National Diabetes Education Program Survey of the Public's Knowledge, Attitudes, and Practices Related to Diabetes: 2006

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Contents

Executive Summary ..... **i**

Survey Results ii

A. Public's Knowledge of the Serious Yet Controllable Aspects of Diabetes ii

B. Diabetes Awareness iii

C. Awareness Among At-risk Populations iv

D. Diabetes and Cardiovascular Disease iv

E. Public's Awareness of NDEP Campaign and Messages v

Summary Highlights and Implications for Program Planning vi

1. Introduction **1**

2. Survey Methodology **3**

2.1 Data Collection Instruments, Screening, and Interviewing Questionnaire 4

2.2 Survey Response Rates 4

2.3 Statistical Methods 5

3. Results **6**

3.1 Diabetes Screening 7

3.2 Awareness of the Term "Pre-diabetes" 8

3.3 Hypertension 9

3.4 High Blood Cholesterol 9

3.5 Advice to Control or Lose Weight 10

3.6 Advice to Increase Physical Activity or Exercise 11

3.7 Advice to Reduce Fat and Calories in the Diet 12

3.8 Advice to Take a Daily Aspirin 12

3.9 Advice to Reduce Salt in the Diet 12

3.10 Awareness of One's Own Risk for Diabetes 13

3.11 Awareness of Risk Factors for Diabetes 14

3.12 Awareness of the Seriousness of Diabetes 15

3.13 Awareness of the Complications of Diabetes 15

3.14 Awareness of the Steps a Person with Diabetes Can Take to Lower His or Her Blood Sugar Level 17

3.15 Awareness of the Steps a Person with Diabetes Can Take to Reduce the Chance of Having a Heart Attack 18

3.16 Awareness of the NDEP Campaign Messages 18

3.17 People with Diabetes Self-Management Practices 19

3.18 Knowledge of A1C Among People with Diabetes 20

3.19 People with Diabetes Rate Their Understanding of Diabetes Management..... 20
3.20 Awareness of Media Stories About Diabetes 22

4. Conclusions..... 23

Appendix A Weighting Methodology 26
Appendix B Questionnaire..... 27
Appendix C Tables

Executive Summary

The National Diabetes Education Program (NDEP) conducted its first survey of the public's knowledge, attitudes, and practices related to diabetes in March 2006. The goals of the survey were as follows:

- To collect information on key questions related to the NDEP campaigns and messages to use for program planning and evaluation purposes. For program planning, these survey results begin to provide insights into the public's awareness that diabetes is serious yet preventable and controllable and the public's knowledge of risk factors for diabetes and actions to take to reduce the risk.
- To learn more about the attitudes and beliefs of those target audiences the program is trying to reach and their perception of their personal susceptibility to diabetes and its complications. The aim is to motivate behavior change, since awareness alone is not sufficient for behavior change.

The survey, which the NDEP plans to repeat in 2008, will serve as a baseline on which to track changes in the public's awareness of:

- Diabetes and pre-diabetes and their personal risk factors;
- Attitudes, knowledge, and practices related to diabetes; and
- One's own risk for diabetes among at-risk groups.

The target sample size was 1,600 persons, ages 45 years and older. The age 45 and older was selected to obtain a sizable proportion of the NDEP's key target audiences in the sample—people with diabetes and pre-diabetes, and people who are at risk for diabetes.

- A *person with diabetes* is defined as one who answers "Yes" to the following question: "{Other than during pregnancy}, has a doctor or other health professional ever told you that you have diabetes or sugar diabetes?"
- A *person with pre-diabetes* is defined as one who answers "Yes" to one or more of the following: "Have you ever been told by a doctor or other health professional that you have: Pre-diabetes? Impaired fasting glucose? Impaired glucose tolerance? Borderline diabetes? Or high blood sugar?"
- A *person at high risk for diabetes* is defined as one who, according to his or her self-reported height and weight, has a body mass index (BMI) of 25 or greater and/or has been told by a doctor or other health professional that he or she is at high risk for diabetes and/or has ever been told by a health care provider that she had gestational diabetes or high blood sugar during pregnancy.

A stratified sampling design was used to oversample African American and Hispanic households. The African American stratum was created using telephone exchanges where at least 50% of the households were African American, which increased the probability of reaching an African American household to 75% in that stratum. The Hispanic stratum was created in a similar manner. The third stratum included all remaining

telephone exchanges. Although African American and Hispanic households were oversampled, once the household member was contacted any eligible respondent regardless of his or her race or ethnicity was selected. The interviews were conducted by telephone using computer-assisted telephone interviewing (CATI) techniques. Interviews were conducted in English and Spanish.

The survey was conducted over a 4-month period beginning in March 2006, by the end of June there were 1,763 completed interviews, which included 374 people with diagnosed diabetes, 181 people with diagnosed pre-diabetes, 730 people at high risk for diabetes, and 478 others. The overall survey response rate for the sample was 43.5%.

The survey was designed to answer key questions related to NDEP campaigns and messages, including:

- Is the general public aware that diabetes is a serious, yet controllable condition? Are they aware of the risk factors for diabetes? Are they aware of the complications or health problems caused by diabetes? Are they aware of the steps a person with diabetes can take to lower his or her blood sugar, and that diabetes can be prevented?
- Is the general population aware of their diabetes status? What percentage of the population have been screened for diabetes and what percentage report that a doctor or other health professional told them their diabetes status, either diagnosed with diabetes or pre-diabetes, or at high risk?
- Are those at high risk for diabetes aware that they are at risk? Are those who know that they are at high risk for diabetes aware of the actions that they can take to reduce their risk? Have they been told by a doctor or other health care professional to take any specific steps to reduce their risk for disease such as diabetes? Are they following that advice?
- Is the public and especially people with diabetes and their families aware of the link between diabetes and cardiovascular disease? Are they aware of their A1C, blood pressure, and cholesterol levels? Are they taking action to control their blood pressure and cholesterol levels or reduce their risk for cardiovascular disease in any other way?
- Are the general public, people with diabetes, and people at risk for diabetes aware of the National Diabetes Education Program and its campaign messages, specifically *Control Your Diabetes. For Life; Be Smart about your Heart. Control the ABCs of Diabetes: A1C, Blood Pressure, and Cholesterol*; and *Small Steps. Big Rewards. Prevent type 2 Diabetes*?

Survey Results

A. Public's Knowledge of the Serious Yet Controllable Aspects of Diabetes

Is the general public aware that diabetes is a serious, yet controllable condition? Are they aware of the risk factors for diabetes? Are they aware of the complications or health

problems caused by diabetes? Are they aware of the steps a person with diabetes can take to lower his or her blood sugar and that diabetes can be prevented?

Eighty-nine percent (89%) of the population consider diabetes to be a very serious condition. Being overweight, heredity, and not getting enough exercise are the three risk factors for diabetes that are well known by the public. Ninety-five percent (95%) of the population report that they feel overweight is a cause of diabetes, 91% report that heredity is a cause, and 85% report that not getting enough exercise is a cause. Eating too much sugar, fatty foods, and too much salt are reported to be at least possible causes of diabetes. Being of a particular race or ethnic group or older age are not reported to be risk factors.

When asked what are the most serious health problems caused by diabetes, blindness was the most frequent response (64%). Cardiovascular disease and amputation both were reported by 39% of the population. People with a family history and people who report that they feel at risk for diabetes are more likely to identify blindness as one of the most serious complications. Cardiovascular disease was more likely to be identified by people with diabetes and people with pre-diabetes than others, including people at high risk. The percentage of the population who identified amputation as a complication of diabetes increased with increasing education.

Survey respondents reported that losing weight, engaging in regular physical activity, and taking medication are three steps that would definitely help a person with diabetes lower his or her blood sugar level. Three-quarters of the population reported that losing weight (78%), engaging in regular physical activity (78%), and taking medication (73%) would definitely help lower one's blood sugar. Following a low-fat diet or low-salt diet were also reported as steps that would definitely help lower one's blood sugar by 50% and 32% of the population, respectively.

B. Diabetes Awareness

Is the general population aware of their diabetes status? What percentage of the population have been screened for diabetes and what percentage report that a doctor or other health professional told them their diabetes status, either diagnosed with diabetes or pre-diabetes, or at high risk?

- The majority (82%) of the population 45 years of age and older report that they have had a blood test for diabetes. People with a diagnosis of diabetes, pre-diabetes, hypertension, or high blood cholesterol are more likely to have had a blood test for diabetes and more likely to have had it in the past year than others, including people at high risk for diabetes. Nine percent (9%) of the population have been told by a doctor or other health professional that they have pre-diabetes. Over half of the people defined as people with pre-diabetes were told by a doctor or other health professional that they have borderline diabetes. Forty-six percent (46%) of the population are at high risk for diabetes, but have not been told that they have pre-diabetes. Ninety-nine percent of those at high risk for diabetes are at risk because of being overweight. Only 20% of them have been told that they are at high risk.

C. Awareness Among At-risk Populations

Are those at high risk for diabetes aware that they are at risk?

When asked, "Do you feel you could be at risk for diabetes?", only 25% of the people at high risk for diabetes report that they feel that they could be at risk for diabetes. Even among people who have been told that they have pre-diabetes, only 59% report that they feel at risk for diabetes. The reason given most often for feeling at risk for diabetes is having a family history of diabetes (60%); however, only 54% of people with a family history of diabetes report that they feel at risk. Other reasons given include being overweight and poor dietary habits. Although the risk for diabetes increases with age, a greater percentage of people in the younger group (45-64) feel at risk compared to the older age group ($\geq$65) (28% vs. 15%), and age was very rarely given as a reason for feeling at risk (4%). The prevalence of diabetes is greater among African Americans and Hispanics, but there was no difference in the percentage of the population who reported feeling at risk for diabetes according to race, and race was never given as a reason for feeling at risk (<1%).

Have they been told by a doctor or other health care professional to take any specific steps to reduce their risk for diabetes? Are they following that advice?

Forty-five percent (45%) of the population 45 years and older report that a doctor or other health professional has told them to control or lose weight to reduce their risk for any disease. This represents 78% of people with diabetes, 54% of people with pre-diabetes, and 51% of people at high risk who have been told to control or lose weight by a doctor or other health professional, compared with 14% of the rest of the population. Eighty-one percent (81%) of those who have been told to control or lose weight by a doctor or other health professional report that they are following that advice.

Fifty-two percent (52%) of the population 45 years or older have been told by a doctor or other health professional to increase their physical activity or exercise to reduce their risk for any disease. This represents 80% of people with diabetes, 67% of people with pre-diabetes, and 53% of people at high risk for diabetes, compared with 32% of the rest of the population. Seventy-four percent (74%) of the population who have been advised by a health professional to increase their physical activity report that they are following that advice.

D. Diabetes and Cardiovascular Disease

Is the public and especially people with diabetes and their families aware of the link between diabetes and cardiovascular disease?

In an open-ended question that asked about the more serious health problems caused by diabetes, cardiovascular disease ranked number two, second to blindness. Thirty-nine percent (39%) of the population identified cardiovascular disease as a serious health problem caused by diabetes. People with diabetes (50%) and pre-diabetes (49%) were more likely to identify cardiovascular disease as a health problem caused by diabetes than people at high risk (34%) or all others (37%).

Are people with diabetes aware of their A1C levels?

Over half (57%) of people with diabetes have heard the term "glycosylated hemoglobin" or "hemoglobin A1c." Awareness of the term "A1C" varies according to race and ethnicity, with 62% of whites, 47% of African Americans, and 36% of Hispanics having heard the term. Given the definition of the term "A1C," 61% of people with diabetes report that they have had their A1C level tested one or more times in the past year. Of those, only 49% could report their last A1C level. This represents approximately 30% of people with diabetes.

Are people with diabetes taking action to control their blood pressure and cholesterol levels or reduce their risk for cardiovascular disease in any other way?

Three-quarters of people with diabetes have hypertension, and 87% are on medication for their high blood pressure. Sixty-two percent (62%) of people with diabetes have been told by a health professional that they have high blood cholesterol, and 77% are on medication to lower their blood cholesterol level.

E. Public's Awareness of NDEP Campaign and Messages

Is the general public, people with diabetes, and people at risk for diabetes aware of the National Diabetes Education Program and its campaign messages, specifically Control Your Diabetes. For Life; *Be Smart About Your Heart. Control the ABCs of Diabetes: A1C, Blood Pressure, and Cholesterol*; *and Small Steps. Big Rewards. Prevent type 2 Diabetes*?

