

Abstract

The national prevalence of asthma, hay fever and eczema, employing the International Study of Asthma and Allergies in Childhood (ISAAC) questionnaire, was determined during 1995 in 3148 Junior Certificate secondary school children aged 13-14 years throughout the Republic of Ireland. The prevalence values for asthma, hay fever and eczema were 15.2%, 24.8% and 9.4% respectively. Although 5.4% reported having both asthma and hay fever, combinations of the other allergic conditions were less than 2%. Sex difference in prevalence rates for the various conditions occurred with asthma prevalence being higher for males, eczema in females, but hay fever was almost equally reported between males and females. This data documents the prevalence of teenage asthma with associated allergic conditions in the Republic of Ireland and will allow for present and future comparisons of these conditions with other countries world-wide using the ISAAC protocol.

Introduction

In developed countries, asthma is the most common chronic disease of childhood. Increases in the rates of asthma morbidity and mortality world-wide have occurred in recent years. However, asthma deaths in the Republic of Ireland do not appear to be increasing although admissions to hospital for this condition in children have increased.¹⁻³ The reasons for this are unclear and cannot be fully accounted for by changing diagnostic patterns. Taylor et al., have recently reported almost a twofold increase in the prevalence of asthma in Irish schoolchildren in the decade up to the early 1990s.⁴ Prevalence rates for childhood asthma were similar for hay fever but less for eczema.⁴ In recent years the prevalence of these three allergic conditions are believed to be increasing in many developed countries world-wide. In this study we document the national prevalence rates for asthma, hay fever and eczema in Irish teenagers and examine the possible urban to rural variations in the prevalence of these conditions.

Materials and Methods

The population of interest were school children within the Republic of Ireland aged 13-14 years in compliance with the ISAAC study requirements.⁵ From each school, classes with the greatest proportion of 13 to 14 year olds were selected (Junior Certificate 2 classes). Included in the analysis were students whose date of birth occurred before 1/9/79, all others were excluded. The basic sampling frame consisted of all post-primary schools (n=624) excluding special disability schools and those that had less than forty students because of the impracticalities of administering the survey. Schools were selected by stratified random sampling based on school size and composition. They were also stratified by Health Board area to allow for regional comparisons of the data. A pre-study sample size of at least 3000 children was calculated using standard sample size calculations. The data collection was carried out between March and April 1995 before commencement of the main grass and tree pollen season. The questionnaires were self-administered under supervision by the researchers. Strenuous efforts were made to follow-up students who were absent on the day the questionnaires were administered. School registers were checked for student absentees on the day of the survey and provision made for completed questionnaires from these students to be returned by post.

Statistical Methods

Prevalence figures are given (with 95% CI's) as a percentage of the total sample that responded. Schools located in an area of population less than 17,000 were categorised as rural, the rest were categorised as urban schools. Data were analysed using the chi-square (X²) test for contingency tables.

Results

All 30 of the selected schools participated in the study. A total of 3490 students were sampled. Age eligibility removed 72 students leaving 2965 surveyed at school and a further 183 returned by post. The response rate was 92% (3148/3418) which included 1456 (46%) males and 1692 (54%) females. The number and percentage of children reporting asthma, hay fever and eczema or a combination of these conditions are given in Table 1. Males had a significantly higher prevalence of asthma (Odds ratio = 1.46 95% CI 1.20-1.78 p<0.001) compared to females. Twenty-nine percent of children reported symptoms consistent with asthma (Table 3) suggesting an under diagnosis of the condition in this population. In addition, children with asthma and wheeze reported a significant impact of these symptoms on their sleep and speech compared to children with only wheeze (Table 4). They were more likely to be on anti-asthma therapy (Table 4).

Symptoms	Number	Prevalence (95% Confidence)	(%)	Intervals
Ever had asthma	479		15.2	(14.0 to 16.5)
Wheeze in last year	915		29.0	(27.5 to 30.7)
Wheeze (attacks in last year)				
1-3	566		18.1	(16.6 to 19.3)
4-12	166		5.3	(4.4 to 6.0)
>12	88		2.8	(2.2 to 3.4)
Wheeze/Sleep disturbance				
< one night per week	232		7.4	(6.5 to 8.3)
> one night per week	83		2.6	(2.0 to 3.2)
Wheeze/Speech limiting	188		6.0	(5.1 to 6.8)
Wheeze with exercise	792		25.1	(23.6 to 26.7)
Dry night cough	1068		33.9	(32.2 to 35.6)

Symptoms	Wheeze with Asthma (n=369)		Wheeze only (n=546)	
	Number	(%)	Number	(%)
Wheeze/Speech limiting*	98	26.6	87	16.0
No. of Attacks of wheeze 4-12	84	22.8	80	14.7
>12	52	14.1	36	6.6
Wheeze/Sleep Disturbance*	173	46.9	133	24.4
Wheeze with Exercise	324	87.8	398	72.9
Dry night cough	173	46.9	273	50.0
Treatment with inhalers				
B2-agonist only	137	37.1	15	2.7
Corticosteroids only	8	2.2	2	0.4
Combination therapy+	114	30.9	5	0.9

*Statistically significant difference (p<0.0001).
 + Combination therapy includes 2 or more of the following: Inhaled corticosteroids, sodium cromoglycate, and 2-agonist.

