

International variations in childhood asthma

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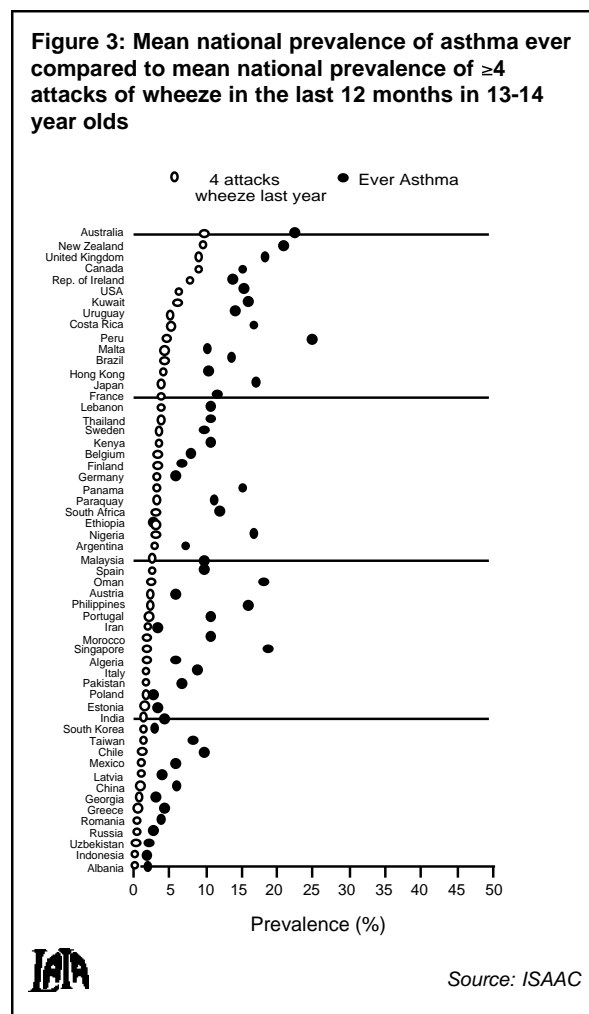
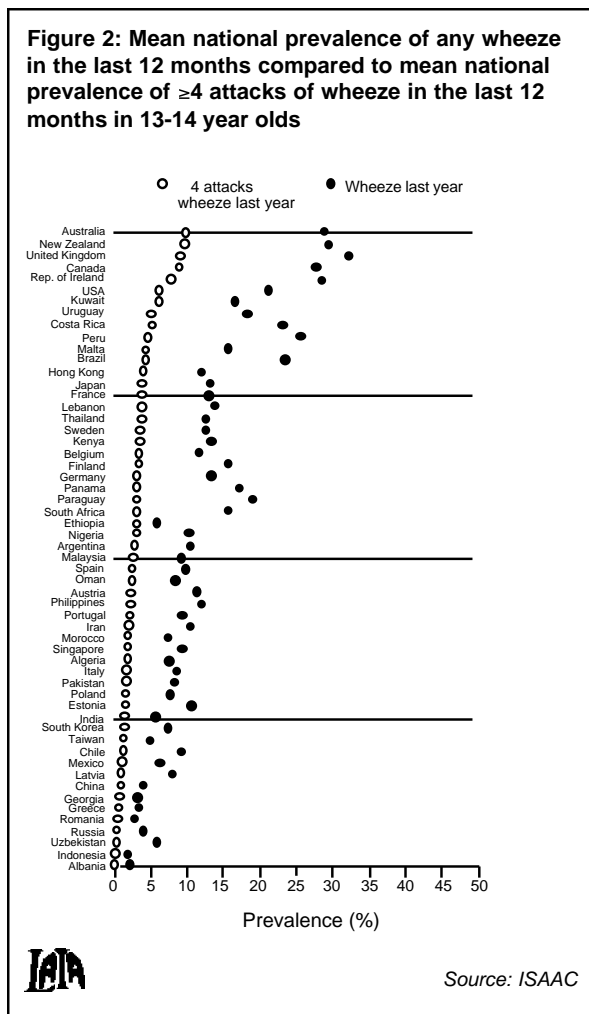
It has been known for many years that the prevalence of childhood asthma varies from place to place, but the potential of such variation to increase our understanding of the causes of asthma was restricted by a lack of a standardised approach to the measurement of prevalence. Phase 1 of the International Study of Asthma and Allergies in Childhood (ISAAC) used a standardised protocol to obtain comparable international prevalence data on the symptoms of asthma and the related atopic disorders of allergic rhinitis (hayfever) and atopic eczema. The target sample for each centre was 3000 and the ages studied were 6-7 years (parental questionnaire) and 13-14 years (written and video questionnaire to the children). The questionnaires were translated into the local language. This factsheet shows results for asthma and wheezing from the written questionnaire completed by 13-14 year old children, the only compulsory component of the protocol. Prevalences of allergic rhinitis from the same questionnaire were shown in factsheet 98/3.

For the questionnaire to 13-14 year olds, data were obtained during 1991-95 from 155 centres in 56 countries and comprised 463,801 participants altogether. All major regions of the world were represented, though Europe predominated with about half of the centres (Figure 1).

Figure 1: World map of ISAAC centres returning questionnaires for 13-14 year olds



Figure 2 shows the mean prevalence of any wheeze in the past 12 months for each country ranked by the mean prevalence of 4 or more attacks in the past 12 months. The former is a sensitive measure of asthma and may include some very mild wheezing. It ranged from under 5% in Albania, China, Greece, Georgia, Indonesia, Romania and Russia to 29-32% in Australia, New Zealand, Republic of Ireland and the UK. The prevalence of 4 or more attacks is a more specific indicator of clinically important asthma. This ranged from less than 1% in Albania, Indonesia, Uzbekistan, Russia, Romania, Greece, Georgia and China to over 9% in Australia, New Zealand, UK and Canada and tended to correlate with the prevalence of less frequent wheezing. This suggests that higher prevalences of wheezing in these English speaking countries are unlikely to be explained solely by over reporting of mild symptoms.



The children were also asked if they had ever had "asthma" and this is compared with the prevalence of frequent wheezing in figure 3. A history of asthma ranged from under 2% in Albania, Indonesia and Uzbekistan to 28% in Australia and Peru. The ranking of asthma diagnosis corresponded moderately with that of frequent wheezing but there some notable variations in the ratio of asthma diagnosis to frequent asthma. For example Malta and Kuwait had a low asthma/wheeze ratio while Oman and Singapore had a high asthma/wheeze ratio. This is likely to be due in part to variations in diagnostic practice.

Although some of the variation found by ISAAC may be due to translation artefacts, much is likely to reflect real differences in prevalence. If so, the reasons are likely to be environmental or related to lifestyle. Current theories include an effect on the immune system of infection in early life, diet, indoor and outdoor pollutants and aeroallergens. Phase 2 of ISAAC will carry out more detailed objective investigations to confirm the results of the questionnaire and measure allergic sensitisation. Phase 3 will repeat the Phase 1 studies after at least 5 years to investigate time trends.

- **There is wide global and regional variation in the prevalence of asthma symptoms in children.**
- **The labelling of these symptoms as asthma also varies between countries.**
- **The highest prevalences of self-reported asthma symptoms occur in English speaking countries and some Latin American countries.**
- **It is thought that the differences in prevalence between populations are due to the environment or lifestyle. This may provide clues to the risk factors for asthma.**

Reference:

ISAAC Steering Committee. Worldwide variations in the prevalence of asthma symptoms: the International Study of Asthma and Allergies in Childhood (ISAAC). *European Respiratory Journal* 1998; 12: 315-335