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The role of pulmonologist in patient education on asthma control using the asthma control test in Erbil city

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Abstract

Background and objective: Asthma is a disease characterized by chronic airway inflammation and variable expiratory airflow limitation that is under-controlled globally. This study aimed to show the role of pulmonologists in patient education on asthma control in Erbil city, Iraq.

Methods: This study was done on 100 patients with asthma from the 1st of September 2023 to the 31st of August 2024. Demographics, asthma control status, causes of uncontrolled asthma, and the state of asthma control were assessed using the asthma control test tool questionnaire. Educational interventions given by the face-to-face method include knowledge about asthma symptoms, triggers, inhaler technique, inhaler of adherence, medication side effects, rescue drug instructions, a written asthma action plan, self-monitoring, and regular review. For reevaluation of the impact of educational intervention on asthma control, an appointment was given to the patients after three months for reevaluation by using ACT.

Results: The mean age ± SD of the patients was 33.23 ± 13.5 years (ranging from 15 to 70 years) with a female-to-male ratio of 1:1. Most of the studied patients (61%) are below 35 years old. Overall, the level of asthma control was 12% at presentation and increased to 45% post-education, which is statistically significant. There was no statistically significant association between gender and age group with the level of asthma control (*P*-value = 0.811 and *P*-value = 0.072, respectively) at presentation and post-education. According to the results of the study, there was a statistically significant association between the effect of education given by pulmonologists about asthma self-management and the level of asthma control by measuring the mean difference between pre and post-education, which is - 4.21 (15.2 - 19.41 pre-education and post-education, respectively).

Conclusion: The study concluded that there was a statistically significant association between pulmonologists' asthma educational interventions and the improvement of asthma control levels.

Keywords: Asthma; Control; Inhaler; Triggers; Comorbidities.

Introduction

Asthma is a disease characterized by chronic airway inflammation and variable expiratory airflow limitation, which is under-controlled globally although it is regarded as a controllable disease.[1]

Asthma is one of the most prevalent long-term respiratory disorders, affecting between 1 and 29% of people worldwide.[2] The frequency of asthma in the Middle East ranges from 4.4% to 7.6%.[3] In contrast, in Iraq, according to certain national studies, it is less than 9% in adults,[4] which is lower than the other countries of the world, particularly Europe and North America.

Asthma control is defined as the level of control in which the symptoms and quality

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of life are improving while reducing risks of future adverse.[5]

In 2019, it was globally estimated that over 260 million people are living with poorly controlled asthma with a high frequency of disabilities and premature deaths, especially in low- and middle-income countries.[6]

The Asthma Control Test (ACT) is a simple five-question assessment tool that has been used to evaluate asthma control since 2004, which is mainly concentrated on asthma status in the last four weeks and includes effects on daily life, shortness of breath, night awakening, using rescue medication and patients rating of his asthma control. A literature analysis conducted in 2020 suggests that the ACT is a suitable measure for assessing overall asthma impact.[7]

There is still no reliable data on asthma control in Middle Eastern countries, although data from several studies, such as the ESMAA study (Asthma Control in the Middle East and North Africa), show that only a small percentage of asthmatics, such as Jordan (14.8%), Iraq (17.5%), Kuwait (42.6%), and Qatar (41.1%), are controlled.[8]

In Turkey, about 90% of adults with asthma were uncontrolled; in Saudi Arabia, 68.1% of asthmatics were uncontrolled.[9]

Uncontrolled asthma reduces quality of life,[10] and raises the likelihood of exacerbations.[11]

Causes of uncontrolled asthma are numerous; some of these factors are short-acting beta agonist (SABA) overdose (> one canister per month),[12] improper inhaler technique,[13] poor medication adherence, indoor and outdoor exposure), tobacco smoke.[14]

Poor knowledge of asthma as a disease and asthma management plans are among the most important causes of uncontrolled asthma.[15] Asthma education about self-management plans has a good effect on asthma control.[16] Education about inhaler technique improves asthma control.[17]

Iraq is one of the countries with very poor asthma control, and it is well known globally that one of the causes of uncontrolled asthma is a lack of knowledge about asthma. Therefore, the current study aimed to uncover the importance of the pulmonologist's role in asthma control education programs by giving education to asthmatic patients for better control of asthma by using the asthma control test.

