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Does activity held on World Asthma Day have an impact on the asthma knowledge and awareness of family physicians?

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Abstract:

OBJECTIVE: Annually, certain activities are performed on World Asthma Day (WAD) for the awareness of both patients and physicians about asthma. The study aimed to observe the effects of asthma education on the skills and knowledge of family physicians on WAD, which basically includes updated information of the international asthma guideline.

MATERIALS AND METHODS: Our quasi-experimental study was started on May 3, 2016, WAD. Education was provided by the Global Initiative for Asthma, 2016. A questionnaire including 25 questions was applied for family physicians before and 6 months after the education.

RESULTS: In the investigation of 32 family physicians, 62.5% were women, with 32.6 ± 26.0 months in family physician practice. 59.4% of the family physicians had received education about asthma in their postgraduate period. Twenty-five percent of the participants were using asthma guidelines in their daily practice. In pre- and posteducation, the percentage of accuracy in the tests was 58.4%–77.6% among specialists and 62.3%–75.9% among trainees of family physicians. The percentage levels of accuracy developed in the questions of focusing asthma treatment and correct inhaler medication use after the education program were 62.5%–93.8% ($P = 0.002$) and 56.2%–90.6% ($P = 0.007$), respectively.

CONCLUSIONS: Our study revealed that family physicians did not have a tendency to use guidelines for asthma diagnosis and treatment. With the aid of the education program, their attitude changed positively. We believe that family asthma physicians should also be trained in “WAD” activities.

Keywords:

Asthma, asthma–chronic obstructive pulmonary disease overlap syndrome, education, family medicine, physician, World Asthma Day

Introduction

Asthma is a chronic airway disorder frequently seen among all age groups.^[1] The burden of asthma both on people and health-care systems is of great importance. Since 2001, the Global Initiative for Asthma (GINA) has performed World Asthma Day (WAD) activities for patients, families, and health-care professionals to increase the awareness about varying aspects of the disease.^[2]

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Family physicians apply both child and adult asthma treatments after diagnosis in their daily practice. In a recent review evaluating the diagnostic ability of primary health-care physicians about common respiratory diseases, it was revealed that almost half of physicians were unable to diagnose asthma.^[3] These observations showed that primary care physicians should improve their knowledge and attitudes toward asthma. In several previous studies, it has been reported that the knowledge and management of asthma of primary health

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physicians should be developed by education.^[4-6] In a few studies from Turkey, it has been observed that physicians need further education concerning asthma.^[5,7-9]

In this study, we aimed to observe the effects of an asthma education program on the skills and knowledge of family physicians on WAD, which basically included updated information of the international asthma guideline.

Materials and Methods

In our quasi-experimental, cross-sectional, and interventional study, in the context of May 3, 2016, WAD, education concerning asthma management and prevention based on the GINA 2016^[2] was given to family physicians and trainees by pediatric allergy and pulmonology specialists in a tertiary health-care hospital located in Ankara. The presentation including asthma in children of <5 years of age, the control and management of asthma, updated knowledge about GINA 2016, and asthma-chronic obstructive pulmonary disease (COPD) overlap syndrome (ACOS) was presented by five lecturers with a 20-min slideshow. Furthermore, hands-on device training was applied with various inhaler medications. Just before the education, all the physicians were requested to complete a questionnaire including 21 items which included questions regarding their knowledge and attitudes as well as a standard questionnaire of 20 questions including demographic data. The questions in the test were prepared and revised by the pediatric allergy and pulmonology specialists who were also authors of the manuscript. Multiple-choice questions were prepared for topics about pathophysiology, diagnosis, differential diagnosis, and treatment of asthma. Furthermore, the definition of asthma exacerbations and their treatment was discussed. The correct usage of inhaler treatment, asthma follow-up procedures in primary health care, asthma symptom control, and ACOS were the remaining topics involved. Six months following the initial education, the same tests were repeated to the same physicians. Seventy family physicians attended the first meeting. Fifty-two physicians attended the second meeting. Eleven of those family physicians first attended the second meeting and nine of the family physicians did not complete the questionnaire. Finally, the number of family physicians attending both the first and second meetings was only 32.

