

## Allergies in Asia: are we facing an allergy epidemic?

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Asia is the world's most populous region consisting of highly diverse populations with respect to ancestry and cultural background. It may not be obvious at the outset, but this region is probably an important resource for lessons in allergic disorders. With growing affluence and westernization, the global trends in allergic diseases have increased at tandem, albeit at different rates. In the 1960's to 1990's, several populations [1] including Asian communities [2] have documented increases in asthma prevalence, particularly in children. The International Study of Asthma and Allergies in Childhood (ISAAC), is a highly quoted research initiative that has provided us with a standardized means of comparing global asthma, allergic rhinitis and eczema prevalence. The Phase One ISAAC studies showed us that none of the Asian countries were ranked amongst the top in terms of asthma symptom prevalence [3]. Instead, the United Kingdom, New Zealand, Australia, Republic of Ireland and Canada had the highest prevalence for asthma symptoms. Japan, Thailand, Hong Kong, Philippines, Singapore and Malaysia were ranked midway. Most interestingly, China had one of the lowest

prevalence and Indonesia was ranked the lowest for asthma symptom prevalence. The ISAAC Phase 3 study was a repeat of Phase 1 study performed 7 to 10 years later. The data showed that asthma prevalence had plateaued in several populations, with modest increases in some centers. Only 4 of 8 Asia Pacific countries recorded an increase in asthma symptom prevalence, and increases for Hong Kong, Japan and Taiwan were very modest (<1%) [4]. Taken together, the ISAAC Phase 1 and 3 data indicate that childhood asthma prevalence in Asia is likely to have stabilized and would not reach the proportions seen in the western world.

These geographical differences in asthma prevalence in children appear to be more related to environment rather than genetics. Migration studies of Asians settling in Australia have shown that Asians born in Australia assume the rates of asthma similar to the local population [5]. Within Asia, Cantonese Chinese children born in Hong Kong have higher prevalence of asthma symptoms compared to ethnically similar children born in the nearby city of Canton China [6].

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Likewise, a similar picture is emerging for food epidemiology in Asia. It does not appear likely that Asia will witness a similar surge in peanut and tree nut allergy [7] as it has been documented in North America, United Kingdom and Australia [8]. It is therefore tempting to speculate that the environmental influences in Asia are less conducive for the development of allergic diseases in general. Prospective comparative studies between populations tracking environmental exposures *pari passu* with serial evaluation of immunological responses may provide clues as to the protective factors in our environment, possibly similar in terms of the protective environment shown in the farming studies of Europe.

However despite the relatively lower prevalence of food allergy compared to the West some peculiarities exist and warrant further exploration. Specifically the predominance of shellfish allergy and its varied presentation from isolated oral symptoms akin to pollen allergy syndrome, to life threatening anaphylaxis in certain individuals is intriguing [9]. Further, the emergence of wheat allergy in Korea, Japan and Thailand suggests unique environmental exposures through cultural and cooking practices which are country specific. With economic progress, the future for academic science in Asia is bright. It will be through innovative research that will deliver better understanding of these observations, and ultimately improved strategies for the management of allergic disorders.

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