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ORIGINAL ARTICLE

Asthma Prevalence in Rio de Janeiro City

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Abstract

Introduction: Asthma is the most common chronic disease in childhood. In Brazil, the prevalence of active asthma is high. However, it is known that within the same country this prevalence can vary. **Objectives:** to describe in the studied sample, the prevalence of asthme, active asthma, asthma diagnosed by a physician, nocturnal cough, cough for more than 10 days after a respiratory infection and respiratory manifestations during physical exertion. **Methods:** Cross-sectional prospective study in a convenience sample of a pediatric population attending the Clínica da Família Souza Marques, in Rio de Janeiro, using a simplified questionnaire. **Results:** 34.3% (62/204) had active asthma. 30.4% (62/204) had already received a medical diagnosis of asthma. Among those with active asthma, 40% (28/70) had never received this diagnosis. 46% (95/204) had nocturnal awakening in the last 12 months, 30.4% (62/204) had other respiratory manifestations with exertion in the last 12 months, and 27% (55/204) coughed for more than 10 days when they had a cold in the last 12 months. **Conclusion:** Asthma is highly prevalent in the evaluated population. Further research is necessary to deepen the study on the evaluation of respiratory symptoms, the communication of the diagnosis to caregivers and to the need to improve clinical recognition, access to diagnostic tests when indicated, and the communication of diagnosis to families.

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INTRODUCTION:

Asthma is an inflammatory disease that is complex, multifactorial and heterogeneous in its manifestations. [1] [2] It is recognized as the most common chronic disease in childhood. Its prevalence ranges from 2.8% to 37.6% in children aged 6-7 years in different regions of the world.[2] In Brazil, the prevalence of active asthma is estimated at 18.5% in adolescents.[3] Genetic, socio-environmental, behavioral, atmospheric and climatic factors, both prenatal and postnatal, affect susceptibility to asthma[4], meaning that the prevalence of the disease may vary within the same country and even within the same city.

International consensus suggests that the combination of anamnesis, physical examination and respiratory tests from the age of six years enables a more accurate diagnosis of the disease.[1] However, in our country, access to respiratory tests by the pediatric population is still limited, especially at the primary health care level[1]. However, it is at this level of care that we should preferably identify potential candidates for treatment, monitoring and diagnostic testing. Although previous studies such as the ERICA and ISAAC have already described the prevalence of asthma in Brazil,[5] the authors were motivated to conduct this study due to informal reports from professionals at the Souza Marques Family Clinic (CFSM) that there was a very high proportion of children and adolescents treated at the unit with symptoms suggestive of asthma. To this end, we applied a simplified questionnaire, validated for the Portuguese language, to children and adolescents aged five to 15 years, for the diagnosis and characterization of asthma and thus contribute to qualifying the care provided to this age group in the region studied.[5]

OBJECTIVES:

To describe the prevalence of active asthma, asthma diagnosed by a physician, nocturnal cough, cough for more than 10 days after a respiratory infection, and respiratory manifestations during physical exertion in the sample.

METHODS

This is a cross-sectional study with prospective data collection of children and adolescents aged five to 15 years old, treated at the CFSM. This is a primary health care unit that is part of the public network of the Municipal Health Department of Rio de Janeiro. It is located in the Cascadura neighborhood, in the North Zone of Rio de Janeiro, and serves a population of approximately 35,000 people living in the following districts: Cascadura, Madureira, Campinho, and the Fubá community. Of this population, approximately 7,300 are children and adolescents.

A convenience sample was studied, consisting of 204 children and adolescents between September 2 and November 9, 2019, whose guardians agreed to participate, and who were at home during one of the three visits planned for this purpose. The time period was determined to meet administrative issues and so as not to interfere with the work routine of the data collectors. These data were collected by volunteer community health agents (CHAs) who regularly work at the CFSM, making home visits to families living in the territory covered by the CFSM. To this end, the CHAs were previously trained to complete a form containing sociodemographic data and a simplified questionnaire[5] [6] previously validated by Santos and Cunha for Brazilian Portuguese[5]. In the second week of October 2019, 20 participants (10% of the sample) had their data checked and confirmed as a form of quality control of the data obtained. Those with a history of wheezing in the previous 12 months were classified as having active asthma[7]. This parameter has high levels of sensitivity (88.0%) and specificity (90%) for the diagnostic evaluation of asthma, similar to the methylcholine bronchoprovocation test, considered the gold standard for asthma.[8]

Participants with a medical diagnosis of asthma, bronchial asthma, bronchitis, allergic bronchitis or asthmatic bronchitis were grouped as having a medical diagnosis of asthma. These terms were used considering the perception that the exclusive use of the term “asthma” is sometimes the target of prejudice and confusion in understanding by the population.[9]

Manifestations of cough, wheezing, wheezing or difficulty breathing during physical activity or the need to interrupt these activities due to dyspnea[10] were grouped as other respiratory manifestations during physical exertion.

The prevalence of other manifestations of asthma such as nocturnal cough and coughing for more than 10 days after a respiratory infection are also included in the questionnaire.

As an exploratory study, since it was not part of the objectives of this study, the prevalence of asthma diagnosed by a physician assessed in one of the questions was compared to active asthma as a way of describing whether there is a possibility of under or overdiagnosis of the disease when compared to active asthma.

The statistical analysis was performed using the IBM SPSS Statistic application (version 26). Descriptive statistics were used, calculating percentages, mean and median, and maximum and minimum values.

