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Risk of Cardiometabolic Diseases in Adults Exposed to Transportation Noise: a Systematic Review and Meta-Analysis

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ABSTRACT

Background: Exposure to transportation noise is thought to contribute to the development of cardiometabolic diseases. A meta-analysis published by Kempen *et al* in 2018 collected and aggregated studies published up to 2015 on this subject. However, since then, many studies have been published. The aim of this review is to bring together the latest studies and to update the quality of the available evidence. **Material and methods:** (PROSPERO 2022: CRD42022353441) A systematic review of the literature was carried out using the Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA) framework. Subsequently, a meta-analysis was performed. Our research covered the period from January 1, 2014 to August 30, 2022. Risk of bias was assessed using the Risk of Bias in Non-Randomized Studies of Exposures (ROBINS-E) tool and quality of evidence was measured by taking into account Grading of Recommendations Assessment, Development and Evaluation (GRADE). The cardiometabolic outcomes considered were hypertension, cardiovascular morbidity and mortality, stroke, myocardial infarction, obesity and diabetes. **Results:** The literature review identified 39 studies included in the meta-analysis. The quality of evidence ranged from high to very low due to some risk of bias in study designs, discrepancies in study populations and some imprecision in estimated effects. **Conclusion:** The results confirm the findings of the review by van Kempen *et al*, although the size of some of the effects was revised slightly downwards. In addition, a clear improvement in the precision of the estimates leads to more robust results.

Keywords: Cardiometabolic Diseases, Transportation Noise, Literature review, Meta-Analysis