food items.

Limitations

The results of this study are descriptive of food pantry customers receiving diabetes-friendly food boxes from one Food Bank, so results at similar organizations may vary. Also, this study used a convenience sample from an on-going study, and therefore might not reflect geographic and demographic diversity of customers. Due to issues with attendance, the four focus groups conducted did not have the desired number of participants and may not reflect the on-going study's participants as a result of the small sample size. One focus group resulted in an individual interview which could have prevented the discovery of valuable information due to the absence of group discussion. In addition, there was a slight variation in the number of diabetes-friendly boxes received by each participant. This could have an impact on their individual view of the boxes as a whole. Another issue of qualitative research that may make a difference in participant response is the nature of the discussion, i.e. conducting focus groups verses individual interviewing, as well as the setting of the interview, i.e. conducting the discussion in a private verses public area. Finally, as with any question-based discussion, participants

may not provide honest answers to the questions asked. Further studies identifying the positive outcomes and the challenges in receiving diabetes-friendly food boxes developed for food insecure individuals with type 2 diabetes are needed to either support or refute the findings of this study.

Implications for Research and Practice

The results of this study demonstrate the participants believe the diabetes-friendly food boxes are improving their health and some have seen measurable results such as their blood glucose levels in the target range. The exposure to new food items and providing items that would not otherwise have been purchased indicates that food provided by the Food Bank could have a positive impact on diabetes outcomes for food insecure individuals. The fresh produce was a majority of the participants' favorite part of the food boxes, and comments about the expense of fresh produce can illustrate that these items would be greatly appreciated by food pantry customers. . In addition, diabetes-friendly recipes could prove beneficial to overcome the barrier of not knowing how to prepare unknown and/or new food items. This would help prevent items being wasted, given away, and/or spoiled.

The results of this study also clearly showed that the participants receiving the diabetes-friendly food boxes share the food items with other persons. All of the participants used the items for meals provided for the household, and others gave away items to neighbors or friends. Since the diabetes-friendly food boxes were established for only one individual, this could indicate that the number of food items provided should be

based off of family household size in order to be certain the individual with diabetes is consuming adequate amounts of appropriate foods.

The location for food box pick-up is requested to be conveniently located closer to the participants' homes. Therefore, participants' addresses should be considered when designating a location for pick-up to aide in easing the process for the participant.

Extending pick-up hours or offering times on the weekend could greatly benefit the food insecure participants by preventing the loss of work hours. Additionally, providing participants with a choice of food items to include in the box could increase the consumption of the diabetes-friendly foods. Offering participants a survey that provides the option to select which food items from different categories, e.g. three grain choices, two fruit choices, two vegetable choices, etc, could increase usage of the food box items. However, including a few items in the box that were not chosen on the survey could continue the benefits of new food exposure.

Finally, many participants expressed that the diabetes education classes helped them learn more about the disease and how to manage their condition. Some participants, however, stated that they would like to attend the classes again or attend additional classes because they want to learn more about diabetes. Participants also requested information regarding foods and recipes to assist them in understanding the information provided at classes. Offering educational handouts in the boxes or classes at the pick-up locations could assist in increasing the participants' diabetes health outcomes.

Additionally, a few participants stated they did not receive all the information needed from their healthcare provider to implement the lifestyle changes and treatment

procedures. Therefore, it is critical that healthcare providers understand and consider the patient's background, health literacy, and extenuating circumstances in making lifestyle-changing recommendations and explaining disease treatment procedures.

The results of this study suggest further research studies may be helpful in understanding how to improve the processes associated with receiving diabetes-friendly food boxes. Additional focus groups or other qualitative studies may help support or refute these findings. Identifying the positive outcomes and the challenges in receiving diabetes-friendly food boxes developed for food insecure individuals with type 2 diabetes could significantly improve the process for the food pantry customer and thus better meet the customer's needs and nutritional desires as well as empower the customers to improve and manage their own health.

CHAPTER 5

THE PERCEPTION OF THE FOOD PANTRY CUSTOMER RECEIVING DIABETES-FRIENDLY FOOD BOXES

Abstract

Objective: To identify both the positive outcomes and the challenges of receiving diabetes-friendly (low-glycemic index) food boxes developed for food insecure individuals with type 2 diabetes using food pantries.

Design: Three face-to-face focus groups and one face-to-face interview utilizing an open-ended question thread with follow-up questions.

Setting: Local Community Centers and a Food Bank.

Participants: A convenience sample (n=8) of participants from an on-going study of 26 participants.

Analysis: Transcripts were analyzed by identifying, coding, and categorizing primary patterns/themes in the data.

Results: Participants cited similar responses resulting in six overarching themes: (1) participants are grateful for the food boxes, (2) participants shared food box items with multiple people, (3) participants provided support to the fellow group members, (4)

participants noted exposure to new foods, (5) perceptions of diabetes health improved due to the food boxes, and (6) the process for pick-up affected participants' lives.

Conclusion and Implications: The findings suggest the diabetes-friendly food boxes are beneficial for food insecure individuals with type 2 diabetes by exposing them to new food items and improving their diabetes management as stated by the participants. Also the findings indicate an increased need for supplemental information regarding food preparation and recipes as well as further diabetes education classes and/or materials.