As with asthma prevalence, hay fever, but not eczema was also slightly more common in males (Table 2). Hay fever was reported more commonly in children living in urban rather than rural communities (Odds ratio = 1.68 95% CI 1.42--1.98 p<0.001) (Table 2). The presence of asthma or eczema was not significantly different between urban and rural areas. 5.4% of children reported having both asthma and hay fever, with fewer children reporting asthma and hay eczema or a combination of all three allergic conditions (Table 1).

	Number	Prevalence (%)	(95% Confidence Intervals)
Asthma	479	15.2	(14.0 to 16.5)
Hay Fever	782	24.8	(23.3 to 26.4)
Eczema	295	9.4	(8.4 to 10.4)
Asthma and Hay fever	169	5.4	(4.6 to 6.2)
Asthma and Eczema	31	1.0	(0.6 to 1.3)
Hay fever and Eczema	58	1.8	(1.4 to 2.0)
Asthma, Hay fever and Aczema	50	1.6	(1.1 to 2.0)

Variable	Total No.s	(%)	Male	Female	Urban	Rural
Asthma	479	15.2	17.8*	12.9	14.5	15.8
Hay fever	782	24.8	26.5	23.3	29.5**	19.9
Eczema	295	9.4	7.4	11.0+	9.5	9.1

* significantly associated with male gender OR = 1.46 (95% CI 1.20-1.78) p< 0.001
**significantly associated with urban residence OR = 1.68 (95% CI 1.42-1.98) p< 0.001
***significantly associated with female gender OR = 1.49 p= 0.0015

Discussion

This study confirms the upward trend for an increase in asthma prevalence as reported initially by Taylor et al.⁴ The small differences in the asthma prevalence results between the two studies may reflect a further increase in asthma prevalence from the early 1990s or a difference in the administration of the survey. This study employed a directly administered questionnaire requiring at least 90% completion compared to the postal questionnaire in the Taylor et al⁴ study with a significantly less completion of questionnaires.

Respiratory symptoms in keeping with a diagnosis of asthma (wheeze, wheeze with exercise and during sleep) were commonly reported in this childhood population as a whole but particularly in those who reported having a diagnosis of asthma. However, a significant number of pupils also reported symptoms, such as cough and wheeze, suggestive of asthma without having an asthma diagnosis being made. This would suggest that this condition may be under-diagnosed in this latter population.

Even when an asthma diagnosis has been reported few children used inhaled anti-inflammatory medication (corticosteroids or sodium chromoglycate or both), which are the cornerstone of asthma therapy for many years. In fact most used only bronchodilator medication alone or were not on any treatment and would suggest that asthma and its severity may be unrecognised and under-treated in these children. The finding that asthmatic symptoms had a significant impact on sleep and speech in a large proportion of these children in this study suggests that this may be the case. The recognition that symptoms such as wheeze, may be due to asthma generally leads to more appropriate therapy for this condition.⁶ On the contrary, asthma under-treatment is an important factor in the increased mortality from this condition.² We have documented the prevalence rates for childhood asthma, hay fever and eczema in the Republic of Ireland. Similar studies to ours are ongoing in 30 other countries the results of which will become available in the near future which will allow for future comparisons of prevalence of these conditions in Ireland with other countries world-wide.

Acknowledgments

We would like to express our gratitude to all the pupils, teachers and principals in the schools throughout the country for their assistance and enthusiasm without which this study would not have been possible. Dr. Myra O'Regan (Trinity College, Dublin) is thanked for her invaluable statistical advice in the design of this study. This study was funded in part by the Health Research Board and Royal City of Dublin Hospital Research Trust.

Correspondence:

Dr Patrick Manning,

Department of Respiratory Medicine,
CResT Directorate,
St James's Hospital,
James Street,
Dublin 8

References

1. Manning P, Murphy E, Clancy L, Callaghan B. Asthma mortality in the Republic of Ireland 1970-84 and an analysis of hospital deaths in a single year. *IMJ* 1987;80:406-409.
2. Sinclair H, Allwright S, Prichard J. Secular trends in mortality from asthma in children and young adults: Republic of Ireland, 1970-91. *Ir J Med Sci* 1995;45-47.
3. Abduelrhman EM, Loftus BG. Paediatric asthma admissions in Galway 1985;89. *IMJ* 1992;85:136-137.
4. Taylor MRH, Holland CV, O'Lorcain P. Asthma and wheeze in schoolchildren. *IMJ* 1996;89:34-35.
5. Asher MI, Keil U, Anderson HR, et al. International study of asthma and allergies in childhood (ISAAC): rationale and methods. *Eur Respir J* 1995;8:483-491.
6. Steen HJ, Stewart MC, McAuley D, Parker S. Changing trends in approach to wheezy children by family doctors. *IMJ* 1992;85:59-60.

Comments: No Comments

OtherReferences: No References

Acknowledgement: No Acknowledgement