

Children's Environmental Exposures and Respiratory Symptoms

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Introduction

According to epidemiological data on the prevalence of asthma, 5-10% of children in Poland have been diagnosed with the disease. This study compared the incidence of allergens and respiratory symptoms in a sample of kids with and without asthma in order to assess the relationship between environmental exposure and the prevalence of bronchial asthma in a paediatric population. 995 primary school students in the province of Silesia were the subject of a cross-sectional study. Based on responses from parents to a questionnaire, the health state of children, the prevalence of bronchial asthma, and the effectiveness of allergic skin tests were evaluated. Depending on the diagnosis of asthma, the parent's subjective evaluation of the child's health varied greatly. Asthma is linked to a number of different illnesses: children with bronchial asthma were statistically significantly more likely to experience allergic reactions to house dust, pollen, hay fever.

Asthma is characterised as a diverse condition with persistent respiratory system inflammation. Asthma can be categorised clinically using a variety of different criteria. The most prevalent kinds of asthma include allergic, non-allergic, adult-onset, persistent airflow limitation, and obesity-related asthma. Contrary to non-allergic asthma, which is typically diagnosed in adults, allergic asthma typically begins in childhood and is accompanied by comorbidities such as allergic conjunctivitis, eczema, allergic rhinitis, and gastrointestinal allergy. Wheezing, perceived dyspnea, chest tightness, and a reflex response from the airways accompanied by a distinctive sound as a result of an antagonistic mechanism towards rapid glottal closure make up the clinical picture of juvenile patients with an asthma diagnosis on medical examination. The three most typical asthmatic symptoms are wheeze, dyspnea, and cough.

One of the main variables influencing the prevalence of asthma is environmental risk factors. Environmental tobacco smoke is a significant risk factor for asthma, according to epidemiological studies. Additionally, there is mounting proof that moulds are a risk factor, even if some research contend that they are exclusively detrimental in the bedroom and beneficial everywhere in the house. Epigenetic predictors during DNA strand methylation and high frequencies of IgE-dependent antibodies are two examples of how research on asthma, allergic reactions, and hypersensitivity states demonstrates a correlation between pulmonology and allergology. Boys have asthma and allergy illnesses more frequently than girls. The structural differences between the male and female lungs may be the cause of these variations. A bigger proportion of innate type 2 lymphoid cells, which are a component of natural immunity, are seen in the lungs of females. Differences in hormone chemistry, which could trigger inflammatory processes linked to macrophage polarisation, are also significant. The hygiene hypothesis, whose presumptions are based on the increase in the degree of morbidity through the implementation of excessive personal hygiene rules, sanitary regime, increased degree of

agglomeration, and unbalanced quantitative-qualitative diet, explains the etiopathogenesis of asthma and allergic reactions.

Description

Environmental circumstances might be categorised as the final factor. The human body's equilibrium is impacted by diet. The effect of nutrition on the onset of asthma is mostly investigated during pregnancy. Therefore, a woman's nutritional state can influence how her fetus's immune system reacts. According to the microbiota programming of the organism throughout the first three years of a child's life, the aforementioned actions subsequently deactivate the immunomodulatory processes of the microbiota state [1]. Responses to inhaled chemicals are started by the epithelium, and the recruitment and activation of immune cells in the airways is brought about by cytokines that are produced by the epithelium. Studies show a connection between asthma and alterations in epithelial shape and function. In the airways of half of those with asthma, there was an active type 2 immune response, which led to increased mucus production by the epithelium and blockage of the airways. Additionally, the information gathered was based on a voluntary anonymous questionnaire that parents completed. The absence of a completed survey indicated that the parent did not consent to participate in the study because surveys were given out directly to parents of school-aged children [2].

An anonymous survey based on the form used in the International Study of Asthma and Allergies in Childhood served as the research tool. Apart from respiratory problems, we do not inquire about any other health outcomes or illnesses from the parents. Only the categories extremely good, somewhat good, and average were used by parents to rate their child's health. On the basis of the answers provided by parents in the questionnaire, the presence of mould and moisture in children's residences was also evaluated. The research children's parents filled out the questionnaire. Univariate logistic regression was used to confirm the effects of allergy, allergic illness and environmental factors on the occurrence of asthma [3]. The use of pets, exposure to cigarette smoke, and the presence of mould or dampness in the home were all independent variables in unadjusted models. It is varied, and the clinical symptoms, as well as the procedures utilised for diagnosis and treatment, varies between children and adults [4]. The therapy of this condition is extremely difficult due to issues with diagnosis and medication selection that must be both safe and effective.

Approximately 25-35% of people are thought to have a congenital tendency to create excessive quantities of IgE, although only a small proportion of them—a few percent of the population—go on to develop asthma. Unfortunately, asthma is only detected too late and too rarely in Poland, which puts patients at risk for receiving ineffective treatments, developing a variety of pathological alterations in their respiratory systems, and ultimately suffering long-term respiratory system damage [5]. It is also important to note that the prevalence of asthma in the Silesian Province may be linked to the region's poorer air quality. It has been established that there is a link between the seasonal decline in air quality and an increase in the number of respiratory illnesses such as asthma attacks. Furthermore, studies show that there is a risk of increasing respiratory disease even when residing in an area with relatively low levels of air pollution. Long-term exposure to air pollution, particularly that caused by ozone, nitrogen dioxide, and fine particulate matter, has been associated to this. These findings could be used to assess the level of environmental risk required to continue making progress on improving the air we breathe.

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Conclusion

This study compared the incidence of allergens and respiratory symptoms in a sample of kids with and without asthma in order to assess the relationship between environmental exposure and the prevalence of bronchial asthma in a paediatric population.

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