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Editorial

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The Trend of Childhood Asthma Prevalence Decreased in 2022: True or Not?

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▸ See the article "Trends in the Prevalence of Asthma in Korean Children: A Population-Based Study From 1995 to 2022" in volume 17 on page 317.

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The definition and classification of asthma have varied over recent decades.[1] According to the Global Initiative for Asthma, asthma is a heterogeneous disease characterized by chronic airway inflammation. It is defined by respiratory symptoms such as wheezing, shortness of breath, chest tightness, and cough that vary over time and in intensity, together with variable expiratory airflow limitation.[2]

Asthma prevalence refers to the proportion of individuals within a given population who have asthma at a specific time. It is typically determined by assessing symptoms over a defined period, commonly within the past year.[3] The diagnosis of asthma involves assessing medical history, physical examination, lung function test, and responsiveness to inhaled bronchodilator. However, no universally accepted methods exist for combining information, leading to variations in diagnosis across different doctors, regions, and time points, along with potential pitfalls.[4]

Standardized questionnaires are commonly employed in large-scale epidemiological studies, where clinical diagnosis is not practical. Questions regarding recent symptoms, such as those within the past 12 months, are generally more reliable than those concerning distant symptoms, as they minimize recall bias.[5,6] Written questionnaires have generally served as the principal instrument for assessing asthma symptom prevalence in community surveys, driving the development of standardized approaches such as the International Study of Asthma and Allergies in Childhood (ISAAC).[3]

ISAAC was established to enhance epidemiological research into asthma and allergic disease through a standardized methodology, facilitating international comparisons and collaboration.[3] Its primary objectives were to describe the prevalence and severity of asthma, rhinitis, and eczema in children globally, establish baseline data, and provide a framework for investigating genetic, environmental, lifestyle, and medical care factors affecting these diseases. Another goal was measuring time trends, so the methodology had to be sufficiently robust to achieve this.[3,7]

The ISAAC studies occurred in 3 phases. Phase 1 (1994–1995) assessed the initial prevalence and severity of asthma and allergic disease. Phase 2 investigated potential etiological factors indicated by phase 1. Phase 3 (2001–2003) repeated phase 1 to assess trends in prevalence.[7,8] ISAAC phase 1 involved over 700,000 adolescents and children from 156 centers in 56

countries, including Korea. Two age groups of schoolchildren participated: a compulsory group of 13 to 14-year-olds and an optional group of 6 to 7-year-olds. Schools were the sampling units with a minimum of 10 randomly selected per center (or all schools used). Students were selected either by grade, level, or year—prioritizing classes with the highest number of children in the target age group—or by age group alone.[3] A high response rate was required for valid estimates of population prevalence. The simplicity of the ISAAC methodology and its relatively low cost enabled it to be undertaken in most settings around the world, more than in any other epidemiological study of asthma.

Asthma prevalence surged in the late 20th century, likely driven by modern lifestyle changes, increased urban exposures, altered microbial exposure, and genetic or epigenetic factors. Currently, asthma prevalence exceeds about 15% in certain regions, with large geographical variations.[9,10] Recent data from the Global Burden of Diseases, Injuries, and Risk Factors Study 2021 Asthma and Allergic Diseases Collaborators suggest a global decline in asthma prevalence from 1990 to 2021, with projections of continued reduction through 2050: the global age-standardized prevalence rate decreased by 40.0% from 5,568.3 (95% uncertainty interval, 4,899.6–6,349.8) per 100,000 population in 1990 to 3,340.1 (2,905.2–3,832.2) per 100,000 in 2021, and is forecasted to continue to decrease by 23.2%, resulting in 2,566.7 (2,131.9–3,058.9) per 100,000 in 2050.[11]

Serial epidemiological studies conducted in Korea underscore the active contributions of Korean pediatric allergists in advancing epidemiological research.[12] Lee *et al.*[13] reported findings from a nationwide epidemiological survey conducted in 2022 among the general pediatric population using the ISAAC questionnaire, consistent with prior surveys. Although the prevalence of ever and current asthma significantly decreased in 2022 compared to earlier assessments (1995, 2000, and 2010), the influence of social distancing measures during the coronavirus disease 2019 (COVID-19) pandemic must be acknowledged.[13] Concurrent data indicate fewer hospital visits for allergic or respiratory conditions during the pandemic,[14,15] suggesting reduced environmental exposures.

Interpreting these findings requires careful consideration of the primary objective of the 2022 survey[13]: Was it intended to assess temporal trends in asthma prevalence or to provide representative cross-sectional data in Korean children? If the aim was to compare temporal trends, methodological similarities and differences with previous studies must be addressed. The sampling method used in this study differs somewhat from that of earlier domestic ISAAC studies (such as 1995 and 2000) in terms of the regions included and the number of participants recruited per grade level in each school.[13,16,17] Therefore, a clear comparison of subject and age group selection across the 1995, 2000, and 2010 studies—along with the methodological differences in the 2022 study, particularly in regional sampling strategies—is essential to enable readers to evaluate the potential impact of these variations on the study results. Methodological consistency is crucial for meaningful comparisons over time, as even minor methodological variations can significantly impact the interpretation of prevalence data. Utilizing identical questionnaires across studies does not inherently ensure comparability, as contextual factors and methodological differences may alter outcomes.

Cross-sectional surveys with standardized protocols yield valuable data, but interpreting temporal trends based on questionnaire responses has inherent limitations. Given the marked prevalence decline observed in 2022,[13] potentially influenced by external factors such as the COVID-19 pandemic, future epidemiologic research should address these elements.

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Since its initiation in 1995, the ISAAC studies in Korea have notably advanced the epidemiology of allergic diseases,[16] fostering subsequent initiatives such as the COCOA birth cohort[18] and nationwide pollen research,[19] thus elevating Korea's global standing in pediatric allergy research.

Continued dedication and insights from researchers pursuing further studies in this field promise significant future contributions.

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