



## AEROSOL THERAPY COMPLIANCE IN PATIENTS WITH BRONCHIAL ASTHMA – A REAL WORLD STUDY

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### ABSTRACT

**Objective:** To study the compliance of aerosol therapy and reasons for non-compliance

**Design:** One-year long descriptive longitudinal study. Study period was 1<sup>st</sup> March 2018 to 28<sup>th</sup> February 2019

**Methods:** Compliance of aerosol therapy in 100 bronchial asthma patients was studied by a questionnaire and interviewing. The patients were asked to maintain a diary regarding the use of aerosol therapy and were reviewed at the end of every month for three consecutive months.

**Results:** Our study showed regular compliance in only 33 patients (33%). Thus the defaults rate is 67%. Majority of the defaulters are in age group of 31 to 40 years and 41 to 50 years. A total of 22 patients (22%) missed 11-20 doses over a period of three consecutive months while 13 patients (13%) missed more than 30 doses during 3 months of observations.

**Conclusion:** Our study showed the reasons for non-compliance include low education status, low economic status, side effects, awkward regimes, and difficulties with inhaler devices, negligence, distant pharmacies and symptomatic improvement. During the study, various strategies were employed to improve the compliance of the patients like verbal praise, inter active communication skills and answering patient's families' worries. After patient's education, the compliance increased in 23 patients, while 44 patients were non-compliant even after education.

**KEYWORDS :** Bronchial asthma, compliance, aerosol therapy, patient education.

### INTRODUCTION:

Bronchial Asthma is a chronic condition, as it requires continuous medical care. India has as estimated 15-20 millions asthmatics, with 10% and 15% in 5-11 years in children. Asthma is a major public health problem affecting a lot of individuals of all ages.

Poor asthma control is responsible for a large proportion of the total cost of the disease and both direct and indirect costs would decrease if control were improved. Poor compliance also leads to increased morbidity and mortality.

We studied the factors that influence patient's compliance with prescribed medication and to elucidate important aspects in the care of patients from their point of view. An attempt was made to elucidate the various reasons for non-compliance and strategies to improve compliance.

### AIMS & OBJECTIVES OF THE STUDY:

- To study the compliance of aerosol therapy in asthmatics.
- To know the factors contributing to non-compliance.

### Inclusion criteria:

Children above 2 years of age, and adults diagnosed with bronchial asthma for more than 1 year duration and patients receiving aerosol therapy for over 6 months.

### Exclusion criteria:

Acute severe asthma  
Chronic obstructive pulmonary disease  
Cardiac asthma  
People on any other medication other than allopathic drugs.

### METHODOLOGY:

All the patients with the confirmed diagnosis of bronchial asthma attending the Respiratory medicine OPD of Alluri Sitaramaraju Academy of Medical Sciences, Eluru were examined. The study was conducted from 1<sup>st</sup> March 2018 to 28<sup>th</sup> February 2019 for a total duration of one year.

A total of 100 patients were studied. A detailed history, physical examination, spirometry were done and recorded in a proforma. Once included in the study, patient's follow up was done for one to three months. Percentage compliance on aerosol therapy was calculated. The variables of interest are expressed in unit time (days). In the study a compliant day is defined as one in which the prescribed number of puffs were taken in each day as prescribed

### RESULTS:

Majority of the patients (39%) were in the age group of 21-40 years. Children constituted only 5% of the study group, while 17% of patients were from adolescent age group. Six patients (6%) had asthma who were more than 70 years. There were (59%) male patients and 41 (41%) female patients thus giving male: female ratio of 1: 4: 1

Only 18 patients (18%) had side effects due to aerosol therapy in the present study. The main side effects tingling/numbness in the extremities and loss of taste.

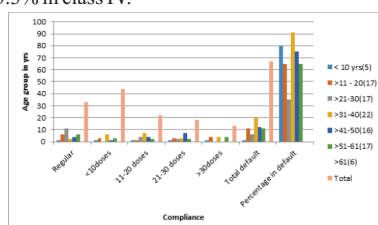
More than two-third of patients (80%) were using dry powder inhalers (DPI) in the present study. Only 20 patients (20%) were using metered dose inhalers (MDI) while 6 patients (6%) used combination of the drugs.

Our study showed regular compliance in only 33 patients (33%). Thus the defaults rate is 67%. Majority of the defaulters are in age group of 31 to 40 years and 41 to 50 years.

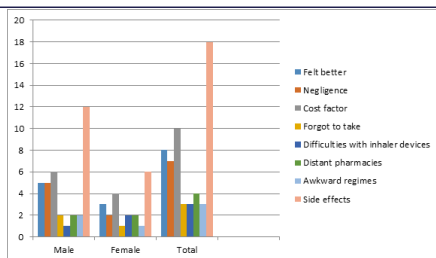
A total of 22 patients (22%) missed 11-20 doses over a period of three consecutive months while 13 patients (13%) missed more than 30 doses during 3 months of observations.

All the patients with postgraduate degree were regular in therapy. And all the illiterate patients (10) defaulted to the therapy. The rate of compliance decreased as the level of literacy decreased. 60% of patients with secondary level of education defaulted while the default rate was 71.4% in patients with primary level of education.

