Assessment of Asthma Control: An Iraqi Cross Sectional Study

Dear Editor,

Asthma is a common global chronic inflammatory disease of the airways that is characterized by episodes of cough, wheezing, and shortness of breath with increasing prevalence in the past years.

In the United States, asthma is the most common reason to seek medical treatment. It is responsible about 15 million annual outpatient visits to physician and for 2 million annual in patients hospital treatment with estimated yearly 55 billion $ cost.[1]

Triggers that worsen asthma control, such as allergens or occupational agents, smoking should be avoided.

Patients with asthma need to understand how to use their medications and the difference between reliever and controller therapies. Education may improve compliance, particularly with inhaled corticosteroids.

All patients should be taught how to use their inhalers correctly and to recognize worsening of their asthma and how to step up therapy. Written action plans have been shown to reduce hospital admissions and morbidity rates in adults and children, and are recommended particularly in patients with unstable disease who have frequent exacerbations.[2]

The primary goal of asthma management is to achieve good control that's defined as minimization of symptoms, activity limitation, airway narrowing, rescue bronchodilator use, and prevent acute exacerbations.[3]

Asthma control is typically assessed by reviewing of symptoms and measurement of airflow obstruction by spirometry or peak flow meter and assessed by control questionnaires. However, despite the availability of treatment guidelines, recent studies suggest that asthma symptoms higher than previously estimated and there are overestimations to the level of control by both the patient and the physician which result in asthma exacerbations and low quality of life to the patient so treatment guidelines are not enough to ensure asthma control.[4,5]

Current smokers with asthma show evidence of poorer asthma control and greater acute care needs than lifelong nonsmokers or former smokers.[6]

This cross-sectional study included all asthmatics who had a documented diagnosis of asthma previously by a consultant respiratory physician from 2 years duration and more on regular use of asthma medications (including inhalers) at Baghdad Teaching Hospital who were seen at period from January to September 2018.

Exclusion criteria included asthmatics having other significant comorbid disease (chronic liver or kidney disease, cancer, diabetes mellitus, and chronic heart disease) or in acute severe asthma exacerbations as well as asthmatics who refuse to participate.

The data of this study obtained through direct interview with patients using the Royal College of Physicians 3 Questions (RCP 3 questions for Asthma control questionnaire) according to the last month from the interview (-have you had difficulty sleeping because of your asthma symptoms including cough? Have you had your usual asthma symptoms during the day "cough, wheeze, chest tightness or breathlessness?" Has your asthma interfered with your usual activities, for example, housework, work, school, etc.). The answer by the patient must be Yes or NO to each question.

Personal information's for each patient include as follows: age, gender, and smoking status.

In order to maintain consistency in the use of various terms while gathering data on smoking behavior, the US Centers for Disease Control and Prevention have developed and updated the following definitions**:**

Current Smokers – Adults who have smoked 100 cigarettes in their lifetime or more and currently smoke cigarettes every day (daily) or some days (nondaily).

Nonsmokers – Adults who currently do not smoke cigarettes, who have never smoked a cigarette or who smoked fewer than 100 cigarettes in their entire lifetime (and currently not smoke).

Ex-smokers were defined as participants who had ceased smoking at least 12 months prior to the interview (who smoke 100 or more cigar in his \ her life) were obtained from each.

The RCP3 questions are simple tool and recommended to use by the British Thoracic Society and Scottish Intercollegiate Guidelines Network UK guidelines for the management of asthma[7] to assess asthma control. If the patient says no to all questions mean controlled asthma and if he-she-say yes to one or more question means uncontrolled asthma.

Each uncontrolled patients according to questionnaire assessed to know the answers (Yes or No) to most common causes of uncontrolled disease (from clinical practice experience) which include as follows:

- Bad inhaler technique? (each patient asked to show us how to use her-his-device)
- Nonadherence to treatment? (Are you taking your medications accurately as your physician ordered?)
- Economic causes to buy inhalers? ((most types of inhalers, especially combined ones in Iraq are bought by the patients from private sector
- Others (any other cause than above three causes lead to uncontrolled disease from the patient point of view such as "I am afraid from dependence on inhalers").