The local ethics committee of Dr. Sami Ulus Maternity and Children Research and Training Hospital, University of Health Sciences, Ankara approved the questionnaire study.

Statistical analysis

The study data were analyzed using the Statistical Package for the Social Sciences (SPSS for Windows 15.0,

Chicago, IL, USA). Categorical variables were expressed as number and percentage and continuous variables were expressed as mean and standard deviation. Chi-square test was used to compare nonparametric variables between the groups. The Pearson's and Spearman's correlation tests were used to evaluate the correlations between two continuous variables. McNemar's test was used to compare nominal variables between two dependent groups. The results were set at $P < 0.05$.

Results

Of the 32 family physicians (5 specialists and 27 residents), the mean age was 35.03 ± 9.98 years (25–57) and 20 (62.5%) trainees were female. It was determined that family physicians had an average duration of general medical practice of 9.93 ± 9.57 years after graduation (median: 7 months–32 years) and 32.61 ± 26.01 months (median: 1–84 months) in family physician practice. 68.8% of them worked in hospitals, 28.1% in primary health-care centers, and 1 in a public health-care center. 6.25% of family physicians themselves had a history of asthma, and 25% of family physicians had first-degree asthmatic relatives. Before the WAD activity, 19 (59.4%) physicians had received education after their postgraduate period. While 7 (36.84%) of 19 physicians received asthma education only during their residency, five had received further education at congresses, meetings, etc., and another seven had only at congresses, meetings, etc. It had been 31.0 ± 32.8 months since the previous meeting. In Table 1, family physicians (either specialists or residents) were questioned about their knowledge and application of national and international guidelines during their daily practice, the follow-up procedures, and treatment approaches of asthmatic patients. There was no significant difference in the level of knowledge between residents and specialists, except for the question concerning of the definition of ACOS.

Before education, the rate of correct answers to questions was 58.4% of specialists and 62.3% of residents. However, 77.6% of specialists and 75.9% of residents answered correctly following the education. Self-reported disease management and the percentage of those feeling competent to teach inhaler technique to patients are given in Table 2.

The presence of postgraduate training did not affect the pre- and posttest correct answers, except those questions relating to GINA knowledge and inhaler drug usage ($P > 0.05$). Those trainees who had not received previous education had significantly lower knowledge levels of GINA and inhaler drugs when compared with their trained colleagues ($P = 0.04$ and $P = 0.024$, respectively).

Table 1: The knowledge of family physicians and application of asthma guidelines in the diagnosis and treatment of asthma

	Family physician specialist (n=5), n (%)	Family physician Resident (n=27), n (%)	Total (n=32), n (%)
The knowledge of the National Guideline of Asthma Diagnosis and Treatment (71.9)	5 (100)	18 (66.7)	23 (71.9)
The implementation of the National Guideline of Asthma Diagnosis and Treatment	3 (60)	4 (14.8)	7 (21.9)
The knowledge of GINA	3 (60)	6 (22.2)	9 (28.1)
The implementation of GINA	0	1 (3.7)	1 (3.1)
Postgraduate training about asthma	4 (80)	15 (55.6)	19 (59.4)
Having taken an allergy rotation	1 (20)	8 (29.6)	9 (28.1)
Having followed patients with asthma	5 (100)	22 (81.5)	27 (84.4)
Ability to diagnose asthma	4 (80)	7 (63)	21 (65.6)
Able to diagnose asthma attack	5 (100)	25 (92.6)	30 (93.8)
Started asthma treatment in primary care	4 (80)	15 (55.6)	19 (59.4)
Sufficient knowledge of inhaled drug	2 (40)	8 (29.6)	10 (31.3)
The knowledge of ACOS terminology	4 (80)	8 (29.6)	12 (37.5)
Able to use medical databases such as PubMed, UpToDate, EKUAL, ClinicalKey	3 (60)	14 (51.9)	17 (53.1)

