

JACC: The duration and quality of sleep is of vital importance in cardiovascular health

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Poor quality sleep increases the risk of atherosclerosis according to the PESA CNIC- Santander Study published in the Journal of the American College of Cardiology (JACC)

People who sleep less than six hours a night may be at increased risk of cardiovascular disease compared with those who sleep between seven and eight hours suggests the results of the PESA CNIC- Santander Study published in the [Journal of American College of Cardiology \(JACC\)](#). Poor quality sleep increases the risk of atherosclerosis—plaque buildup in the arteries throughout the body—according to the study.

“Medicine is entering into fascinating phase. Until now we have tried to understand cardiovascular disease, thanks to studies like PESA CNIC- Santander, we are starting to understand health,” said Valentin Fuster, MD, Ph.D., General Director at Centro Nacional de Investigaciones Cardiovasculares (CNIC) and JACC editor-in-chief.

“There are two things we usually do every day: eat and sleep. We’ve known for many years the relation between good nutrition and cardiovascular health; however, we don’t know as much the

relation between sleep and cardiovascular health”, said senior study author José M. Ordovás, PhD, researcher at the CNIC in Madrid (Spain) and director of Nutrition and Genomics at the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University.

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“Cardiovascular disease is a major global problem, and we are preventing and treating it using several approaches, including pharmaceuticals, physical activity and diet. However, this study emphasizes we have to include sleep as one of the weapons we use to fight heart disease—a factor we are compromising every day,” said Ordovás. “This is the first study to show that objectively measured sleep is independently associated with atherosclerosis throughout the body, not just in the heart.”

Previous studies have shown that lack of sleep raises the risk of cardiovascular disease by increasing heart disease risk factors such as glucose levels, blood pressure, inflammation and obesity, he said. “In our study, we’ve included almost 4.000 participants of the PESA-CNIC Santander Study and we’ve wanted to evaluate the impact the sleep duration or fragmentation in atherosclerosis. We saw that the participants that slept less than 6 hours per day or had a very fragmented sleep presented more cholesterol plaques compared to those who slept more hours or had less fragmented sleep”. In conclusion, said Fernando Domínguez, first author of the article, “sleep duration and quality are of vital importance in cardiovascular health.”

Quality of sleep was defined by how often a person woke during the night, and the frequency of movements during the sleep, which reflect the sleep phases

The study included 3,974 bank employees from the PESA CNIC- Santander Study, led by CNIC General Director Valentín Fuster, MD, Ph.D., which uses imaging techniques to detect the prevalence and rate of progression of subclinical vascular lesions in a population with an average age of 46 years. All participants were without known heart disease and two-thirds were men. **All participants wore an actigraph, a small device that continuously measures activity or movement, for seven days to measure their sleep characteristics.** They were divided into four groups: those who slept less than six hours, those who slept six to seven hours, those who slept seven to eight hours and those who slept more than eight hours. The participants underwent 3D heart ultrasound and cardiac computed tomography (CT) scans to look for heart disease.

The study found that after accounting for traditional risk factors for heart disease, participants who slept less than six hours were 27 percent more likely to have atherosclerosis throughout the body compared with those who slept seven to eight hours. Similarly, those who had a poor quality of sleep were 34 percent more likely to have atherosclerosis compared with those who had a good quality of sleep. Quality of sleep was defined by how often a person woke during the night, and the frequency of movements during the sleep, which reflect the sleep phases.

While the number of participants who slept more than eight hours was small, the study also suggested that oversleeping may be associated with an increased risk in atherosclerosis, especially in women.

The new study is different from previous studies on sleep and heart health in several ways, Ordovás said. It is larger than many earlier studies and focused on a healthy population. Many previous studies have included people with sleep apnea or other health problems. While other studies have relied on questionnaires to determine how much sleep participants got, this study used actigraphs to obtain objective measures of sleep. “What people report and what they do are often different,” he said.

[*Domínguez, F., Fuster, V., Fernández-Alvira, J. M., Fernández-Friera, L., López-Melgar, B., Blanco-Rojo, R., . . . Ordovás, J. M. \(2019\). Association of Sleep Duration and Quality With Subclinical Atherosclerosis. *Journal of the American College of Cardiology*, 73\(2\), 134-144. doi:10.1016/j.jacc.2018.10.060*](#)

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