

Publication

The relationship between transportation noise exposure and ischemic heart disease : a meta-analysis

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Background: There is a growing body of evidence that exposure to transportation related noise can adversely affect health and wellbeing. More recently, research on cardiovascular disease has specifically explored the hypothesis that exposure to transportation noise increases the risk for ischemic heart disease (IHD). Our objective was to review and conduct a meta-analysis to obtain an overall exposure-response association. Methods and results: We conducted a systematic review and retained published studies on incident cases of IHD using sources of transportation noise as exposure. Study-specific results were transformed into risk estimates per 10 dB increase in exposure. Subsequently we conducted a random effects meta-analysis to pool the estimates. We identified 10 studies on road and aircraft noise exposure conducted since the mid-1990s, providing a total of 12 risk estimates. Pooled relative risk for IHD was 1.06 (1.03-1.09) per 10 dB increase in noise exposure with the linear exposure-response starting at 50 dB. Based on a small number of studies, subgroup analyses were suggestive of higher risk for IHD for males compared to females ($p=0.14$), and for persons over 65 years of age compared to under ($p=0.22$). Air pollution adjustment, explored only in a subset of four studies, did not substantially attenuate the association between noise exposure and IHD. Conclusions: The evidence for an effect of transportation noise with IHD necessitates further research into the threshold and the shape of the exposure-response association, potential sources of heterogeneity and effect modification. Research in different cultural contexts is also important to derive regional and local estimates for the contribution of transportation noise to the global burden of disease. (C) 2015 Elsevier Inc. All rights reserved.

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