

Race, Income Affect Teens' Metabolic Control

BY SUSAN LONDON

FROM THE ANNUAL MEETING OF THE SOCIETY OF BEHAVIORAL MEDICINE

SEATTLE – The rate of worsening of metabolic control among adolescents with type 1 diabetes seems to depend on a complex interplay between race and neighborhood income, researchers report.

In an observational study of 225 adolescents with type 1 diabetes, black – but not Hispanic – adolescents had higher hemoglobin A_{1c} levels than did their white peers at the age of 10 years, when neighborhood income was taken into account. But the rate of worsening in HbA_{1c} levels at age 10-18 years was similar for all three ethnic groups.

White adolescents from high-income neighborhoods had slower deterioration of HbA_{1c} levels than did their peers from low-income neighborhoods. In contrast, black and Hispanic adolescents from high-income neighborhoods had a more rapid deterioration than did their respective peers from low-income neighborhoods.

“We can suggest that childhood and adolescence are both equally risky periods of time” for black youth, said lead inves-

tigator Jenny T. Wang, Ph.D., of Duke University Medical Center in Durham, N.C. “Hispanic youth were actually no different [from white youth] based on our data when income was included.

“There is likely a very complex relationship between race and neighborhood income, so we really need a lot more studies in more diverse samples of youth.”

Levels of HbA_{1c} typically creep upward during adolescence in youth with type 1 diabetes, which signals poorer metabolic control, according to Dr. Wang. However, most studies have focused on white adolescents; much less is known about metabolic control in minority youth at the start of adolescence and its trajectory during that period.

The researchers reviewed the medical records of 81 white, 81 black, and 63 Hispanic 14- to 18-year-olds with type 1 diabetes who were seen in a pediatric endocrinology clinic. Their income level was assessed from their neighborhood's socioeconomic status.

In an initial hierarchical linear

model that looked solely at HbA_{1c} levels and age in the entire sample, the adolescents had an HbA_{1c} level of 9.1% at age 10 years, and their levels rose at a rate of 0.3 percentage points

than those of their white peers at age 10 (*P* less than .001), but Hispanic adolescents now had similar levels. Once again, race did not affect the rate of deterioration between ages 10 and 18 years.

In a final model that looked at the joint influence of race and income on HbA_{1c} levels, there was no interaction effect at the age of 10 years. White adolescents tended to have a slower deterioration of HbA_{1c} levels between ages 10 and 18 years if they lived in high- vs. low-income neighborhoods (*P* = .07).

In contrast, the investigators found that black and Hispanic adolescents who lived in high-income neighborhoods had more rapid deterioration than did their respective peers from low-income neighborhoods (*P* = .03 for each).

Discussing the study's results, Dr. Wang said that the poorer metabolic control seen at age 10 among black adolescents supports a childhood risk model wherein black youths have risks that occur in childhood and persist from that point onward.

But when it comes to the trajectory of metabolic control

during adolescence, “there is a parallel deterioration [of HbA_{1c} levels], suggesting that the mechanisms at work or the risks may be similar across these racial groups.”

More research will be needed to untangle what appears to be a complex interplay between race and neighborhood income, contended Dr. Wang.

“One potential explanation may be that as these minority youth have higher rates of income, they may tend to live in less ethnically dense neighborhoods and have greater exposure to racism and discrimination,” as well as lower neighborhood support, she proposed. “This might actually reduce the benefits of increased material wealth.”

Alternatively, higher income may lead to greater acculturation, which has been associated with increased risk-taking behavior, and that may have detrimental effects on metabolic control in diabetic adolescents.

Finally, families with higher income might be assumed to have more highly acculturated children, but “this may expose the parent-child relationships to these intergenerational conflicts that may make diabetes more difficult to manage,” she concluded. ■

VITALS

Major Finding: White adolescents had a slower rise in HbA_{1c} levels if they lived in high- vs. low-income neighborhoods, whereas black and Hispanic adolescents had a more rapid rise if they lived in high- vs. low-income neighborhoods.

Data Source: An observational study among a racially diverse sample of 225 adolescents with type 1 diabetes.

Disclosures: Dr. Wang reported that she had no conflicts of interest related to the study.

per year between ages 10 and 18 years, Dr. Wang reported.

