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Review [J Hypertens.](#) 2012 Jun;30(6):1075-86. doi: 10.1097/HJH.0b013e328352ac54.

The quantitative relationship between road traffic noise and hypertension: a meta-analysis

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Abstract

Objective: Reviews have suggested that road noise exposure is associated with high blood pressure (hypertension). No reliable exposure-response relationship is as yet available. A meta-analysis was carried out in order to derive a quantitative exposure-response relationship between the exposure to road traffic noise and the prevalence of hypertension, and to gain some insight into the sources of heterogeneity among study results.

Methods: Twenty-seven observational studies published between 1970 and 2010 in English, German or Dutch, were evaluated. Finally, the results of 24 studies were included into the data aggregation.

Results: Road traffic noise was positively and significantly associated with hypertension: Data aggregation revealed an odds ratio (OR) of 1.034 [95% confidence interval (CI) 1.011-1.056] per 5 dB(A) increase of the 16 h average road traffic noise level (LAeq16hr) [range 45-75 dB(A)]. Important sources of heterogeneity were the age and sex of the population under study, the way exposure was ascertained, and the noise reference level used. Also the way noise was treated in the statistical model and the minimum years of residence of the population under study, gave an explanation of the observed heterogeneity. No definite conclusions can be drawn about the threshold value for the relationship between road traffic noise and the prevalence of hypertension.

Conclusion: Based on the meta-analysis, a quantitative relationship is derived that can be used for health impact assessment. The results of this meta-analysis are consistent with a slight increase of cardiovascular disease risk in populations exposed to transportation noise.

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