Public Perception of Health Care Provider Practice Regarding Family History of Diabetes

Deb Duquette, MS, CGC and Janice Bach, MS, CGC
Michigan Department of Community Health
Division of Genomics, Perinatal Health and Chronic Diseases Epidemiology

Background

- An estimated 648,100 adults or 8.5% of Michigan's total adult population have been diagnosed with type 1 or type 2 diabetes.[1] Michigan ranks 15th highest for type 2 diabetes prevalence among all states in the nation.[2]
- **Family history** of diabetes is currently recognized as an important **risk factor** and **screening criterion** for type 2 diabetes.[3]
- The risk of type 2 diabetes in individuals with a **family history** of diabetes is **two to six times higher** than the risk to individuals without a family history.[4-6]
- Characteristics of a **high risk** family history for diabetes include[7]:
  - ✓ **Early age** of onset (before 40 years of age for type 2)
  - ✓ **Multiple family members** affected
  - ✓ Presence of indicators of **insulin resistance**
  - ✓ Affected **first degree** relative (parent, child, sibling)

Objective

To determine the public perception of provider practice regarding collection of family history of diabetes and discussion of risks and recommendations.

Methods

- The Michigan Diabetes, Osteoporosis and Arthritis (DAO) survey is a random digit dialed telephone survey of **2656 Michigan adults** with over-sampling of persons who are over 45 years old, African American or Latino/Hispanic.
- The DAO is a survey of knowledge, opinions, health status and behaviors.
- In 2005, six questions regarding family history of diabetes were included in the DAO.

Results

Table 1 shows results for the question, "To the best of your knowledge, were any of your relatives ever told they had diabetes (OR "sugar") by a doctor, nurse or other health care provider?" **58.5%** of Michigan adults reported a **family member with diabetes**. Those who were **young** and self-identified as **Hispanic** were more likely to report a family history of diabetes.

Table 1. Proportion who have relatives that have ever been told they have diabetes[1], by diabetes status[2]
Diabetes, Arthritis, and Osteoporosis Survey, 2005
Percent (95% confidence interval)

Demographic Characteristics	All	Diabetes	No Diabetes
Total	58.5 (54.7-62.3)	65.9 (55.6-74.9)	57.9 (53.8-61.9)
Age (years)			
18-24	71.2 (55.7-83.0)	NC	72.7 (57.4-84.1)
25-34	60.2 (48.9-70.5)	NC	59.2 (47.8-69.7)
35-44	59.6 (51.2-67.5)	NC	59.6 (51.0-67.7)
45-54	62.1 (55.8-68.0)	81.3 (65.2-91.0)	60.6 (53.9-66.9)
55-64	52.8 (46.4-59.0)	65.5 (48.7-79.1)	50.2 (43.3-57.0)
65-74	51.7 (43.3-60.0)	70.4 (51.2-84.3)	46.1 (37.0-55.5)
≥75	39.2 (30.7-48.3)	46.3 (30.7-62.6)	38.1 (28.9-48.3)
Sex			
Male	54.0 (47.8-60.2)	63.2 (48.5-75.8)	53.2 (46.5-59.8)
Female	62.5 (57.8-67.0)	68.7 (54.5-80.1)	62.0 (57.0-66.8)
Race-Ethnicity			
White non-Hispanic	57.4 (52.7-61.9)	64.3 (51.3-75.4)	56.7 (51.8-61.6)
Black non-Hispanic	61.6 (53.1-69.5)	71.4 (53.5-84.4)	60.5 (51.2-69.1)
Other non-Hispanic	58.3 (41.7-73.2)	NC	60.2 (41.9-76.1)
Hispanic	71.1 (61.9-78.8)	NC	69.9 (60.4-78.0)
Education			
< High school	64.6 (47.7-80.5)	NC	65.1 (43.8-81.7)
High school graduate	61.6 (54.9-67.9)	64.1 (46.1-78.8)	61.3 (54.1-68.1)
Some college	57.9 (51.1-64.3)	65.8 (44.6-82.2)	57.1 (50.0-63.9)
College graduate	55.0 (48.6-61.1)	70.8 (52.6-84.1)	53.7 (47.2-60.2)
Household Income			
<$20,000	60.4 (49.3-70.4)	70.4 (47.9-86.0)	59.1 (46.7-70.4)
$20,000-34,999	62.0 (54.4-69.1)	85.3 (70.5-93.3)	59.5 (51.3-67.2)
$35,000-49,999	64.4 (55.0-72.7)	NC	64.4 (54.4-73.3)
$50,000-74,999	62.6 (54.5-70.0)	NC	64.1 (55.7-71.7)
≥$75,000	51.7 (43.9-59.5)	NC	51.0 (42.9-59.1)

