Study finds anxiety impacts future cortisol production in gender specific ways

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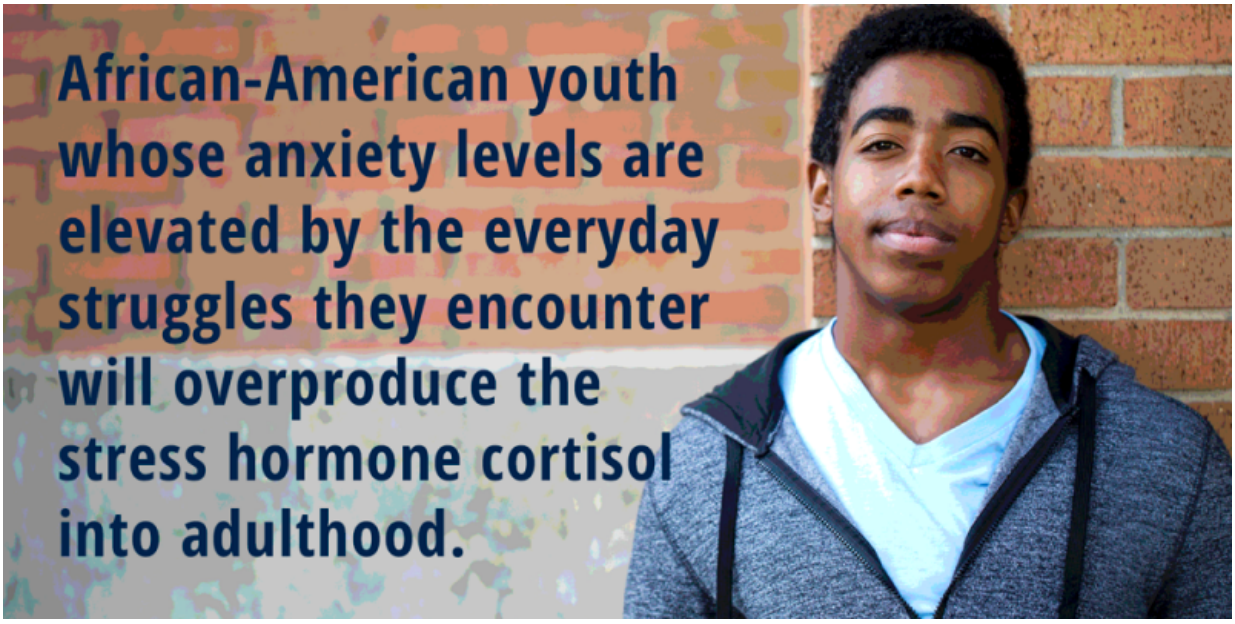

African-American youth whose anxiety levels are elevated by the everyday struggles they encounter will overproduce the stress hormone cortisol into adulthood, according to new research by the University of Michigan.

Researchers from the U-M School of Public Health and Medical School found that anxiety among females and alcohol use among males in their

teens predict their cortisol output seven years later.

"This paper extends current knowledge by following a unique sample of black youth, who are transitioning to adulthood in inner cities with huge trauma and other stressors," said Dr. Shervin Assari of the U-M Center for Research on Ethnicity, Culture, and Health, and the Department of Psychiatry.

"That is, of course, a difficult and challenging transition as the environment is not friendly to many of them, and opportunities are systematically blocked for many of them. Low safety, low job opportunities and high poverty are some elements of that life."

Specifically, chronic stress throws off the balance of hormones secreted in what is called the hypothalamus-pituitary-adrenal (HPA) axis. When stressed, the part of the brain known as the hypothalamus triggers the corticotropin-releasing hormone, which then stimulates secretion of adrenocorticotrophic hormone (ACTH) by the pituitary gland. ACTH secretion then results in the release of cortisol from the adrenal glands.

The cortisol response to fear or stress often is referred to as the fight-or-flight mechanism. The hormone is supposed to be spent by our bodies as we respond to the trigger. One way to use up the cortisol is an aerobic workout at the gym, for example.

For many, elevated levels of cortisol don't get used and then build up. Over time, the increased level of cortisol can throw off the regulation of the other hormones, some of which naturally decline as we age.

High cortisol levels can impact memory and learning, lower immune function, reduce bone density, cause increased weight gain, and raise blood pressure and cholesterol. It has been blamed for metabolic syndrome, diabetes, cardiovascular conditions, mental health issues,

including anxiety and depression, and shortened life spans.

Conclusions about the impact of stress on cortisol production and the impacts of excess hormone have been mixed, but nearly all of the research has used white subjects measured at one specific point in time, Assari said. The U-M study, reported in the current issue of the *International Journal of Endocrinology and Metabolism*, is the first to look at how anxiety levels affect cortisol levels in a gender-specific way among African-American youth over time.

The researchers used data from the Flint Adolescent Study, landmark longitudinal research of young people from the Michigan community conducted from 1994-2012.

The paper used a subset of data that included 176 young black people (85 male, 91 female) from four high schools, checking cortisol levels from 9th grade into early adulthood. They took samples of saliva to measure how anxiety level at age 15 impacted the entire HPA system, but specifically measuring cortisol.

"Living all their lives in a very stressful environment, which is associated with higher levels of anxiety, is not very good for the brains of these black youth, and such exposures will have long lasting effects, which is potentially preventable," Assari said. "Reducing level of stress and anxiety that these youth are experiencing should be a main strategy for early prevention of more severe mental and physical health problems."

More information: Shervin Assari et al. Anxiety Symptoms During Adolescence Predicts Salivary Cortisol in Early Adulthood Among Blacks; Sex differences, *International Journal of Endocrinology and Metabolism* (2015). DOI: 10.5812/ijem.18041

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