

Search NIDDK

[Home](#) : [Diabetes Publications A to Z](#) : Diabetes in African Americans

GO

Diabetes in African Americans

On this page:

- [What is diabetes?](#)
- [How many African Americans have diabetes?](#)
- [What risk factors increase the chance of developing type 2 diabetes?](#)
- [How does diabetes affect African American children?](#)
- [How does diabetes affect African American women during pregnancy?](#)
- [How do diabetes complications affect African Americans?](#)
- [Does diabetes cause excess deaths in African Americans?](#)
- [Hope Through Research](#)
- [Points to Remember](#)
- [References](#)
- [For More Information](#)

Today, diabetes mellitus is one of the most serious health challenges facing the United States. The following statistics illustrate the magnitude of this disease among African Americans.

- 2.8 million African Americans have diabetes.¹
- On average, African Americans are twice as likely to have diabetes as white Americans of similar age.¹
- Approximately 13 percent of all African Americans have diabetes.¹
- African Americans with diabetes are more likely to develop diabetes complications and experience greater disability from the complications than white Americans with diabetes.
- Death rates for people with diabetes are 27 percent higher for African Americans compared with whites.

[\[Top\]](#)

What is diabetes?

Diabetes mellitus is a group of diseases characterized by high levels of blood glucose. It results from defects in insulin secretion, insulin action, or both. Diabetes can be associated with serious complications and premature death, but people with diabetes can take measures to reduce the likelihood of such occurrences.

Most African Americans (about 90 percent to 95 percent) with diabetes have type 2 diabetes. This type of diabetes usually develops in adults and is caused by the body's resistance to the action of insulin and to impaired insulin secretion. It can be treated with diet, exercise, diabetes pills, and injected insulin. A small number of African Americans (about 5 percent to 10 percent) have type 1 diabetes, which usually develops before age 20 and is always treated with insulin.

Diabetes can be diagnosed by three methods:

- A fasting plasma glucose test with a value of 126 milligrams/deciliter (mg/dL) or greater.
- A nonfasting plasma glucose value of 200 mg/dL or greater in people with symptoms of diabetes.
- An abnormal oral glucose tolerance test with a 2-hour glucose value of 200 mg/dL or greater.

Each test must be confirmed, on another day, by any one of the above methods. The criteria used to diagnose diabetes were revised in 1997.²

[\[Top\]](#)

How many African Americans have diabetes?

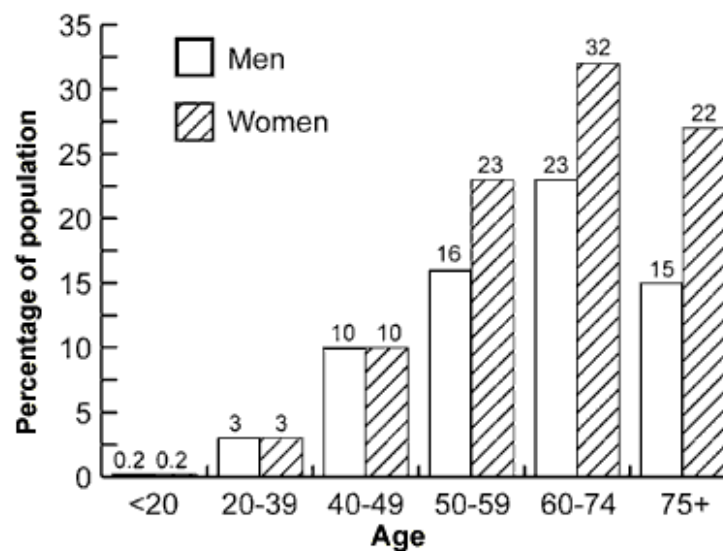
Figure 1 shows the prevalence for African American men and women based on the NHANES III survey conducted in 1988-94.³ The proportion of the African American population that has diabetes rises from less than 1 percent for those aged younger than 20 years to as high as 32 percent for women age 65-74 years. Overall, among those age 20 years or older, the rate is 11.8 percent for women and 8.5 percent for men.

