

Rising Prevalence of Asthma but Declining Wheeze in Teenagers (1995–2003): ISAAC Protocol

Abstract:

PJ Manning¹, P Goodman², A OSullivan¹, L Clancy¹

¹Department of Respiratory Medicine, CResT Directorate, St James's Hospital, James's Street, Dublin 8
²Dublin Institute of Technology, Kevin Street, Dublin

Abstract

The results of the initial International Study of Asthma and Allergies in Childhood (ISAAC) undertaken in the mid 1990s demonstrated a substantial increase in asthma and wheeze symptoms prevalence in Irish teenagers aged 13–14 years from the 1980s. International research suggests that asthma has increased further in some countries and this study was undertaken to determine whether an upward trend in childhood asthma prevalence has continued in the Republic of Ireland in recent years. We therefore conducted two further national cross sectional studies in the same previously surveyed childhood population throughout the Republic of Ireland, one in 1998 (n=2,580) and the other in 2002–3 (n=3089). We report here on rising prevalence trends of asthma (42.1% relative increase) but falling wheeze (10.4% relative reduction) prevalence in these teenage children in 2002–3.

Introduction

Asthma is one of the most common chronic disorders in children, and its prevalence varies worldwide¹. The International Study on Asthma and Allergies in Children (ISAAC) study has identified that the prevalence of asthma in Ireland remains one of the highest in the world. While reports from different countries indicate a fall in asthma symptoms in some countries including the Republic of Ireland in recent years² reports in some Western countries indicating an increase in prevalence of asthma in recent years^{3,4}. However, while asthma has a genetic basis, the increasing rise in asthma rates is unlikely to be explained by genetic factors and may reflect other issues such as changing but unexplained environment factors⁵ or an increased awareness of the condition particularly in milder disease⁴. This paper reports on the changing prevalence of asthma and asthmatic wheeze in teenagers throughout the Republic of Ireland in recent years.

Methods

The national changing prevalence of asthma, and wheeze employing the International cross sectional questionnaire, were determined in 1998 and 2002–3. The questionnaire and methods of this study were similar to that reported in the 1995 study published in the Irish Medical Journal 1997⁵. As part of these studies we employed questions in the questionnaire on "wheeze or whistling in chest over the past 12 months" and whether they "ever had asthma". As in the 1995 study the basic sampling frame consisted of all post primary schools throughout the Republic of Ireland excluding special disability schools and schools with less than 40 pupils of this age group because of the impracticalities of administering the survey in these schools. The same 30 representative and randomly selected schools from throughout the Republic of Ireland from the 1995 study took part in the 1998 study. However, in the 2002–3 study 26 of these 30 schools were also included but four schools were omitted as they had either closed down or were unable to participate. We randomly replaced these schools with others of similar size, gender and we also had to increase the number of participating schools to 36 because of falling enrolment numbers in the remaining schools, to ensure a sample size of at least 3000 children. From each school, classes with the greatest proportion of 13–14 year olds were selected (Junior Certificate 2 Classes). The initial study was undertaken in the Spring of 1998 and the second from December 2002 to Spring of 2003. The questionnaires used in both studies were self administered under supervision by the researchers on each occasion. This study was approved by the Ethics committee, of Federated Dublin Hospital's Group, Dublin.

Results

The response rate for both studies was high at 87.7% in the 1998 survey with 2580 of 2942 students completing the questionnaire and 90.9% responding in a similar manner in the 2002–3 survey with 3089 of 3398 students completing the survey. Between 1995 and 2002–3 we demonstrated that while the prevalence of diagnosed asthma increased in teenagers the symptoms of asthmatic wheeze decreased. The prevalence values for children who reported "ever having asthma" increased to 18.2% in 1998 and again to 21.6% by 2003 compared to data reported in 1995 at 15.2% (n=479). This is a 42.1% relative increase in asthma diagnosis over that time period. Asthma was more common in males. However, the prevalence for "wheeze in the past 12 months" (Table 1) remained steady initially at 29.8% in 1998 (n=770) compared to 29.0% (n=915) in 1995. This then fell to 26.7% (n=825) in 2002–3 which is a 10.4% relative reduction in wheeze symptoms over that period.

