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The global burden of chronic respiratory disease
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Global burden of asthma among children

I. Asher,* N. Pearce†‡

*Department of Paediatrics: Child and Youth Health, the University of Auckland, Auckland, New Zealand; †Centre for Global NCDs, London School of Hygiene & Tropical Medicine, London, UK; ‡Centre for Public Health Research, Massey University, Wellington, New Zealand

SUMMARY

About 334 million people worldwide suffer from asthma, and this figure may be an underestimation. It is the most common chronic disease in children. Asthma is among the top 20 chronic conditions for global ranking of disability-adjusted life years in children; in the mid-childhood ages 5–14 years it is among the top 10 causes. Death rates from asthma in children globally range from 0.0 to 0.7 per 100 000. There are striking global variations in the prevalence of asthma symptoms (wheeze in the past 12 months) in children, with up to 13-fold differences between countries. Although asthma symptoms are more common in many high-income countries (HICs), some low- and middle-income countries (LMICs) also have high levels of asthma symptom prevalence. The highest prevalence of symptoms of

severe asthma among children with wheeze in the past 12 months is found in LMICs and not HICs. From the 1990s to the 2000s, asthma symptoms became more common in some high-prevalence centres in HICs; in many cases, the prevalence stayed the same or even decreased. At the same time, many LMICs with large populations showed increases in prevalence, suggesting that the overall world burden is increasing, and that therefore global disparities in asthma prevalence are decreasing. The costs of asthma, where they have been estimated, are relatively high. The global burden of asthma in children, including costs, needs ongoing monitoring using standardised methods.

KEY WORDS: asthma; children; burden

Our understanding of the global burden of asthma in children has increased greatly over the last two decades. The key reason for this increased understanding comes from data collected in a standardised manner by the International Study of Asthma and Allergies in Childhood (ISAAC), involving 306 centres in 105 countries.^{1,2} The data from ISAAC formed the bulk of the evidence for asthma in children in the Global Burden of Disease Study 2010 (GBD 2010),^{3,4} the first systematic and comprehensive assessment conducted since 1990.

Asthma is becoming more important as a childhood disease. GBD 2010 found that the burdens of infectious diseases are falling, as they are increasingly being prevented and controlled, and far fewer young children are dying. Disability from chronic disease, including chronic respiratory disease, is thus becoming an increasingly important issue for all health systems.

HOW IS ASTHMA DEFINED?

The International Consensus Report on the Diagnosis and Treatment of Asthma defines asthma as ‘a chronic inflammatory disorder of the airways in which many cells play a role, including mast cells and eosinophils. In susceptible individuals, this inflammation causes symptoms that are usually associated with widespread but variable airflow obstruction that is often reversible, either spontaneously or with treatment, and causes an associated increase in airway responsiveness to a variety of stimuli’.⁵ Asthma typically presents with ‘wheezing’, a high pitched whistling sound heard on expiration, and, if the asthma is severe, also on inspiration. Asthma also causes shortness of breath and chest tightness, and can cause cough, particularly in children.

Diagnosing asthma clinically may present challenges, as there may be an overlap of symptoms with

other chronic diseases. For example, pneumonia causes shortness of breath and sometimes cough; similarly, heart failure (more common in adults) causes shortness of breath and sometimes wheezing (hence the term ‘cardiac asthma’); also, chronic obstructive pulmonary disease (COPD) in adults has symptoms similar to those of asthma. In populations where asthma prevalence is increasing, there may be a lag in its recognition, as occurred in the United Kingdom in the 1970s, when there was increasing concern about underdiagnosis of asthma among older children.⁶ It is possible that the same phenomenon is occurring in other parts of the world where prevalence has been low and is now increasing. These factors suggest that the current global estimates of asthma may be underestimates.

HOW IS ASTHMA MEASURED IN POPULATIONS?

Many factors influence the clinical diagnosis of asthma within populations; these may vary considerably between populations due to variations in awareness of asthma, medical training and experience, cultural and societal factors. The differences in diagnostic practice may be greater in magnitude than the real differences in asthma burden. Asthma prevalence surveys usually focus on self-reported (or parent-reported) ‘asthma symptoms’ rather than on diagnosed asthma.⁷ Standardised questionnaires on asthma symptoms have therefore become the cornerstone of the large studies on asthma incidence or prevalence in adults⁸ and children.¹ This approach allows a large number of people to be surveyed at a relatively low cost (compared with clinician assessment), and in a short time period. Although wheezing, chest tightness, breathlessness and cough are all symptoms clinically associated with asthma, epidemiological studies have shown that wheezing is the most important symptom for the identification of asthma. Thus the majority of questionnaires used to assess asthma prevalence are based on this symptom.⁹ An alternative approach to symptom questionnaires has been to use more ‘objective’ measures such as bronchial responsiveness testing, either alone or in combination with questionnaires.¹⁰ However, the validity of bronchial hyperresponsiveness for the assessment of asthma is lower than that of wheeze assessed from questionnaire.^{9,11–13}

