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NHLBI Study Finds Hostility, Impatience Increase Hypertension Risk

Impatience and hostility—two hallmarks of the "type A" behavior pattern—increase young adults' long-term risk of developing high blood pressure, according to a study funded by the National Heart, Lung, and Blood Institute (NHLBI), part of the National Institutes of Health. Further, the more intense the behaviors, the greater the risk.

However, other psychological and social factors, such as competitiveness, depression, and anxiety did not increase hypertension risk.

The research appears in the October 22/29, 2003, issue of *The Journal of the American Medical Association*. It was conducted by scientists at the Northwestern University Feinberg School of Medicine in Chicago, the University of Pittsburgh in PA, the University of Alabama at Birmingham, and the Birmingham Veterans Affairs Medical Center.

The research is the first prospective study to examine as a group the effects of key type A behaviors, depression, and anxiety on the long-term risk for high blood pressure. Earlier studies had mostly looked at individual psychological and social behaviors, and found conflicting results.

"The notion that a 'type A' behavior pattern is 'bad' for your health has been around for many years," said NHLBI Acting Director Dr. Barbara Alving. "This study helps us understand which aspects of that behavior pattern may be unhealthy.

"High blood pressure is a complicated condition," she continued. "Biological and dietary factors are involved in its development. The study suggests that behavior and lifestyle play a role in preventing and managing the condition."

High blood pressure, also known as hypertension, is a major risk factor for heart disease, kidney disease, and congestive heart failure, and the chief risk factor for stroke. Normal blood pressure is a systolic of less than 120 millimeters of mercury (mm Hg) and a diastolic of less than 80 mm Hg; high blood pressure is a systolic of 140 mm Hg or higher, or a diastolic of 90 mm Hg or higher.

About 50 million Americans—one in four adults—have high blood pressure and its prevalence increases sharply with age: The condition affects about 3 percent of those ages 18-24 and about 70 percent of those 75 and older.

"Although high blood pressure is less common among young adults, young adulthood and early middle age is a critical period for the development of hypertension and other risk factors for heart disease," said lead author Dr. Lijing L. Yan, Research Assistant Professor of Preventive Medicine at Northwestern University. "Previous research on young adults is limited, and our study helps to fill that gap."

The study used data from the NHLBI's Coronary Artery Risk Development in Young Adults (CARDIA) study, which involved 3,308 black and white men and women from four metropolitan areas (Birmingham, AL, Chicago, IL, Minneapolis, MN, and Oakland, CA). The participants were aged 18-30 at the time of their enrollment in the study. Enrollment took place from 1985 to 1986.

Participants were followed through 2000 or 2001, and had periodic physical examinations, which included blood pressure measurements and self-administered psycho-social questionnaires. Fifteen percent of all the participants had developed high blood pressure by ages 33-45.

Five psychological/social factors were assessed: time urgency/impatience, achievement striving/competitiveness, hostility, depression, and anxiety. The first three are key components of the type A behavior pattern and were assessed at the start of the study; the other two behaviors were assessed 5 years later. The factors were assessed by different scales based on the psychosocial instrument used but, in every case, a higher score meant the most intense degree of the behavior.

Time urgency/impatience was rated on a scale from 0 to 3-4. After 15 years, participants with the highest score of 3-4 had an 84 percent greater risk of developing high blood pressure and those with the second highest score of 2 had a 47 percent greater risk, compared with those with the lowest score of 0.

Hostility was rated on a score of 0 to 50 and then categorized into quartiles. After 15 years, those in the highest quartile had an 84 percent higher risk of hypertension and those in the second highest quartile had a 38 percent higher risk, compared with those in the lowest quartile.

No significant relationship was found for the other factors.

Results were similar for blacks and whites, and were not affected by age, gender, race, blood pressure at the time of enrollment, or education. They also held regardless of the presence of such established hypertension risk factors as overweight/obesity, alcohol consumption, and physical inactivity.

The researchers state that the rise in blood pressure due to psychological and social factors may be caused by a complex set of mechanisms and is not well understood. For instance, they note that stress could activate the sympathetic nervous system, causing a series of heart and blood vessel repercussions, including narrowing of the blood vessels and an increase in blood pressure.

"This long-term study has given us much-needed information about the effects of psychological and social factors," said Dr. Catherine Loria, CARDIA Project Officer at NHLBI. "But more research must be done on this topic, especially considering the widespread prevalence of high blood pressure in the U.S. and the fast pace of our lives."

To arrange an interview about this study, contact the NHLBI's Communications Office at (301) 496-4236.

NHLBI press releases and other materials, including an interactive Web page, "Your Guide To Lowering High Blood Pressure," are available online at www.nhlbi.nih.gov.