
RELEVANT, BIASED OR CONFOUNDED RESULTS? – ASSOCIATIONS OF ENVIRONMENTAL NOISE AND RESPIRATORY SYMPTOMS IN THE NATIONAL CHILDREN’S RESPIRATORY SURVEY (OGYELF), HUNGARY, 2005

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Objective: The aim of the study was to determine associations of environmental noise and respiratory symptoms among children in a nationwide questionnaire survey.

Material and methods: In fall 2005, the National Institute of Environmental Health performed a survey among 8–9-year-old pupils in Hungary. The anonymous questionnaires asked for demographical data, perinatal circumstances, respiratory/other symptoms, housing environmental, lifestyle and social factors. 100,333 standardised questionnaires were sent into 2,726 schools. After voluntary, parental completion, from 2,160 schools (79.2%) 62,711 questionnaires were sent back (76.4%) by post or by the local medical officers. After fast GIS evaluation of the respiratory symptoms, ongoing data entry have been performed by Epi Info 6.04d (recently 39,840 entered records, 63.5%). Only data of children who lived at the same place from birth were analyzed, so, altogether 16,382 children (41.1%) were included in the study. Tabulation and logistic regression were performed with postcode clusters by STATA/W/SE v9.2. The odds ratios (aOR) were adjusted to gender/age of the children, to respiratory (or allergic) illness of the parents, to early chest disease, to the

traffic, to a near factory, to crowding, to mould in the flat, to ETS and to mother’s education.

Results: Of the children, 49.1% were boys and 50.9% were girls; 35.9% were 8-year-old and 64.1% 9-year-old. 31.5% of the children had a parent with respiratory illness. Of the children, bronchitic symptoms had 15.7%, (recent) asthmatic symptoms 9.9% and allergy (for inhalative allergens) 16.5%. 18.2% of the children lived far from traffic, 67.1% near small traffic and 14.7% near busy traffic. 66.7% of the parents judged the noise for not disturbing, 30.7% for slightly disturbing and 2.6% for sleep-disturbing. For bronchitic symptoms, the slightly disturbing noise was associated with higher risk (aOR=1.32, 95% CI=1.15–1.50), sleep-disturbing noise with much higher risk (aOR=2.69, 95% CI=1.99–3.64), compared to no disturbing noise. The same ratios for asthmatic symptoms were aOR=1.36, 95% CI=1.16–1.60 and aOR=2.13, 95% CI=1.45–3.12; for allergy, aOR=1.15, 95% CI=1.02–1.31 and aOR=1.45, 95% CI=1.05–2.00, respectively. Unstratified and stratified (for parents – respiratory illness or for traffic) results differed only slightly.

Conclusions: In a countrywide questionnaire study, among 16,383 8–9-year-old children, the noise and respiratory symptoms showed significant, quasi dose-response associations. To decrease observer bias, stratifying to parents’ respiratory illness, the same associations were recognized. To decrease confounding with chemical pollution due to the traffic, stratifying to that variable, the results changed only a little. The results are consistent with those of other epidemiological investigations. Physiologically, the alarm reaction caused by the noise and the subsequent immune deprivation can cause the observed effect. Supposing no change in traffic noise during the years, the effect surely did follow the hypothetical cause. However, for *ceteris paribus* arguments are hard to achieve, objective sound measurements of the health status can approximate the evidence level.