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Evaluation of Knowledge Among Pediatricians on Childhood Asthma and Asthma Attack

Astım ve Astım Atağında Çocuk Sağlığı ve Hastalıkları Hekimlerinin Bilgi Düzeyi

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Abstract

Objective: Asthma is one of the most common chronic conditions in children. It has several characteristic features including wheezing, breathlessness, chest tightness, and coughing. It is essential to educate general pediatricians about childhood asthma and its treatment to standardize care. The aim of this study was to evaluate knowledge and practice of pediatricians about childhood asthma and its treatment.

Material and Method: In this study, a total of 157 pediatricians (64.3% woman, mean age 30.5±5.3) were enrolled. A questionnaire of 50 questions about asthma and asthma attack were applied to the pediatricians. Results: Although the knowledge level of specialist physicians was higher than the physician assistants, this difference was not statistically significant (p> 0.05) except specialist physicians gave statistically more correct answers to acute asthma management question than assistants (p<0.05) Seventy nine percent of the pediatricians (n: 124) were physician assistants and 21% (n=33) were specialists. The scores and frequencies obtained from the correct answers were similar in terms of gender, time worked as a pediatrician (<10 years / >10 years) and being a specialist or assistant pediatricians.

Conclusion: Although there were some discrepancies between guidelines and clinical practice, most of the assistant or specialist pediatricians participating in the study had sufficient knowledge in the treatment of childhood asthma and asthma attacks. Gender, time worked as a pediatrician, and being a specialist or assistant pediatrician had no effect on knowledge level of asthma and asthma attack. It is believed that the requirements of postgraduate education to provide children more standardized treatment.

Keywords: Asthma, asthma attack, pediatrician, knowledge survey

Öz

Amaç: Astım çocukluk çağının sık rastlanan kronik hastalıklarından birisidir. Hışıltı, nefes darlığı, göğüs ağrısı ve öksürük gibi çok çeşitli klinik bulguları mevcuttur. Genel pediatri uzmanlarının çocukluk çağı astımı ve tedavisi konusunda ki, yeterli bilgi düzeyi etkin astım kontrolü için gereklidir. Bu çalışmada, pediatri hekimlerinin çocukluk çağı astımı, astım atağı ve tedavisi konusunda bilgi ve uygulamalarının değerlendirilmesi amaçlanmıştır.

Gereç ve Yöntem: Çalışmamıza 157 çocuk hastalıkları ve sağlığı uzman veya asistan hekiminin katıldı. Astım ve astım atağı ile ilgili toplam 50 soruluk anket hekimlere uygulandı. Bulgular: Uzman hekimlerin asistan hekimlere biraz daha fazla doğru cevap vermelerine rağmen anlamlı bir fark saptanmadı (p:0,99). Cinsiyetin (p: 0,185) ve hekimlik süresinin (p:0,662) teste doğru cevap verme açısından anlamlı bir farklılık oluşturmadığı görüldü.

Sonuç : Astım kılavuzları ve pratik yaklaşımda bir kısım farklılıklar mevcut olmakla birlikte, çocuk hekimlerinin çoğu yaklaşımlarının kılavuzlara uygunluk gösterdiği saptanmıştır. Hekimlik süresi, cinsiyet ve uzman yada asistan olmanın anlamlı farklılık yaratmadığı görülmüştür. Ancak astımlı çocuklara daha etkin ve standardize tedavi verilebilmesi için mezuniyet sonrası eğitimin gerektiği düşünülmektedir.

Anahtar Kelimeler: Astım, astım atak, çocuk hekimi, bilgi düzeyi

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INTRODUCTION

Asthma is one of the most common chronic diseases of childhood. It manifests itself with a wide variety of clinical signs such as wheezing, shortness of breath, chest pain and cough. Asthma is thought to affect approximately 300 million people around the world. It has been reported by the World Health Organization that there are 15 million disability-adjusted life years loss (DALY) annually in the world due to asthma, and this figure corresponds to 1% of the total losses due to all diseases in the world. It is estimated that around 250,000 people die annually in the world from asthma.[1]