Key Words: food pantry customer; diabetes; food insecurity; food boxes

Introduction

Food insecurity is defined by the United States Department of Agriculture (USDA) as a household-level economic and social condition of limited or uncertain access to adequate food.¹ The definition also includes ranges of food security including low food security and very low food security.¹ Individuals experiencing food insecurity has been on the rise in the United States since 1999. According to the USDA annual, nationally representative survey, in 2011 an estimated 14.9 percent of American households, representing 33.5 million adults and 16.7 million children, were food insecure during the year.² Recent studies indicate that food insecurity rates are higher among individuals who are younger,³ from a racial or ethnic minority group,^{3,4} have a lower educational level,³ have incomes near or below the Federal poverty line,^{3,4} and live in households with children headed by a single parent.⁴

Studies have shown food insecure individuals have a higher risk of developing diabetes,⁵ are more likely to have diabetes,⁵ and have higher HbA1c levels⁵⁻⁷ than those who are food secure. Once an individual has developed diabetes, food insecurity may impair diabetes self-management.⁵⁻⁸ Individuals with diabetes who have access to nutritional counseling are often instructed to limit and/or avoid foods that have a high proportion of added fats, added sugars, and refined carbohydrates in order to have better blood glucose control, however, food insecure individuals often purchase these energy-dense foods.⁵⁻⁷ Blood glucose levels may fluctuate as a result of inconsistent caloric and carbohydrate intake.⁶ In addition, the cost of foods appropriate for individuals with diabetes may compete with the costs of diabetes medication, supplies, and/or medical

management as a result of the inherent financial limitations associated with food insecurity.^{5,6,8} Self-efficacy, defined as one's confidence in one's ability to complete specific tasks, may also influence the health outcomes of those persons who are food insecure and have diabetes. A lower self-efficacy has been reported in food insecure individuals with diabetes in light of the extra burdens/or emotional distress regarding diabetes self-management.^{9,15,16}

Food insecure participants often describe being frustrated with the inability to purchase appropriate foods to help manage their diabetes.⁹ The most cost-efficient means to consume calories is with oils and sweets, bread, rice, and pastas. The more expensive means to obtain calories is with fresh fruits and vegetables.^{7,9} Food pantries have the unique ability to address both food insecurity and inadequate nutritional intakes by providing more nutritious and fresh foods at no cost to those that qualify for services.¹⁰ The types of foods distributed to food pantry clients are an important element for diabetes management in food insecure individuals. Currently there is a lack of research on how to effectively use food to help food insecure individuals with diabetes to manage their disease or delay progression of disease. Particularly, there are limited studies that examine the effect food distributed by food pantries can have on the management of diabetes. A greater understanding of what types of foods provided by food pantries will be most beneficial to food insecure individuals with type 2 diabetes could have a significant impact on better meeting the individual's medical needs to assist diabetes control.

The purpose of this study is to identify both the positive outcomes and the challenges of receiving diabetes-friendly (low-glycemic index) food boxes developed for food insecure individuals with type 2 diabetes. The process of receiving the food boxes and utilization of the food provided was assessed to inform future recommendations on how to improve the process for the food pantry customer.

Methods

Study Design

Three face-to-face focus groups and one face-to-face interview were conducted between October and November 2012 at three sites at various times in the day. An open-ended thread of questions with follow-up questions (Table 5.1) was utilized to identify both the positive outcomes and the challenges of receiving diabetes-friendly food boxes developed for food insecure individuals with diabetes. Qualitative studies have been successful in discovering participants' opinions of items that hinder or assist them in controlling varying disease states.

Participants

Participants for the focus groups and interview were recruited from an ongoing study by a personal phone call. A follow-up letter explaining the focus group and containing a consent form was mailed. Participants were provided the following information: participating participants will be asked to participate in an audiotaped discussion group during which they will be asked about the diabetes-friendly food boxes received. Participation will require approximately two hours, and two \$25 gift cards will be given to participants after the discussion concludes. It was also stated that: (a)

participants will be asked to sign a written consent form; (b) researchers will keep all materials confidential; (c) members in a discussion group will be similar in terms of primary language spoken and time frame they began receiving diabetes friendly foods; (d) participants can choose not to respond to any question or could choose to discontinue participation at any point in time with no adverse consequences. Written consent was obtained according to the protocol approved by The Ohio State University's Institutional Review Board for Research Involving Human Subjects.

Procedures

A focus group and interview leader, familiar with focus group and interview methodology, facilitated each session. For the focus group that was conducted in Spanish, a translator assisted. A graduate student assisted during the sessions by recording conversations and taking notes of relevant nonverbal behaviors and interactions observed. Three sessions consisted of English-speaking participants (n= 3, n=2, n=1), and the other group (n = 2) consisted of Spanish-speaking participants. The sessions were audio recorded with participant consent.

Data Analysis

The audiotape recordings from both the English-speaking and Spanish-speaking focus group and interview sessions were transcribed. Major trends, observations, and issues that developed were discussed by the leader and assistant after each session. The transcriptions, along with the notes recorded by the leader and assistant comprised the data for analysis. The research team reviewed the data and coded the responses searching for patterns and themes. Pertinent quotes which characterize major trends and issues were

included in the final summary in order to illustrate the findings. The focus group leader verified the themes and the quotes.

Results

The majority of the participants were female (n=5) and English speaking (n=6). The first focus group was conducted at The Ohio State University (n=3), the second was at a community health center (n=2), and the third focus group and interview were conducted at the Mid-Ohio Food Bank (n=2) and (n=1). Six overarching themes were identified from participant focus groups including (1) participants are grateful for the food boxes, (2) participants share food items with multiple people, (3) participants provided support to the fellow group members, (4) participants noted exposure to new foods, (5) perception of diabetes health improved due to the food boxes, and (6) the process for pick-up affected participants' lives.

Participants are Grateful for the Food Boxes

Many participants expressed general thankfulness for the food boxes. One participant said, "Well I guess thank you guys. It is very interesting and helpful to us, people of this condition. And I hope you continue..." Those participants who worked also explained that they are grateful for the additional food and the food boxes assists with their food needs. One woman said, "It's worth it. You know even if you're working, it really would help."