GINA: Global Initiative for Asthma, COPD: Chronic obstructive pulmonary disease, ACOS: Asthma-COPD overlap syndrome, EKUAL: EKUAL in English: National Academic License for Electronic Resources

Table 2: Self-reported ability of the diagnosis and treatment of asthma pre- and post-education by the family physicians

Questions	Family physician Specialist (n=5), n (%)	Family physician resident (n=27), n (%)	Total (n=32), n (%)	P*
Able to diagnose asthma				
Preeducation	4 (80)	17 (63)	21 (65.6)	0.039
Posteducation	5 (100)	23 (85.2)	25 (87.5)	
Able to diagnose asthma attack				
Preeducation	5 (100)	25 (92.6)	30 (93.8)	0.500
Posteducation	5 (100)	27 (100)	32 (100)	
Able to start asthma treatment				
Preeducation	4 (80)	15 (55.6)	19 (59.4)	0.021
Posteducation	5 (100)	22 (81.5)	27 (84.4)	
Able to teach inhaler drug use				
Preeducation	2 (40)	8 (29.6)	10 (31.3)	0.006
Posteducation	4 (80)	16 (59.3)	20 (62.5)	

*McNemar's test

The comparison of correct answers pre- and posteducation for multiple-choice questions is given in Table 3.

Discussion

In our own WAD activity, it was found that family physicians did not adhere to using national and international guidelines in their daily practice. In 2016, asthma diagnosis and treatment based on evidence-based strategies were updated and published as "the guideline of asthma diagnosis and treatment" by the Turkish Thoracic Society.^[10] Our results have shown that although 85% of family physicians followed asthma patients and 71.9% of them were aware of the national guideline, only 21.9% were implementing the steps in their daily practice. Only 28.1% of family physicians had an awareness of the GINA guideline; however, only 1 (3.1%)

physician was applying it in daily practice. GINA is a guideline which is prepared for the prevention and effective management of asthma using evidence-based strategies by leading asthma experts from all around the world.^[2] These guidelines are updated with national and international data. Therefore, frequently seen chronic respiratory diseases such as asthma have better treatment outcomes with the guidance of this updated knowledge. Unfortunately, in our study, nearly half of the family physicians were unable to use the electronic medical database. In primary care practice, access to evidence-based medicine practice and medical databases should be encouraged.

Eighty-five percent of family physicians routinely follow asthma patients in their daily practice. Following education, it was determined that attitude and skills of

Table 3: Comparison of the correct response rate of the family physicians to the test pre- and post-education

