

Sleepless and Stressed

The Link Between Short Sleep Duration and High Blood Pressure

The average person will spend over 25 years sleeping in their lifetime. Naturally, sleep is an integral part of personal health, both mentally and physically. One aspect of physical health that has been shown to be closely associated with sleep is blood pressure. This association was examined in the Atlanta population alongside the role of stress in modifying sleep habits.

In the U.S. the prevalence of adult hypertension was 47.7% as of 2023. Hypertension is one of the single largest risk factors for heart disease and stroke. Heart disease is the leading cause of death for men and women in the United States, representing approximately 700,000 deaths in 2022. An increase in cardiovascular mortality and risk of hypertension was found to be associated with sleep duration of less than 7 hours.

Analysis of geospatial census data was used to examine two variables. The prevalence of self-reported short sleep duration, defined as less than 7 hours in a 24-hour period and self-reported high blood pressure diagnosis, defined as a BP $\geq 130/\geq 80$. Regions of Atlanta with a high prevalence of short sleep duration were associated with higher percentage of individuals reporting high blood pressure. The greatest prevalence of hypertension by region was reported to be 50.12%. It is also of note that the southern portion of Atlanta showed the greatest rate of both short sleep duration and high blood pressure.

Stress is a major risk factor for sleep disorders including diminished sleep duration. Anticipatory stress and acutely stressful events are both shown to increase physiological and cognitive arousal. This stimulation has been shown to be detrimental to healthy sleep onset and quality. While it is impossible to control all stressors in an individual's life, appropriate management of stress has been shown to reduce the negative impact on sleep. Further analysis of areas at high risk of sleep deprivation and high blood pressure in Atlanta may provide insight into modifiable individual and community stressors.

