

Chronic bronchial asthma from challenge to treatment: epidemiology and social impact

Margherita Neri, Antonio Spanevello

Asthma is an important cause of chronic morbidity and a crucial health problem among children and adults worldwide, with high prevalence rates particularly in many developed countries.^{1,2} Increasing morbidity, hospital admission rates, use of medical services, drug use and, in some countries, increasing mortality rates have been reported.³ However, controversy still exists regarding the epidemiology of asthma. There are two serious problems which need to be considered when trying to obtain reliable data on the prevalence, morbidity, and mortality of asthma. The first relates to definition; despite substantial advances in understanding the pathogenesis, genetics, and clinical characteristics of asthma, we do not have a useful definition of asthma for epidemiological purposes.² The second problem concerns the different methods used to collect epidemiological data and information. More recently two international studies—the European Community Respiratory Health Survey (ECRHS)⁴ and the International Study of Asthma and Allergies in Childhood (ISAAC)⁵—have used the same internationally standardised questionnaire to provide important data on the prevalence of asthma.

In the ISAAC study the prevalence of symptoms in 13–14 years old subjects was highly variable (from 1.6% to 36.8% in different countries). The higher prevalence was in the UK, New Zealand, and Australia while the prevalence of asthma in eastern Europe, Greece, and China was considerably lower. In the ECRHS study, performed in a large cohort of 20–44 year old subjects, the prevalence of asthma was higher in the UK, New Zealand, and the USA and lower in central and southern European countries. These data show a link between the prevalence of asthma and the geographical area or distribution of risk factors. Although the ECRHS and ISAAC studies may help to identify specific risk factors for current asthma, neither study has answered questions on changes in prevalence or severity of asthma over time, unless subsequent studies with the same methodology are undertaken in future years.

However, there have been a number of epidemiological studies repeated in the same population with similar methods which suggest that asthma prevalence and severity have increased.^{6,7} In Aberdeen essentially identical studies were undertaken in children 25 years apart.⁶ In 1989 the prevalence of asthma had doubled from the figure in 1964. The prevalence of eczema and hay fever had also increased, which suggests that the increase in asthma related primarily to an increase in the prevalence of allergy.

Among 12 year old children in South Wales, the prevalence of a history of wheezing at any time increased from 17% in 1973 to 22% in 1988, and a history of asthma from 6% to 12%. The prevalence rates for eczema and hay fever also rose over the 15 year period.⁷

Reasons for the increased prevalence of asthma or increased allergy may include a greater proliferation of house dust mites, increasing both sensitisation and exposure, or effects of outdoor and indoor environmental factors such as passive smoking.⁸ The impact of early childhood infections and the subsequent immunological shift from Th1 to Th2 is currently of major interest.

During the 1970s and 1980s asthma mortality increased among young people in many countries.^{2,3} Revisions in coding of airway diseases according to the International Classification of Diseases could have determined a mismatch in interpretation of death from “bronchitis or asthma”, especially in older people. However, the revision of the codes had a minimal impact in 5–34 year old subjects and in many countries asthma mortality in this age group increased from the mid 1970s to the second half of the 1980s. Evidence from the two epidemics of asthma mortality in young people suggests that mortality increased with the introduction of high dose formulations of inhaled β agonists.⁹

As asthma is such a common illness, its economic impact is a heavy burden on health care resources.¹⁰ The estimated costs of asthma—usually divided into direct, indirect, and intangible costs—are very high. Direct costs are those associated with drugs and devices, physicians, and hospitals. Indirect costs are defined as “lost resources” such as time off work and school, and premature retirement. Intangible costs are related to quality of life impairment and social problems of the patients and their families.¹¹ It is a common shared concept that good management of the disease could lead to decreasing morbidity, mortality, and costs of asthma.³

As with all chronic diseases, the responsibility for the daily management needs to be shared between health care professionals, patients, and their families.³ Moreover, asthma is a chronic disease that varies greatly in time with long symptom free periods, and patients can find it difficult to perceive and accept that the disease is a chronic one. The increase in morbidity and mortality is also related to the poor adherence to long term anti-inflammatory treatment. In fact, incorrect asthma management (such as misuse or over-use of drugs, poor perception of symptoms, prolonged exposure to exacerbating factors)

**Pneumology
Department,
Fondazione S Maugeri,
Care and Research
Institute, Tradate
(VA), Italy**
M Neri
A Spanevello

Correspondence to:
Dr M Neri
mneri@fsm.it

can be life threatening and can explain, at least in part, excess mortality and morbidity.¹² Efforts to increase compliance with treatment and a good relationship between patient and doctor are needed to obtain good long term asthma management. Teaching asthmatic patients about their illness is strongly recommended in international guidelines on asthma management³; the aims are to provide knowledge, capacity, motivation, and self-confidence to control the illness. There is evidence that educating patients and their families can achieve not only an increase in knowledge, but also a reduction in morbidity, mortality and related costs, and an improvement in the quality of life.^{13 14}

- 1 Sears MR. Epidemiology. In: Barnes PJ, Rodger IW, Thomson NC, eds. *Asthma: basic mechanism and clinical management*. 2nd ed. San Diego: Academic Press, 1992: 1-19.
- 2 Sears MR. Descriptive epidemiology of asthma *Lancet* 1997;**350**(Suppl II):1-4
- 3 *Global strategy for asthma management and prevention*. NHLBI/WHO Workshop Report, March 1993. Publication no. 95-3659. Bethesda: National Institutes of Health, National Heart, Lung and Blood Institute, 1995.
- 4 European Community Respiratory Health Survey. Variations in the prevalence of respiratory symptoms, self-reported asthma attacks, and use of asthma medication in the European Community Respiratory Health Survey (ERCHS). *Eur Respir J* 1996;**9**:687-95.
- 5 The International Study of Asthma Allergies in Childhood (ISAAC) Steering Committee. Worldwide variations in prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and atopic eczema. *Lancet* 1998;**351**:1225-32.
- 6 Ninan TK, Russel G. Respiratory symptoms and atopy in Aberdeen schoolchildren: evidence from two surveys 25 years apart. *BMJ* 1992;**304**:873-5.
- 7 Burr ML, Butland BK, King S, et al. Changes in asthma prevalence: two surveys 15 years apart. *Arch Dis Child* 1989;**64**:1452-6.
- 8 Sporik R, Chapman MD, Platts-Mills TAE. House dust mite exposure as a cause of asthma. *Clin Exp Allergy* 1992;**22**:897-906.
- 9 Sears MR, Taylor Dr, The β_2 agonist controversy: observations, explanations and relationship to asthma epidemiology. *Drug Safety* 1994;**11**:259-83.
- 10 Weiss KB, Gergen PJ, Hodgson TH. An economic evaluation of asthma in the United States. *N Engl J Med* 1992;**326**:862-6.
- 11 Barnes PJ, Jonsson B, Klim JB. The costs of asthma. *Eur Respir J* 1996;**9**:636-42.
- 12 Dales RE, Schweitzer I, Kerr P, et al. Risk factors for recurrent emergency department visit for asthma. *Thorax* 1995;**50**:520-4.
- 13 Trautner C, Richter B, Berger M. Cost-effectiveness of a structured treatment and teaching programme on asthma. *Eur Respir J* 1993;**6**:1485-91.
- 14 Neri M, Migliori GB, Spanevello A, et al. Economic analysis of two structured treatment and teaching programs on asthma. *Allergy* 1996;**51**:313-9.