Asthma is a chronic inflammatory airway disease in which many cells and cellular elements play a role in combination with genetic and environmental factors, usually common in the lungs, and often reversible spontaneously or with treatment. Chronic inflammation is associated with airway hyperresponsiveness, which causes recurrent wheezing, shortness of breath, chest tightness, and cough attacks that occur especially at night or early in the morning.[1]

Childhood asthma epidemiology studies have been conducted using three different methods. These are the International Study for Asthma and Allergies in Childhood (ISAAC) questionnaire, the American Thoracic Society's adapted questionnaire, and the Aberg questionnaire and methods.[2,3] Almost all research in adults is the European Community Respiratory Health Survey (ECRHS) survey.[4] According to the results of this study, it was reported that the prevalence of asthma varies between 2-15% in children and 2-5% in adults. The high prevalence values obtained in some childhood studies suggest that the prevalence of asthma decreases with age. However, these high values may be based on the fact that some diseases with wheezing in childhood are mistakenly diagnosed as asthma.

The prevalence of asthma varies significantly between cities and regions in our country. It is more common in coastal areas, cities, large metropolises and low socioeconomic living conditions. It is slightly more common in males in childhood and females in adulthood. Symptom prevalence and rates of asthma treatment use, found in many studies, do not match figures based on physician diagnosis. Control studies conducted with similar methods in some of our large metropolises report that the prevalence is increasing in some regions.[5-9]

Pediatrics specialists are expected to have sufficient knowledge and skill levels about childhood asthma and its treatment. In this study, it was aimed to evaluate the knowledge and practices of pediatricians on childhood asthma, asthma attack and its treatment. Comparisons were made according to whether they were a specialist or assistant physician and the time they spent in pediatric clinics. Similar studies on this subject in the literature have also evaluated the knowledge levels of the participants theoretically and questioned how much and how they applied it in practice. In some studies, a questionnaire was conducted about asthma and asthma attacks before and after a training, and it was tried to determine how much they increased the correct answers of physicians.[10-14]

MATERIAL AND METHOD

In order to evaluate the knowledge and attitudes of pediatric specialists and assistant physicians on childhood asthma and asthma attack, the study was approved by the local ethics committee of the Zeynep Kamil Gynecology and Pediatrics Training and Research Hospital Clinical Research Ethics Committee (52.10.04.2014). It is a cross-sectional study conducted between 01.10.2014 and 2.01.2015. The data of the study were collected by a questionnaire form prepared in line with the literature. After the literature review on the subject, a 50-question questionnaire, developed on the basis of the latest Turkish Thoracic Society Asthma Diagnosis and Treatment Guidelines, a questionnaire form was distributed to 157 pediatric specialists and residents. Participation was on a voluntary basis, and a questionnaire was given to those who wanted to answer the questions. Before answering the questions, it was stated to the participants that this is not an exam and that all of the data will be used for scientific study, and that the answers will in no way affect their professional life and future. After obtaining informed consent, questionnaire questions were answered by face to face interview method.

The questionnaire form consists of 50 questions in three parts. In Part 1, demographic characteristics (Gender, Age, Institution of Employment, Duty Period, Asthma Patient Sight Frequency), in Part 2, 26 questions for learning about personal education and competence about asthma, and in part 3, their approach and knowledge about asthma attack. It has been prepared as 19 questions in total, consisting of statements for evaluation. Those who answered correctly to the questions in the second and third sections were given "2" points, those who answered partially correct "1" points and those who answered incorrectly "0" points. The questions were placed in a mixed manner, there was no time limit and no assistance to the participants.

When the questionnaire form and questions were answered, it was checked whether there were unanswered questionnaires or questions of knowledge level, and people were asked to fill in the blank spaces and choose the most correct answer if they had more than one answer. The questionnaire forms were coded in accordance with the data coding guide prepared and recorded in the SPSS (Statistical Package for Social Sciences for Windows) 16 statistical program, and analyzes were made using this program.

