The association between road traffic noise exposure and blood pressure among children in Germany: the GINIplus and LISAplus studies.

Studies examining the association between road traffic noise and blood pressure in children are scarce. Nighttime noise levels and window orientations have not been considered in most previous studies. Investigate the association between road traffic noise exposure and blood pressure among children, and investigate the impact of bedroom window direction on this association. We measured blood pressure in 605 children aged 10 years from two Munich cohorts. Demographic and health information was collected by parent completed questionnaires. Road traffic noise levels were assessed by day-evening-night noise indicator "Lden" and night noise indicator "Lnight". Minimum and maximum levels within a 50 m buffer around child's home address were derived. Generalized additive models were applied to explore effect of noise levels on systolic and diastolic blood pressure (SBP and DBP). The orientation of child's bedroom window was considered in sensitivity analyses. DBP was significantly associated with the minimum level of noise during 24 h (Lden_min) and nighttime (Lnight_min). Specifically, DBP increased by 0.67 and 0.89 mmHg for every 5 A-weighted decibels increase in Lden_min and Lnight_min. After adjusting for Lden_min (Lnight_min), DBP of children whose bedroom window faced the street was 1.37
(1.28) mmHg higher than those whose bedroom window did not, these children showed statistically significant increased SBP for $\text{Lden}_{\text{min}}$ (3.05 mmHg) and $\text{Lnight}_{\text{min}}$ (3.27 mmHg) compared to children whose bedroom window did not face the street. Higher minimum levels of weighted day-evening-night noise and nighttime noise around the home residence may increase a child's blood pressure.