

New study shows differences in blood pressure variation across ethnicity

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Differences in circadian blood pressure variation due to a combination of genetic and cultural factors may contribute to ethnic differences in cardiovascular morbidity, according to new research from Binghamton University, State University of New York.

Gary D. James, professor of anthropology, nursing, and biomedical engineering and director of the graduate program in biomedical anthropology at Binghamton University, studied a group of [women](#) all working in similar positions at two major medical centers in New York City. These women were classified into four broad ethnic groups: African Americans, Hispanic Americans, European Americans, and Asian Americans. Each woman wore a 24-hour [blood pressure](#) monitor over the course of one mid-week workday. The monitor took blood pressures every 15 minutes, at which point each woman would write down what they were doing at the time (e.g. their posture, location, mood, and activity).

Circadian blood pressure variation is a controversial indicator of cardiovascular disease risk. Research suggests that having a smaller blood pressure decline from waking to sleep increases cardiovascular risk. Previous studies examining ethnic variation in the waking-sleep decline have compared African Americans or Asian Americans to European Americans and have shown that the European Americans have a larger decline than either group. The study conducted by James and his colleagues is the first to make waking-sleep comparisons among multiple groups of women: African American, Hispanic American, European

American, and Asian American. The results of the study confirm that the average blood pressure decline of African American and the Asian American women is less than the European American women, but it turns out that those differences are also similar with Hispanic American women. African American women and Asian American women differ in the same way with the Hispanic American women as they do with the European American women. The Asian American women also had higher pressures during sleep than all the other groups, so that their decline during sleep was the smallest, even smaller than the African American women. What is interesting about this, said James, is that the differences mostly reflect changes from being at work to sleeping; there were no ethnic differences in the decline in pressure from being at home in the evening to sleeping.

"Hypertension develops over time. What the results of this study suggest is that it's developing differently, in different groups, over time," said James. "You can see a clear difference in the way blood pressure is changing over the course of the day. It would suggest that some aspect of cultural upbringing might be contributing to this. There could be some genetic differences also. But, more than likely, it's probably a combination of both. The kinds of behavior people engage in are a source of what causes hypertension, and those behaviors are probably different in different groups. Why this is important is that if you want to treat hypertension and prevent cardiovascular diseases, you need to know a lot about your patient. Treatment is not just a generic thing."

James thinks that having 24-hour ambulatory [blood pressure monitoring](#), done for the purpose of determining hypertension, should be the norm. In Europe, they will not diagnose hypertension until they've done ambulatory monitoring at least two or three times. In America, a blood pressure taken at a doctor's office is often sufficient to make a diagnosis.

"Ambulatory blood pressure monitoring is not something that is done

routinely in medical practice," he said. "In America, we are just now coming around to the idea of having people take their blood pressure with a home monitor. These out-of office blood pressures provide a significant amount of added information. They at least tell clinicians what blood pressure is like when patients are relaxing at home, as opposed to when they are in the relatively unusual situation of being at the doctor's office.

The study, "Ethnic differences in inter- and intra-situational blood pressure variation: Comparisons among African-American, Hispanic-American, Asian-American, and European-American women," was published in the *American Journal of Human Biology*.

More information: Gary D. James et al, Ethnic differences in inter- and intra-situational blood pressure variation: Comparisons among African-American, Hispanic-American, Asian-American, and European-American women, *American Journal of Human Biology* (2016). [DOI: 10.1002/ajhb.22872](https://doi.org/10.1002/ajhb.22872)

Provided by Binghamton University

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