THE GLOBAL BURDEN OF DISEASE: DEATHS AND DISABILITY-ADJUSTED LIFE YEARS

Deaths

Death from asthma is relatively rare at all ages: in the GBD 2010, asthma accounted for only a small proportion of deaths. A comparison of mortality

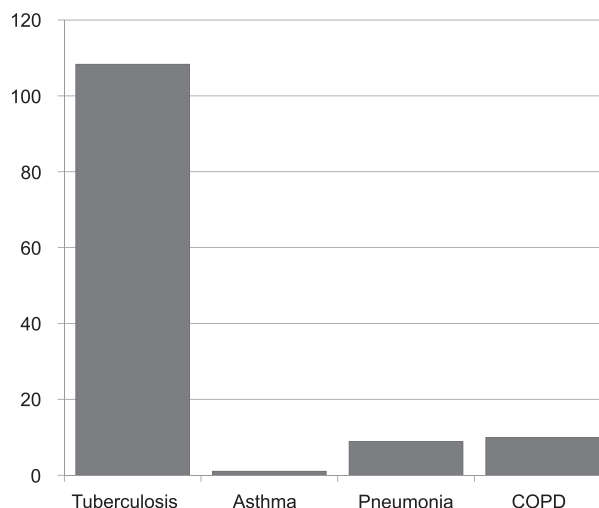


Figure 1 Mortality per 1000 due to tuberculosis, asthma, pneumonia and COPD.¹⁴ COPD = chronic obstructive pulmonary disease.

from four respiratory diseases, tuberculosis, asthma, pneumonia and COPD, is shown in Figure 1. The overall age-standardised global death rate was 784.5 per 100 000 population, of which non-communicable diseases (NCDs) accounted for 520.4/100 000 (66%), including 57.0 (7%) from chronic respiratory diseases, of which 5.2/100 000 (0.7%) were from asthma.¹⁴ Age-standardised mortality from asthma fell from 9.0 to 5.2/100 000 per year between 1990 and 2010. However, specific findings for childhood asthma deaths were not reported in GBD 1990 or 2010. We know that deaths from asthma in children are rare, but they are measurable (range 0.0–0.7/100 000), and are consistently positively associated with asthma symptom prevalence and hospital admissions.¹⁵ Cause of death estimates were obtained from a comprehensive database of vital registration, verbal autopsy, mortality surveillance, censuses, surveys, hospitals, police records and mortuaries, covering 187 countries. Greater accuracy in reporting of asthma deaths would be desirable, especially in countries where asthma is under-recognised or confused with pneumonia, COPD or heart failure, and therefore under-reported. Strengthening of death registration, and improved verbal autopsy methods, along with more accurate recognition of asthma, may lead to greater ascertainment of asthma deaths.

Disability weights

The term ‘disability’ may have different meanings; in the GBD 2010, it refers to any short- or long-term health loss other than death.¹⁶ The GBD 2010 estimated the disability weights for asthma by surveying people in Bangladesh, Indonesia, Peru, Tanzania and the United States. For the 220 disability weights surveyed, there was remarkable consistency

between different cultural environments. A value of 0 implies no loss of health, whereas 1 implies health loss equivalent to death. The disability weight for controlled asthma ('has wheezing and cough once a month, which does not cause difficulty with daily activities') was 0.009 (0.004–0.018), partially controlled asthma ('has wheezing and cough once a week, which causes some difficulty with daily activities') was 0.027 (0.015–0.045) and uncontrolled asthma ('has wheezing, cough and shortness of breath more than twice a week, which causes difficulty with daily activities and sometimes wakes the person at night') was 0.132 (0.087–0.190).

Years lived with disability

Years lived with disability (YLDs) are calculated as the prevalence of each disease sequela multiplied by the disability weight for that sequela.⁴ The overall global prevalence of asthma was 334 247 000 (4.85%), with a prevalence of 160 346 000 (4.6%) in males and 173 901 000 (5.1%) in females. The overall global estimate of YLD per 100 000 in 2010, of 1 160 sequelae of 286 diseases and injuries, was 11 283/100 000, of which NCDs accounted for 8 869/100 000 (79%), including 716 (6%) from chronic respiratory diseases, of which 201 (1.8%, 95% uncertainty interval [UI] 135–283) were from asthma. This represented little change from the 1990 estimate of 204 (95% UI 137–288).⁴ Asthma was the 14th highest ranked cause of global YLD (all ages), and the 13th ranked NCD cause. Once again, the specific findings for children were not reported.

