

***Participants of the Dining with Diabetes  
Program Improve Knowledge and Behaviors  
Related to the Control of Their Diabetes***

***By***

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## **Abstract**

Diabetes mellitus (DM) affects 25.8 million Americans, with 79 million estimated to have pre-diabetes. DM results in uncontrolled blood glucose levels if not properly treated, increasing a person's risk of heart disease, stroke, neuropathy, nephropathy, and eye impairments. However, DM can be controlled through a balance of meal planning, medications, exercise and glucose testing. In Ohio, only 55% of those diagnosed with DM Type 2 receive proper education to control the disease. To address this gap, the Ohio State University Extension offers diabetes education through the Dining with Diabetes (DWD) program. The primary goal of DWD is to better educate those with, or someone associated with, the disease. The study's purpose is to determine how DWD affected the outcomes in which it intended to reach by assessing the participants' knowledge and behaviors related to diabetes management. The program consists of three lessons using a standardized curriculum, and is taught in conjunction with a registered dietitian. Participants (n=740) throughout Ohio completed pre- and post-intervention surveys that collected information on participants' food and nutrition knowledge (10 questions), behaviors (14 questions), and demographics. Generalized linear mixed effects models were used to determine outcome measures. Significance was set at  $p \leq .05$ . Participants were mostly white (96%), female (75%), and over the age of 51 (87.8%). Participants' knowledge about foods containing carbohydrates increased significantly ( $p = .012$ ). Females scored higher ( $p < .001$ ), on average, than males when adjusting for age, education, ethnicity, and home size. Of the participants with DM (n=460), participants were more likely, on average, to report checking blood glucose daily post-intervention compared to pre-intervention ( $p < .001$ ). Results suggest the DWD program is improving knowledge and positive behaviors related to diabetes management. Additional research is needed to determine long-term effects of DWD as well as the program's impact on medical tests associated with diabetes control (e.g., A1c test).

## **Background**

Diabetes mellitus refers to the body's inability to either produce or effectively use insulin to help control blood glucose levels. The two main types include Type 1 diabetes mellitus (T1DM) or the most prevalent, Type 2 diabetes mellitus (T2DM). T1DM involves a defect in the pancreatic beta cells causing them to not produce the appropriate amount of insulin for the body, whereas T2DM results from the ineffective use of insulin in the cells.<sup>1</sup> The most common risk factors of T2DM include poor diet and lack of physical activity that leads to obesity, and lack of access to preventative care.<sup>2</sup> T2DM can be prevented and controlled through proper diabetes education and management including a balance of meal planning, medications, exercise, and glucose testing.<sup>3</sup>

Insulin, a hormone produced by the beta cells of the pancreas, is necessary for the use and/or storage of body fuels, including carbohydrates, proteins and fats.<sup>4</sup> Without insulin, high blood glucose levels, or hyperglycemia, will result and produce a multitude of complications. Insulin sensitivity can range from extremely sensitive to non-sensitive insulin resistance, which leads to T2DM.<sup>4</sup> Insulin deficiency, or resistance, has been shown to increase the incidence of both morbidity and mortality among those who present the symptoms through complications including high blood pressure, heart disease and stroke, blindness, kidney disease, nephropathy, and limb amputations.<sup>5</sup> It also is a major risk factor for many other chronic health problems, such as heart disease, stroke, hypertension, dyslipidemia, metabolic syndrome, and end stage renal disease.<sup>2</sup>

Although poor diet and physical inactivity are major risk factors, other risk factors for T2DM include: having an immediate family member with the disease or a family background of the disease, giving birth to a baby weighing over 9 pounds, hypertension, good cholesterol or HDL < 35 mg/dL, polycystic ovarian syndrome, impaired fasting glucose, or impaired glucose

tolerance.<sup>6</sup> According the American Diabetes Association, testing for T2DM should be done if a patient is overweight or obese and presents one or more of the additional risk factors listed above, or is above the age of 45.<sup>6</sup>

Learning to control blood glucose levels on a day-to-day basis is critical to preventing long term complications of the disease. Even small improvements in blood glucose control over time can reduce complications of the eyes, kidneys, heart, nerves and brain 10-15 years down the road.<sup>7</sup> When glucose attaches to hemoglobin in the bloodstream, glycosylated hemoglobin is formed, otherwise known as Hemoglobin A1c (HbA1c). HbA1c levels provide an estimation of blood glucose readings over the course of 8-12 weeks. The higher the HbA1c level, the more glucose there is in the bloodstream, indicating that a form of insulin resistance is occurring. The normal range of HbA1c for people without diabetes is 4-5.9%, but a good HbA1c control point for those with diabetes is 6.5- 7.0%.<sup>8</sup> Checking blood glucose levels daily to make sure they are within the appropriate range will lower HbA1c levels over time, ultimately helping to control overall blood glucose.

