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Asthma prevalence in Portuguese preschool children: the latest scientific evidence

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To the editor,

Asthma is the most common and important chronic non-infectious disease in childhood and its prevalence has increased in the last years¹. However, information on childhood asthma prevalence research regarding Portuguese young children is scarce and has not been compiled. Therefore, as part of the INAIRCHILD project², this letter aimed to review the major scientific findings, of the most recently published papers on childhood asthma prevalence in Portuguese preschool aged children.

Articles published from 2005 to date were identified in the following on-line databases: *Science Direct*, *Scopus*, *PubMed*, and *Google Scholar*. Only studies in press or fully published (in English and/or Portuguese) were analysed. Although 8 studies were found published in the last 10 years on the assessment of childhood asthma prevalence in Portuguese young children, only two of them were focusing on preschool aged children.

Thus, this letter reviews those only two published papers, one recently published³ and the other one published 5 years ago⁴, namely concerning study design, methodologies used, prevalence rates and risk factors.

Table 1 summarizes the main characteristics of these two reviewed studies. Both of these studies were cross-sectional and they were conducted in big urban areas in the coast line, although Branco et al.³ was also conducted in rural areas of the inner country (Bragança district) allowing comparisons between different geographic, social and demographic contexts. Different study population sizes were considered, but the aim was the same. Different methodologies were used to recruit study population and to obtain health information, although in both ISAAC-derived questionnaires were used, which allowed asthma prevalence estimation based on symptoms and asthma previously diagnosed. However, the comparison of asthma prevalence results between the two studies is difficult

due to different criteria used for asthma diagnosis, namely: i) combination of answers given by the patient about respiratory symptoms and physician's best knowledge of the patient's asthma status⁴; and ii) wheezing and dyspnea simultaneously mentioned in the absence of upper respiratory infections³. In fact, de Sousa et al.⁴ assumed to have found a lower prevalence for preschool age than expected due to diagnostic problems (the diagnostic procedures were based on a combination of the answers given by the patient on respiratory symptoms and the physician's best knowledge of the patient's asthma status). Thus, the difference between the asthma prevalence values found in the two studies should be interpreted with caution, because it could possibly be due to different methodologies used and different criteria considered for asthma diagnosis. Moreover, other factors like children's age and environmental contexts were also different, which could contribute to differences in the prevalence results.

In these two studies medical exams for asthma diagnosis confirmation were not performed, like exhaled nitric oxide or spirometry. Although not very common in preschool children, spirometry seems to be feasible in that age⁵. They have been used worldwide to confirm asthmatic symptoms reported in questionnaires⁶, which is very important to increase the robustness of the conclusions.

Risk factors for childhood asthma prevalence, namely demographic, environmental, psychosocial and clinical risk factors, were only studied in Branco et al.³ which concluded that living in a non-rural location, being male and having an asthmatic parent were risk factors for childhood asthma development in Portuguese preschool children. However, other important risk factors for childhood asthma development already reported in the literature for primary school aged children were not considered, namely exposure to air pollution⁷.

These findings led to conclude that asthma studies on Portuguese preschool children are rare and limited due to methodological constraints, namely to obtain precise health information and to perform medical exams to confirm symptoms. More studies are needed, particularly in preschool age children living both in urban and rural areas. Those studies should include medical exams to confirm asthma symptoms. The study of lifestyle risk factors must be enlarged to others already studied in primary school children.

Conflicts of interest

The authors have no conflicts of interest to declare.

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Table 1 – Comparison of the main characteristics of the two reviewed studies.

		Branco et al. (2016)	de Sousa et al. (2011)
Study design	Date	2013 and 2014	Between February and July 2009
	Location	Porto and Bragança districts	Matosinhos (Porto Metropolitan Area)
	Study population	497 children attending nursery schools (aged under 6 years old)	576 patients, of which a sub-group of 136 were children aged 0-7 years old
	Aim	To assess asthma prevalence and associated risk factors for infants and preschoolers living in northern Portugal	To determine the prevalence of asthma by gender and stratified age groups in a Family Unit in Portugal.
Methodology	To recruit study population	Children attending nursery schools	A stratified random sample obtained from the practice general database of patients in the Family Health Unit
	To collect health information	ISAAC-derived questionnaires	Two questionnaires: a physician's questionnaire and a patient's questionnaire (ISAAC-derived)
	Criteria to consider a child asthmatic	Wheezing and dyspnea reported simultaneously in the absence of upper airways inflammation, or self-reported previously diagnosed asthma	If the doctor and the patient reported symptoms of asthma, a diagnostic algorithm was used in order to confirm or reject the diagnosis. In cases of inconsistency between the information provided by the doctor and the patient, an assessment of the patient was conducted to validate the diagnosis
Outcomes	Asthma prevalence	10.7%	9.56% (8.6% when standardized for Portuguese population)
	Risk factors	Living in a non-rural location, male gender and having an asthmatic parent	Not considered