



Assessment of theoretical and practical knowledge of asthma among guardians of children treated in primary care

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TO THE EDITOR:

Asthma is a highly prevalent chronic respiratory disease and constitutes a serious global public health problem. Its management is related to symptom control. Asthma control requires knowledge of the disease, because children depend on their guardians for asthma management.⁽²⁾ Studies have demonstrated that only 50% of patients achieve symptom control through treatment adherence as instructed by a health care team.⁽³⁾ Inhaled medication use, with correct inhaler technique, reevaluation visits by a multidisciplinary team, and changes in lifestyle habits are strategic measures in the treatment of asthma in childhood.⁽⁴⁾

Therefore, a cross-sectional study was designed with the objective of assessing the health literacy and asthma knowledge levels of guardians of children and adolescents (1-17 years old) diagnosed with the disease and registered in the *Rede Bem-Estar* (Well-being Network) in the city of Vitória, Brazil. The study was approved by the local research ethics committee (Protocol no. 2.257.264), and written informed consent was obtained from all participants. Patient selection included five health care facilities that were chosen by convenience sampling. We excluded patients with cognitive or motor limitations or with other chronic diseases that could compromise the evaluation of health control, attitudes, and practices.

The diagnosis of asthma was made by a pediatrician working in the municipal health care system in the city of Vitória, in accordance with the tenth revision of the International Classification of Diseases (code J45). Patient follow-up in primary care is carried out jointly by a Family Health Program physician and a specialist physician (pediatrician).

Patients' guardians were administered a clinical questionnaire and a socioeconomic classification questionnaire.⁽⁵⁾ For assessment of asthma control, they completed the Global Initiative for Asthma questionnaire,⁽¹⁾ which categorizes asthma control levels (as controlled, partly controlled, and uncontrolled). For assessment of disease knowledge, they were administered a specific questionnaire on knowledge of pediatric asthma (Newcastle Asthma Knowledge Questionnaire)⁽⁶⁾ and a health literacy questionnaire (Short Assessment of Health Literacy

for Portuguese-speaking Adults).⁽⁷⁾ For assessment of treatment attitudes and practices, they were administered a theoretical questionnaire and underwent observational practice analysis regarding the specific management for treating asthma. For analysis of understanding of prescription instructions, the guardians were assessed as to the type of prescription (preventive or rescue) and their understanding of the prescription instructions; their level of understanding was classified as adequate or inadequate. For the purpose of establishing cut-off points for the questionnaires, scores of at least 70% (≥ 7 points) were considered acceptable. For the purpose of statistical analysis, the chi-square test was used for nominal variables, and ANOVA with the Bonferroni post hoc test was used for scalar variables.

A total of 120 children with asthma, with a mean age of 6.3 ± 3.9 years, participated in the study. Their guardians had a mean age of 39.9 ± 13.0 years, and it was the mothers who predominantly took their children to medical appointments ($n = 94$; 78.3%). A total of 45.0% of the guardians had completed high school, and 48.3% belonged to the middle socioeconomic class (class C).

Comparison of results by asthma control group (Table 1) showed significant differences for the following variables: symptoms of chest tightness ever ($p = 0.02$); wheezing or shortness of breath at rest ($p = 0.02$); hospitalization for asthma ($p = 0.01$); and school absenteeism ($p = 0.01$). In addition, the results regarding asthma treatment in the past 12 months showed that the totally controlled asthma group had the highest proportion of patients receiving continuous treatment ($p < 0.01$) and the lowest proportions of patients using oral corticosteroids ($p = 0.01$) and bronchodilators ($p = 0.01$).

