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[Columbia University's Mailman School of Public Health](#)

Lack of sleep linked to increased risk of high blood pressure

April 3, 2006 – If you're middle age and sleep five or less hours a night, you may be increasing your risk of developing high blood pressure, according to a study released by Columbia University's Mailman School of Public Health and the College of Physicians and Surgeons, and reported in *Hypertension: Journal of the American Heart Association*.

"Sleep allows the heart to slow down and blood pressure to drop for a significant part of the day," said James E. Gangwisch, PhD, lead author of the study and post-doctoral fellow in the psychiatric epidemiology training (PET) program at the Mailman School. "However, people who sleep for only short durations raise their average 24-hour blood pressure and heart rate. This may set up the cardiovascular system to operate at an elevated pressure."

Dr. Gangwisch said that 24 percent of people ages 32 to 59 who slept for five or fewer hours a night developed hypertension versus 12 percent of those who got seven or eight hours of sleep. Subjects who slept five or fewer hours per night continued to be significantly more likely to be diagnosed with hypertension after controlling for factors such as obesity, diabetes, physical activity, salt and alcohol consumption, smoking, depression, age, education, gender, and ethnicity.

The researchers conducted a longitudinal analysis of data from the Epidemiologic Follow-up Studies of the first National Health and Nutrition Examination Study (NHANES I). The analysis is based on NHANES I data from 4,810 people ages 32 to 86 who did not have high blood pressure at baseline. The 1982-84 follow-up survey asked participants how many hours they slept at night. During eight to 10 years of follow-up, 647 of the 4,810 participants were diagnosed with hypertension. Compared to people who slept seven or eight hours a night, people who slept five or fewer hours a night also exercised less and were more likely to have a higher body mass index. (BMI is a

measurement used to assess body fatness). They were also more likely to have diabetes and depression, and to report daytime sleepiness.

"We had hypothesized that both BMI and a history of diabetes would mediate the relationship between sleep and blood pressure, and the results were consistent with this," Dr. Gangwisch said.

Sleep deprivation has been shown previously to increase appetite and compromise insulin sensitivity.

Short sleep duration was linked to a new diagnosis of high blood pressure among middle-aged participants, but the association was not observed among people age 60 or older, he said. Dr. Gangwisch said the differences between the younger and older subjects might be explained by the fact that advanced age is associated with difficulties falling and staying asleep. Another factor could be that subjects suffering from hypertension, diabetes, and obesity would be less likely to survive into their later years.

Among study limitations, researchers found that high blood pressure often goes undetected. An analysis of NHANES III data showed that over 30 percent of people who had high blood pressure didn't know they had it.

Since the study is based on observational data, Dr. Gangwisch said more research is needed to confirm the association between short sleep duration and high blood pressure. "We need to investigate the biological mechanisms and, if confirmed, design interventions that will help people modify sleep behavior," he said.

Dr. Gangwisch said the study's main message is clear: "A good night's sleep is very important for good health."

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Co-authors of the study include Andrew G. Rundle, DrPH, assistant professor of Epidemiology at the Mailman School of Public Health; and Columbia University Medical Center's Steven B. Heymsfield, MD; Bernadette Boden-Albala, DrPH; Ruud M. Buijs, PhD; Felix Kreier, PhD; Thomas G. Pickering, MD, DPhil; Gary K. Zammit, PhD; and Dolores Malaspina, MD. Support for the study was provided by a National Research Service Award by the National Institute of Mental Health.

About the Mailman School of Public Health

The only accredited school of public health in New York City, and among the first in the nation Columbia University's Mailman School of Public Health provides instruction and research opportunities to more than 950 graduate students in pursuit of masters and doctoral degrees. Its students and more than 270 multi-disciplinary faculty engage in research and service in the city, nation, and around the world, concentrating on biostatistics, environmental health sciences, epidemiology, health policy and management, population and family health, and sociomedical sciences.

Columbia University Medical Center provides international leadership in pre-clinical and clinical research, in medical and health sciences education, and in patient care. The medical center trains future leaders in health care and includes the dedicated work of many physicians, scientists, nurses, dentists, and public health professionals at the College of Physicians & Surgeons, the College of Dental Medicine, the School of Nursing, the Mailman School of Public Health, the biomedical departments of the Graduate School of Arts and Sciences, and allied research centers and institutions. Columbia University Medical Center researchers are leading the discovery of novel therapies and advances to address a wide range of health conditions. <http://www.cumc.columbia.edu/>
