



Bronchial Asthma in Israel

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Key words: asthma, education, prevalence, mortality, morbidity, epidemiology

Abstract

Asthma in Israel is a growing medical problem, affecting at least 7% of children and 3.7% of the total population. Mortality rates in the age group 5–34 years were on a rise between 1976 and 1990 but show a marked decrease in recent years, perhaps due to the sharp increase in sales of inhaled corticosteroids. There is also a recent indication that the relatively high crude mortality rate among women is declining (from 3.68 and 4.58 per 100,000 population in 1995 and 1996 respectively, to 3.58 per 100,000 in 1997). In spite of better asthma education and management there is still a gap between available medical knowledge and medical therapy and its utilization for the benefit of the asthmatic population in Israel.

IMAJ 2002;4:661–663

Bronchial asthma is a common worldwide disease, affecting many millions at all ages. It is the most common chronic disease among children and its prevalence is rising constantly. The establishment of the National Asthma Education and Prevention Program (NAEPP) and its guidelines in 1991 (revised 1997) by the National Heart Lung and Blood Institute (NHLBI) in the United States [1], and later on the establishment of the Global Initiative for Asthma (GINA) in 1995 by the World Health Organization [2], were a major cornerstone in the internationally organized fight against asthma. They both stimulated intense international asthma epidemiologic efforts [3]. Israel, a small country with a population of six million, a western lifestyle and easy access by the population to modern medical care, may be a good model for many relevant questions regarding trends in asthma epidemiology and asthma management.

Prevalence

Several asthma prevalence surveys were conducted in Israel in recent years. In 1997 a national prevalence survey was conducted among 10,127 school children aged 13–14 years [4]. Prevalence and other epidemiologic data were assessed by means of a standardized questionnaire that is used by the International Study of Asthma and Allergies in Childhood (ISAAC) [3]. Self-reported asthma prevalence in this age group was 7% [Table 1]. When asthma definition was broadened and included also self-reported wheezing episodes, use of asthma medication, or a follow-up by a pulmonary clinic, the prevalence was 11.1%. Asthma was significantly more prevalent among Jews compared to Arabs, and in urban versus rural communities [Table 1]. In another study [5], the Health Services Survey in Israel (4,500 households) conducted by the Israel Central Bureau of Statistics (ICBS), the total prevalence of asthma in Israel in all age groups in 1996 was 3.7%. Above the age group 25–44 years

Table 1. Asthma prevalence in Israel

	Prevalence (%)	Reference No.
Age 13–14 (1997, entire sample)		[4]
– Jews	7.8] $P = 0.001$
– Arabs	4.9	
– Boys	7.3] NS
– Girls	6.7	
– Urban	7.4] $P = 0.04$
– Rural	5.9	
All ages (1996, overall population)	3.7	[5]
Adults 75 years +	7.0	[5]

the prevalence increased with age, reaching a peak at ages 75+ [Table 1]. In another survey, asthma prevalence was assessed among 400,000 army inductees aged 17–18 years [6]. Asthma prevalence in this age group increased from 1980 to 1991 by 85% among men and 115% among women. In the USA, the Centers for Disease Control [7] reported a rising trend in the overall prevalence of self-reported asthma during the years 1982–1992 from 3.5% to 4.9%. In the age group 5–34 years the increase was more marked, from 3.5% to 5.3%. In Britain [8], a national study among children 5–17 years old revealed a prevalence of 13.1%. It seems that the prevalence of asthma in Israeli children is between that of the USA and Britain.

Incidence

There are no data on the rate of newly diagnosed asthma in Israel. The incidence of asthma in the 13–14 year old age group will be assessed in the near future (personal communication with the Israel Center for Disease Control).

