

Does traffic noise increase the risk of obesity?

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There is an association between road traffic noise and the risk of obesity among people who are particularly sensitive to noise, according to a study from the Norwegian Institute of Public Health.

Previously, a Swedish study reported a positive association between aircraft [noise](#) and waist circumference, but this is the first study to show a link with road traffic noise.

Noise from road traffic is a growing problem. Almost 1.4 million people in Norway have noise levels outside their residence that exceed the recommended limit of 55 decibels, and road traffic is by far the most common source of noise.

A number of studies in recent years have documented associations between long-term exposure to both aircraft and road traffic noise and increased risk of high blood pressure and cardiovascular disease. This study reinforces the knowledge that noise can contribute to more serious health conditions than annoyance and [sleep](#) disturbance.

"More research about the long-term effects of noise on health is needed. It is important to learn more about the mechanisms of disease development and to identify vulnerable groups, as there are large individual differences in sensitivity to noise," says Gunn Marit Aasvang, senior researcher at the Department of Air Pollution and Noise at the NIPH.

Results from this study:

- Among women who reported being particularly sensitive to noise, statistically significant associations were found between traffic noise levels and all three obesity markers: body mass index (BMI), waist circumference and hip-waist ratio (ratio between hip and waist circumference).
- The associations were weaker among men.
- The association with BMI was stronger among those who had been exposed to noise over several years.
- There was no association between noise and obesity markers when the population was viewed as a whole.
- Self-reported sleep quality and noise annoyance did not appear to affect the association between noise and obesity in our study.
- The association was stronger among men with the bedroom

facing a busy road, providing some support for the link to reduced sleep quality.

What do we already know about noise and health?

- According to the World Health Organization, [traffic noise](#) leads to the loss of at least one million healthy life years annually in Western Europe, mainly due to annoyance and sleep disturbance.
- Noise is a stress factor that contributes to the disturbance of rest, sleep and communication.
- A number of studies in recent years have also shown an association between noise, hypertension and cardiovascular disease.
- Experimental studies have shown acute increases in [blood pressure](#), heart rate and levels of stress hormones, but the health consequences of prolonged exposure to noise have been more uncertain.
- Both stress and inadequate sleep can affect metabolism and causes changes in hormone secretion.
- Several experimental and epidemiological studies in recent years show an association between lack of sleep and risk of overweight and obesity.
- A possible link between exposure to noise and increased risk of obesity may be mediated by reduced [sleep quality](#) and stress.
- Overweight and obesity are also risk factors for [cardiovascular disease](#).

Who was included in this study?

The study used data from two population studies from different periods from the same people:

- the Oslo Health Study 2000-2001 (HUBRO) and
- the follow-up Health and Environment in Oslo study from 2009-10 (HELMILO).

BMI based on measured height and weight, as well as waist and hip measurement from HUBRO, were examined in relation to estimated levels of [road traffic](#) noise outside of their home. Furthermore, the questionnaire data from HUBRO about annoyance and sleep disturbance was used.

The HELMILO questionnaires provided data about noise sensitivity, duration of residence and whether bedrooms were sheltered or faced onto a busy road. In the analyses, a number of factors were taken into account, including possible confounding factors such as lifestyle and socio-economic status.

More information: Oftedal B et al (2015) "Road traffic noise and markers of obesity – A population-based study." *Environmental Research* Volume 138, Pages 144–153

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