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IMPROVING SERVICES

Suggestions for Food & Friends to Serve Diabetic Clients Better

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Improving Services:

Suggestions for Food & Friends to Serve Diabetic Clients Better

Introduction

Food & Friends is a Washington, D.C.-based nutrition services agency that provides home delivered meals, groceries, and nutritional counseling for people living with life challenging illnesses such as HIV/AIDS and cancer. Since 1988, Food & Friends has delivered approximately 10.5 million meals to 17,500 people living in the metro Washington, D.C. area. In 2007 alone, Food & Friends provided nearly 900,000 meals to 2,800 individuals. As Food & Friends has grown, it has strived to address unmet needs in the communities that it serves. This report identifies the unique needs of Food & Friends' clients with comorbid diabetes and offers suggestions on how these needs can be met.

Diabetes is a growing epidemic in the United States and a serious public health concern in the District of Columbia. In 2005, an estimated 20.8 million people living in America (7.3% of the population) had diabetes [1,2]. Recent research estimates that 45,000 residents of Washington, D.C., had diagnosed diabetes in 2007 [2]. These numbers reflect a 7.7% prevalence rate of diagnosed diabetes in the District, which is higher than the national average [2]. The CDC estimates that approximately 30% of people who have diabetes are unaware that they are diabetic [1]. Consequently, the numbers listed above most likely underestimate the true prevalence of diabetes in the District.

Wishing to address the high prevalence of diabetes among its client population and within the Washington, D.C., community, Food & Friends is interested in assuming a more active role in diabetes intervention and prevention. Currently, Food & Friends offers only limited service modifications to its diabetic clients. Meals for diabetic clients are modified in only one major way: the removal of concentrated sweets such as desserts. Consequentially, there is a disparity between the American Diabetes Association's nutritional recommendations [4] and the food provided in the Food & Friends diabetic diet.

This study is part of a larger body of research being conducted at Food & Friends about diabetes intervention and prevention. Research in this broader effort has spanned from an investigation of unmet community needs in the District to an analysis of diabetes-related services offered by other member organizations of the Association of Nutrition Services Agencies (ANSA). Turning a critical eye onto itself, Food & Friends requested this study in order to improve the services offered to its diabetic clients. The primary investigators interviewed 65 Food & Friends clients with comorbid diabetes and present their findings in the following pages.

The following report provides background information on the epidemiology of diabetes, American Diabetes Association's (ADA) nutritional guidelines for diabetics, and current services provided by Food & Friends. Subsequently, a detailed description of the quantitative and qualitative data collected through both in-depth interviews and a focus group with clients is presented. Lastly, researchers provide insight into clients' needs and suggestions. Utilizing the presented literature and ADA recommendations, the authors provide practical action steps that Food & Friends can take to improve and expand the services it offers to diabetic clients. It is the authors' hope that this document will provide novel insight into the ways that good nutrition can help people with comorbid diabetes improve and sustain their health.

Background

Diabetes: An American Epidemic

In 2005, roughly 20.8 million people in United States, or 7% of the population, had diabetes. This number includes not only 14.6 million people diagnosed with diabetes but also 6.2 million people who live without knowing that they have this chronic illness [1]. Alarmingly, the number of diagnosed diabetics alone in the United States is projected to increase to 48.3 million by the year 2050 [3]. In 2002, an additional 54 million Americans were estimated to have pre-diabetes, diagnosed by elevated fasting blood glucose or impaired ability to process glucose. These individuals are at significant risk for developing diabetes [1].

Diabetes is a serious and costly illness. Diabetes increases the risk of macrovascular diseases such as heart disease and stroke. It is also the leading causes of adult blindness and kidney failure in the United States due to microvascular damage [1]. If diagnosed at age 40, an American man is projected to lose more than 11 life-years due to diabetes while an American woman is projected to lose more than 14 life-years [5]. In 2002, diabetes was calculated to be the sixth leading cause of death based on death certificate estimates [6]. However, this statistic underestimates the impact of diabetes since death certificate analysis underreports diabetes incidence [7]. In 2007, the costs of diabetes were estimated to be $174 billion, including direct medical expenditures and indirect loses in productivity [8].

Fact: Diabetes costs the United States $174 billion per year, more than the annual cost of military operations in Iraq and Afghanistan, combined [9].

Changing Demographics: Diabetes as Comorbidity

In 2005, more than 1 in 5 people in United States aged 60 or older had diabetes [1]. Over the next several decades, the fastest growth in diabetes incidence will be amongst men and women aged 65 and above [10]. As the demographics of an aging population increase the incidence of chronic illnesses, the number of individuals with multiple chronic diseases will also rise [11]. The majority of adults with diabetes have at least one other chronic illness, and it is estimated that as many as 40% of diabetics have more than three concomitant illnesses [12]. This report will focus on the intersections between diabetes and other chronic illnesses, with special emphasis on HIV/AIDS and cancer.

Comorbid HIV/AIDS and Diabetes

HIV/AIDS and diabetes are strongly linked due to metabolic changes associated with antiretroviral drug therapies [13]. Highly active antiretroviral therapy (HAART) has significantly improved the prognoses of individuals with HIV/AIDS. However, HAART is associated with increased risk for insulin resistance and abnormal lipid profiles (dyslipidemia) [13,14]. In one study, HIV-infected individuals with fat redistribution syndrome (lipodystrophy) were 6.5 times more likely to develop pre-diabetes than HIV-negative individuals. More than one in three HIV-infected individuals with lipodystrophy became pre-diabetic [15]. Another study showed that HIV-positive individuals receiving HAART were 3.1

times more likely to develop diabetes than HIV-negative individuals [14].

Fact: HIV-positive individuals receiving antiretroviral treatment may be 3.1 times more likely to develop diabetes than HIV-negative individuals.

Comorbid Cancer and Diabetes

One study estimates that 6.1% of individuals have pre-existing diabetes at the time of cancer diagnosis [11]. In addition, a substantial body of literature has established a relationship between abnormal glucose metabolism and risk of cancer development [16]. The incidence of many types of cancers, including cancers of the breast, endometrium, pancreas, and colon, have been associated with type 2 diabetes mellitus [16]. Further, diabetes incidence was shown to be statistically higher amongst men receiving androgen deprivation therapy for prostate cancer [17].

Diabetes and blood sugar control have serious impacts on cancer survival, cancer recurrence, and quality of life. Both impaired glucose tolerance [18] and diabetes [17] have been shown to independently predict cancer mortality. In addition, individuals with both cancer and diabetes have significantly lower health related qualities of life than individuals with either illness alone [16]. These impacts of diabetes on individuals with cancer are well-documented for colorectal and breast cancer. Patients with diabetes and high-risk colon cancer experience a significantly higher risk of cancer mortality and cancer recurrence due to diabetes [19]. A study of cancer survival in older persons has also revealed diabetes as a significant cause of death amongst individuals with co-morbid colorectal cancer [20]. In the case of breast cancer, diabetes has been associated with a 40% increase of mortality within the first five years after diagnosis [21]. Having three or more comorbid illnesses in addition to primary breast cancer has been correlated with a 4-fold increase in mortality within three years of diagnosis [22].

Fact: Diabetes significantly decreases survival after breast cancer diagnosis and increases the risk of colon cancer recurrence and mortality.

Medical Nutrition Therapy for Diabetes

The American Diabetes Association has recognized the role of good nutrition in the diabetes prevention and management by establishing comprehensive recommendations for medical nutrition therapy (MNT) [4]. The recommended guidelines for MNT targeted towards diabetes prevention and intervention are summarized in **Table 1**.

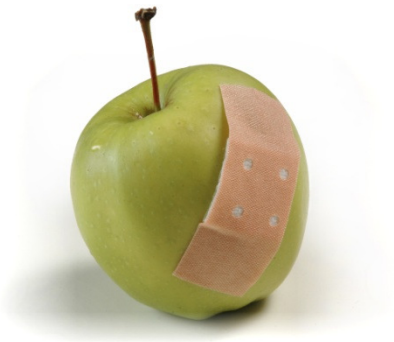


Table 1. Principles of Medical Nutrition Therapy for Diabetes	
Primary Diabetes Prevention	**Goals for Prevention:** • Promotion of healthy food choices and physical activity • Healthy weight loss towards the prevention of diabetes and cardiovascular disease
	Nutrition Recommendations for Prevention: • Structured lifestyle changes including moderate weight loss (7%) and regular physical activity (150 minutes/week) • Achieving USDA-recommended intake of dietary fiber (14 grams per 1000 kcal) and whole grains (one-half of grain intake) • Although moderate alcohol intake may reduce risk of diabetes, data do not support the recommendation of alcohol consumption for diabetes prevention
Secondary Diabetes Intervention	**Goals for Intervention:** • Maintenance of blood glucose levels, lipid and lipoprotein profiles, blood pressure levels • Prevention or slowing of chronic complications of diabetes
	Nutrition Recommendations for Intervention: • Carbohydrates: ○ Diverse sources including fruits, vegetables, whole grains, legumes, low-fat milk ○ Monitoring intake through carbohydrate counting, exchanges, or other methods ○ Substitution of sucrose-containing food for other carbohydrates ○ USDA-recommended dietary fiber intake (14 grams per 1000 kcal) ○ Use of sugar alcohols and sugar substitutes within FDA-recommended levels • Fat and cholesterol: ○ Saturated fat should be limited to 7% of total caloric intake ○ Two or more servings of fish per week for n-3 polyunsaturated fatty acids • Protein: ○ For individuals with normal renal function, usual protein intake (15% to 20% of total energy) is sufficient without reduction

These recommendations recognize the concept of "energy balance" within diabetes prevention and intervention. Lifestyle modifications managing energy intake (through diet) and energy expenditure (through exercise) have been shown to be effective for weight loss, cardiovascular disease prevention, and increasing insulin sensitivity [4,23]. Modest (5% to 7%) weight loss and regular physical activity are both top recommendations from the ADA [4]. The importance of daily physical activity is further supported by its inclusion in the ADA's Standards of Medical Care in Diabetes [24].

ANSA and "Food as Medicine"

Responding to the increasing prevalence of diabetes, many members of the Association of Nutrition Services Agencies (ANSA) nationwide have established innovative programs focused on diabetes and pre-diabetes. Embracing the concept of "food as medicine," ANSA member agencies recognize that good nutrition is a vital component of health promotion and disease management. A recent white paper from ANSA demonstrated the potential for medical nutrition therapy and food delivery programs in the prevention of diabetes-related health complications and medical spending [25].

Food & Friends' Current Services for Diabetic Clients

Food & Friends offers three different meal plan options. The Home Delivered Meals (HDM) plan includes three freshly-prepared meals per day, delivered in a one daily delivery, up to six days each week. The Meals Plus (M+) plan includes three freshly-prepared meals (frozen) per day, delivered in one daily delivery, Wednesday through Saturday. A "plus" bag with canned and boxed groceries is provided so that clients can prepare some of their own meals. The Groceries to Go (GTG) plan involves one delivery a week that includes 6-days worth of canned and boxed food items, as well as frozen entrées and soups. In addition to the three meal plans, Food & Friends offers a variety of different diet options for clients to choose from. Diets range from a mild diet, designed for clients with renal problems, to a puréed diet for clients who have difficulty chewing or swallowing food.

Currently, Food & Friends offers a "diabetic diet." The main difference between the regular diet and the diabetic diet is that for clients on HDM, instead of receiving up to six desserts a week, clients on the diabetic diet only receive one dessert each week. When dessert is not received, a piece of fruit is substituted. Additionally, baked goods prepared by Food & Friends (e.g., breakfast foods such as muffins and coffee cake) are lower in fat and sugar than the baked goods provided in the regular diet. When jelly or maple syrup packets are provided, clients on the diabetic diet receive sugar-free versions. There are no differences between the regular diet entrées, salads, and soups and the "diabetic diet" entrées, salads, and soups.

In addition, it is important to note that Food & Friends currently lacks the ability to assess the exact caloric and macronutrient content within its prepared foods. With the exception of baked goods, all foods are prepared in large quantities using production sheets without exact ingredient ratios. For this reason, prospective analysis of nutritional content is not possible.

For clients on GTG and M+ programs, there are very limited substitutions for the diabetic diet. When canned fruit is provided, clients on the diabetic diet receive fruit in light syrup opposed to heavy syrup. Additionally, the syrup for waffles and pancakes given is sugar-free, and cereals with high sugar content are not given. Lastly, artificial sweeteners are given in substitution for regular sugar.

It has been assessed that the "diabetic diet" currently offered is truly a "no concentrated sweets diet." **Table 2** provides a comparison between the American Diabetes Association's nutritional guidelines [4] and the current substitutions and changes Food & Friends makes to its diabetic diet.

Purpose

Currently there is a disparity between Food & Friends' diabetic diet and the nutritional recommendations of the American Diabetes Association [4]. Recognizing that diabetes is a growing epidemic locally and nationally, Food & Friends wished to explore the ways in which it can take a more active role in diabetes intervention and prevention. This effort began with an examination of how Food & Friends can improve the current services that are offered to diabetic clients. This study aims to provide practical action steps that Food & Friends can take to improve its services, based on background literature, American Diabetes Association nutritional recommendations, and quantitative and qualitative data collected from clients.

