Research Article

Assessment of Triggering Factors, Quality of Life and Impact of Patient Counseling in Asthma Patients in A Multi Specialty Tertiary Care Centre

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ABSTRACT

The present study was carried out in 140 asthmatic patients of a tertiary care hospital in south Kerala with the aim to assess the triggering factors, quality of life and impact of patient counseling in the knowledge, attitude and practice (KAP) in them. In this study, triggering factors were assessed by using asthma trigger inventory (ATI), quality of life by St. George's respiratory questionnaire (SGRQ) and KAP questionnaire were used for data collection. The analysis of collected data by using statistical package for the social sciences (SPSS) software revealed that almost all triggers included in the ATI causes asthma symptoms in all the patients included in the study in various intensity. It was found that allergens were the most common triggers in males whereas in female patients the psychological factors are the most common trigger. The occurrence of asthma was found more in females than in males. A poor to moderate health related quality of life was found in the study subjects. The KAP of the patients before counseling were too low that signifies their lack of knowledge attitude and practice about asthma but it was improved significantly after patient counseling which clearly indicates the importance of counseling and role of clinical pharmacist in patient education.

Keywords: Asthma, Triggering factors, Quality of life, KAP, Patient counseling.

INTRODUCTION

Bronchial asthma is one of the chronic inflammatory disorders of the lungs involving airway obstruction affect approximately 300 million people without age restriction globally. In rural India, it was identified as one of the significant cause of morbidity and mortality [1-5]. Due to physical, emotional and social limitations, asthma can impair the quality of life of patients [2].

According to Global initiative for asthma (GINA), good asthma control gains an important place in the asthma management[6]. Continuous monitoring and therapy adjustments are beneficial one to minimize the symptoms regardless of the severity of condition [7].

Patient counseling plays a vital role in asthma management because it is a chronic disease requires lifelong treatment involves the usage of specialized devices and needs self monitoring [8]. Pharmacists can play a vital role in many ways in asthma management particularly education and improving the knowledge, attitude and practice (KAP) of the patients [3, 8].

With this view, the present study was designed to assess the triggering factors of asthma, quality of life, KAP of the patients and impact of counseling provided to them.

METHODS

Study design

After getting proper approval from hospital authorities and institutional ethical committee (R/ADMIN-08/0), a prospective observational study for a period of six months, from January 2017 to June 2017 was conducted at the Department of Pulmonary and Critical care of Cosmopolitan Hospitals (P) Ltd., a multispecialty tertiary care centre located in Thiruvananthapuram, Kerala, south India. 140 patients were included in the study. Patients between the age of 18 to 75 years with asthma exacerbation and willing to participate were included in the study. Patients with other pulmonary disorders and non-willing to participate were excluded from the study.

Data collection

A detail about the study was explained to the participants and their consent in written format was collected properly. Various tools such as Asthma trigger inventory (ATI), St. George's respiratory questionnaire (SGRQ) and properly designed Knowledge, attitude and practice (KAP) questionnaire with the help of subject experts were used for data collection.

ATI is a validated questionnaire for assessing the triggering factors in asthmatic patients. It consists 32 type of triggering factors of asthma and provide the score of 0 – 4 for the reply viz., 0 – Never; 1 – Rarely; 2 – Some times; 3 – Most of the times; 4 – Always. In addition, the patients were asked to list out the most important six triggers affect them. Then they were asked about how these listed triggers affect their daily life and provide a score of 0 – 4 for their answer viz., 0 – Not at all; 1 – Slightly; 2 – Moderately; 3 – Very much; 4 – Completely.

SGRQ is a validated questionnaire for assessing the quality of life of asthma patients. The questions were based on the current health status, symptoms of disease, activity affected and their impact on daily life. Scores were provided separately for each part of questions and

finally the total score was calculated to determine the quality of life of patients.