Groups were divided according to gender, duration of practice, being a specialist or an assistant. Distribution of data was evaluated using Kolmogorov-Smirnov test. For numerical comparisons of independent two groups, the independent sample t-test or Mann-Whitney U-tests were used according to normal distribution of the parameters. For numerical comparisons of independent more than two groups, Kruskal Wallis or one-way ANOVA tests were used according to normal distribution of the parameters.

Chi-square test was used to compare the categorical variables. Categorical data were expressed as frequency (%), while numerical data were expressed as median (25-75th percentile) or mean±standard deviation. In all statistical tests, p values <0.05 were considered significant.

RESULTS

Of the 157 pediatricians participating in the study, 64.3% were female (n: 101) and 35.7% were male (n: 56), and their average age was 30.5±5.3 years (24-60 years old). The average time worked as a pediatrician (assistant or specialist) was 5.5±5.1 years (range 1–35 years). Seventy nine percent of the pediatricians (n: 124) were physician assistants and 21% (n=33) were specialists. It was determined that 79.6% (n: 125) of them was working in the Ministry of Health Training and Research Hospital, and 20.4% (n: 32) was working in a university hospital. The average percentage of physicians undertaking the treatment of childhood asthma patients in their clinics was found to be 8.04±9.2 percent.

Considering the answers given to the questions about the pathogenesis of asthma and risk factors, it was observed that being an assistant or specialist physicians (p:0.82), duration of practice (<10 years / >10 years) (p:0.72) and gender (p:0.41) did not make a significant difference in terms of knowledge level. It was calculated that physicians gave correct answers to at least two and eight questions on average, with an average score of 12.4±2.5 over eighteen points to nine questions. Most of the pediatricians evaluated the sentence "asthma is a systemic inflammatory disease" as completely or partially correct (75.2% and 15.4%, respectively). Question sentences that pediatricians most frequently answered incorrectly were “Having a pet increases the risk of asthma” and “Recurrent upper respiratory tract infections increase the risk of asthma” (the frequencies of correct answers were 39.5% and 27.4%, respectively). The most frequent complete correct answers were given to the sentences "In addition to bronchial contraction, mucosal edema and inflammation play a role in the pathogenesis of asthma" and "Asthma progresses with recurrent and reversible findings" (99.4% and 96.2%, respectively).

It was found that physicians received an average of 8.1±2.3 points out of twelve points (minimum 2 and maximum 11 points) in a total of five questions in which asthma predictive index parameters, which are important in evaluating the risk of developing asthma in children under five years of age. It was observed that the time worked as a pediatrician (p:0.065), being a specialist or an assistant (p:0.425) and gender (p:0.103) did not make a significant difference. The most wrong answer was found in the "Wheezing with common cold parameter. Correct response rate for this parameter was 21.7%. In asthma predictive index parameters, the highest frequency of correct answer was obtained from the question of "Doctor-diagnosed asthma history in the parent" (65.4%).

In a total of twelve parameters and a 24-point question in which laboratory and clinical findings related to asthma were examined, the average score was 18.4±2.4 (minimum 10 and maximum 23 points). It was found that being a specialist or an assistant (p:0.058) and gender (p:0.85) did not make a significant difference in terms of the knowledge level for this section. However, it was observed that those who worked as a physician for more than 5 years had significantly more accurate answers than those who worked less than 5 years (p:0.017). According to the pulmonary function test, the most important finding in asthma was questioned, and 97.4% of the physicians stated that reversibility is an important finding, but 74.5% of the physicians answered that the finding of obstruction is as important as reversibility. “Presence of night symptoms”, “Post-exercise dyspnea” and “Ongoing wheezing” parameters were marked as the most important clinical finding in the diagnosis of asthma. The frequencies of complete correct answers given to these questions were 75.2%, 74.5% and 75.8%, respectively. Sums of partial and complete correct response frequencies for these questions were calculated as 96.8%, 97.4% and 96.8%, respectively.