Table 2. Comparison of Food & Friends' Diabetic Diet with American Diabetes Association Recommendations

	American Diabetes Association (ADA) Diet [4]	Current Food & Friends (F&F) Diabetic Diet	Differences Between Diets
Nutrition Goals	• Healthy, sustained weight loss • Maintenance of blood glucose levels, lipid and lipoprotein profiles, blood pressure levels • Prevention or slowing of chronic complications of diabetes	• Healthy weight maintenance, focused primarily on the prevention of malnutrition and/or wasting associated with HIV/AIDS and cancer • Limiting amount of concentrated sweets through dessert restriction and low-sugar breakfast food substitutes	• The ADA's MNT recommendations focus on healthy weight loss, while F&F's diet focuses on weight maintenance. • F&F's diabetic diet does not specifically monitor carbohydrate or fat content in prepared meals.
Nutrition Recommendations	**Carbohydrates** • Diverse sources including fruits, vegetables, whole grains, legumes, and low-fat milk • Monitoring intake through carbohydrate counting, exchanges, or other methods • Substitution of sucrose-containing food for other carbohydrates • USDA-recommended dietary fiber intake (14 grams per 1000 kcal) • Use of sugar alcohols and sugar substitutes within FDA-recommended levels	**Carbohydrates** • Diverse sources, but heavy on refined grains such as rice and pasta. Fresh fruits and vegetables are limited, especially to clients receiving groceries. • Exact carbohydrate and caloric content of prepared foods is unknown, with the exception of baked goods. • Fiber is increased through partially whole-grain rolls and bean products. • Sugar substitutes and low-sugar options are provided to grocery clients.	**Carbohydrates** • Total calorie content is unknown in F&F prepared foods, making calories from carbohydrates incalculable. • Carbohydrate counting and diabetic exchange calculations are currently impossible within F&F diabetic meals. • No numerical target for fiber consumption is used in the F&F diabetic diet.
	Fat and cholesterol • Saturated fat limited to 7% of total caloric intake • Two or more servings of fish per week for n-3 polyunsaturated fatty acids	**Fat and Cholesterol** • Currently, no explicit fat restriction exists for the diabetic diet. • One serving of fish is provided in prepared meals on Fridays.	**Fat and Cholesterol** • Total calorie content is unknown in F&F prepared foods, making calories from fat incalculable. • If F&F were limited to 2200 to 2400 calories per meal bag, there should be no more than 17 to 18 grams of saturated fat per delivery.
	Protein • For individuals with normal renal function, usual protein intake (15% to 20% of total energy) is sufficient without reduction.	**Protein** • Exact protein content in meals is unknown, but a goal of 80 g to 90 g per meal bag is in place.	**Protein** • Total calorie content is unknown in F&F prepared foods, making calories from protein incalculable. • However, if a general guideline of 80 g to 90 g of protein is used with a 2200 to 2400 calorie meal, roughly 15% of calories will come from protein sources.

Methodology

Home Assessments: Research Design and Methods

Participants and Compensation

Food & Friends' clients with a diagnosis of diabetes (type 1 or 2) were the target population for study inquiry. In total, 65 clients participated in the study. For compensation for participating in a home assessment, all participants were entered into a drawing for a $25.00 gift card to a local supermarket. Four clients were randomly selected to receive gift cards. Gift cards were mailed to clients' homes.

Client Identification

Prior to this study, Food & Friends had not comprehensively identified which of its clients were diabetic. Food & Friends uses MealService software that assists in the planning, scheduling and delivery of meals. Within MealService, clients' health histories are available, including their primary illnesses and secondary conditions. However, MealService was not utilized by Food & Friends until 2004, and self-reported diabetes screening status was not part of the official client intake process until 2007. Consequentially, not all clients with diabetes were appropriately marked as diabetic. An initial query to identify diabetic clients reported that there were 57 diabetic clients on service.

To quantify and identify additional diabetic clients, researchers went through MealService systematically three times during the study period. Queries were run to identify clients on the diabetic diet or the renal diet, since diabetes is the largest single cause of adult renal failure [1]. Additionally, researchers went through every active client's file on MealService and examined the health history tab for any marking of diabetes under primary illness and secondary conditions. Lastly, researchers searched the medication tab of all active clients for listings of the commonly prescribed diabetes medications and their generic counterparts. Medications included: Actos, Amaryl (Glimepiride), Avandia, Diabeta (Glyburide), Glucotrol (Glipizide), Glucophage (Metformin), Glyset, Humalog (Insulin Lispro), Januvia, Lantus (Insulin Glargine), Micronase (Glyburide), Novolog (Insulin Aspart), Prandin, Precose, and Starlix.

All clients who were not properly marked as diabetic or newly identified as diabetic were designated as diabetic under the primary illness field on MealService. Averaging the three systematic diabetic client MealService searches, researchers estimate that any given time, there are approximately 150 diabetic clients on service.

Qualification and Participation

The majority of Food & Friends' diabetic clients were eligible to participate in the study. Exclusion factors included being a Medicaid waiver client that would not otherwise qualify for service, long-term suspension from service due to missed deliveries, failure to submit recertification forms, limited English proficiency, memory impairment (i.e. Dementia and Alzheimer's), underage, stopped or suspended service for more than three weeks during the study period (often due to travel or hospitalization), and death. Additionally, clients had to be on service for at least a month to be eligible for study participation.

Of identified diabetic clients, 82 clients qualified to participate in the study. Researchers were unable to contact 10 clients, mainly because of disconnected phones. Seven clients declined to participate in the home assessment. The primary reasons for nonparticipation were poor health and elderly age. The participation rate was 79%.

Sixty-five clients participated in an in-home assessment, resulting in a 90% confidence interval. Consequently, the study population is statistically representative of Food & Friends' diabetic clients.

Data Collection Procedures and Materials

All diabetic clients who qualified for the study were contacted via the telephone by researchers. Clients were provided a brief overview of the study and asked if they wished to participate. Researchers scheduled a home assessment with clients who agreed to participate.

A home assessment questionnaire (**Appendix A**) was developed based on a literature review in the areas of diabetes, co-morbid diabetes, medical nutrition therapy, and the American Diabetes Association's nutritional guidelines for diabetics. The questionnaire was designed to gain insight into clients' management of diabetes, perceived understanding of Food & Friends' current diabetic services, and their suggestions for improvements to the services Food & Friends offers its diabetic clients. Questions were quantitative and qualitative, open-ended and closed-ended. All questions were screened and approved by the registered dietitians and the Client Services Department of Food & Friends.

Written informed consent was obtained from each participant prior to the beginning of home assessments. Additionally, interviewers assisted participants in completion of a short demographic questionnaire. Clients' weight was measured using a digital scale. Subsequently, researchers asked the questions outlined in the questionnaire. Granted clients' permission, interviews were recorded using a digital audio recorder. Additional notes were taken on the interview guide. Interviews lasted an average of 50 minutes. After the interview was completed, researchers gave participants a short information guide about diabetes, provided participants with contact information for Food & Friends' dietitians, and answered any additional questions.

Data Analysis

All interviews were transcribed into a Microsoft Excel spreadsheet. Client identification numbers, rather than names, were used to ensure confidentiality. Interviews were analyzed for general impressions, responses that specifically addressed the research questions, and common themes between participants. Utilizing Rubin and Rubin's [26] research on how best to transcribe and code qualitative research, transcriptions were coded for *concepts, themes, events* and *topical markers*. Concepts included subjects such as the health impact of diabetes, diabetes education, exercise habits, diet, and suggestions for improvements to services.

The quantitative data was entered into SPSS statistical software. Frequencies and descriptive statistics were run for all 60 demographic and quantitative variables. Additionally, bivariate linear regressions were run to find correlations amongst variables. The quantitative data was used to complement the in-depth qualitative data collected.

Focus Group Methods

Participants

One focus group was conducted with 7 clients at the Food & Friends organizational office located in northeast Washington, D.C. Because many clients of Food & Friends have limited mobility due to life-challenging illnesses, recruitment for the focus group was limited to clients residing in the District of Columbia and Montgomery County, Maryland. Participants were recruited from the pool of active Food & Friends clients who had previously participated in an in-home assessment. Previous assessment was deemed necessary for eligibility to control for the influence of the in-home assessment questionnaire on focus group

responses. Further, because the focus group included a strong focus on the cultural appropriateness of Food & Friends' services, eligibility for the focus group was limited to clients who self-identified as African American. Each participant was offered transportation to and from the focus group via taxi and also given a $25.00 gift card to a local grocery store for compensation. Written consent was obtained from participants.

Procedures

A focus group discussion guide (**Appendix B**) was developed based on a literature review of the following: medical nutritional therapy for diabetes and eating patterns of African Americans. Focus group questions were developed in accordance with study goals [27,28] and focused on two primary concepts: "healthy eating" for diabetes and the effectiveness of Food & Friends' services for diabetic clients. In addition, the topic of cultural appropriateness was incorporated into both of these concepts within the guide. To this end, a list of foods from the American Diabetes Association publication *The New Soul Food Cookbook for People with Diabetes* [29] was integrated into focus group materials. Participants were asked to identify culturally appropriate foods for possible inclusion into future Food & Friends menu cycles.

The questioning guide was analyzed by the registered dietitians and the Client Services Department of Food & Friends to ensure appropriateness. Further, the guide was edited by two focus group researchers (one from the American Diabetes Association) with extensive experience on needs assessments among minority populations in order to ensure cultural sensitivity. The focus group was moderated by an African American employee of Food & Friends to facilitate discussion on cultural appropriateness of Food & Friends' services [27]. To ensure consistency and clarity, the group moderator participated in the designing of the questioning guide. Principal investigators, who had individually met with all group participants during in-home assessments, acted as co-moderators, noting nonverbal communications and providing technical support. The group interview lasted a total of 1 hour 20 minutes.

Data Analysis

The group was recorded on two digital audio recorders and separately transcribed by the study's primary investigators. Transcripts were compared, and in cases of conflict, a third opinion was obtained. Thematic analysis was conducted to identify common trends among data [27]. Participants' comments were separated according to themes. The most prominent themes are presented later the focus group results section of this report. They provide insight into clients' dietary management of diabetes and manners in which Food & Friends' services can be improved to better suit the needs of diabetic clients.

Results

Demographic Characteristics of Identified Diabetic Clients

Explained in study methodology, Food & Friends did not have a comprehensive list of clients with diabetes prior to the researchers' arrival. After three searches through Food & Friends' meal planning/client data base software, researchers developed estimates of the number of clients with diabetes. Researchers estimated that currently Food & Friends has approximately 150 diabetic clients on service at any given point. Food & Friends serves approximately 750 clients daily. Researchers calculated that roughly 20% of clients have diabetes in addition to another life-challenging illness. Of note, there are also clients receiving Food & Friends services who have pre-diabetes. However, at this point, researchers are unable to estimate the number of pre-diabetic clients on service due to limited pre-diabetes screening and reporting. Additionally, most pre-diabetic individuals are not prescribed medication for this condition, making it impossible for researchers to know a clients' pre-diabetes status based on available health information.

Researchers identified 146 diabetic clients on service. Of the 146 diabetic clients, 57 (39.0%) were male and 89 (61%) were female. The majority of the clients were African American (112, 76.2%) while 27 (18.5%) were Caucasian, 4 (2.7%) were Hispanic, 1 (0.7%) was Asian, and 2 (1.4%) were listed as "other." The mean age of a diabetic client was 63.5 years old. The oldest diabetic client identified was 90 years old while the youngest was 10 years old. Sixty-six (45.2%) of the indentified diabetic clients lived in the District of Columbia, 52 (35.6%) lived in Maryland, and 28 (19.2%) lived in Virginia. Examining primary illness, 68 (46.6%) clients had cancer, 46 (31.5%) had HIV/AIDS, 2 (1.4%) had both, and 30 (20.5%) had another life-challenging illness.

Home Assessment Findings

Demographic Characteristics of Study Population

Demographic characteristics of study participants are highlighted in **Table 3.** 65 clients participated in a home assessment interview. 25 (38.5%) participants were male and 40 (61.5%) were female. The majority of participants identified as African American (75.4%). Participants also identified as Caucasian (16.9%), Asian (1.5%), American Indian (1.5%), Hispanic (1.5%), and "other" (3.1%). The average age of participants was 62.1 years old. The youngest client interviewed was 33 years old, and the oldest was 89 years old. Participants lived in all three geographical areas that Food & Friends serves: 31 (47.7%) lived in the District of Columbia, 17 (26.2%) lived in Maryland, and 17 (26.2%) lived in Virginia.

Clients' weights, measured by the interviewer at the start of the home assessment, and clients' self reported heights were used to calculate body mass index (BMI). Following standard BMI guidelines, 3 (4.6%) participants were considered underweight, 21 (32.3%) were normal weight, 20 (30.8%) were overweight, 16 (24.6%) were obese, and 5 (7.7%) were morbidly obese. Over 63% of the participants were overweight or obese (**Graph 1**).

In the preliminary demographic questionnaire, clients were asked what type of diabetes they had. The majority of clients (75.4%) reported having type 2 diabetes. 4.6% of clients reported having type 1 diabetes, while 20% of participants were unaware of what type of diabetes they had (**Graph 2**). Several clients were very recently diagnosed with diabetes, while some clients were diagnosed years ago. The average time since diabetes diagnosis was 11.7 years. Several clients

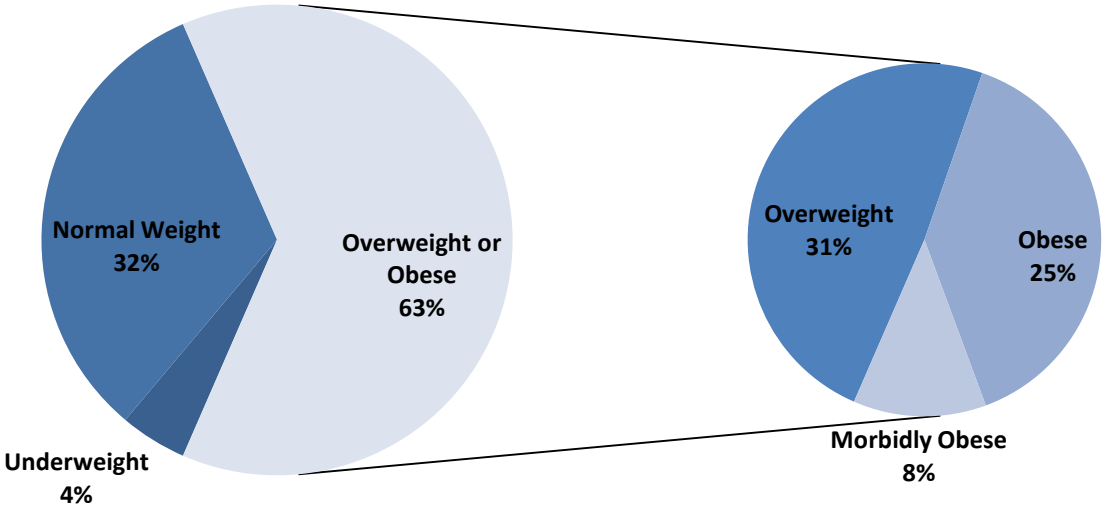
found out approximately six months ago that they had diabetes, while one client found out over 40 years ago that she had diabetes. In addition to diabetes, all participants had another serious life-challenging illness. Thirty-five (53.8%) participants had cancer, 23 (35.4%) had HIV/AIDS, 2 (3.1%) had both, and 5 (7.7%) had another life-challenging illness such as congestive heart failure.