Disability-adjusted life years

Disability-adjusted life years (DALYs) were proposed in the GBD 1990 as a way of measuring disease burden.¹⁷ DALYs are the sum of two components: years of life lost plus YLDs. They are an absolute measure of health loss, and count how many years of healthy life are lost due to death and/or non-fatal illness or impairment. Population composition, particularly the age structure, influences the number of DALYs in a population. The goal is for individuals to live the standard life expectancy in full health.

The overall global estimate of DALYs/100 000 in 2010 for all causes was 36 145/100 000, of which NCDs accounted for 19 502/100 000 (54%), including 1712 (5%) from chronic respiratory diseases, of which 326 (0.9%, 95% UI 249–424) was from asthma.³ This represented a decline from the 1990 estimate of 405 (95% UI 304–531).³ The global ranking of DALYs from asthma in children compared with other causes of DALYs is shown in the Table, including the data from both 1990 and 2010. This shows that, at all ages, asthma is in the top 20 causes of DALYs, and in the top 10 causes in the mid-childhood ages (5–14 years). In the older age group

Table Global rank of disability-adjusted life years in childhood from asthma compared with other causes³

Age, years	1990	2010
1–4*	18	18
5–9	6	8
10–14	6	3
15–19	16	12

* The labelling of asthma as a cause for wheezing in preschool children has recently undergone changes.¹⁸

(10–19 years), asthma has become a more common cause of DALYs.

ISAAC: prevalence

Most (85%) of the world's >7 billion people live in low- and middle-income countries (LMICs). Until the early 1990s, few centres had information on prevalence of asthma symptoms in children, and most of these were in high-income countries (HICs).^{19–26} Concerns that asthma, rhinitis and eczema were on the increase led to the development of ISAAC in 1991, with the potential to study asthma in LMICs for the first time. The emphasis in ISAAC was the use of straightforward methods and tools to assess prevalence and severity between diverse populations. Phase One of ISAAC, conducted in 155 centres in 56 countries involved a simple questionnaire survey of asthma prevalence.¹ Phase Two involved more detailed investigations in 30 study centres in 22 countries.²⁷ Phase Three involved a repeat of Phase One in about 100 centres to enable the time trends of symptom prevalence to be determined, as well as the incorporation of new centres to enable the development of a more comprehensive world map;² it involved approximately 280 centres in 106 countries. A total of 306 centres in 105 countries contributed data to ISAAC.

The ISAAC questionnaire modules were designed to enable diverse populations to answer simple questions on health issues, and minimal resources were required to administer the questionnaires. In addition, a video questionnaire involving the audio-visual presentation of clinical signs and symptoms of asthma was developed for adolescents to minimise translation problems. The population of interest in Phases One and Three were schoolchildren aged 6–7 years and 13–14 years in specified geographical areas. The older age group was chosen to reflect the period when morbidity from asthma was common and to enable the use of self-completed questionnaires. The younger age group was chosen to give a reflection of the early childhood years, and involved parents' completion of questionnaires.

That the ISAAC methodology was straightforward and accessible to people in countries of all income levels and languages explains in part the large numbers of participating centres and high response

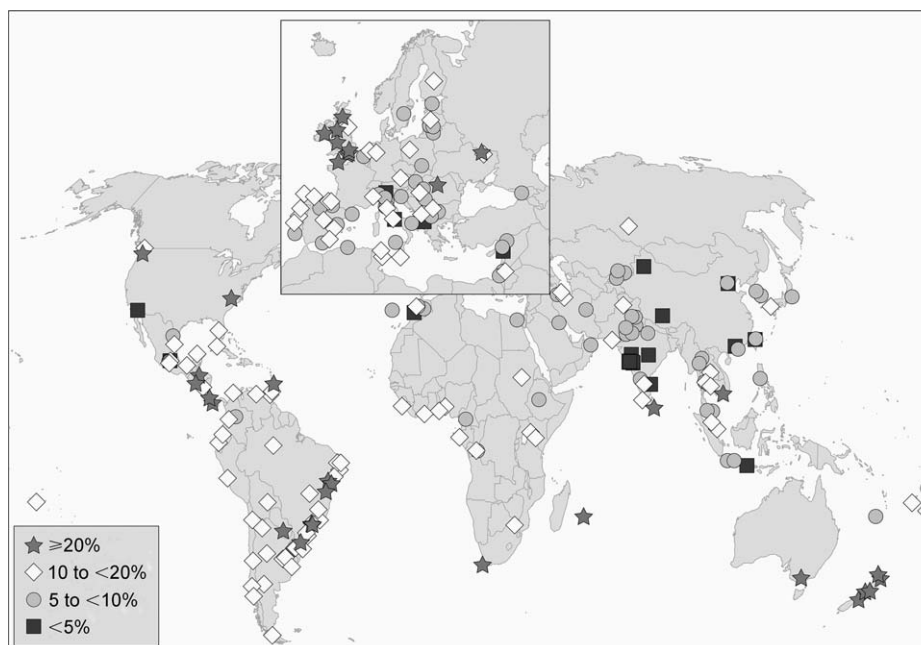


Figure 2 Prevalence of current wheeze according to the written questionnaire in the 13–14-year age group. See text for definition of current wheeze. [Reproduced from reference 30 with permission from the BMJ Publishing Group Ltd.]

