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Research Article

ASSESSMENT OF MEDICATION ADHERENCE AND FACTORS AFFECTING TO MEDIACTION ADHERENCE IN ASTHMA PATIENTS BY CLINICAL PHARMACIST

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ABSTRACT
Asthma is a major public health problem affecting a large number of individuals of all ages. The effectiveness of medications depends not only on the efficacy and appropriateness of the drugs used, but also on patient adherence to the intended regimen. Adherence with medication regimens is essential for attaining maximal therapeutic benefits. The main objective of the study was to assess the medication adherence and to identify the reasons for non-adherence to prescribed therapy. The medication adherence was assessed by using Morisky Medication Adherence Assessment questionnaires. Assessment of patient's adherence from baseline to first follow up showed a mean increase in medication adherence level of 2.735 ± 0.1762 and $P < 0.0001$ which is statistically significant. Assessment of patient's adherence from baselines to second follow up shows a mean increase of 3.211 ± 0.172 and $P < 0.0001$ which is statistically significant. The study concludes that pharmacist provided patient counseling found to have significant influence on improvement in the patient's adherence to prescribed therapy.
Key Words: Adherence, Medication, Assessment, Prescribed therapy.

INTRODUCTION

Asthma is a major public health problem affecting a large number of individuals of all ages. Throughout the world approximately 300 million people are suffering from asthma. In India it is estimated that more than 15 million peoples were affected by Asthma. The overall prevalence of diagnosis of asthma is at 2.38 percent. Asthma accounts for 0.5% of national burden of disease with 0.2 % of death. [1,2]

Missing doses is a natural behaviour – every patient misses doses once in a while usually without important clinical consequences - but it may become pernicious if it is frequent enough to impact negatively on therapeutic outcomes.[3] Poor adherence to treatment and medical advice is well-known to clinicians and has been widely reported.[4] According to a World Health Organization report, 50% of patients from developed countries with chronic diseases do not use their medications as recommended. In asthma, adherence rates are particularly problematic, generally ranging from 30% to 70%.[5]

Adherence to a medication regimen is generally defined as the extent to which patients take medications as prescribed by their health care providers.[6] Adherence to therapy is a challenge not only for patients, but also for health practitioners and researchers. Despite efforts to educate patients and provide interventions to address factors contributing to non-adherence and non persistence to therapy remain high, both across different populations and disease states. A lack of consensus about the use and definitions of adherence, the absence of a gold standard to measure adherence and the use of, primarily, self-report methods also introduce a bias in the results and further complicate adherence research and the assessment of interventions provided.[7]

There are two types of non adherence:

1. **Unintentional non adherence** results from practical barriers to adherence, such as:
   - misunderstanding the prescribing instructions;
   - language barriers; and
   - frequently and understandably, forgetfulness.

2. **Intentional non adherence** results from the patient's decision not to take the medication as prescribed, i.e., to take less or none or to take it differently than prescribed, such as:
   - patients may doubt the necessity of taking a daily medication for a condition that they experience episodically, while
   - they may have concerns about potential adverse effects of inhaled steroids.[8]

Poor adherence has been shown to decrease the effects of prescribed medications or other treatments and to increase the likelihood of poor outcomes.[9] The effectiveness of medications depends not only on the efficacy and appropriateness of the drugs used, but also on patient adherence to the intended regimen. Adherence with medication regimens is essential for attaining maximal therapeutic benefits.[10] Multiple studies have shown that medication adherence decreases as the number of medications prescribed, the dosing frequency, and the duration of treatment increase.[11]

Non-adherence may be in form of not fulfilling prescriptions, omission of doses, incorrect medication, incorrect dosages or schedules, premature discontinuation of drugs, not following advice to avoid allergens and suboptimal inhalation technique.[12] Peoples with asthma can lead a normal and healthy life, and one major step in insuring this is the adherence to their prescribed therapy.[13] Pharmacists may be able to enhance patients' adherence and outcomes by engaging in pharmaceutical care activities (eg, monitoring symptoms, providing medication counselling, and helping resolve drug-related problems, facilitating communication with physicians).[14]

The purpose of present study was to assess the medication adherence and identify the factors that can influence patient adherence with prescribed medication.

OBJECTIVE

1. To assess the medication adherence of the Asthma patient.
2. To identify the reasons for non-adherence to prescribed therapy.

METHODOLOGY

Study Site

The study was carried out at Department of Medicine, H.K.E.S's Basaveshwar Teaching and General Hospital, Gulbarga, which is a 765 bedded tertiary care hospital.

Study design

A hospital based prospective study.