The KAP of the patients was assessed before and after counseling. The KAP questionnaire contains 15 questions, five each in knowledge, attitude and practice sections. The knowledge and practice sections have two answering options, Yes or No, but the attitude section has three options such as 'Disagree', 'Neither agree nor disagree' and Agree. During counseling, the patients were educated about the asthma, its triggers and medications. All information relevant to study was collected from the case records and direct interview with patients and documented properly in the pro forma.

Statistical analysis

Microsoft Excel was used for data entry and for their analysis; the statistical package for the social sciences (SPSS) software was used.

RESULTS

In this six month long study, various significant results were obtained. Totally 140 patients were included in the study. Among them, 95 patients (68%) were female and 45 patients (32%) were males. The study subjects were divided in to three groups based on their age viz., 18 – 35; 36 – 55; 56 – 75 years age. Majority of the study subjects, 73 patients (52%) were aged between 56 – 75 years of age. 47 patients (34%) belong to the age group of 36 – 55 years. Only 20 patients (14%) were come under the age group of 18 – 35 years. The mean age value of this study was 54.7 with standard deviation of 14.2. (Table 1)

Table 1: Gender and age distribution of patients under study

Variables		Count	Percentage (%)
Gender	Male	45	32
	Female	95	68
Age	18 – 35	20	14
	36 – 55	47	34
	56 – 75	73	52
Mean ± SD		54.7 ± 14.2	

Regarding with the analysis of triggering factors of asthma by using ATI, the results revealed that, in case of allergens causing asthma, 29 patients (21%) always produce symptoms of asthma when they exposed to feathers from birds. Grass and cockroach were reported as the factors by 6 patients (4%). For 21 patients (15%) ants and for 20 patients (14%) cow was the factors. 16 patients (11%) reported cat and dog were the allergy causing factors. Goat and hay dust were reported as allergens by 24 patients (17%). 26 patients (19%) reported weeds and for 8 patients, trees produce the symptoms of asthma (Table 2).

Table 2: Effect of allergens on inducing asthma

Allergens	Never	Rarely	Sometimes	Most of the times	Always
Cockroach	28 (20%)	100 (71%)	5 (4%)	1 (0.7%)	6 (4%)
Ants	30 (21%)	46 (33%)	32 (23%)	11 (8%)	21 (15%)
Feathers	35 (25%)	29 (21%)	25 (18%)	22 (16%)	29 (21%)
Cow	40 (29%)	24 (17%)	26 (19%)	30 (21%)	20 (14%)
Cat	32 (23%)	50 (36%)	22 (16%)	20 (14%)	16 (11%)
Dog	29 (21%)	42 (30%)	28 (20%)	25 (18%)	16 (11%)
Goat	29 (21%)	52 (37%)	17 (12%)	18 (13%)	24 (17%)
Hay dust	45 (32%)	32 (23%)	21 (15%)	18 (13%)	24 (17%)
House dust	40 (29%)	32 (23%)	29 (21%)	13 (9%)	26 (19%)
Weeds	40 (29%)	38 (27%)	31 (22%)	17 (12%)	14 (10%)
Grass	43 (31%)	53 (38%)	26 (19%)	12 (9%)	6 (4%)
Trees	62 (44%)	48 (34%)	14 (10%)	8 (6%)	8 (6%)

In case of food, 7 patients (5%) always produce symptoms of asthma when exposed to chicken, for 6 patients (4%) beef, prawn and crabs were the risk factors. Only 2 patients (1%) always have asthma exacerbation when exposed to fish (Table 3).

Regarding with activities and exercise, 21 (15%) patients always produce symptoms of asthma when they overexert. 19 patients (14%) reported sports activities and climbing flights of stairs as the causing factors (Table 4).

Regarding with infection, for 10 patients (7%), viruses, cold and sinus problems were the factors (Table 5). In case of air pollution or irritants, 15 patients (11%) reported when they exposed to cigarette, odour of paints leads to the symptoms of asthma. 12 patients (9%) said perfumes and for 6 patients, fumes were the factors (Table 6).