Mortality

During the period 1995–1997 in Israel, 164, 197 and 191 persons died of asthma each year, respectively [9, and Israel Central Bureau of Statistics personal communication). The crude annual asthma mortality rates in Israel per 100,000 population in 1996 were 2.32 among men and 4.58 among women [9]. In the USA the crude annual mortality rate in 1994–96 was 2.1 per 100,000 – lower than in Israel [10]. However, there are some indications that asthma mortality has begun to decrease in certain subpopulations in Israel. Mortality among Israeli asthmatic women decreased in 1997 compared to 1996 and 1995 (while mortality among men continues to rise) [Figure 1], and a decrease in the annual asthma mortality rate in the 5–34 year age group [Table 2] was recently reported [11,12]. In contrast, the mortality rate continues to rise in the same age group among Afro-Americans and Japanese [13,14]. Interestingly, in Israel, annual mortality rates in the 5–64 year age group

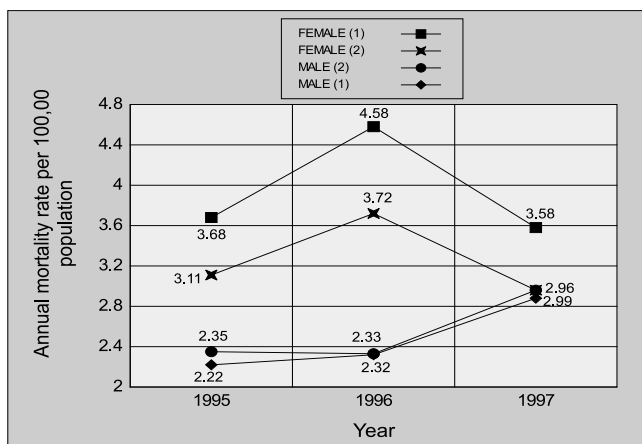


Figure 1. Asthma annual mortality rate in Israel. (1) crude mortality, (2) age-standardized mortality.

Table 2. Mean annual mortality rate* (annual deaths from asthma per 100,000 population in Israel)

	Age groups		
	5–34 yr	35–64 yr	5–64 yr
1976–1980	0.18		
1981–1990	0.393 ± 0.055	4.568 ± 0.625	2.480 ± 0.41
1991–1995	0.202 ± 0.046	4.063 ± 0.967	2.133 ± 0.59
P value	< 0.05	NS	NS

* Ref. 11, 12 NS = not significant

correlated inversely with the increase in unit sales of inhaled corticosteroids that occurred in 1991–95 compared to the years 1982–90 [12].

Hospitalization and emergency room use

In 1990, hospitalization rates in all age groups due to asthma were assessed by the Israel Bureau of Statistics [15]. The overall hospitalization rate in 1990 was 150 per 100,000. The hospitalization rate in the U.S. was somewhat higher than that reported in Israel, with 179 hospitalizations per 100,000 population in the USA in 1991 [7].

In Israel the highest hospitalization rate was among children in the first year of life, but data are probably confounded by the inability to differentiate between the etiologies of wheezing attacks at this age. Rates were lowest at ages 15–44 years and increased with age thereafter. In the 65–74 year age group the rate was the highest – 247 hospitalizations per 100,000 population, with an average duration of stay of 4.3 days. In 1997, in the national children's asthma survey (13–14 year olds), 21% of asthmatic children visited the emergency room during the previous year and 9% of asthmatic children were hospitalized in the same period because of asthma exacerbation [4]. These figures may indicate asthma under-treatment.

Management and education

Progress in asthma care and education in Israel has been achieved in recent years. In 1997, the Israel Medical Association published its first Asthma Clinical Guidelines for asthma diagnosis, management and education (revised in 2000). The guidelines are similar to other

international guidelines such as those of the NAEPP and GINA. In addition, many lectures dealing with these topics are given throughout the country to general practitioners and internists through university-based continuing medical education programs, which in the year 2000–2001 also conducted real-time, interactive, video-mediated lectures to reach physicians in remote areas. The Israeli asthma internet site already exists and provides information to patients as well as to physicians (www2.iol.co.il/asthma). Pharmaceutical companies that sponsor asthma clinical workshops for general practitioners throughout the country also promote asthma education. There is a suggestion that asthma management is improving, based on the fact that the mean unit sales rate of inhaled corticosteroids in Israel between 1982–90 and 1991–95 increased from 21.7 to 190.45, respectively ($P < 0.5$) [11]. Most inhaled corticosteroids and long-acting beta-agonists are sold in Israel (already for some years) also in the form of breath-actuated inhalers. Combined powder inhalers (corticosteroid + long-acting beta-agonist) were recently made available in Israel, and its use is likely to increase asthma control [16] and perhaps also patient compliance. Pressurized inhalers with spacers are used for infants and for the elderly in order to avoid incorrect use of pressurized inhalers, as was recently shown in Israeli adults [17].