Survey respondents were asked if in the past year they have heard or seen ads or educational materials with the following messages:

- Control Your Diabetes. For Life
- Be Smart About Your Heart. Control the ABCs of Diabetes
- Make the Link! Diabetes, Heart Disease, and Stroke
- Don't Be Blind to Diabetes
- Small Steps. Big Rewards. Prevent type 2 Diabetes

In all cases, people with diabetes were more likely to have heard or seen the messages than others. The oldest NDEP campaign message—*Control Your Diabetes. For Life*—was recognized by nearly half (49%) of the population and 57% of people with diabetes. The NDEP's campaign *Be Smart About Your Heart. Control the ABCs of Diabetes* was recognized by 41% of the population, and 53% of people with diabetes. Thirty-eight percent (38%) of the population report that they have heard the American Diabetes Association's (ADA) similar campaign message: *Make the Link! Diabetes, Heart Disease, and Stroke*. Thirty-four percent (34%) of the population report that they have heard or seen the message associated with another ADA campaign: *Don't Be Blind to Diabetes*. The NDEP's newest campaign message, which targets people at risk for diabetes, *Small Steps. Big Rewards. Prevent type 2 Diabetes*, was seen by 28% of the population, 37% of people with pre-diabetes, and 36% of people with diabetes.

Summary Highlights and Implications for Program Planning

The following points represent the key issues for the NDEP to consider as the program moves forward in program planning. These data provide baseline measures to assess the public's knowledge, attitudes, and practices regarding diabetes prevention and control and the progress made in reaching the NDEP's objectives to improve treatment and outcomes for people with diabetes, to promote early diagnosis, and to prevent or delay the onset of diabetes.

- Although the majority of the population report that they have been tested for diabetes, only a small percentage (9%) of the population have been told that they have pre-diabetes and are at risk for developing diabetes. Those who have been told that they have pre-diabetes are more likely than others to feel at risk for diabetes, but only 59% report that they feel at risk for diabetes.
- Forty-six (46%) percent of the surveyed population are at high risk for diabetes as defined by risk factors, but only a quarter of them report feeling at risk for diabetes.
- The most frequent reason given for feeling at risk for diabetes is having a family history of diabetes, but only 54% of people with a family history of diabetes feel at risk for diabetes.
- Other reasons given for feeling at risk for diabetes include being overweight and having poor dietary habits. Being of a particular race or age was not given as a reason for feeling at risk.
- Being overweight, heredity, and not getting enough exercise are three risk factors for diabetes that are well known. Belonging to particular racial or ethnic groups is not recognized as a risk factor for diabetes.
- People with diabetes or pre-diabetes and people at high risk are being told to lose or control their weight and increase their physical activity or exercise by health professionals at a greater rate than others. Most report that they are following that advice.
- Only 57% of people with diabetes have heard the term "A1C," and only 30% of people with diabetes can report their last A1C level.
- Thirty-nine percent (39%) of the public and half of the people with diabetes are aware of the link between diabetes and cardiovascular disease and identify cardiovascular disease as a serious health problem caused by diabetes. People with diabetes are more likely to have other risk factors for cardiovascular disease, high blood pressure, and high cholesterol, and the majority are taking medications to lower their blood pressure or cholesterol level.
- The public—and especially people with diabetes—have heard the NDEP's campaigns: 49% have heard *Control Your Diabetes. For Life*; 41% have heard *Be Smart About Your Heart. Control the ABCs of Diabetes*; and 28% have heard the *Small Steps. Big Rewards. Prevent type 2 Diabetes* campaign.

The progress made in reaching the public and meeting the objectives of the NDEP is illustrated in the results of this survey, which are presented in the body of this report and the tables in Appendix C. Many of these results indicate that the NDEP is having an effect on the public's knowledge, attitudes, and practices related to diabetes. However, much more needs to be done to reach the ultimate goals of the program to improve the treatment and outcomes of people with diabetes, to promote early diagnosis, and to prevent the onset of diabetes. The survey data will assist the NDEP in understanding its target audience, and future surveys will evaluate program progress by documenting changes over time in the public's knowledge, attitudes, and practices related to diabetes prevention and management.

1. Introduction

The U.S. Department of Health and Human Services' National Diabetes Education Program (NDEP) was launched in 1997 to improve diabetes management and help reduce the morbidity and mortality from diabetes and its complications. The NDEP is co-sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) of the National Institutes of Health (NIH) and the Division of Diabetes Translation of the Centers for Disease Control and Prevention (CDC). The overall aim of the NDEP is to improve the treatment and outcomes for people with diabetes, to promote early diagnosis, and to prevent the onset of diabetes. To reach these goals, the NDEP has formulated the following program objectives:

- To increase awareness of the seriousness of diabetes, its risk factors, and strategies for preventing diabetes and its complications among at-risk groups.
- To improve understanding about diabetes and its control and to promote better self-management behaviors among people with diabetes and their social supporters.
- To improve health care providers' understanding of diabetes and its control and to promote an integrated approach to care.
- To promote health care policies that improve the quality of and access to diabetes care.
- To reduce disparities in health in racial and ethnic populations disproportionately affected by diabetes.

Four central principles guide the NDEP's planning, implementation, and evaluation activities. These principles are based on approaches used by other NIH and CDC education programs over the past 30 years.

The first principle is that the program must rest squarely on scientific evidence, ranging from basic science to epidemiologic, clinical, and demonstration studies. In the case of the NDEP, this science base provides the evidence that much of the morbidity and mortality associated with diabetes and its complications can be prevented or delayed by aggressive treatment with diet, physical activity, and pharmacological approaches that help to normalize blood glucose levels, blood pressure, and lipids. Further, research now shows that type 2 diabetes can be prevented or delayed through modest weight loss and regular physical activity.

The second principle is that an effective education program must involve a variety of organizations that operate in partnership to achieve program goals and objectives. A significant component of the NDEP is its Partnership Network of more than 200 public- and private-sector organizations. Program partners disseminate and promote the NDEP's mass media campaigns and educational messages through national, State, and local communication channels. They also provide guidance on developing appropriate messages and strategies by participating in audience-specific work groups. These work groups meet monthly via telephone conference calls and annually at face-to-face

meetings where they develop, implement, and review progress on their respective strategic plans, media messages, educational products, and community channel activities.

The third principle is that public, professional, and patient education must use effective communication strategies to reach selected target audiences. The NDEP offers a wide range of resources to support three major public education campaigns. Each campaign offers partners a wealth of tools—brochures, tip sheets, public service advertising, provider kits, and more—for conducting outreach activities in communities across the country. Consumer materials are carefully tailored for groups at highest risk for diabetes, including older adults, African Americans, American Indians, Alaska Natives, Hispanics and Latinos, Asian Americans and Pacific Islanders, and women with a history of gestational diabetes. Many of the NDEP's educational and promotional materials are available in as many as 15 languages.

The fourth principle is that evaluation must be an integral component of program planning and implementation and used as part of an iterative process of replanning and refining program activities. This principle has inspired a comprehensive approach to NDEP evaluation, encompassing both process and outcome evaluation. The process evaluation monitors program implementation and short-term effects. The resulting findings are used to identify areas in need of mid-course correction or continuation. The outcome evaluation focuses on the mid-term and longer-term intended effects of the NDEP's efforts, particularly the NDEP's and partner organizations' promotion and outreach activities to program target audiences. Progress on these mid- and longer-term outcomes is measured by tracking changes in the public's awareness, knowledge, attitudes/beliefs, and behaviors regarding diabetes prevention and control.

2. Survey Methodology

In March 2006, the NDEP conducted its first survey of the public's knowledge, attitudes, and practices related to diabetes. The survey sample was nationally representative of the U.S. civilian noninstitutionalized adult population 45 years of age and older and living in telephone households. The age, 45 and older, was selected in order to obtain a sizable proportion of individuals in the sample who have been diagnosed with diabetes or pre-diabetes or who are at risk for diabetes. The survey reports analyses according to these key target audiences of the NDEP—people with diabetes, people with pre-diabetes, and people who are at risk for diabetes. The interviews were conducted by telephone using computer-assisted telephone interviewing (CATI) techniques. Interviews were conducted in English and Spanish. The targeted sample size was 1,600 interviews, including an oversample of African American and Hispanic groups that resulted in 400 interviews in each of these groups.

The sample was based on list-assisted random digit dialing (RDD). A stratified sampling design was used to oversample African American and Hispanic households. The African American stratum was created using telephone exchanges where at least 50% of the households were African American, which increased the probability of reaching African American household to 75% in that stratum. The Hispanic stratum was created in a similar manner. The third stratum included all remaining telephone exchanges. Although African American and Hispanic households were over-sampled, once the household member was contacted any eligible respondent regardless of his or her race or ethnicity was selected. The interviews were conducted by telephone using computer-assisted telephone interviewing (CATI) techniques. Interviews were conducted in English and Spanish.

A short screening questionnaire was used to identify an eligible respondent 45 years of age or older. If more than one adult within the household was eligible for the survey, the one with the "most recent birthday" was selected. Once the eligible respondent was identified, questions were asked to determine if he or she has diabetes or pre-diabetes, or is at high risk of developing diabetes.

- A *person with diabetes* is defined as one who answers "Yes" to the following question: "{Other than during pregnancy}, has a doctor or other health professional ever told you that you have diabetes or sugar diabetes?"
- A *person with pre-diabetes* is defined as one who answers "Yes" to one of the following: "Have you ever been told by a doctor or other health professional that you have: Pre-diabetes? Impaired fasting glucose? Impaired glucose tolerance? Borderline diabetes? Or high blood sugar?" Over half of the people defined as people with pre-diabetes were told by a doctor or other health professional that they have borderline diabetes.
- A *person at high risk for diabetes* is defined as one who, according to his or her self-reported height and weight, has a body mass index (BMI) of 25 or greater and/or has been told by a doctor or other health professional that he or she is at high risk for

diabetes and/or has ever been told by a health care provider that she had gestational diabetes or high blood sugar during pregnancy.

Appendix A presents more information on the sampling and weighting methodology.

2.1 Data Collection Instruments, Screening, and Interviewing Questionnaire

The questionnaire was designed to answer key questions related to the NDEP campaigns and messages, including:

- Is the general population aware of their diabetes status? What percentage of the population has been screened for diabetes, and what percentage reports that a doctor or other health professional told them their diabetes status, either diagnosed with diabetes or pre-diabetes, or at high risk?
- Is the general public aware that diabetes is a serious, yet controllable condition? Are they aware of the risk factors for diabetes? Are they aware of the complications or health problems caused by diabetes? Are they aware of the steps people with diabetes can take to lower their blood sugar? Are they aware that diabetes can be prevented?
- Are those at high risk for diabetes aware that they are at risk? Are those who know that they are at high risk for diabetes aware of the actions that they can take to reduce their risk? Have they been told by a doctor or other health care professional to take any specific steps to reduce their risk for diabetes? Are they following that advice?
- Is the public—especially people with diabetes and their families—aware of the link between diabetes and cardiovascular disease? Are they aware of their hemoglobin A1C, blood pressure, and cholesterol levels? Are they taking action to control their blood pressure and cholesterol levels or reduce their risk for cardiovascular disease in any other way?
- Are the general public, people with diabetes, and people at risk for diabetes aware of the National Diabetes Education Program and its campaign messages, specifically:
    - *Control Your Diabetes. For Life*
    - *Be Smart about your Heart. Control the ABCs of Diabetes*
    - *Small Steps. Big Rewards. Prevent type 2 Diabetes*

Appendix B presents the questionnaire.

2.2 Survey Response Rates

The survey was conducted over a 4-month period beginning in March 2006; by the end of June 2006, 1,763 interviews were completed. The completed interviews included 374 people with diagnosed diabetes, 181 people with diagnosed pre-diabetes, and 730 people at high risk for diabetes. The survey response rate for the total sample was 43.5%. The response rate was slightly higher for the African American stratum (47.6%) and slightly lower for the Hispanic stratum (39.8%).

Response rates have been calculated using the definitions prescribed by the American Association for Public Opinion Research (AAPOR). Each phone number in the sample is assigned a single disposition code according to AAPOR's standard definitions.

2.3 Statistical Methods

Sample weights were applied to the survey results using the methods described in Appendix A. Chi-square statistics were computed for all cross-tabulation tables and are included in the tables in Appendix C. This report discusses only those significant results at the 0.01 level. This significance level was chosen to account for the large number of chi-square tests being done.

3. Results

Since more precise and comparable self-reported estimates are available from the National Center for Health Statistics' National Health Interview Survey (NHIS) and estimates from clinical data are available from the National Health and Nutrition and Examination Survey (NHANES), the NDEP survey did not attempt to estimate the prevalence of diabetes in the U.S. population. However, as a validation of the NDEP survey sample, the NDEP survey results were compared to survey results from the NHIS. Table 1 presents the prevalence of diabetes and high blood pressure from the 2006 NDEP survey compared with the data collected in the 2005 NHIS.

Table 1. Prevalence of diabetes and hypertension as estimated by the 2006 NDEP survey compared with the 2005 NHIS.