rates.²⁸ The high quality of ISAAC data was ensured by the combination of straightforward methods (questionnaires in a defined population) that are achievable in a wide range of resource and cultural settings, a detailed protocol, and rigorous methodology and data checks to ensure data reach a requisite standard.

ISAAC involved 721 601 children in Phase One and 1 187 496 children in Phase Three. Striking international differences in asthma symptom prevalence were found.^{29,30} Current wheeze (wheeze in the past 12 months) occurred in all countries studied and was more common than was previously believed.^{29,30} Although asthma symptoms were more common in some HICs, some LMICs also had high levels of asthma symptom prevalence. In addition, there were striking variations in the prevalence of asthma symptoms throughout the world, of up to 13-fold between countries (Figure 2). In adolescents aged 13–14 years, self-reported prevalence of wheeze in the past 12 months (current wheeze) varied from 32.6% in Wellington, New Zealand, to 0.8% in Tibet, China. Thirty-five centres (15%) had a prevalence of current wheeze of $\geq 20\%$; these were mostly from English language countries and Latin America. Twenty-two centres (9.4%) had a prevalence of $< 5\%$; these were mostly in the Indian subcontinent, Asia-Pacific, Eastern Mediterranean and Northern and Eastern Europe (Figure 2). In children aged 6–7 years, parent-reported current wheeze ranged from 37.6% in Costa Rica to 2.4% in Jodhpur, India. Twenty-one centres (14.6%) had a prevalence of

current wheeze of $\geq 20\%$; all but two were English language or Latin American countries. Seventeen centres (11.8%) had a prevalence of $< 5\%$; these were mostly from the Indian subcontinent, Asia-Pacific and Northern and Eastern Europe.^{30,31}

The highest prevalence of symptoms of severe asthma among children with current wheeze (Figure 3) were found in LMICs and not HICs.³⁰ In adolescents, Africa (51%), the Indian subcontinent (48.2%) and the Eastern Mediterranean (47.2%) ranked higher than English language countries (46%) and Latin America (38.3%) for the prevalence of symptoms of severe asthma among children with current wheeze. Among children aged 6–7 years, centres with a high proportion of current wheezers with symptoms of severe asthma ($> 50\%$) were mostly seen in the Indian subcontinent, Eastern Mediterranean, Africa and Latin America. The centres with a low proportion (30%) were mostly from Asia-Pacific and Northern and Eastern Europe.

Asthma became more common in children globally from the mid-1990s to the mid-2000s. The ISAAC Phase Three time trends analysis³² showed increases in global prevalence from 11.1% to 11.6% in children aged 6–7 years and from 13.2% to 13.7% in those aged 13–14 years. There were variations around the world. While asthma has become more common in some high-prevalence centres in high-income countries (Figure 4), in many cases the prevalence stayed the same or even decreased.³³ At the same time, many LMICs with large populations showed an increase in prevalence, suggesting that the

