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[Occup Environ Med](#). 2015 Aug;72(8):594-601. doi: 10.1136/oemed-2014-102516.

Epub 2015 May 25.

Exposure to traffic noise and markers of obesity

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PMID: 26009579 DOI: [10.1136/oemed-2014-102516](#)

Abstract

Objectives: Limited evidence suggests adverse effects of traffic noise exposure on the metabolic system. This study investigates the association between road traffic noise and obesity markers as well as the role of combined exposure to multiple sources of traffic noise.

Methods: In a cross-sectional study performed in 2002-2006, we assessed exposure to noise from road traffic, railways and aircraft at the residences of 5075 Swedish men and women, primarily from suburban and semirural areas of Stockholm County. A detailed questionnaire and medical examination provided information on markers of obesity and potential confounders. Multiple linear and logistic regression models were used to assess associations between traffic noise and body mass index (BMI), waist circumference and waist-hip ratio using WHO definitions of obesity.

Results: Road traffic noise was significantly related to waist circumference with a 0.21 cm (95% CI 0.01 to 0.41) increase per 5 dB(A) rise in L(den). The OR for central obesity among those exposed to road traffic noise \geq 45 dB(A) was 1.18 (95% CI 1.03 to 1.34) in comparison to those exposed below this level. Similar results were seen for waist-hip ratio (OR 1.29; 95% CI 1.14 to 1.45) but not for BMI (OR 0.89; 95% CI 0.76 to 1.04). Central obesity was also associated with exposure to railway and aircraft noise, and a particularly high risk was seen for combined exposure to all three sources of traffic noise (OR 1.95; 95% CI 1.24 to 3.05).

Conclusions: Our results suggest that traffic noise exposure can increase the risk of central obesity. Combined exposure to different sources of traffic noise may convey a particularly high risk.

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