When sex, insulin pump use, and age at diagnosis were added to the model, black adolescents had levels that were 1.4 percentage points higher (*P* less than .001), and Hispanic adolescents had levels that were 0.5 percentage points higher (*P* = .02) than those among their white peers at age 10 years. The rate of deterioration of HbA_{1c} levels did not differ by race.

When income was added to the model, black adolescents still had HbA_{1c} levels that were 1.2 percentage points higher

Link Found Between ADHD and Obesity in Young Adults

BY MITCHEL L. ZOLER

FROM THE 11TH INTERNATIONAL CONGRESS ON OBESITY

STOCKHOLM – Young adults with hyperactive-impulsive symptoms of attention-deficit/hyperactivity disorder had a significantly increased risk for obesity in a U.S. national sample of nearly 12,000 people.

“This is the first population-based study to examine the association between ADHD symptoms as dimensional predictors of adult BMI [body mass index], changes in BMI, and risk of adult obesity and hypertension,” Bernard F. Fuemmeler, Ph.D., wrote in a poster at the meeting. “Our findings show a dose-response increase in risk of obesity associated with increasing ADHD symptoms, especially hyperactive-impulsive symptoms.”

Based on these findings, “it may be clinically relevant to screen patients with ADHD who are at risk for obesity to develop appropriate treatment strategies,”

suggested Dr. Fuemmeler, a clinical psychologist at Duke University in Durham, N.C.

“The effectiveness of obesity treatment may be diminished, and relapse may be greater among those with more ADHD symptoms,” he added.

VITALS

Major Finding: American young adults with hyperactive-impulsive symptoms of attention-deficit/hyperactivity disorder had a 63% increased risk of being obese, compared with those without any ADHD symptoms in a multivariate analysis.

Data Source: Data from the fourth wave of the National Longitudinal Study of Adolescent Health, which included a representative sample of 11,666 Americans with an average age of 29.

Disclosures: The National Longitudinal Study of Adolescent Health is sponsored by several branches of the National Institutes of Health. Dr. Fuemmeler said he has served as a consultant to or received research funding from Addrenex, Otsuka, and Shire.

The biologic plausibility of a link between ADHD symptoms and obesity is based on results from positron emission tomography studies showing a reduced availability of dopamine receptors in people with ADHD and in people who

are obese. Better understanding of the link may improve understanding of the etiology of obesity and may help identify better treatments.

Dr. Fuemmeler and his coinvestigators used data collected during the fourth wave of the National Longitudinal Study of Adolescent Health, a recurring national survey begun in 1994 sponsored by the National Institute of Child Health and Human Development and several other branches of the National Institutes of Health.

At the onset, the representative sample of adolescents in the survey had an average age of 16. The fourth round of longitudinal data collection occurred in 2007 and 2008 at an average age of 29, and included 11,666 people, 49% women; among the sample, 66% were white, 15% African American, 12% Hispanic, and 7% other.

Average BMI for the entire sample was 29 kg/m². In all, 37% of participants were obese (BMI of 30 kg/m² or greater); 33% were normal weight (BMI less than 25 kg/m²); and 30% were overweight (BMI 25-29 kg/m²). Hypertension prevalence in the entire group was 13%.

In a multivariate analysis that controlled for age, sex, race, ethnicity, edu-

cation, depression, alcohol use, smoking, and physical activity, survey participants with hyperactive-impulsive symptoms of ADHD had a statistically significant 63% increased risk of being obese compared with survey participants without these symptoms.

People with ADHD symptoms of inattention had a smaller increased obesity risk, 23%. The data showed the link between ADHD symptoms and hypertension was weaker than the link between ADHD and obesity.

Although even people with one hyperactive-impulsive symptom had a modestly increased obesity risk, the risk was highest among people with three to eight hyperactive-impulsive symptoms, which linked with a 50% increased risk in the multivariate analysis.

In contrast, people with inattentive symptoms showed an increased obesity risk in only those with three to nine symptoms, a 21% increased risk, the investigators found.

Analysis of the longitudinal data, collected from participants at four times during the course of the survey to date, showed hyperactive-impulsive symptoms linked with increasing BMI over the course of adolescence and into adulthood. ■