The prevalence of diabetes is rising dramatically, with nearly 346 million people now claiming to have it worldwide.<sup>9</sup> In the United States, 25.8 million people, or 8.3% of the population are said to be suffering from the disease, and 79 million people have been labeled pre-diabetic.<sup>3</sup> In 2010 alone, there were 1.9 million newly diagnosed cases in the United States, affecting both men and women equally.<sup>9</sup> An astonishing 3.4 million people died in 2004 from complications with diabetes, and it is estimated that this number will double by the year 2030.<sup>1</sup>

In 2007, healthcare costs associated with diabetes skyrocketed to nearly \$174 billion dollars, and total costs for the disease, including undiagnosed and pre-diabetes exceeded \$218 billion in the United States alone.<sup>3</sup> On average, those diagnosed with diabetes spend 2.3 times

more on medical costs than those who do not have the disease. Types of cost include direct medical bills and also indirect costs such as disability, cessation of work, co-morbidities, and premature mortality.<sup>3</sup>

Due to the lack of knowledge about diabetes mellitus, there are many misconceptions about the disease that can ultimately be detrimental to those who suffer from it. Only 35.1% of the 25.8 million Americans that are diagnosed with diabetes have received the proper diabetes self-care education that would allow them to properly manage their health on a day to day basis.<sup>10</sup> Participants of educational programming regarding diabetes are more likely to be from the Midwestern area of the United States, have higher incomes and levels of education, be diagnosed at a younger age, be African American in race, or have had the presence of other complications related to diabetes. In the past, patient education has been shown to help reduce both morbidity and mortality rates that are associated with the disease, and further focus should be directed to those who are of lower socioeconomic status and do not have the advantage of living nearby an education center.<sup>10</sup>

### **Literature Review**

In general, the effectiveness of a diabetes education program is a fairly new topic of study, but many key findings have been showing up across the entire spectrum of results. Just like in any community- based awareness program, action cannot be expected from participants' if the program is based on knowledge alone.<sup>11</sup> It is crucial to not only affect participants' attitudes about the disease, but to also teach them ways in which they can help themselves make significant behavior changes to better their health. The amount of exposure time participants' have to learning how to overcome complications of the disease is directly related to whether the participants' behavioral changes last long term.<sup>11</sup> Of the 346 million people who have the disease worldwide, only about 35.1% have stated that they had actually received diabetes patient

education. Many reasons have been studied to show why this percentage is so low, with the most prevalent being lack of personal time, opportunity, and knowledge from health care providers.<sup>10</sup>

With the proper treatment, the goal for a diabetics' fasting blood glucose level should range from 70-130 mg/dL, and the aim for HbA1c, or their 8-12 week average, should be between 6.5- 7.0%.<sup>12</sup> Because there is a lot to know about diabetes, and how to properly control it, programs that are more intensive are showing better long term results. For example, Briggs-Hill et al, (2011), split 56 participants evenly into two groups, a 9 week all-encompassing diabetes education session and a 2 week diabetes overview session. Those who participated in the 9 week program were taught the facts about diabetes, as well as problem solving skills related to how to make diabetes a priority in their own lives. They were taught this through one diabetes and cardiovascular disease (CVD) education session and eight problem-solving training sessions. The participants in the 2 week session were taught a condensed version of the program, including one diabetes and CVD education session and one problem-solving training session but did not receive proper advice on how to change their actual behaviors. The results concluded that on average, those who participated in the 9 week session lowered their HbA1c levels by 0.7% three months after the program ended, whereas the 2 week group showed no change in behavior.<sup>11</sup> Another study by Shaibi et al, (2012), looked at the effects of a 12 week diabetes prevention program on 15 adolescents, and resulted in lowered BMI percentages and waist circumferences, and good improvements in insulin sensitivity. They also noticed a significant reduction in 2-hour post prandial glucose tests among all children.<sup>13</sup> After looking at the results of 31 different trials, a meta-analysis study was conducted by Norris et al, 2002, to look at the advantages of diabetes self-management on T2DM patients. This study found that on average,

GHb (or HbA1c) levels decreased by 0.76% immediately after each program, but then slowly crept back up 3-4 months post-intervention. This further proves how short-term programs initially impact actions, but without intense programs or continuous support, these actions will not last long-term.<sup>14</sup> All three studies prove how important it is to focus on program length, as well as behavior change instead of knowledge alone when designing a diabetes educational program.