Questions	Family physician specialist (n=5), n (%)	Family physician resident (n=27), n (%)	Total (n=32), n (%)	P
Nonasthmatic characteristic				
Preeducation	3 (60)	19 (70.4)	22 (68.8)	0.039
Posteducation	5 (100)	24 (88.9)	29 (90.6)	
Cell involved asthma etiopathogenesis				
Preeducation	4 (80)	25 (92.6)	29 (90.6)	1.000
Posteducation	4 (80)	25 (92.6)	29 (90.6)	
Nonasthmatic features				
Preeducation	2 (40)	17 (63)	19 (59.4)	0.039
Posteducation	3 (80)	24 (88.9)	27 (84.4)	
Asthma diagnosis in <5-year-old children				
Preeducation	4 (80)	25 (92.6)	29 (90.6)	1.000
Posteducation	4 (80)	25 (92.6)	29 (90.6)	
Triggers of asthma				
Preeducation	4 (80)	19 (70.4)	23 (71.9)	0.070
Posteducation	5 (100)	24 (88.9)	29 (90.6)	
Parameters of asthma control				
Preeducation	5 (100)	24 (88.9)	29 (90.6)	0.250
Posteducation	5 (100)	27 (100)	32 (100)	
Nonrisk factors for asthma exacerbation				
Preeducation	3 (60)	19 (70.4)	22 (68.8)	0.180
Posteducation	3 (60)	24 (88.9)	27 (84.4)	
Severe asthma in <5 years old children				
Preeducation	2 (40)	13 (48.1)	15 (46.9)	0.109
Posteducation	3 (60)	18 (66.7)	21 (65.6)	
Evaluation of severity of asthma attack				
Preeducation	0	13 (48.1)	3 (40.6)	0.549
Posteducation	2 (40)	14 (51.9)	16 (50)	
Treatment of asthma attack				
Preeducation	2 (40)	18 (66.7)	20 (62.5)	0.424
Posteducation	3 (60)	21 (77.8)	24 (75)	
Chest X-ray findings in asthma				
Preeducation	2 (20)	12 (44.4)	14 (43.8)	0.049
Posteducation	3 (60)	20 (74.1)	23 (71.9)	
Long-term target in asthma treatment				
Preeducation	3 (60)	18 (66.7)	21 (65.6)	1.000
Posteducation	2 (20)	19 (70.4)	21 (65.6)	
First-choice treatment for children aged <5 years old				
Preeducation	4 (80)	25 (92.6)	29 (90.6)	0.250
Posteducation	5 (100)	27 (100)	32 (100)	
Misuse of inhaler drugs in children <5 years of age				
Preeducation	3 (60)	17 (63)	20 (62.5)	0.002
Posteducation	5 (100)	25 (83.3)	30 (93.8)	
Correct asthma treatment				
Preeducation	4 (80)	23 (85.2)	27 (84.4)	0.062
Posteducation	5 (100)	27 (100)	32 (100)	
Incorrect inhaler drug use				
Preeducation	2 (40)	16 (59.3)	18 (56.2)	0.007
Posteducation	4 (80)	25 (92.6)	29 (90.6)	
Asthma that can be followed in primary care				
Preeducation	3 (60)	17 (63)	20 (62.5)	1.000
Posteducation	3 (60)	17 (63)	20 (62.5)	
Who does not have ACOS				
Preeducation	1 (25)	7 (87.5)	8 (66.7)	0.125
Posteducation	4 (100)	8 (100)	12 (100)	

Contd...

Table 3: Contd...

Questions	Family physician specialist (n=5), n (%)	Family physician resident (n=27), n (%)	Total (n=32), n (%)	P
Characteristics of ACOS				
Preeducation	0	8 (100)	8 (66.7)	0.500
Posteducation	2 (50)	8 (100)	10 (83.3)	
Treatment of ACOS				
Preeducation	0	1 (12.5)	1 (8.3)	0.070
Posteducation	3 (75)	4 (50)	7 (58.3)	

*McNemar's test. COPD: Chronic obstructive pulmonary disease, ACOS: Asthma-COPD overlap syndrome

physicians to diagnose and treat asthma were increased. It was also seen that physicians had not been educated about asthma for over 10 years. This is a proof of the need for periodic repetition of updated asthma education with the guidance of national and international sources.

The cooperation between patient/family and physician is essential in the treatment of asthma. With the guidance of physicians, this cooperation leads to better asthma control.^[11] One major component of asthma education is the training of health professionals with updated knowledge. Previous literature has shown that better asthma control is achieved by physicians who receive interactive education.^[12] In control-based asthma management, it is crucial that inhaler medicine techniques are taught on the first diagnosis and adherence should be revised in each and every control.^[2] The skills of family physicians in teaching patients about inhaler medications have improved 2-fold in comparison to preeducation. In one study conducted in a primary health-care center, only 17.2% of family physicians were able to respond to the questions of patients about drugs and devices.^[13] Similar results were found in a multicenter study where the majority of participants were pulmonologists and pediatricians.^[8] These results indicate that repetitive education concerning inhaler techniques and drug use is required.

In the questionnaire, the correct answer rate was significantly higher after the educational program. In another study where the effects of education on family physicians were investigated, the correct answers for the questions about pathogenesis and clinical findings of asthma were significantly higher after an educational program.^[5] With our program, the level of knowledge about the differential diagnosis was also improved. The knowledge that differential diagnosis of asthma and other diseases such as cystic fibrosis, congenital abnormalities, and cardiac problems is an important issue for the prevention of diagnostic delay and proper management should be emphasized during such education.