Table 3. Demographic Characteristics of Study Participants.

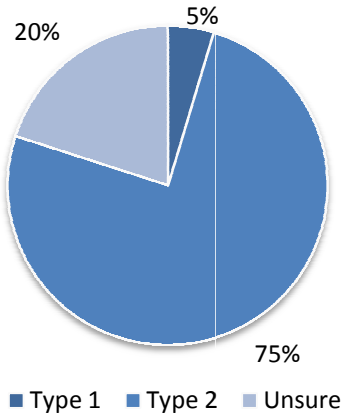
Characteristic	Overall, *N* = 65
Sex, *No. (%)*	
Male	25 (38.5)
Female	40 (61.5)
Race or Ethnic Group, *No. (%)*	
African American, Black	49 (75.4)
Asian (including Indian subcontinent)	1 (1.5)
Hispanic, Latino/a	1 (1.5)
Native American, Alaska Native	1 (1.5)
White, Caucasian	11 (16.9)
Other	2 (3.1)
Age , *Yr.*	
Mean	62.1
Range	33 to 89
Body Mass Index, *No. (%)*	
Underweight (<18.5)	3 (4.6)
Normal weight (18.5-24.9)	21 (32.3)
Overweight (25-29.9)	20 (30.8)
Obese (30-39.9)	16 (24.6)
Morbidly Obese (40+)	5 (7.7)
Type of Diabetes, *No. (%)*	
Type 1	3 (4.6)
Type 2	49 (75.4)
Unsure	13 (20.0)
Time Since Diabetes Diagnosis, *Yr.*	
Mean	11.7
Range	.5 to 40
Primary Illness*, *No. (%)*	
Cancer	35 (53.8)
HIV/AIDS	23 (35.4)
Both	2 (3.1)
Other	5 (7.7)
Location, *No. (%)*	
District of Columbia	31 (47.7)
Maryland	17 (26.2)
Virginia	17 (26.2)

* All data was based on self-reported responses of clients except primary illness, which was taken from MealService.

Graph 1. Weight Status of Study Participants, by BMI Classification



Graph 2. Self-Reported Diabetes Type of Study Participants



In the preliminary demographic questionnaire, clients were also asked to state the highest level of education completed, household size and annual family income (**Table 4**). Of the clients interviewed, 4 (6.2%) participants had no high school education, 15 (23.1%) had some high school education, 15 (23.1%) earned a high school diploma, 18 (27.7%) had some college education, 5 (7.7%) earned an associate degree, 6 (9.2%) earned a college diploma, and 2 (3.1%) earned a graduate/professional degree. Almost half of the participants (47.7%) lived alone. 26.2% of the clients lived in a two person household, and 18.5% lived in a three person household. 7.7% of participants reported a household size of greater than three.

Table 4. Educational Attainment, Household Size, and Income of Study Participants	
Characteristic	Overall, *N* = 65
Education, *No. (%)*	
No High School	4 (6.2)
Some High School	15 (23.1)
High School Diploma	15 (23.1)
Some College	18 (27.7)
Associate Degree	5 (7.7)
College Degree (Bachelor's)	6 (9.2)
Graduate or Professional Degree	2 (3.1)
Household Size, *No. (%)*	
1	31 (47.7)
2	17 (26.2)
3	12 (18.5)
4	2 (3.1)
5	2 (3.1)
6	1 (1.5)
Annual Family Income*, *No. (%)*	
Less than $10,000	24 (38.1)
$10,000 to $19,999	25 (39.7)
$20,000 to $29,999	6 (9.5)
$30,000 to $39,999	3 (4.8)
$40,000 to $49,999	2 (3.2)
$50,000 to $59,999	2 (3.2)
$60,000 to $69,999	1 (1.6)

*N=63. Only 63 participants wished to report their annual family income.

The annual family income of the participants was very low according to the United States Department of Health and Human Services income standards [30]. More than 75% of the participants reported an annual family income of less than $20,000. Over 45% of the participants living alone reported an annual income level that placed them below the 2007 official poverty threshold determined by guidelines created by the United States Department of Health and Human Services [30].

Study Participants' Diabetes Management

In order to make suggestions to Food & Friends as to how it can improve services offered to diabetic clients, researchers deemed it necessary to first obtain a clear picture of how clients manage their diabetes. The following issues were explored: the challenges resulting from diabetes that clients face, the level of diabetes education they have received, and the ways in which they manage the illness.

Self-Identified Needs of Comorbid Diabetics

Participants were asked to describe how, and if, diabetes impacts their lives. Responses ranged from some clients stating that diabetes has no impact on their lives to clients providing detailed descriptions of how diabetes impacts their health and well-being. When asked if diabetes has an impact on her life, one female client responded:

"Yes. A lot of things I like to eat, I don't eat because I have diabetes... Diabetes, if not

taken care of properly... you can go into a coma. That's frightening... I wished they had a cure for it. I stick myself every day, and sometimes I don't know if I get the right side or the left side... It's very uncomfortable... I feel like it's part of my life that's missing because I'm not able to do or eat or have things. And I can't go nowhere because I always have to have a little snack with me... It's something to deal with, it's really something to deal with... I wear socks all the time, and I'm scared of everything. I'm scared to take my shoes off unless I know where I'm at... It's really a big impact on my life."

Client Perspective: *"If I could help the world not to get diabetes, I would want to do that. Because this is something I wish they could find a cure for, even more than AIDS at times. This disease, it can cause you to have heart attack; you could go blind; you could lose your limbs. So many things can happen to you. It's such a frightening situation."*

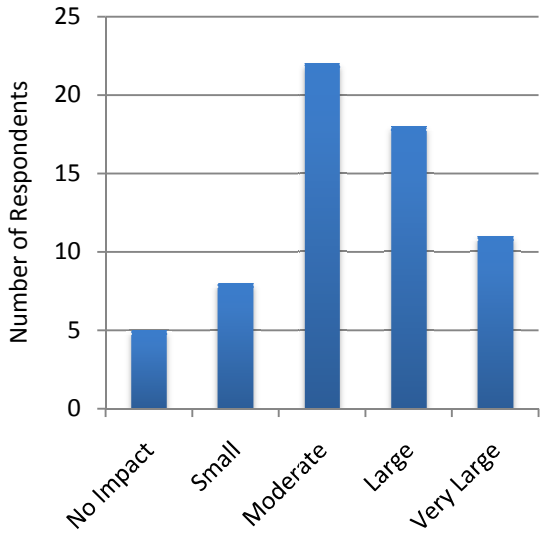
In addition to asking participants to explain how or if diabetes impact their lives, interviewers also asked clients if there are challenges they face having diabetes. 59.4% of participants stated that they faced challenges, while 40.6% said that they did not (N=64). Challenges that participants faced ranged from financial burdens of purchasing healthy, diabetic-appropriate food to problems with physical intimacy. When responding to this question, and explaining some of the challenges she faces, a female client stated:

"I have to eat, I'm exhausted, I get headaches. Health wise it does [have an impact] *and physically. There is so much I can and cannot do. There are things that I can and cannot eat. When I do eat it, things go wrong. It definitely affects my life a lot. I can't deal with the exhaustion all of the time. Sometimes I go without eating a lot, and I get shaky, and I am never knowing when that's going to happen."*

Participants were also asked to quantify, on a scale from 1 to 5, the impact that diabetes has on their health (1 represented no impact, 2 small, 3 moderate, 4 large, 5 very large). Over 78% of the participants reported that diabetes has a moderate or larger impact on their health (N=64) (**Graph 3**).

As explained previously, all of the participants had another serious life-challenging illness in addition to diabetes. Researchers were interested if having multiple health conditions made it difficult for clients to manage their diabetes. More than half of the participants (52.3%) said that having another serious illness in addition to their diabetes made it difficult for

Graph 3. Impact of Diabetes on Health



them to manage their diabetes. 46% said that they did not experience difficulties managing their diabetes due to other health conditions they were dealing with.

Responses to this question varied widely. Participants who said there was not a comorbid impact often said that they had not thought about it, that diabetes was not their primary worry, or that they were too sick to care about their diabetes. One male client who had terminal cancer told the interviewer, *"why does it matter, I will be dead in 10 months."* One female client discussed that although she thinks that diabetes has a large impact on her health, and that having HIV makes it difficult for her to manage her diabetes, that people still view diabetes as a secondary health condition. She shared:

> *"Some people, when you talk to them, then they find out you are HIV(+), then they seem to show less interest… I've noticed that when I talk about my diabetes, and then they ask you other health problems, if I happen to mention HIV, the whole situation seems to fade out. They blame everything that's wrong with you on HIV. That's not right. You've got to look at both of the situations. You can't just say, 'She has HIV -- then anything can happen in her.' You have to look at both sides of it."*

Many clients expressed that having other illnesses in addition to diabetes produced many challenges. Several clients shared that diabetes poses the greatest challenges of all their health conditions.

A female client explained:

> *"I was doing all right with cancer. I was in remission for five years. At the six year check up I found that it moved to my lungs. That was all right. But when I found out about diabetes, I went into a deep depression… It is still hard to stick to the diet… So much is going on, you know, with cancer and diabetes. The diabetes scares me more than the cancer."*

Another female client shared:

> *"I just know that by me having diabetes, I have to prioritize my health and since I've had diabetes, I have had to live a lot of days where diabetes takes priority. It used to be that some of my other illness would take priority. HIV comes nowhere near diabetes."*

Clients' explanations for how other illnesses, most often cancer or HIV/AIDS, impact their diabetes management ranged from reporting that their illness caused their diabetes to challenges with not knowing which of their symptoms were caused by which disease. One client reported that the steroids her doctor prescribed her led her to gain over 100 pounds, which in turn caused her to develop diabetes. Another female client discussed challenges with not being able to identify the cause of her symptoms and said, *"I cannot figure out now if it is because of diabetes or symptoms of the cancer. It's hard to figure out if the pain is from my cancer treatment I undergo or from nerve damage from diabetes."*

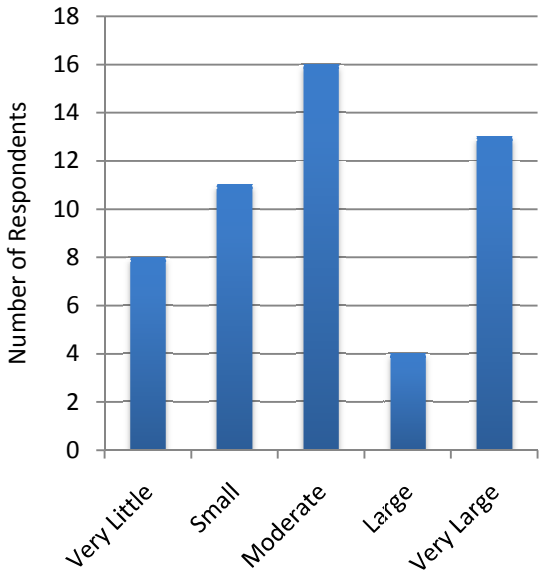
Several clients also discussed difficulties trying to find a diet that is appropriate for all of their health conditions. One female client said that, *"Because of [my] kidneys, I have to follow that diet as well as the diabetic diet… and also hypertension. You try to find a diet that fits it all."* Several of the participants were on dialysis and discussed the challenges with trying to find a balance between appropriate food selection for their diabetes as well as their dialysis treatment. A female client expressed that *"it's hard to keep it balanced." "But I'm doing better. The first three years on the machine were chaotic."* She also explained that she is supposed to drink

abundant amounts of fluids because of her diabetes; however, dialysis forces her to limit her fluid intake.

Level of Diabetes Education

Understanding what diabetes is, its symptoms, best management practices, and the serious complications that can arise from improper management are extremely important for diabetes intervention [24]. Researchers were interested in assessing the level of diabetes education participants had. Participants were asked to identify, on a scale from 1 to 5, their knowledge of diabetes (1 represented a very little amount, 2 small, 3 moderate, 4 large, and 5 very large). The responses were quite varied (**Graph 4**). Of respondents, 8 (12.3%) individuals said that they knew very little, 11 (16.9%) said they knew a small amount, 16 (24.6%) said that they knew a moderate amount, 4 (25.2%) said they knew a large amount, and 13 (20%) said that they knew a very large amount.

Graph 4. Level of Diabetes Knowledge Reported by Clients



Participants were also asked if they had received any form of diabetes education. Over 72% of the participants said yes, while roughly 28% said no. When asked to explain the education they had received, participants reported receiving education from doctors, nurses, nutritionists, friends, classes, support groups, books, pamphlets, television, and the internet. The majority (63.1%) of participants had not attended a formal diabetes educational class, while 36.9% had. Almost no participants (96.9%) had participated in a diabetes support group. Forty-two (64.6%) participants said that they had read information about diabetes, while 23 (35.4%) participants had not. The majority of participants stated that they had received diabetes education via talking to their doctor or nurse or through reading books and pamphlets.

Researchers were also interested in assessing if participants wished to learn more educational information about diabetes. Forty-eight (73.8%) participants said that they would be interested in learning more about diabetes, while 17 (26.2%) participants said they were not interested.

Roughly seven out of ten clients expressed interest in more educational information about diabetes.

One female client expressed, "*Knowledge is power… give more knowledge to diabetic clients. A lot of people really don't understand crippling effects, need to know it's serious.*" The most common responses for not wanting new information were: *"I already know enough," "I am too old to learn more,"* and *"learning more about it scares me."* Interviewers asked all participants from whom they preferred to receive educational information about diabetes and what manner they preferred to be presented with new information. Participants' responses varied. Overall, many participants said they prefer to receive new information from their doctor, nurse, or nutritionist. However, several clients said they had no preference. Many participants said that they prefer to talk to someone when presented with new material about their diabetes. Additionally, many participants said they like to read books and pamphlets to learn about their diabetes.

General Management and Family Influence

Participants were asked to list up to five of the most important things that they are doing to manage their diabetes. The most common responses involved dietary monitoring, avoiding sugar, taking prescribed medication, checking blood sugar, and exercising. Participants were also asked if family and/or friends influence how they managed their diabetes. More than half (57.1%) said that they had family and/or friends that impacted how they manage their diabetes; 42.9% said that they did not (N=63).