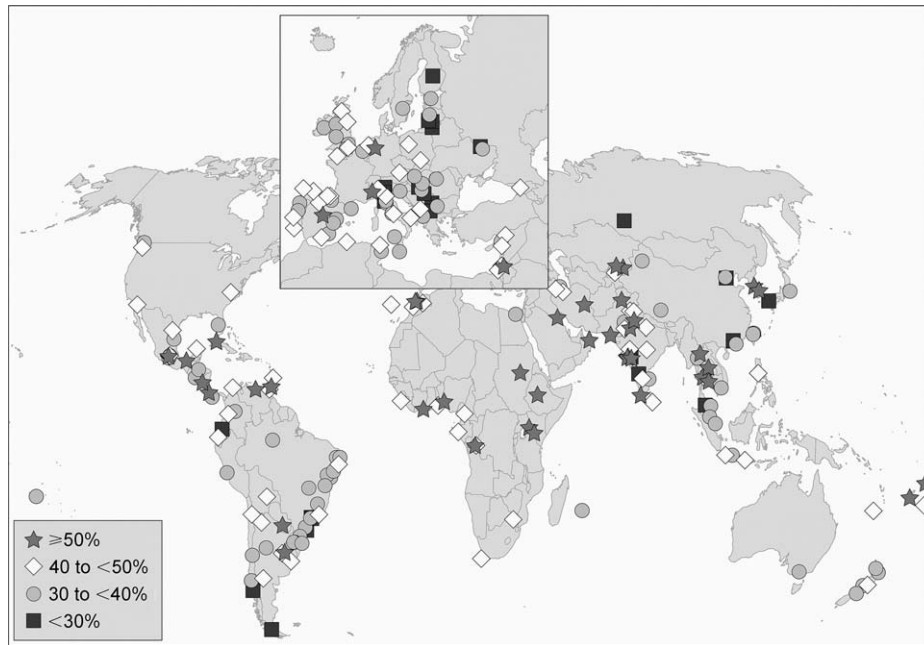


Figure 3 Prevalence of symptoms of severe asthma among wheezers in the past 12 months in 13–14-year age group. [Reproduced from reference 30 with permission from the BMJ Publishing Group Ltd.]

overall world burden is increasing and, surprisingly, global disparities in asthma are decreasing. A number of countries that had high or intermediate levels of symptom prevalence in Phase One showed significant increases in prevalence in Phase Three. Examples include Latin American countries such as Costa Rica, Panama, Mexico, Argentina and Chile, and Eastern European countries such as the Ukraine and Romania. Other countries with significant increases in symptom prevalence included Barbados, Tunisia, Morocco and Algeria. With the exception of India, all of the countries with very low symptom prevalence rates in Phase One reported increases in prevalence in Phase Three, although only increases for Indonesia and China were statistically significant.

As there have been no further global studies of asthma in children using standardised methodology since 2003, it is not possible to estimate whether asthma symptom prevalence and severity have continued to change over the last decade.

HOW COMMON IS ASTHMA COMPARED WITH OTHER DISEASES?

Asthma compared with respiratory diseases

The burden of asthma may have been overlooked compared with other respiratory diseases, as deaths from asthma are relatively rare compared with the more common conditions of tuberculosis,³⁴ COPD¹⁴ and pneumonia³⁵ (Figure 1). However, with regard to the total burden of disease as measured by DALYs, which incorporate both morbidity and mortality,

asthma is the second most important respiratory disease after COPD.

Asthma compared with other non-communicable diseases

NCDs have been the most common cause of death and disability globally for at least the last three decades. In the past decade, the importance of NCDs for global health has been recognised, culminating in the 2011 UN High-level Meeting on NCDs, which focused on adult mortality. Asthma causes fewer deaths than other NCDs, and has therefore been relatively overlooked, although it is included as a chronic respiratory disease in publications on the 'NCD agenda'.³⁶ Chronic respiratory diseases as a group account for 4.7% of global DALYs,¹⁴ with COPD making up two thirds of the total and asthma nearly a fifth of the total. Similarly, if disability is considered alone (and not combined with mortality), chronic respiratory diseases account for 6.3% of global YLDs, with the largest contributor being COPD (29.4 million YLDs), followed by asthma, with 13.8 million YLDs.⁴ NCD targets thus focused on preventing deaths are inappropriate for asthma.

WHAT ARE THE LIFELONG OUTCOMES OF CHILDHOOD ASTHMA?

Asthma can develop at any stage in life, including adulthood, but most commonly develops in early childhood. The longitudinal study in Melbourne, VIC, Australia, found that those with infrequent very