About one-third of total diabetes cases are undiagnosed among African Americans. This is similar to the proportion for other racial/ethnic groups in the United States.³

National health surveys during the past 35 years show that the percentage of the African American population that has been diagnosed with diabetes is increasing dramatically.⁴ The surveys in 1976-80 and in 1988-94 measured fasting plasma glucose and thus allowed an assessment of the prevalence of undiagnosed diabetes as well as of previously diagnosed diabetes. In 1976-80, total diabetes prevalence in African Americans ages 40 to 74 years was 8.9 percent; in 1988-94, total prevalence had increased to 18.2 percent--a doubling of the rate in just 12 years.³

Prevalence in African Americans is much higher than in white Americans. Among those ages 40 to 74 years in the 1988-94 survey, the rate was 11.2 percent for whites, but was 18.2 percent for African Americans.

Figure 1.--Prevalence of diagnosed and undiagnosed diabetes in African Americans, U.S., 1988-94.



Note: Diabetes includes both previously diagnosed diabetes and undiagnosed diabetes (fasting plasma glucose greater than 126 mg/dL).

[\[Top\]](#)

What risk factors increase the chance of developing type 2 diabetes?

The frequency of diabetes in African American adults is influenced by the same risk factors that are associated with type 2 diabetes in other populations. Two categories of risk factors increase the chance of developing type 2 diabetes. The first is genetics. The second is medical and lifestyle risk factors, including impaired glucose tolerance, gestational diabetes, hyperinsulinemia and insulin resistance, obesity, and physical inactivity.

Genetic Risk Factors

The common finding that "diabetes runs in families" indicates that there is a strong genetic component to type 1 and type 2 diabetes. Many scientists are now conducting research to determine the genes that cause diabetes. For type 1 diabetes, certain genes related to immunology have been implicated. For type 2 diabetes, there seem to be diabetes genes that determine insulin secretion and insulin resistance. Some researchers believe that African Americans inherited a "thrifty gene" from their African ancestors. Years ago, this gene enabled Africans, during "feast and famine" cycles, to use food energy more efficiently when food was scarce. Today, with fewer such cycles, the thrifty gene that developed for survival may instead make the person more susceptible to developing type 2 diabetes.

Medical Risk Factors

Pre-diabetes (Impaired Glucose Tolerance and Impaired Fasting Glucose)

In some people, blood glucose levels are higher than normal but not high enough for them to be diagnosed with diabetes. These individuals are described as having pre-diabetes, also called impaired glucose tolerance (IGT) or impaired fasting glucose (IFG). People with pre-diabetes are at higher risk of developing type 2 diabetes than people with normal glucose tolerance. Rates of IGT among adults ages 40 to 74 years in the NHANES III survey were similar for African Americans (13 percent) and white (15 percent) Americans.³

Gestational Diabetes (GDM)

About 2 to 5 percent of pregnant women develop mild abnormalities in glucose levels and insulin secretion and are considered to have gestational diabetes. Although these women's glucose and insulin levels often return to normal after pregnancy, as many as 50 percent may develop type 2 diabetes within 20 years of the pregnancy.

Hyperinsulinemia and Insulin Resistance

Higher-than-normal levels of fasting insulin, called hyperinsulinemia, are associated with an increased risk of developing type 2 diabetes. Hyperinsulinemia often predates diabetes by several years. Among people who did not have diabetes in the NHANES III survey, insulin levels were higher in African Americans than in whites, particularly African American women, indicating their greater predisposition for developing type 2 diabetes.⁵ Another study showed a higher rate of hyperinsulinemia in African American adolescents compared with white American adolescents.⁶