	Prevalence of Diabetes		Prevalence of Hypertension	
	NDEP Survey 2006	NHIS 2005	NDEP Survey 2006	NHIS 2005
Total	15.6 +/- 2.1	14.2	45.8 +/-3.3	42.0
Male	16.0 +/- 3.5	15.1	39.7 +/- 5.3	40.3
Female	15.2 +/- 2.5	13.4	51.1 +/- 3.9	43.5

The estimate of the prevalence of diabetes among men and women in the 2005 NHIS lies within the 95% confidence interval of the prevalence estimate obtained in the NDEP survey. Only the estimate of the prevalence of hypertension among women from the 2005 NHIS lies outside the 95% confidence interval of the NDEP estimate.

The survey results are presented in tables in Appendix C. Table 1 in Appendix C presents the percentage of the population with diabetes, with pre-diabetes, and at high risk for diabetes, according to demographic variables and the presence of other risk factors.

Results are presented (1) for both sexes combined and for men and women separately, according to two age groups (a younger group of 45-64 and an older group of 65 and older), and four categories of race and ethnicity (Hispanic, African American non-Hispanic, white [non-African American and non-Hispanic, or other], and all others); (2) for four categories of education level; (3) according to diabetes status (diabetes, pre-diabetes, at high risk, and other); (4) according to the presence or absence of other risk factors (overweight, obesity, family history of diabetes, high blood pressure, and high blood cholesterol); and (5) for those who feel at risk compared with those who do not.

A *person with diabetes* is defined as one who answers "Yes" to the following question: "{Other than during pregnancy}, has a doctor or other health professional ever told you that you have diabetes or sugar diabetes?" Sixteen percent (16%) of the surveyed population have diabetes according to this definition. The percentage of Hispanics and African Americans who report that a doctor or other health professional has told them

that they have diabetes is greater than the percentage of whites (27% and 24% compared to 12%, respectively).

A *person with pre-diabetes* is defined as one who answers "Yes" to one of the following: "Have you ever been told by a doctor or other health professional that you have: Pre-diabetes? Impaired fasting glucose? Impaired glucose tolerance? Borderline diabetes? Or high blood sugar?" Nine percent (9%) of the surveyed population are in this group of persons with pre-diabetes. This represents 5% of men and 12% of women. Over half (54%) of the people defined as people with pre-diabetes were told by a doctor or other health professional that they have borderline diabetes; 42% were told that they have high blood sugar, and 25% were told that they have pre-diabetes.

A *person at high risk for diabetes* is defined as one who, according to his or her self-reported height and weight, has a body mass index (BMI) of 25 or greater and/or has been told by a doctor or other health professional that he or she is at high risk for diabetes and/or has ever been told by a health care provider that she had gestational diabetes or high blood sugar during pregnancy. Forty-six percent (46%) of the surveyed population are in this group at high risk. Twenty percent (20%) of those at high risk for diabetes were told by a doctor or other health professional that they are at high risk.

3.1 Diabetes Screening

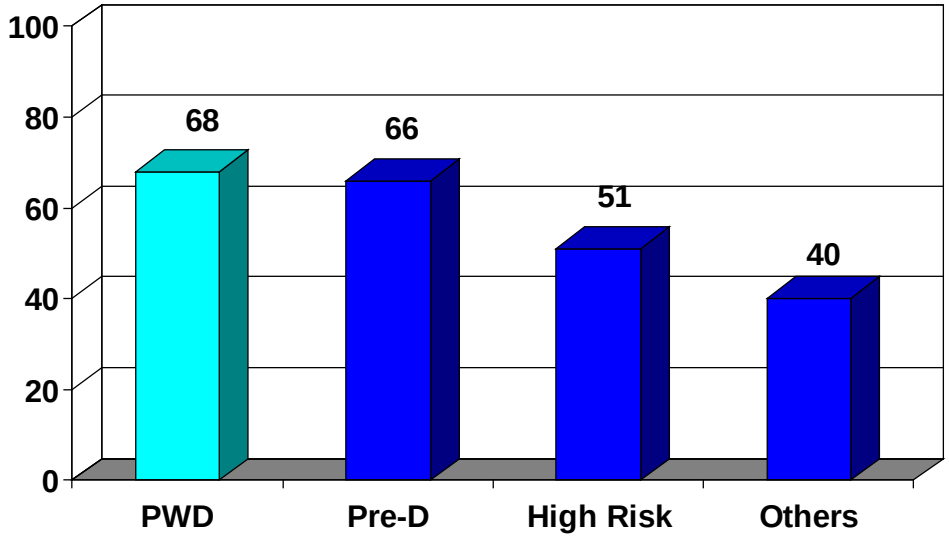
The majority (82%) of the adult population 45 years of age and older report that they have had a blood test for diabetes (Table 2, Appendix C). Virtually all people with diabetes (99%), 92% of people with pre-diabetes, and 80% of people at high risk for diabetes report that they have had a blood test for diabetes, compared with 71% of the rest of the population. Adults with other risk factors for diabetes, family history and overweight, are more likely to have had a blood test than those who do not have other risk factors. Ninety percent (90%) of those with a family history of diabetes report that they have been tested, compared with 79% of those with no family history; 91% of the obese population and 85% of the overweight population have been tested, compared with 75% of those who are not overweight. People with other risk factors for cardiovascular disease, specifically high blood pressure and high blood cholesterol, are more likely to have had a blood test for diabetes than those without these conditions. Eighty-seven percent (87%) of the hypertensive population report that they have had a blood test for diabetes, and 88% of the population with high blood cholesterol has had a blood test, compared with 77% of those without high blood pressure or high blood cholesterol.

Sixty-four percent (64%) of those who report that they have had a blood test for diabetes report that the test was done within the past year (Table 3, Appendix C). Of those who have ever been tested, people with diabetes (69%) and pre-diabetes (72%) are more likely to have been tested in the past year than others (56%), including people at high risk (64%). Among people who have had their blood sugar tested, people who have been diagnosed with high blood pressure (71% vs. 57%) and high blood cholesterol (70% vs. 58%) are more likely to have been tested in the past year.

Among the total population 45 years of age and older, 68% of people with diabetes and 66% of people with pre-diabetes—compared with only 51% of people at high risk and 40% of the rest of the population—have been tested within the past year (Figure 1).

Sixty-two percent (62%) of people with either high blood pressure or high blood cholesterol have been tested, compared with 45% of those who do not have high blood pressure or high blood cholesterol.

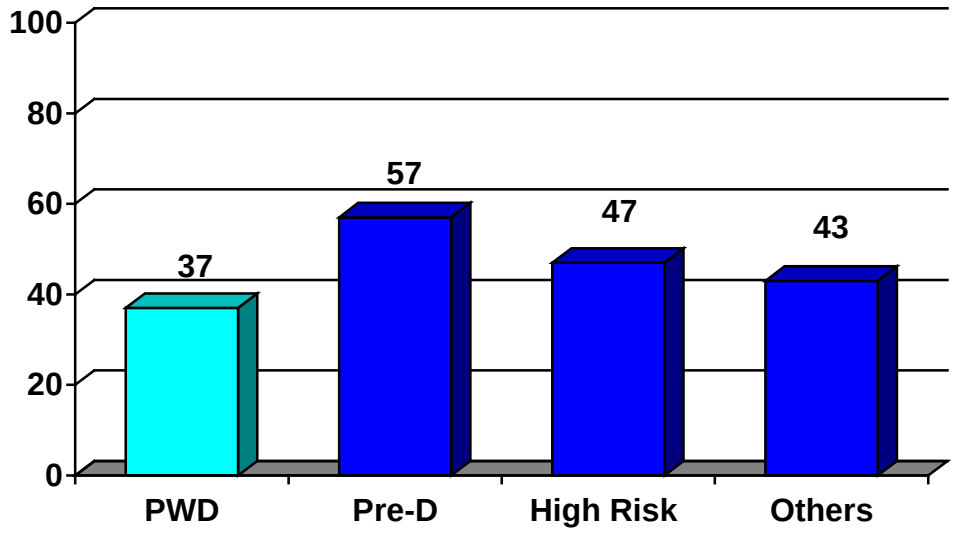
Figure 1. Percentage of the survey population who have had a blood test within the past year according to diabetes status: people with diabetes (PWD), people with pre-diabetes (Pre-D), people at high risk (High Risk), and all others (Others).



3.2 Awareness of the Term "Pre-diabetes"

Forty-five percent (45%) of the population have heard the term "pre-diabetes," including 41% of men and 48% of women (Table 4, Appendix C). African Americans (31%) and Hispanics (31%) are less likely to have heard of pre-diabetes than whites (50%). People with a college degree (55%) or some college (52%) are more likely to report that they have heard the term than people with only a high school diploma (30%) or no high school diploma (34%). Nine percent (9%) of the population have been told by a doctor or health professional that they have pre-diabetes. As shown in Figure 2, people with diabetes are less likely to have heard the term (37%), and people with pre-diabetes are more likely to have heard the term (57%).

Figure 2. Percentage of adults 45 years of age and older who have heard the term "pre-diabetes" according to diabetes status: people with diabetes (PWD), people with pre-diabetes (Pre-D), people at high risk (High Risk), and all others (Others).



3.3 Hypertension

Forty-six percent (46%) of the survey respondents have been told by a doctor or other health professional that they have hypertension or high blood pressure (Table 5, Appendix C). This represents 40% of men and 51% of women; 37% of those 45 to 64 years of age; and 64% of those 65 years of age and older. African Americans report a higher prevalence of hypertension (59%) than Hispanics (48%) or whites (44%). People with risk factors for diabetes and other cardiovascular diseases report a higher prevalence of hypertension: 50% of the overweight population, 59% of the obese population, and 58% of those who have high blood cholesterol. People with diabetes have the highest prevalence of hypertension (74%), compared with 60% of people with pre-diabetes, 43% of people at high risk, and 32% of the rest of the population.

Among those with high blood pressure, 79% are taking medication for their hypertension (Table 6, Appendix C). This represents 87% of people with diabetes 79% of people with pre-diabetes, and 75% of people at high risk.

3.4 High Blood Cholesterol

Forty-six percent (46%) of the population 45 years of age and older have been told by a doctor or other health professional that they have high blood cholesterol (Table 7, Appendix C). This represents 43% of those 45 to 64 years of age and 53% of those 65 years of age and older. Among people with diabetes and people with pre-diabetes, 62% report having been diagnosed with high blood cholesterol, compared with 42% of people at high risk and 39% of the rest of the population. People who have been diagnosed with

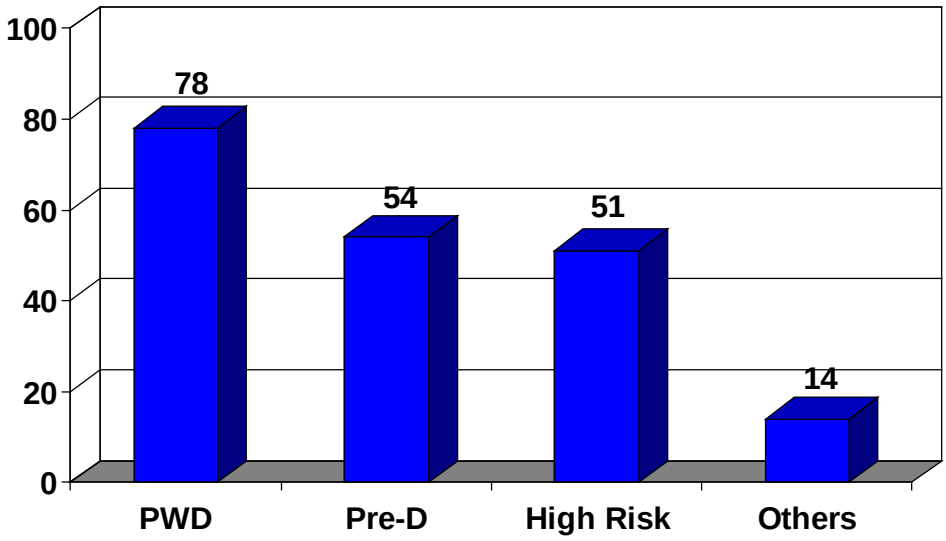
hypertension (58%) are also more likely to be diagnosed with high blood cholesterol than those who have no diagnosis for hypertension (36%).

Among those with high blood cholesterol, 57% report that they are on medication to lower their blood cholesterol (Table 8, Appendix C). The percentage reporting that they are on medication for high blood cholesterol increases with age: 50% of those 45-64 and 69% of those 65 and older. Seventy-seven percent (77%) of people with diabetes who have high blood cholesterol are on medication to lower their cholesterol, compared with 58% of people with pre-diabetes, 52% of people at high risk, and 47% of the rest of the population.

3.5 Advice to Control or Lose Weight

Forty-five percent (45%) of the population 45 years and older report that a doctor or other health professional has told them to control or lose weight to reduce their risk for disease (Table 9, Appendix C). As shown in Figure 3, this represents 78% of people with diabetes, 54% of people with pre-diabetes, and 51% of people at high risk, compared with 14% of the rest of the population.

Figure 3. Percentage of the population told by a doctor or other health professional to control or lose weight according to diabetes status: people with diabetes (PWD), people with pre-diabetes (Pre-D), people at high risk (High Risk), and all others (Others).