The frequency of diabetes and the percentage of those who actually receive patient education past the time of diagnosis is alarming. Patient education has been shown to reduce the risk of both comorbidities and the mortality rate due to diabetes, especially in those who have T2DM.<sup>10</sup> In a study of 2,405 self-reported diabetic individuals conducted by Coonrod et al, (2004), the percentage of those stating they had received patient education (35%) reported that the average number of instruction hours was 11.8. The majority of those people also stated that the classes contained instruction on meal planning, blood and urine self-testing, foot care, sick day management, and how to manage insulin injections, and reported that the physician's office was their biggest source of recruitment.<sup>10</sup>

Furthermore, another study by Stark-Casagrande et al, (2012), looked at the prevalence of knowledge of HbA1c levels, blood pressure, and LDL cholesterol, and whether simply knowing what the values mean and what goals are set by their physicians equals actual behavior change.<sup>15</sup> Of the 1,233 adult participants, 48% stated they knew their HbA1c values, 63% stated their blood pressure, and only 22% stated they knew their LDL cholesterol levels. Only 19% who reported HbA1c levels, 47% who reported blood pressure, and 41% who reported LDL levels stated that their health care team had actually stated the goals for each respective level.<sup>15</sup> As the final result, this study states that participant knowledge of their own levels, and whether they



knew the actual goal for those levels was not significantly associated with risk factor control, except for those who knew their LDL levels (22%), showing that knowledge alone does not impact behavior change.<sup>15</sup>

In all, the most important step in a diabetes program is recruitment because without recruitment, it is impossible to teach others how to properly manage the disease. No matter the age or class size, the goal of any diabetes patient education program should focus on knowledge, as well as behavior change so that participants actually make changes to their overall health. The overall long-term effectiveness of a program relies on the time spent with participants and the intensity of the curriculum.

### **Materials and Methods**

**Objective:** The primary goal of this study was to determine if the Dining with Diabetes program impacts participants' knowledge, attitudes, skills, and behaviors related to diabetes management.

**Study Design:** The Dining with Diabetes (DWD) program is held in 60 of Ohio's 88 counties, and is taught by a local Extension Educator and a registered dietitian. In all, 740 people participated in the DWD program from 2008 to 2010.

The program includes three educational sessions, lasting nearly two hours each that are spread out over the course of three weeks. The participants of the program include those with any form of diabetes mellitus and their family and/or friends who provide support. The purpose of DWD is to teach basic diabetes management skills to all participants, including knowledge of correct health implications of diabetes, for instance the importance of controlling blood glucose, A1c, and cholesterol levels to avoid serious complications, healthy meal planning techniques, and proper food preparation skills. Using a paper survey at the testing center, DWD measures

participants' knowledge, attitudes, and behaviors immediately before the first session (pre) and after the last (post). An optional class reunion is held 3 – 6 months after the final class to determine if participants' maintained their behavior changes over the course of time.

**Recruitment:** The Dining with Diabetes Program recruits individuals via newspaper advertisements, radio announcements, public bulletins and newsletters, flyers and brochures at public spaces including physicians' offices and local health departments.

**Evaluation Instrument:** The evaluation survey was initially developed in 1997 by the West Virginia Extension Agency.<sup>16</sup> It was later adapted by the Ohio State University Extension, and reformatted to better fit Ohio's curriculum, including the promotion of physical activity and different cooking methods. It was also adjusted to measure both behaviors and knowledge, compared to only knowledge in the West Virginia version.

The survey assesses participants' knowledge, attitude and behaviors associated with diabetes both before and after the course, with questions such as:

- Can you circle the correct high carbohydrate foods?
- Do you know what an A1c level is, and have you had yours checked in the last four months?
- Do you check your blood glucose daily?

