Asian Journal of Scientific Research

ISSN 1992-1454

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OPEN ACCESS Asian Journal of Scientific Research

ISSN 1992-1454
DOI: 10.3923/ajsr.2020.126.131

Research Article
Evaluation of Pharmaceutical Care Services Provided to South Indian Asthma Patients in a Tertiary Care Hospital

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Abstract

Background and Objective: Treatment guidelines for asthma emphasize the importance of patient education to asthma patients. However, in most of the developing countries, including India, provision of clinical pharmacy services by pharmacists to patients are still in the budding stage. The present study aimed to educate asthma patients and to assess the impact of pharmacists provided patient education on their knowledge, attitude, practice (KAP), health related quality of life and medication adherence. **Materials and Methods:** Patients were educated using the global initiative for asthma (GINA) recommended pocket guide. Impact of patient education was measured by comparing baseline and end visit KAP score, Saint George Respiratory Questionnaire (SGRQ) score and patient medication adherence. **Results:** A total of 68 patients were educated. A significant ($p<0.05$) improvement of KAP score was observed with respect to baseline characteristics. A significant improvement ($p<0.0001$) in all the domains of the SGRQ score was observed from day 60 onwards. No statistically significant ($p<0.05$) changes were noted in the association between KAP score and baseline characteristics. Medication adherence to treatment was found to be 90-100%. **Conclusion:** Pharmacist provided patient education significantly improved patient's KAP, HRQoL and medication adherence.

Key words: Medication adherence, Saint George Respiratory Questionnaire, patient counseling, global initiative for asthma, KAP

Citation: Meeran Sahina Begum, Santhosh Kumar Sanchana, Elangovan Sandhiya, Mathivanan Koushik Muthu Raja and Muhasaparur Ganesan Rajanandh, 2020. Evaluation of pharmaceutical care services provided to South Indian asthma patients in a tertiary care hospital. Asian J. Sci. Res., 13: 126-131.

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Competing Interest: The authors have declared that no competing interest exists.

Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

In many developing countries, clinical pharmacy services are still in the budding stage, with pharmacists spending a predominant amount of time on distribution and manufacturing activities. In India, pharmacy practice is still in its infancy. The clinical pharmacist's contribution to patient care through education is an approach being advocated to optimize drug therapy and improve the patient's health related quality of life (HRQoL)[1,2].

It is widely believed that, a patient who is educated about his or her health related problem will better adhere to treatment plans and have improved health outcomes. Patients also want information about their own health and management[3-5]. Worldwide, numerous studies have evaluated the impact of patient education in various chronic disease conditions such as asthma, diabetes mellitus, cancer, tuberculosis, etc. Patient education should be an integral part of all interactions between health care professionals and patients[6-9].

World Health Organization (WHO) recognizes asthma as a disease of major public health importance. The WHO joined with the National Heart, Lung and Blood Institute (NHLBI) to form Global Initiative for Asthma (GINA) to implement an optimal strategy for asthma management and prevention. GINA guidelines for asthma emphasize the importance of patient education to asthmatics[10]. An education program to improve the awareness of critical diseases like asthma among the affected community would certainly make changes in the disease management.

Knowledge, attitude and practice (KAP) assessment is one of the integral components of patient assessment of their actual knowledge of a given subject, attitude toward the established norms in their disease and the actual practice. This assessment not only helps the healthcare provider to evaluate the quality of an education program but also, in general, will quantitatively assess the impact of such programs with KAP scores. KAP assessment was accepted by many researchers in studying the impact of educational intervention. With this background, the present study is aimed to provide patient education to asthmatic patients and to evaluate the impact of patient education by measuring their KAP, HRQoL and treatment compliance of the study patients. This present study advance in the knowledge of product oriented work of pharmacists to patient oriented services.

MATERIALS AND METHODS

Study design and settings: A prospective, interventional study was conducted for a period of 8 months from July, 2018 to February, 2019 at the Department of Pulmonary Medicine, Sri Ramachandra Medical College Hospital, Sri Ramachandra Institute of Higher Education and Research, Porur, 600 116 Chennai, Tamil Nadu, India. Institutional Human Ethics Committee approval was obtained prior to the commencement of the study (CSP/17/AUG/60/225). Written informed consent was obtained from all the study patients.

