

# Hearing Loss and Diabetes in an African American Adult

Diane M. Scott

 <https://orcid.org/0000-0002-7472-7208>

North Carolina Central University, USA

## EXECUTIVE SUMMARY

*Research has linked hearing loss to other medical conditions such as diabetes. Studies have shown that hearing loss is more common in individuals who have diabetes than in those who do not. Hyperglycemia, or raised blood sugar, is a common effect of uncontrolled diabetes and over time leads to serious damage to many of the body's systems, especially the nerves and the blood vessels. Consequently, diabetes can affect the blood vessels of the inner ear and the vestibulocochlear (VIII cranial) nerve fibers. This case study examines the interrelationship between diabetes and hearing loss in an African American adult while examining the issues of the higher prevalence of diabetes in African Americans and the role of audiologists in the care of individuals with hearing loss and diabetes.*

## INTRODUCTION

Research has linked hearing loss to other disabling conditions in adults, such as diabetes, cognitive decline and dementia, clinical depression, cardiovascular disease, and other illnesses (Bainbridge, Hoffman, & Cowie, 2008; Lin & Ferruci, 2012; Mener, Betz, Genther, Chen, & Lin, 2013). These linkages are referred to as “comorbidities,” which refers to the presence of more than one disorder in the same person. Comorbidity is associated with worse health outcomes, more complex clinical management, and increased health care costs.

Hearing loss and diabetes are both chronic conditions that are similar and can co-exist in a patient. They are both invisible, progressive, often incurable, and treatable. Both require professional care as well as self-managed behavioral change for long-term success. There are racial/ethnic differences in the prevalence of hearing loss as well as in the prevalence of diabetes. For African Americans the prevalence rates are diametrically opposite. Hearing loss is less common in non-Hispanic African Americans

compared to non-Hispanic Whites, while diabetes is more common in African Americans than Whites. That can lead to a complicated relationship between hearing loss and diabetes.

## **Diabetes in Adults**

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Insulin is a hormone that regulates blood sugar. Hyperglycemia, or raised blood sugar, is a common effect of uncontrolled diabetes and over time leads to serious damage to many of the body's systems, especially the nerves and the blood vessels. Diabetes can be a direct cause of death as well as high blood glucose.

The most common types of diabetes are type 1, type 2, and gestational diabetes. Type 1 diabetes (previously known as insulin-dependent, juvenile or childhood-onset) is characterized by deficient insulin production and requires daily administration of insulin. The cause of type 1 diabetes is not known and it is not preventable. Symptoms of the disease include frequent urination, increased thirst and/or hunger, sleepiness, weight loss, blurred vision, difficulty in concentrating, and slow healing of infections. These symptoms may occur suddenly.

Type 2 diabetes (formerly known as non-insulin-dependent or adult-onset) results from the body's ineffective use of insulin. Type 2 diabetes comprises the majority of people with diabetes around the world, and is largely the result of excess body weight and physical inactivity. Symptoms may be similar to those of type 1 diabetes, but are often less marked. As a result, the disease may not be diagnosed until several years after onset, once complications have already arisen.

Gestational diabetes develops in some women when they are pregnant. Most of the time, this type of diabetes goes away after the baby is born. However, if a woman developed gestational diabetes during pregnancy, she has a greater chance of developing type 2 diabetes later in life. Sometimes diabetes diagnosed during pregnancy is actually type 2 diabetes. Gestational diabetes often has no symptoms, or the symptoms may be mild, such as being thirstier than normal or having to urinate more often. Gestational diabetes is sometimes related to the hormonal changes of pregnancy that make the body less able to use insulin. Genes and extra weight may also play a role in the development of gestational diabetes.

In all types of diabetes, the end result is an elevation in blood sugar levels which must be managed. Diabetes is a leading cause of blindness, kidney failure, amputations, heart failure, and stroke (World Health Organization [WHO], 2019). Diabetes complications are divided into microvascular (damage to small blood vessels) and macrovascular (damage to larger blood vessels). Microvascular complications include damage to the eyes (retinopathy) leading to blindness, to the kidneys (nephropathy) leading to renal failure and to the nerves (neuropathy) leading to impotence, and diabetic foot disorders (which include severe infections leading to amputation).

Macrovascular complications are primarily diseases of the coronary arteries, peripheral arteries, and the cerebrovasculature leading to cardiovascular diseases such as heart attacks, strokes, and insufficiency in blood flow to the legs. Early macrovascular disease is associated with atherosclerotic plaque in the blood vessels supplying blood to the heart, brain, limbs, and other organs. Late stages of macrovascular disease involve complete obstruction of these vessels. Cardiovascular disease (CVD) is the major cause of morbidity and mortality in patients with diabetes (American Diabetes Association, 2015).

Diabetes is a global public health issue. In 2015, 30.3 million Americans, or 9.4% of the population, had diabetes. Of the 30.3 million adults with diabetes, 23.1 million were diagnosed and 7.2 million were undiagnosed. The percentage of Americans aged 65 and older with diabetes remains high, at 25.2%, or

16 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/hearing-loss-and-diabetes-in-an-african-american-adult/248691](http://www.igi-global.com/chapter/hearing-loss-and-diabetes-in-an-african-american-adult/248691)

## Related Content

---

### Classification of Graph Structures

Andrzej Dominik (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition* (pp. 202-207).  
[www.irma-international.org/chapter/classification-graph-structures/10821](http://www.irma-international.org/chapter/classification-graph-structures/10821)

### On Clustering Techniques

Sheng Maand Tao Li (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition* (pp. 264-268).  
[www.irma-international.org/chapter/clustering-techniques/10831](http://www.irma-international.org/chapter/clustering-techniques/10831)

### Data Mining in Genome Wide Association Studies

Tom Burr (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition* (pp. 465-471).  
[www.irma-international.org/chapter/data-mining-genome-wide-association/10861](http://www.irma-international.org/chapter/data-mining-genome-wide-association/10861)

### Metaheuristics in Data Mining

Miguel García Torres (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition* (pp. 1200-1206).  
[www.irma-international.org/chapter/metaheuristics-data-mining/10975](http://www.irma-international.org/chapter/metaheuristics-data-mining/10975)

### Deep Web Mining through Web Services

Monica Maceliand Min Song (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition* (pp. 631-637).  
[www.irma-international.org/chapter/deep-web-mining-through-web/10887](http://www.irma-international.org/chapter/deep-web-mining-through-web/10887)