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Title: Incidence of asthma and wheeze among teenagers is associated with environmental risk factors

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Body: Aim: To study the incidence of asthma and wheeze among teenagers in relation to environmental risk factors, including smoking. Method: In a longitudinal study about asthma and allergic diseases within the Obstructive Lung Disease In Northern Sweden (OLIN) studies, a cohort of school children (n=3,430) was followed annually from age 7-8yrs by completion of an extended ISAAC questionnaire. Skin prick tests (SPT) were performed at age 12yrs. In the endpoint survey (age 19yrs) 2,861 (83% of original responders) participated. Risk factor analyses for the cumulative incidence of asthma and wheeze from age 12 to 19yrs were performed (mean follow-up time 6.5y). Results: The cumulative incidence of physician-diagnosed asthma was 7.6%, current asthma 6.6%, and current wheeze 22.4%. Interestingly, increasing number of siblings was inversely related to the incidence of physician-diagnosed asthma, current asthma and current wheeze in multivariate analyses (OR 0.8-0.9). Current smoking was related to the incidence of asthma (OR 1.6) and current wheeze (OR 2.8). Ex-smoking (OR 2.5), living close to a road with heavy traffic (OR 1.3) and house dampness (OR 1.3), respectively, was significantly associated with the incidence of current wheeze. As expected, female sex, positive SPT, and parental history of asthma were also significant risk factors. Conclusion: Beside the risk factors sex, positive SPT, and heredity of asthma, several environmental risk factors were found, including smoking, traffic exposure and house dampness. Thus, the incidence of asthma and wheeze among teenagers could partly be reduced by smoking prevention and improvement of their living environment.