Obesity

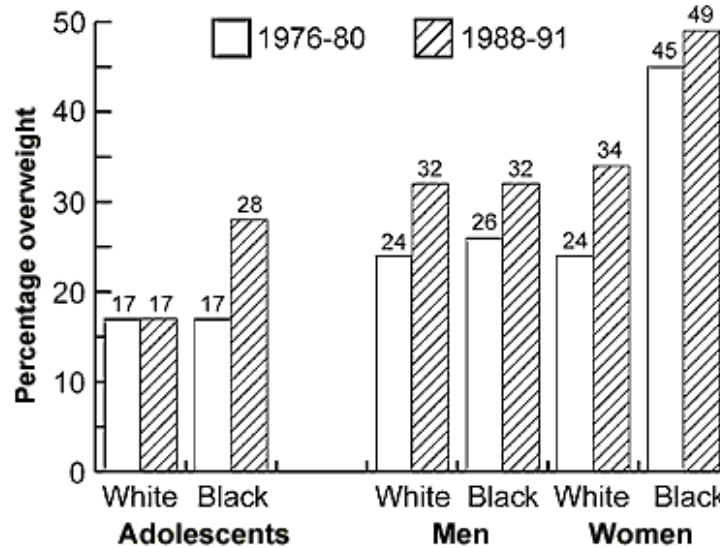
Overweight is a major risk factor for type 2 diabetes. The NHANES surveys found that overweight is increasing in the United States, both in adolescents and in adults. Figure 2 illustrates these data and also shows that African American adults have substantially higher rates of obesity than white Americans.^{7,8}

In addition to the overall level of obesity, the location of the excess weight is also a risk

factor for type 2 diabetes. Excess weight carried above the waist is a stronger risk factor than excess weight carried below the waist. African Americans have a greater tendency to develop upper-body obesity, which increases their risk of diabetes.

Although African Americans have higher rates of obesity, researchers do not believe that obesity alone accounts for their higher prevalence of diabetes. Even when compared with white Americans with the same levels of obesity, age, and socioeconomic status, African Americans still have higher rates of diabetes. Other factors, yet to be understood, appear to be responsible.

Figure 2.--Time trends in the percentage of adolescents and adults in the U.S. who are overweight, U.S., 1988-94.



Physical Activity

Regular physical activity is a protective factor against type 2 diabetes and, conversely, lack of physical activity is a risk factor for developing diabetes. Researchers suspect that a lack of exercise is one factor contributing to the high rates of diabetes in African Americans. In the NHANES III survey, 50 percent of African American men and 67 percent of African American women reported that they participated in little or no leisure time physical activity.⁹

[\[Top\]](#)

How does diabetes affect African American children?

African American children seem to have lower rates of type 1 diabetes than white American children. Researchers tend to agree that genetics probably makes type 1 diabetes less common among children with African ancestry compared with children of European ancestry. However, recent reports indicate an increasing prevalence of type 2 diabetes in children, especially in those with African American, American Indian, or Hispanic family background.¹⁰

[\[Top\]](#)

How does diabetes affect African American women during pregnancy?

Gestational diabetes, in which blood glucose values are elevated above normal during pregnancy, occurs in about 2 percent to 5 percent of all pregnant women. Perinatal

problems such as macrosomia (large body size) and neonatal hypoglycemia (low blood sugar) are higher in these pregnancies. The women generally return to normal glucose values after childbirth. However, once a woman has had gestational diabetes, she has an increased risk of developing gestational diabetes in future pregnancies. In addition, experts estimate that about half of women with gestational diabetes develop type 2 diabetes within 20 years of the pregnancy.

Several studies have shown that the occurrence of gestational diabetes in African American women may be 50 percent to 80 percent more frequent than in white women.

[\[Top\]](#)

How do diabetes complications affect African Americans?

Compared with white Americans, African Americans experience higher rates of diabetes complications such as eye disease, kidney failure, and amputations. They also experience greater disability from these complications. Some factors that influence the frequency of these complications, such as high blood glucose levels, abnormal blood lipids, high blood pressure, and cigarette smoking, can be influenced by proper diabetes management.