Uncontrolled asthma symptoms are associated with higher risks of exacerbation. Therefore, the symptoms of asthma should be questioned and evaluated during each primary care visit. In practical terms, for asthma

control assessment, the asthma patients can be asked the questions of the GINA guideline.^[2] In this way, the patients who are in the early stages can be detected. Concerning the parameters of asthma control in the questionnaire, there was no difference between training periods. All the contributors (100%) were remarkably able to answer correctly.

Triggers, findings, and the severity of exacerbations and drug treatment strategies were asked, and there was no difference between the two education periods. The diagnosis and treatment of asthma exacerbations can be first applied in primary health-care centers. On the other hand, it is necessary to refer and transport severe attacks after the first intervention in primary health-care centers.^[2] Therefore, this issue should be emphasized during the education of family physicians. In our questionnaire, a question relating to the "silent lung" which may be a major finding of severe exacerbation in children under 5 years old was asked. Both pre- and posteducation correct answer rates were quite low (46.9% and 65.6%, respectively).

The correct answer rate for the question "what is the expected radiological finding in asthma?" had remarkably increased following education. Chest X-ray is not routinely recommended in asthma attacks. Chest X-ray can be applied for the first hospital visit, differential diagnosis, and cases with severe or life-threatening episodes not responding to initial therapy or if there is any suspicion of pneumonia, pneumothorax, and pneumomediastinum.^[14]

Proper inhaler medicine techniques are essential for effective drug delivery in the treatment of asthma. However, in clinical practice, misuse may occur both by physicians and asthmatic patients themselves. Therefore, on WAD, proper techniques were demonstrated with the help of hand-on devices and slideshows. A significant difference was found over 90% after the education in the two questions about the usage of inhalers, devices, and spacers in children with asthma under 5 years of age. In another new study, the importance of the family physician's ability to teach the patients techniques of inhalers was emphasized.^[6]

A great majority of asthma patients can be treated by primary health-care providers. Even though the referral for specialist investigation and management was defined in detail in GINA 2016, indications may differ according to the health systems of different countries.^[2] Regarding our study family, physicians responded to the questions about “which asthma severity and symptom controlled level or which asthma phenotypes can be followed in primary health care” at similar rates (approximately 60%) before and after training. By improving knowledge about asthma diagnosis and treatment of family physicians, tracking of asthma patients can be enhanced.

In adult smokers, the differentiation between asthma and COPD is hard to recognize. In recent years, ACOS has been defined.^[15] 37.5% of family physicians who have completed the questionnaire had already heard about ACOS. The questions concerning the clinical features and treatment of ACOS were not different pre- and posteducation. In this new topic, reeducation is a must.

The limitation of the study was that it involved a relatively small number of trainees. Moreover, there were a few family physician specialists. In Turkey’s primary care practice, both general practitioners and family medicine/physician specialists have studied in family health centres. According to the family medicine model in Turkey,^[16] there have been increasing number of family physician specialists after a special residency training program. These are the reasons for small numbers of specialists. In addition, we did not enquire if the method of the education was satisfactory or not and it was not supported by the sample cases. On the other hand, our study’s upside was that it included specialists with good clinical practice and the trainers had certificates of good clinical practice.

Conclusions

Although family physicians are aware of the national asthma diagnosis and treatment guideline, this guideline is rarely used in daily practice as is the international guideline such as GINA. It is determined that although family physicians can initiate the treatment of asthma in children and adults, their knowledge about inhaler drugs is insufficient. In our WAD activity, the family physician’s awareness, the manner of asthma treatment, and the usage of inhaler medications improved.

With the help of updated guidelines and repeated education including concerning the practice of inhaler devices, the family physician’s contribution to the management of their asthmatic patients may be vastly improved.

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Conflicts of interest

There are no conflicts of interest.

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