Fifty-seven percent (57%) of African Americans, 55% of Hispanics, and 41% of whites interviewed reported that a doctor or other health professional told them to control or lose weight.

Eighty-three percent (83%) of the obese population (BMI 30 or greater) and 59% of the overweight population (BMI 25 or greater) report that they have been given weight-control advice from a health professional, compared with 17% of the nonoverweight

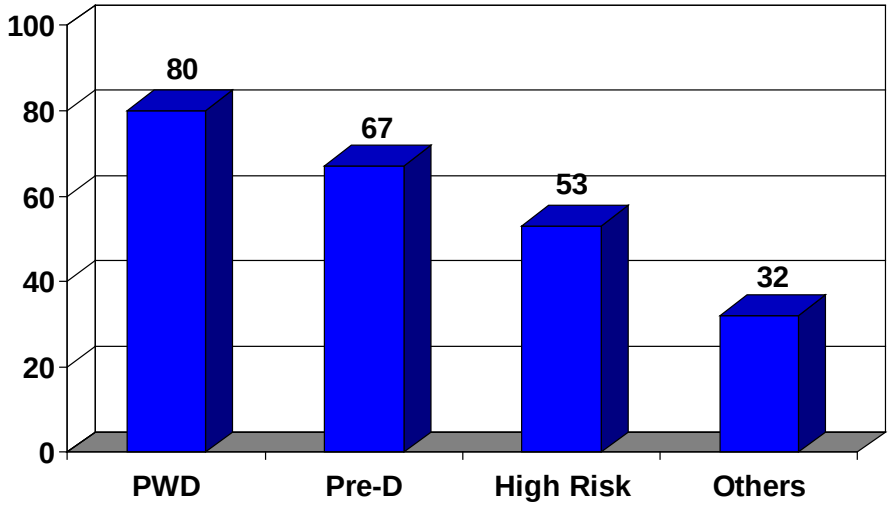
population. People with hypertension or high blood cholesterol are also more likely to be told to control or lose weight than others (57% vs. 35% and 53% vs. 38%, respectively).

Eighty-one percent (81%) of those who have been told to control or lose weight by a doctor or other health professional report that they are following that advice, and there is little or no difference according to demographic characteristics or risk factors (Table 10, Appendix C).

3.6 Advice to Increase Physical Activity or Exercise

Fifty-two percent (52%) of the population 45 years or older have been told by a doctor or other health professional to increase their physical activity or exercise to reduce their risk for disease (Table 11, Appendix C). As shown in Figure 4, this represents 80% of people with diabetes, 67% of people with pre-diabetes, and 53% of people at high risk for diabetes, compared with 32% of the rest of the population.

Figure 4. Percentage of the population told by a doctor or other health professional to increase physical activity or exercise according to diabetes status: people with diabetes (PWD), people with pre-diabetes (Pre-D), people at high risk (High Risk), and all others (Others).



Sixty-eight percent (68%) of Hispanics, 58% of African Americans, and 50% of whites reported that a health professional advised them to increase their physical activity.

Among the obese population, 76% have been told by a health professional to increase their physical activity, compared with 61% of the overweight population and 36% of the nonoverweight population. Persons with hypertension or high blood cholesterol are more likely to have been given this advice than those without these conditions.

Seventy-four percent (74%) of the population who have been advised by a health professional to increase their physical activity report that they are following that advice (Table 12, Appendix C). There is little or no difference in the percentage who report that

they are following the physical activity advice according to demographic or risk factor characteristics.

3.7 Advice to Reduce Fat and Calories in the Diet

Forty-three percent (43%) of the population report that they have been told by a doctor or other health professional to reduce the fat and calories in their diet (Table 13, Appendix C). Sixty-four percent (64%) of people with diabetes and 58% of people with pre-diabetes report that they have received this advice, compared with 44% of the population at high risk for diabetes and 24% of the rest of the population. Hispanics (63%) and African Americans (51%) were more likely to be told to reduce the fat and calories in their diet than whites (39%). People with hypertension or high blood cholesterol are more likely to have been given this advice than those without these conditions (55% vs. 32% of those with and without hypertension and 57% and 31% of those with or without high blood cholesterol).

Eighty-eight percent (88%) of the population who have been told by a health professional to reduce the fat and calories in their diet report that they are following that advice (Table 14, Appendix C).

3.8 Advice to Take a Daily Aspirin

Thirty-nine percent (39%) of the population have been told by a doctor or other health professional to take daily aspirin to reduce their risk for disease (Table 15, Appendix C). The population over 65 years of age (54%) is more likely to be told than the younger age group (31%). People with risk factors for cardiovascular disease are more likely to receive the advice to take a daily aspirin than those without risk factors. Among people with diabetes, 66% have been told to take daily aspirin compared with 47% of people with pre-diabetes, 34% of people at high risk for diabetes, and 30% of the rest of the population. A greater percentage of those with high blood pressure are given this advice than those without a diagnosis of high blood pressure (52% vs. 27%), and a greater percentage of those with a diagnosis of high blood cholesterol are given this advice than those without this diagnosis (51% vs. 28%).

Eighty-one percent (81%) of those who are given advice by a health professional to take a daily aspirin to reduce their risk for disease report that they are following this advice (Table 16, Appendix C).

3.9 Advice to Reduce Salt in the Diet

Thirty-five percent (35%) of the population report that they have been told by a doctor or other health professional to reduce the salt in their diet to reduce their risk for disease (Table 17, Appendix C). A greater percentage of people in the older age group have been given this advice than the younger age group (42% vs. 31%). African Americans (56%) and Hispanics (54%) were more likely to be given the advice to reduce the salt in their diet than whites (29%). People with diabetes (65%) and people with pre-diabetes (44%) are more likely to be given this advice than people at risk for diabetes (31%) and others (24%). People with high blood pressure are more likely to be given the advice to reduce

the salt in their diet than those without high blood pressure (58% vs. 16%), and people with high blood cholesterol are more likely to be given this advice than those without a diagnosis of high blood cholesterol (44% vs. 27%). Eighty-nine percent (89%) of those who have been told to reduce the salt in their diet report that they are following that advice (Table 18, Appendix C).

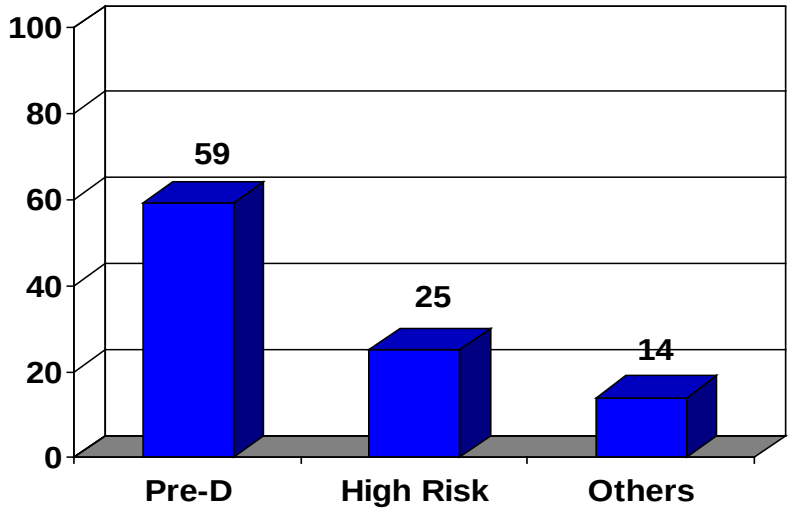
3.10 Awareness of One's Own Risk for Diabetes

Awareness of one's own risk for diabetes was assessed by asking the following questions:

> *"Do you feel you could be at risk for diabetes?"*
> *"Why do you think you are at risk for diabetes?"*

Among the population 45 years of age and older who have not been diagnosed with diabetes, 25% report that they feel at risk for diabetes (Table 19, Appendix C). This represents 29% of those in the younger age group, compared with 15% of those over 65. As shown in Figure 5, 59% of people with pre-diabetes report that they feel at risk for diabetes, compared with 25% of people who are at high risk or 14% of the rest of the population.

Figure 5. Percentage of the population who feel at risk for diabetes according to diabetes status: people with pre-diabetes (Pre-D), people at high risk (High Risk), and all others (Others).



Fifty-four percent (54%) of those who have a family history of the disease but have not been diagnosed with diabetes report that they feel at risk for diabetes. Persons who are obese (40%) or overweight (29%) are more likely than those who are not overweight (16%) to report that they feel at risk for diabetes.

Reasons given for feeling at risk for diabetes include having a family history of diabetes (60%), being overweight (22%), and having poor dietary habits (13%). Less than 5% gave their age as a reason for feeling at risk for diabetes, and less than 1% gave their race or ethnic background as a reason for feeling at risk.

Sixty percent (60%) of those who feel at risk for diabetes cite family history as the reason. This represents 88% of people who feel at risk for diabetes and have a family history of diabetes (Table 20, Appendix C). Being overweight is given as a reason for feeling at risk for diabetes among 22% of those who feel at risk and among 27% of the overweight and 41% of the obese population who feel at risk for diabetes (Table 21, Appendix C). Hispanics who feel at risk for diabetes (33%) report poor dietary habits more frequently than African Americans (18%) or whites (8%) (Table 22, Appendix C).

3.11 Awareness of Risk Factors for Diabetes

Awareness of the risk factors for diabetes was addressed in the survey in two ways. Survey respondents were told:

> "*I'd like to read you a list of some things that other people we have interviewed have said are possible causes of diabetes. For each one, would you please tell me if you feel it is a definite cause of diabetes, a possible cause, or not a cause? What about: Race or ethnic group? Being overweight? Heredity? Eating too much sugar? Eating too much salt? Eating fatty foods? Not getting enough exercise? Old age?"*

Being overweight, heredity, and not getting enough exercise are three causes of diabetes that are well known among the population of adults 45 years of age and older. Ninety-five percent (95%) of the population report that they feel that overweight is a cause of diabetes (Table 23, Appendix C). This represents 55% who report that overweight is a definite cause and 40% who feel it is a possible cause. Ninety-one percent (91%) of the population report that they feel that heredity is a cause of diabetes, including 48% who feel it is a definite cause and 43% a possible cause (Table 24, Appendix C). Eighty-five percent (85%) of the population report that they feel that not getting enough exercise is a cause of diabetes, including 35% who report it is a definite cause and 50% who report that it is a possible cause (Table 25, Appendix C).

Eating too much sugar, fatty foods, and too much salt is identified by a large proportion of the population as at least a possible cause of diabetes. Three-quarters of the population report that they feel that eating too much sugar and eating fatty foods are causes of diabetes. Eating too much sugar is reported by 44% of the population as a possible cause and by 32% as a definite cause (Table 26, Appendix C). Eating fatty foods is reported by 50% of the population as a possible cause and by an additional 23% as a definite cause (Table 27, Appendix C). Eating too much salt is reported by 46% of the population as a cause of diabetes: 33% as a possible cause and 13% as a definite cause (Table 28, Appendix C).

Risk factors such as race and ethnicity and older age are not recognized as causes of diabetes. Thirty-eight percent (38%) of the population report that they feel belonging to a

particular race or ethnic group is definitely not a cause of diabetes (Table 29, Appendix C). This represents 41% among the younger age group and 32% among persons 65 and older. Thirty-eight percent (38%) of the population report that old age is not a cause of diabetes (Table 30, Appendix C).

3.12 Awareness of the Seriousness of Diabetes

When asked how serious they consider diabetes to be, 89% of the population report that diabetes is very serious (Table 31, Appendix C). An even greater percentage of people with pre-diabetes consider diabetes to be a very serious condition (97%) than people with diabetes (89%) or people at high risk for diabetes (87%). A greater percentage of people who feel at risk for diabetes (96%) report that diabetes is serious than those who do not feel at risk for diabetes. When asked how serious it would be if someone the respondent's age had diabetes, 80% said very serious; this did not seem to vary by age or diabetes status (Table 32).

