

PUBLIC TRANSPORT AS INDICATOR OF NOISE EXPOSURE IN URBAN AREAS

Katarina Paunovic, *Institute of Hygiene and Medical Ecology, School of Medicine, University of Belgrade, Serbia*

Goran Belojevic, *Institute of Hygiene and Medical Ecology, School of Medicine, University of Belgrade, Serbia*

Branko Jakovljevic, *Institute of Hygiene and Medical Ecology, School of Medicine, University of Belgrade, Serbia*

Background and Aims: Public transport has never been used as an indicator of noise exposure in studies on noise and health, contrary to noise levels and traffic density. The aim of this study was to investigate the relationship between public transport, noise levels and traffic density in urban areas.

Methods: A cross-sectional study was performed in an urban municipality in Belgrade, Serbia. Noise levels were measured in the middle of all investigated streets in two daily intervals, in one evening interval, and in two night intervals. Simultaneously, traffic density was registered as the number of light vehicles (motorbikes, motors and cars) and heavy vehicles (vans, trucks, lorries, buses, trams, trolleybuses) in all streets. The presence and the type of public transport (bus, tram and trolleybus) were assessed by matching the streets with official public transport maps for Belgrade.

Results: Public transport was running in 65 (23%) streets of the investigated urban area; 218 (77%) of the investigated streets were free of public transport. In streets where public transport was running, noise levels and traffic density were significantly higher during the daytime (by 12 dBA and by 200 to 400 heavy vehicles per hour) and during the nighttime (by 10-13 dBA and by 30 heavy vehicles per hour), compared to streets where no public transport was present. The highest noise levels were measured in streets where public transport included both buses and trams (68.0 ± 2.9 dBA), followed by streets with buses and trolleybuses (66.8 ± 2.7 dBA), streets with busses only (67.7 ± 2.2 dBA); the lowest noise level at daytime was reported in streets where trams were the only mean of transport (62.0 ± 4.6 dBA).

Conclusions: Public transport is strongly related to noise levels and traffic density in urban areas. We propose public transport to be used as an indicator of noise exposure.