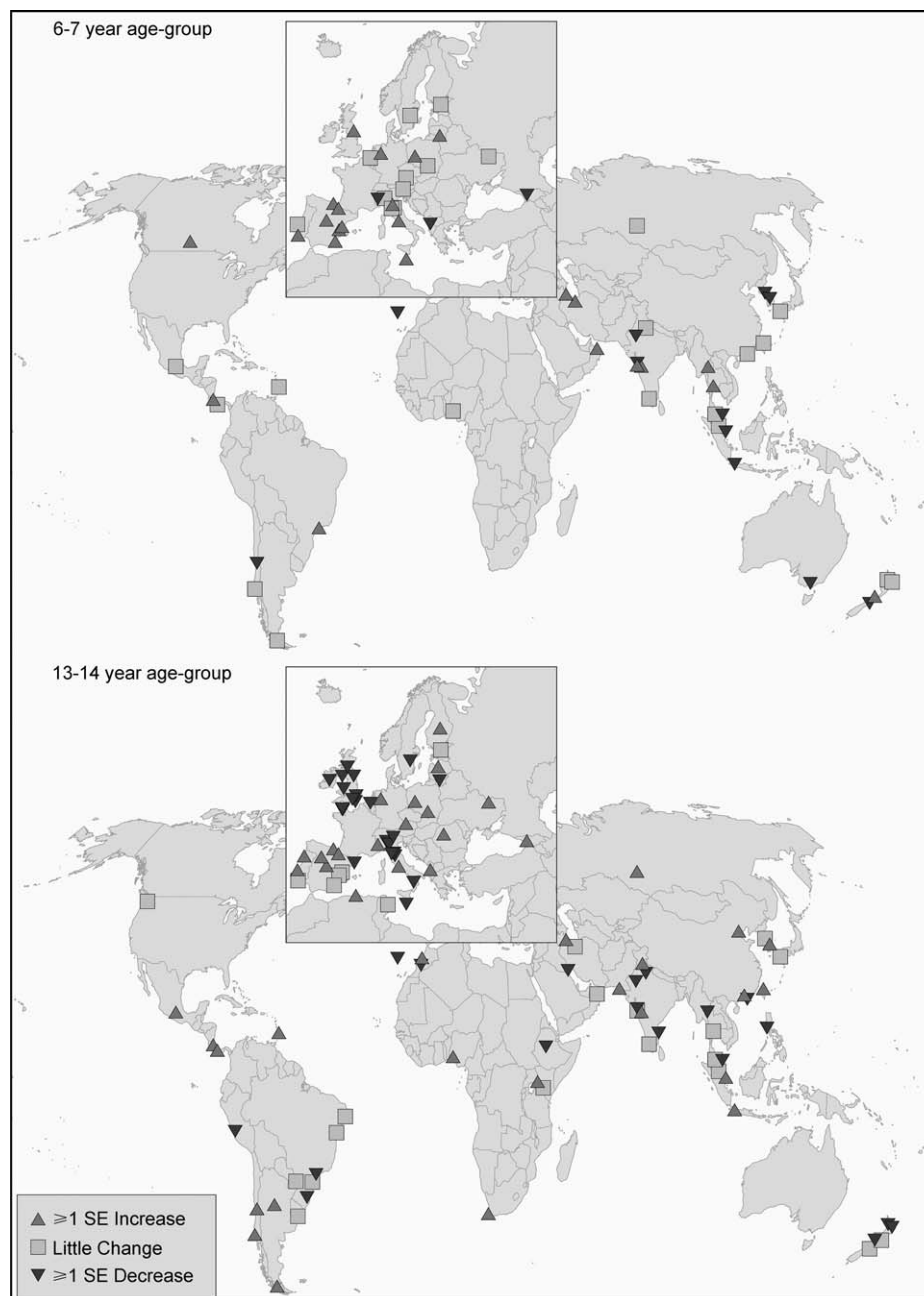


Figure 4 World map showing direction of change in prevalence of asthma symptoms for 6–7-years and 13–14-year age-group. Each symbol represents a centre. [Reproduced from reference 33 with permission from the Lancet.]

mild symptoms at the age of 7 years were often asymptomatic during adolescence, although some had ongoing mild symptoms later in adulthood.³⁷ Those with more frequent or persistent asthma tended to have ongoing symptoms. The latest review of the Melbourne cohort reported that at age 50 years,³⁸ 75% of individuals who had been classified with severe asthma at age 6 years still had asthma symptoms, whereas for those with persistent asthma it was only 47%. Moreover, those with severe childhood asthma had a high risk of COPD.³⁹ Severe asthma in childhood should thus be considered a life-

long disease. To reduce its life-long burden, efforts should be focused on ways of preventing severe asthma in childhood.

WHAT ARE THE COSTS OF ASTHMA?

When children with asthma experience symptoms of airway obstruction—wheeze, shortness of breath, chest tightness or coughing—they feel unwell and are unable to carry out their usual activities at pre-school education, school, tertiary education or at work or in their communities. If asthma becomes

abruptly severe, such as during an asthma attack, the child will need acute medical treatment, possibly admission to hospital and sometimes even intensive care. Occasionally, children die from asthma. When children are sick, parents may need to take time off work or other activities to look after them. Under-treated asthma causes large health care costs (preventer and reliever medicines, spacers and other devices; acute ambulatory, emergency and in-patient hospital care; and asthma management planning and patient education) and productivity losses, although these have been quantitated in only a few settings in HICs (in 2008 US\$): Canada \$654 million, Germany \$2740–4430 million, Singapore \$49.36 million, Switzerland \$1413 million, United States \$2300–8256 million.⁴⁰ The national or local approach to funding health care will determine the level to which these costs are borne directly by the patients with asthma and/or their families, taxpayers or health insurance companies. Achievement of better asthma control in people with symptoms should result in a lowering of asthma costs. To assess the cost burden of asthma, a great deal more data are required on the costs of asthma, especially in LMICs.

ARE THE CAUSES OF ASTHMA KNOWN AND CAN ASTHMA BE PREVENTED?

