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The Effect of Patient Education Interventions on Asthma Management in Hail Region

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Abstract

The rising importance of educating asthma patients about their medication and devices and how to use them and the impact of this knowledge on controlling the disease and improving the quality of life has attracted great interest from researchers in assessing the current situation of dealing with the disease in their community. The purpose of this study is therefore to assess the knowledge of asthma patients about their medication and devices, highlight the problems in the advice provided by health-care providers to asthma patients and study the potential impact of education on the management of asthma. The study was also designed to encourage health-care providers to provide appropriate education for patients and develop an educational program for the management of asthma. A cross-sectional study was conducted using two types of questionnaire, the first directed at asthmatic patients to assess their knowledge and the other directed at health-care providers to assess the challenges, which they faced in advising patients. The results showed that patients' awareness of asthma was of a medium level. Moreover, the level of challenges faced by health-care providers when advising patients to teach them how to use asthma medications and devices was also of a medium level. The most significant problems were time and lack of patient interest. The findings explained that asthmatic patients in Hail region need improvement in their level of awareness about the use of asthma medications and devices in order to achieve a higher degree of disease control, which will be achieved through the development and implementation of an educational program by health-care providers.

Keywords: Asthma Devices, Asthma Education Program, Asthma Management, Prevention

1. Introduction

Asthma is a chronic inflammatory disorder of the airway characterized by a sense of shortness of breath, chest tightness, wheezing, dyspnea and coughing. There are many trigger factors for asthma-like symptoms, for example allergens (pollens, animals and house dust), indoor air pollution (soap, dishwashing liquids, cosmetics, facial creams and shaving cream), drugs (aspirin, ibuprofen, beta-blockers and penicillin's), foods (nuts) and other industrial triggers such as wood and cotton dust. The medications for asthma include anti-inflammatory drugs (glucocorticoids, mast cell stabilizers, leukotriene antagonists) and bronchodilator drugs (Beta 2 adrenergic agonists, methylxanthines, anticholinergics). Inhaled drug device is the keystone in the management of patients across a spectrum of respiratory diseases such as asthma[1].

There are some drug delivery systems and special devices which are used for asthma management such as Metered Dose Inhalers (MDIs), dry powder inhalers and nebulizers. Surprisingly this subject has not been discussed

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much in spite of its importance. One of the few studies, which have addressed it, was an evaluation of an asthma education program for adults that focused on improving asthma control and reducing readmission rates through increased patient knowledge and the development of self-management skills. The result was substantial changes in illness behavior and the development of a brief asthma education program on the use of health care facilities[2,3]. Hilton (1996) carried out a controlled evaluation of the effects of patient education on asthma morbidity in general practice and the results encouraged the development of self-management skills in asthmatic patients. There were two different patient education programs for asthma in general practice involved in that study: One group received a maximum education program, the second group received a limited education program and a third group acted as a control group. In both of the intervention groups, the understanding of asthma was increased but only in the maximum intervention group was there a significant improvement in knowledge about asthma. These simple informational education programs were ineffective when applied to a general practice population. Further studies of the factors affecting attitudes, beliefs and actions are therefore needed in order to improve the advice and support given to asthma patients[4]. Wilson (1991) compared changes in asthma symptoms, the utilization of medical services, knowledge about asthma, MDI technique and self-management behavior in 323 adults before and after educating them about asthma and found that the self-management education programs were associated with significant improvements in the control of asthma[5].

Asthma medications need to be accompanied by important instructions on how to use them and in this regard, health-care providers have a duty to educate patients on how to use asthma medications. Due to the lack of published research on this subject, the current researchers realized the importance of focusing on how health-care providers offer an educational service to ensure the provision of sufficient information on how asthma devices are used in order to improve the quality of life for patients with asthma in Hail region.