The study followed the principles of the Declaration of Helsinki and was approved according to opinion no. 2,887,378 by the Research Ethics Committee of the Municipal Health Department of Rio de Janeiro and opinion no. 2,815,573 by the Research Ethics Committee of the Souza Marques School of Medicine.

The consent form was obtained from the participating children and adolescents and the informed consent form was signed by their guardians. All care was taken to guarantee the privacy of the participants and the confidentiality of the data during the study.

RESULTS:

The sample consisted of 204 individuals, with equal proportions of males and females (50%: 102/204). The minimum age was five and the maximum was 15 years, mean 9.6 and median 10 years. A little over half of the sample were adolescents aged 10 to 15 years: 51.5% (105/204).

The participants were predominantly under female responsibility: 94.6% (193/204), with the majority being mothers: 73% (149/204), followed by grandmothers: 14.2% (29/204). The age of the guardians ranged from 13 to 81 years, with an average of 39.5 and a median of 38 years. Less than half of the guardians had completed high school: 48% (98/204). The percentage of 41.2% (84/204) corresponded to those who completed elementary school and 7.4% (15/204) higher education. Seven guardians (3.4%) had not completed any schooling at all.

The presence of active asthma was reported by the guardians in 34.3% of the sample (70/204). This group was predominantly composed of children aged five to less than 10 years (52.9%: 37/70) and males: 51.4% (36/70).

Some 30.4% (62/204) of the sample had already received a medical diagnosis of asthma. If we consider only those with active asthma, 40% (28/70) had never received this diagnosis.

As for the manifestations studied that may be associated with asthma, 46% of the children and adolescents (95/204) had awakened at night due to coughing in the last 12 months, 30.4% (62/204) had other respiratory manifestations during physical exertion in the last 12 months and 27% (55/204) coughed for more than 10 days when they had a cold in the last 12 months. If we consider only those with active asthma, 85.7% (60/70) had nocturnal awakenings due to coughing in the last 12 months, 64.3% (45/70) had other respiratory symptoms during physical exertion in the last 12 months and 54.3% (38/70) coughed for more than 10 days when they had a cold.

DISCUSSION:

The predominance of female caregivers has already been described in Brazil, where there is a dichotomy of social roles based on gender. Thus, family-oriented care work is traditionally attributed to women.[11] [12]

The proportion of high school completion among caregivers in the sample was close to the national proportion, both less than half of the population, 48 and 48.8%, respectively.[13] It is possible that socioeconomic obstacles faced by the population of the region, such as the lack of appropriate educational support and the need to contribute early to the family's livelihood, are factors to be overcome in order to reduce school dropout.[14]

Regarding gender and age group, there were differences between our sample and the 2022 population census in the state of Rio de Janeiro. The equal proportion of the sample according to male and female sex differed from the data from the last population census of the state of Rio de Janeiro, where there was a slight predominance of males. There were also differences in age groups: adolescents predominated in the sample and children aged five to under 10 in the Rio de Janeiro state census.[15] Although the reasons for these differences are unclear, it is possible that the longer time spent attending the health unit and the resulting closer ties between patients and guardians and health agents, established since childhood, contributed to the higher proportion of agreement by adolescents and their families to participate in the study.

The rates of active asthma and physician-diagnosed asthma were higher in our sample when compared to the ERICA study in Brazil, whose values were 14.5% [95% CI: 12.9-16.1] and 8.7% [95% CI: 8.2-9.1], respectively, and to another study conducted in Pelotas, Rio Grande do Sul, which showed percentages of 26.8% and 29.6%, respectively.(16) However, it is important to emphasize the methodological differences between these articles and our study. Sociodemographic, atmospheric, environmental, and climatic conditions may also have contributed to the high prevalence of active asthma found.[17] In addition, since this is a convenience sample, other factors may have contributed to the result found. Among them, we highlight the possibility that families of children with respiratory manifestations were more interested in participating in a study on the subject.

Fluctuations in gender predominance in children and adolescents with active asthma have been observed in studies conducted in different countries.[8][16][18] In our study, the found that the male predominance was small.

Despite the high proportion of participants with a physician-diagnosed asthma compared with other studies, the proportion of participants with active asthma without a physician-diagnosed asthma was also high. It is possible that there were errors in the diagnosis of the disease.[19] The resulting under- or over-diagnosis of asthma is a concern, especially in countries where health resources are scarce.[1] However, this situation has also been described in regions where more resources are available and where there is easier access to diagnostic tests to confirm clinical manifestations, as recommended by the most recent consensus guidelines.[19][20][2][21]

Among the other manifestations studied, nocturnal awakening due to coughing was the most frequent complaint, followed by other respiratory manifestations during exercise and coughing for more than 10 days after the occurrence of a cold. These findings, in the same order of predominance in their respective distributions, had already been described previously, despite the differences in the methods used. [22] [23]

CONCLUSIONS:

The results presented suggest that subsequent studies should be conducted to further evaluate pediatric asthma in this population group. The importance of the

respiratory symptoms presented by patients, communication of the diagnosis to those responsible for them, and access to diagnostic tests when indicated are aspects that deserve attention in new studies.

Asthma requires an integrated approach, focusing on prevention, early diagnosis, and appropriate management. In this way, we can improve the quality of life of asthmatic patients and reduce the social burden of this disease.

STUDY LIMITATIONS:

Some limitations should be considered so that this study can be carefully interpreted. The authors evaluated a convenience sample, and the methods used are not intended to generalize the results. In comparisons with the literature, methodological differences between studies should also be considered. However, as we were not aware of any other assessments on the subject in the population in question up to the date of completion of this article, we intend to have contributed to encouraging the development of strategies to improve care for this population.

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