

Long-term exposure to road traffic noise and incidence of psychiatric disorders: a prospective cohort study

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ABSTRACT

Background: Road traffic noise may increase sleep disorders or annoyance. However, the evidence on psychiatric disorders is scarce. We examined the association between long-term exposure to road traffic noise and incident psychiatric disorders.

Methods: We followed 25,027 women from the Danish Nurse Cohort (> 44 years) from baseline (1993 or 1999) to their first hospital contact for psychiatric disorders or December 31, 2015, whichever came first. Residential annual mean levels of day-evening-night road traffic noise (Lden) were estimated by the Nord2000 model. We applied time-varying Cox regression models to estimate the association of 3-year mean exposure to Lden with incidence of mood, neurotic, substance use, and depressive disorders, after adjusting for potential confounders.

Results: During 18 years of follow-up, 338 nurses developed psychiatric disorders (177 mood, 42 neurotic, 26 substance use, 135 depressive disorders, and 42 with more than a disorder). We observed positive associations between Lden and psychiatric disorders. In particular, substance use disorders showed a hazard ratio (HR) of 2.02 [95% confidence interval (CI): 1.67, 3.51] per 10 dB increase in Lden, and other psychiatric disorders showed positive but insignificant HRs of 1.03 (95% CI: 0.85, 1.24), 1.12 (0.7, 1.68), and 1.15 (95% CI: 0.91, 1.43) for mood, neurotic, and depressive disorders, respectively.

Conclusion: Our novel finding suggests that long-term exposure to road traffic noise may increase risk of psychiatric disorders.

Keywords: Cohort study, Psychiatric disorders, Road Traffic Noise