



Noise Increases the Risk of Heart Diseases

Recent epidemiologic study shows that long-term exposure to high traffic noise increases the risk of cardiovascular diseases.

Noise from transportation activities, and especially road transport noise, is certainly one of the most widespread and growing environmental issues in Europe. Extensively studied effects of noise pollution on human health include hearing loss, various degrees of annoyance related to sleep loss, distraction and productivity loss.

Furthermore, the epidemiologic studies on the relationships between heart diseases and noise pollution suggest a higher risk of heart attack in persons exposed to high levels of traffic noise. However, since the majority of these studies have low statistical power, more evidence is needed to firmly state that chronic exposure to traffic noise increases the risk of cardiovascular diseases.

On this background, German researchers endeavoured a major epidemiological study assessing the risk of heart attacks related to traffic noise exposure. The study covered the entire city of Berlin, included a larger set of potentially confounding factors and improved methods of exposure assessment.

In particular, the study included 2,000 heart attack patients that were compared with over 2,000 control patients from 32 hospitals in Berlin between 1998 and 2001. The outdoor traffic noise level was determined for each patient based on noise maps of the city. Standardized interviews were conducted to assess possible confounding factors and the annoyance from various noise sources.

Overall, the results of the study support the hypothesis that chronic exposure to traffic noise actually increases the risk for heart diseases by boosting cardiovascular risk factors such as general stress conditions. However, differences in effects exist between men and women. While noise-exposed women were not at higher risk of heart attacks, men exposed to sound levels that equalled or exceeded 70 dB(A) during the day showed an increase in risk of heart attack compared with those who lived in streets where the sound level did not exceed 60 dB(A).

Moreover, this risk for men increased when the years of residence at the same address with higher levels of noise exposure were considered. These data show that chronic noise induces physiological stress that eventually leads to the manifestation of pathologic changes. In other words, on the long run, the physiological stress caused by noise could prompt increased levels of stress hormones in the body that could increase blood pressure and levels of blood lipids leading to heart attack.

The findings of this major study suggest that more caution is needed when it comes to protecting people from both environment and workplace noise, especially for the persons with existing cardiovascular diseases. For example, the researchers suggest that the current level requiring ear protection could be lowered from 85dB(A), widely used in western Europe, to somewhere between 65 and 75dB(A).

Source: Babisch W, Beule B, Schust M, Kersten N, Ising H. (2005) "Traffic noise and risk of myocardial infarction", *Epidemiology*, 16(1):33-40.

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