Additionally, some participants described that they would not purchase many of the food items provided in the box due to the expense. A participant stated, "Yeah some of the foods that are in the boxes I probably wouldn't buy. Like the brown rice, cause it's

expensive.” Another participant responded similarly stating, “Yes. It’s a great thing. You know you probably wouldn’t expect to buy some of this stuff.” One man even explained that the food boxes are his source of food, “For me that’s why I eat. I don’t buy no other food.”

Half of the participants (n=4) described having to choose between buying food and paying other bills and expenses. A participant said, “You know we got to go to work, what I think about is, uh, the house note, the light, the gas, and the water. You don’t think about the food until it is time to eat. And sometimes you just can’t do it. That’s how it is with me.” The participants continued to explain that the food boxes provide the needed food and allowed them to pay for other expenses without decreasing their food consumption. One woman explained, “And the money you were going to use on this [food] is not money that you don’t have to spend. For example, all the money you were going to spend in vegetables now you don’t have to buy in vegetables. Like the money that you use to be spending on vegetables you know now you can be spending on other things like your blood glucose strips.” She continued by stating, “But now I have been able to buy my medicine and I’ve been taking it regularly.”

Sharing Food Items with Multiple People

All of the participants stated that the food items they receive in their food boxes are being shared with other people in the household. One woman stated, “And I have two grandsons that live with me and they usually don’t like the vegetables that I cook. So they’ll eat the beans...” Another man stated, “Yes I shared with my wife and my son as well.” A majority of the participants explained that they shared the food items because

they would make a big pot or entrée with the items provided, however, one participant noted that she shared the food specifically with her daughter to prevent the development of diabetes: “There are only three of us in the house, so usually it’s enough to feed because diabetes is kind of going down the line from my grandmother, my great-grandmother, mother, me, and I’m just trying to get my daughter to eat like I’m eating as far as the diabetes is concerned.”

A few participants (n=3) said they shared the food box items with friends or neighbors. The majority of the food items shared were items that the participant did not like or did not know how to cook and did not want the items to go to waste. One man said, “Yes a friend of mine from work who is currently out of work. I gave him like four cans... I gave him four cans because I really didn’t like those.” Another participant described, “If I like everything, you know. If not, you know, I just pass it to the next person, like to my neighbor or something. Because you know I don’t just want to throw it away. Or let it collect dust.” One participant said she was in a unique situation and does not have cooking utensils currently, therefore she stated, “Um, like the greens I had to give to my neighbor because I couldn’t cook them. Um, so I don’t let anything go to waste.”

Providing Support to the Other Participants

Support was provided to other participants in all three focus groups. During each of the sessions recipes were exchanged, especially for food items that others did not know how to prepare. One participant shared with another how to eat the radishes, “You cut them up and eat them. Just slice them up and eat them.” Another participant described

how she used the string beans instead of just eating them out of the can, “I’ll fix some string beans with some onions and green peppers and put a can of tomatoes too.” During the interview session, the one participant stated that she had wished others were present so she could ask them how they prepared the brown rice.

Support was also provided by answering personal questions and/or providing information on diabetes management. One participant was asked what he experiences when he has low blood glucose, “I’ll be shaking, your body will shaking, sweating.... So I have to eat something quick to build it up.” Later he provided some advice on how to correct low blood glucose, “...so sometimes I get a bite of honey sometimes or they have candies. When you’re traveling you should travel with candy so when it’s low you can...” Another participant provided information to others about how to decrease your blood glucose levels, “...Because when you start doing exercise and movement, you know, you’re uh your sugar goes down.”

Exposure to New Foods

During all the focus groups and the interview, the participants discussed the exposure to new food items through the food boxes. One participant stated, “I would buy zucchini and yellow squash now and which I would never thought that before...” Similarly a patient said, “Cause I’ve never had brown rice until it was in my food box.” The exposure to new food items, however, caused a barrier for some of the participants. A few participants explained that they did not eat some of the food items because they were not sure how to prepare the item. One man stated, “No the purple one [eggplant] went bad before we used it because we didn’t know what to do with it.” Another

participant commented, “And you know, I keep saying I’m going to go to the library and get a cookbook because they had given me radishes, fresh radishes and I don’t know what to do with radishes.” To overcome this barrier, during two of the focus groups participants suggested that the food boxes provided recipes for the food items. One of the participants explained, “So you know for that purple ball [eggplant] and the yellow ball [squash] that we got, it would have been good to have a recipe because my wife didn’t know how to make them and we didn’t know what to do with them.”

Perception of Diabetes Health Improved due to the Food Boxes

During all of the focus groups and the interview, all the participants discussed that their diabetes health has improved as a result of the food boxes. The majority of participants stated that their food choices were more appropriate for their condition because of the food items in the food box. One participant described, “Well yes because it kind of forces me, my kitchen is small, and you know I kind of trip over the box. So those things are like a visual reminder...” Similarly another participant said, “Yeah, it gives you a view of things that, um, you should be eating.” Another participant explained that the food box has empowered her to make a healthy life-style change, “It’s helped me. It’s helped me recognize that I can take charge. Where before I thought, well it’s in my family too, and I never did eat good... my mother she got diabetes and died. She was 64 and I thought I was kind of doomed. But I am not, so I do not have to keep it. I’m going to overcome it. And the box has helped me because I know now what carbs can do to you and I don’t eat them like I use to.” Another empowered participant said, “You know, enough is enough! I know what I can eat was good for me and whether it’s good for me.