3.13 Awareness of the Complications of Diabetes

The survey addressed the public's awareness of the complications of diabetes in two ways. In one open-ended question, respondents were asked:

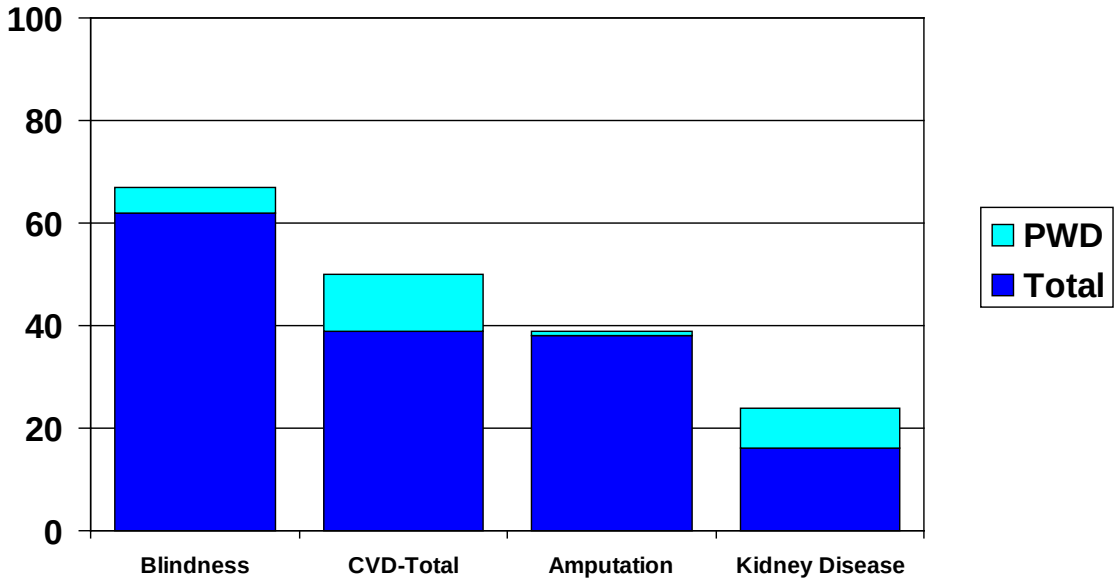
> *"To the best of your knowledge, what are the most serious health problems caused by diabetes?"*

Interviewers recorded as many responses as were given. In a later part of the interview, the following question was asked:

> *"I'd like to read you a list of illnesses or complications. For each one, would you please tell me if you think it can be caused by diabetes or not?"*

As shown in Figure 6, blindness was the most frequent response to the open-ended question about serious health problems caused by diabetes (64%). The percentage of persons who identified blindness as a serious health problem caused by diabetes increased with increased education from 52% of those with no high school diploma to 73% of those with a college degree. People with a family history of diabetes (72%) are more likely to identify blindness as a serious health problem caused by diabetes than those with no family history (62%). Those who feel at risk for diabetes (76%) are more likely to identify blindness as a serious health problem caused by diabetes than those who do not feel at risk for diabetes (60%) (Table 33, Appendix C).

Figure 6. Percentage of the adult population or percentage of people with diabetes who report that blindness, cardiovascular disease, amputation, and kidney disease are the most serious health problems caused by diabetes.



Thirty-nine percent (39%) of the population identified cardiovascular disease as one of the most serious health problems caused by diabetes. This included those who reported stroke, heart attack, heart condition, and hypertension as well as cardiovascular disease as serious health problems caused by diabetes. People with diabetes (50%) and pre-diabetes (49%) were more likely to identify cardiovascular disease as a health problem caused by diabetes than people at high risk (36%) or others (37%) (Table 34, Appendix C).

Amputation was the third most frequent response, with 39% of the surveyed population identifying amputation as one of the most serious health problems caused by diabetes. The percentage of persons who identified amputation as a problem caused by diabetes increased with increased education, from 24% of those with no high school diploma to 48% of those with a college degree (Table 35, Appendix C).

Kidney disease was identified as a serious health problem caused by diabetes by 16% of the total population surveyed and 24% of people with diabetes. This represents 20% of women and 12% of men (Table 36, Appendix C).

When asked directly if the illness or complication can be caused by diabetes, 96% of the population and 99% of people with diabetes reported that blindness could be caused by diabetes (Table 37, Appendix C). Eighty-two percent (82%) of the population and 92% of people with diabetes reported that kidney disease could be caused by diabetes (Table 38, Appendix C). Seventy-eight percent (78%) of the population reported that stroke could be caused by diabetes, including 84% of people with diabetes (Table 39, Appendix C). Seventy-six percent (76%) of the population reported that heart disease could be caused by diabetes, including 82% of people with diabetes (Table 40, Appendix C). Sixty-nine

percent (69%) of the population, including 76% of people with diabetes, reported that nerve damage could be caused by diabetes (Table 41, Appendix C), and 53% of the population and 67% of people with diabetes believe that gum disease could be caused by diabetes (Table 42, Appendix C).

3.14 Awareness of the Steps a Person with Diabetes Can Take to Lower His or Her Blood Sugar Level

The public's awareness of steps a person with diabetes can take to lower his or her blood sugar was assessed by asking the question:

> *"I'd like to read you a list of possible treatments for diabetes that other people we have interviewed have mentioned. For each one, would you please tell me if you feel that as a treatment it would definitely help lower one's blood sugar level, might help lower one's blood sugar level, or would not help lower one's blood sugar level? Taking medication? Low-salt diet? Low-fat diet? Losing weight? Engaging in regular physical activity?"*

As shown in Appendix C Table 43, 96% of the population report that losing weight would help lower one's blood sugar, including 78% who say that losing weight would definitely help and 18% who say that it might help. There is no difference in the percentage of the population who are overweight or not overweight who feel that losing weight would help lower one's blood sugar level; however, a greater percentage of the obese population (83%) report that losing weight would lower one's blood sugar than the nonobese population (77%).

Ninety-seven percent (97%) of the population report that engaging in regular physical activity would help lower one's blood sugar level, including 76% who say it would definitely help and 20% who say it might help (Table 44, Appendix C).

Ninety-seven percent (97%) of the population report that taking medication would help lower one's blood sugar level, including 73% who say it would definitely help and 24% who say it might help (Table 45, Appendix C).

Ninety-one percent (91%) of the population report that following a low-fat diet would help lower one's blood sugar level, including 50% who say it would definitely help and 41% who say it might help (Table 46, Appendix C).

Seventy-eight percent (78%) of the population report that following a low-salt diet would help lower one's blood sugar level, including 32% who say it would definitely help and 46% who say it might help (Table 47, Appendix C).

3.15 Awareness of the Steps a Person with Diabetes Can Take to Reduce the Chance of Having a Heart Attack

To assess the public's awareness of steps a person with diabetes can take to reduce the chance of having a heart attack, respondents were asked:

> *"To the best of your knowledge, what are the most important things a person with diabetes can do to reduce the chance of having a heart attack or stroke?"*

In response to this question, 72% of the surveyed population reported eating a better or healthier diet is the most important thing a person with diabetes can do to reduce the chance of having a heart attack or stroke. This represents 65% of men and 78% of women (Table 48, Appendix C). In addition, 15% specifically said that the most important thing a person with diabetes could do is diet to lose weight (Table 49, Appendix C). Since this question was asked in an open-ended fashion, it is difficult to know whether those who said eating a better or healthier diet meant losing weight. Fifty percent (50%) of the population (45% of men and 54% of women) said that a person with diabetes can reduce the risk of having a heart attack by increasing physical activity or exercise (Table 50, Appendix C). Twenty-seven percent (27%) of the population reported that checking blood sugar is the most important thing a person with diabetes can do to reduce the risk of having a heart attack or stroke (Table 51, Appendix C).

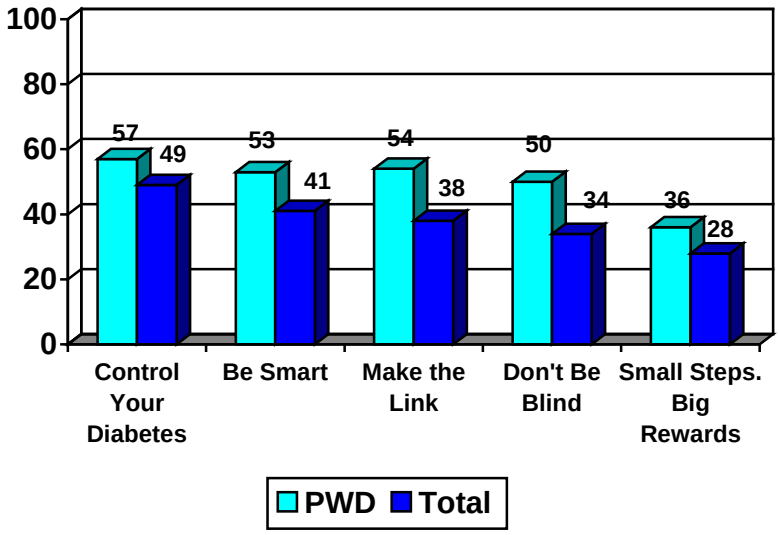
3.16 Awareness of the NDEP Campaign Messages

To assess the public's awareness of the NDEP campaign messages, survey respondents were asked:

> *"In the past year, have you heard or seen any ads or education materials with the following messages about diabetes? Control Your Diabetes. For Life? Be Smart About Your Heart. Control the ABCs of Diabetes? Make the Link! Diabetes, Heart Disease and Stroke? Don't Be Blind to Diabetes? Small Steps. Big Rewards. Prevent type 2 Diabetes?"*

The *Control Your Diabetes. For Life* campaign is the oldest of all the NDEP campaigns, and the target of the campaign's messages and materials is people with diabetes and their families. As shown in Figure 7, 49% of the population and 57% of people with diabetes report that they have heard or seen this message in the past year (Table 52, Appendix C). Sixty percent (60%) of the Hispanics interviewed and 63% of the African Americans interviewed, compared with 46% of whites and 49% of others, reported that they have heard or seen the *Control* message in the past year.

Figure 7. Percentage of people with diabetes 45 years of age and older who have heard the NDEP and ADA campaigns in the past year, compared with the total population.



The target of the *Be Smart About Your Heart. Control the ABCs of Diabetes* campaign is also people with diabetes and their families. Forty-one percent (41%) of the population report that they have heard or seen the message in the past year (Table 53, Appendix C). This represents 53% of people with diabetes. Sixty-one percent (61%) of Hispanics interviewed and 58% of African Americans report hearing the message, compared with 35% of Whites interviewed.

Twenty-eight percent (28%) of the population report that they have heard or seen the most recent NDEP campaign, *Small Steps. Big Rewards. Prevent type 2 Diabetes* (Table 54, Appendix C), which targets people at risk for diabetes. People with pre-diabetes (37%) and people with diabetes (36%) are more likely to report having heard the campaign than people at high risk (26%) and the rest of the population (23%).

Thirty-eight percent (38%) of the population report that they have heard or seen the ADA campaign message *Make the Link! Diabetes, Heart Disease, and Stroke* (Table 55, Appendix C). This represents 54% of people with diabetes, 46% of people with pre-diabetes, and 32% of people at high risk.

Thirty-four percent (34%) of the population report that they have heard or seen the message *Don't Be Blind to Diabetes,* another ADA campaign (Table 56, Appendix C). This represents 50% of people with diabetes, 36% of people with pre-diabetes, and 33% of people at high risk.

3.17 People with Diabetes' Self-Management Practices

Eighty-one percent (81%) of people with diabetes report that they check their own blood sugar; on days when they check their blood sugar, 51% report that they check it two or more times (Tables 57 and 58, Appendix C). People with diabetes in the younger age

group are more likely to check their blood sugar two or more times per day than those in the older age group. Sixty-one percent (61%) of people aged 45-64 with diabetes who check their blood sugar level check it two or more times per day compared to 38% of those 65 and older. Seventy-six percent (76%) of people with diabetes who check their own blood sugar at least once a day keep a record of their blood sugar results (Table 59, Appendix C). Fifty-five percent (55%) of people with diabetes report that they have received diabetes education (Table 60, Appendix C).

Eighty-five percent (85%) of people with diabetes take medication to lower their blood sugar: 13% use insulin alone, 57% take diabetic pills alone, and 15% use insulin and take diabetic pills (Table 61, Appendix C).

3.18 Knowledge of A1C Among People with Diabetes

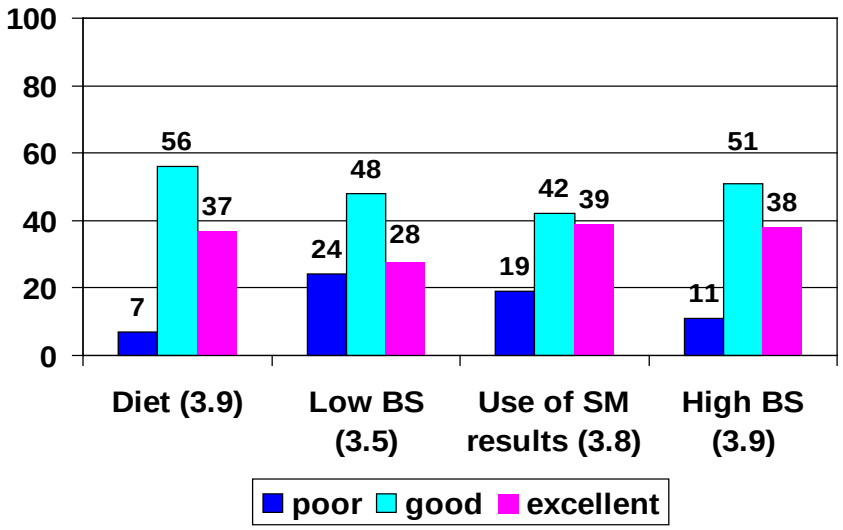
Fifty-seven percent (57%) of people with diabetes report that they have heard the term *"glycosylated hemoglobin or hemoglobin A1C"* (Table 62, Appendix C). Knowledge of the A1C test varies by race/ethnicity, with 62% of whites, 47% of African Americans, and 36% of Hispanics having heard the term. Given the definition of A1C, 61% of people with diabetes report that they have had their A1C level tested one or more times in the past year (Table 63, Appendix C). The A1C levels of those who reported that they have been tested in the past year ranged from 4 to 300. Forty-nine percent (49%) of people with diabetes reported their last A1C level was between 4 and 18, and the remainder either reported a number outside this range or did not know their last level (Table 64, Appendix C). Whites (60%) and African Americans (47%) were more likely to report that their A1C level was between 4 and 18 than Hispanics interviewed (12%).