Study procedure and tools: Patients in the study were educated using a patient education material recommended by the GINA. Patients were educated either in one-to-one or group counseling method. One to one counseling was given when the patients visited the study site. In group counseling method, patients were called on a particular day, apart from their scheduled study visits and were taught by the study team members. The impact of education was assessed by comparing the baseline and end visit KAP, HRQoL and patient adherence to the medications. A validated KAP[11], HRQoL[12] and patient adherence[13] questionnaire was used after obtaining permission from the developers. Scoring and data interpretation was also carried out according to the developers' guidelines. KAP and adherence questionnaire was administered at the baseline (day 0) and end visit (day 90) while, HRQoL was administered on day 0, 30, 60 and 90.

Statistical analysis: Data were expressed as mean (standard deviation), $p<0.05$ was considered statistically significant. Kruskal-Wallis one-way analysis of variance was used to compare the baseline, final follow-up knowledge, attitude and practice (KAP) scores and association across the baseline characteristics.

RESULTS

A total of 68 patients completed the study. Baseline characteristics such as age, gender, age at asthma onset, duration of asthma, smoking history and education status are listed in Table 1. The mean (SD) age of patients in the study was 38.37±14.87 years with almost equal gender distribution. Most of the patients were nonsmokers (72.05%) and educated. All the patients were graded from mild to moderate persistent in severity. Most of the patients were upper lower class of socioeconomic status (Table 2).

Table 1: Demographic data of study population

Variables	Number of patients (%)
Age (years)	
Mean±SD	38.37±14.87
Male	37 (55.41)
Female	31 (45.58)
Age at asthma onset in years (Mean±SD)	31.42±8.96
Duration of asthma in years (Mean±SD)	6.64±6.67
Smoking history	
Smoker	13 (19.18)
Past smoker	6 (8.82)
Passive smoker	-
Non smoker	49 (72.05)
Educational status	
Professional degree	2 (2.9)
Graduate/postgraduate	3 (4.4)
Intermediate/diploma	2 (2.9)
High school	19 (27.9)
Middle school	24 (35.3)
Primary school	12 (17.6)
Illiterate	6 (8.8)
Severity level	
Mild persistent	17 (25.00)
Moderate persistent	51 (75.00)

Table 2: Socioeconomic classes of study population

Variables	Number of patients	Percentage
Occupation		
Profession	1	1.5
Semi profession	2	2.9
Clerical, shopkeeper, farmer	12	17.6
Skilled worker	10	14.7
Semi-skilled worker	7	10.3
Unskilled	8	11.8
Unemployed	28	41.2
Monthly income (Rs.)		
≥32050	-	-
16020-32049	-	-
12020-16019	13	19.1
8010-12019	8	11.8
4810-8009	28	41.2
1601-4809	12	17.6
≤1600	07	10.3
Socioeconomic class		
Upper	-	-
Upper middle	8	11.8
Lower middle	21	30.9
Upper lower	36	52.9
Lower	3	4.4

Table 3: Visit wise changes in SGRQ scores

Day	Symptom score	Activity score	Impact score
Baseline	74.37 (8.79)	72.15 (6.69)	74.63 (8.17)
First follow up	52.80 (11.0)***	68.89 (9.78)	70.21 (8.56)
Second follow up	47.86 (8.79)***	66.80 (9.01)*	68.63 (8.44)**
End visit	42.11 (8.52)***	62.90 (9.05)***	64.64 (8.85)***

*p<0.01, **p<0.001, ***p<0.0001

Table 3 portrayed the overall SGRQ score. It was found that baseline, no statistically significant (p>0.05) difference exists between any of the HRQoL domains. A significant improvement (p<0.0001) in symptom score was observed from day 30. Statistically significant improvement was observed in all the domains of the SGRQ score from day 60 onwards.

The following subjects were dealt in educating the patients, i.e., nature of asthma disease, causative factors and preventive measures of asthmatic attacks, needed lifestyle changes for asthmatic person, medications usage and how to get help in case of emergencies. The assessments of KAP results given in Table 4 showed that patient education resulted in better improvements in knowledge, attitude and practice of patients when compared to baseline values.

No statistically significant (p<0.05) changes were noted in the association between KAP score and baseline characteristics. Most of the patients completed their scheduled clinic visits. Adherence to treatment was evaluated on the basis of adherence assessment form and it ranged from 90-100%.