Methods

Study design

This cross-sectional observational study was conducted to assess the role of education, which was delivered by pulmonologists, in the management of asthma.

The study was conducted on 100 patients with asthma in a Rizgary Teaching Hospital from the 1st of September 2023 to the 31st of August 2024.

Demographics, asthma control status, causes of uncontrolled asthma, and the state of asthma control were assessed using the ACT tool questionnaire.

Study population

Any asthmatic patients who visited Rizgary Teaching Hospital during outpatient respiratory clinic during study time were included in the study (age range between 15 and 70 years old). Exclusion criteria include well controlled asthma and any patient with any respiratory disease other than asthma.

Assessments

An ACT tool questionnaire was used for categorizing patients. ACT is composed of 25 scores; according to the assessment, patients were divided into three groups: controlled (score ≥ 20), poorly controlled (score between 16 and 19), and uncontrolled (score ≤ 15). Every patient was assessed at the first presentation, ACT was measured, and the cause of uncontrolled asthma was determined.

Educational intervention

Educational interventions given by the face-to-face method include knowledge about asthma symptoms, triggers, inhaler technique, inhaler of adherence,

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medication side effects, rescue drug instructions, a written asthma action plan, self-monitoring, and regular review. For reevaluation of the impact of educational intervention on asthma control, an appointment was given to the patients after three months for reevaluation by using ACT.

Ethical consideration

The study was conducted by ethical principles that have their origin in the Declaration of Helsinki. The study was approved by the Hawler Medical University Ethics Committee. Consent and permission were taken from the patient at the first visit.

Statistical Analysis:

Statistical Package for the Social Sciences version 24 (SPSS 24, IBM Company, and Chicago, USA) was used for statistical analysis. The chi-square test was used in cross tables. *P* ≤0.05 was considered statistically significant.

Asthma Control Test (ACT)

During the past 4 weeks	1	2	3	4	5	Score
Q1. How often did your asthma prevent you from getting as much done at Score: work, school or home?	All of the time	Most of the time	Some of the time	A little of the time	None of the time	
Q2. How often have you had shortness of breath?	More than once a day	Once a day	3-6 times a week	1-2 times a week	Not at all	
Q3. How often did your asthma symptoms wake you up at night or earlier than usual in the morning?	≥ 4 nights /week	2 or 3 nights / week	Once /week	Once or twice	Not at all	
Q4. How often have you used your reliever inhaler (usually blue)?	3 or more times a day	1-2 times a day	2-3 times a week	Once a week or less	Not at all	
Q5. How would you rate your asthma control?	Not controlled	Poorly controlled	Somewhat controlled	Well controlled	Completely controlled	
			Total Score			

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Results

The mean age ± SD of the patients was 33.23 ± 13.5 years (ranging from 15 to 70 years) with a female-to-male ratio of 1:1. Most of the studied patients (61%) were below 35 years old, as shown in Figure 1. Figures 2 and 3 show a statistically significant association between asthma control test levels at pre-education (12%) and post-education (45%).