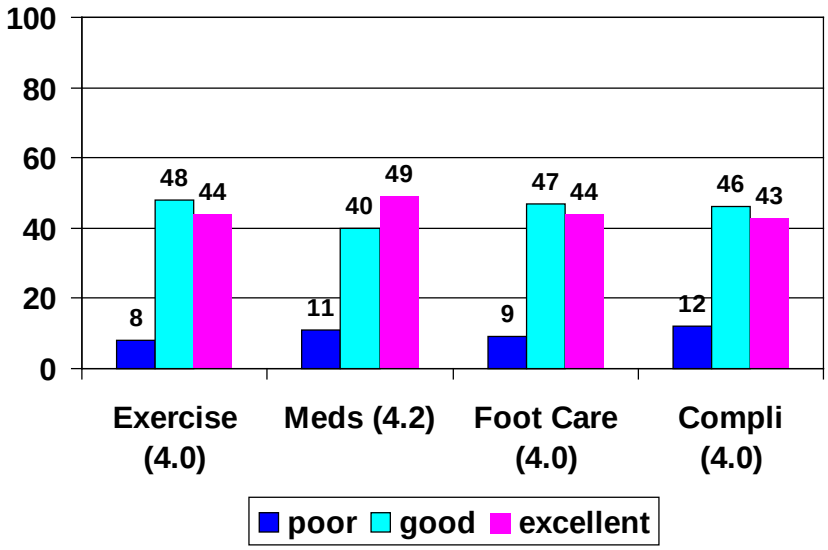
When asked what their doctor or other health professional says their A1C level should be, the majority of people with diabetes do not know (39%) or say that their health care provider did not specify a goal (25%) (Table 65, Appendix C). Only 27% of people with diabetes say that their health care provider specified that their A1C level should be 7 or less. This varied by race and ethnicity, with only 9% of Hispanic respondents with diabetes reporting that their health care provider specified that their A1C level should be 7 or less, compared to 27% of African Americans and 34% of whites.

3.19 People with Diabetes Rate Their Understanding of Diabetes Management

As shown in Figure 8, using a scale from 1 to 5, where 1 is poor, 3 is good, and 5 is excellent, people with diabetes were asked to rate their understanding of the following: the role of diet in blood sugar control, the role of exercise in diabetes care, the medications that they take, how to use the results of blood sugar monitoring, the prevention and treatment of high blood sugar, the prevention and treatment of low blood sugar, the prevention of long-term complications of diabetes, proper foot care, and the benefits of improving blood sugar control (Tables 66-74, Appendix C).

Figure 8. Understanding of people with diabetes of diabetes management.





People with diabetes rate their understanding of the medications they are taking highest, with nearly half rating their understanding of the medications they are taking as excellent. Prevention and treatment of low blood sugar and how to use the results of their blood sugar monitoring were rated the lowest. Nearly one-quarter of people with diabetes rated their understanding of the prevention and treatment of low blood sugar as poor.

3.20 Awareness of Media Stories About Diabetes

One-fifth of the population report that they follow news stories about diabetes very closely, and an additional 38% follow news stories about diabetes somewhat closely (Table 75, Appendix C). Hispanics (32%) and African Americans (26%) are more likely to report that they follow news stories about diabetes very closely than whites (17%). People with diabetes (32%) and people with pre-diabetes (34%) are more likely to follow news stories about diabetes than people at high risk for diabetes (14%) or others (19%). People with a family history (26%) are more likely to follow the news about diabetes than those with no family history (18%).

Thirty-six percent (36%) of the population have heard that 40% of adults have pre-diabetes (Table 76, Appendix C). This represents 49% of people with diabetes, 47% of people with pre-diabetes, 32% of people at high risk, and 32% of all others.

Sixty-four percent (64%) of the population have heard that about one-third of persons with diabetes in the United States do not know they have it (Table 77, Appendix C). This represents 77% of people with diabetes, 73% of people with pre-diabetes, and 62% of people at high risk for diabetes, compared with 59% of people who are not at high risk for diabetes. Seventy-three percent (73%) of people with a family history have heard the message, compared with 61% of people with no family history. Seventy-one percent (71%) of people who feel at risk for diabetes have heard the message, compared with 59% of those who do not feel at risk for diabetes.

Sixty-four percent (64%) of the population report that they have heard that diabetes can be prevented (Table 78, Appendix C). Those in the younger age group are more likely to say that they have heard that diabetes can be prevented than those over 65 (68% compared with 57%).

4. Conclusions

The data collected in this first survey conducted by the NDEP provide baseline measures to assess the public's knowledge, attitudes, and practices regarding diabetes prevention and control and the progress made in reaching the NDEP's objectives to increase awareness of the seriousness of diabetes, its risk factors, and strategies for preventing diabetes and its complications. The following summarize some of the results:

- The majority (82%) of the surveyed population report that they have been tested for diabetes. People with diabetes and pre-diabetes, and people with risk factors for diabetes, specifically those with a family history of diabetes or those who are obese or overweight and those who have other risk factors for cardiovascular disease, high blood pressure, and high blood cholesterol, are more likely to have had a blood test or had a blood test in the past year than others. From this survey it is difficult to determine what the respondents mean when they say that they have had a blood test for diabetes. Future NDEP sponsored qualitative and quantitative research will try to establish whether or not respondents are referring to a fasting blood test for glucose or if they are just referring to a blood draw where the doctor may have ordered a variety of tests and respondents assume one of them may have been for diabetes. In addition, questions concerning why and under what circumstances people report that they have a blood test for diabetes will be addressed in future research. Is it initiated by the patient or by the physician? Are they told the results and how?
- The majority (81%) of people with diabetes check their blood sugar level and of those, 76% report that they keep a record of their blood sugar results. However, when asked to rate their understanding of how to use the results of their blood sugar monitoring, 19% of people with diabetes rated it as poor.
- Only a small percentage (9%) of the surveyed population have been told that they have pre-diabetes. Those who have been told that they have pre-diabetes are more likely than others to feel at risk for diabetes, but only 59% report that they feel at risk for diabetes. Persons with pre-diabetes in this survey are defined as those who have been told by a doctor or other health professional that they have pre-diabetes, borderline diabetes, impaired fasting glucose, or impaired glucose tolerance; over half of them were told that they have borderline diabetes. Future research, either qualitative or quantitative, should address whether persons who have been told that they have pre-diabetes feel more at risk for diabetes than persons who have been told that they have borderline diabetes, to determine if there is a difference in perception of risk associated with the different terms.
- In addition to the 9% of the population who have been told that they have pre-diabetes, another 46% are at high risk as defined by risk factors. This includes those who are overweight or have been told that they had gestational diabetes or have been told that they are at high risk for diabetes by a doctor or other health professional. Only 25% of those who are at high risk as defined by risk factors

feel at risk for diabetes. The NDEP will conduct focus groups with persons at risk for diabetes to better understand their perceptions of their personal risk in order to understand how they can be motivated to make lifestyle changes to reduce their risk. Unless persons who are at risk for diabetes feel that they are at risk it is unlikely that they will take steps to reduce this risk.

- Among those surveyed who feel at risk for diabetes, the most frequent reason given is having a family history of diabetes, given 60% of the time. People with a family history of diabetes may be a target audience that is predisposed to take action to reduce their risk for diabetes. Fifty-seven percent (57%) of people with a family history of diabetes feel at risk for diabetes. Other reasons given include being overweight and poor dietary habits. Although the risk for diabetes increases with age, a greater percentage of people in the younger group (45-64) feel at risk compared to the older age group ($\geq$65) (28% vs. 15%), and age was very rarely given as a reason for feeling at risk (4%). The prevalence of diabetes is greater among African Americans and Hispanics, but there was no difference in the percentage of the population who feel at risk for diabetes according to race, and race was never given as a reason for feeling at risk (<1%).
- People with diabetes or pre-diabetes and people at high risk are being told to lose or control their weight and increase their physical activity or exercise by health professionals at a greater rate than others. Most report that they are following that advice.
- Only 57% of people with diabetes have heard the term "A1C," and only 30% of people with diabetes can report their last A1C level.
- When asked what are the most serious health problems caused by diabetes, blindness was the most frequent response (64%), followed by cardiovascular disease and amputation. Thirty-nine percent (39%) of the public and half of the people with diabetes are aware of the link between diabetes and cardiovascular disease and identify cardiovascular disease as a serious health problem caused by diabetes. People with diabetes are more likely to have other risk factors for cardiovascular disease, high blood pressure, and high cholesterol, and the majority are taking medications to lower their blood pressure or cholesterol level.
- The public—and especially people with diabetes—have heard the NDEP's campaigns: 49% have heard *Control Your Diabetes. For Life*; 41% have heard *Be Smart About Your Heart. Control the ABCs of Diabetes*; and 28% have heard the *Small Steps. Big Rewards. Prevent type 2 Diabetes* campaign.

The findings of this survey indicate that the campaigns and messages supported by the NDEP are having an effect on the public's knowledge, attitudes, and practices related to diabetes. However, much more needs to be done to reach the ultimate goal of the program to improve the treatment and outcomes of people with diabetes, to promote early diagnosis, and to prevent the onset of diabetes. The survey data will assist the NDEP in understanding its target audience, and future surveys will evaluate program progress by documenting changes over time in the public's knowledge, attitudes, and practices related to diabetes prevention and management.

Appendix A
Weighting Methodology

Sample weights were computed by the sampling statistician at Marketing Systems Group. Marketing Systems Group provided the sample using GENESYS, an RDD sample design generation system. The weighting procedure incorporates three stages. The first stage of weighting involved the probability of selection within the household, defined as the number of household members 45 and older. The second stage incorporated a Race/Ethnicity correction across the three sampling strata. Basically, this weight was incorporated to correct for oversampling of each Race/Ethnicity category (African American, Hispanic, and Other) across the individual strata. The proportion of each group was determined using the GENESYS Race/Ethnicity estimates corresponding to the actual numbers comprising each sample stratum. The sample distribution for each stratum was computed using the weighted totals from the first stage.

In the third stage, the weighted results from stages 1 and 2 were recast into a geodemographic matrix comprised of Gender (Male/Female), Age (45-54, 55-64, 65+, DK), Census Division (4), Race/Ethnicity (AA, Hispanic, Other), and Metropolitan Status (Metro, non-Metro)—a total of 192 cells. Cells with fewer than five interviews were collapsed to obtain a minimum of five interviews; the order of combination was Metropolitan Status, followed by Age—all within Gender, Race/Ethnicity, and Region. Population estimates from the 2005 Current Population Survey (CPS) Demographic Supplement were generated for each of the original 192 cells. The final weight was the Population Estimate corresponding to an individual cell or summation of collapsed cells divided by the corresponding weighted sample total through stages 1 and 2.

Appendix B Questionnaire

INTRODUCTION

Si1. Hello, my name is _____, and I'm calling on behalf of the National Institutes of Health. We're gathering information about health issues.

IF LETTER SENT: You may have received a letter about this study from the US Department of Health and Human Services.

1. **English, Continue**
2. **Spanish, Continue**
3. **Spanish, Spanish Interviewer, Call back**
4. **Business, Government Office, Other organization**
5. **Institution**
6. **Group Home**
7. **Hard of Hearing**
8. **Physically or mentally/incompetent**
9. **Cell phone/Teen phone**
10. **Dedicated fax/Computer Line, No Home Use**

Si2. Could you tell me how many members of your household, including yourself, are 45 years of age or older?

1……1 GO TO S3
2……2 GO TO S3
3……3 GO TO S3
4…… …….4 GO TO S3
NONE……..5 END SURVEY

S2a. Thank you, but we're only gathering information from adults who are 45 years or older. Thank you and good-bye.

IF BUSINESS, OR R REFUSES, VERIFY PHONE NUMBER. END CALL IF WRONG NUMBER, GO BACK TO INTRODUCTION AND REDIAL PHONE NUMBER.

Si3. IF S2=1: Is it you or someone else?

IF S2=2, 3, OR 4: Who is the person 45 years old or older with the most recent birthday?