In the twenty-two-point question in which the clinical and laboratory findings of the asthma attack were questioned, there were eleven parameters, the average score was 16.2±2.1 (minimum 2 maximum 21). In the evaluation made according to these parameters, it was found that being a specialist or an assistant (p:0.773), time worked as a pediatrician (p:0.659) and gender (0.952) did not make a significant difference in terms of the knowledge level for this section. The question that was the least correctly answered was "Is chest X-ray radiography necessary for the evaluation of acute asthma attack?". The rate of those who gave correct answers to this parameter was 38.2%. The parameters with the most correct answers were dyspnea, wheezing and retractions as the most important clinical findings in determining the severity of acute asthma attack. The complete correct answers given to these parameters were 91.1%, 81.5% and 84.1%, respectively.

Physicians scored an average of 13.6±2.2 points from a sixteen-point question with a total of eight parameters asking the treatment to be applied during an acute asthma attack (minimum 6 maximum 16 points). It was found that specialist physician gave more correct answers than assistant physician (p:0.03).

87.3% of the physicians participating in our study stated that they did not recommend mucolytic drugs, 66.9% antihistamines and 63.7% chest physiotherapy in asthma attack

However, it was observed that the time worked as a pediatrician (p:0.156) and gender (p:0.385) were similar in terms of the knowledge level. The least correct answer was "Is physiotherapy necessary in acute asthma attack?". The correct response rate given to this parameter was 63.7%. All of the physicians participating in the study "Should antibiotics be given to acute asthma attack?" gave the correct answer to the parameter.

When the whole test was evaluated, it was calculated that the physicians got an average score of 65.3±5.7 (minimum 47 and maximum 76) in a total of forty-five parameters and a ninety-point test. Although the knowledge level of specialist physicians was higher than the physician assistants, this difference was not statistically significant (p> 0.05) except specialist physicians gave statistically more correct answers to acute asthma management question than assistants (p<0.05). The scores and frequencies obtained from the correct answers were similar in terms of gender (p:0.185) and time worked as a pediatrician (p:0.662). Results are summarized in **Table 1**.

Table 1. Statistical Evaluation Of Survey Results

	Gender			Specialist			Job duration		
	Female	Male	p	Specialist	Assistant	p	<10 years	>10 years	P
Pathogenesis Of Asthma and Risk Factor	12.3± 2.92	12.4± 2.83	>0.05	12.6± 2.82	12.1± 2.9	>0.05	12.2±2.8	12.6±2.8	>0.05
Asthma Predictive Index	8.0±2.16	8.05±2.14	>0.05	8.12±2.3	7.99±2.43	>0.05	8.03±2.33	8.1±0.33	>0.05
Laboratory And Clinical Examination Related To Asthma	18.7±2.8	17.9±2.4	>0.05	18.8±2.9	17.9±3.4	>0.05	18.0±3.4	19.1±2.5	>0.05
Asthma Attack Laboratory and clinical examination	16.1±3.6	15.98±3.2	>0.05	16.2±3.62	15.8±4.4	>0.05	15.8±4.49	16.1±3.5	>0.05
Asthma Attack Management	13.6±2.1	13.3±2.4	>0.05	13.9±1.1	13.0±2.7	<0.05	13.5±2.3	13.8±2.1	>0.05

DISCUSSION

Asthma is a systemic inflammatory disease with an increase in mortality and morbidity in our country and in the world in recent years. Asthma creates a social and economic burden not only on patients but also on society. Therefore, it becomes imperative to diagnose as early as possible and to treat appropriately. In our country, there are already guidelines for the diagnosis and treatment of asthma that comply with The Global Initiative for Asthma guidelines, which are prepared by the Turkish Thoracic Society.[1] In the current study, we aimed to determine how competent pediatricians were in the current diagnosis and treatment approaches of asthma and asthma attacks. Comparisons were made according to whether they were a specialist or assistant physician and the time they spent in pediatric clinics.

Considering the answers given to the questions about the pathogenesis of asthma and risk factors, it was observed that being an assistant or a specialist doctor, the time worked as a pediatrician and gender have no impact on the knowledge levels. Although these findings are compatible with the study conducted by Yılmaz et al ., demonstrating that there was no significant difference when the knowledge levels of specialist physicians) were compared to assistant physicians.[12] In our study, the knowledge levels of pediatricians calculated about the clinical findings of asthma and acute asthma attack were consistent with the research conducted by Soyer et al.[11] But we found that gender factor does not make a significant difference . Soyer et al. also showed that the management of acute asthma attack was better than chronic asthma attack. However, in our study, since we did not ask any question about chronic asthma attack, we could not interpret our cohort's knowledge of chronic asthma attack and management.