Study duration

The study was carried out for a period of 9 months, from June 2010 to February 2011.

Study criteria

The asthma patients visiting Out and In patients Department of Medicine were enrolled in to the study after taking their consent and by considering following inclusion and exclusion criteria.

Inclusion criteria

- Patients with age of above 18 years and of either sex.
- Patients willing to participate in the study.
- Patients taking asthma medicines from at least last 1 year.

Exclusion criteria

- Patients newly diagnosed with asthma.
- Patients not willing to participate in the study.

Source of data

- OPD cards of Outpatients and case sheets of Inpatients.
- Morisky Medication Adherence Assessment Questionnaires.

Study procedure

After obtaining the approval from the ethical committee and from the department of medicine, the study was initiated at medicine department by selecting the patients based on inclusion and exclusion criteria of the study. The patients were briefed about the study and enrolled into the study after obtaining consent from the patient.

Assessment of Medication Adherence

The medication adherence was assessed by using Morisky Medication Adherence Assessment questionnaires.

Baseline assessment: The baseline adherence of the patients was assessed at their first visit and after this the patients were educated regarding the medication adherence by counselling and providing patient information leaflet.

I and II follow up: During I and II Follow up, the adherence was assessed by using Morisky Medication Adherence Assessment questionnaires.

Pattern of scoring: The medication adherence assessment score were given on the basis of number of questions answered correctly i.e. if the patient answered 'NO' it carries 1 score and 'YES' it carries 0 score for the question.

The factors for non adherence identified by patients self reporting method.

Statistical analysis

The data collected was analyzed by the non-parametric Wilcoxon's matched paired test.

RESULTS

A total of 75 asthma patients were enrolled into the study, out of which, 69 patients have completed the study of which 28 (40.6%) were male patients and 41 (59.4%) were female patients. Remaining six patients did not turn up for the follow up. The data of only those patients who completed the study were analyzed.

Demographic data for all patients that participated in the study (n= 69)

Gender	**n = 63**
Male	28
Female	41
Age (years)	
20-39	13
40-59	33
60-79	23
80 and above	0
Education	
University	07
Pre-university	03
School	26
Illiterate	33
Habit of Smoking	
Smoker	12
Non Smoker	57
Family History of Asthma	
Patients having Family History of Asthma	42
Patients not having Family History of Asthma	27
Length of time patient had Asthma (in years)	
1-5	36
6-10	21
11-15	05
16 and above	07

Assessment of medication adherence in asthma patients

All the 69 participants of the study were assessed by Morisky Medication Adherence Assessment questionnaires at the time of enrollment and on subsequent follow up, medication adherence score was evaluated at baseline, first and second follow up.

Morisky Medication Adherence Questionnaires (MMAQ's) Score

Assessment of patient's adherence from baseline to first follow up showed a mean increase in medication adherence level of 2.735 ± 0.1762 and $P < 0.0001$ which is statistically significant.

Assessment of patient's adherence from baselines to second follow up shows a mean increase of 3.211 ± 0.172 and $P < 0.0001$ which is statistically significant.

Comparative Scores of Adherence in Males and Females

Morisky Medication Adherence Questionnaires (MMAQ's) Score in Male (n=28)

Assessment of patient's adherence from baseline to first follow up showed a mean increase in medication adherence score of 2.214 ± 0.302 and $P < 0.0001$ which is statistically significant.

Assessment of patient's adherence from baseline to second follow up shows a mean increase of 2.857 ± 0.2497 and $P < 0.0001$ which is statistically significant.

Medication Adherence Score (MAS) in Female (n=41)

Assessment of patient's adherence from baseline to first follow up showed a mean increase in medication adherence score of 3.073 ± 0.1996 and ($P < 0.0001$) which is statistically significant.

Assessment of patient's adherence from baseline to second follow up shows a mean increase of 3.463 ± 0.1902 and $P < 0.0001$ which is statistically significant.

Factors for medication non-adherence

Among 69 patients, most of the patients gave more than one reason for non-adherence.