SELF.....1 (s4)
SOMEONE ELSE 2 (s4)

IF R REFUSES, VERIFY PHONE NUMBER. END CALL IF WRONG NUMBER, GO BACK TO INTRODUCTION AND REDIAL PHONE NUMBER.

Si4. May I have (your/his/her) first name?

_____

Si5. I want to verify that the phone number I dialed is XXX-XXX-XXXX. Is that correct?

YES 1 (s6)
NO 2 (s5a)

Si5a. For this study I need to speak to someone at the phone number I mentioned. Thank you for your time.

ENTER 1 TO CONTINUE

Si6. May I speak to (NAME FROM S4)?

YES, AVAILABLE 1 (S10)
NO, NOT AVAILABLE.....2 (S6a)

S6a. IF NOT AVAILABLE: When would be a good time to reach him/her?

GO TO APPOINTMENT SCREEN

IF R REFUSES, VERIFY PHONE NUMBER. END CALL.
IF WRONG NUMBER, GO BACK TO INTRODUCTION AND REDIAL PHONE NUMBER.

S7. This is (INTERVIEWER) calling on behalf of the National Institutes of Health. May I please speak to (NAME FROM S4)?

YES, AVAILABLE 1 (S8)
NO, NOT AVAILABLE..... 2 (S7a)

S7a. IF NOT AVAILABLE: When would be a good time to reach him/her?

GO TO APPOINTMENT SCREEN

S8. (Good morning/afternoon/evening), this is (INTERVIEWER) calling on behalf of the National Institutes of Health, which is gathering information about health issues. We spoke to someone in your household earlier and learned you may be eligible for this study. First, I would like to verify that you are age 45 years or older.

YES 1 (S9/10)
NO 2 (S7a)

S8a. For this study I need to speak to someone who is at least 45 years old. Thank you for your time.

ENTER 1 TO END STUDY

Si10. (Hello, my name is XXX, and I'm calling on behalf of the National Institutes of Health.)

We're gathering information on health issues. Although your participation in this study is voluntary, it is very important. It will take only 15 minutes, and I won't ask your full name, address or other personal information that can identify you. You don't have to answer any question you don't want to, and you can end the call at any time. All information you give me will be kept confidential to the extent allowed under law.

ENTER 1 TO CONTINUE

AFTER MAKING APPT:

AP1: If you have any questions, you can always call our toll-free number, 1-800-598-2888.

Thank you very much for your time.

Section A: Survey of People with Diabetes and their Families, People with Pre-diabetes, and People at High Risk of Developing Diabetes

Section A: Identifies People with Diabetes (PWD) and their families, People with Pre-Diabetes (PPD), and People at High Risk for Developing Diabetes (PHR).

A1Mo. First, in what month and year were you born?

1. JANUARY
2. FEBRUARY
3. MARCH
4. APRIL
5. MAY
6. JUNE
7. JULY
8. AUGUST
9. SEPTEMBER
10. OCTOBER
11. NOVEMBER
12. DECEMBER

DON'T KNOW 8
REFUSED ..... R
NOT ASCERTAINED ..... 9 (ENTER NOTE)

IF BIRTH YEAR IS NOT ASCERTAINED, ASK ONCE AGAIN IF THE R IS AGE 45 OR OLDER. IF NO OR NOT KNOWN, END SURVEY.

A1Yr. [ENTER FOUR-DIGIT YEAR, I.E. YYYY]

A2. ASK ONLY IF NECESSARY:

MALE 1
FEMALE 2

Now I'm going to ask some questions about diabetes.

A3. Have you ever had a blood test to see if you have diabetes or high blood sugar?

YES	1	
NO	2	GO TO A5
REFUSED	R	

A4. About how long has it been since you had this test? Would you say:

Less than 1 year ago	1
At least 1 year but less than 2 years ago	2
At least 2 years but less than 3 years ago	3
At least 3 years but less than5 years ago	4
At least 5 years or more	5

A5. {(IF A2=2) Other than during pregnancy}, has a doctor or other health professional ever told you that you have diabetes or sugar diabetes?

YES	1	
NO	2	GO TO A7
REFUSED	R	GO TO A7
DON'T KNOW	8	GO TO A7

A6. How old were you when a doctor or other health professional **first** told you that you had diabetes or sugar diabetes? Please give me your best estimate.

☐☐
ENTER AGE IN YEARS

A7. Does anyone {(IF A5=YES)} else in your immediate family have diabetes?

YES	1	
NO	2	GO TO A9
REFUSED	R	GO TO A9
DON'T KNOW	8	GO TO A9

A8. May I ask which member of your immediate family has diabetes? (DO NOT READ, ENTER ALL THAT APPLY)

SPOUSE (HUSBAND/WIFE) 01
MOTHER 02
FATHER 03
SISTER 04
BROTHER 05
DAUGHTER 06
SON 07
GRANDPARENT 08
OTHER 09

A9. Have you ever heard of the term pre-diabetes?

YES 1
NO 2
REFUSED ..... R
DON'T KNOW 8

ASK A10 – A12 ONLY IF A5 IS NO

A10intro.

{(IF A9=YES) As you may already know} Pre-diabetes is a term that means a person is at high risk for developing diabetes or a person has blood sugar levels that are higher than normal but do not yet reach the level of diabetes.

Have you ever been told by a doctor or other health professional that you have:

A10a. Pre-diabetes?
YES ..... 1 **GO TO A12**
NO 2
REFUSED ..... R
DON'T KNOW 8

A10b. Impaired fasting glucose?
YES ..... 1 **GO TO A12**
NO 2
REFUSED ..... R
DON'T KNOW 8

A10c. Impaired glucose tolerance?

YES ..... 1 **GO TO A12**
NO 2
REFUSED ..... R
DON'T KNOW 8

A10d. Borderline diabetes?

YES ..... 1 **GO TO A12**
NO 2
REFUSED ..... R
DON'T KNOW 8

A10e. High blood sugar?

YES ..... 1 **GO TO A12**
NO 2
REFUSED ..... R
DON'T KNOW 8

A10f. Have you ever been told by a doctor or other health professional that you are at high risk for diabetes?

YES ..... 1 **GO TO A12**
NO 2
REFUSED ..... R
DON'T KNOW 8

A11. Do you feel you could be at risk for diabetes?

YES 1
NO ..... 2 GO TO A13
REFUSED ..... R GO TO A 13
DON'T KNOW ..... 8 GO TO A13

A12. Why do you think you are at risk for diabetes?

(DO NOT READ; ENTER ALL THAT APPLY)

RISK FACTORS

FAMILY HISTORY 1
OVERWEIGHT 2
AGE 3
POOR DIETARY HABITS 4
RACE 5
HAD A BABY THAT WEIGHED OVER 9 LBS. AT BIRTH 6

MEDICAL CONDITIONS
HIGH BLOOD PRESSURE 1
HIGH BLOOD SUGAR 2
HIGH CHOLESTEROL 3
HYPOGLYCEMIC 4
EXPERIENCED SYMPTOMS
EXTREME HUNGER 1
TINGLING/NUMBNESS
IN HANDS OR FEET 2
BLURRED VISION 3
INCREASED FATIGUE 5
OTHER FACTORS
ANYONE COULD BE AT RISK 6
DOCTOR WARNING 7
OTHER 4
DON'T KNOW 8

A13. How much do you weigh without shoes?

_____LBS
ENTER WEIGHT
(*RANGE75-400 – SOFT EDIT)*

A14ft. How tall are you without shoes?

A14in.

_____FEET_____INCHES
ENTER HEIGHT
(RANGE 4'6" – 7'0" – soft edit)

FOR WOMEN ONLY (A2=2)

A15. Have you ever been pregnant?

YES 1
NO ..... 2 GO TO SECTION B

A16. Were you ever told by a health care provider that you had gestational diabetes or high blood sugar during pregnancy?

YES 1
NO 2
DON'T KNOW 8

Section B: Health Care Practices Questions

Sección B: Preguntas sobre las Prácticas de Cuidado de la Salud

B1. Have you ever heard of the term glycosylated hemoglobin <gly-KOH-sil-lated HEE-muh-globe-in> or hemoglobin A1C?

YES 1
NO 2

B2. {(IF B1=YES)} As you may know glycosylated hemoglobin <gly-KOH-sil-lated HEE-muh-globe-in> or the "A one C" test measures the average level of blood sugar over the past 3 months, and usually ranges between 5 and 14. During the past 12 months, how many times has a doctor, nurse, or other health care professional checked you for glycosylated hemoglobin or "A one C"?

_____
TIMES *(RANGE 1-50)*

NONE 0
DON'T KNOW 8

IF DIABETIC (A5=1), CONTINUE. IF NOT AND B2=0, DK, OR RF, GO TO B5.

B3. What was your last "A one C" level?

_____
ENTER VALUE *(RANGE = 1-400)*

REFUSED ..... R
DON'T KNOW 8

B4. What does your doctor or other health professional say your "A one C" level should be?

7 or less 1
8 or less 2
9 or less 3
10 or less 4
More than 10 5
NO GOAL SPECIFIED 96

B5. Has a doctor or other health professional ever told you that you have high blood pressure or hypertension?

YES 1
NO 2
DON'T KNOW 8

B6sys.

B6dia.

Blood pressure is usually given as one number over another. What was your most recent blood pressure in numbers?

ENTER VALUES:
___/___/___/ SYSTOLIC (*RANGE 50-500)*
___/___/___/ DIASTOLIC (*RANGE 50-500)*

REFUSED ..... R
DON'T KNOW 8

B7. What does your doctor or other health professional say your blood pressure should be?

ENTER VALUES. IF RANGE GIVEN, RECORD UPPER VALUE OF RANGE:
___/___/___/ SYSTOLIC (*RANGE 50-500)*
___/___/___/ DIASTOLIC (*RANGE 50-500)*

REFUSED ..... R
DON'T KNOW 8
NO GOAL SPECIFIED 996

IF B5 IS YES

B8. Are you currently taking medications for high blood pressure?

YES 1
NO 2
DON'T KNOW 8

B9. Has a doctor or other health professional ever told you that you have high cholesterol <koh-LESS-ter-all>?

YES 1
NO 2
DON'T KNOW 8

B10. What was your most recent cholesterol level?

ENTER VALUES. IF RANGE GIVEN, RECORD UPPER VALUE OF RANGE:

___/___/___/ *(ALLOWABLE RANGE: 30 - 600)*

REFUSED ..... R (GO TO B12)
DON'T KNOW ..... 8 (GO TO B12)

B11. Is that your total cholesterol level?

YES 1
NO 2
DON'T KNOW 8

B12. One part of total serum cholesterol in your blood is bad cholesterol, called LDL, which builds up and clogs your arteries. What was your most recent LDL cholesterol number?

_____

ENTER VALUE *(RANGE: 30 - 600)*

REFUSED ..... R
DON'T KNOW 8

B13. What does your doctor or other health professional say your LDL cholesterol should be?

_____

ENTER VALUE. IF RANGE GIVEN, RECORD UPPER VALUE OF RANGE
(RANGE: 30 - 600)

REFUSED ..... R
DON'T KNOW 8
NO GOAL SPECIFIED 996

IF B9 IS YES:

B14. Are you currently taking medications for high cholesterol?

YES 1
NO 2
DON'T KNOW 8

B15. To lower your risk for any type of disease, has a doctor or other health professional ever told you to:

Control your weight or lose weight?

YES 1
NO ..... 2 (GO TO B16)
DON'T KNOW 8
REFUSED ..... R

B15i. Are you now following this advice? (to control or lose weight)

YES 1
NO 2
DON'T KNOW 8

B16. (Has a doctor or other health professional ever told you to) Increase your physical activity or exercise?

YES 1
NO ..... 2 (GO TO B17)
DON'T KNOW 8
REFUSED ..... R

B16i. Are you now following this advice? (to increase your physical activity or exercise)

YES 1
NO 2
DON'T KNOW 8

B17. (Has a doctor or other health professional ever told you to) Reduce the amount of fat or calories in your diet?

YES 1
NO ..... 2 (GO TO B18)
DON'T KNOW 8
REFUSED ..... R

B17i. Are you now following this advice? (to reduce the amount of fat or calories in your diet)

YES 1
NO 2
DON'T KNOW 8

B18. (Has a doctor or other health professional ever told you to) Take prescribed medication to lower your risk for any type of disease?

YES 1
NO ..... 2 (GO TO B19)
DON'T KNOW 8
REFUSED ..... R

B18i. Are you now following this advice (to take prescribed medication)?

YES 1
NO 2
DON'T KNOW 8

B19. (Has a doctor or other health professional ever told you to) Take daily aspirin?

YES 1
NO ..... 2 (GO TO B20)
DON'T KNOW 8
REFUSED ..... R

B19i. Are you now following this advice (to take daily aspirin)?

YES 1
NO 2
DON'T KNOW 8

B20. (Has a doctor or other health professional ever told you to) Reduce the amount of salt in your diet?

YES 1
NO ..... 2 (GO TO B21)
DON'T KNOW 8
REFUSED ..... R

B20i. Are you now following this advice (to reduce the amount of salt in your diet)?

