

# Diabetes Disparities Among Racial and Ethnic Minorities

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AHRQ is the lead Federal agency charged with supporting research designed to improve the quality of health care, reduce its cost, address patient safety and medical errors, and broaden access to essential services. AHRQ sponsors and conducts research that provides evidence-based information on health care outcomes; quality; and cost, use, and access.

The information helps health care decisionmakers—patients and clinicians, health system leaders, and policymakers—make more informed decisions and improve the quality of health care services.



U.S. Department of Health  
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Diabetes, the sixth leading cause of death in the United States, is a chronic disease characterized by persistent hyperglycemia (high blood glucose levels). As of 1999, approximately 16 million Americans—5.9 percent of the total population—had been diagnosed with diabetes, and that number is increasing rapidly. In a healthy person, blood sugar levels, which fluctuate based on food intake, exercise, and other factors, are kept within an acceptable range by insulin. Insulin, a hormone produced by the pancreas, helps the body absorb excess sugar from the bloodstream. In a person with diabetes, blood sugar levels are not adequately controlled by insulin.

From 1990 to 1998, the prevalence of type 2 diabetes increased by one-third—from 4.9 percent to 6.5 percent of the adult population. In type 2 diabetes, the pancreas produces some insulin, sometimes even large amounts; however, either the pancreas does not produce enough insulin or the body's cells are resistant to the action of insulin. Almost 800,000 people are expected to be newly diagnosed with the disease in 2001 and close to 200,000 will die from its complications.

The burden of diabetes is much greater for minority populations than the white population. For example, 10.8 percent of non-Hispanic blacks, 10.6 percent of Mexican Americans, and 9.0 percent of American Indians have diabetes, compared with 6.2 percent of whites.<sup>1</sup> Certain minorities also have much higher rates of diabetes-related complications and death, in some instances by as much as 50 percent more than the total population.<sup>2</sup>

## Overview

The Agency for Healthcare Research and Quality (AHRQ) sponsors research that focuses, among other issues, on identifying disparities in health care quality and outcomes that might result from variations in how health care is provided to people of different racial and ethnic backgrounds. Results of this research have contributed to a better understanding of the disparities in the prevalence of diabetes and related complications among different racial and ethnic groups, identification of some of the barriers to health care that contribute to these disparities, and identification of changes that could be made to eliminate the barriers and reduce the disparities.



Research on diabetes in minorities published from 1976-1994 was identified through a MEDLINE search.<sup>2</sup> This comprehensive AHRQ-funded literature review of 290 articles revealed that:

- All minorities, except Alaska Natives, have a prevalence of type 2 diabetes that is two to six times greater than that of the white population.
- Improving the lipid profile of African Americans with diabetes could help to lower their risk of diabetes-related cardiovascular disease.
- Health care interventions that take into consideration cultural and population-specific characteristics can reduce the prevalence and severity of diabetes and its resulting complications.

### High Diabetes Rates for Minorities

Identifying disparities is a first step toward understanding what causes them and what can be done to reduce them.

- Different studies found that African Americans are from 1.4 to 2.2 times more likely to have diabetes than white persons.
- Hispanic Americans have a higher prevalence of diabetes than non-Hispanic people, with the highest rates for type 2 diabetes among Puerto Ricans and Hispanic people living in the Southwest and the lowest rate among Cubans.
- The prevalence of diabetes among American Indians is 2.8 times the overall rate.
- Major groups within the Asian and Pacific Islander communities (Japanese Americans, Chinese

Americans, Filipino Americans, and Korean Americans) all had higher prevalences than those of whites.

### High Complication Rates for Minorities

Although minorities are more likely than whites to be diagnosed with diabetes, the rates of complications vary by disease and minority group.<sup>2</sup>

#### Kidney Disease

Diabetes is the most frequently reported cause of kidney failure in the United States. In 1990, it was the underlying cause of kidney failure in 34 percent of patients starting treatment for end stage renal disease (ESRD). Diabetes-related kidney failure affects a much higher percentage of African Americans than whites.<sup>3</sup> An AHRQ-funded study of renal disease found that:

- The rate of diabetic ESRD is 2.6 times higher among African Americans than among whites.<sup>3</sup>
- From 1988 to 1990, the annual incidence of new cases of diabetes-related ESRD was 137 per million African Americans, compared to 38 cases per million whites.<sup>3</sup>
- ESRD is more likely to be related to type 2 diabetes among African Americans than it is among whites.<sup>3</sup>
- Rates of early stage kidney disease (proteinuria) are higher among Hispanic Americans, African Americans, and American Indians than among the white population.<sup>2</sup>

The AHRQ-funded study also found that the proportion of ESRD attributable to diabetes was similar in whites (44 percent) and blacks (41 percent).