In the assessment of inhalation techniques, the results revealed poor theoretical knowledge of the techniques, with no differences between the groups ($p = 0.08$). However, the frequency of guardians with adequate practical knowledge of inhalation techniques was significantly higher in the totally controlled asthma group than in the other groups ($p < 0.01$). In the assessment of prescription literacy and understanding of prescription instructions and type of treatment, the results showed that guardians of children with greater asthma control have a better understanding of the disease. In the assessment of health literacy, there

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Table 1. Asthma diagnoses, asthma symptoms, and asthma treatment, by asthma control classification.^a

Variable	Asthma			p
	Uncontrolled (n = 75)	Partly controlled (n = 11)	Totally controlled (n = 34)	
Diagnosis of rhinitis	59 (78.7)	9 (81.8)	32 (94.1)	0.13
Diagnosis of atopy	42 (56.0)	7 (63.6)	20 (58.8)	0.88
Asthma symptoms (ever)				
Woken up with shortness of breath	73 (97.3)	11 (100.0)	34 (100.0)	0.55
Woken up with chest tightness	43 (57.3)	11 (100.0)	23 (67.6)	0.02**
Asthma symptoms (in the past 12 months)				
Wheezing/shortness of breath during exercise	47 (62.7)	9(81.8)	18 (52.9)	0.22
Wheezing/shortness of breath at rest	66 (88.0)	10 (90.9)	23 (67.6)	0.02*
Hospitalization for asthma	43 (57.3)	9 (81.8)	12 (35.3)	0.01**
Only once	40 (93.0)	8 (88.9)	12 (100.0)	0.01**
Twice or more	3 (7.0)	1(11.1)	0 (0.0)	
School absenteeism in the last school year	70 (93.3)	11 (100.0)	26 (76.5)	0.01*
One full week	6 (8.0)	2 (18.2)	5 (14.7)	0.01*
Two full weeks	24 (32.0)	4 (36.4)	12 (35.3)	
More than two weeks	40 (53.3)	5 (45.5)	9 (26.5)	
Asthma treatment (in the past 12 months)				
Has a prescription for medication to treat asthma attacks	70 (93.3)	11 (100.0)	34 (100.0)	0.21
Continuous treatment	41 (54.7)	9 (81.8)	34 (100.0)	< 0.01**
Takes treatment before exercise	43 (57.3)	8 (72.7)	14 (41.2)	0.13
Treatment with inhaled corticosteroids	70 (93.3)	11 (100.0)	34 (100.0)	0.21
Treatment with oral corticosteroids	63 (84.0)	9 (81.8)	20 (58.8)	0.01*
Treatment with bronchodilators	75 (100.0)	11 (100.0)	30 (88.2)	0.01*
Treatment with leukotriene receptor antagonists	3 (4.0)	0 (0.0)	3 (8.8)	0.41
Receives medication via the public health care system	74 (98.7)	11 (100.0)	34 (100.0)	0.74
Uses a spacer for the treatment	59 (78.7)	11 (100.0)	29 (85.3)	0.20
Uses a commercial spacer	58 (98.3)	11 (100.0)	29 (100.0)	0.71

^aValues expressed as n (%). *p < 0.05 between the totally controlled asthma group and the other groups. **p < 0.05 between the three asthma control groups.

were no statistically significant differences between the asthma control groups. In contrast, in the assessment of asthma knowledge, values were lower in the partly controlled asthma group than in the other groups ($p = 0.02$). With regard to prescription literacy and understanding of prescription instructions and type of treatment, we found that greater understanding of the procedures for proper treatment indicates better disease control scores.

Another relevant finding concerns asthma control through continuous, preventive treatment. All patients with totally controlled and partly controlled asthma had prescriptions for medication to treat asthma attacks. In addition, adherence to continuous treatment was better in the totally controlled and partly controlled asthma groups (100.0% and 81.8%, respectively). However, in the uncontrolled asthma group, 54.7% of the patients were adherent to continuous treatment, and a predominant number of patients used inhaled and oral corticosteroids.

The present study demonstrates that the vast majority of children with asthma do not have controlled disease, and inadequate asthma control is due to lower use of controller medication. In addition, rescue medications and oral corticosteroids were demonstrated to be very frequently used by patients with partly controlled or uncontrolled asthma. Another important factor concerns prescription literacy and understanding of prescription instructions and type of treatment: greater understanding of the procedures for proper treatment translates to better disease control.

Limitations to this study include the type of design (cross-sectional) with one-time assessment, the non-probabilistic (convenience) sampling, and the age range studied.

Finally, our findings underscore the need for improving asthma knowledge in the groups studied in order to increase disease control through parent and patient educational programs that are central to and effective in consolidating public policies aimed at health promotion.

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