



## Depression and Anxiety Linked to Hypertension

People who experience symptoms of depression or anxiety are at increased risk of developing hypertension, suggest the results of a two-decade study.

The increase in risk associated with depression or anxiety is similar among white women and all men but is substantially higher among black women, according to Bruce S. Jonas, ScM, PhD, and James F. Lando, MD, MPH, of the Centers for Disease Control and Prevention.

The increased risk for depression or anxiety persisted even after controlling for other hypertension risk factors including: age, gender, race, education, smoking, alcohol use, baseline diastolic and systolic blood pressure, and body mass index. The increased risk observed among people with high levels of depression or anxiety remained about the same even when the investigators further controlled for body mass index changes over time. The increase in risk is comparable to a 10-point change in baseline diastolic blood pressure or to a 10-point change in body mass index.

"Risk factors such as baseline diastolic and systolic blood pressure, baseline body mass index, and change in body mass index over the follow-up period remain strong predictors of developing hypertension." said Jonas "However, this study indicates that elevated depression and anxiety levels may also play important roles."

The researchers followed a nationally representative sample of more than 3,300 healthy adults 25 to 64 years old who had normal blood pressure in the early 1970s as part of the first National Health and Nutrition Examination Survey. Participants completed a series of questionnaires probing their health history and psychological symptoms, and they were re-interviewed four times through the early 1990s.

The researchers report their findings in the current issue of *Psychosomatic Medicine*.

Overall, 15.7 percent of the adults reported high levels of anxiety or depression at the beginning of the study. Among these people, odds of being treated for hypertension two decades later were the highest. For example, 17.4 percent of white women with high levels of anxiety or depression eventually received treatment for hypertension, compared with 11.1 percent of white women with low levels. Similarly, 14.7 percent of men with high levels of depression or anxiety were treated for hypertension, compared with 11.2 percent of men with low levels. More than a third (37.4 percent) of black women with high levels of depression or anxiety were being treated for hypertension compared with 21.7 percent of black women with low levels.

How these negative emotions lead to the development of hypertension is not known for certain. Some clues may be found in the nervous system response to stress among those with anxiety and depression, the researchers say. In some studies, people with anxiety have displayed exaggerated responses by the autonomic nervous system, the part of the nervous system that controls body functions not under one's conscious control. In other studies, depressed people have displayed increased activity in their sympathetic nervous systems, the portion of the autonomic system that mobilizes the body in times of stress.

"It remains unclear how the association between hypertension and symptoms of anxiety and depression can be explained," said Jonas. "But given the high prevalence of both conditions, the relationship between these negative emotions and hypertension is of considerable public health importance."

The National Health and Nutrition Examination Survey Epidemiologic Follow-up Study was jointly initiated by the National Institute on Aging and the National Center for Health Statistics and has been developed and funded by the National Institute on Aging; National Center for Health Statistics; National Cancer Institute; National Heart, Lung, and Blood Institute; National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases; National Institute of Mental Health; National Institute of Alcohol Abuse and Alcoholism; National Institute of Allergy and Infectious Diseases; and the National Institute of Neurological and Communicative Disorders and Stroke, Bethesda, Md.

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