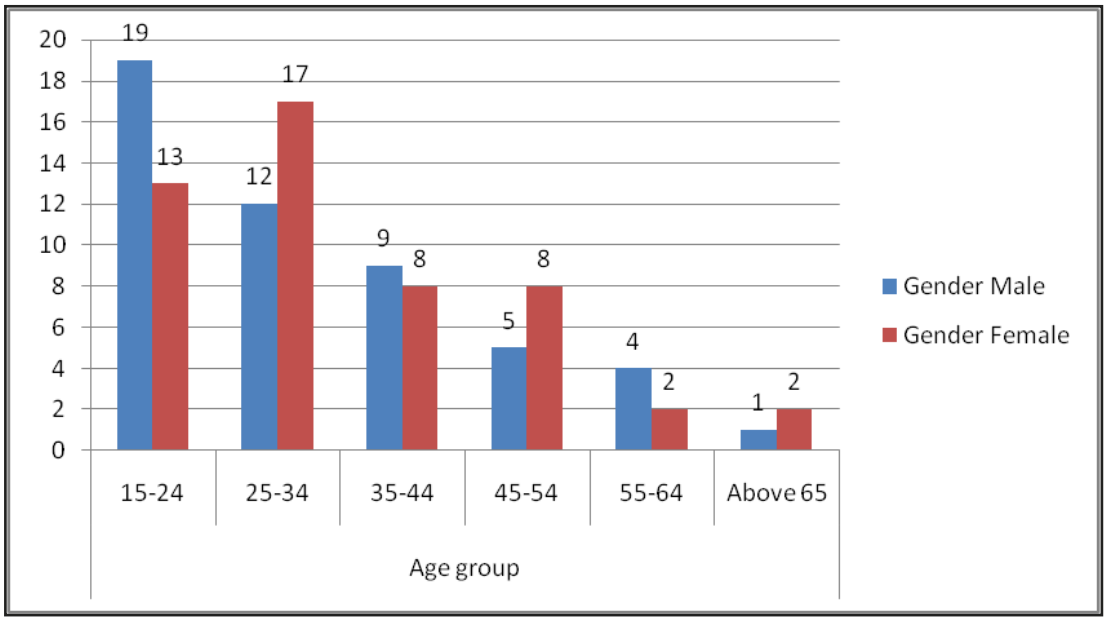

Figure 1 Age and gender distribution of the study sample

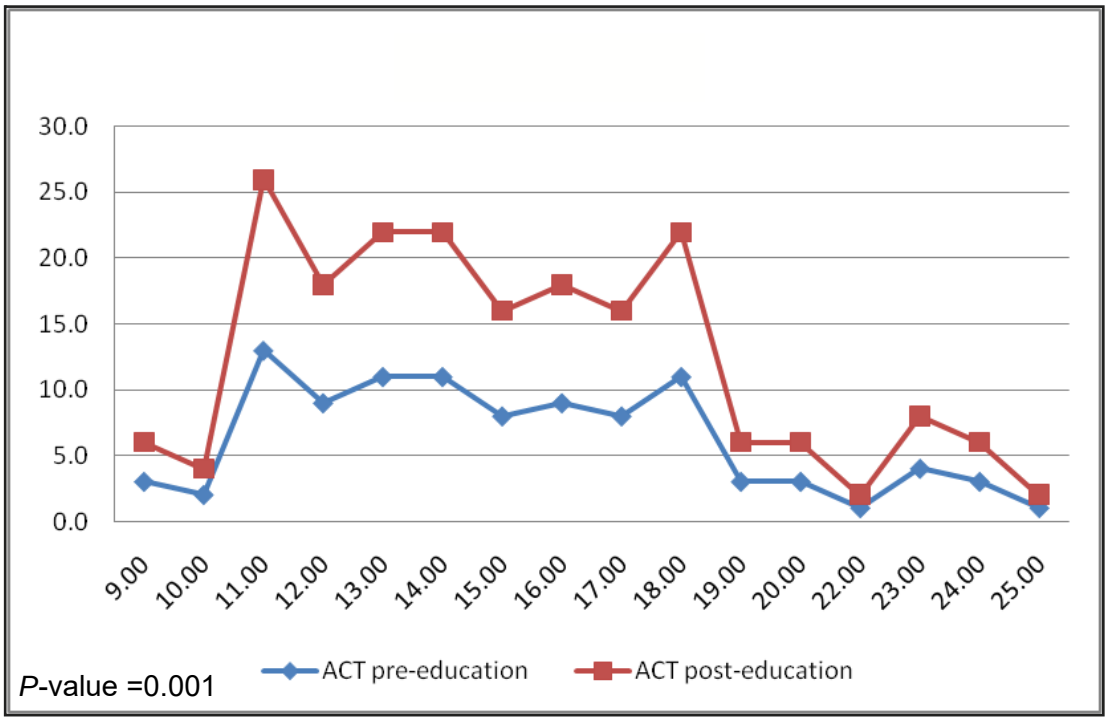

Figure 2 Asthma control test level at pre and post asthma education.

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Table 1 shows the level of asthma control of the study population at presentation and post-education, which demonstrates that the level of asthma control,, was 12% at presentation and increased to 45% post-education which was statistically significant. There was no statistically significant association between both gender and age group with the level of asthma control at presentation and post-education.

Table 1 Pre- and Post-education asthma control by age group and gender

		Asthma Control pre-education				Asthma Control post-education			
		Well controlled	Partly controlled	Un-controlled	*P*-value	Well controlled	Partly controlled	Un-controlled	*P*-value*