I've been fooling around eating what I want to thinking the insulin would take care of it, but it doesn't do the whole job. Cause I have to do it."

During two of the focus groups, participants explained how the food boxes have helped improve their diabetes outcomes by keeping their blood glucose in the target ranges. One man stated, "Because uh, like this morning we're on the go 4:00 my sugar went very low, and I went and got something out of the box, cooked the food and it quickly build my sugar, so it helped me to eat fast food." Another woman said, "When I started with this program my blood glucose levels were in the 400s. But now I have been able to buy my medicine and I've been taking it regularly. You know my blood glucose, I'll wake up and it'll be 85. And at the end of the day it use to be in the 500s or 600s. And now it is in the 100s and 100 some things. I am talking about 10 years with diabetes."

Process for Pick-Up

All of the participants stated that the location for pick-up is more convenient when located closer to their homes. Many participants said the change of location from the Food Bank has improved the process: "No it's [the process] been pretty, pretty good, pretty easy, especially since they moved it from Grove City." Another participant stated, "No once they changed me to my area it was better. Because I was having to come down here and I live out west and now I'm on Valley View pickup..." One participant explained why the change of location was better, "It was problem because the gas to go there was farther." A barrier that a few participants (n=2) are facing is the time allotted for pick-up of the food boxes. One participant explained, "Yes for me, the time of the day doesn't work because I work from nine to six... Yes because when I had to go pickup the

other day I was late to work and I had to call off too so I lost about three hours that I could have been working.” This participant suggested providing pick-up times on Saturday so work hours do not have to be missed. Another participant explained having to give up work hours and suggested providing a larger window of time for pick-up.

Three participants suggested improving the process by allowing participants to choose the food items in their boxes. One participant stated, “I think I would let them go shopping in the food place and get what they want so they don’t have to give it away, give the other stuff away or don’t use what they don’t need. They would get what they need.” Similarly a participant explained, “You know what you got in your box you want, you won’t be taking nothing home you don’t want and you’ll enjoy it all. Maybe like you, you might want more fresh vegetables than the cans.” Another participant suggested providing a survey to participants with diabetes-friendly food options and allowing participants to pick items off of the survey for their boxes.

Discussion

The results of this study provide insights of positive outcomes and the challenges in receiving diabetes-friendly food boxes developed for food insecure individuals with type 2 diabetes. Only eight subjects completed the study. Subject participation was difficult to attain at times for various reasons including transportation difficulty or conflicting schedules, therefore an interview took place instead of a focus group at the last session.

Food insecure individuals often find that the cost of food may compete with costs of diabetes medication and supplies^{6,8,11-13} and other bills and expenses.^{8,9,12-14} The focus

group participants confirmed this was a concern for them. One participant stated they usually pay for the bills first and what is left is used for food, but now with the food boxes they are able to use the left over money to buy blood glucose testing strips. Other participants stated they could buy other food items and medication with the money saved from the food boxes.

All of participants stated that they shared the food items with other persons in the home, such as their spouse and children. This finding supports other studies of food insecure individuals indicating when food was scarce, a common policy is that the children eat first.^{9,14,15} Similar to other studies,^{15,16} participants stated giving food items to friends or neighbors because they didn't want to waste food items that they did not like or could not use. To prevent wasting or giving away food items, the participants of this study recommended being able to choose food items for their boxes. Previous food pantry customer focus groups studies also found that participants preferred a choice when selecting food items in order to minimize wasted food.^{10,16}

The focus groups were a good demonstration of peer coaching. The participants readily assisted each other with recipes and ideas for using products in the boxes. The participants also encouraged each other to be honest, so that they all could be helped with their disease. One participant stressed the importance of carrying candy with you at all times in case your blood sugar goes low. Other participants shared experiences of how to lower one's blood sugar through physical activity and eating "free" foods such as lettuce.

All of the participants were grateful for the exposure to new food items that the boxes provided, however, some items created a barrier to consuming the food because

participants were unsure how to cook/prepare the item. All of the Spanish-speaking participants described food items that they did not use as a result of not knowing how to cook the item. This finding coincides with another focus group study involving Spanish-speaking food pantry clients.¹⁰ To overcome this barrier, a participant from each focus group where this issue was addressed suggested providing recipes for the food items in the boxes. One of these participants also added that recipes would help because as individuals with diabetes, they are educated on what items to eat but not on how to incorporate these items into meals. Food pantry customer appreciation for recipes is also consistent with other findings.^{10,16}

The participants also discussed their improvements in their diabetes health as a result of the food boxes. A previous focus group study with low-income women found that many participants reported being frustrated because they could not afford more healthful food items such as lean meats and fresh fruits and vegetables.⁹ Participants of this study stated that the boxes provided them with healthier food options and food items that could not have been afforded on their own.

The process for picking up the food boxes was also discussed by each participant during the focus groups. When asked about challenges and barriers to the process of pick-up, almost all of the participants stated there were no challenges since the location was moved closer to their homes. One participant explained that the farther location required the use of more gas. In addition, providing flexible hours for pick-up was discussed especially for participants who are usually working during the allotted pick-up times. These finding reflects similar findings of other studies discussion transportation

issues^{13,16-19} and the limits of hours of operation¹⁶ which show the significance of these barriers.