The reasons that African Americans have more diabetes-related ESRD are

unclear. African Americans have much higher rates of hypertension than whites. The interaction between hypertension and type 2 diabetes, which occur together more frequently in African Americans than in whites, may account for the higher rate of ESRD. Another factor could be a difference in the quality of care furnished to African-American patients with type 2 diabetes.<sup>3</sup>

### Eye Disease

Another serious complication of diabetes is retinopathy, which, if untreated, can cause blindness.

Diabetic retinopathy is the major cause of blindness among adults ages 20 to 74.

- Rates of blindness due to diabetes are only half as high for whites as they are for rest of the population.
- Two studies of retinopathy in Hispanic Americans showed conflicting results, with one showing higher rates and the other showing lower rates than whites.
- Pima Indians in Arizona and Native Americans in Oklahoma have both been shown to have higher rates of retinopathy than whites.<sup>2</sup>

### Coronary Artery Disease

People with diabetes are at greater risk for heart disease than the general population. Although there do not appear to be consistent disparities in diabetes-related coronary artery disease between minorities and white persons, an AHRQ-funded study has found that African-American diabetic patients are more likely than whites to have a particular lipid profile: low HDLs (high-density lipoproteins), high LDLs

(low-density lipoproteins), but lower triglycerides than among whites. This is important because having too few HDLs, too many LDLs, or too many triglycerides are all risk factors for heart disease. Therefore, the researchers recommend that, in treating dyslipidemia (imbalances among HDLs, LDLs, and triglycerides) among African Americans, clinicians should focus primarily on improving LDLs and HDLs.<sup>4</sup>

### Other Conditions

No consistent evidence exists that shows disparities between minorities and whites for diabetes-related neuropathy and peripheral vascular disease. However, African Americans and American Indians have higher rates of lower-extremity amputations than white persons.<sup>2</sup>

### Mortality

Diabetes-related mortality rates for African Americans, Hispanic Americans, and American Indians are higher than those for white people. Asians and Pacific Islanders have the lowest diabetes-related mortality of any racial/ethnic group in America.<sup>2</sup>

### Cultural Variations and Economic Barriers

AHRQ-funded research has shown that Hispanics with diabetes often face economic barriers to treatment and are reluctant to place their own medical needs over needs of family members. Other common barriers include a distrust of insulin therapy, a preference for more familiar traditional remedies, and a fatalistic acceptance of the course of the disease.<sup>5,6</sup>

### Reducing Disparities

AHRQ-funded research has demonstrated ways in which racial/ethnic disparities can be reduced. Strategies to prevent the onset of diabetes through diet and lifestyle changes require interventions that are culturally sensitive and population specific.<sup>5,6</sup> Designing strategies for managing the disease and its complications to be culturally sensitive and targeted to specific populations may also be helpful.

### Diet, Exercise, and Primary Prevention

In studies done comparing migrant populations with native nonmigrant populations, a consistent linkage of type 2 diabetes with the American lifestyle was found. According to AHRQ-funded researchers, this lifestyle includes a diet higher in total calories and fat but lower in fiber, as well as the tendency to expend less energy because of labor-saving devices. All minorities in the United States for which data exist have a higher prevalence of diabetes than do residents of their countries of origin.<sup>2</sup>

To learn more about how to prevent diabetes from occurring in the Mexican-American population, AHRQ funded a pilot study of an intervention program for children at risk for type 2 diabetes. The 3½-month program had a threefold emphasis on understanding of diabetes, diet, and exercise and was designed to be culturally and age-appropriate for Mexican-American children. Thirty-seven at-risk children 7-12 years of age (those with at least one diabetic parent or grandparent) and their parents were enrolled in an eight-

session educational program intended to inform them about diabetes and its complications and to teach the essentials of a healthy lifestyle.

The children received health screenings before and after the program. Post-program analysis of individual risk factors showed a trend toward more normal values. For example, the percentage of children whose consumption of protein, total fat, saturated fat, and cholesterol fell within the recommended daily requirement increased. Also, 94 percent of parents and 67 percent of children began reading food labels, 83 percent of parents began to use fat-modified recipes, and 83 percent of children began exercising regularly. Parental involvement also resulted in parents making progress toward adopting healthier lifestyles.<sup>7</sup>

### **Chronic Disease Self-Management Program**

The Chronic Disease Self-Management Program (CDSMP) is now being used by health organizations in 31 States and 9 countries (including diabetes treatment facilities).<sup>8</sup> The CDSMP could eventually have a significant impact on the health status and health care use of minority persons with diabetes. The program originated in an AHRQ-funded study that tested a 7-week community-based patient education program for people with heart disease, lung disease, stroke, and arthritis. A premise of the program is that many chronic diseases, such as diabetes, heart disease, lung disease, arthritis, and high blood pressure, pose similar problems in patient self-

management. The CDSMP focuses on improving people's self-efficacy in taking care of their own health. In the initial 6-month followup, the study found positive results for self-reported health, disability, fatigue, and hospital use indicators.