Eye Disease

Diabetic retinopathy is a deterioration of the blood vessels in the eye that is caused by high blood glucose. It can lead to impaired vision and, ultimately, to blindness. The frequency of diabetic retinopathy is 40 percent to 50 percent higher in African Americans than in white Americans, according to NHANES III data.¹¹ Retinopathy may also occur more frequently in African Americans than in whites because of their higher rate of hypertension. Although blindness caused by diabetic retinopathy is believed to be more frequent in African Americans than in whites, there are no valid studies that compare rates of blindness between the two groups.

Kidney Failure

African Americans with diabetes experience kidney failure, also called end-stage renal disease (ESRD), about four times more often than diabetic white Americans.¹² In 1995, there were 27,258 new cases of ESRD attributed to diabetes in African Americans.¹³ Diabetes is the leading cause of kidney failure and accounted for 43 percent of the new cases of ESRD among African Americans during 1992-1996. Hypertension, the second leading cause of ESRD, accounted for 42 percent of cases. In spite of their high rates of ESRD, African Americans have better survival rates after they develop kidney failure than white Americans.¹²

Amputations

Based on the U.S. hospital discharge survey, there were about 13,000 amputations among African American diabetic individuals in 1994, which involved 155,000 days in the hospital.¹⁴ African Americans with diabetes are much more likely to undergo a lower-extremity amputation than white or Hispanic Americans with diabetes. The hospitalization rate of amputations for African Americans was 9.3 per 1,000 patients in 1994, compared with 5.8 per 1,000 white diabetic patients. However, the average length of hospital stay was lower for African Americans (12.1 days) than for white Americans (16.5 days).

[\[Top\]](#)

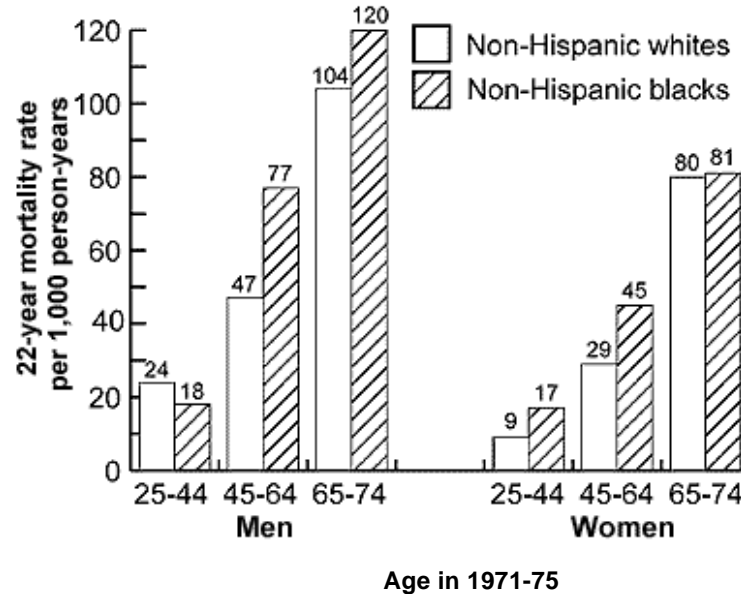
Does diabetes cause excess deaths in African Americans?

Diabetes was an uncommon cause of death among African Americans at the turn of

the century. By 1994, however, death certificates listed diabetes as the seventh leading cause of death for African Americans. For those age 45 years or older, it was the fifth leading cause of death.¹⁴

Death rates (mortality) for people with diabetes are higher for African Americans than for whites. Figure 3 shows death rates for whites and African Americans with diabetes in a national survey of people first studied in 1971-1975 whose mortality was confirmed through 1992-1993.¹⁵ The overall mortality rate was 20 percent higher for African American men and 40 percent higher for African American women, compared with their white counterparts.