Table 3: Effect of food on inducing asthma

Food	Never	Rarely	Sometimes	Most of the times	Always
Beef	53 (38%)	31 (22%)	37 (26%)	13 (9%)	6 (4%)
Chicken	44 (31%)	56 (40%)	27 (19%)	6 (4%)	7 (5%)
Prawn	50 (36%)	59 (42%)	20 (14%)	5 (4%)	6 (4%)
Crab	55 (39%)	60 (43%)	19 (14%)	0	6 (4%)
Fish	49 (35%)	57 (41%)	26 (19%)	6 (4%)	2 (1%)

Table 4: Influence of exercise on asthma development

Exercise	Never	Rarely	Sometimes	Most of the times	Always
Sports	56 (40%)	39 (28%)	25 (18%)	1 (0.7%)	19 (14%)
Over exertion	51 (36%)	47 (34%)	14 (10%)	7 (5%)	21 (15%)
Climbing stairs	47 (34%)	48 (34%)	24 (17%)	2 (1%)	19 (14%)

Table 5: Role of infection on inducing asthma

Infection	Never	Rarely	Sometimes	Most of the times	Always
Viruses	46 (33%)	67 (48%)	12 (9%)	5 (4%)	10 (7%)
Cold	53 (38%)	62 (44%)	12 (9%)	3 (2%)	10 (7%)
Sinus problems	57 (41%)	52 (37%)	18 (13%)	3 (2%)	10 (7%)

Table 6: Effect of air pollution on asthma development

Air pollution (Irritants)	Never	Rarely	Sometimes	Most of the times	Always
Fumes	40 (29%)	51 (36%)	34 (24%)	9 (6%)	6 (4%)
Cigarette	30 (21%)	49 (35%)	44 (31%)	2 (1%)	15 (11%)
Odors	62 (44%)	51 (36%)	12 (9%)	0	15 (11%)
Smell of paints	47 (34%)	56 (40%)	20 (14%)	2 (1%)	15 (11%)
Perfumes	62 (44%)	44 (31%)	18 (13%)	4 (3%)	12 (9%)

In case of psychological factors, 41 patients (29%) reported that the symptoms of asthma were produce when they involved in argument with others, have intense worries or feeling alone. 30 patients expressed that the symptoms were produced when being angry (Table 7).

Table 7: Role of psychological factors on asthma development

Psychological factors	Never	Rarely	Sometimes	Most of the times	Always
Being angry	30 (21%)	57 (41%)	23 (16%)	0	30 (21%)
Arguments	47 (34%)	33 (24%)	19 (14%)	0	41 (29%)
Worries	30 (21%)	51 (36%)	18 (13%)	0	41 (29%)
Feeling alone	35 (25%)	39 (28%)	25 (18%)	0	41 (29%)

It was found that, in 36% of patients, the allergens were the strongest triggers and food was the least strong trigger in 3.5% patients. The comparison of asthma causing allergens and psychological factors with that of patients' gender and age showed a significant relationship which is presented in the Table 8.

The health related quality of life in asthma patients was assessed by using SGRQ. Initially, scores of symptoms, activity and impact was determined and then the overall quality of life was calculated. The results showed that the mean symptom score was 82.6 with standard deviation of 10.2, mean activity score was 64.1 with standard deviation of 10.8 and mean impact score was 64.5 with standard deviation of 8.9. The mean overall quality of life score was 67.3 with standard deviation of 7.2. The results are shown in Table 9.

Table 8: Comparison of asthma causing allergens and psychological factors with that of patients' gender and age

Allergens with gender					
Gender	**Mean**	**SD**	**N**	**t**	**p**
Male	20.1	7.0	45	2.26	0.025
Female	17.0	7.9	95		
'p' value less than 0.05; mean difference 3.1					
Psychological factors with gender					
Male	4.6	3.9	45	3.48	0.001
Female	7.9	5.9	95		
'p' value less than 0.01; mean difference 3.3					
Allergens with age					
Age	**Mean**	**SD**	**N**	**F**	**p**
18 – 35	21.0	8.7	20	8.84	0.000
36 – 55	20.6	6.7	47		
56 - 75	15.5	7.3	73		
'p' value significant at 0.01 level					
Psychological factors with age					
18 – 35	7.0	5.2	20	10.01	0.000
36 – 55	4.2	4.0	47		
56 - 75	8.6	5.9	73		
'p' value significant at 0.01 level					