Statistical package for social sciences version 24 (SPSS, IBM Company, Chicago, IL 60606, USA) was used to analyze data. Continuous variables presented as means with standard deviation and discrete variables presented as numbers and percentages. Chi-square test was used as appropriate to test the significance of association between discrete variables. Findings with $P < 0.05$ were considered significant.

The study was conducted in accordance with the ethical principles that have their origin in the Declaration of Helsinki. It was carried out with patient's verbal and analytical approval before sample was taken. The study protocol and the subject information and consent form were reviewed and approved by a local ethics committee.

From 100 participants age varied from 20 to 86 years old with a mean age of 42.4 ± 15.7 years. About 63% were male. Moreover, according to RCP3 questions of asthma control only 14% (proportion of control is 14% with a 95% confidence interval of 8.1%–22.7%) of participants are controlled. 73% of uncontrolled patients were nonadherent to treatment as their physicians ordered. Thirty-seven percent of uncontrolled had bad inhaler techniques. Thirty-two percent of uncontrolled patients had economic difficulties to buy inhalers. None of controlled ones are current smokers, whereas all current smokers had uncontrolled asthma.

According to study results [Table 1] only 14% of asthmatic controlled (no difficult sleeping, no day symptoms, and no interference with usual activities) this may be due to the episodic nature of the disease that made the patient feel improvement and lead him– her– to nonadherence.

Nonadherence with asthma medications ($P < 0.001$), especially inhalers is common problem among asthmatics (73% of uncontrolled ones).

This study revealed that though majority of patients claimed to know how to use inhalation devices correctly, only few patients followed all the essential steps of the inhalation technique before intervention., this study showed that there is statistically significant association between inhalation technique and asthma control ($P < 0.05$). Health professionals should educate patients more about inhalation techniques.

Chronic nature of asthma needs frequent usage of inhalers. Not all patients had economical ability to provide these drugs so this lead to uncontrolled asthma and that was statistically significant in our study ($P < 0.05$).

Twenty-four percent of uncontrolled patients were current smokers and 15% of them were ex-smokers and there was statistically significant association ($P < 0.05$).

Asthma control is still a major problem in our populations and nonadherence with medications is most frequent cause. More public education about the disease nature and about its management is required.

Financial support and sponsorship

Nil.

Table 1: Distribution of studied sampled according to the presence of asthma control and to studied characteristics

Variables	Asthma control		*P*
	Uncontrolled (*n*=86; 100.0%), *n* (%)	Controlled (*n*=14; 100.0%), *n* (%)	
Age group (years)			
20-39	36 (41.9)	7 (50.0)	0.819
40-59	33 (38.4)	5 (35.7)	
≥60	17 (19.8)	2 (14.3)	
Gender			
Male	53 (61.6)	10 (71.4)	0.481
Female	33 (38.4)	4 (28.6)	
Smoking status			
Current smoker	21 (24.4)	0	0.043
Ex-smoker	13 (15.1)	5 (35.7)	
Nonsmoker	52 (60.5)	9 (64.3)	
Bad inhaler technique?			
Yes	32 (37.2)	0	0.006
No	54 (62.8)	14 (100.0)	
Nonadherence to treatment?			
Yes	63 (73.3)	0	<0.001
No	23 (26.7)	14 (100.0)	
Presence of economic causes?			
Yes	28 (32.6)	0	0.012
No	58 (67.4)	14 (100.0)	
Other causes are present?			
Yes	21 (14.0)	0	0.136
No	74 (86.0)	14 (100.0)	

Conflicts of interest

There are no conflicts of interest.

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Submitted: 25-Aug-2020 **Accepted:** 06-Feb-2021
Published: 26-Jun-2021

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Quick Response Code:

Website: www.medjbabylon.org

DOI: 10.4103/MJBL.MJBL_60_20

How to cite this article: Tareq AA. Assessment of asthma control: An Iraqi cross sectional study. Med J Babylon 2021;18:146-8.