Table 1: Medication Adherence Score (MAS) (n=69): Score (0-5)

a) Adherence score of patients from baseline to first follow up

Average Baseline	Average I Follow up	Mean ± SD	P- Value
1.449	4.174	2.735 ± 0.1762	P<0.0001

b) Adherence score of patients from baseline to second follow up

Average Baseline	Average II Follow up	Mean ± SD	P- Value
1.449	4.667	3.211 ± 0.172	P<0.0001

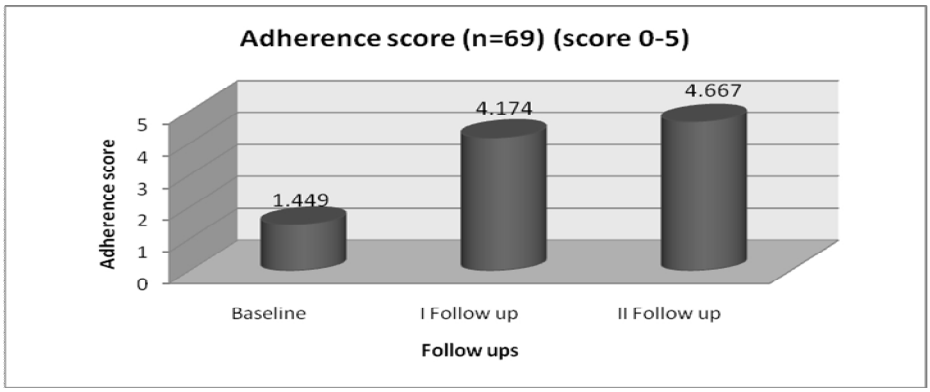


Figure 1: Medication adherence Score (MAS) (n=69): Score (0-5)

Table 2: Medication Adherence Score (MAS) (Male n=28 Female n=41): Score (0-5)

a) Adherence score of patients from baseline to first follow up

Gender	Average Baseline	Average I Follow up	Mean ± SD	P-Value
Male	1.85(36%)	4.0(80%)	2.214 ± 0.302	P<0.0001
Female	1.2(24%)	4.244(84%)	3.073±0.1996	P<0.0001

b) Adherence score of patients from baseline to second follow up

Gender	Average Baseline	Average II Follow up	Mean ± SD	P-Value
Male	1.85(36%)	4.3(86%)	857 2.± 0.2497	P<0.0001
Female	1.2(24%)	4.6(92%)	3.463±0.1902	P<0.0001

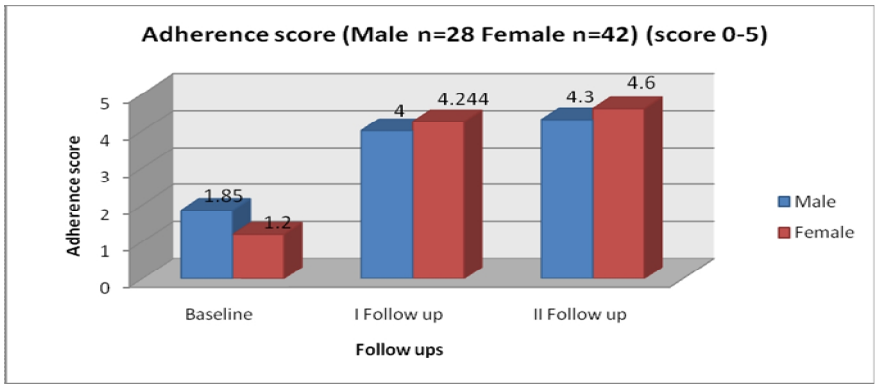


Figure 2: Medication Adherence Score (MAS) (Male n= 28 Female n=41): Score 0-5

Table 3: Factors for medication non-adherence

Sr. no	Factors for non-adherence	No of patients reported
1	Treatment considered unnecessary, ineffective or dangerous.	7 (10.14%)
2	Lack of immediate effect after taking inhaled steroids.	3 (4.34%)
3	Poor understanding of the treatment regimen.	13 (18.84%)
4	Poor inhaler technique / Trouble operating dispensers (inhalers).	30 (43.5%)
5	Economic restriction on access to health care and drugs.	4 (5.8%)
6	Forget to take/Occupation related problems.	21 (30.4%)
7	High cost of medications.	8 (11.6%)
8	Lack of family support/Motivation.	9 (13.04%)
9	Difficulty to get medicines nearby pharmacy.	8 (11.6%)
10	Fear about side effect of the drug.	9 (13.04%)