Table 9: SGRQ scores of study subjects

	Score	**Count**	**Percentage**
Symptoms	40-60	3	2.1
	61 – 80	46	32.9
	>80	91	65.0
	Mean ± SD 82.6 ± 10.2		
Activity	<40	1	0.7
	40 – 60	46	32.9
	61 – 80	78	55.7
	>80	15	10.7
	Mean ± SD 64.1 ± 10.8		
Impact	40-60	39	27.9
	61 – 80	96	68.6
	>80	5	3.6
	Mean ± SD 64.5 ± 8.9		
Overall quality of life	40-60	20	14.3
	61 – 80	114	81.4
	>80	6	4.3
	Mean ± SD 67.3 ± 7.2		

It was also found that the overall quality of life of the patients decreases with increase in age. The mean overall quality of life of patients between the age group of 18-35 was found to be 57.3 with a standard deviation of 3.4. Similarly, the mean overall quality of life, standard deviation of patients between the age group of 36-55 and 56-75 was found to be 63.8, 1.9 and 72.4, 5.7 respectively. Thus, it shows that there is a significant relationship between age and quality of life at 0.01 level (p= 0.000). The results are shown in table 10.

Table 10: Comparison of overall quality of life with age

Overall quality of life score	Age 18-35		Age 36–55		Age 56–75	
	Count	Percent	Count	Percent	Count	Percent
40 - 60	20	100.0	0	0.0	0	0.0
60 - 80	0	0.0	47	100.0	67	91.8
>80	0	0.0	0	0.0	6	8.2
Mean ± SD	57.3 ± 3.4		63.8 ± 1.9		72.4 ± 5.7	

Regarding with KAP assessment, the mean value of knowledge score before counseling was 1.6 and it was increased to 4.2 after counseling. The mean difference is 2.6. Thus the result was significant at 0.01 level (p = 0.000). The mean value of attitude score before counseling was 3.5 but after counseling this score was increased to 8.5. The mean difference is 5.0. This results also significant at 0.01 level (p = 0.000). The mean value of practice score was 1.6 before counseling but after counseling it was 4.2. The mean difference is 2.6. Thus the result was significant at 0.01 level (p = 0.000). These results clearly indicated that a significant improvement in the KAP of the study subjects during the post counseling assessment comparing with pre counseling assessment (Table 11).

Table 11: Status of KAP of the study subjects in pre and post counseling assessment

Variables		Mean	SD	N	Mean difference	Paired t	p
Knowledge	Pre	1.6	0.7	140	2.6	31.97	0.000
	Post	4.2	0.7	140			
Attitude	Pre	3.5	1.1	140	5.0	41.22	0.000
	Post	8.5	1.0	140			
Practice	Pre	1.6	0.7	140	2.5	30.56	0.000
	post	4.2	0.7	140			

DISCUSSION

The baseline data of the present study indicated that the occurrence of asthma was found more in females (67.85%) than in males (32.14%). It was found that most commonly affected age group in this study was above 55 years. In our study, 52.1% of patients were of advancing age (≥ 55 years).

Adequate asthma management depends on accurate identification of triggers. Individuals vary in their perception of asthma triggers. Patients may be unaware of all of or some of their triggers, which may leave them uncertain about what the exacerbating factors of their disease are and about which specific triggers to avoid, and cold leave them exposed to triggers repeatedly without protection. Misidentification of asthma triggers can lead to unnecessary avoidance of perceived triggers and thus restrictions in daily functioning and impairment in quality of life. Despite the importance of trigger perception in asthma management, only few studies have investigated patients' self-report of asthma triggers. The Asthma Trigger Inventory (ATI) has been developed to assess a broad spectrum of asthma triggers in a standardized way. It is a 32 item questionnaire, consisting of 6 subscales measuring trigger domains of allergens, foods, exercise, infection, air pollution or irritants and psychological factors. Patients with a higher number of asthma triggers report less quality of life. Asthma trigger identification is a complex task. It requires perception of asthma symptoms, perception of potential asthma triggers, and perception of a contingency or causal relationship between potential asthma triggers and symptoms.