Limitations

The results of this study are descriptive of food pantry customers receiving diabetes-friendly food boxes from one Food Bank so results at similar organizations may vary. Also, this study used a convenience sample from an on-going study, and therefore might not reflect geographic and demographic diversity of customers. Due to issues with attendance, the four focus groups conducted did not have the desired number of participants and may not reflect the on-going study's participants as a result of the small sample size. One focus group resulted in an individual interview which could have prevented the discovery of valuable information due to the absence of group discussion. In addition, there was a slight variation in the number of diabetes-friendly boxes received by each participant. This could have an impact on their individual view of the boxes as a whole. Another issue of qualitative research that may make a difference in participant response is the nature of the discussion, i.e. conducting focus groups verses individual interviewing, as well as the setting of the interview, i.e. conducting the discussion in a private verses public area. Finally, as with any question-based discussion, participants may not provide honest answers to the questions asked. Further studies identifying the positive outcomes and the challenges in receiving diabetes-friendly food boxes developed for food insecure individuals with type 2 diabetes are needed to either support or refute the findings of this study.

Implications for Research and Practice

The results of this study demonstrate the participants believe the diabetes-friendly food boxes are improving their health and some have seen measurable results such as their blood glucose levels in the target range. The exposure to new food items and providing items that would not otherwise have been purchased indicates that food provided by the Food Bank could have a positive impact on diabetes outcomes for food insecure individuals. The fresh produce was a majority of the participants' favorite part of the food boxes, and comments about the expense of fresh produce can illustrate that these items would be greatly appreciated by food pantry customers. In addition, diabetes-friendly recipes could prove beneficial to overcome the barrier of not knowing how to prepare unknown and/or new food items. This would help prevent items being wasted, given away, and/or spoiled.

The results of this study also clearly showed that the participants receiving the diabetes-friendly food boxes share the food items with other persons. All of the participants used the items for meals provided for the household, and others gave away items to neighbors or friends. Since the diabetes-friendly food boxes were established for only one individual, this could indicate that the number of food items provided should be based off of family household size in order to be certain the individual with diabetes is consuming adequate amounts of appropriate foods.

The location for food box pick-up is requested to be conveniently located closer to the participants' homes. Therefore, participants' addresses should be considered when designating a location for pick-up to aid in easing the process for the participant.

Extending pick-up hours or offering times on the weekend could greatly benefit the food insecure participants by preventing the loss of work hours. Additionally, providing participants with a choice of food items to include in the box could increase the consumption of the diabetes-friendly foods. Offering participants a survey that provides the option to select which food items from different categories, e.g. three grain choices, two fruit choices, two vegetable choices, etc, could increase usage of the food box items. However, including a few items in the box that were not chosen on the survey could continue the benefits of new food exposure.

Finally, many participants expressed that the diabetes education classes helped them learn more about the disease and how to manage their condition. Some participants, however, stated that they would like to attend the classes again or attend additional classes because they want to learn more about diabetes. Participants also requested information regarding foods and recipes to assist them in understanding the information provided at classes. Offering educational handouts in the boxes or classes at the pick-up locations could assist in increasing the participants' diabetes health outcomes. Additionally, a few participants stated they did not receive all the information needed from their healthcare provider to implement the lifestyle changes and treatment procedures. Therefore, it is critical that healthcare providers understand and consider the patient's background, health literacy, and extenuating circumstances in making lifestyle-changing recommendations and explaining disease treatment procedures.

The results of this study suggest further research studies may be helpful in understanding how to improve the processes associated with receiving diabetes-friendly

food boxes. Additional focus groups or other qualitative studies may help support or refute these findings. Identifying the positive outcomes and the challenges in receiving diabetes-friendly food boxes developed for food insecure individuals with type 2 diabetes could significantly improve the process for the food pantry customer and thus better meet the customer's needs and nutritional desires as well as empower the customers to improve and manage their own health.

1. What is the first thing that comes to mind, when I say the food boxes?
2. What is the best part of the food boxes?
3. When you think of the process of receiving the food boxes, were there challenges or barriers [problems] in receiving [getting] the boxes?
4. How would you improve the process of receiving [getting] the food boxes?
5. What foods in the food box did you like the most?
 - a. Why?
6. Which foods did you like the least?
 - a. Were there any challenges [problems] in using the foods in the box?
 - i. Were you needing any additional equipment?
 - b. What did you do to overcome these challenges [problems]?
 - i. Were there any foods that you did not know how to cook?
 - ii. Were there any foods you could not prepare [cook] because you needed other ingredients?
 - iii. Did anyone else eat the foods in the box?
 - If so, who?
 - Which foods did you share?
7. Do you have any ideas on how to make the food boxes better?
 - a. Are there other items you need that the food boxes did not provide?
8. What advice would you give others receiving [getting] the food boxes?
9. Do you believe this food box has helped your diabetes?
 - a. How?
10. Do you believe your diabetes is under control?
11. How confident are you that you can control your diabetes?
12. Do you have any other comments that you wish to tell us?

Table 5.1. Focus Group and Interview Open-Ended Discussion Question Thread

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APPENDIX A
FOLLOW-UP LETTER (ENGLISH)

Dear Participant:

I'm writing to let you know that as a participant in this research study, you have the option to participate in focus groups. If you choose NOT to participate in the focus groups, it will not affect your participation in the study or your ability to receive usual medical management and/or food boxes. If you are interested, please let me know and then you will be contacted about the dates/times of the focus groups. You will receive two \$25 (\$50 total) gift cards for attending the focus group sessions. If you choose to participate in the focus groups, then you will need to sign another consent form (because we added focus groups). The new consent form is included with this letter. Please read the document over and contact me if you have any questions. Do not sign the document until we have had the opportunity to discuss this option. Please call me if you have any questions, concerns and/or would like to enroll and/or know more about the focus groups.