Gender	Male	6 %	17%	27%	0.811	20%	22%	8%	0.492
	Female	6%	20%	24%		25%	17%	8%	
Age group	15-24	5%	10%	17%	0.072	12%	14%	6%	0.117
	25-34	1%	11%	17%		8%	14%	7%	
	35-44	1%	10%	6%		8%	7%	2%	
	45-54	5%	2%	6%		10%	2%	1%	
	55-64	0%	3%	3%		4%	2%	0%	
	> 64	0%	1%	2%		3%	0%	0%	

*By Chi-square test.

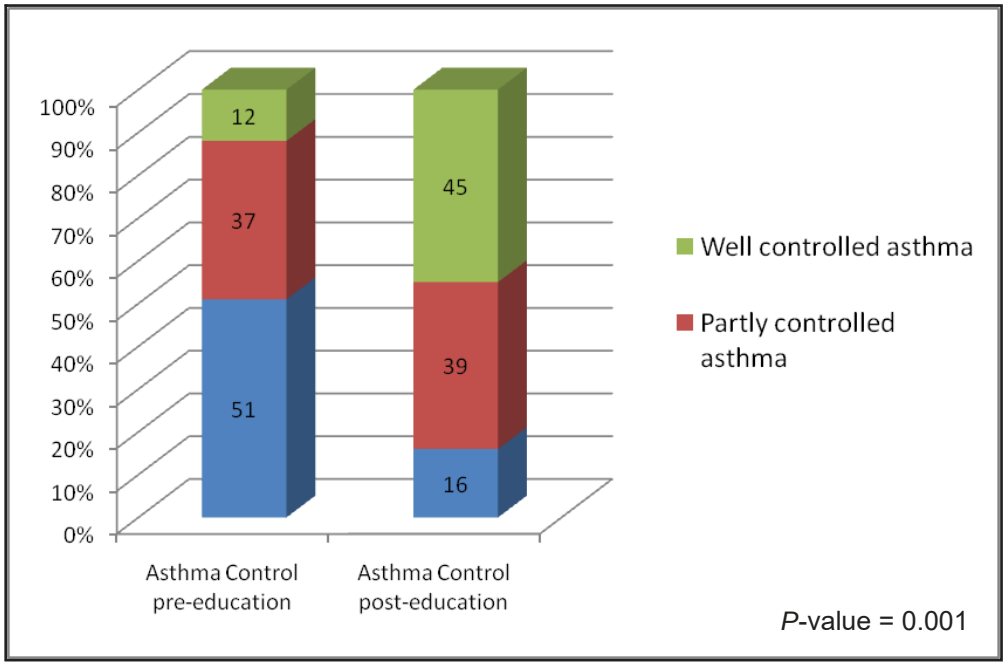

Figure 3 Pre- and Post-education asthma control

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According to the results of this study, there was a statistically significant association between the effect of education given by pulmonologists about asthma self-management and the level of asthma control by measuring the mean difference between pre and post education which was - 4.21 (15.2 - 19.41 pre-education and post-education respectively) shown in Table 2 and Table 3.