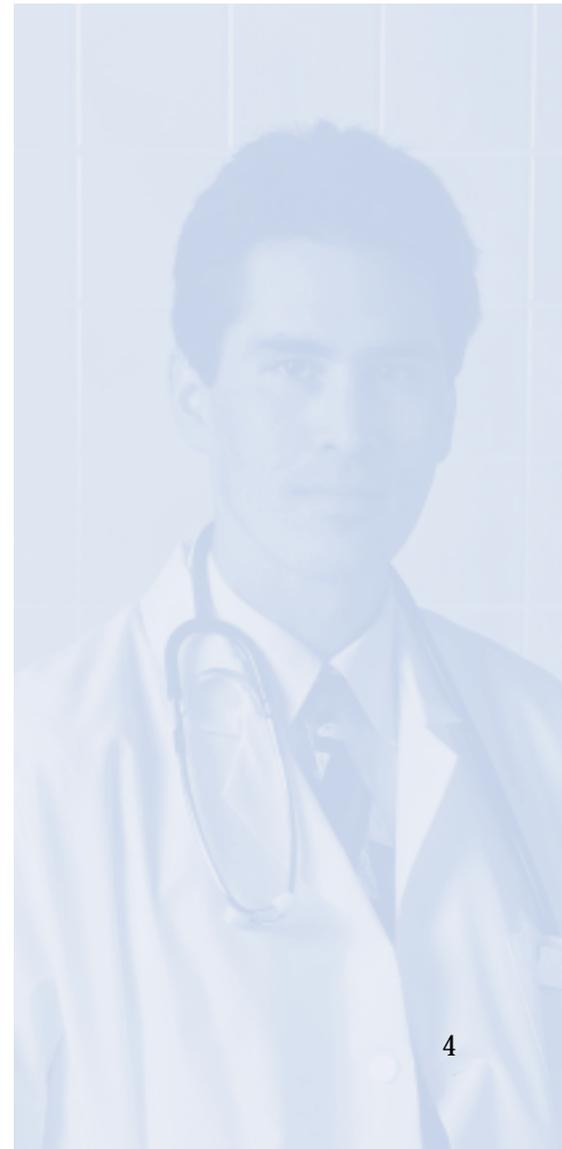
The CDSMP consists of seven weekly 2½-hour sessions (later changed to six weekly sessions) focusing on nutritional change, adoption of exercise programs, use of medications and community resources, health-related problem solving, and decision-making. Preliminary followup studies (covering a 2-year period) indicate that participants have improved health, more energy, and fewer hospitalizations and doctor visits.<sup>8</sup>

### **Family Support**

An AHRQ-funded study, a literature review of studies reporting on the effects of social support among African-American adults with diabetes, found that African Americans relied more heavily than whites on informal social networks to meet their disease management needs. The social support consisted of help with the day-to-day management of diabetes including:

- Help with diet supervision.
- Medication assistance.
- General support.
- Blood sugar monitoring.

The review found that social support is significantly associated with improved diabetes management among this population.<sup>9</sup> Although research has not been done to show that this practice leads to better outcomes, it appears to be a promising practice.



