

Minority kids less likely to get latest type 1 diabetes treatments, study finds

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Experts aren't sure what's causing differences in insulin pump use, blood sugar levels.

(HealthDay)—The care of type 1 diabetes has evolved rapidly over the past few decades, but not all racial and ethnic groups seem to be benefiting from the latest treatments, a new study indicates.

The researchers found that [black children](#) with type 1 diabetes were less than half as likely to receive treatment with an insulin pump than white [children](#) were —and that difference persisted even when the researchers adjusted the data to account for income, education and insurance. Hispanic children were also far less likely than white youngsters to be on an insulin pump.

Black children also had higher average [blood sugar](#) levels compared to

white and Hispanic children, the researchers found. Higher blood sugar levels can indicate problems with blood sugar management.

"It's been shown that insulin pump use is associated with [better blood sugar management]. And our study is the first step in assessing what barriers exist to motivating someone to [try] newer technologies," said study co-author Kellee Miller, assistant director of the T1D Exchange Clinic Network Coordinating Center, and an epidemiologist at the Jaeb Center for Health Research in Tampa, Fla.

Results of the study were released online Feb. 16 in the journal *Pediatrics*.

Type 1 diabetes is an autoimmune disease that destroys the insulin-producing cells in the pancreas. Insulin is a hormone that's needed to help use the sugar (also called glucose) from foods as fuel for the cells in the body and brain. Without insulin, you cannot survive.

Because people with type 1 diabetes produce no, or very little, of their own insulin, they must take insulin shots every day, or use an insulin pump. While an insulin pump doesn't require daily injections, the small tube that delivers insulin into the body must be changed every few days to prevent infections and scar tissue.

Getting the right amount of insulin is very hard to do. People with type 1 diabetes must try to estimate how many carbohydrates are in the food they eat, because carbohydrates are processed into sugar that's released into the blood. The right amount of insulin helps that sugar get into cells. Too much insulin, however, can cause dangerously low blood sugar levels, according to the American Diabetes Association (ADA).

Yet, too little insulin is also a problem because that allows blood sugar levels to rise. Over time, high blood sugar levels can cause serious

complications, such as heart disease and eye problems. Additionally, factors such as exercise and stress also affect insulin needs, making insulin dosing a difficult balancing act, according to the ADA.

The new study included nearly 11,000 children, under the age of 18, from 73 endocrinology clinics across the United States. They all had type 1 diabetes, and had dealt with the disease for an average of almost four years. The group was 48 percent female. The average age was nearly 12. Just over 80 percent were white, 7 percent were black and 11 percent were Hispanic. Additionally, the group included 214 high-income black and Hispanic families.

Nearly two-thirds of white youngsters were on insulin pumps. Just 26 percent of the black children made use of the newer technology, and slightly more than one-third of the Hispanic youngsters used [insulin pumps](#), the researchers found.

Cost is undoubtedly one factor considered when thinking about using an insulin pump for managing type 1 diabetes. The actual cost varies based on insurance plans—or in the case of Medicaid, the coverage offered by a particular state—but a new pump can be more than \$5,000, according to published reports. Additional disposable supplies are needed each month as part of insulin pump management.

But, cost didn't seem to be a guiding reason for the racial disparities, the study found.

Black children "were far less likely to be using pumps for [insulin delivery](#), even after adjusting for socioeconomic status. When we broke it down by annual household income, 45 percent of children in black families with more than \$100,000 in household income were using an insulin pump. That was the same percentage [of children on pumps] in white families earning \$50,000 or less," Miller noted.

Dr. Stuart Chalew, the section head of endocrinology and diabetes at Children's Hospital of New Orleans, wrote an editorial that accompanied the study. He suggested that "despite similarities in the way the kids are treated, our education systems may just not be adequate. For whatever reason, there seems to be some intangible that we still haven't broken through."

The researchers also found racial differences in the children's hemoglobin A1c levels—a test that estimates average blood sugar levels over the past two or three months, according to the ADA. The result is expressed as a percentage. The ADA recommends that A1c levels in children be 7.5 percent or less.

In the new study, none of the groups met that target. The average A1c for white children was 8.4 percent. For black children, it was 9.6 percent. And, for Hispanic children, the average A1c was 8.7 percent, the study authors found.

"There's the possibility that there may be a biological difference in how African-American patients respond to glucose," Chalew explained. "If you look at non-diabetic individuals, African-Americans have higher A1c levels, and in people with type 2 diabetes, African-Americans have higher A1c levels. There's something independent of blood glucose that affects A1c in African-Americans," he suggested.

This difference is referred to as the "glycation gap," according to Miller. She said it's possible that this plays a role in the A1c differences, but "I don't think it explains the whole difference," she added.

Miller's group is currently designing a study to better assess this difference. The study would continuously monitor daily [blood sugar levels](#) over three months in whites and blacks to see how those levels compared to the A1c findings.

The bottom line, said Chalew, is that "this was an eye-opening study that shows we still have challenges ahead."

More information: To learn more about the treatment of type 1 diabetes, visit the [American Diabetes Association](#).

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