In the study conducted by Söğüt et al., it was demonstrated that the knowledge level of childhood asthma among family physicians was significantly lower than their knowledge level of adult asthma.[10] In our study, it was found that specialist pediatricians, compared to assistant physician, had higher knowledge level about the clinical findings of childhood asthma. Based on this, it may be concluded that the diagnosis and treatment of pediatric patients with chronic respiratory symptoms or asthma-like clinical findings should be managed by specialist pediatrician rather than family physicians.

None of the physicians participating in our study used antibiotics in acute asthma attack. In a study conducted by Lagerlov et al in five different countries, they found that they used much less antibiotics (14-96%).[15] Yılmaz et al.[12] reported that the use of antibiotics in acute asthma attack was above 63.7%.However, since our study is based on a questionnaire, the answers given theoretically and may not reflect the frequency of daily practice. In addition, the fact that all of the pediatricians participating in our study work either in a training and research hospital or a medical faculty hospital, it is possible that this result was affected. The low frequency of antibiotic use may be explained by the theoretical obtaining of the answers through questionnaires and the fact that the cases are working in a tertiary referral hospital (in a training and research hospital or a medical faculty hospital).

Most of the physicians participating in our study considered having a pet at home and recurrent upper respiratory tract infections as risk factors that increase asthma attacks. These rates Yılmaz et al.[12] similar rates were found in their research in 2009.However, according to the hygiene hypothesis that has received more support in recent years, there are studies showing that having a pet in the first three years reduces the incidence of asthma, and children with less respiratory tract infections may have a more atopy tendency, and even the information about asthma risk factors may change day by day. It is obvious that our physicians should keep their knowledge up to date.

Oxygen saturation, chest radiography and blood gas assessment were listed as the most helpful tests for the diagnosis of asthma attack by the pediatricians participating in our study. In the study conducted by Coates et al. in adults asthma., more than 90% of general practitioners were reported to prefer pulmonary function tests and / or peak flow meters as a first choice in the assessment of asthma attacks.[13] In the study conducted by Moy et al in the USA in 1999, the preference rate of spirometry was determined as 54%.[16] Compared to our study, it is observed that American and especially Australian physicians used much more peak flowmeter and respiratory function tests. The difficulty of performing respiratory function tests and peak flowmeters in the childhood age group may be the reasons that prevent pediatricians from this practice. In the study conducted by

Gharagozlou et al.[14] In 2007, it was determined that 40% of Iranian physicians benefited from chest X-ray in the diagnosis of asthma, but 9% used respiratory function test or peak flow meter. These rates are somewhat similar to our study. However, in our country, it has been determined that chest X-ray is used more in asthma attack, and it is thought that it will be more appropriate to measure with a respiratory function test or peak flowmeter in children older than five years of age, except for very necessary cases.

