

Urban stressors may contribute to rising rate of diabetes in developing nations

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As people in developing nations relocate from rural areas to cities, the increased stress is affecting their hormone levels and making them more susceptible to diabetes and other metabolic disorders, according to a new study published in the Endocrine Society's *Journal of Clinical Endocrinology & Metabolism (JCEM)*.

About 387 million people worldwide have [diabetes](#), and 77 percent of them live in low- and middle-income countries, according to the International Diabetes Federation. In the Middle East and north Africa, one in 10 adults has diabetes.

One factor that can raise a person's risk of developing diabetes and other metabolic problems is chronic exposure to the [stress hormone cortisol](#). Cortisol can counteract insulin, the hormone that regulates blood sugar, and slow the body's production of it.

"Our findings indicate that people who leave a rural lifestyle for an urban environment are exposed to high levels of stress and tend to have higher levels of the hormone cortisol," said one of the study's authors, Peter Herbert Kann, MD, PhD, MA of Philipp's University in Marburg, Germany. "This [stress](#) is likely contributing to the rising rates of diabetes we see in developing nations."

To test the theory, researchers examined people from one ethnic group - the Ovahimba people of Namibia in southwestern Africa. Namibia is the second least-densely populated country in the world, with 38.6 percent

of residents living in urban environments.

In the prospective, cross-sectional, diagnostic study, the researchers measured cortisol, blood sugar and cholesterol levels in 60 Ovahimba people living in the regional capital, Opuwo. Opuwo has a population of around 21,000. The researchers then conducted the same tests on 63 Ovahimba people living at least 50 kilometers from the nearest town or village.

Among the urban residents, 28 percent of the people had diabetes or other glucose metabolism disorders. The rate was less than half that for rural residents. The urban dwellers also had significantly higher cortisol levels than their rural counterparts.

While the city residents reported that they exercised less and ate more fast food and desserts than the rural residents, lifestyle changes aren't the only factor at work, Kann said. The difference in cortisol levels indicates that the hormone is a key part of the equation.

"The results suggest sociocultural instability caused by urbanization contributes to an increased risk of developing diabetes or another metabolic disorder," Kann said. "This is the first prospective study to systematically show the body's regulation of the [hormone cortisol](#) plays a part in the metabolic changes brought on by the shift to an urban lifestyle."

More information: The study, "Alterations of Cortisol Homeostasis May Link Changes of the Sociocultural Environment to an Increased Diabetes and Metabolic Risk in Developing Countries: A Prospective Diagnostic Study Performed in Cooperation with the Ovahimba People of the Kunene Region / North-western Namibia," was published online, ahead of print.

Provided by The Endocrine Society

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