Despite the progress achieved in asthma care, asthma may still be under-diagnosed in Israel. This may be true at least in the age group 13–14 years, if judged by the discrepancy between self-reported asthma (7%) and the prevalence of asthma, as assessed by its broader definition (11.1%) or by the self-reported prevalence of dyspneic episodes during the year 2000 (17.9%) [4]. In addition, there is a great need for improved physician education. For example (according to personal not yet published data), there is poor usage of an objective measurement of airway obstruction by peak expiratory flow-meter or by a spirometer in asthmatic patients admitted to emergency rooms. This measurement is not done at all in 44% of the adult emergency rooms throughout the country, or is done in less than 50% of asthmatic patients in another 35% of the adult ERs. On discharge from the ER, or before hospital admission, objective assessment of airway obstruction is never checked in 50% of the ERs and is checked in less than 50% of the patients in another 40% of the adult ERs. In addition, in about 60% of the adult ERs in Israel, physicians do not follow official asthma guidelines but make decisions according to their personal clinical impression. The rate of use of the peak expiratory flow-meter by Israeli family practitioners in their offices is not known. In other developed countries, when objectively studied, its use unfortunately can be as low as 4% [18], leaving the patients and their caregivers unaware of the impact of the disease on airway function.

Concluding remarks and future goals

Asthma prevalence in Israel increased very significantly during the last two decades, as it did in many other developed countries of the modern world. In parallel, asthma care and education in Israel improved in recent years, as suggested by recent trends in mortality, in sales of inhaled corticosteroids, and in official asthma education

ER = emergency room

to healthcare providers. Nevertheless, as in the rest of the world, asthma in Israel is probably still under-diagnosed and under-treated. Even in most of the developed countries there is a significant gap between available medical knowledge and available effective medications on the one hand, and the practical application of these resources to the benefit of the asthmatics on the other [19]. One immediate goal in Israel, as in the other parts of the world, should be the dissemination of medical knowledge to patients and their families, to general practitioners, nurses, and to pharmacists. Dissemination of asthma education will be much easier and on a vaster scale once the World Wide Web (internet) will be available in each home through cable or satellite-driven interactive TV sets, and clinical guidelines will be incorporated into the computerized medical record system. The second immediate goal should be the development of a national central program for better asthma control in the population. Such a central control program should make use of a computerized automated monitoring system. This might be relatively easily achieved since almost all family practitioners in Israel are obligated to work with a computerized medical record system within their health maintenance organization. Of the four HMOs that insure the entire population in Israel, three work with a computerized medical record network system, covering almost 90% of the population in Israel, and the fourth one is currently beginning with such a network system. A computerized central monitoring program like the one proposed should at least be able to automatically detect asthmatic patients who overuse short-acting beta-agonists as well as patients with frequent unscheduled medical visits or hospitalizations [18,20]. Once such patients are detected, the central office, via their family practitioners, should automatically refer them to specialized asthma clinics where they can be examined, educated, guided and followed by professionals for a better outcome [21].

In the meantime, the available educational resources and effective therapeutic regimens are still under-utilized. Asthma education with regard to the nature of the disease, the importance of control medication, environmental control (including interfering medications) and prevention of exacerbations, self-management instructions, proper use of inhalers, objective assessment of pulmonary function, and use of clinical guidelines, are still a major goal. In my opinion this goal can be attainable, or at least approached, even in general practices by using specialized educating teams that should periodically visit these practices and coach the practitioners and a specific nurse(s) towards this end. In our asthma clinic this is practiced on a personal basis with our patients on different aspects of education and management; it consumes a few minutes at each visit but is conducted throughout the entire follow-up. Clinicians' efforts should be focused on this goal, while scientists continue to work on the elucidation of asthma pathogenesis, genetics and risk factors in order to develop more specific medications with improved efficacy, easier regimens and fewer side effects, and – in the more distant future – to prevent disease occurrence.

Acknowledgment. The author thanks Dr. T. Sochat of the Israel Center for Disease Control for her valuable help.

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