Sincerely,

Kathy Garrison, Project Manager
The FEED Study
614-292-3848
Enclosure (consent form)

APPENDIX B

FOLLOW-UP LETTER (SPANISH)

Querido(a) Participante:

Le escribo para hacerle saber que como participante de este estudio, usted tiene la opción de participar en grupos de enfoque. Si usted decide NO participar en los grupos de enfoque, esto no afectara su participación en el estudio o su habilidad de recibir cuidado medico o sus cajas de comida. Si usted esta interesado, por favor hacérmelo saber y será contactado con las fechas y horas de los grupos de enfoque. Si usted decide participar en los grupos de enfoque, necesitará firmar otra carta de consentimiento (porque agregamos grupos de enfoque). La nueva carta de consentimiento esta incluida en esta carta. Por favor lea el documento y contácteme si tiene cualquier pregunta. Usted recibirá dos tarjetas de \$25 (\$50 total) por atender estas sesiones de grupo de enfoque. No firme el documento hasta que hayamos tenido la oportunidad de discutir esta opción. Por favor llámeme si tiene cualquier pregunta, preocupación, si quisiera saber más de estos grupos de enfoque o quisiera ser parte de ellos.

Sinceramente,

Kathy Garrison, Gerente de Proyecto

The FEED Study

614-292-3848

Adjunto (carta de consentimiento)

Si habla espanol llame a Susana perez (614-256-9759)

APPENDIX C
CONSENT FORM (ENGLISH)

The Ohio State University Consent to Participate in Research

Study Title: FEED: Food, Education, and Empowerment in Food Insecure Diabetics

Researcher: Colleen K. Spees, PhD, MEd, RD

Sponsor: Mid-Ohio Foodbank

This is a consent form for research participation.

It contains important information about this study and what to expect if you decide to participate.

Your participation is voluntary.

Please consider the information carefully. Feel free to ask questions before making your decision whether or not to participate. If you decide to participate, you will be asked to sign this form and will receive a copy of the form.

Purpose:

The purpose of the study is to understand how improved food security impacts people living with Type 2 Diabetes, how the addition of healthy foods, peer training, and education toolkits can impact disease and how behavioral changes may improve the overall health status of those affected by Type 2 Diabetes.

Health Clinic Record Review/Medical Record Screening:

The research team will review my records at the Columbus Neighborhood Health Center to determine if I am eligible to qualify for this study. If it is determined that I qualify, then I will be contacted by a member of the research team about being in the study as outlined in the Procedures/Tasks section of this document. However, if upon this review of my medical records it is determined that I do not qualify for this study, I will be notified and will receive no further contact from the research team for this study.

Data Storage:

The information collected from you during this study will be recorded in a database called REDCap. This is a secure internet-based data storage system; with only designated persons being allowed access to the information. This information will not be provided to anyone other than the researchers of this study.

Focus Groups:

If you are selected to be in this study, you will have the opportunity to participate in focus groups at various times throughout the study. If you choose NOT to participate in the focus groups, it will not affect your participation in the study or your ability to receive usual medical management and/or food boxes. You will receive two \$25 (\$50 total) gift cards for participating in the focus groups.

Procedures/Tasks:

If you are selected to participate in the study, you will receive diabetes-friendly food boxes at regular intervals for two to three years. During this time, you will continue to receive medical management, including diabetes management, at the Columbus Neighborhood Health Center (CNHC) along with the CODA health and nutrition classes. During the two to three years, information regarding your diabetes will be collected from your Columbus Neighborhood Health Center chart. This health information includes A1C levels, Blood glucose, Blood pressure, Lipid panel, Height, Weight, Medications, Eye, Vision, Dental and Foot health. The information will not be provided to anyone except the researchers. Researchers may observe the CODA classes. You will also complete surveys about your diabetes about every six months. After the last survey is completed, each person will receive a \$25.00 gift card. If you choose NOT to participate in the surveys, it will not affect your participation in this study or your ability to receive usual medical management and/or food boxes. If you currently use the food pantries or need to in the future, you may continue to do so.

In addition, four to eight persons in the study will be requested to complete peer training modules. These trainers will be paid minimum wage to complete the training and to speak to and help future participants of the study. You may agree to receive the food boxes and not be a peer trainer. Peer trainers will provide feedback and answer questions or surveys in the future.

Duration:

This study will last about three years. You may leave the study at any time. If you decide to stop being in the study, there will be no penalty to you, and you will not lose any benefits. You will continue to be able to receive food from the Food Pantries and medical care from the Columbus Neighborhood Health Center whether or not you are in the study. Your decision will not affect your future relationship with The Ohio State University or Columbus Neighborhood Health Center.

Risks and Benefits:

The potential benefits of being in this study are better understanding of your diabetes and greater knowledge about food and your diabetes. Your participation may also assist in the development of better services at food pantries for persons with diabetes.

You will receive a variety of foods, and there is the possibility of a food allergy. You do not have to eat any foods that cause you an allergic reaction or other discomfort.

Confidentiality:

Your information will be collected in a confidential manner. Summary of the data will not include names and will always be summarized without any identifying information.

Every effort will be made to keep your study-related information confidential. However, there may be circumstances where this information must be released. For example, personal information regarding your participation in this study may be disclosed if required by state law. Also, your records may be reviewed by the following groups (as applicable to the research):

- Office for Human Research Protections or other federal, state, or international regulatory agencies;
- The Ohio State University Institutional Review Board or Office of Responsible Research Practices;
- The sponsor, if any, or agency (including the Food and Drug Administration for FDA-regulated research) supporting the study.

Incentives:

Selected peer trainers will be financially compensated (hourly minimum wage) for training time and all peer training activities. All subjects will receive food boxes. In addition, all subjects will receive a \$25 gift card for completing the survey at the end of the study.

Participant Rights:

You may refuse to participate in this study without penalty or loss of benefits to which you are otherwise entitled. If you are a student or employee at Ohio State, your decision will not affect your grades or employment status.