Participants who said that they did have family and/or friends that influenced their diabetes management were asked if their family and/or friends made it easier or harder for them to manage their diabetes. 89.5% said that family and/or friends made it easier, 2.6% said they made it harder, and 7.9% were neutral. When describing how her family made it easier for her to manage her diabetes a female client shared: *"My brother tries to monitor my health. He makes it easier for me. He tries to tell me what I should be eating and what I shouldn't. He'll bring stuff over for me."*

Medication and Healthcare

Participants were asked a series of questions about the medication they take, medical recommendations that they have been given, and their compliance with these recommendations (**Table 5**). The majority of participants (86.2%) take diabetes medication, and the majority of participants (80%) check their blood sugar at least once a week. The most common reasons for not checking blood sugar mentioned were not having access (mainly because of financial difficulties) to a glucometer and stating that they *"know"* when their blood sugars are *"off"* without having to measure them. **Table 5** documents other aspects of client's medical management of diabetes.

Client Perspective: *"Yes, I need to take medication. When normal [not having diabetes], you don't have to budget for it. But with diabetes you have to budget for it. You know, things like the co-pay."*

Exercise

Participants were asked if they exercise. Forty-four clients (67.7%) said yes, and 21 clients (32.3%) said no. Frequency of exercise varied widely. For example, some clients reported exercising daily (54.5%), while others reported that they exercised 1 to 2 times per week (13.6%). Reported frequencies of exercise are detailed in **Table 6.** Time spent exercising ranged from 5 minutes to 2 hours with the average being 37.6 minutes (N=44). Exercise activities that

Table 5. Medical Management of Diabetes Among Study Participants.	
Characteristic	Overall, *N* = 65
Diabetes Medication, *No. (%)*	
Yes	56 (86.2)
No	9 (13.8)
Blood Sugar, *No. (%)*	
Told to Watch Blood Sugar	
Yes	62 (95.4)
No	3 (4.6)
Check Blood Sugar	
Yes	52 (80)
No	13 (20)
If Yes, How Often	
Less than Once a Day	17 (26.1)
Once a Day	20 (30.8)
Twice a Day	16 (24.6)
Three Times a Day	6 (9.2)
More than Three Times Daily	6 (9.2)
Cholesterol, *No. (%)*	
Told to Watch Cholesterol	
Yes	47 (72.3)
No	18 (27.7)
Currently Watching Cholesterol	
Yes	38 (58.5)
No	27 (41.5)
Taking Cholesterol Medication	
Yes	25 (38.5)
No	40 (61.5)
Blood Pressure, *No. (%)*	
Told to Watch Blood Pressure	
Yes	53 (81.5)
No	12 (18.5)
Currently Watching Blood Pressure	
Yes	42 (64.6)
No	23 (35.4)
Taking Blood Pressure Medication	
Yes	50 (76.9)
No	15 (23.1)

Table 6. Exercise Frequency of Respondents, Times Per Week

None	Once	2 to 3	4 to 6	7 or more
21	6	7	7	24

clients mentioned ranged from doing leg lifts in a wheel chair to running on a treadmill at a gym.

Participants were asked if their exercise activities, duration and/or frequency changed when they were diagnosed with diabetes (N=59). Twelve (20.3%) said that they exercised more, 10 (16.9%) said that they exercised less, and 37 (62.7%) said that their exercise patterns did not change. Participants who said they exercised more often said that they did so because their doctor encouraged them to do so. Participants who reported exercising less often stated that their health conditions and energy level made exercising very difficult. One female client shared that she stopped exercising when she found out she had diabetes. *"I stopped when I found out about my sugars… I said my God I can't take more of this, it's just too much."*

Participants were asked to identify barriers to exercise and what, if anything, would make them exercise more. Many participants said that their health conditions significantly limit their ability to exercise. One female client shared:

> *"I really can't exercise like I used to. I used to go walk at least a mile, but I can't no more… I get short of breath, and I get real tired… I need to exercise more, but I get so tired when I try to do it… Maybe if I had somebody to exercise with… it might make me exercise more."*

Another female client expressed enthusiasm about a free exercise program for seniors every Saturday at the YMCA. She reported that her participation in this program provided her access to exercise equipment and strength conditioning equipment. She shared that she enjoys the opportunity to go to the YMCA and likes exercising with other seniors. She stated:

> *"I just ignored the whole fact that I was diabetic. I really didn't do anything. Not till I was at the age of 40 did I start doing what I was supposed to do."*

She explained that although she tries to exercise at home, it is difficult. *"I can exercise here, but I don't. Just the will power. I just don't want to do it."* The interviewer asked the client to identify what made it hard to exercise at home. The client responded, "*I think when you exercise with someone it is more enjoyable.*" When asked if there was anything that would make her exercise more, she explained, *"If there were more free classes at the Y, and different varieties like a dance group… Make it fun."* Other clients expressed similar sentiments. Conversely, some clients said that they are satisfied with the amount they exercise and/or they are doing as much as their body will allow them do.

32.3% of clients interviewed said that they do not exercise. Common reasons for not exercising included not feeling well enough to engage in physical activity or being unaccustomed to exercise. Several of the participants had single or double leg amputations, and others had glaucoma or varying vision problems due to diabetic retinopathy. These health conditions were often cited as reasons for why clients did not exercise. Other clients stated that they do not exercise because they are *"lazy."* A few clients shared that they do not feel safe exercising in their neighborhood. A female client said, *"It's so dangerous out here, I can't even walk no more down the street because you don't know who's going to knock you in the head."*

Diet

The Role of Diabetes in Food Selection

Participants were asked if diabetes plays a role in their food selection. Fifty-two (80%) said that diabetes does influence what they select to eat, while 13 (20%) said that diabetes does not influence what they choose to eat. Subsequently, interviewers asked participants to quantify the influence diabetes has on their food selection on a scale from 1 to 5 (1 represented no influence, 2 small, 3 moderate, 4 large, and 5 very large). Fifty-two (80%) participants said that diabetes has at least a moderate impact on their food selection (**Graph 5**). Six (9.2%) participants said that diabetes has no influence on their food selection.

Perception of Healthy Food for Diabetics

To gain insight into clients' perceptions of healthy food for diabetics, participants were asked to explain what foods they view as "healthy" for people with diabetes. Participants' responses varied. The most common responses were *"sugar free foods"* and *"little sugar."* Also, frequently mentioned were vegetables, fruit, chicken, fish, whole grains, and low fat foods. A few clients did mention foods not typically viewed as "healthy" for diabetics to eat, such as pasta and rice. Quite a few clients were quick to say that this is what they are *"supposed"* to eat, not what they were eating.

Difficulties Managing Diet

Often, even before interviewers asked participants if they had difficulties managing their diet, numerous clients shared that they have trouble eating what they view as appropriate foods for someone with diabetes. Interviewers formally asked all clients if they experience difficulties when managing their diet. Almost half of the participants responded yes (49.2%), and 50.8% responded no. One of the most common difficulties cited was trouble staying away from certain foods (often sweets). One female participant shared that she has actually been eating more sugar since being diagnosed with diabetes. She shared that she believed the cause was psychological, resulting from being told to decrease the amount of sweets she eats. *"I'd rather eat the sweets than the food; it's a mind thing... I am eating more sugar than I would usually eat."*

The other most common difficulty cited by participants was associated with the financial burdens of purchasing food. When asked about what she thought was healthy for someone with diabetes to eat, a female client responded:

> *"Fresh vegetables, fresh fruit, but it's too high in price. And that's what they want you to eat, and that don't make no sense."*

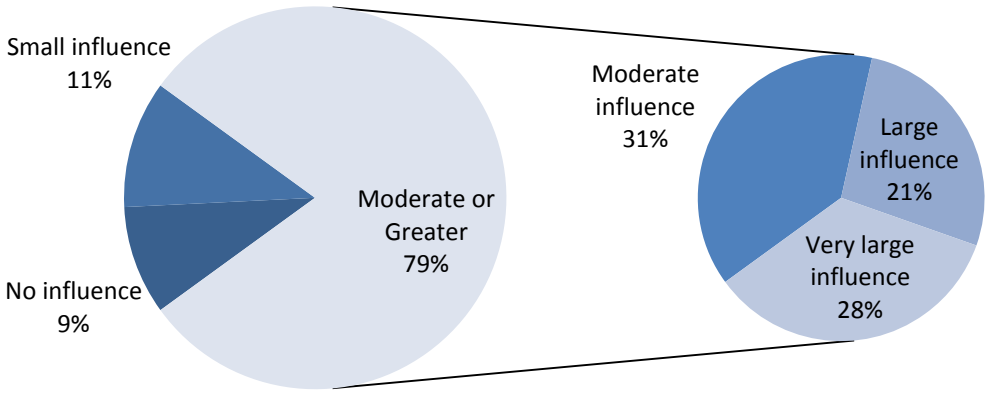
One male client shared that he is very grateful for Food & Friends' services because the only time he is able to purchase food himself is when he has coupons. He said, *"When I don't have money I'm hungry. Food & Friends helps me a lot." "My finances are very very poor. I buy [food] when I have coupons."* Another participant went into detail about how her limited finances make purchasing healthy food very challenging. She shared:

> *"Things is rough now, and if you're on a fixed income, you can't do but so much. You got other bills you have to take care of, you got to keep a roof over your head, but you also have to eat. It wouldn't be so bad if I didn't have diabetes. I have to eat."*

Later when explaining additional challenges she had managing her diet, she stated:

> *"It was stressing me out because the things I*

Graph 5. Reported Influence of Diabetes on Participants' Food Selection



was supposed to have, I couldn't afford. I could only afford the things I wasn't supposed to have because it was the cheapest. The things I was supposed to have cost to much. It costs to be a diabetic now. It really costs."

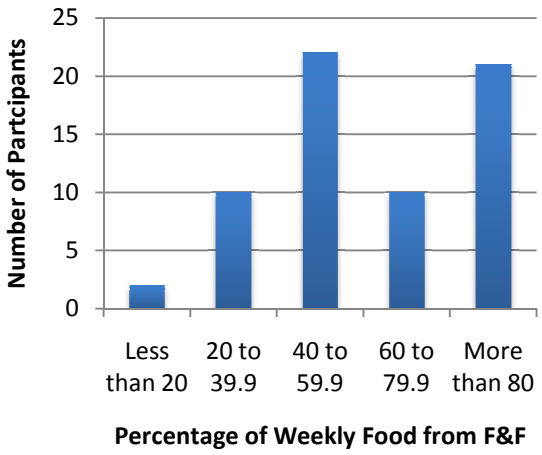
Clients' Understanding of Food & Friends' Current Diabetic Services

In order to make well-informed suggestions on how Food & Friends can improve the services it offers diabetic clients, researchers deemed it necessary to understand how Food & Friends clients currently perceive the current services offered.

General Diet Questions

All participants were asked what percent of the food that they eat on a weekly basis comes from Food & Friends. The mean was 59.8%. Responses ranged from 1%-100%. **Graph 6** displays the breakdown of the percentages of weekly food consumed provided by Food and Friends.

Graph 6. Percent of Weekly Food Consumed provided by Food & Friends



Participants were asked to describe what other types of foods they eat besides the meals sent by Food & Friends. A typical probe was "What do you buy at the super market?" The foods mentioned most often were milk, fruit, vegetables, meat, chicken, fish, whole grain bread, juice, and artificial sweetener. Many participants mentioned again that buying healthy foods, such as fruit and vegetables, is very costly. One client shared:

"I love fruits, but they're so high now, my gracious. I got 4 apples, 4 oranges, and it

came to seven dollars. Seven dollars for 4 oranges and 4 apples! That's a lot of money for a little fruit, but I have fruit on account of diabetes. I love it, but I can't afford it."

Also of note, several clients mentioned that they buy artificial sweetener, diet soda, and sugar-free snacks when they go to the supermarket.

Perceived Interaction with Food & Friends' Dietitians

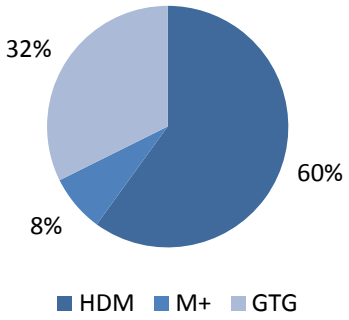
Clients were asked if they have spoken to a Food & Friends dietitian about their diabetes. Over half of the participants said yes (53.8%), while just a little under half (46.2%) said no. If clients reported having spoken to a Food & Friends dietitian, interviewers asked them if they found it helpful. Of the clients that had talked to a dietitian about their diabetes (N=35) and wished to comment (N=34), 31 (91.2%) said that they found it helpful, while 3 (8.8%) said that they did not.

All clients identified as diabetic, during Food & Friends' required initial nutritional consultation, are offered a short diabetes informational handout sent to their homes. Clients were asked if they had received information from Food & Friends about their diabetes in the mail. (It is important to note, not all clients interviewed were identified as diabetic during their initial nutritional consultation). Twenty-seven (42.9%) clients reported receiving information about diabetes from Food & Friends in the mail. Thirty-six (57.1%) said they had not received such information (N=63). Of the clients that did report receiving information via the mail about diabetes from Food & Friends and wished to comment (N=22), 20 (90.9%) said they found the information helpful, while 2 (9.1%) reported that they did not find the information to be helpful.

Delivery Service and Food Eaten

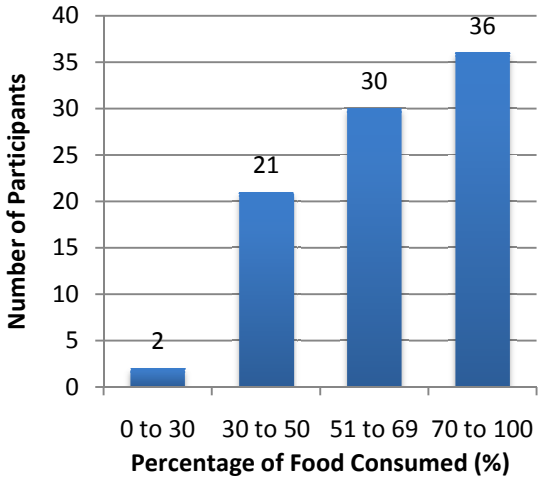
Food & Friends offers 3 different meal delivery programs. Of the 146 total identified diabetic clients, 105 (71.9%) were on the Home Delivered Meal (HDM) program, 7 (4.8%) were on the Meal Plus (M+) program, 33 (22.6%) were on the Groceries to Go (GTG) program, and 1 (0.7%) receives nutritional counseling only. Study participants included recipients of all three food delivery options. Thirty-nine (60%) of the participants were on the HDM program, 5 (7.7%) were on the M+ program, and 21 (32.3%) were on the GTG program (Graph 7).

