

Original article

Management of asthma in French schoolchildren: The 6C study

La prise en charge de l'asthme chez les écoliers français : l'étude 6C

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Abstract

Objectives. – To describe the severity of asthma in schoolchildren in six cities in France in order to evaluate asthma management, observance and therapeutic education of both parents and children.

Participants and methods. – Nine thousand six hundred and forty one schoolchildren in 401 CM1 and CM2 classrooms in 108 randomly selected primary schools participated in a multicentre epidemiological cross-sectional survey in six French cities (the 6C study). A standardized questionnaire provided information on: (1) symptoms and severity of their asthma; (2) control and management of the asthma by parents and children.

Results. – Nine hundred and three children out of the 9641 participants were asthmatics. Of these asthmatic children, 22.3% had had no previous medical diagnosis of asthma. Among the asthmatic children, 77.3% suffered from intermittent asthma, 9.9% from mild persistent asthma and 12.8% from moderate persistent asthma. The asthmatic children were being followed mainly by pediatricians or general practitioners. Nearly a third (30%) of the parents knew how to prevent an asthma attack and more than half said that they knew how to use asthma medication in the event of severe attacks. Few parents knew the cause of the attacks. Peak flow-meters were rarely used. The positive effects of physical exercise were poorly known, especially by parents whose children suffered from mild asthma.

Conclusion. – Guidelines for asthma control and management in France can be improved. The parents of children with mild or un-diagnosed asthma should be targeted. Guidelines for treatment and care must be adapted to the culture, the socioeconomic context and to the family's level of knowledge (or ignorance) of the disease.

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Keywords: Asthma; Management; Severity; Children; Parents

Résumé

Objectifs. – Décrire la gravité de l'asthme chez les écoliers dans six villes françaises, afin d'évaluer la prise en charge de l'asthme, l'observance et l'éducation thérapeutique des parents et des enfants.

Population et méthodes. – Neuf mille six cent quarante et un écoliers de 401 salles de classe de CM1 et CM2 dans 108 écoles primaires choisies au hasard dans le cadre de l'étude des six villes. Un questionnaire standardisé a permis d'obtenir des informations sur : (1) symptômes et gravité d'asthme ; (2) contrôle et prise en charge de l'asthme par les parents et les enfants.

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Résultats. – Neuf cent trois enfants sur les 9641 ayant participé à l'enquête étaient asthmatiques. De ces enfants asthmatiques, 22,3 % n'avaient eu aucun diagnostic médical antérieur d'asthme. Parmi les enfants asthmatiques, 77,3 % des enfants souffraient d'asthme intermittent, 9,9 % d'asthme persistant léger et 12,8 % d'asthme persistant modéré. Les asthmatiques étaient suivis principalement par des pédiatres ou généralistes. Presque un tiers (30 %) des parents savaient comment prévenir les crises d'asthme et plus de la moitié déclarait connaître les médicaments contre l'asthme en cas de crises graves. Peu de parents connaissaient les causes des crises. L'utilisation d'un débitmètre de pointe était rare. Les effets positifs de l'exercice physique étaient mal connus, en particulier par les parents dont les enfants souffraient d'asthme léger.

Conclusion. – Les lignes directrices sur la prise en charge de l'asthme peuvent être améliorées en France. Elles doivent cibler aussi les parents d'enfants ayant eu un diagnostic d'asthme léger ou n'ayant pas été encore diagnostiqué. Les lignes directrices sur les traitements et les soins doivent être adaptés à la culture, le contexte socioéconomique et le niveau de connaissance (ou l'ignorance) de la maladie par la famille.

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Mots clés : Asthme ; Prise en charge ; Sévérité ; Enfants ; Parents

1. Introduction

Asthma is the most frequent chronic disease in children and its prevalence continues to increase [1–4]. In France, asthma is responsible each year of 600 000 days of hospitalization (short stay), approximately 1000 deaths and generates more than one billion euros of health expenditure [5]. Children are at greater risk for both asthma hospitalisation and death than the rest of the population. According to the *Programme de médicalisation des systèmes d'information* (PMSI) dataset, the annual standardised hospitalisation rate for asthma is 9/10 000. In addition, the *Organisation de la Surveillance COordonnée des URgences* (OSCOUR) network indicates that in the Parisian Region there are up to 40 ER department visits per month for asthma. Previous studies have shown that asthma education and case management may reduce asthma emergency care, hospitalizations, and expenditures [6]. The International Study of Asthma and Allergies in Childhood (ISAAC), using a standardized methodology, constitutes one of the most important investigations carried into asthma and the allergies in infantile general population [7]. The six Cities Study (6C), the French contribution to ISAAC, was carried out in a representative population-based sample of schoolchildren in six cities in France (metropolitan area) in order to estimate the prevalence and severity of asthma and to study its risk factors, air pollution in particular, in contrasted zones [8]. The objectives of the present study are to describe the severity of childhood asthma and to evaluate asthma management, observance and therapeutic education using the data of both parents and children in the 6C Study with an enriched ISAAC protocol.

2. Methods, design, setting and participants

A cross-sectional survey was conducted in 401 randomly selected classrooms of 108 randomly selected primary schools in six cities (Strasbourg, Reims, Créteil, Bordeaux, Clermont-Ferrand, Marseilles). Nine thousand six hundred and forty one participants aged 10 to 13 years issued from the general population of schoolchildren of French primary school (levels 9 and 10, CM1 and CM2 in France) were involved in the study. Parents were asked to complete an enriched version of the standardized ISAAC questionnaire, and children were sub-

mitted to a medical examination for allergic and respiratory diseases by a qualified medical practitioner. Asthma severity was assessed according to the Global Initiative for Asthma (GINA) classification in intermittent, mild persistent, moderate persistent and severe persistent (<http://www.ginasthma.com/>).

3. Results

3.1. General characteristics of the population

The analyses were performed in the panel of asthmatics as defined on the basis of the presence of asthmatic symptoms children ($n = 903$) (Table 1). Among them (11.6% of the observed population) aged 10.4 years (8–13.2 years) in mean, the prevalence of past year asthma (wheezing and whistling in the chest in the last 12 months) was 7.98% ($n = 72$). Among the children, 77.3% suffered from intermittent asthma, 9.9% from mild persistent asthma and 12.8% from moderate persistent. None had severe persistent asthma. One hundred and forty-three boys and 90 girls had repeated a class; most of them were in the group of mild persistent asthma (Table 2).

Table 1
Geographical variations of asthma according to Global Initiative for Asthma (GINA)^a classification by town.

Centers	Schoolchildren Schools	GINA 1 (%)	GINA 2 (%)	GINA 3 (%)	GINA 4 (%)
Créteil	175 20	130 (74.3)	17 (9.7)	28 (16)	0
Reims	116 20	86 (74.1)	17 (14.7)	13 (11.2)	0
Marseille	164 17	132 (80.5)	13 (7.9)	19 (11.6)	0
Strasbourg	142 14	114 (80)	13 (7.9)	15 (10.6)	0
Clermont	137 18	110 (80.3)	8 (5.8)	19 (13.9)	0
Bordeaux	169 16	126 (74.6)	21 (12.4)	22 (13)	0
Total		698	89	116	0

^a GINA classification: intermittent (GINA 1), mild persistent (GINA 2), moderate persistent (GINA 3) and severe persistent (GINA 4) (<http://www.ginasthma.com/>).

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