

LETTER

High prevalence of hospitalisation for asthma in a population-based paediatric sample

The asthma prevalence and burden are high among children. However, available data for asthma hospitalisation in children have been mainly reported as annual rates of asthma hospitalisations.¹ The proportion of children with asthma that are hospitalised because of asthma during their lifetime is still unknown.

INASMA was a cross-sectional, population-based, all-age, nationwide telephone survey conducted in 2010 to estimate asthma prevalence and control in Portugal. Details on INASMA methods are described elsewhere.² We report the proportion of lifetime hospitalisation (LH) for asthma in Portuguese children and adolescents aged 6–17 years (hereafter referred to as ‘children’). INASMA included 563 participants in this age group, representative of the Portuguese paediatric population.³ This sample size allowed us to estimate the prevalence of LH with a margin of error of 0.1, considering a 95% confidence level. LH was defined as a positive answer to ‘Have you ever been hospitalised for asthma (inpatient admission >24 h)?’ Lifetime asthma was defined as a positive answer to ‘Have you ever had asthma?’ Current asthma was defined as lifetime asthma plus, at least, one of the following in the previous 12 months: wheezing, waking with breathlessness, asthma attack, or currently taking asthma medication.

The prevalence of LH for asthma in Portuguese children was 3.9% (95% CI 2.6 to 5.7). In children with lifetime asthma, this prevalence was 29.7% (95% CI 23.6 to 36.7) (table 1). Children with current asthma had a higher prevalence of hospitalisations (36.5%; 95% CI 28.8 to 44.9) than children with a history of lifetime asthma but without current asthma (prevalence 13.4%; 95% CI 11.5 to 15.6) (OR 3.70; 95% CI 2.64 to 5.20). The presence of any asthma-like symptom in the previous 12 months increased the proportion of LH (OR 1.85; 95% CI 1.16 to 2.95). Female children had more hospitalisations than male children (OR 1.97; 95% CI 1.22 to 3.18). No differences in the prevalence of LH were observed with socioeconomic status or in children with rhinitis, sinusitis, or food or drug allergies.

In the present study, a high number of hospitalisations for asthma were

observed, with more than 55 000 Portuguese children aged 6–17 years hospitalised for asthma during their lifetime. Moreover, of the children with current asthma, more than one-third had been hospitalised for asthma. Our study is limited by the lack of diagnosis/LH confirmation by a physician, as in other epidemiological studies. We excluded from the analysis participants aged 0–5 years to avoid misclassification of hospital admissions for bronchiolitis and/or viral-induced wheezing. To our knowledge, only one other study reported the prevalence of LH in children⁴; however,

it only included children aged 6–7 years from one Italian city, and the proportion of children with asthma who had LH was not reported. More studies with comparable data from other countries and settings are needed. Our results should contribute to improve knowledge on asthma-related hospitalisations in children, leading to the development of healthcare programmes aiming to reduce their frequency.

For the first time, the proportion of LH for asthma was reported for a national population-based paediatric sample. In Portugal, about one-third of children with

Table 1 Proportion and OR (95% CI) for lifetime hospitalisation (LH) for asthma in Portuguese children aged 6–17 years with lifetime asthma

	LH % (95% CI)	OR for LH (95% CI)
Overall	29.7 (23.6 to 36.7)	
Sex		
Male	24.1 (18.0 to 31.5)	1.00 (Ref)
Female	38.5 (28.8 to 49.2)	1.97 (1.22 to 3.18)
Age groups		
6–12 years old	33.0 (24.2 to 43.1)	1.00 (Ref)
13–17 years old	26.4 (19.0 to 35.5)	0.73 (0.40 to 1.34)
Regions		
North	26.1 (20.0 to 33.2)	1.00 (Ref)
Centre and Islands	46.8 (33.8 to 60.3)	2.10 (1.31 to 4.76)
South	14.5 (6.2 to 30.2)	0.48 (0.18 to 1.31)
Municipality		
Urban	27.3 (19.1 to 37.4)	1.00 (Ref)
Rural	35.9 (35.9 to 35.9)	1.49 (0.94 to 2.37)
Socioeconomic status*		
Low	34.1 (25.3 to 44.3)	1.00 (Ref)
Medium	19.7 (11.3 to 32.1)	0.47 (0.19 to 1.19)
High	23.5 (3.4 to 73.1)	0.59 (0.06 to 5.47)
ETS†		
No	34.4 (24.5 to 45.7)	1.00 (Ref)
Yes	24.0 (17.9 to 31.3)	0.60 (0.31 to 1.17)
‘Wheezing’		
No	18.8 (15.2 to 23.0)	1.00 (Ref)
Yes	41.1 (32.7 to 50.1)	3.03 (2.15 to 4.26)
‘Nocturnal symptoms’‡		
No	21.8 (11.8 to 36.7)	1.00 (Ref)
Yes	34.6 (27.6 to 42.4)	1.90 (0.85 to 4.25)
‘Asthma attack’		
No	23.4 (17.0 to 31.3)	1.00 (Ref)
Yes	43.5 (33.0 to 54.5)	2.52 (1.46 to 4.34)
‘Asthma-like symptoms’§		
No	21.2 (15.4 to 28.5)	1.00 (Ref)
Yes	33.2 (25.9 to 41.5)	1.85 (1.16 to 2.95)
‘Current asthma’		
No	13.4 (11.5 to 15.6)	1.00 (Ref)
Yes	36.5 (28.8 to 44.9)	3.70 (2.64 to 5.20)

Bold values are statistically significant.