2. Methodology

A cross-sectional study using two types of questionnaire was carried out between November 2019 and April 2020. The questionnaires were self-designed to meet the objectives of the research and to encourage respondents to provide accurate, unbiased and complete information. The first online questionnaire for use with asthmatic patients had closed questions to assess their awareness of the use of asthma medications, and the other was designed for use with health-care providers to assess the challenges which they face when advising patients on how to use asthma medications. Ethical approval was not required since the nature of the data in the manuscript is not critical and the study would generally be considered a low-risk project (answering an online questionnaire and failed to meet the participants directly due to the corona virus pandemic). Depending on a CI of 95% and population percentage of about 10%, sample size was calculated to be about 150[6]. Patients who were able to participate and answering the online questionnaire were asthmatic patients who had already been diagnosed and had visited the public inpatient and outpatient clinics in Hail hospitals for this purpose. Mothers of young children were excluded from the study. Data entry and coding were carried out and analyzed using Statistical Analysis Software (SAS 9.3).

Table 1. Demographic Characteristics of Patients Participated in the Study

*HTN: Hypertension.
*DM: Diabetes mellitus.
*CVD: Cardiovascular disease.
*NM: Not mentioned.
***Values are mean ± SD; (n = 120).

**Distribution of the Sample by Gender (%)		Distribution of the Sample by Age (%)				Distribution of the Samples According to Case History of Asthma				Distribution of the Sample According to Concomitant Diseases				Distribution of the Sample by Occupation			
Male	*Female*	*15-30 Years*	*40-50 Years*	*>50-60 Years*	*>60 Years*	*5-10 Years*	*20-30 Years*	*>30-40 Years*	*>40 Years*	**HTN*	**DM*	**CVD*	**NM*	*Not-working*	*Student*	*Employed*	*Self-empoled*
62.5	37.5	37.5	29	26	7.5	45	45	7.5	2.5	27.5	22.5	12.5	37.5	45	20	30	5

3. Results

To assess patient awareness about the use of asthma medications and to identify problems in the advice provided by health-care providers for patients with asthma in the Hail region, data were collected online from 120 participants and 30 doctors and pharmacists. Two types of online questionnaires were administered as described above, one to assess patients' awareness about the use of asthma medications and the other to assess the challenges faced by health-care providers when advising patients how to use asthma medications. Data analysis was performed using SPSS V23 and Excel-2013. The results were as follows.

Table 1 showed that participants were 62.5% more likely to refer to a male than female 37.5%. Moreover, 37.5% of the sample was aged between 15 and 30 years, 29% of the sample was aged between 40 and 50 years, 26% between > 50 to 60 years and 7.5% more than 60 years. In the same table, we found that 45% of the patients had a case history of asthma from 5 to 10 years, 45% from 20 to 30 years, 7.5% more than 30 to 40 years and only 2.5% of the sample had case history of asthma over more than 40 years. Based on comorbidity, the most frequent associated diseases with the asthmatic patients were hypertension (27.5%), diabetes (22.5%) and cardiac disease (12.5%). Concerning patients' occupations the result was showed that 45% of the patient participants were not working, 20% was students and 30% were employed and 5% were self-employed.

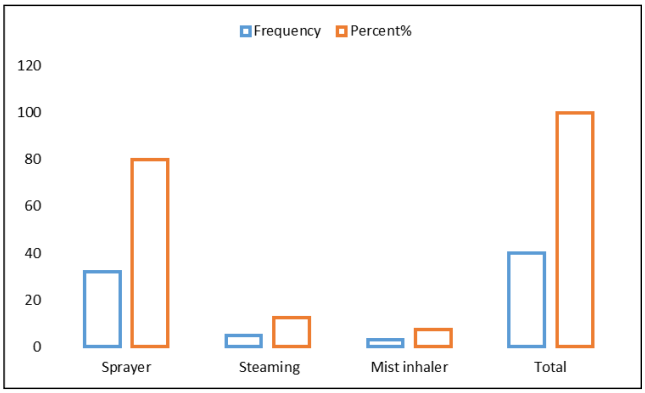

Figure 1. Commonly used medical devices for asthmatic patients.

Figure 1 explained that 80% of the patients had used a sprayer, 12.5% steaming and 7.5% a mist inhaler during an asthma attack.