1) Response to the question, "To the best of your knowledge, were any of these relatives ever told they had diabetes (OR "Sugar") by a doctor, nurse, or other health care provider?" If necessary, probe with "Remember, we are thinking of your grandparents, parents, brothers, sisters, and children both those living and deceased."
2) Response to question, "Have you ever been told by a doctor that you have diabetes?"

Table 2 demonstrates results for the question, "Has your doctor, nurse, or other health care provider collected information from you about your family history of diabetes?" **52.7%** of respondents reported their **provider collected** their family history of diabetes. Family history of diabetes was more likely to be collected from persons with diabetes.

Table 2. Proportion who report having their family history of diabetes collected by a health care provider[1], by diabetes status[2]
Diabetes, Arthritis, and Osteoporosis Survey, 2005
Percent (95% confidence interval)

Demographic Characteristics	All	Diabetes	No Diabetes
Total	52.7 (48.6-56.7)	68.0 (57.6-76.8)	51.3 (47.0-55.5)
Age (years)			
18-24	23.8 (14.0-37.5)	NC	24.3 (14.2-38.3)
25-34	47.6 (37.0-58.3)	NC	46.0 (35.7-56.7)
35-44	69.7 (62.0-76.5)	NC	69.2 (61.3-76.1)
45-54	62.7 (56.3-68.7)	89.2 (73.0-95.0)	60.6 (53.8-67.0)
55-64	63.4 (56.9-69.6)	75.4 (61.2-85.6)	61.0 (53.7-67.8)
65-74	46.6 (38.5-54.9)	49.0 (31.6-66.6)	45.6 (36.5-55.0)
≥75	30.9 (23.8-39.1)	57.0 (40.6-72.0)	27.3 (20.0-36.1)
Sex			
Male	41.4 (35.7-47.4)	67.7 (53.6-79.2)	38.8 (32.8-45.1)
Female	62.9 (57.4-68.1)	68.3 (52.6-80.7)	62.4 (56.6-67.9)
Race-Ethnicity			
White non-Hispanic	53.0 (48.1-57.9)	68.9 (55.7-79.7)	51.6 (46.5-56.7)
Black non-Hispanic	51.7 (43.0-60.3)	62.4 (45.9-76.4)	50.5 (40.9-60.0)
Other non-Hispanic	49.1 (33.0-65.5)	NC	47.0 (29.8-64.8)
Hispanic	54.6 (45.6-63.3)	NC	53.7 (44.3-62.8)
Education			
< High school	28.5 (16.1-45.4)	NC	25.5 (13.6-42.8)
High school graduate	47.9 (40.9-55.0)	70.5 (52.0-84.1)	45.7 (38.4-53.3)
Some college	52.7 (45.8-59.4)	66.1 (45.3-82.1)	51.4 (44.2-58.4)
College graduate	62.9 (56.5-68.9)	68.4 (48.3-83.3)	62.4 (55.6-68.8)
Household Income			
<$20,000	38.8 (29.2-49.4)	67.6 (46.8-83.2)	35.1 (25.4-46.3)
$20,000-34,999	48.5 (40.3-56.8)	81.7 (64.6-91.6)	44.9 (36.7-53.3)
$35,000-49,999	65.6 (53.5-76.0)	NC	65.8 (44.8-66.2)
$50,000-74,999	62.9 (54.1-71.0)	NC	57.0 (41.0-71.5)
≥$75,000	58.3 (50.1-66.0)	NC	58.5 (50.0-66.6)

1) Response to the question, "Has your doctor, nurse, or other health care provider collected information from you about your family history of diabetes?"
2) Response to question, "Have you ever been told by a doctor that you have diabetes?"