The survey also collects demographics of each participant, including, gender, age, employment status, ethnicity, education level, and home-size. All DWD participants complete the knowledge portion of the survey (e.g., identify foods high in carbohydrate), but only participants with diabetes report the behavior portion (e.g., test blood glucose daily). For a sample of the DWD survey, please see Appendix A and Appendix B.

**Statistical Analysis:** The OSU Statistical Consulting Service was contracted to develop the statistical analysis plan and execute some key analyses. Pre/post differences are analyzed using generalized linear mixed effects modeling. The statistical analysis estimated county-level differences and educator-level differences as well as potential covariates of gender, age, employment status, ethnicity, education level and home-size. Significance is set at  $p < .05$ .

**Outcomes:** The following outcomes are the intended measures used to study the effectiveness of the DWD program, including knowledge variables, behavior variables and demographics.

- Participants' knowledge of high carbohydrate foods was measured by the sum of 9 items correctly identified as high or not high in carbohydrate; items include steak, pasta, corn, cheese, potatoes, eggs, peas, rice, and broccoli.
- Participants' knowledge of nutrition concepts related to diabetes was measured by the sum of the correct responses to 5 true/false items;
  1. Blood sugar and glucose are the same thing (True)
  2. According to the plate method, half of your plate should consist of meat (False)
  3. Hidden salt in processed foods is the biggest source of sodium in the typical diet (True)
  4. Fruits are a rich source of carbohydrates (True)
  5. Soluble fiber can help the body get rid of some cholesterol in our meal (True)
- The measure of how many participants' check their blood glucose levels daily.
- The measure of how many participants' have had their HbA1c levels checked in the past four months.

- The participants' demographics including gender, age, employment status, ethnicity, education level, and home-size.

### Results

To assess the average population of the Dining with Diabetes program statewide, demographics information was collected from all 740 participants (Table 1). The results showed that the majority of the participants were white (96%), females (75%), over the age of 50 (88%), and/or had at least a high school diploma (41%).

		With Diabetes N (%)	Supporter N (%)
Gender:	Male	132 (28.7%)	53 (18.9%)
	Female	328 (71.3%)	227 (81.1%)
	Total	460	280
Age (y):	< 21	2 (0.4%)	0 (0%)
	21-50	44 (9.6%)	44 (15.7%)
	51-65	199 (43.2%)	117 (41.8%)
	≥ 66	215 (46.7%)	119 (42.5%)
	Total	460	280
Ethnicity:	African American	10 (2.2%)	5 (1.8%)
	Asian	1 (0.2%)	0 (0%)
	Hispanic	5 (1.1%)	3 (1.1%)
	Indian	1 (0.2%)	0 (0%)
	Other	1 (0.2%)	2 (0.7%)
	White	442 (96.1%)	270 (96.4%)
	Total	460	280
Education Level:	Grade-		
	<12 years	24 (5.2%)	5 (1.8%)
	12 years	190 (41.3%)	111 (39.6%)
	College/Trade School-		
	≤ 3 years	142 (30.9%)	86 (30.7%)
≥ 4 years	104 (22.6%)	78 (27.9%)	
Total	460	280	

The knowledge portion of the survey (Table 2) was devised to assess the amount of knowledge obtained from the Dining with Diabetes Program. The knowledge-based outcome measure of the participants' knowledge of foods that are high in carbohydrates increased significantly ( $p=.012$ ) from before the program to after. Out of a total 9 foods, initially participants averaged roughly  $7.29 \pm .11$ , and after, this number raised to an average of  $7.58 \pm .11$  items answered correctly. Participants' knowledge of nutritional concepts related to diabetes

