

Publication

Adverse cardiovascular effects of traffic noise with a focus on nighttime noise and the new WHO noise guidelines

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Exposure to traffic noise is associated with stress and sleep disturbances. The World Health Organization (WHO) recently concluded that road traffic noise increases the risk for ischemic heart disease and potentially other cardiometabolic diseases, including stroke, obesity, and diabetes. The WHO report focused on whole-day noise exposure, but new epidemiological and translational field noise studies indicate that nighttime noise, in particular, is an important risk factor for cardiovascular disease (CVD) through increased levels of stress hormones and vascular oxidative stress, leading to endothelial dysfunction and subsequent development of various CVDs. Novel experimental studies found noise to be associated with oxidative stress-induced vascular and brain damage, mediated by activation of the NADPH oxidase, uncoupling of endothelial and neuronal nitric oxide synthase, and vascular/brain infiltration with inflammatory cells. Noise-induced pathophysiology was more pronounced in response to nighttime as compared with daytime noise. This review focuses on the consequences of nighttime noise.

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