Graph 7. Type of F&F Service Received by Study Participants



Clients were asked what percent of the food provided by Food & Friends they consume. The mean was 70.2%, and responses ranged from 1% to 100%.

Graph 8. Percent of F&F Food Consumed



If participants reported eating less than 100% of the food sent, they were asked to explain what they do not eat and why. The two most common foods mentioned were soups and salads. Typical responses as to why they do not eat the salads and the soups involved not liking the taste and not being accustomed to the ingredients or the mixture of ingredients. Discussing not eating the soups and salads was one of the few times that clients were consistently negative about the food delivery service. One client described the salads as *"bizarre"* while another called them *"nasty."* An additional concern often mentioned by clients when explaining their dissatisfaction with the soups and salads was the amount of beans in the food items. A female client stated:

> *"Beans, all those beans everyday. Beans in salad, beans in the main dish, beans, beans, beans. You could lose your appetite over that."*

In addition to saying that there are too many beans in the food, especially the salads, clients described to interviewers that they do not eat some of the food sent by Food & Friends because they do not find it culturally familiar. Clients shared that the foods that are sent often does not resemble the foods that they ate growing up, or have flavors that they are accustomed to eating. One female client stated, "*Sometimes I look at the stuff and say what is it?*" One male client from Ethiopia explained that he is "*not accustomed to such foods.*" A few of the clients who receive groceries in their deliveries showed the interviewer the sent food items and asked if she knew anyone that eats such foods. One male client said, *"I'm not stereotyping anyone, but the people I know don't do tuna casserole."* Another male client said, when describing why he doesn't eat the salads sent by Food & Friends:

> *"I'm just a basic, regular type guy. I like lettuce, tomatoes, onions in salad… I don't eat those chickpeas or some of those exotic foods. But hey, it's a cultural thing."*

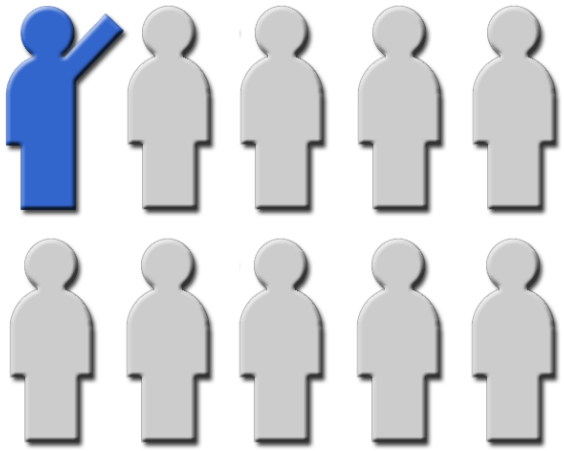
Diabetic Diet

Out of all the diabetic clients identified, researchers found that 110 (75.3%) receive the diabetic diet while 36 (24.7%) do not (N=146). Similarly, of the clients interviewed for the study, 51 (78.5%) are on the diabetic diet, while 14 (21.5%) are not. During the interview, clients were asked if they are on Food & Friends' diabetic diet. Fifty-five (84.6%) clients correctly identified if they were or were not on the diabetic diet. Ten (15.4%) of clients were incorrect when responding to the question regarding if they receive Food & Friends' diabetic diet. Six clients incorrectly thought that they were receiving Food & Friends diabetic diet. Four clients incorrectly reported that they are not receiving Food & Friends' diabetic diet.

Clients who reported they did not receive the diabetic diet were asked if they knew that it was offered at Food & Friends (N=12). 83.3% said that they knew that there is a diabetic diet offered. 16.7% said that they were not aware that Food & Friends offers a diabetic diet. Clients who reported not being on the diabetic diet, but stated that they knew Food & Friends had a diabetic diet, were asked why they are not receiving the diabetic diet. The responses widely varied. Some clients said that they thought the diet would not taste as *"good"* as the normal diet. Others reported that they know how to monitor their diet and do not need Food & Friends to do it for them. A few clients said that because of other health conditions they face, they already have too many diet restrictions leading them not to request to be placed on the diabetic diet. Lastly, a few participants mentioned that they have a very poor appetite and *"barely eat anyways."* Consequently, they said they wanted to be able to choose what they ate.

Identifying Differences between the Regular and Diabetic Diet

All clients that self-reported being on the diabetic diet and clients that self-reported knowledge of the diabetic diet despite not receiving it (N=63) were asked to identify the differences between the diabetic diet and regular diet Food & Friends offers. Only 7 (11.1%) clients said that they knew the difference and could correctly identify the differences between the diets when asked. Fifty-six (88.9%) of the clients either said that they did not know what the differences were or wrongly explained the differences.



Only one out of ten clients could accurately identify the difference between the regular and diabetic diets.

Notably, many of the clients who said they knew the differences between the diets, but were mistaken, stated that the diabetic diet has less carbohydrates, less fat, and less seasoning than the regular diet. For example, a female client described the differences as, *"It don't have much in the way of sweets or sugars, or seasoning. And* [it's] *less fatty."* Some clients went as far to say that the meals are counted for carbohydrates and that the dietitians are controlling the amount of starchy foods placed in the diabetic meals. One female client confidently stated (although she was mistaken) that she knew the differences between the diabetic and the regular diet and said:

> *"They always put a label* [referring to the blue sticker that is placed on diabetic meal bags]*, because a nutritionist is doing it. There's portions and classification of food. They classify it between normal and diabetic."*

At the end the interview, learning the true differences between the regular and diabetic diets, one client stated:

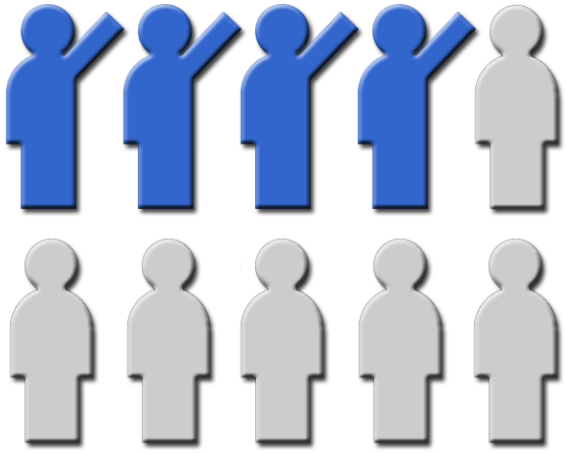
> *"All along, thought I got special meals for my diabetes, but then I found out that they're the same."*

Knowledge of the Need to Portion Control Carbohydrate Portions

As mentioned earlier, all of Food & Friends' clients receive a nutritional assessment by a registered dietitian at service initiation. During this assessment, clients are given individualized dietary advice. For diabetic clients, this advice includes strategies for managing carbohydrate portion size within Food & Friends' food deliveries. All clients who reported being on the diabetic diet, excluding those who only received groceries, were asked if they are aware that they need to control the amount of carbohydrates they eat in the food items sent by Food & Friends (N=52). 34.6% of the clients stated that they were aware of the need to control the portion of carbohydrates they eat out of the meals sent by Food & Friends. However, the majority of clients (65.4%) said that they were not aware of the need to control carbohydrates in the meals.

After being asked this question, the most frequent response was: *"I thought you [Food & Friends] do that."* One client responded, *"They don't have a lot of carbs in the meals, do they?"*

Another client said with concern, *"Oh no. Nobody ever told me. Nobody has ever mentioned it. I never really asked. I had no reason to pay attention to it."* Another client reacted by saying, *"I thought I was supposed to eat it all."* It was evident by participants' responses that many of them had not been informed about the need to control the amount of carbohydrates they eat out of the meals. At the end of the interview, many clients expressed concern, worrying that they were previously unaware of the need to portion control the carbohydrates.



Less than four out of ten clients knew that they should control their own carbohydrate portions in delivered meals from Food & Friends.

On the other hand, some clients who were not aware that they were supposed to control the carbohydrates said that they did it regardless, because they noticed that there was a lot of pasta and rice in the meals. Furthermore, of the clients who reported being aware of the need to control the carbohydrate amount, several quickly admitted that they do not do so. Conversely, some clients did report knowing that they need to take out some of the starchy foods, such as pasta and rice and that they did so on a regular basis.

What Could Food & Friends do Better? Suggestions for Improvements

The last segment of the interview focused on clients' suggestions for improvements to the services Food & Friends offers diabetic clients. Participants were first asked to share general suggestions for improvements that Food & Friends could make to its services for diabetic clients. Many clients' first response was gratitude for the service and a comment regarding that they think Food & Friends is doing a good job. In general, some clients offered no suggestions for improvements, while others provided several.

Interviewers stressed to clients that Food & Friends is hoping to improve its services to best serve its diabetic clients and that suggestions would not be perceived as insults. Further, clients were reassured that their responses would not affect the services they are receiving from Food & Friends. Still, several clients provided no suggestions.

The most frequent responses provided by participants who did not give suggestions were ones of satisfaction with the current services, great appreciation for the job Food & Friends is doing, and often a consequent feeling of guilt by providing suggestions. Clients also expressed a perceived lack of knowledge about diabetes and subsequent feeling of not wanting to give advice without apparent knowledge. Conversely, many clients shared with interviewers their opinions about the services and suggestions for how they think Food & Friends can do a better job serving its clients who have comorbid diabetes.

Suggestions ranged from providing low-income clients with diabetic socks to providing meal planning suggestions, with appropriate portion sizes, for diabetic clients on groceries. There were many suggestions, some more feasible than others. Below is a description of the most frequently reported suggestions.

Foods to Add or Increase in Quantity

All clients were asked: "As a person with diabetes, would it be easier to manage your diabetes if Food & Friends added or gave more of a particular type of food?" The most common responses were requests for more fresh fruits, fresh and frozen vegetables, Glucerna, whole grain bread and pasta, brown rice, sugar free snacks, and artificial sweetener. For example, a female client said to send, *"more vegetables and fruit. You know lettuce, cabbage, coleslaw dishes, bananas and apples. Also, Molly McButter, Butter Buds, Splenda, and Equal."* Clients expressed that adding these foods, or increasing the amount of these foods sent, would help them manage their diabetes better.

Many clients suggested sending more fresh fruit. Several clients asked why the fruit they most often see is apples. One female client said, *"You've been on an apple kick for a while."* Another female client suggested that Food & Friends adds *"honeydew, cantaloupe…, watermelon, and pears"* to the delivery bags when the fruits are in season. Numerous clients shared with interviewers their favorite fruits and suggested that Food & Friends send their diabetic clients more fresh fruit.

In addition to fresh fruit, a common suggestion of foods to add, or give more of, were more fresh vegetables as well as frozen vegetables (opposed to only canned vegetables in the groceries). Vegetables commonly mentioned were fresh lettuce, broccoli, carrots, greens, and tomatoes. One female client said, *"If they could give me more… something raw, like raw carrots and celery. I can make a meal out of that. It's good because it's natural, and it's not something that's been processed."* Many clients on the Meal Plus (M+) program or the Groceries to Go (GTG) program expressed concern about the salt content in canned vegetables. Five participants suggested giving clients who receive groceries a few packages of frozen vegetables, instead of only canned vegetables (if fresh vegetables are not feasible). One client stated:

> *"If I eat the canned goods out of the can as it is, my sugar is out of control, my pressure is out of control, and plus, it can give me a heart attack because it has salt in it."*

Numerous clients on the Home Delivered Meal (HDM) program requested more fresh green salads. One male client suggested that instead of sending so many pasta salads to diabetic clients, Food & Friends send, *"more leafy salads, with lettuce."* With similar sentiment, a female client suggested sending more *"greens, tomatoes, raw vegetables, and carrots."*

Several clients suggested that Food & Friends should send more Glucerna to diabetic clients. They explained that it was very helpful because it is *"tasty and nutritious"* and provides for a nutrient dense supplement when their appetite is weak. The daughter of an elderly male client said that often her father does not want to eat and that having extra Glucerna would be a helpful way for him to get necessary nutrients into his system. In talking about her father's energy level, she explained:

> *Glucerna increases that, it's good. Helps with vitamin and energy level. Gives him lots of vitamins he might not get with the food."* She suggested that instead of sending *"lots of pasta and rice"* to send *"the milkshakes* [Glucerna], *because there is a lot of nutrients in that. If you could replace some of the other stuff with that, it would be helpful."*

It was also common for participants to suggest the addition of whole grain breads, and whole wheat pasta and brown rice, into the meals.

Several participants explained that they learned in a diabetes educational class that whole grains are healthier than white starches and questioned why they receive such a large amount of white pasta and rice.

Clients also suggested sending diabetes-appropriate, low-sugar snacks in their meal bags. Several clients explained that they need to eat regularly and often, if there is nothing available for them to snack on that is low in sugar, they will eat whatever is nearby. One male client said, *"Just feed them. Diabetics get hungry."* He explained that he would like to see healthy snacks added to the meals because right now, when he gets hungry, he *"grabs anything."* A female client said that she *"can't go nowhere because I always have to have a little snack with me."* A male client, who also suggested sending healthy, low sugar snacks to diabetic clients, suggested sending snacks such as Fig Newtons and unsalted chips. He said these snacks are *"good for people with high blood pressure and diabetes."* Later he added, *"you all could send Baked Lay's, cause not that much salt and* [they are] *very good to eat."*

In addition to snacks, clients requested sending more diabetic-appropriate desserts, artificial sweeteners, and butter substitutes. One female client requested:

> *"More dessert, like raisins. Something more than just plain peaches. It helps you manage getting your sweet taste. Not too much because you have to control sugars, but something."*

She later shared that having just a few bites of something sweet helps her control her sugar cravings. Another female client mentioned, more than once, that Food & Friends should send its diabetic client butter substitutes, make desserts with artificial sweeteners, and send packets of artificial sweeteners. At the end of the interview, she reminded the interviewer to:

> *"Look into the Molly McButter and the Butter Buds because they are helpful and low-to-no sodium, they could give us desserts made with Splenda and Equal. Once you use the sweetener, you don't really have an appetite for wanting something else that is sweet."*

Aside from wanting something sweet to satisfy their desire for sugar, clients said that providing sugar and butter substitutes would provide a decrease in the *"financial burden"* they feel when they are at the store. Two clients mentioned wanting to purchase Splenda to mix into their tea. However, they said it was too expensive for them to buy, so they often used regular sugar. Similarly, many clients mentioned the high prices of buying fresh fruits and vegetables at the super market and expressed that if Food & Friends could send more fresh fruits and vegetables, it would be a *"huge help"* financially, as well as help them manage their diabetes better.