If you choose to participate in the study, you may discontinue participation at any time without penalty or loss of benefits. By signing this form, you do not give up any personal legal rights you may have as a participant in this study.

An Institutional Review Board responsible for human subjects research at The Ohio State University reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

Contacts and Questions:

For questions, concerns, or complaints about the study you may contact Colleen K. Spees at 614-688-4651 or colleen.spees@osumc.edu.

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

If you are injured as a result of participating in this study or for questions about a study-related injury, you may contact Colleen K. Spees at 614-688-4651.

Signing the consent form

I have read (or someone has read to me) this form and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to participate in this study.

I am not giving up any legal rights by signing this form. I will be given a copy of this form.

Printed name of subject

Signature of subject

AM/PM

Date and time

Printed name of person authorized to consent for subject
(when applicable)

Signature of person authorized to consent for subject
(when applicable)

AM/PM

Relationship to the subject

Date and time

Investigator/Research Staff

I have explained the research to the participant or his/her representative before requesting the signature(s) above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

Printed name of person obtaining consent

Signature of person obtaining consent

AM/PM

Date and time

APPENDIX D
CONSENT FORM (SPANISH)

La Universidad de el Estado de Ohio

Consentimiento para Participar en Investigación

Título del Estudio: FEED (por sus iniciales en Inglés): Comida, Educación, y Empoderamiento en Diabéticos con Inseguridad de Alimentos

Investigador: Colleen K. Spees, PhD, MEd, RD

Patrocinador: Mid-Ohio Foodbank

Este es el formulario de consentimiento para la participación en la investigación.

Contiene información importante acerca de este estudio y lo que puede esperar si decide participar.

Su participación es voluntaria.

Por favor considere la información cuidadosamente. No dude en hacer preguntas antes de tomar su decisión, si desea o no participar. Si usted decide participar, se le pedirá que firme este formulario y recibirá una copia del formulario.

Propósito:

El propósito de este estudio es entender cómo una mejor seguridad de alimentos afecta a personas viviendo con Diabetes Tipo 2, cómo la adición de comida saludable, instrucción en grupo y herramientas de educación pueden impactar la enfermedad y cómo los cambios de comportamiento pueden mejorar el estado general de salud de aquellos afectados por Diabetes Tipo 2.

Revisión de Registros de la Clínica de Salud / Revisión de Registros Médicos:

El equipo de investigación revisará mis registros del Centro de Salud del Vecindario de Columbus para determinar si reúno los requisitos necesarios para calificar para este estudio. Si es determinado que si califico, seré contactado/contactada por un miembro del equipo de investigación acerca de ser parte del estudio como es indicado en la sección de Procedimientos de este documento. Sin embargo, si es determinado que no califico para el estudio según la revisión de mis registros médicos, seré notificado/notificada y no volveré a ser contactado o contactada por el equipo de investigación.

Almacenamiento de Datos:

La información obtenida de usted durante este estudio se registrarán en una base de datos llamada REDCap. Se trata de un sistema de Internet seguro basado en el almacenamiento de datos, con sólo las personas designadas se les permite el acceso a la información. Esta información no será proporcionada a nadie más que a los investigadores de este estudio.

Grupos de Enfoque:

Si usted es seleccionado para este estudio, tendrá la oportunidad de participar en grupos de enfoque en diferentes ocasiones durante el estudio. Si usted decide NO participar en los grupos de enfoque, esto no afectara su participación en el estudio o su habilidad de recibir manejo médico usual y/o sus cajas de comida. Los participantes recibirán dos tarjetas de \$25 (\$50 total) por atender las sesiones de grupo de enfoque.

Procedimientos/Tareas:

Si usted es seleccionado para participar en este estudio, usted recibirá cajas de comida adecuada para la diabetes a intervalos regulares durante dos a tres años. Durante este tiempo, usted continuará recibiendo cuidado médico incluyendo el manejo de la diabetes en el Centro de Salud del Vecindario de Columbus junto con clases de nutrición y salud de CODA. Durante estos dos a tres años, información sobre la diabetes será recolectada de su registro médico en el Centro de Salud del Vecindario de Columbus. Esta información de salud incluye niveles de A1C, glucosa en sangre, presión, panel metabólico, altura, peso, medicamentos, visión, salud dental y de pie. La información no será proporcionada a nadie excepto a los investigadores. Los investigadores pueden observar las clases de CODA. Usted también completará encuestas sobre su diabetes cada seis meses. Después que la última encuesta haya sido completada, cada persona recibirá una tarjeta de regalo de \$25.00. Si usted decide NO participar en las encuestas, no afectará su participación en el estudio o su habilidad de recibir su manejo médico habitual y/o sus cajas de comidas. Si actualmente está usando las despensas de alimentos o necesita hacerlo en un futuro, puede continuar haciéndolo.

Además, se le pedirá a entre cuatro a ocho personas que completen módulos de entrenamiento en grupo. Estos entrenadores serán pagados el salario mínimo para completar el entrenamiento y para hablar y ayudar a futuros participantes del estudio. Usted puede estar de acuerdo con recibir las cajas de comida y no ser un entrenador de grupo. Los entrenadores de grupo proveerán su opinión y responderán preguntas o cuestionarios en el futuro.

Duración:

Este estudio durará aproximadamente tres años. Usted puede retirarse del estudio en cualquier momento. Si usted decide dejar de participar en el estudio, no habrá penalidad para usted y no perderá ningún beneficio. Usted podrá seguir recibiendo comida de su despensa de alimentos y cuidado médico de la Clínica de Salud del Vecindario de Columbus independientemente de si está participando en el estudio o no. Su decisión no afectará su relación con la Universidad Estatal del Estado de Ohio o la Clínica de Salud del Vecindario de Columbus.