Table 2. Patient awareness level about using asthma medications with challenges faced by health-care providers when giving information to a patient

Patient awareness level about using asthma medications						
No. Of Participants	***Question***	***Mean***	***SD***	***Relative weight %***	***Degree***	***Rank***
120	Did the heath-care provider give you instructions about your drug and/or device?	1.25	0.439	62.50	Medium	6
	Did you understand the instruction given by your health-care provider?	1.25	.439	62.50	Medium	7
	Did they give you enough time for your questions?	1.40	0.496	70.00	Medium	4
	Did they ask you to repeat the information?	1.68	0.474	84.00	High	1
	Do you ever forget to take your medication?	1.43	0.501	71.50	Medium	3
	Are you careless about the time you take your medication?	1.55	0.504	77.50	Medium	2
	When you feel better, do you sometimes stop taking your medication?	1.12	0.335	56.00	Weak	8
	Do you sometimes feel worse when you take the medicine?	1.28	0.452	64.00	Weak	5
		1.37	**0.45**	**68.50**	**Medium**	

Challenges faced by health-care providers when advising patients how to use asthma medications						
30	Is the patient interested in what you tell him about the instructions?	1.43	0.504	71.50	Medium	3
	Is there enough time to give full information to the patient?	1.5	0.509	75.00	Medium	2
	Is the number of health-care providers sufficient to provide the best education for patients?	1.60	0.498	80	High	1
	Are you repeating the important information to patients on every visit for their care management?	1.37	0.490	68.5	Medium	4
	Do you think there is a need for the implementation of an educational programme for asthma patient in Hail region to improve disease management and the patients' quality of life?	1.07	0.245	53.50	Weak	5
		1.39	**0.45**	**69.70**	**Medium**	
Challenges faced by health-care providers when giving information to a patient						
	N	Percent				
Time is a problem	15	50.0				
Patients' lack of interest	15	50.0				
Total	30	100.0				

A reliable eight-item questionnaire was designed to establish patient awareness levels about using asthma medications and devices. The results set out in Table 2 showed that patients' awareness of asthma management was of medium level and have a relative weight 68.50%. This indicates the need to improve patients' level of awareness about the use of asthma medications in general in order to achieve a higher level of awareness in the future. In addition, the same table was exhibited the responses given by the health-care providers to the five questions about the challenges, which they had encountered when giving information to patients: 50% of the health-care providers said that time was a problem and the other 50% said that the lack of interest by the patients was a problem. Finally the same table measures the challenges that health care providers faced when advising patients on how to use asthma medications and devices that were at an average level and had a relative weight of 69.70%.

4. Discussion

There are various drug delivery systems and special devices used for asthma management, such as MDIs, dry powder inhalers and nebulizers. Asthma medications need to be given with important instructions on how to use them and health-care providers therefore have a duty to educate patients on how to use asthma medications. The findings from this study show that the patients' awareness of asthma management was at a medium level and that the level of challenges faced by health-care providers when advising patients how to use asthma medications was at a medium level, as well. This suggests a need to improve the level of patients' awareness of the use of asthma medications in general in order to achieve a higher level in the future. These results are consistent with those of previous published reports on asthma education[7]. One purpose of this current study was to assess knowledge of asthma self-management among adult asthma patients. Their knowledge of asthma self-management was found to be low. Patients with a better knowledge of asthma self-management had better asthma control[8]. In addition, a higher education level was associated with greater knowledge of asthma self-management. Regarding the challenges which the health-care providers had faced while giving information to patients, half of the health-care respondents stated that time was a problem and the

other half reported a lack of interest in this problem among patients; which is similar to the findings reported in many previous studies[9]. There was often a communication gap between the health-care providers and the patients, which could lead to a lack of interest by the patient. The findings also suggest that educating patients about asthma and about self-management education programs would lead to significant improvements in the control of asthma[10]. We therefore suggest that a patient education program should be developed to optimize asthma management and thereby improve the quality of life[11,12] for asthma sufferers.

5. Conclusion

Asthma management and control needs action from both health-care providers and patients. Asthma medications and devices need to be given with important instructions on how to use them, so health-care providers have a responsibility to educate patients on how to use asthma medications in order to improve patients' awareness about their own disease control. The patient may have a different view of things and may have doubts about the technology to monitor the use of the inhaler. They can be considered as a means of punishment rather than giving them power. Therefore, innovation should not only measure results, but also support self-management processes[13–15]. The patients' awareness of asthma management techniques was found to be at medium level, showing that there is a need to improve patients' level of awareness about the use of asthma medications and devices in general in order to achieve a higher degree of awareness in the future.

6. Conflict of Interest

The authors declare that there is no any conflict of interest.

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