

# LIVING CLOSE TO A MAIN ROAD DURING INFANCY IS ASSOCIATED WITH ATOPIC ECZEMA IN KOREAN SCHOOLCHILDREN

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**Background and Aims:** The prevalence of allergic diseases has increased during the past decades in Korea, with the increasing tendency that more children are exposed to traffic-related air pollutants as potential risk factor of allergic diseases.

The objective in our study is to assess the relationship between living close to a main road during infancy and atopic eczema in Korean children.

**Methods:** From 2005 to 2006, we studied the first or second grade elementary school children at the age 6~8years in ten South Korea cities as part of the first Children's Health and Environmental Research (CHEER) survey. During the first two years of the CHEER study, 2927 children were included in these analyses. To collect information on the medical history of the children, we used standardized questionnaires that include the International Study of Asthma and Allergies in Childhood (ISAAC) questions. In order to assign an exposure estimate to each subject, the residential address of each participant was geocoded and subsequently mapped using geographic information system (GIS) computer software ArcGIS 9.3. Distance of residence from the nearest main road was classified into four categories (<75, 75 to 110, 110 to 200, and >200 m) and length of main roads within a 200m buffer was also classified into four categories (0, 1 to 150, 151 to 300, and >300 m). Logistic regression analysis was performed to estimate odds ratios (ORs) and 95% confidence intervals (CIs) of atopic eczema relative to the distance of homes from the nearest main road and length of main roads.

**Results:** The lifetime and 12-month prevalence of atopic eczema, the lifetime atopic eczema diagnosis, and 12-month treatment were 37.7%, 21.9%, 33.4%, and 9.4%, respectively. Inverse associations were found between the distance to the nearest main road and atopic eczema. The highest adjusted odds ratios(ORs) for children living less than 75m from main roads were found for lifetime atopic eczema (OR, 1.36; 95% confidence interval(CI), 1.04-1.77), past year atopic eczema (OR, 1.50; 95% CI, 1.06-2.24), atopic eczema treatment (OR, 1.54; 95% CI, 1.06-2.24), respectively.

**Discussion:** The current cross-sectional study found that a shorter distance from the residence to the nearest main road during infancy, especially within 75m, was significantly related to an increased prevalence of doctor-diagnosed atopic eczema and symptoms of atopic eczema at the age 6~8years. Furthermore, a positive exposure-response relationship between length of road within 200m of the residential location was significant for doctor-diagnosed atopic eczema and symptoms of wheeze or atopic eczema. However, our findings were based on a proxy marker for traffic-related air pollution and on crude exposure period. Further investigation with longitudinal models are needed which incorporate life-time exposure to pollution.