Results (continued)

Of respondents whose family history was collected, **52.7%** reported that their provider **discussed their risk** of diabetes based on their family history. Of those, **57%** reported that their provider **made recommendations to reduce the risk**. These results are shown in Table 3.

Table 3. Proportion who report that health care provider made recommendations based on family history[1], by diabetes status[2]
Diabetes, Arthritis, and Osteoporosis Survey, 2005
Percent (95% confidence interval)

Demographic Characteristics	All	Diabetes	No Diabetes
Total	57.0 (51.5-62.3)	70.8 (60.0-79.6)	55.0 (48.9-60.9)
Age (years)			
18-24	40.7 (17.5-68.9)	NC	NC
25-34	65.5 (48.1-79.6)	NC	64.9 (47.3-79.2)
35-44	64.3 (52.0-75.0)	NC	62.2 (49.2-73.6)
45-54	49.4 (39.7-59.2)	NC	46.0 (35.7-56.6)
55-64	55.8 (46.0-65.2)	NC	51.1 (40.1-62.0)
65-74	55.5 (39.5-70.3)	NC	56.1 (35.2-75.0)
≥75	51.6 (32.7-70.0)	NC	NC
Sex			
Male	56.4 (46.0-66.3)	71.9 (55.1-84.3)	53.0 (41.0-64.6)
Female	57.4 (51.3-63.3)	69.4 (56.2-80.0)	56.1 (49.5-62.5)
Race-Ethnicity			
White non-Hispanic	56.5 (50.1-62.8)	76.6 (64.8-85.3)	53.6 (46.6-61.0)
Black non-Hispanic	61.8 (46.7-74.9)	NC	64.5 (47.8-78.3)
Other non-Hispanic	NC	NC	NC
Hispanic	48.8 (35.1-62.7)	NC	47.7 (33.3-62.5)
Education			
< High school	62.0 (44.3-77.0)	NC	59.8 (38.4-78.1)
High school graduate	61.3 (52.2-69.6)	72.9 (55.7-85.2)	58.8 (48.4-68.5)
Some college	53.9 (43.9-63.5)	NC	52.0 (41.2-62.7)
College graduate	56.2 (46.7-65.3)	NC	54.6 (44.3-64.4)
Household Income			
<$20,000	58.3 (44.5-70.9)	NC	57.4 (41.2-72.1)
$20,000-34,999	60.1 (48.4-70.8)	NC	56.1 (43.7-68.4)
$35,000-49,999	65.6 (53.5-76.0)	NC	65.4 (52.1-76.6)
$50,000-74,999	58.1 (43.8-71.2)	NC	57.0 (41.0-71.5)
≥$75,000	51.0 (40.6-61.4)	NC	48.3 (37.4-59.4)

1) Response to the question, "Based on your family history risk, has your health care provider made any recommendations?" Among those who reported discussing their risk of diabetes with their health care provider based on their family history
2) Response to question, "Have you ever been told by a doctor that you have diabetes?"

Discussion

Individuals with a family history of diabetes are at greater risk for developing diabetes themselves. Discussion of risk along with prevention strategies is important for primary prevention of diabetes. Based on these survey results, more than one-half of respondents with a family history of diabetes have not had this important discussion with their provider.

References:
1. Michigan Behavioral Risk Factor Surveillance System. Michigan Department of Community Health, Chronic Disease Epidemiology Section, 2005-2007.
2. Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Prevalence and Trends Data. Atlanta, Georgia, 1998-2007.
3. American Diabetes Association. Screening for type 2 diabetes. Diabetes Care. 2004;27:S11-S14.
4. Annis AM et al. Preventing Chronic Disease 2005;97(5)907-912.
5. Baptiste-Roberts K et al. American Journal of Public Health. 2007; 97(5)907-912.
6. Harrison TA et al. American Journal of Preventive Medicine. 2003;24(2):152-9.
7. Rimoin et al. Emery and Rimoin's Principles and Practice of Medical Genetics, 4th Edition. Churchill Livingstone, London.

Michigan Department of Community Health
MDCH
Jennifer M. Granholm, Governor
Janet Olszewski, Director