Table 2. Asthma and asthma attack knowledge level survey form
1. Age:
2. Gender:
3. How long have you been working as a doctor? ……
4. Specialist/Assistant: ……
5. Institution you work for: ……
6. How often do you see asthma patients in daily practice? % ……
7. Score the following parameters in the diagnosis of asthma (2: very important, 1: important, 0: unimportant).
Persistent dry cough
Continued wheezing
Dyspnoea
Post-exercise dyspnea
Increased symptoms at night
Presence of concomitant allergic diseases
Presence of atopic disease in the family
Obstruction in respiratory function testing
Reversibility in respiratory function test
Increased eosinophil count
Increased serum IgE level
Skin prick test or presence of specific IgE detected allergy
8. Without determining the severity of the asthma attack, score the following parameters (2: very important, 1: important, 0: not important)).
General condition
Vital signs
Skin color
Retractions
Dyspnoea
Wheezing
Auscultation
Oxygen saturation
Blood gas
Respiratory function test
PA chest radiography
9. Score the following parameters according to their importance in the diagnosis of asthma (2: very important, 1: important, 0: not important).
A history of doctor-diagnosed asthma in the parent
Doctor diagnosed atopic dermatitis
Doctor-diagnosed allergic rhinitis
Wheezing with common cold
Basoophilia (> = 4%)
10. Define the following treatments as true or false in asthma attack.(T: true P: partially true F: false)
Chest physiotherapy or broncholage ……
Starting antibiotics for each patient ……
Giving sedatives ……
Inhaled mucolytic drugs ……
Use of antihistamines ……
Hydration with excessive amounts of liquid ……
Use of short acting beta agonists ……
Corticosteroid (i.v / p.o.) Use ……
12. Please write how much you agree or disagree with the following. (T: true P: partially true F: false)
Asthma is a systemic inflammatory disease.
Asthma in childhood is mostly allergic
Asthma progresses with recurrent and reversible symptoms
In addition to bronchial contraction, mucosal edema and inflammation also play a role in the pathogenesis of asthma.
Family history of asthma or allergic increases the risk of asthma
Having a pet increases the risk of asthma
Recurrent upper respiratory tract infections increase the risk of asthma
Recurrent wheezing and chronic cough may be symptoms of asthma
Findings in asthma are reversible by bronchodilator

98.7% of the physicians participating in our study stated that they used short-acting beta agonists in the treatment of acute asthma attack. This rate was found to be 91% in the study conducted by Yılmaz et al. and 93% in the study conducted by Coates et al.[12,13] The rate of steroid use by physicians participating in our study was similar to other studies (98%), but the parenteral route was preferred more Although it was determined in our study that our physicians preferred the parenteral route more, it was found that more than half of the physicians used oral steroids in the study conducted by Coates. [13] In the study of Yılmaz et al.[12] it was observed that the less invasive and inexpensive oral steroid administration, which could not be found to differ significantly from the intravenous route in terms of efficacy, was not sufficiently adopted by our physicians. Based on the way to choose the effect of parenteral steroids in reducing the duration of symptoms of acute exacerbation of Turkey's cultural infrastructure and the problems of patients admitted to practice it has been linked to want faster solution.

87.3% of the physicians participating in our study stated that they did not recommend mucolytic drugs, 66.9% antihistamines and 63.7% chest physiotherapy in asthma attack; this is suggesting that especially antihistaminic and physiotherapy applications are still recommended in the treatment of asthma attacks. Although the knowledge that these treatment methods will trigger bronchospasm and cough and cause respiratory distress has been included in the Global Initiative for Asthma (GINA) guidelines since the late 90's, some of the physicians in our country still use these treatments, do not follow the guidelines on the diagnosis and treatment of asthma .

Limitations

In our study, the level of knowledge was evaluated theoretically. Since it is a questionnaire study, it has been answered based on thoughts, memory factor and experiences. Therefore, objective measurement and evaluation practices have not been carried out. Especially in some questions related to clinical findings, only the most correct answer was included in the scoring, and some items containing partially correct answers were not included in the scoring. In addition, it was determined that there were incorrect answers due to the participant's inability to pay attention during the questionnaire And since our study is based on a questionnaire, the answers given theoretically and may not reflect the frequency of daily practice. In addition, the fact that all of the pediatricians participating in our study work either in a training and research hospital or a medical faculty hospital, it is possible that this result was affected.

CONCLUSION

Although there are many international consensus reports and guidelines on the diagnosis and treatment of asthma and asthma attacks, both cultural and socioeconomic differences among societies and postgraduate training of pediatricians affect knowledge and practices dealing with asthmatic children. These findings suggested the lack of knowledge of some pediatric assistants and specialist physicians in the management of childhood asthma. In addition, our research covers university or education research hospitals. In Turkey, the actual utilization rate of non-recommended treatments for asthma may be higher than the results of our study. It is believed that the requirements of postgraduate education to provide more standardized treatment for asthma.

ETHICAL DECLARATIONS

Ethics Committee Approval: This study was approved by the local ethics committee of the Zeynep Kamil Gynecology and Pediatrics Training and Research Hospital Clinical Research Ethics Committee (52.10.04.2014).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflict of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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