Client Perspective: *"I love fruits, but they're so high now, my gracious. I got 4 apples, 4 oranges, and it came to seven dollars. Seven dollars for 4 oranges and 4 apples! That's a lot of money for a little fruit, but I have fruit on account of diabetes. I love it, but I can't afford it."*

Foods to Take Away or Decrease in Quantity

Similar to the question about which foods to add or give more of, all clients were asked *"as a person with diabetes, would your diabetes management be easier if Food & Friends took away or gave less of a particular type of food."* Clients' responses varied, but overwhelmingly, the most common responses included sending less pasta, rice, and beans. Clients also suggested sending fewer or no chick peas as well as fewer salads that contain rice and pasta.

Concerning pasta and rice, a few clients expressed that they had been told by their doctor, nurse, nutritionist and/or family not to eat large amounts of these starches and, consequently, were surprised to see the amount of pasta and rice in Food & Friends' meals. One female client said there is *"too much rice and pasta," adding, "you know that's all I get."* A care taker of one of the female participants suggested: *"not so much pasta. I notice in all my clients, I see a lot."* Another client stated that there is an *"overload of noodles."*

Clients not only requested that Food & Friends sends less pasta and rice in the main entrée but also mentioned sending less of these starches in the salads. Often a statement of desiring less pasta and rice in the salads was followed by a desire for more green salads. Besides wanting less of these food items, to decrease the amount of starch in their meals, clients specifically shared that one reason they want less or no rice in the salads is because they are not familiar with seeing rice in salads. Cultural appropriateness of food was mentioned earlier and will be further explored in the Discussion section of the paper.

In addition to sending less rice and pasta, a large number of clients requested that Food & Friends send less beans and chick peas in its meals. Several clients said that chick peas are not a food that they are accustomed to eating. A few clients identified beans as a good source of protein but said that they thought that there is *"too many"* sent and that beans are *"too often"* included in the salads. One female client shared:

> *"I don't want beans all the time. I know its good for protein, but they run it into the hole with protein... I've never seen so much beans."*

Most frequently mentioned foods to <u>increase</u> in quantity:

- Fresh fruits and vegetables
- Whole grains
- Sugar substitutes
- Diabetes-appropriate snacks

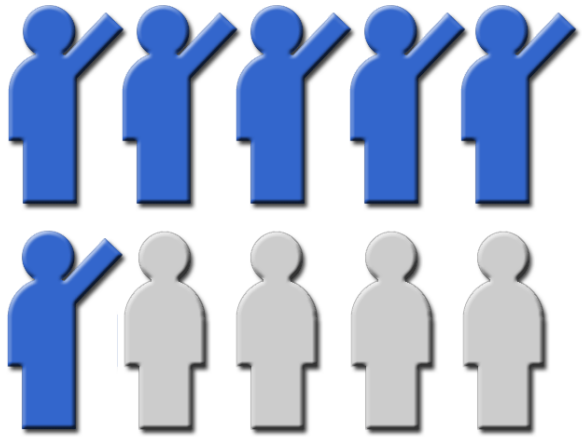
Most frequently mention foods to <u>decrease</u> in quantity:

- Starches (rice and pasta)
- Beans and chick peas
- Starch-based salads
- Starch-based soups

Activities and Information

Researchers were interested in learning if clients would be interested in Food & Friends offering activities and information about diabetes. All participants were asked: "What types of activities and information would you like Food & Friends to provide you, to help you understand and/or manage your diabetes better?" Additionally, all participants were asked: "If Food & Friends had a nutrition/diabetes program would you be interested in going?" The majority of participants (63.1%) said that they would be interested in

attending a diabetes program hosted by Food & Friends. However, many expressed that they would only be able to attend the program if transportation was provided. About 37% of participants said that they were not interested in attending. The most common reason clients stated for not being interested in attending a diabetes program was not having the physical ability to attend a program. Several clients shared that they no longer leave their home and therefore are not interested in a diabetes class. Age was inversely correlated with interest in the proposed program, as elderly clients were less likely to express interest in attending a program.



More than six out of ten clients expressed interest in attending a class on diabetes and nutrition at Food & Friends.

As mentioned previously, many clients did state that they would be interested in attending a Food & Friends diabetes program. In addition to expressing interest in attending a diabetes program, participants expressed a desire for more educational materials (i.e. pamphlets) about diabetes. One client said that she would like *"something to read, [because] I read a lot."* Another client suggested that Food & Friends sends its diabetic clients, *"booklets and the newest things going on, anything to let me know something."* She later said that *"information, new techniques, a booklet once a month. You know, something short…"* would be of help to her. A male client said that if Food & Friends should *"give out more information so they [diabetic clients] can know what is necessary to take care of their diet and health."* He went on to suggest that Food & Friends send its diabetic clients, *"information on carbs,"* and information about *"which things are considered to have a lot of carbs"* so people can *"take care of their diet and health."*

Clients also mentioned a need for information about exercising, a place to exercise, people to exercise with, and some form of support group. A few clients asked if Food & Friends had an exercise facility or if they knew of places where they could exercise for free. Additionally, several clients discussed how exercising with others made physical activity easier. One male client said that in addition to wanting more information about diabetes, he would like to see *"some set up for diabetic clients"* where they could *"exercise a couple times a week."* He went on to say that having a *"weight scale"* or someone to *"take blood sugar during activity or [after] having a meal"* would be helpful. He explained that these things would be *"something to motivate"* people and allow them to know *"how good you did this week."*

When providing suggestions about information and activities Food & Friends could add to the services it offers diabetic clients, one female participant suggested: *"More exercise things, like a manual or a class. That's basically what I am lacking; you know organizations, a group to exercise with, or a group…* [in which] *you can help each other."* A few clients discussed their desire for more support or to be part of a support group for people with diabetes. The husband of

one of the female participants shared, *"We watch over her, make sure that she gets her medicine on time…and the right medicine. And give her love. But we need to give her even more, and I wish I could reach out and get some more help somewhere."*

Additional Suggestions

At the end of the interview, all clients were asked if they had any additional suggestions that they wished to share. A common suggestion that participants mentioned involved Food & Friends providing the amount of calories and carbohydrate exchanges in the food that is sent to diabetic clients. Also discussed was adding variety to the meals, providing a menu in the meal bag that accurately represents what diabetic clients receive, and a shorter delivery window.

More Information on Delivered Food

Many clients expressed concern with not knowing what is in the food prepared by Food & Friends. A few clients expressed concern with not knowing how many calories are in the food items sent. Additionally, several clients expressed similar concern with not knowing the amount of carbohydrates in the food. Three participants discussed that their doctor, nurse, and/or nutritionist provided them with dietary recommendations that involve the ability to count the calories and amount of carbohydrate portions one eats. However, several clients said that they are unaware of how many calories or carbohydrates are in the meals. Without nutritional information, counting calories and monitoring carbohydrate exchanges is extremely challenging.

Adding Variety to the Meals and Decreasing the Amount of Combined Foods

A common response to questions requesting additional suggestions for improvements to the services involved adding variety to the food sent. A male client stated, *"Well sometimes it is the same stuff over and over and I, sometimes, I can't eat it every day, so I have to supplement or add something to it that I have."* A female client suggested that Food & Friends *"could really improve by making different dishes, it seems like they send the same things… if they could make a better variety."* In addition to requesting more variety in the food, several participants expressed a dislike for the combination of foods sent by Food & Friends. Often clients said that they were familiar with the food items but unfamiliar with the ways in which foods are combined. In some instances, clients said that the food *"does not belong together."* One male client shared that it is not that Food & Friends is sending *"stuff that we shouldn't eat"* it is that they send foods that *"we're not used to eating combined."* Related, a female client requested that they send less *"mixed up gooky wooky stuff."* She discussed how the mixture of the food items (e.g., a starch, a protein, and several vegetables) in one compartment of a packaged meal was not satisfying or something she enjoyed eating. Providing a clear summary of both suggestions one male client suggested:

> *"Give people a choice of whether they'd rather have whole food or whether they'd like to have it cut up and diced and a lot of mixtures that a lot of people don't like…"* He also stated, that *"it seems there's one particular seasoning…that's the only seasoning the cook knows…like an oregano or something…it makes everything smell the same, when I put it in the microwave, I think 'I had this yesterday.' "*

A Diabetic Diet-Specific Menu

Interviewers noticed that many clients discussed desiring fewer substitutes in their meal bag. They stated that often their meal bag contains food not included on the menu they receive with the

delivery. One female client thought that the delivery person was *"going through"* her bag and taking her food. When questioned about it, she explained that her desserts were often missing. When the interviewer explained that clients on the diabetic diet only get dessert once a week, and a piece of fruit on the other days, the client asked why the menu does not reflect this difference. One male client shared:

> *"On the substitution -- a lot of times, they substitute stuff that's on one menu with something else. Try to give the client more information on the stuff that's substituted so they have some idea of what's coming... so they* [do not say], *'I'm not sure what this is right now!'"*

Clients said it often causes them confusion when the menu does not match up with what is in their meal bag. One client expressed that *"for people like us,* [the service would be] *much better if Food & Friends attends to what is written on the menu."*

Shortened Delivery Window

Many clients mentioned the trouble they face with the 10am-3pm delivery window. Several clients said that their diabetes causes them to need to eat regularly, and that at times the delivery does not come until 3pm or afterwards and does not arrive at the same times daily. They explained that this makes it hard for them to eat small meals throughout the day. Problems with delivery timing are commonly reported by all Food & Friends' clients, not just clients with diabetes. However, the researchers emphasize this issue within the context of this report to highlight the particular challenges that diabetic clients may face when food sources are not readily available at consistent times throughout the day.

Correlations

The investigators have characterized demographic characteristics of Food & Friends' diabetic clients and their diabetes management habits. In addition, diabetic clients' understanding of Food & Friends' services was explored and their suggestions for future improvements to the services. The following sections seek to draw linkages between the above data to show significant correlations between the presented data.

The Impact of Diabetes on Nutrition

Clients reporting a larger impact of diabetes on their health:

- Were more likely to report difficulties managing their diet (r = -0.330, p < 0.008).
- Reported a significantly larger impact of diabetes on their food selection (r = *0.457*, p < 0.001).

Clients reporting challenges managing diabetes:

- Were more likely to have difficulties managing a diet appropriate for diabetes (r = 0.318, p < 0.010).

The Impact of Diabetes on Health Management

Clients reporting a larger impact of diabetes on their health:

- Were more likely to check their blood sugar (r = -0.428, p < 0.001).

The Influence of Comorbidity

Clients who reported that one or more comorbid illnesses had an impact on their diabetes management:

- Reported a larger impact of diabetes on their health (r = -0.422, p < 0.001).
- Reported a larger impact of diabetes on food selection (r = -0.334, p < 0.005).
- Were more likely to have difficulties managing their diet (r = 0.564 , p < 0.001).

The Effect of Education

Diabetic clients who received some form of diabetes education:

- Were significantly less likely to report difficulties in managing their diet (r = -0.445, p < 0.000).

Diabetic clients who attended an educational class on diabetes:

- Reporting having greater knowledge on diabetes (r = -.0324, p < 0.009).

Effect of Age on Utilization of Food & Friends' Services

Clients who are older:

- Are less likely to have spoken to a Food & Friends dietitian about diabetes (r = 0.326, p < 0.008).
- Are less likely to report interest in attending a Food & Friends diabetes education program (r = 0.487, p < 0.001).

Understanding of Food & Friends' Services

Clients who know the difference between the diabetic and normal diets:

- Are more likely to know that they must monitor their own carbohydrate portion sizes within Food & Friends' meals (r = 0.311, p < 0.025).

Clients who report having some form of diabetes education:

- Are more likely to know that they must monitor their own carbohydrate portion sizes within Food & Friends' meals (r = 0.351, p < 0.011).

Clients who report having difficulties managing their diet for diabetes:

- Are more likely to know the true difference between Food & Friends' normal diet and diabetic diet (r = 0.359, p < 0.040).

Impact of Speaking to Dietitian about Diabetes

Clients who report having spoken to a Food & Friends dietitian about their diabetes:

- Have a greater interest in attending a Food & Friends diabetes educational program (r = 0.251, p < 0.044).
- Are more likely to monitor their blood sugar (r = 0.309, p < 0.012).
- Are more likely to know that they must monitor their own carbohydrate portion sizes within Food & Friends' meals. However, this relationship was not statistically significant (r = 0.215, p < 0.126, n = 52).

Surprisingly, clients who have spoken to a Food & Friends dietitian about their diabetes were *not* more likely to understand the differences between Food & Friends' normal diet and diabetic diets (r = -0.067, p < 0.600, n = 63).

Relationships between Self-management Strategies

Clients who report a greater influence of diabetes on their food selection:

- Are also more likely to check their blood sugar (r = -0.374, p < 0.002).

Focus Group Results

The following section explores the data collected during the focus group. Focus group participants were asked to describe the services they received from Food & Friends, the role that Food & Friends' services played in their diabetes management, and ways in which services could be improved.

Demographics of Study Population

The focus group consisted of 7 individuals, 5 women and 2 men. Qualifying comorbid illnesses of participating clients were cancer (*n* = 4) and HIV/AIDS (*n* = 3). Clients attending the focus group included recipients of all three types of food delivery services offered by Food & Friends, Home-Delivered Meals (*n* = 4), Meals Plus (*n* = 2), and Groceries to Go (*n* = 1).

