Impact of short-term aircraft noise on cardiovascular disease risk in the area surrounding London Heathrow airport: the RISTANCO epidemiological study

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Plain language summary

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Previous studies have found links between long-term aircraft noise exposure and heart disease or stroke, but there are very few such studies on short-term noise exposure.

We first looked at how aircraft noise varies across the day in areas affected by noise from aircraft arriving at and departing from London Heathrow airport. We used standard noise models that use information such as flight paths, type of aircraft and weather conditions to estimate aircraft noise levels at different times of day near Heathrow airport in 2014–18. We found that the daytime periods 7 a.m.–7 p.m., with the largest number of flights, had higher noise levels than evening or night-time and higher numbers of noisy flights. However, the early morning (6 a.m.–7 a.m. had the highest average noise levels. Night-time aircraft noise levels were lower but fluctuated more than at any other time of day.

We investigated inequalities in noise exposures by comparing wealthy with less wealthy areas and found that wealthier areas tended to have lower aircraft noise levels, especially at night.

We then examined whether higher noise levels at particular times of day in an area were linked with higher hospital admissions and deaths from heart disease or stroke (cardiovascular disease). We saw a small increased risk of hospital admissions for cardiovascular disease if there were high evening noise levels the previous day. This may be linked to sleep disturbance. Men aged over 65 years also showed increased risks associated with daytime aircraft noise.

Finally, we assessed whether areas prone to changing aircraft noise patterns (i.e. with relief periods from aircraft noise) affected the increased risk of cardiovascular disease in areas with higher noise in the evenings and found the higher risks were only seen in areas with more constant noise levels. More research is needed to investigate potential health benefits of relief periods with lower noise.

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