Asthma is caused by a complex combination of genetic and environmental factors. Although asthma often runs in families, and identical twins are more likely than non-identical twins to both have asthma, only about half of identical twins with an asthmatic co-twin are themselves asthmatic. Large studies of asthma in the general population have recently identified a small number of genetic variants that influence asthma risk, mainly in children. However, the association of these variants with asthma is too weak to reliably predict which individuals will develop the disease.⁴¹ Moreover, genetics do not explain global variations or time trends in prevalence.⁴²

Asthma used to be considered as an allergic disease, wherein allergen exposure produces sensitisation to allergens, and continued exposure leads to clinical asthma through the development of airways inflammation, reversible airflow obstruction and enhanced bronchial reactivity. However, it is now widely recognised that only about half of asthma cases involve allergic mechanisms;⁴³ and, in fact, the proportion is even lower in LMICs.⁴⁴ Non-allergic mechanisms of asthma are not well understood.⁴⁵

One possible explanation for the effects of westernisation on the risk of asthma is the hygiene hypothesis, which postulates that having childhood infections is protective against the development of allergic diseases. This intriguing hypothesis alone is unlikely to explain the increases in asthma prevalence

that come with increasing affluence, cleanliness and westernisation.⁴⁶ However, the growing evidence that growing up on a farm or in a rural environment might protect against some forms of asthma⁴⁷ indicates that the causes of the global increases in asthma may be found, and potentially prevented.

Although air pollution is a factor in modern life, and is a trigger for people with established asthma, it has not been associated with increased asthma symptom prevalence in the ISAAC populations.^{48,49} However, ISAAC found positive associations between asthma prevalence and exposure to a range of other environmental factors: high intensity truck traffic exposure,⁵⁰ tobacco smoke exposure,⁵¹ open fire cooking,⁵² dampness and moulds in homes,⁵³ paracetamol use,^{54,55} antibiotic use,⁵⁶ burger/fast food intake,^{57,58} obesity,⁵⁹ and inverse associations between fresh fruit and vegetable intake,^{57,58} and breastfeeding in non-affluent countries.⁶⁰ These associations require further investigation and monitoring over time.

CAN PEOPLE WITH ASTHMA BE TREATED TO LESSEN THE ASTHMA BURDEN?

Asthma symptoms can be improved by treatment with asthma medicines. These medicines are relievers, such as β_2 agonists (salbutamol) and, if symptoms are frequent or persistent, a preventer, such as inhaled corticosteroids (ICSs) (beclometasone or budesonide). These are deemed essential medicines by the World Health Organization (WHO). However, they are poorly available in LMICs. A recent study found that 72% of LMICs do not have salbutamol and ICS on their essential medicines lists and that these drugs are poorly available in these countries.⁶¹ Furthermore, when they are available they may be very expensive.⁶² The Asthma Drug Facility, a project of the International Union Against Tuberculosis and Lung Disease (The Union), has been addressing this issue (<http://www.globaladf.org>). Delivering effective asthma management extends beyond the availability of essential medicines; it also requires political commitment to improve asthma in populations, up-to-date asthma guidelines, trained health care workers, standard case management and effective information systems.

WHERE TO FROM HERE?

It is important that the monitoring of asthma prevalence and severity continue globally, and that action be taken to reduce the burden of asthma. Future asthma surveys should be accompanied by estimates of the costs of asthma, especially in LMICs. The trends of asthma prevalence and severity in the world are of concern and must be tracked. It is likely that the GBD study will be regularly updated as new

and more reliable information becomes available, and it is important that new asthma surveys be conducted so that standardised data can be included. However, there is no ongoing coordinated approach by government organisations to estimate the burden of asthma, and there are no plans for the WHO World Health Survey⁶³ to be repeated. It is vital that the methods used to collect asthma prevalence and severity data remain standardised so that information from one locality or country is comparable with another. This was the approach taken in the past by the European Community Respiratory Health Survey for asthma in adults,⁸ and by ISAAC for children.²

The Global Asthma Network (GAN, <http://www.globalasthmanetwork.org/>), a non-governmental organisation, established in 2012 (including key members of the ISAAC Steering Committee and The Union), plans to regularly collect data on asthma in schoolchildren and adults (the parents of the children), asthma prevalence and severity and risk factors. The methodology will be based on the ISAAC protocols using standardised questionnaires, as well as surveys for the principal investigators of each GAN centre, with additional questions based on the findings of ISAAC Phase Three.

As well as its work in asthma surveillance, GAN also aims to improve asthma management to reduce severe asthma (i.e., the proportion of persons with asthma symptoms not on ICSs, time off work or school because of asthma, unplanned health care visits for asthma, hospital admissions for asthma, severity of asthma and mortality from asthma) by 50% by 2025, and to increase access to quality-assured essential asthma medicines so they are on the WHO prequalification list, on national essential medicines lists and available and affordable in all countries.