Client Perception of Food & Friends' Services

All participating clients noted a positive role of Food & Friends' services in their lives. Group members were first asked to identify healthy eating habits for diabetes management and to evaluate further the impact of Food & Friends' services.

Food & Friends Alleviates Cost Barriers

> **Client Perspective:** *"A lemon costs a dollar at Safeway. A dollar!"*

Throughout the discussion of dietary management of diabetes, four clients specifically mentioned the price of food as a significant barrier to obtaining healthy food options for diabetes. One client explained, *"The cost of food is so bad, is so high… Some people can't afford to eat good and eat what they're supposed to eat."* Another client, when asked about eating healthily, stated, *"I think it's difficult because of the cost of food."* Throughout the focus group discussion, there was broad recognition that even with knowledge of healthy food options, the affordability of these choices was limited by income.

Further, there was general agreement that Food & Friends' services alleviated the financial difficulties of affording food. One client receiving home-delivered meals noted, *"Because my pocket is limited, I can't actually buy all the things so that I can keep preparing* [food]. *So by it coming from Food & Friends, it reduces that stress off of me."* Another client explained, *"With a fixed income like I've got, it really helps me a lot."* In this manner, clients suggested that Food & Friends' free food services were especially beneficial due to their financial constraints.

Gratitude Limits Willingness to Offer Criticism

> **Client Perspective:** *"It's a really good service…, so I'm not going to complain about it."*

Gratitude for Food & Friends' services, strengthened by recognition that services are delivered at no cost, appeared to make group participants reluctant to offer criticism of received services. One client emphasized this point while addressing other participants: *"If you don't want to eat it, don't eat it. We're getting something for free."*

Clients' gratitude for a free food service was sometimes so strong that it resulted in peer censorship of criticism. For instance, when one client suggested that more information be provided on the nutritional content of meals, another client responded, *"My theory is that they do a lot… That's a lot more work. These are all volunteers who put this all together."* For this reason, critical comments about service were often qualified with an expression of gratitude such as *"The food is great, and I'm not going to*

complain about it. But…" The majority of group participants used this model of "praise then criticism" to speak about Food & Friends' services. With this approach, several concrete suggestions for service improvement were voiced.

Suggested Changes to Food & Friends' Services

Increased Fresh Produce

One theme throughout discussions was the desire for more fresh fruits and vegetables. The following quotes highlight clients' desire for more fresh produce from 3 clients all of whom are on different meal delivery programs.

- From a client on HDM: *"I need more leafy vegetables. You don't get greens or anything like this coming in."*
- From a client on M+: *"We need fresh vegetables and fruits."*
- From a client on GTG: *"If they had the money to do it – because I don't know how they fund it – but if you could add fresh vegetables, fresh fruits, and dried beans…"*

Decreased Starchy, High-Sugar, Processed foods

Further, clients often suggested that certain foods provided by Food & Friends may be inappropriate for diabetes management. The following quotes portray the suggestions of clients from all three meal delivery options.

- From a client on HDM: *"They keep sending me a lot of noodles in my food… I don't eat it. It just goes to waste."*
- From another client on HDM: *"More leafy vegetables and stuff like that – like the cabbage, like collards or turnips. Cut down, somewhat, on the rice all the time."*
- From a client on M+: *"The kind of food sent – beef macaroni… and those processed foods… Some of the food that they send you is really not for diabetics."*
- From a client on GTG: *"Once a week, they send you oil, they send you mayonnaise, and they send you peanut butter, and they send you jelly. None of this is sugar-free, mind you. This is what they send out."*

Within the discussion, clients implicitly recommended the provision of less-processed, sugar-free options in their criticism of certain food items. In addition, both vegetables and whole-grain foods were explicitly suggested as alternatives to what is currently provided in the prepared-meal options.

Cultural Appropriateness of Food & Friends' Services

Clients May View Cultural Appropriateness as an Unrealistic Expectation

Although the topic of cultural appropriateness of Food & Friends' services was explicitly mentioned in the focus group twice, group participants seemed to feel that cultural sensitivity to African American eating traditions was an unrealistic expectation for the organization. A discussion of cultural impacts on food selection included the following exchange:

> ***Client A:*** *Some of the salads that you send are like macaroni salad. Black people don't eat macaroni salad without tuna in it. We eat tuna salad.*
>
> ***Client B:*** *Right.*
>
> ***Client A:*** *Macaroni salad with tomatoes in it, I mean… But you don't know* [directed at Asian American co-moderator].

Client B: *Yeah, you don't know* [also directed at Asian American co-moderator]. *That's Soul Cooking.*

For this reason, cultural unfamiliarity of the food was not conceptualized as a problem with service but more an understandable, acceptable fact by participating clients.

Clients View Cultural Adjustment of Delivered Food as a Personal Responsibility

A mixture of gratitude and a reluctance to criticize Food & Friends' service may converge on the topic of cultural appropriateness. When asked about cultural unfamiliarity of received foods, focus group participants expressed confusion over the ingredient composition of unfamiliar foods:

Client A: *Do they put anything in the food at all? Any kind of seasoning?*

Client B: *I don't think they put much seasoning on it.*

Client A: *What do they put in it? That's what I want to know. What kind of seasonings do they put in it when they cook it?*

Further, participants characterized the adjustment of delivered foods (mostly prepared meals) to their own cultural preferences as a personal burden. Specifically, clients discussed attempts to season food to more culturally-appropriate tastes at two distinct points in the group discussion. Some clients expressed frustration over failed attempts to modify delivered foods:

Client A: *There are some things that come in the prepared meals that I'm not familiar with, that I taste. I'm saying, "I'm not sure how I want to season this or how I can season." And I tried different variations of it, and…*

Client B: *And it doesn't work!*

Client A: *And it doesn't work. So maybe some of the instructions can say, "Season it this way…"*

Client B: *By trying to make it taste like something, you may add something that you're not supposed to have – or too much of something.*

Non-Consumption of Culturally Unfamiliar Foods may be Viewed as Waste

When prompted for specific examples of foods that are culturally unfamiliar due to taste, group participants specifically mentioned *"some kinds of soup they have"* and *"some salads they send."* Moreover, clients cited cultural unfamiliarity as a cause of *"waste"* – or non-consumption of unfamiliar food items:

Client A: *The salads that they used to send* [client has switched to groceries] *have chickpeas in it. We're* [referring to African Americans] *not used to chick peas. We don't eat chick peas and stuff like that…*

Client B: *Some of them* [salads] *for diabetes, I don't know…*

Client A: *I wasted a lot of prepared foods.*

Client C: *That's why I said I didn't want to waste it… That's why I cut it off… I don't like to waste no food. Food is too expensive to waste.*

Throughout the focus group, the theme of "waste" was mentioned by three participants who expressed interest in switching to a strictly-groceries service despite being on HDM or M+. One client on M+ said, *"They be sending me the cooked food, and I can't throw it out. Because*

sometimes, it'll be too much." Two other clients concurred that prepared meals included *"too much food,"* implying that they were also forced to dispose of it in a wasteful fashion. At another point in the discussion, a client receiving home-delivered meals stated, *"I get the prepared meals, but I asked for groceries. I prefer to prepare what I'm going to eat myself."*

In this manner, cultural unfamiliarity of Food & Friends' services was noted by a majority of group participants. However, participants conceptualized cultural inappropriateness not as a "problem" but instead as an inherent, understandable characteristic of Food & Friends' services. The majority of group participants emphasized a reluctance to "complain" about the food but nevertheless noted failed efforts to modify delivered food to match cultural taste preferences. Because non-consumption of prepared meals was viewed as "waste" by a majority of group members, at least one client had already made the decision to switch to strictly groceries while another three clients expressed similar desires.

Identification of Culturally-Appropriate Food

The researchers were interested in identifying culturally-appropriate foods for possible addition to future menu cycles. Group participants were shown a select list of food items from *The New Soul Food Cookbook for People with Diabetes* [29]. While food traditions vary across, and within, ethnic and cultural traditions, this exercise was intended to begin the process of identifying food items appropriate for both cultural food preferences and the nutritional needs of diabetics. All food items within the cookbook had recipes analyzed by two registered dietitians to ensure appropriate nutritional content for people with diabetes. **Table 7** documents the responses of group participants regarding preference for presented food items.

Table 7. Results from Client Survey of "Soul Food" Options*

Main Courses		Cooked Vegetables	
Dish	**Votes**	**Dish**	**Votes**
Beef Gumbo	4	**Boiled Rutabagas**	**5**
Beef Casserole	4	Broccoli Casserole	4
Sloppy Joes	3	**Collard Greens**	**5**
Jamaican Roast Beef**	**6**	Creamed Potatoes	3
Jerk Chicken	**5**	**Lima Beans**	**5**
Chicken and Dumplings	**5**	**Rutabaga Soufflé**	**5**
Country Fried Chicken	4	**Sweet Potato Soufflé**	**5**
Grilled Catfish	4		
Seafood Creole	2		
Other Side Dishes		**Soups and Salads**	
Dish	**Votes**	**Dish**	**Votes**
Baked Cheese Grits	**5**	Black Bean Soup	2
Corn Bread	**6**	**Chili**	**5**
Red Rice	4	Chicken Gumbo Soup	4
Sweet Potato Bread	4	Bean Stew	2
Pigeon Peas and Rice	2	Soul Slaw (Cole Slaw)	4

* One focus group participant did not complete this exercise, *N* = 6

** All bolded food items received five or more votes from participants.

Discussion

The following section combines the results from both the home assessments and focus group and consolidates the results into a practical discussion in which researchers provide suggestions for how Food & Friends can improve its services.

The primary goal of this study is to provide information for Food & Friends on how it can improve the services it offers diabetic clients. Through in-depth interviews, with a statistically representative sample of Food & Friends diabetic clients, and a focus group, researchers gained insight into the needs of Food & Friends' diabetic clients. Researchers obtained information on clients' management of diabetes, understanding of received services, and suggestions for service improvements. Combining the quantitative and qualitative data presented earlier in the findings section, the background literature, and the American Diabetes Association (ADA) recommendations, researchers developed action steps for Food & Friends to take when improving the services offered to diabetic clients.

Rather than presenting a discussion in the format of a traditional scientific study, researchers concluded that this discussion would be maximally useful for Food & Friends if it was framed practically. Consequentially, researchers compiled all of the results to identify overall key themes. Researchers organized themes into categories. Four broad categories were identified based on the analysis of the home assessment and focus group data. Taking into account existing diabetes literature, best practices in diabetes intervention and prevention, and the ADA recommendations, researchers identified four areas in which Food & Friends can improve the services it offers its diabetic clients.

The following pages present the four major areas in which researchers feel that there is potential for improvement and growth. Each area of potential improvement is presented with detailed insight based on the data collected. Additionally, researchers provided practical "Action Steps," based on scientific literature and the ADA recommendations, for Food & Friends to implement. Client perspectives are provided for each area, to contextualize the issues and bring to light their perspectives. The following discussion presents background information, constructive client feedback, and specific action steps that Food & Friends can take to improve and develop the services provided to diabetic clients.

Food & Friends should…

1. Meet American Diabetes Association Nutrition Standards

There is a disparity between Food & Friends' "diabetic diet" and the nutritional recommendations of the ADA. One strong recommendation from the ADA is the monitoring of dietary intake through use of carbohydrate counting or dietary exchanges [4]. Currently, Food & Friends does not analyze the nutritional content of the majority of food items provided because set recipes are not used for most food items produced (baked goods excluded). The dietitians are given production lists by the kitchen staff to estimate nutritional content of menu items. However, since recipes are frequently not used, it is not possible at this current time for the dietitians to calculate the exact nutritional content of prepared food items. Since the nutritional makeup of the food prepared is often unknown, it is impossible to use methods of carbohydrate counting or dietary exchanges.

An additional, important ADA suggestion is that people with diabetes consume diverse sources of carbohydrates, including fruits, vegetables and whole grains. A further ADA suggestion is that diabetics substitute sucrose containing foods with other carbohydrates [4]. 49.2% of participants stated that they have trouble managing their diet. The financial burden of purchasing foods identified as "healthy" for diabetics was discussed by several clients as a specific difficulty they have in managing their diet. More specifically, many clients expressed cost barriers to purchasing fresh fruits, vegetables, and whole-grain products. When asked if diabetes management would be easier if Food & Friends gave more of, or added, a particular food to deliveries, fresh fruits and vegetables were two of the most frequently mentioned food groups. Fruits and vegetables are nutrient dense, non-sucrose containing forms of carbohydrates. Similarly, whole grains are mentioned as a diverse source of carbohydrates, and are high in fiber, which the ADA recommends that people eat 14 grams for every 1000kcal consumed [4].

Action Steps:

- **Modify** the diabetic diet through macronutrient (carbohydrate, fats, and protein) balance so that delivered food meets the nutrition standards set by the ADA.
- **Develop** the diabetes dietary restriction so that targeted substitutions are made for high-starch, high-sucrose foods.
- **Diversify** sources of carbohydrates in delivered food by providing more fresh fruits and vegetables.
- **Increase** dietary fiber by increasing foods rich in whole grains, setting a concrete target of 14 grams for every 1,000 kcal in delivered foods.

Client Perspective: *"It was stressing me out because the things I was supposed to have, I couldn't afford. I could only afford the things I wasn't supposed to have because it was the cheapest. The things I was supposed to have cost to much. It costs to be a diabetic now. It really costs."*

2. Provide More Information About Foods Delivered

"What's in my food?" In exploring clients' understanding of the services Food & Friends offers its diabetic clients, it became apparent to researchers that there was great room for improvement regarding clients' understanding of delivered foods. Clients were confused or even misinformed about the nutritional and ingredient content of food provided by Food & Friends. Only 1 out of every 10 diabetic clients could accurately identify the difference between the regular and the "diabetic" diets. Currently, the only difference in delivered food for clients on M+ or GTG is a set of limited substitutions including lower-sugar versions of cereals and condiments. There are limited dietary modifications for clients on the HDM diabetic diet. These clients only receive one dessert a week, and freshly prepared baked goods are lower in fat and sugar. Further, condiments provided in meal bags are also low-sugar or sugar-free, if these versions are available. Many clients wrongly assumed that the diabetic diet had less fat, sugar, seasoning, and carbohydrates that the normal diet, especially in regards to the entrée.