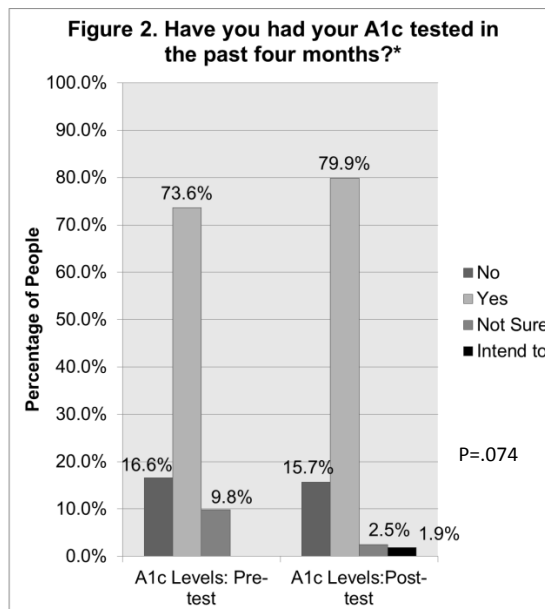
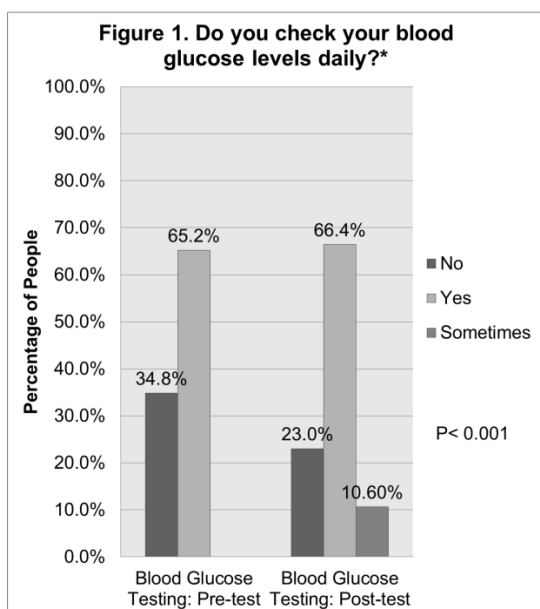
also increase significantly ( $p < .001$ ). Prior to the educational sessions, the average number of correctly answered items out of 5 was  $3.91 \pm .23$ , whereas afterwards it was  $4.22 \pm .23$ .

Outcome Measure <sup>a</sup>	Pre-Test	Post-Test	Significance <sup>b</sup>
Knowledge of foods that are high in carbohydrates (# of correct answers out of 9 items)	$7.29 \pm .11$	$7.58 \pm .11$	$p = .012$
Knowledge of nutrition concepts related to diabetes (# of correct answers out of 5 items)	$3.91 \pm .23$	$4.22 \pm .23$	$p < .001$

<sup>A</sup>All participants included in knowledge analysis (n=740).  
<sup>B</sup>Analysis adjusts for gender, age, education, ethnicity, and home size.

The behavior portions of the survey were assessed to see if the participants with diabetes actually took what they learned from the DWD program, and put it into action in their own lives. The percentage of participants who check their blood glucose levels daily (Figure 1) increased ( $p < .001$ ) from 65.2% before, to 66.4% after, and the number of people who said they did not decreased from 34.8% to 23.0%. The percent of people who had their HbA1c levels tested within the past four months (Figure 2) increased ( $p = .074$ ) from 73.6% before the program, to 79.9% afterwards.

There were no differences seen across counties or educators for any of the results, indicating consistency in the delivery of all Ohio DWD programs.



\* Only those with diabetes were considered for the behavior analysis.

## Discussion

Overall, the significant improvement of knowledge and positive behaviors among participants demonstrates that the Dining with Diabetes Program can help diabetics better manage their disease. It is clear from the results that most participants' had a good foundation of nutritional knowledge initially, but still increased on that after the completion of the program. Both Figure 1 and Figure 2 show that the participants who originally did not partake in these behaviors daily felt more inclined to do so at the end of the program. The increase in behaviors could be related to the fact that before the class, participants simply did not know the severe consequences of the disease, resulting in increased awareness among participants as a result of the DWD Program.

Several studies listed in the literature review conclude by stating that knowledge alone will not produce behavior change, and that behavior change will instead be encouraged by the addition of a more hands-on program. One study proved this by showing that out of 48% of people who knew their actual HbA1c, only 19% could state what the actual goal for HbA1c

should be, meaning they could not relate their own knowledge to the actual goal behavior change. These results suggest that DWD is in line with previous research studies in the fact that it does focus on both providing knowledge and changing behaviors, which was evident by the significant increase in the glucose behavioral category and the marginally significant increase in the HbA1c category. Three different studies, also reviewed above, suggest that the longer and more intense the program, the more long lasting the behavioral results for participants. For example, one program that split participants into a 9-week and a 2-week group produced significant long-term results in the 9 weeks, but none at all in only 2 weeks. The DWD curriculum could be improved by lengthening the program duration and adding topics that are more challenging to further the chance of producing a long lasting effect. A study by Coonrod et al, (2004), of nearly 2,405 people, concluded that the majority of their subjects discovered information about diabetes education via their physician's office, which means that DWD is on track with its recruitment procedures.