Riesgos y Beneficios

Los beneficios potenciales de participar en este estudio son una mejor comprensión sobre su diabetes y un mayor conocimiento sobre la alimentación y la diabetes. Su participación también puede ayudar en el desarrollo de mejores servicios en las despensas de alimentos para las personas con diabetes.

Usted recibirá una variedad de comidas y existe la posibilidad de una alergia a la comida. Usted no tiene que comer cualquier alimento que le cause reacción alérgica o cualquier tipo de malestar.

Confidencialidad:

Su información será recolectada de una manera confidencial. El resumen de la información no incluirá nombres y siempre será resumida sin ningún tipo de información que lo identifique.

Todo esfuerzo será hecho para mantener su información relacionada con el estudio, confidencial. Sin embargo, pueden haber circunstancias en las que su información debe ser compartida. Por ejemplo, información personal con respecto a su participación en el estudio puede ser revelada si así lo requiere la ley estatal. Además, sus registros pueden ser revisados por los siguientes grupos (aplicable a la investigación):

- Oficina para la Protección de Estudios Humanos y otras agencias regulatorias federales, estatales o internacionales.
- Junta de Revisión Institucional de la Universidad Estatal de Ohio o la Oficina de Prácticas de Investigación responsable.
- El Patrocinador, si existe, o agencia (incluyendo la Food and Drug Administration para la investigación regulada por el FDA) que apoya el estudio

Incentivos

Entrenadores de grupo seleccionados serán compensados económicamente (salario mínimo por hora) por tiempo de entrenamiento y actividades de entrenamiento en grupo. Además, todos los sujetos recibirán una tarjeta de regalo de \$25 por completar el cuestionario al final del estudio.

Derechos de Participantes:

Usted puede negarse a participar en este estudio sin penalización o pérdida de beneficios a los que usted tiene derecho. Si usted es un estudiante o empleado en la Universidad del Estado de Ohio, su decisión no afectará sus calificaciones o situación laboral.

Si usted escoge participar en el estudio, puede dejar de participar en cualquier momento sin penalización o pérdida de beneficios. Al firmar este formulario, no renuncia a ninguno de sus derechos personales legales que pueda tener como participante de este estudio.

Una Junta de Revisión Institucional responsable por la investigación con sujetos humanos de la Universidad Estatal de Ohio revisó este estudio y encontró que era aceptable de acuerdo con regulaciones estatales y federales aplicables y regulaciones de la Universidad diseñadas para proteger los derechos y el bienestar de los participantes de este estudio.

Contactos y Preguntas:

Para preguntas, inquietudes o quejas sobre el estudio, puede contactar a Colleen K. Spees al 614-688-4651 o colleen.spees@osumc.edu.

Para preguntas acerca de sus derechos como participante en este estudio o para discutir otras preocupaciones o quejas relacionadas con el estudio con alguien que no forme parte de el equipo de investigación, puede comunicarse con Ms. Sandra Meadows en la Oficina de Prácticas de Investigación Responsable al 1-800-678-6251.

Si usted se lesiona como resultado de su participación en este estudio o si tiene preguntas sobre una lesión relacionada con el estudio, puede ponerse en contacto con Colleen K. Spees al 614-688-4651.

Firmando el formulario de consentimiento

Yo he leído (o alguien me ha leído) este formulario y sé que estoy siendo invitado a participar en un estudio de investigación. He tenido la oportunidad de hacer preguntas y han sido contestadas a mi satisfacción. Acepto voluntariamente participar en este estudio.

No estoy renunciando a ningún derecho legal al firmar este formulario. Se me entregará una copia de este formulario

I am not giving up any legal rights by signing this form. I will be given a copy of this form.

Nombre escrito del participante

Firma del participante

AM/PM

Fecha y hora

Nombre de la persona autorizada para consentir en lugar del participante. (cuando aplicable)

Firma de la persona autorizada para consentir en lugar del participante. (cuando aplicable)

AM/PM

Relación con el participante

Fecha y hora

Investigator/Personal de Investigación

He explicado la investigación al participante o a su representante antes de pedir su firma.
No hay espacios en blanco en este documento. Una copia de este formulario ha sido
entregada al participante o su representante.

Nombre de persona obteniendo consentimiento
consentimiento

Firma de persona teniendo

_____AM/PM

Fecha y Hora

APPENDIX E

FOCUS GROUP AND INTERVIEW INTRODUCTION (ENGLISH)

Investigator: I am _____ a faculty/student member in the School of Health and Rehabilitation Sciences at The Ohio State University. You are one of the current participants in the study providing diabetes friendly food boxes. The purpose of this part of the study is to identify the positive outcomes and the challenges in receiving [getting] diabetes-friendly food boxes. Today I will be asking you questions in order to better understand how to improve the diabetes-friendly food boxes that you have been receiving.

There are no risks in participating in this session. Participation is voluntary and you may refuse to participate or withdraw at any time without penalty or loss of benefits which you are otherwise entitled. The benefit of participating is that your experiences will serve to guide further research and improve the food boxes to better meet individuals' needs. You will receive two \$25 gift cards today whether or not you participate.

Your answers will be confidential and I will only summarize what you say, not tell anyone who said what. No identifying information will be asked during this session. Would you mind if I tape record the discussion? (If yes – record, If no from any participant – take only handwritten notes). Does anyone have any questions that I can answer for you? Would you mind answering our questions today?

Your answers are very important to us and will help us learn how to improve the food boxes. Thank you for taking the time to be with us today.