*Socioeconomic status was categorised based on occupation and school education of the person who contributed most to the household income.

†Environmental tobacco smoke.

‡‘Nocturnal symptoms’ in the last 12 months: waking with breathlessness or waking with cough or waking with chest tightness.

§‘Asthma-like symptoms’ in the last 12 months: wheezing or nocturnal symptoms or asthma attacks.

asthma have been hospitalised for asthma at least once in their lifetime.

Manuel Ferreira-Magalhães,^{1,2,3} Ana Sá-Sousa,² Mário Morais-Almeida,⁴ Luís Filipe Azevedo,^{2,5} Inês Azevedo,^{1,3} Ana Margarida Pereira,^{2,6} João Almeida Fonseca^{2,5,6}

¹Paediatric Department, Centro Hospitalar de S. João, Porto, Portugal

²CINTESIS-Centre for Research in Health Technologies and Information Systems, Faculty of Medicine, Porto University, Porto, Portugal

³Paediatric Department—Faculty of Medicine, Porto University, Porto, Portugal

⁴Allergy and Clinical Immunology Department, CUF Descobertas Hospital, Lisbon, Portugal

⁵Health Information and Decision Sciences Department—Faculty of Medicine, Porto University, Porto, Portugal

⁶Allergy Unit, Instituto & Hospital CUF, Porto, Portugal

Correspondence to João Almeida Fonseca, CINTESIS-Center for Health Technology and Services Research, Rua Dr. Plácido da Costa, s/n, Centro de Investigação Médica, Faculdade de Medicina da Universidade do

Porto, Piso 2, edifício nascente, 4200-450, Porto, Portugal; jfonseca@med.up.pt

Contributors Manuel Ferreira-Magalhães participated in data analysis, interpretation of results and wrote the manuscript draft. Ana Sá-Sousa participated in data collection, data analysis and reviewed the manuscript. Mário Morais-Almeida participated in study conception and critical review of the manuscript. Filipe Azevedo participated in study design and reviewed the manuscript. Inês Azevedo participated in interpretation of results and critical review of the manuscript. Ana Margarida Pereira participated in data analysis and critical review of the manuscript. João A. Fonseca is responsible for the INASMA study and participated in all stages and tasks.

Competing interests None.

Ethics approval Ethics Committee of Centro Hospitalar S. João, Porto, Portugal.

Provenance and peer review Not commissioned; externally peer reviewed.

To cite Ferreira-Magalhães M, Sá-Sousa A, Morais-Almeida M, *et al.* *Arch Dis Child* Published Online First:

[please include Day Month Year] doi:10.1136/archdischild-2014-307675

Accepted 8 December 2014

Arch Dis Child 2015;0:1–2.

doi:10.1136/archdischild-2014-307675

REFERENCES

- 1 Hasegawa K, Tsugawa Y, Brown DFM, *et al.* Childhood asthma hospitalisations in the United States, 2000–2009. *J Pediatr* 2011;163:1127–33.
- 2 Sa-Sousa A, Morais-Almeida M, Azevedo L, *et al.* Prevalence of asthma in Portugal—the Portuguese National Asthma Survey. *Clin Transl Allergy* 2012;2:15.
- 3 Censos 2011 Resultados Definitivos—Portugal. Instituto Nacional de Estatística. 2012.
- 4 Cesaroni G, Farchi S, Davoli M, *et al.* Individual and area-based indicators of socioeconomic status and childhood asthma. *Eur Respir J* 2003;22:619–24.



High prevalence of hospitalisation for asthma in a population-based paediatric sample

Manuel Ferreira-Magalhães, Ana Sá-Sousa, Mário Morais-Almeida, Luís filipe Azevedo, Inês Azevedo, Ana Margarida Pereira and João Almeida Fonseca

Arch Dis Child published online January 7, 2015

Updated information and services can be found at:
<http://adc.bmj.com/content/early/2015/01/07/archdischild-2014-307675>

These include:

References

This article cites 3 articles, 1 of which you can access for free at:
<http://adc.bmj.com/content/early/2015/01/07/archdischild-2014-307675#BIBL>

Email alerting service

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
<http://group.bmj.com/group/rights-licensing/permissions>

To order reprints go to:
<http://journals.bmj.com/cgi/reprintform>

To subscribe to BMJ go to:
<http://group.bmj.com/subscribe/>