The results of this study should be interpreted with caution because of a limitation with the evaluation questionnaires. The pre- versus post- survey varied in response type available in both behavioral questions. For instance, when asked whether blood glucose levels are checked daily, the pre-survey responses include "no" or "yes", whereas the post-survey adds a "sometimes" factor. This also is true in the HbA1c question with pre-survey responses being "no," "yes," and "not sure," whereas the post-survey adds an "intend to" factor. This variance in response makes it hard to determine the actual change seen in behavior among participants, and thus, should be interpreted with caution.

The reported results of the 740 participants of the DWD Program show how crucial diabetes education is to someone suffering from the disease. With 346 million people claiming

to have diabetes worldwide, a bill of health totaling \$218 billion dollars in 2007, and an estimation of over 6 million deaths by the year 2030, it is evident that the current methods are not effective. Although DWD is showing to have many positive attributes, future progress should be encouraged in the area of developing a longer, more intense program to enhance the behavior change outcomes.

### **Conclusions and Implications**

With the death rate associated with diabetes growing dramatically, and the rising healthcare costs associated with diagnosing and treating the disease, the need for effective diabetes self- management educational programs is extremely high. This is the first time the Ohio Dining with Diabetes program has systematically and quantitatively assessed the effectiveness of the program.

The DWD program positively impact participants' knowledge by teaching them the importance of managing the disease. Yet, according to the literature, knowledge alone does not produce a change in people. DWD also focuses on improving positive behaviors related to diabetes management. It is evident, with the significant response of people making positive improvements in daily blood glucose testing and regular HgA1c levels, that DWD is in fact impacting the actions of diabetic individuals.

On the other hand, the results did portray that participants' had a high starting point for knowledge based questions about general nutrition, which could mean that the curriculum could be longer and has room to become more challenging. With past research suggesting that longer programs are more effective at producing long-term results, this could also be an option for future DWD programs. Because physical inactivity is a huge risk factor for diabetes, more emphasis should be placed on measuring it in the survey to see whether actual changes are being made due to the DWD program. Goal setting could be added to ensure that participants are



challenge to actually participate during the three week course. Also, not all surveys matched both pre- and post-, and only the ones that did match were used which cut out a lot of data. With nearly 96% Caucasian participants, the recruitment of DWD needs to be generalized more toward those in need of health education, including African Americans and Hispanics. Finally, the DWD program does not have a control group which makes it hard to measure the overall actual results because there is no comparison group.

The updated (2011) version of the Dining with Diabetes evaluation survey includes portions that better align responses from pre- to post-test. It also asks not only if the participants know what HbA1c, blood pressure and total cholesterol mean, but also if they can actually provide their own personal values. In the future, this will help the program decipher if it is in fact making a difference.

Future progress should also be made to better collect long-term data from participants. This will help the program better assess if it is in fact producing behavior changes that are long lasting. Also, more emphasis should be placed on reaching a more representative group of individuals with diabetes. Overall, results of this study suggest that the DWD program is improving knowledge and positive behaviors related to diabetes management initially, but enhancements are recommended to elicit a greater impact in the future.

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## Appendix A

Please **Circle** one answer that best describes you.

### 6. Are you:

Male

Female

### 7. What is your age?

Under 21      31-40

21-30      41-50

51-55

56-60

61-65

66 or Over

### 8. What is your current employment status?

Working full-time

Not working

Working part-time

Retired

### 9. Are you:

Hispanic/Latino

American Indian or Alaskan Native

Asian

Black or African American

Native Hawaiian or Other Pacific Islander

White

Multi Cultural

Other (Please specify.) \_\_\_\_\_

### 10. What is your highest level of education completed?

Grade:    K    1    2    3    4    5    6    7    8    9    10    11  
12

College/Trade School:    1    2    3    4    > 4  
years

### 11. How many people (including you, other adults and children) live in your house?

Number of people \_\_\_\_\_

### PLEASE RETURN TO YOUR INSTRUCTOR~THANK YOU!

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04/08/2008

Please check one box:

**Yes**, I agree to participate in the study.

### Dining with Diabetes: Session 1

Pre-Program Questionnaire

Participant Label/#: \_\_\_\_\_

Class Date: \_\_\_\_\_

County: \_\_\_\_\_



**Welcome to the Dining with Diabetes Program!** We hope this program will help you take control of your diabetes. Please take a few minutes to complete this questionnaire. The information you share will help us make this a better program for you.

