

Trains, planes, automobiles and heart disease

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Noise may disrupt the body on the cellular level in a way that increases the risk of common heart disease risk factors, according to a review topic published today in the *Journal of the American College of Cardiology* that examined the underlying mechanisms that may lead to noise-induced heart disease. The review is in response to growing evidence connecting environmental noise, including from road traffic and aircrafts, to the development of heart disease, such as coronary artery disease, arterial hypertension, stroke and heart failure.

In the last decade, the global burden of disease has shifted from communicable disease to non-communicable disease, including heart disease. Focus is placed on the diagnosis, treatment and prevention of traditional [heart disease risk](#) factors, but there is a growing body of evidence around risk factors in the physical environment that deserve further research.

Traffic [noise](#) has been shown in a number of studies to increase the risk of heart disease, but questions still remain about the precise mechanisms that lead to noise-induced heart

disease. In this review topic, researchers looked at novel translational noise studies demonstrating the molecular mechanisms that may lead to impaired vascular function, recent epidemiologic evidence of noise-induced cardiovascular [disease](#), and the non-auditory effects of noise and their impact on the cardiovascular system.

The authors said that based on the evidence, they propose that noise induces a stress response, characterized by activation of the sympathetic nervous system and increased levels of hormones, which will initiate sequelae and ultimately lead to vascular damage. Researchers said their evidence further strengthens the concept that transportation noise contributes to the development of [heart disease](#) risk factors such as hypertension and diabetes because noise is associated with oxidative stress, vascular dysfunction, autonomic imbalance and metabolic abnormalities.

Specific topics looked at were the adverse effects of [environmental noise](#) on the autonomic nervous system and consequences for the cardiovascular system, adverse cardiovascular effects of noise in humans and adverse cardiovascular effects of noise in animals.

The authors also looked at some of the mitigation strategies used around the world and said strategies like traffic management and regulation, the development of low-noise tires could help reduce noise, and air traffic curfews help reduce hazardous noise, but other strategies are needed.

Thomas Munzel, MD, lead author of the review and director of the Department of Internal Medicine at University Medical Center Mainz, Johannes Gutenberg University, Mainz, Germany, said, "as the percentage of the population exposed to detrimental levels of transportation noise are rising, new developments and legislation to reduce noise are important for public health."

Provided by American College of Cardiology

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