



Jornal de
Pediatria

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EDITORIAL

A sequel of the International Study of Asthma and Allergies in Childhood or a prelude to the Global Asthma Network? ☆, ☆ ☆

Uma sequência do estudo internacional de asma e alergias na infância ou um prelúdio da Global Asthma Network?

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Asthma is one of the most prevalent chronic diseases, affecting over 334 million individuals worldwide.¹ A very different distribution of its prevalence around the world was described by the International Study of Asthma and Allergies in Childhood (ISAAC).^{2,3} This enormous research program has been surveying the prevalence and risk factors for asthma, rhinoconjunctivitis, and eczema globally for three decades, and has provided a large body of epidemiological information which was expected to yield new clues about the etiology of these conditions. However, the latest survey, ISAAC phase three, was conducted ten years ago, and since then, no other has been performed worldwide. Fortunately, some researchers have used the same methodology

to study these conditions locally, comparing the new and the previous data whenever available.⁴⁻¹¹ Solé et al. have updated these data in Brazil.¹²

Their study provides valuable information about the prevalence of asthma, rhinoconjunctivitis, and eczema in Brazilian adolescents. Comparing to data from nine years ago, rhinoconjunctivitis and eczema prevalences are still increasing, in contrast to that of asthma, which shows a declining trend.^{13,14} Unfortunately, only seven of the 21 Brazilian ISAAC centers participated in this study; the overall results, if they had come from the whole 21 centers, could have been different, even significantly so.

An increase in asthma prevalence should have been expected in the age group of the aforementioned study, considering the high proportion (24.4%) of 6-7 year-age children presenting asthma symptoms at ISAAC phase three.^{13,14} However, a cohort effect has not occurred.

The authors discuss some factors that have changed in their environment in recent years, which could have lead to the decrease in asthma prevalence. Some of these changes are related to dissemination of asthma knowledge, such as the implementation of management programs or diffusion of medical guidelines and consensus statements. Those could be factors associated with the increased frequency of

DOI of original article:

<http://dx.doi.org/10.1016/j.jped.2014.05.002>

☆ Please cite this article as: Garcia-Marcos L, Pacheco-González R. A sequel of the international study of asthma and allergies in childhood or a prelude to the global asthma network?. J Pediatr (Rio J). 2014. <http://dx.doi.org/10.1016/j.jped.2014.09.001>

☆☆ See paper by Solé et al., in pages x-y.

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<http://dx.doi.org/10.1016/j.jped.2014.09.001>

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diagnosis and the reduction of its severity, as the authors state. Moreover, those factors could be also responsible for the stabilization of asthma prevalence due to the boost in primary prevention. As they also discuss, the standardization of asthma therapy could be a protective factor for decreasing asthma morbidity and mortality, but not for prevalence reduction.

Another interesting factor, discussed by the authors, is the improvement of Brazilian economy. The economical factor was proposed in ISAAC phase three as a possible explanation to the large differences in prevalence between the collaborating centers. This hypothesis emerged as asthma prevalence was thought to be more elevated in developed countries, in particular in English-speaking countries, and lower in developing countries. Surprisingly, the increasing trend in developing countries was not observed in developed countries. As a consequence, it was proposed that the asthma prevalence had reached a plateau in high income countries (higher prevalence), while in low income (lower prevalence) countries, it was still increasing.^{13,15} The fact that asthma prevalence has continued to decrease for the last nine years, while Brazilian economy has improved considerably, could indicate that asthma prevalence has reached a plateau in that country, as it occurred with high income countries in ISAAC phase three. However, this factor does not appear to fully explain the situation. It is important to highlight that, contrary to the general hypothesis from the ISAAC study, Mallol et al. observed, in a multicentre study in Latin America, that higher prevalence of asthma symptoms were observed in areas of lower socioeconomic status.¹⁶ Thus, socioeconomic level appears to be a factor related to asthma etiology. However, as income data is not available at individual level, its real effect can not be elucidated. It is possible that the socioeconomic status is just a marker of rural/urban environment. In previous studies, the same Brazilian group confirmed that living in a rural environment was a protective factor for asthma in Brazil.¹⁴⁻¹⁷

ISAAC phase three listed other risk factors that could influence the prevalence of allergic conditions, such as environmental pollution. However, Anderson et al.¹⁸ could not relate an increase in the prevalence of asthma, rhinoconjunctivitis, and eczema with air pollution levels on a worldwide analysis. Solé et al.¹² suggest that pollution could be a factor related to the increase in the prevalence of rhinoconjunctivitis and eczema in their region, based on their previous study where pollutant levels were associated with the prevalence of asthma, rhinoconjunctivitis, and eczema.¹⁹ Supporting their result, a different study conducted in Alta Floresta (southeast of the Brazilian Amazon) concluded that asthma prevalence in that region is one of the highest in the country (21.4%), which could be linked with the high concentration of outbreaks of biomass burnings in the area, although this argument was not confirmed.⁴ Solé et al.¹² also mention that air pollution has been monitored in the past years in two Brazilian regions, and consequently better air quality has been achieved. This should have been translated into a decrease in the prevalence of rhinoconjunctivitis and eczema in those two areas but not in the others, according to the authors. However, the results do not corroborate this statement. The influence of environmental pollution should be analyzed in detail to confirm its impact in these diseases. Another factor that might be associated

to the inception of these conditions is dietary habits. Fast food consumption appears to be a risk factor for asthma, while fruits and vegetables consumption may act as protective factors.²⁰ Unfortunately, Solé et al. did not analyze this possibility in their article.

In summary, the study by Solé et al., published in the current issue of *Jornal de Pediatria*, is a very interesting article, updating the data on the prevalence asthma, rhinoconjunctivitis, and eczema in Brazil. Similar studies should be conducted in more regions around the world to compare with the previous trends, and to check the risk or protective factors that were reported. Fortunately, now that the ISAAC program has ended, the Global Asthma Network will provide such data in the new future. In the meantime, Solé et al.¹² anticipated a large amount of epidemiological data, which can help to explain the local environmental factors and, furthermore, to clarify the situation of uncertainty about the cause of these allergic conditions. The question stands: is this a sequel of the International Study of Asthma and Allergies in Childhood (ISAAC) or a prelude to the Global Asthma Network (GAN)?

Conflicts of interest

The authors declare no conflicts of interest.

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