**1. Please Circle your answer to the following questions:**

Do you have diabetes?

No (if no, proceed to question 3)

Yes

If yes, what type do you have?

Type 1

Type 2

Approximately how long ago did you learn that you have diabetes?

One year or less

2 – 10 years

Over 10 years

Do you check your blood sugar levels daily?

No

Yes

**2. Please mark “no,” “yes,” or “not sure” for the following:**

	No	Yes	Not Sure
Do you know what A1C is?			
Have you had your A1C tested in the past four months?			
Have you had your blood pressure checked in the past six months?			

Do you know what a microalbumin test is?			
Have you had a microalbumin test in the past six months?			
Have you had a cholesterol test in the past six months?			
Have you had a dilated eye exam in the past year?			
Have you had a foot exam in the past year?			

**3. Please Circle your answer to the following questions:**

Circle the high carbohydrate foods:

Steak    Pasta    Corn    Cheese    Potatoes

Eggs    Peas    Rice    Broccoli

Circle the healthy fats:

Canola oil    Olive oil    Butter

Circle the high fiber foods:

Orange    Orange juice  
White bread    Whole grain bread

**4. Please mark “true,” or “false,” for the following questions:**

	True	False
Blood sugar and glucose are the same thing.		
According to the plate method, half of your plate should consist of meat.		
Hidden salt in processed foods is the biggest source of sodium in the typical diet.		
Fruits are a rich source of carbohydrates.		
Soluble fiber can help the body get rid of some cholesterol in our meals.		

Do you count the amount of carbohydrates you eat?			
Do you use the Nutrition Facts on food labels to make food choices?			
Do you wash your hands with soap and water before preparing food?			
Do you know what the plate method is?			

**5. Please mark “no,” “yes,” or “sometimes” for the following:**

	No	Yes	Some -times
Do you exercise at least three times a week?			
Do you use canola or olive oil in the majority of your cooking?			
Do you think about portion sizes when making meal choices?			
Do you use herbs or spices in place of salt?			

**Appendix B**



**Dining with Diabetes: Session 3**

Post-Program Questionnaire

Participant Label/#: \_\_\_\_\_

County: \_\_\_\_\_ Class

Date: \_\_\_\_\_

Please take a few minutes to complete this questionnaire. The information you share will help us make this a better program.

**1. Do you have diabetes?**

Yes    No (if no, go to question 3)

**2. Please mark “no,” “yes,” “intend to,” or “not sure” for the following:**

	No	Yes	Intend To	Not Sure
Do you know what A1C is?				
Have you had your A1C tested in the past four months?				
Have you had your blood pressure checked in the past six months?				
Do you know what a microalbumin test is?				
Have you had a microalbumin test in the past six months?				

Have you had a cholesterol test in the past six months?				
Have you had a dilated eye exam in the past year?				
Have you had a foot exam in the past year?				

3. Please **Circle** your answer to the following questions:

Circle the high carbohydrate foods:

- Steak    Pasta    Corn    Cheese    Potatoes  
 Eggs    Peas    Rice    Broccoli

Circle the healthy fats:

- Canola oil    Olive oil    Butter

Circle the high fiber foods:

- Orange    Orange juice  
 White bread    Whole grain bread

4. Please mark “true,” or “false,” for the following questions:

	True	False
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Blood sugar and glucose are the same thing.		
According to the plate method, half of your plate should consist of meat.		
Hidden salt in processed foods is the biggest source of sodium in the typical diet.		
Fruits are a rich source of carbohydrates.		
Soluble fiber can help the body get rid of some cholesterol in our meals.		

5. Please mark “no,” “yes,” or “sometimes” for the following:

	No	Yes	Some-times
Do you check your blood sugar levels daily?			
Do you exercise at least three times a week?			
Do you use canola or olive oil in the majority of your cooking?			
Do you think about portion sizes when making meal choices?			
Do you use herbs or spices in place of salt?			
Do you count the amount of carbohydrates you eat?			



Do you use the Nutrition Facts on food labels to make food choices?			
Do you wash your hands with soap and water before preparing food?			
Do you know what the “Plate Method” is?			

**PLEASE RETURN TO YOUR TEACHER~THANK YOU!**

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