Discussion

This study demonstrates a sizable persisting level of childhood asthma in the Irish population and in addition there has been an overall upward trend for increased asthma prevalence. This represents a 42% relative increase in Irish childhood asthma diagnosis from the period 1995 to 2002–3. There was however, a relative drop in reported wheeze in these children by over 10%. The cause for these trends is unknown but may reflect better recognition and diagnosis of asthma in clinical practice, reduced childhood asthma admissions to hospital⁶ and the drop in reported wheezing rates in the Irish population from 1998 to 2002–3 would be supportive of this. These changes have coincided with the launch and the wide dissemination of national evidence-based Asthma Management Guidelines.

These Irish (GINA) asthma guidelines were widely published as a supplement to the Irish Medical Journal in 2000 and have been included with web-based access on the Journal website. The guidelines supported the early use of inhaled anti-inflammatory corticosteroids, an effective anti-inflammatory asthma therapy in children. Thus a possible explanation for at least some but not all of the paradoxical increase in asthma prevalence thus may be that the diagnosis of asthma has become more commonly applied to an increasingly milder disease although other environmental issues may also be playing a role². We recently demonstrated that based on asthma symptoms alone over 70% of patients had milder asthma⁷. However while the asthma and wheeze rates have become closer in terms of prevalence values the greater level of persisting wheeze suggests that a sizable number of children may still remain undiagnosed in terms of asthma which is a concern in these children. Since asthma can be a persisting and recurring health problem, the results reported in this paper indicating high and rising rates of asthma in Ireland which raises important public health concerns. There is the likelihood for increased health, social, and economic costs for these children, their families and the Irish Healthcare system in caring for them into future and thus necessitates a strong governmental and HSE response to this rising "asthma epidemic" in children with targeted funding for asthma research into this problem which to date has been sparse and very limited.

References

1. Worldwide variation in prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and atopic eczema. Lancet 1998; 351: 1125–32.
2. Asher MI, Montefort S, Björkstén B, Lai CW, Strachan D, Weiland SK, Williams H, and the ISAAC Phase Three Study Group. Worldwide time trends in the prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and eczema in childhood. ISAAC Phases One and Three repeat multicountry cross-sectional surveys. Lancet 2006; 368:733–43.
3. Ng Man Kwong G, Proctor A, Billings C, Duggan R, Das C, Whyte MK, Powell CV, Primhak R. Increasing prevalence of asthma diagnosis and symptoms in children is confined to mild symptoms. Thorax 2001 Apr; 56:312–4.
4. Soriano JB, Kiri VA, Maier WC, Strachan D. Increasing prevalence of asthma in UK primary care during the 1990s. International Journal Tuberculosis and Lung Disease 2003; 7: 415–21.
5. Manning PJ, Curran K, Kirby B, Taylor MRH, Clancy L. Asthma, Hay fever, and Eczema in Irish teenagers (ISAAC Protocol). Irish Medical Journal 1997; 90:110–1.
6. Shabu A, Carr M, Loftus BG. Childhood asthma admissions, three 12-month studies over 15 years. Irish Journal Medical Science, 2005; 4 (supplement 3), p.21 (abstract).
7. Manning PJ, Greally P, Shanahan E. Asthma control and management: a patient's perspective. Irish Medical Journal 2005; 98:231–2, 234.

Comments: PJ Manning
Department of Respiratory Medicine, St. James's Hospital, Dublin 8
Email: pjmanning@eircom.net
OtherReferences: No References

Acknowledgement: Supported by the Royal City of Dublin Hospital (RCDH) Trust. We wish to thank the principals, teachers and students in the various schools who generously participated in these studies.