DISCUSSION

In the present study, patients had a low level of knowledge, poor attitude and practice towards their disease and management respectively, at the baseline. Available literatures state that educating the patients on the knowledge of their disease condition, signs, symptoms, pulmonary functions, existing therapy and the importance of medication adherence have enhanced their treatment outcome and therefore patient education should be an integral part of a patient care[13,14]. In the present study, after patient education i.e., at the end visit, knowledge, attitude and practice of the patients increased. Thus, it becomes evident that pharmacist-led, patient education has great impact on the knowledge, attitude and practice of patients.

Asthma may limit the normal day-to-day activities of a patient, including their physical, social, emotional and professional lives and thereby it leads to substantial negative impact on their QoL. Such problems can be well managed by the patients, if they are well educated about their disease condition. Studies carried out in this area concluded that QoL of asthma patients can be dramatically reversed through patient education, especially by a clinical pharmacist[15-18].

In a study carried out by Yang *et al.*[19] reported that patient education significantly increased the knowledge, quality of life and other clinical outcome in asthma patients. Similar findings were observed in Rajanandh *et al.*[11], Yang *et al.*[19] and Boulet *et al.*[20]. In contradictory, Yamaoka *et al.*[21] concluded that asthma education program in a hospital outpatient setting had increased only the

Table 4: Results of knowledge, attitude, practice assessment

Domains	Percentage		
	Baseline	End visit	Change
Knowledge domain			
Can you name the disease you are suffering?	59	90	31
What are the symptoms of your disease?	42	89	47
Can you name which part of the body is affected?	28	93	65
Rescue medicines	19	89	70
Do you know the causative/worsening factors of your disease?	23	94	71
Attitude domain			
Can your disease be cured or controlled?	23	98	75
Can you adjust the dose of the medications, according to your symptoms/cost?	30	96	66
Is your disease contagious?	55	90	35
For your disease condition, can you do breathing exercises	50	96	46
Is your disease fatal?	60	98	38
Practice domain			
If you are prescribed with medicines for one month	47	92	45
Do you take medicine at the exact time as prescribed	64	80	16
Can you go for doubling the dose if a dose is missed	36	96	60
Will you avoid taking ice cold drinks or cold foods	31	93	62
If you are not having asthma symptoms	46	96	50

patient's knowledge of asthma, but not on their self-management skills or attitudes and beliefs about asthma. This could be because of the reason that the patients on their study were educated only at the beginning and not on the regular follow-up visits.

A limited patient education program or patient education at a single visit may not be sufficient to achieve the permanent improvements. A similar study carried out by Abdulwadud *et al.*[22] suggested that it is necessary to provide patient education on a regular and on-going basis to achieve permanent improvements.

In the present study, the authors observed that many patients are reluctant to use either inhaled or oral corticosteroid as controller medications. Patients were more concern about the safety of corticosteroids and it is merely a wrong belief. It is well known that even the most appropriate treatment strategy will fail if the patient has an uncooperative attitude. In the present study, patients were not only taught with the validated educational material but also counseled and corrected their misconception about the disease or medications. Patients were educated about the importance of corticosteroid as controller in the management of asthma.

In the usual practice, patients receive a general counseling from the physicians or their assistants. In the present study, special education was given to all the patients using a patient education material recommended by the GINA, which is available as 'patient guide' in the GINA website[10].

GINA has translated the english material into the local language of Tamil. In the present study, patients were eager to learn the material in their local language with pictorial representation. Also, the authors observed that patient education improved the KAP, HRQoL and medication adherence. Findings of the present study is similar to other studies carried out in India, where pharmacists mediated patient education had improved patients' KAP, HRQoL and medication adherence[23-25]. Future studies can be carried out to prove the effectiveness of either one-to-one or small group counseling session in improving the KAP or QoL of the patients.

CONCLUSION

Pharmacists play a vital role in the management of chronic disorders such as asthma, by providing pharmaceutical care. Patient education by the clinical pharmacist was well received by the asthma patients. Present study demonstrated the positive influence of patient education on knowledge, attitude, practice and medication adherence.

ACKNOWLEDGMENT

Rajanandh MG would like to express his great attitude Dr. P.W. Jones, PhD, FRCP, Professor of Respiratory Medicine, St. George's University of London for open-handed permission to use SGRQ at free of cost.

SIGNIFICANCE STATEMENT

This study discovered the importance of providing pharmaceutical care for asthma patients that can be beneficial for pharmacists to make the service of pharmaceutical care as a routine standard care treatment. This study will help the researchers to uncover the critical areas of patient education on medication adherence and health related quality of life that many researchers were not able to explore. Thus a new theory on pharmaceutical care may be arrived at.

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