## Current AHRQ Projects

**Phillips, L. Improving primary care of African-Americans with NIDDM. (HS09722)**

**McCabe, M. The impact of Navajo interpreters on diabetes outcomes. (HS10637)**

**Piette, JD. Automated assessments and the quality of diabetes care. (HS10281)**

**Gerber, B. A multi-media computer education program for minority populations. (HS11092)**

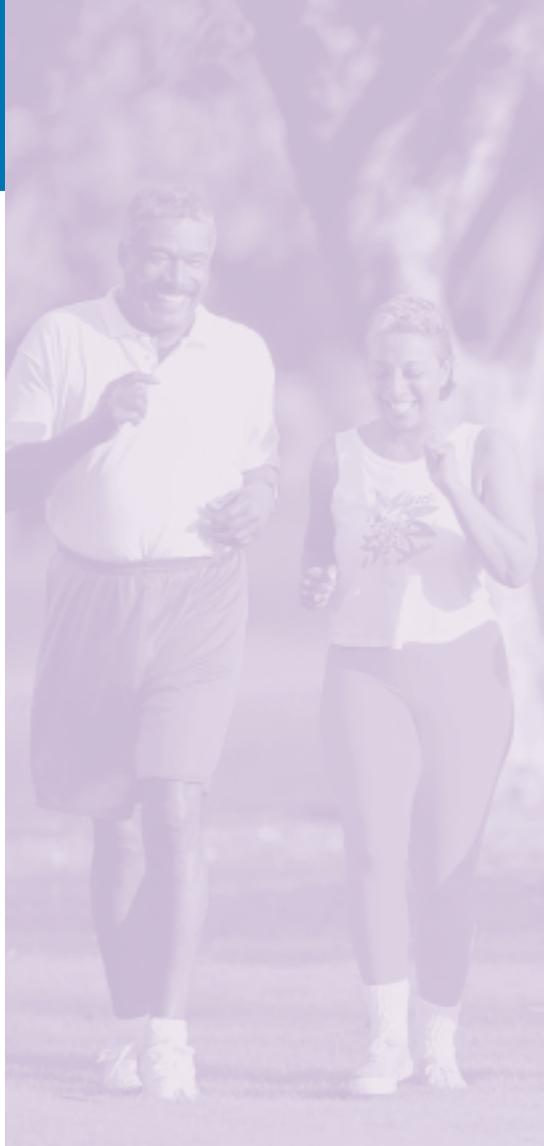
**Taylor, A, Taliaferro, G. Medical care use and expenditures for people with diabetes: Are there racial and ethnic disparities?**

## Current Research

Current AHRQ studies continue to address the need for better disease management and improved quality of life for diabetics in minority populations. The principal investigator, name of project, and grant number (if applicable) for each study are shown in the accompanying list. A summary of the projects is shown below:

- Primary care providers are collaborating with endocrinologists in Atlanta to see if they can improve care and prevent complications in indigent urban African Americans with type 2 disease who are in poor control of their blood sugar (Phillips).
- The effects of interpreters on diabetes outcomes for Navajo patients are being studied. Researchers are evaluating how the training of interpreters affects their impact and the effects that the interpreters have on diabetes outcomes and cost of ambulatory care of Navajo diabetic patients (McCabe).
- Researchers are examining the variation in outcomes for diabetic patients using an automated telephone disease management system (ATDM) and extending the use of ATDM to Spanish-speaking patients (Piette).
- A culturally sensitive multimedia computer education program is being tested in a clinical setting. Researchers are evaluating its impact on diabetes-related knowledge, attitudes, self-efficacy (the belief that what you do makes a difference), and self-care for African-American and Latino populations (Gerber).
- An AHRQ study of racial and ethnic disparities in medical care use and expenditures for people with diabetes is underway. Using 1997 survey data, it will present national estimates of medical visits, individual expenses, and sources of payment for people with diabetes, including racial and ethnic minorities. This study is expected to be completed during 2002 (Taylor and Taliaferro).





## References

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- \*2. Carter JS, Pugh JA, Monterrosa A. Non-insulin-dependent diabetes mellitus in minorities in the United States. *Ann Intern Med* 1996; 125(3):221-32. (AHRQ Grant HS07397).
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- \*4. Cook CB, Erdman DM, Ryan GJ, et al. The pattern of dyslipidemia among urban African-Americans with Type 2 diabetes. *Diabetes Care* 2000; 23(3):319-24. (AHRQ Grant HS09722).
- \*5. Noel PH, Larme AC, Meyer I, et al. Patient choice in diabetes education curriculum. *Diabetes Care* 1998; 21(6):896-901. (AHRQ Grant HS07397).
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- \*7. McKenzie SB, O'Connell J, Smith LA, et al. A primary intervention program (pilot study) for Mexican American children at risk for Type 2 diabetes. *Diabetes Educ* 1998; 24(2):180-7. (AHRQ Grant HS07397-02).
- \*8. Lorig KR, Sobel DS, Stewart AL, et al. Evidence suggesting that a chronic disease self-management program can improve health status while reducing hospitalization. *Med Care* 1999; 37(1):5-14. (AHRQ Grant HS06680). For sites using the program for diabetes and other conditions, see <[www.Stanford.edu/group/perc](http://www.Stanford.edu/group/perc)>.
- \*9. Ford ME, Tilley BC, McDonald PE. Social support among African-American adults with diabetes, part 2: a review. *J Nat Med Assoc* 1998; 90(7):425-32. (AHRQ Grant HS07386).

### **\*AHRQ-funded sponsored research**

### **For More Information**

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