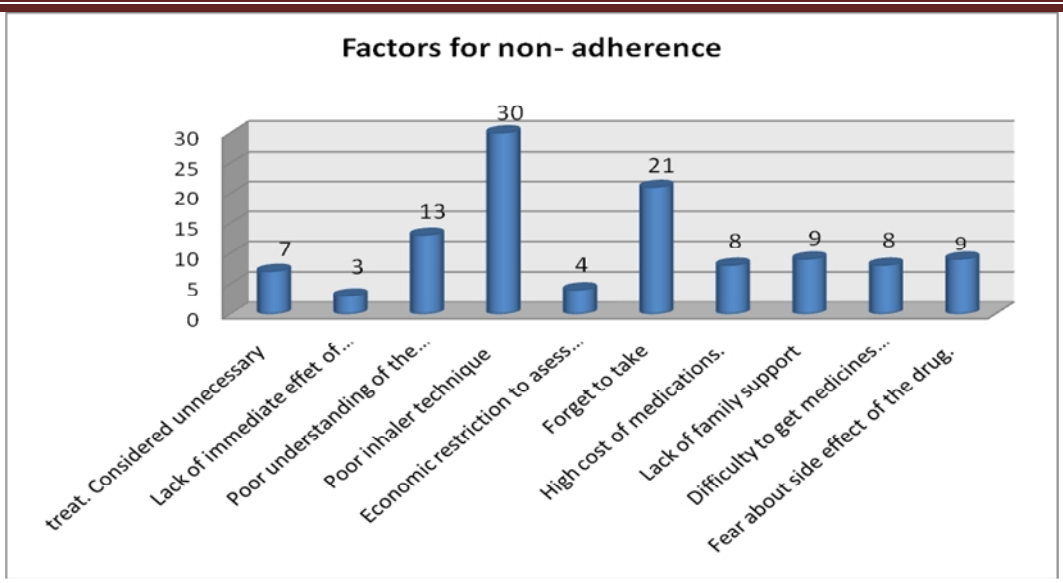


Figure 3: Number of patients reported factors for medication non-adherence.

DISCUSSION

The study results shows counselling session conducted by clinical pharmacist were able to produce a statistically significant improvement in adherence of the patient towards prescribed medication. Similar study, carried out by Mehuys E et al[15]. found that pharmacist intervention substantially improved both the inhalation technique and medication adherence. Levy et al.[16] reported that an intervention involving asthma education from hospital-based specialist asthma nurses improved adherence and clinical outcomes in asthmatic patients.

Comparison of medication adherence among gender

Both genders showed statistically significant improvement in medication adherence from baseline assessment to I & II follow ups.

The results of medication adherence assessment suggest that patients at the baseline possess poor medication adherence and this may be due to various reasons.

During the time of baseline assessment we asked the reasons to stop/miss medications to the patients. Following were the reasons pointed out by patients:

Out of 69 Asthma patients, **8 (11.6%)** patients were reported that high cost of the medication was one of the reasons for medication non-adherence. As Inhalers and Rotahalers are very costly and majority of the patients enrolled were from middle class family and from low socio-economic groups. So they couldn't afford the cost of medications.

Another reason for non-adherence was forgetfulness **21 (30.4%).** This problem can resolve by using the tools like medication reminder or diary keeping.

Out of 69 Asthma patients, **13 (18.84%)** patients stopped their medication because of poor understanding of the treatment regimen. This may be due to poor medication knowledge and poor understanding of physician advice. Clinical pharmacist can be an effective tool to counsel and educate the patient regarding use of medication.

The **30 (43.5%)** patients using Inhalers and Rotahalers reported reason for non-adherence i.e poor inhaler technique / Trouble operating dispensers (inhalers)**.** Clinical pharmacist can resolve this problem by educating the patients about inhaler techniques.

Out of 69 Asthma patients, **9 (13.04%)** patients were stopped their medication due to lack of family support or motivation. This may be due to poverty, poor knowledge and attitude of family and society towards the disease. Clinical pharmacist can be an effective tool to counsel the family regarding the disease which will change their attitudes towards it.

Out of 69 Asthma patients, **9 (13.04%)** patients were reported that fear of side effect of medications was the problem to discontinue their therapy. This problem can be solved by counselling the patients regarding side effects of each drug and rescue action to be taken when it happens.

Out of 69 Asthma patients, **7 (10.14%)** patients thought that, their medication was not acting, treatment was unnecessary, ineffective or dangerous and hence they stopped the medications. This may be due to progression of disease and inappropriate therapy. Here clinical pharmacist can resolve this problem by consulting physician.

Out of 69 Asthma patients, **8 (11.6%)** patients were reported that, they stopped the medication because they are not getting prescribed medication at their nearby pharmacy. Clinical pharmacist can solve this problem by advising the patient to take the prescribed medication at once.

The study concludes that pharmacist provided patient counseling found to have significant influence on improvement in the patient's adherence to prescribed therapy. The pharmacist provided patient counseling helps to improve inhaler techniques and understanding of their treatment regimen.

Further the study suggests that, the pharmacist intervention is essential in the management of chronic diseases. Pharmacist provided patient counseling helps in improving medication adherence and which will improve the therapeutic outcome of the patient.

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