YES 1
NO 2
DON'T KNOW 8

B21. (Has a doctor or other health professional ever told you to) do anything else to lower your risk for any type of disease?

YES 1
B21sp _____ *(250 characters)*
ENTER RESPONSE
NO ..... 2 (GO TO C1)
DON'T KNOW 8

B21i. Are you now following this advice? (to FILL FROM B21sp)?

YES 1
NO 2
DON'T KNOW 8

Section C: People with Diabetes
Self-Management Questions

ASK SECTION C ONLY IF A3 IS YES; OTHERWISE GO TO SECTION D

Now I'd like to ask you some questions about how you manage your diabetes.

C1. Do you check your own blood sugar?

YES 1
NO ..... 2 (GO TO C4)

C2. On days that you test, how many times do you test your blood sugar?

_____
TIMES/ DAY *(RANGE 1-20)*
DON'T KNOW 8

C3. Do you keep a record of your blood sugar test results?

YES 1
NO 2
ONLY UNUSUAL VALUES 3

C4. Do you now use insulin <IN-su-lin>?

YES 1
NO 2

C5. Are you now taking diabetic pills to lower blood sugar? These are sometimes called oral agents or oral hypoglycemic <HIPE-o-gli-SEE-mik> agents.

YES 1
NO 2
REFUSED ..... R
DON'T KNOW 8

C6. Have you ever received diabetes education, for example, attended a series of classes or series of meetings with a diabetes educator?

YES 1
NO 2
NOT SURE 8

C7. Using a scale of 1-5 with **1=poor and 3=good and 5=excellent**, Please tell me how you would rate your understanding of the following: (INSERT):

C7a. The role of diet in blood sugar control?

1.....1 (POOR)
2.....2
3.....3 (GOOD)
4.....4
5 5 (EXCELLENT)

C7b. The role of exercise in diabetes care?

1.....1 (POOR)
2.....2
3.....3 (GOOD)
4.....4
5.....5 (EXCELLENT)

C7c. Medications you are taking?

1.....1 (POOR)
2.....2
3.....3 (GOOD)
4.....4
5.....5 (EXCELLENT)

C7d. How to use the result of blood sugar monitoring?

1.....1 (POOR)
2.....2
3.....3 (GOOD)
4.....4
5.....5 (EXCELLENT)

C7e. The prevention and treatment of <u>high</u> blood sugar?

1.....1 (POOR)
2.....2
3.....3 (GOOD)
4.....4
5.....5 (EXCELLENT)

C7f. The prevention and treatment of <u>low</u> blood sugar?

1.....1 (POOR)
2.....2
3.....3 (GOOD)
4.....4
5.....5 (EXCELLENT)

C7g. The prevention of long-term complications of diabetes?

1.....1 (POOR)
2.....2
3.....3 (GOOD)
4.....4
5.....5 (EXCELLENT)

C7h. Proper foot care?

1.....1 (POOR)
2.....2
3.....3 (GOOD)
4.....4
5.....5 (EXCELLENT)

C7i. The benefits of improving blood sugar control?

1.....1 (POOR)
2.....2
3.....3 (GOOD)
4.....4
5.....5 (EXCELLENT)

Section D: Public Knowledge of NDEP Messages

Sección D: Conocimiento Público de los Mensajes de NDEP

D1. In the past year, have you heard or seen any ads or education materials with the following messages about diabetes?

D1a. Control Your Diabetes for Life

YES 1
NO 2
DON'T KNOW 8

D1b. Be Smart About Your Heart. Control the ABCs of Diabetes

YES 1
NO 2
DON'T KNOW 8

D1c. Make the Link! Diabetes, Heart Disease and Stroke

YES 1
NO 2
DON'T KNOW 8

D1d. Don't Be Blind to Diabetes

YES 1
NO 2
DON'T KNOW 8

D1e. Small Steps. Big Rewards. Prevent type 2 Diabetes

YES 1
NO 2
DON'T KNOW 8

D2. To the best of your knowledge, what are the most serious health problems caused by diabetes? (DO NOT READ. ENTER ALL THAT APPLY.)

BLINDNESS 1
AMPUTATION 2
KIDNEY DISEASE 3
CARDIOVASCULAR DISEASE 4
HEART CONDITION 5
HEART ATTACK 6
FOOT ULCERS 7
DEATH 8
STROKE 9
HIGH BLOOD PRESSURE/HYPERTENSION .. 10

D2sp OTHER, SPECIFY..... 11

_____

(100 characters)

D3. To the best of your knowledge, what are the most important things a person with diabetes can do to reduce the chance of having a heart attack or stroke?

(DO NOT READ, ENTER ALL THAT APPLY)

DIET: Healthier/better diet..... 1
EXERCISE: Regular exercise 2
BLOOD SUGAR: Control/check blood sugar..... 3
WEIGHT: Lose weight..... 4
MEDICATIONS: Take prescription medications ... 5
CHOLESTEROL: Lower cholesterol..... 6
SMOKING: Quit smoking 7
LIFESTYLE: Lead a healthy lifestyle 8
BLOOD PRESSURE: Lower blood pressure 9
CHECK-UPS: Regular check-ups..... 10
STRESS: Reduce stress..... 11
ASPIRIN: Take aspirin 12
OTHER, SPECIFY 13

D3sp _____
(250 characters)

DON'T KNOW..... 98

Section G. Public Attitudes and Education Needs

Sección G. Actitudes del Público y Necesidades Educativas

G1. How serious do you consider diabetes to be? Would you say:

Very serious 1
Somewhat serious 2
Not very serious, or 3
Not serious at all? 4

G2. Thinking about people your own age, how serious do you think it would be if someone your own age were to have diabetes? Would you say:

Very serious 1
Somewhat serious 2
Not very serious, or 3
Not serious at all? 4

G3. How closely do you follow news stories about diabetes? Would you say:

Very closely 1
Somewhat closely 2
Not too closely, or 3
Not at all closely? 4

G4intro.

I am now going to read you a list of health-related statements about diabetes that have appeared in the news.

For each please tell me if you were aware of or had heard the information included in the statement.

G4a. 40 percent of adults currently have a condition called pre-diabetes. Were you aware of this?

WAS AWARE 1
WAS NOT AWARE ..... 2 (GO TO G4b)

G4ai. To the best of your recollection where did you hear this information?

CHECK ALL THAT APPLY

NEWSPAPER……..1
TV NEWS…….2

TV COMMERCIAL……..3
TV, Other 4
RADIO……..54
POSTER…… 6
BILLBOARD……7
BROCHURE……8
OTHER, SPECIFY……..9

G4aisp _____ *(100 characters)*

G4b. About one third of persons with diabetes in the United States do not know they have it. (Were you aware of this?)

WAS AWARE..... 1
WAS NOT AWARE ..... 2 (GO TO G4c)

G4bi To the best of your recollection where did you hear this information?

CHECK ALL THAT APPLY

NEWSPAPER……..1
TV NEWS……2
TV COMMERCIAL……..3
TV, Other 4
RADIO……5
POSTER…… 6
BILLBOARD……7
BROCHURE……8
OTHER, SPECIFY……..9

G4bisp _____ *(100 characters)*

G4c. Diabetes can be prevented. (Were you aware of this?)

WAS AWARE..... 1
WAS NOT AWARE ..... 2 (GO TO G5intro)

G4ci To the best of your recollection where did you hear this information?

CHECK ALL THAT APPLY

NEWSPAPER……..1
TV NEWS……2
TV COMMERCIAL……..3
TV, Other 4
RADIO……..5
POSTER…… 6

BILLBOARD……7
BROCHURE……8
OTHER, SPECIFY……..9

G4cisp _____ *(100 characters)*

G5 intro

I'd like to read you a list of some things that other people we have interviewed have said are possible causes of diabetes.

For each one, would you please tell me, from what you know or have heard, if you feel it is a definite cause of diabetes, a possible cause, or not a cause?

What about:

G5a. Race or ethnic group?

READ AS NECESSARY: Is this a definite cause, a possible cause, or not a cause of diabetes?

Definite cause, ... 1
Possible cause,..... 2
Not a cause of diabetes 3

G5b. Being overweight?

READ AS NECESSARY: Is this a definite cause, a possible cause, or not a cause of diabetes?

Definite cause, ... 1
Possible cause,..... 2
Not a cause of diabetes 3

G5c. Heredity, that is, people are born with it or the tendency for it.

READ AS NECESSARY: Is this a definite cause, a possible cause, or not a cause of diabetes?

Definite cause, ... 1
Possible cause,..... 2
Not a cause of diabetes 3

G5d. Eating too much sugar.

READ AS NECESSARY: Is this a definite cause, a possible cause, or not a cause of diabetes?

Definite cause, ... 1
Possible cause, ... 2
Not a cause of diabetes 3

G5e. Eating too much salt.

READ AS NECESSARY: Is this a definite cause, a possible cause, or not a cause of diabetes?

Definite cause, ... 1
Possible cause, ... 2
Not a cause of diabetes 3

G5f. Eating fatty foods.

READ AS NECESSARY: Is this a definite cause, a possible cause, or not a cause of diabetes?

Definite cause, ... 1
Possible cause, ... 2
Not a cause of diabetes 3

G5g. Not getting enough exercise.

READ AS NECESSARY: Is this a definite cause, a possible cause, or not a cause of diabetes?

Definite cause, ... 1
Possible cause, ... 2
Not a cause of diabetes 3

G5h. Old age.

READ AS NECESSARY: Is this a definite cause, a possible cause, or not a cause of diabetes?

Definite cause, ... 1
Possible cause, ... 2
Not a cause of diabetes 3

G6 intro.

I'd like to read you a list of illnesses or complications.

For each one, would you please tell me if you think it can be caused by diabetes or not?

Do you think (READ ITEM BELOW) can be caused by diabetes?

G6a. Heart disease

YES 1
NO 2
DON'T KNOW 3

G6b. Stroke

YES 1
NO 2
DON'T KNOW 3

G6c. Kidney disease

YES 1
NO 2
DON'T KNOW 3

G6d. Blindness

YES 1
NO 2
DON'T KNOW 3

G6e. Gum disease or loss of teeth

YES 1
NO 2
DON'T KNOW 3

G6f. Nerve damage

YES 1
NO 2
DON'T KNOW 3

G7 intro.

I'd like to read you a list of possible treatments for diabetes that other people we have interviewed have mentioned.

For each one would you please tell me if you feel it is a treatment that would definitely help lower one's blood sugar level, might help lower one's blood sugar level, or would not help lower one's blood sugar level?

G7a. Taking medication.

READ AS NECESSARY: Do you think this would definitely help, might help, or would not help lower blood sugar?

Would definitely help, ...1
Might help, or 2
Would not help lower blood sugar 3

G7b. Low-salt diet.

READ AS NECESSARY: Do you think this would definitely help, might help, or would not help lower blood sugar?

Would definitely help, ...1
Might help, or 2
Would not help lower blood sugar 3

G7c. Low-fat diet.

READ AS NECESSARY: Do you think this would definitely help, might help, or would not help lower blood sugar?

Would definitely help, ...1
Might help, or 2
Would not help lower blood sugar 3

G7d. Losing weight.

READ AS NECESSARY: Do you think this would definitely help, might help, or would not help lower blood sugar?

Would definitely help, ...1
Might help, or 2
Would not help lower blood sugar 3

G7e. Engaging in regular physical activity

READ AS NECESSARY: Do you think this would definitely help, might help, or would not help lower blood sugar?

Would definitely help, ...1
Might help, or 2
Would not help 3

Demographic Questions

H1intro

Thank you. I have just a few final questions

H1. Are you Hispanic or Latino?

YES 1
NO 2
DON'T KNOW 9
REFUSED ..... R

H2. What is your race? Please select one or more of the following:

American Indian or Alaska Native 1
Asian 2
Black or African American 3
Native Hawaiian or Other Pacific Islander 4
White 5
OTHER 6
DON'T KNOW/NOT SURE 8
REFUSED ..... R

H3. What is the HIGHEST level of school you've finished or the highest degree you have received?

NEVER ATTENDED SCHOOL 00
1st GRADE 01
2nd GRADE 02
3rd GRADE 03
4th GRADE 04
5th GRADE 05
6th GRADE 06
7th GRADE 07
8th GRADE 08
9th GRADE 09
10th GRADE 10
11th GRADE 11
12TH GRADE, NO DIPLOMA 12
HIGH SCHOOL DIPLOMA 13
GED 14
VOCATIONAL TRAINING 15
SOME COLLEGE, NO DIPLOMA 16
ASSOCIATE'S DEGREE 17

BACHELOR'S DEGREE 18
MASTER'S DEGREE 19
PROFESSIONAL DEGREE 20
DOCTORATE 21
REFUSED 97
NOT ASCERTAINED 98
DON'T KNOW 99

These are all the questions I have. Thank you very much for taking the time to take part in this study.

COMPLETE……1