In our study, it was found that allergens were the most common trigger in males, whereas, in female patients, the psychological factors are the most common trigger which produces asthma exacerbations. It was also found that in the age group of 18-35, the most common trigger was allergens, whereas, in the age group of 56-75, psychological factors acts as the most common trigger. In the allergic subscale, feathers from birds, house dust and hay dust accounted for the most relevant individual trigger. The most relevant individual trigger in food was chicken and in exercise over exertion is the most relevant trigger. Smoking, smell of paints and some odors were also reported by most of the patients as a most relevant individual trigger in the subscale air pollution or irritants. In the psychological factor subscale, feeling alone, arguments and worries were equally reported by patients as their most relevant individual trigger.

The health related quality of life (HRQOL) in asthma patients was assessed using St. George's Respiratory Questionnaire for asthma (SGRQ). From this symptom, activity and impact score was determined to determine the overall quality of life (QOL). The mean symptom score was found to be to be 82.6 with standard deviation of 10.2, mean activity score was found to be 64.1 with standard deviation of 10.8 and mean impact score was found to be 64.5 with standard deviation of 8.9. The mean overall quality of life score was found to be 67.3

with standard deviation of 7.2. Here the patients had shown a poor to moderate health related quality of life.

The overall scores obtained by patients before counseling were too low that signifies their lack of knowledge, attitude and practice about asthma. The mean values of knowledge, attitude and practice scores before counseling were found to be 1.6, 3.5 and 1.6 respectively. Similarly, these values after post counseling were 4.2, 8.5 and 4.2. The mean differences in knowledge, attitude and practice before and after counseling were 2.6, 5.0 and 2.5 respectively which are significant at 0.01 level. Patient education and counseling was provided after questionnaire session and the KAP was reassessed during follow up visit. Apart from verbal messages, a patient information leaflet in the local language (Malayalam) was provided to patients

Asthma is one of the diseases with large number of people affected around the world, even in India. Patient counseling is one of the most important aspects in developing patient's knowledge about disease, management, precautions and improving overall quality of life. Our study even revealed that majority of patients had lack of knowledge about disease, precautions and management before counseling. After counseling, the knowledge, attitude and practice of patients were assessed based on KAP questionnaire and the result showed significant improvement in knowledge, attitude and practice of asthma patients regarding disease, risk factors, management precautions.

CONCLUSION

In the view of current health scenario, the triggering factors, quality of life and impact of patient counseling in asthma patients was assessed by the present study. Based on this, the information about the major triggers in males and females, status of quality of life in asthma patients and changes in knowledge, attitude and practice in patients after an effective patient counseling was collected. The present analysis revealed that most of the patients with asthma had shown moderate quality of life. Also, there is a positive correlation between age and quality of life was identified.

Accurate information of asthma triggers often is a prerequisite for adequate asthma management. However, so, for, research on the identification of asthma triggers has not received sufficient attention. From this study, it was able to identify the most relevant individual triggers and compared the distribution of different triggers among males and females.

The study subjects' initial knowledge, attitude and practice on asthma were low. The baseline KAP result suggested that patients had a poor perception of their disease. Patient education improved the KAP of the patients and they were able to answer satisfactorily the

same questions that were posed during baseline. The results showed a significant improvement after counseling. From this it was clear that patient education found to have significant influence on improvement in the knowledge, attitude and practice of asthma towards its management. The concept of patient education is well established in developed countries, but yet to be initiated in developing country like India. Provision of patient education by the clinical pharmacist was well received and encouraged by the patients and medical fraternity. Thus, patient education may help in reducing the mortality and morbidity from asthma. For future research, the study should be done in a large sample and for long duration of period as a multicentre study.

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