Figure 3.--Mortality rates in African American and white diabetic men and women in a sample of the U.S. population, 1971-1993.



[\[Top\]](#)

Hope Through Research

Within many African American communities around the country, NIDDK supports centers that provide nutrition counseling, exercise, and screening for diabetes complications. These centers are called Diabetes Research and Training Centers.

Prevention

In 1996, NIDDK launched its Diabetes Prevention Program (DPP). The goal of this research effort was to learn how to prevent or delay type 2 diabetes in people with impaired glucose tolerance (IGT), a strong risk factor for type 2 diabetes.

The findings of the DPP, which were released in August 2001, showed that people at high risk for type 2 diabetes could sharply lower their chances of developing the disease through diet and exercise. In addition, treatment with the oral diabetes drug metformin also reduced diabetes risk, though less dramatically. These results were so striking that the DPP's external data monitoring board advised ending the trial early.¹⁶

Participants randomly assigned to intensive lifestyle intervention reduced their risk of getting type 2 diabetes by 58 percent. On average, this group maintained their physical activity at 30 minutes per day, usually with walking or other moderate intensity exercise, and lost 5 to 7 percent of their body weight. Participants randomized to treatment with metformin reduced their risk of getting type 2 diabetes by 31 percent.

Of the 3,234 participants enrolled in the DPP, 45 percent were from minority groups

that suffer disproportionately from type 2 diabetes: African Americans, Hispanic Americans, Asian Americans and Pacific Islanders, and American Indians. The trial also recruited other groups known to be at higher risk for type 2 diabetes, including individuals age 60 and older, women with a history of gestational diabetes, and people with a first-degree relative with type 2 diabetes. Participants ranged from age 25 to 85, with an average age of 51.

Lifestyle intervention successfully reduced the risk of getting type 2 diabetes for both men and women, and across all the ethnic groups. It reduced the development of diabetes in people age 60 and older by 71 percent. Metformin was also effective in men and women and in all the ethnic groups, but was relatively ineffective in the older volunteers and in those who were less overweight.

Researchers will continue to analyze the data to determine whether the interventions reduced cardiovascular disease and atherosclerosis, major causes of death in people with type 2 diabetes. The DPP is the first major trial to show that diet and exercise can effectively delay diabetes in a diverse American population of overweight people with IGT.

National Diabetes Education Program

NIDDK and the Centers for Disease Control and Prevention are jointly sponsoring the National Diabetes Education Program (NDEP). Its goal is to reduce the death and disability associated with diabetes and its complications. The NDEP conducts ongoing diabetes awareness and education activities for people with diabetes and their families. Special efforts are being made to address the needs of certain ethnic groups that are hardest hit by diabetes, including African Americans, Hispanic Americans, Asian Americans, Pacific Islanders, and American Indians. Through these efforts, the NDEP hopes to improve the treatment and outcomes for people with diabetes, promote early diagnosis, and, ultimately, prevent the onset of diabetes.

[\[Top\]](#)

Points to Remember

- 2.8 million African Americans have diabetes.
- On average, African Americans are twice as likely to have diabetes as white Americans of similar age.
- The highest incidence of diabetes in African Americans occurs between 65 and 74 years of age. Twenty-five percent of these individuals have diabetes.
- Obesity is a major medical risk factor for diabetes in African Americans, especially for women. Some diabetes may be prevented with weight control through healthy eating and regular exercise.
- African Americans have higher incidence of and greater disability from diabetes complications such as kidney failure, visual impairment, and amputations.
- People at high risk for type 2 diabetes, including African Americans, can prevent or delay diabetes with modest weight loss and regular exercise.

[\[Top\]](#)

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Statistics in this fact sheet were derived from NIDDK's fact sheet [National Diabetes Statistics](#).

[\[Top\]](#)

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[\[Top\]](#)

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[\[Top\]](#)

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