The risk factors for asthma are currently unclear, although certain environmental factors of interest are emerging. A great deal of further asthma research is clearly needed, and needed urgently, before the rest of the world begins to experience the levels of asthma prevalence and morbidity that currently exist in Western countries.³⁶ This contrasts with some other priority risk factors and NCDs (e.g., tobacco and COPD), where the causes and options for prevention are well established and the current policy initiatives are likely to be effective if implemented effectively.

The Director General of the WHO, Margaret Chan, said:

Accurate assessment of the global, regional and country health situation and trends is critical for evidence-based decision making public health. ... The real need is to close the data gaps, especially in low-and middle-income countries.⁶⁴

In this context, we have good data on asthma in children thanks to ISAAC, but there needs to be

ongoing commitment to continuing data collection (there have been none since the mid-2000s) and extending our knowledge.

As advocated by the Lancet,

...everyone concerned with health – health workers and policy makers, those working in technical agencies bracket across the UN system, development partners, civil society, and research community – should use global burden findings to sharpen understanding of trends. We should use these data to hold one another account for progress.⁶⁵

Let us do that for asthma in children.

Acknowledgements

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Conflict of interest statement:

I Asher is Chair of the International Study of Asthma and Allergies in Childhood (ISAAC) and the Global Asthma Network (GAN). N Pearce is on the Steering Committee of ISAAC and the Steering Group of GAN.

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R E S U M E

Près de 334 millions de personnes dans le monde souffrent d'asthme et il est possible que ce nombre soit sous-estimé. Chez les enfants, c'est la maladie chronique la plus fréquente. L'asthme fait partie des 20 premières maladies chroniques en termes de classement mondial des années de vie ajustées sur l'incapacité chez les enfants ; dans la deuxième enfance, entre 5 et 14 ans, l'asthme fait partie des 10 premières causes. Le taux de mortalité lié à l'asthme chez les enfants va de 0,0 à 0,7 pour 100 000. Il y a des variations mondiales frappantes de la prévalence des symptômes de l'asthme chez l'enfant (définie par une respiration sifflante au cours des 12 derniers mois), avec un rapport de 1 à 13 selon le pays. Bien que ces symptômes soient plus fréquents dans la plupart des pays à haut revenu (HIC), certains pays à revenu faible ou moyen (LMIC) ont également une prévalence élevée des

symptômes d'asthme. La prévalence la plus élevée d'asthme grave parmi les enfants ayant eu une respiration sifflante au cours des 12 derniers mois se trouve dans les LMIC et non pas dans les HIC. Des années 1990 aux années 2000, les symptômes d'asthme sont devenus plus fréquents dans des centres de prévalence élevée dans des HIC; dans de nombreux cas, la prévalence est restée identique ou a même diminué. Au même moment, de nombreux LMIC, largement peuplés, ont vu une augmentation de la prévalence, suggérant que le fardeau mondial s'accroît et que pour cette raison, les disparités mondiales de la prévalence de l'asthme diminuent. Le coût de l'asthme apparaît relativement élevé là où il a été estimé. Le fardeau mondial de l'asthme de l'enfant, notamment son coût, requiert un suivi prolongé basé sur des méthodes standardisées.

R E S U M E N

Cerca de 334 millones de personas en todo el mundo padecen asma y es posible que esta cifra no sea exhaustiva. El asma representa la enfermedad crónica más frecuente en los niños y ocupa uno de los 20 primeros puestos de las enfermedades crónicas en la clasificación mundial de los años de vida ajustados a la discapacidad en los niños; en las edades intermedias de la niñez, de los 5 a los 14 años, el asma se encuentra entre las 10 primeras causas. Las tasas de mortalidad por asma en la niñez oscilan entre 0,0 y 0,7 por 100 000 personas. Existen variaciones considerables de la prevalencia de síntomas de asma en los niños (sibilancias en los últimos 12 meses), que pueden ir hasta diferencias de 13 veces entre algunos países. Si bien los síntomas de asma son más frecuentes en muchos países de altos ingresos (HIC), algunos países de ingresos bajos y medianos (LMIC) también presentan alta prevalencia de estos síntomas.

Las prevalencias más altas de asma grave en los niños, con sibilancias en los últimos 12 meses, se observan en los LMIC pero no en los HIC. De 1990 a los años 2000, los síntomas de asma se han hecho más frecuentes en algunos centros de alta prevalencia en HIC y en muchos casos la prevalencia ha permanecido estable o incluso ha disminuido. Al mismo tiempo, en muchos LMIC con poblaciones muy numerosas, se ha observado un aumento de la prevalencia, lo cual indica un incremento de la carga mundial de morbilidad; por esta razón están disminuyendo las diferencias mundiales en la prevalencia de asma. Los costos que genera el asma, donde se han calculado, son relativamente altos. Es preciso vigilar de manera continua la carga mundial de morbilidad por asma en los niños, incluidos sus costos, mediante métodos normalizados.
