Results

The diabetes prevalence for adults with a family history of diabetes was almost 4 ½ times higher than the prevalence for those without a family history. (Figure 1)

Diabetes prevalence increased significantly with corresponding increase in number of family members affected with diabetes (p<.001). (Figure 2) The proportion of adults with diabetes among subjects who had three or more diabetic relatives (44.4%) was higher than the prevalence associated with any other factor measured.

Diabetes prevalence increased significantly with the number of parents affected with diabetes (p<.001). (Figure 3) Having a sibling with diabetes conferred a diabetes risk comparable to having two diabetic parents.

The etiologies of type 2 diabetes are multiple and complex. Family history of diabetes provides valuable genomic information because it represents the combination of inherited genetic susceptibilities and shared environmental and behavioral factors.4

Methods

The National Health and Nutrition Examination Survey (NHANES) is a population-based survey conducted annually by the National Center for Health Statistics. Information is collected via in-home interviews and physical examinations. Public-use data files are available on-line at: http://www.cdc.gov/nchs/nhanes.htm.

This study utilized data from 18023 adults who participated in NHANES during 1999-2002. Prevalence estimates and 95% confidence intervals (CI) were calculated by the National Center for Health Statistics. Analyses incorporated appropriate NHANES sample weights to account for complex sampling design.

Discussion

Family history of diabetes was found to be a significant predictor of diabetes prevalence in the adult U.S. population. Factors that may influence this association include:

• Diabetes has strong genetic components, and its heritability has been previously supported.6
• Compared to those without a family history, individuals who have close relatives with diabetes may be more motivated to seek early health screening; thus, diagnoses may be more likely, and age of onset younger for these persons.
• Individuals who have diabetes may be more likely to collect family health history information, as compared to those without diabetes.

Implications:

• Family health history is easily available and inexpensive to obtain, yet may be under-utilized in health care practice.7 This study’s findings suggest family history to be a valuable source of genomic information and measure of disease risk, and thus, support the application of a family history tool for diabetes prevention and early detection strategies.
• Diabetes has paralleled the obesity epidemic, both of which have strong modifiable risk factors. Since the presence of family history often reflects shared health-related behaviors among family members, the recognition of this high correlation between obesity, diabetes, and family history can help guide population-appropriate health promotion activities.
• This project represents a feasible and inexpensive method of extracting genomic information from existing population-based data sources. Because family history encompasses genetic, behavioral, and environmental factors, it can be applied to other chronic diseases and can be translated into other public health program areas.

Limitations:

• Unable to discriminate between type 1 and type 2 diabetes.
• Diabetes, age of onset, and family history are self-reported, creating a potential for recall bias or misclassification.

• NHANES excludes institutionalized persons, such as residents of nursing homes who are likely to be older adults.

References