The "diabetic diet" offered by Food & Friends is truly a no-concentrated-sweets diet. Consequently, clients with diabetes must portion the amount of carbohydrates they eat when consuming food sent by Food & Friends. Clients on HDM and M+ were asked if they are aware that they need to control the amount of carbohydrates they eat in the food produced by Food & Friends. More than 65% of the clients were unaware of the need to control portion sizes in delivered meals. A substantial number of the clients mistakenly assumed that Food & Friends already modifies its prepared meals to account for the nutritional needs of diabetics. Clients incorrectly believed that methods ranging from carbohydrate limits to strict portion control are used. Of note, clients who knew the actual differences between the normal and the "diabetic diet" were more likely to know that they must monitor their own carbohydrate portion sizes in Food & Friends meal items ($r=0.311$, $P<0.001$). However, only one of ten clients knew this difference.

Many clients reported concern about items they believed to be missing from their meal bags. Currently, Food & Friends does not create a specific "diabetic diet" menu. Several clients noted a discrepancy between the items listed on their menus and the food within their delivery bags. The menu clients find in their meal bags should accurately reflect the food delivered in order to minimize confusion and false expectations.

Action Steps:

- **Contact** clients on the diabetic diet to ensure that all recipients know that the current "diabetic diet" is currently a no-concentrated sweets diet.
- **Plan** menus with set ingredient ratios so that the calculation of exact nutritional content is possible.
- **Provide** more detailed information about the content of food provided to clients, through labels on individual meals or explanations on provided menus.
- **Create** a new "diabetic diet" menu that accurately reflects substitutions made to provided food.

Client Perspective: *"They don't have a lot of carbs in the meals, do they?"*

Client Perspective: *"All along I thought I got special meals for my diabetes, but then I found out that they're the same."*

3. Ensure Cultural Appropriateness of Foods Delivered

More than 3 of 4 interviewed clients with diabetes were African American. Researchers were interested in assessing clients' food preferences, which are established early in life [31]. The authors found that clients were unlikely to broach the issue of cultural appropriateness without prompting. However, many African American clients, as well as the one Asian American client, voiced concerns regarding the cultural appropriateness of the food provided by Food & Friends. Clients expressed unfamiliarity with some ingredients used in food preparation and also with combinations of ingredients, especially in salads. For example, many clients were not familiar with chickpeas and expressed dislike for their common use in salads and entrees. Of concern, several focus group clients had stopped or had considered stopping the delivery of freshly prepared meals in order to switch to grocery service. One rationale given for this change was the added ability to prepare the food in a manner that was culturally familiar.

During the focus group, African American clients suggested tangible ways to make food more suited to their cultural traditions. For example, clients suggested that Food & Friends provide macaroni salad with tuna rather than peas. Additionally, focus group participants expressed excitement over the majority of food dishes presented from the *New Soul Cook Book for People with Diabetes* [29]. Although researchers were able to extrapolate clients' concerns about some cultural appropriateness from their responses to questions as well as their suggestions for service improvements, most clients did not directly frame their concerns as issues with "cultural appropriateness." Based on numerous interactions with clients, researchers believe that clients may view cultural appropriateness of food as an unobtainable luxury from a free food service. Consequently, they may view "complaining" about cultural appropriateness as inappropriate and as an expression of ingratitude.

This realization emphasizes the need for proactive action on the part of Food & Friends. Because clients are unlikely to engage in behavior that they would view as "complaining," Food & Friends should be proactive in this area and conduct further research on the cultural food traditions of clients served.

Action Steps:

- **Label** food items, making sure to identify and explain ingredients that clients may find culturally unfamiliar.
- **Identify** ways to create salads that have more ingredients that would be identified as traditional salad ingredients by Food & Friends' clients. Decrease use of rice, pasta, chick peas, and other culturally unfamiliar ingredients in salads.
- **Conduct** more research on the appropriateness of Food & Friends' delivered food in regards to cultural food preferences, keeping in mind that clients will be reluctant to discuss this issue directly.

Client Perspective: *"I'm just a basic, regular guy. I like lettuce, tomatoes, onions in salad... I don't eat those chickpeas or some of those exotic foods. But hey, it's a cultural thing."*

Client Perspective: *"I'm not stereotyping anyone, but the people I know don't do tuna casserole."*

4. Expand Existing Services and Develop New Programs

Food & Friends has the opportunity to use its expertise in nutrition services to expand current services and to develop new programs to serve its diabetic clients better. Diabetes education appeared to have a significant impact on clients' dietary management. Clients who reported attendance at some form of diabetes education were significantly less likely to report difficulties in managing their diet ($r = -0.445$, $p < 0.001$). In addition, the large majority of clients expressed strong interest in receiving educational information (73.8%). The majority of clients interviewed (63.1%) expressed interest in attending a Food & Friends run diabetes class/program. By providing diabetes education, Food & Friends could provide important knowledge and social support to its clients. Educational opportunities could inform clients about the risks associated with diabetes and empower them through evidence-supported management practices.

In addition, a strong interest was voiced for diabetes support groups and opportunities for physical activity. During home assessments and the focus group, many clients expressed excitement about a diabetes support group. There was unanimous interest among focus group participants in returning to Food & Friends for a diabetes support group. Furthermore, there was also independent exchange of contact information between group participants at the conclusion of the group. It was apparent that clients enjoyed having the opportunity to speak with other individuals experiencing similar health challenges and that they were interested in further contact. Lastly, during both the home assessments and focus group, clients expressed an interest for exercise opportunities. Clients identified cost and neighborhood safety as significant barriers to adequate regular exercise.

Action Steps:

- **Offer** opportunities for group learning, through methods such as structured diabetes management classes and moderated diabetes support groups.
- **Expand** and tailor existing programming (e.g. grocery store tours and cooking classes) to meet the specific needs of diabetic clients.
- **Offer** opportunities for physical activity through community partnerships or internal initiatives.
- **Provide** diabetic clients with community-resource guide to increase clients' awareness of local services for people with diabetes.
- **Create** an appropriate guide on lifestyle modification to meet the needs of homebound and disabled clients (including diet and exercise suggestions), comparable to the curriculum of diabetes management classes.

Client Perspective: *"Knowledge is power… Give more information to diabetic clients. A lot of people really don't understand crippling effects, [they] need to know it's serious."*

Client Perspective: *"More exercise things, like a manual or a class. That's basically what I am lacking. You know organizations, a group to exercise with, or a group…* [in which] *you can help each other."*

Suggestions for the Future

The research compiled, analyzed, and presented represent the beginning of a thorough evaluative process through which changes will be made to the services Food & Friends provides its diabetic clients. It is the researchers' hope that Food & Friends examines the four major recommendations given and conducts further research about each topic to ensure best practices in diabetes care. Specifically, more research on culturally appropriate food items that clients wish to see added to the deliveries is needed. Additionally, researchers suggest that Food & Friends systematically evaluates any changes that are made to the diabetic diet as well as any new programs offered.

Due to study qualification parameters, researchers did not speak to clients who have memory impairment conditions (i.e. dementia and Alzheimer's.). Future research should aim to speak to the caregivers of these clients, to ensure that recommendations made in this study are applicable to their needs. Additionally, due to the fact that Food & Friends does not currently ask clients if they have pre-diabetes, this study did not address pre-diabetes and the needs of clients who have such a diagnosis. Future research, should examine clients who have pre-diabetes and investigate if their needs and suggestions are similar to clients who have diabetes.

Lastly, researchers are excited about having assisted in Food & Friends' effort to take a more active role in diabetes prevention and intervention – both in the Washington, D.C. area as well as among ANSA member organizations. It is researchers' hope that Food & Friends utilizes the collective body of work conducted over the last six months when designing and implementing changes to the services offered to its diabetic clients.

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Appendix A – Home Assessment Questioning Guide

Self-identified Needs of Comorbid Diabetes

General Questions

- Does diabetes impact your life? Please explain. Are there challenges you face as a diabetic? If so, please explain.
- On a scale from 1-5 (1 no impact, 3 moderate impact, 5 very large impact) how big of an impact does diabetes have on your health?

Comorbidity Question

- Do find that having multiple health conditions makes it difficult to manage your diabetes?
    - If so, when does this happen and for what reason?

Education

- On a scale from 1-5 (1 very little amount, 3 moderate amount, 5 very large amount) how much do you think *you know* about diabetes?
- Have you received any form of diabetes education?
    - If so, from whom? (e.g. doctor, friend, family) From what? (e.g. books, pamphlets, internet) Community resources? (e.g. support groups, educational classes)
    - What key things have you learned?
- Would you be interested in receiving more educational information about diabetes?
- From whom do you like to receive new information about your diabetes (e.g. doctor, nutritionist, t.v./media, family member)?
- How do you like to be presented with new information about your diabetes (e.g. book, internet, pamphlet, handouts)?

Management and Treatment

General and Medical Management Questions

- Please list up to five of the most important things you are doing to manage your diabetes.
- Do your family and friends influence the management of your diabetes?
    - Do they make it easier or harder to manage your diabetes?

Medications/Healthcare

- Are you on medication (including insulin) to regulate your diabetes? ☐ Yes ☐ No
- If Yes… which ones? _____

- Have you been told to watch your blood sugar? ☐ Yes ☐ No
- Do you check your blood sugar? ☐ Yes ☐ No
- If Yes… how often? _____
- If No… why not?_____

- Have you been told to watch your cholesterol? ☐ Yes ☐ No

- Are you currently watching your cholesterol? ☐ Yes ☐ No
- Do you take medications to control your cholesterol? ☐ Yes ☐ No
- If Yes… which ones? _____

- Have you been told to watch your blood pressure? ☐ Yes ☐ No
- Are you currently monitoring your blood pressure? ☐ Yes ☐ No
- Do you take medications to control your blood pressure? ☐ Yes ☐ No
- If Yes… which ones? _____

Exercise Questions

- Do you ever exercise?

If Yes	**If No**
• What type of exercise do you do? • How often do you exercise? • How long do you exercise for? • Did your exercise activities, duration (amount) and/or frequency (how often) change when you were diagnosed with diabetes? ○ *If Yes:* How? Why? • What makes it hard for you to exercise? What stops you from exercising? • What would make you exercise more?	• Why don't you exercise? What stops you from exercising? • If you started to exercise what would you do? • Did you used to exercise? If so what did you do? How often? How long? • What would make you start exercising?

Nutrition Questions

General Diet Questions

- What % of the food that you eat comes from Food & Friends?
- What other foods do you eat if you are eating food that was *not* sent by Food & Friends?

Diet Questions Relating to Health Conditions

- Does diabetes play a role in your food selection? Please provide examples.
- On a scale from 1-5 (1 no influence, 3 moderate influence, 5 very large influence) how much does diabetes influence what you eat?

Nutritional Management and Nutritional Guideline Questions

- What kinds of foods do you view as "healthy" food for people with diabetes? What does a healthy diet for people with diabetes look like?
- Are there difficulties you have in managing your diet? If so please give examples.

What is Food & Friends Doing to Address Your Diabetes

- Have you talked to a Food & Friends nutritionist about your diabetes? If yes… was it helpful?
- Did you receive information in the mail (flyers, pamphlet) from Food & Friends about your diabetes? If yes… was it helpful?
- Do you receive diabetic meals?

If Yes

Do you know what makes the diabetic diet different from the normal diet? Please explain.

- What percent of the food that Food & Friends sends you do you eat?
- What don't you eat? Why?
- Are you aware that you have to control the carbohydrate (starch, grains, etc.) portion size in the Food & Friends meals?
    - *If Yes*: Do you?

If No

- Did you know that we offer diabetic meals?
- *If Yes:*
    - Why are you not receiving them?
    - Do you know what makes the diabetic the diabetic diet different from the normal diet? Please explain.
- What percent of the food that Food & Friends sends you do you eat?
- What don't you eat? Why?

What Could Food & Friends Do Better?

- How do you think Food & Friends can improve its services for its diabetic clients?
- As a person with diabetes, would your diabetes management be easier if Food & Friends took away or gave less of a particular type of food? If yes… please explain and give examples.
- As a person with diabetes, would it be easier to manage your diabetes if Food & Friends added or gave more of a particular type of food? If yes… please explain and give examples.
- What types of activities and information would you like Food & Friends to provide you, to help you understand and/or manage your diabetes better?
- If Food & Friends had a nutrition/diabetes program would you go? Please explain.
- If you could give the Executive Director of Food & Friends one piece of advice for how to improve the services Food & Friends offers their diabetic clients, what would it be?
- Do you have any other suggestions/opinions about how Food & Friends could improve their services to better address your need as a diabetic client that you have not mentioned?

Closing Question

- Those were all of the questions I wanted to ask you. I was wondering if you had any questions for me, or if there is anything that I did not ask you that you wanted to talk about?

Appendix B – Focus Group Questioning Guide

Introductory questions

1. **Please introduce yourself to the group. Please tell us your name (just a first name is fine) and something that you like to do for fun in your spare time. Also, please tell us a little about your diabetes. When were you diagnosed with diabetes, and how is it treated?**

2. **What are some different ways in which you've learned about diabetes?**

Transitional Questions

3. **What recommendations have other people given you on <u>how to eat healthily</u> as someone with diabetes**

4. **Are there suggestions <u>for eating healthily</u> that you do not follow completely or at all? If so, what makes it hard for you to follow these suggestions?**

5. **Are there situations where you've found it hard to eat healthily because of food traditions that are part of your culture?**

6. **What would make it easier for you to <u>eat foods that are healthy for people with diabetes</u>?**

Key Questions

7. **What services do you receive from Food & Friends?**

8. **Over time, how have Food & Friends' services impacted your diabetes management?**

9. **Do you have any needs as a diabetic that you feel that are not currently being met by Food & Friends' services?**

10. **Do you find that the foods sent by Food & Friends are culturally appropriate for you?**

11. **Are there [other] ways that you think that Food & Friends' can improve or change its services to help you to help manage your diabetes?**

12. **Are there any new services or programs that Food & Friends could create in order to help you manage your diabetes?**

Ending question

13. **Are there any things that you feel that we have missed in our discussion? Is there anything else that you would like to say?**