Discussion

This study was done on 100 asthmatic patients. The mean age ± SD of the patients was 33.23 ± 13.5 years (ranging from 15 to 70 years) with a female-male ratio of 1:1.

The Asthma Control Test (ACT) is a simple assessment tool that has been used to evaluate asthma control since 2004. It is a suitable measure for assessing overall asthma control.[8] According to the study done in the Chinese primary care setting, ACT is regarded as valid, reliable, and practical for asthma control assessment.[18] ACT also predicts asthma exacerbation, as seen in Cajigal S et al.[19]

In the current study, asthma control was very poor; only 24 patients (12%) were controlled by using ACT. The level of asthma control is low as seen in other studies done in different countries. For example, in Zimbabwe, 62% of patients had uncontrolled asthma,[20] in Cameroon asthma was inadequately controlled in 42% of patients,[21] and in Jordan, asthma was insufficiently controlled in 64.6%.[22]

Usually, there was a significant level of unawareness among asthmatic patients about their disease, medication, and actions to limit asthma exacerbations.[23] Also, most physicians were unaware of the last GINA guidelines, and they prioritized symptom management over exacerbations.[24]

Despite new evidence and updated guidelines, there was still no sufficient knowledge among patients, pharmacists, and primary care physicians about asthma management plans. For example, the knowledge of pharmacists on nebulizers and MDIs was very low; according to the study, below 5% of the pharmacists demonstrated all steps of MDI correctly,[25] and SABA monotherapy and overreliance were not advisable by guidelines. Still, both patients and clinicians continue to overuse SABA,[26] and an inhaled corticosteroid

Table 2 Mean of Asthma control at pre and post education

Asthma control	Mean	No.	SD	*P*-value*
ACT pre-education	15.2000	100	3.74705	< 0.001
ACT post-education	19.4100	100	3.53080	

*By Chi-square test.

Table 3 Mean difference of Asthma control at pre and post education

ACT	Mean	SD	95% Confidence Interval of the Difference		*P*-value*
			Lower	Upper	
ACT pre-education - ACT post-education	-4.21000	3.48241	-4.90099	-3.51901	<0.001

*By Chi-square test.

(ICS) was not prescribed as the first-line treatment for persistent asthma in about 70 % of the primary care physicians.[27]

Pulmonologists and, allergists were among the specialties that adhere more to the guidelines, like inhaler technique assessment and use of asthma action plans.[28] Education has a significant effect on asthma control by different methods,[29] especially if given face-to-face. Even if given by a healthcare practitioner, it has a significant effect on the patient's motivation to adhere to his medication regularly.[30]

According to the results of this study, there was a statistically significant association between the effect of education given about asthma management like inhaler technique, inhaler adherence, choice of inhaler, written asthma action plan, self-monitoring, avoidance of triggers, and allergens. The results were similar to studies done in Iraq[31] and other countries, for example, Jordan,[32] Indonesia,[33] Spain,[34] and Egypt.[35]

The hospital-based study rather than population based might be one of the weaknesses and subsequently might be exposed to bias. Being a hospital-based study; the findings may not address all asthma patients in Erbil who were not admitted to the hospital. Furthermore, the smaller number of patients included in the study might have reduced the statistical power therefore we were not able to control for potential confounders.

Conclusion

The study found a statistically significant correlation between the improvement in asthma control levels and the educational interventions for asthma provided by pulmonologists. According to the study's findings, a pulmonologist's educational program is crucial for managing asthma in addition to medication treatment.

Competing interests

The authors declare that they have no competing interests.

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