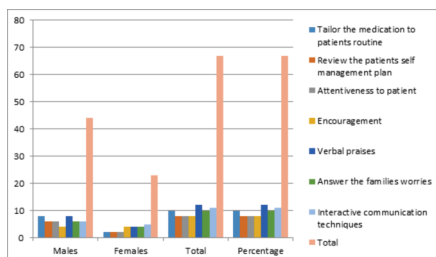
As the socioeconomic status of the patients decreased from class I to class V according to B.G.Prasad classification system, the level of compliance with aerosol therapy also decreased. In class I, the compliance level was 71.4% while all the patients in class V defaulted to the therapy. In class III, the default rate was 73.9% and it reduced further to 83.3% in class IV.



Graph - 1: Compliance with aerosol therapy



Graph 2: Cause of defaults



Graph 3: Strategy to improve patient's compliance

## DISCUSSION:

This study was conducted to know the percentage of compliance with aerosol therapy in bronchial asthma patients and reasons for non-compliance. An effort was also made to improve the patient compliance via the patient education program.

In the present study out of 100 patients, only 33 patients (33%) were regular to aerosol therapy and did not miss a single dose and while the remaining 67 patients (67%) were non-compliant to aerosol therapy and this was statistically highly significant. While the 67 patients who had defaulted, 14 patients had missed less than 10 doses in three months (21%), 23 patients had missed 11-20 doses in three months (34%), another 17 patients had missed 21-30 doses in three months (25%) while 13 patients had missed more than 30 doses in three months (19%).

## Sex Prevalence:

There were 59 male and 41 female in the present study with male: female ratio of 1.4:1. Among male patients, regular compliance was observed in 19 patients only (32.2%) while it was almost similar among female patients also (14/41) (34.1%). Higher number of male patients missed more than 20 doses over duration of 3 months (56.6%) as compared to female patients (43.3%).

In another study<sup>1</sup> it was observed higher prevalence of asthma in female patients as compared to males. Females with current asthma, reported adult onset of asthma more often, and males reported childhood onset more often. Sex differences were identified for the asthma-control characteristics. Females presented higher asthma risk and poorer asthma profiles than males.

## Educational Status:

There were 4 patients with higher education (post graduation) and all this patients had regular compliance with the therapy. Patients having graduation degree (9 patients) also had complete regular therapy with the medications. They did not default a single time. Patients having secondary education had a default rate of 60%, patients having primary education had a high default rate of 71.4% while illiterate patients had a higher default rate 100%.

Educational programs for asthmatics can improve the knowledge of the disease and self evaluation of symptoms. Proper training tools can increase significantly asthma knowledge, treatment compliance and patient self-management<sup>2</sup>.

## Economic Status:

In the present study out of 33 patients who were on regular compliance 7 patients belong to class I, out of which 5 were on regular compliance (71.4%), and 2 patients were non-complaint. The default rate was 53.3% in class II, 73.9% in class III 83.3% in class IV and it was 100% in class V category of the patients.

## Reasons for Non Compliance:

The aim of patient education is to provide the patient and their family

with suitable information and training so that the patient can keep well and adjust according to a planned medication.

The factors involved in non-compliance in the present study are multifactorial. The most common reasons for the higher default rates were side effects to the medications (18%), higher cost of the therapy (10%), feeling of well-being on therapy (8%) and negligence on the part of the patients (7%). Other causes for non-compliance are drug factors, which includes difficulties with inhaler devices, awkward regimes (e.g., four times daily or multiple drugs), dislike of medication and distant pharmacies. Non-Drug factors include fears about side effects, anger about condition or its treatment, forgetfulness or complacency and attitudes toward ill health.

Recently, a study<sup>3</sup> observed sub optimal adherence for inhalation therapy to be 63% in patients with COPD. Adherent patients had greater understanding about their illness and management options. Satisfaction and faith in the treating physicians were found to be low among the less adherent group compared to highly adherent group. During early consultation patients need information about the diagnosis, types of treatments available and about the rationale for the specific therapeutic interventions being recommended. For example, different inhaler devices should be demonstrated, and patients should take part in a decision as to which is most suitable for them.

In the present study strategies to improve patients compliance was undertaken like tailoring the medications to patients routine (10%), review the patients self-management plan (8%), patients were given special attention and encouragement (8%+8%), they were praised for their inhaler techniques (12%), some of the patients family worries were answered (10%) and there was interactive communications techniques (11%). This was organized for the noncompliant patient with the help of a psychologist.

After employing the various strategies of patient's education, the compliance increased in 23 patients (34.3%). While the remaining 44 patients (65.7%) were found to be noncompliant even after various educational techniques. The improvement in the compliance was observed to be better in female patients (48.1%) as compared to male patients (25%).

Patients should be given adequate opportunity to express their expectation of both the asthma and its treatment. It is reasonable for most patients to expect freedom from symptoms day and night, no restriction on activities, including sports and best possible lung function (e.g., peak expiratory flow). In a study conducted in Sweden on compliance with medications in asthma patients the important factors that resulted in noncompliance were age gender duration of the disease and patients view on asthma<sup>4</sup>.

## CONCLUSION:

The percentage of regular compliance on aerosol therapy in bronchial asthma is 33%, which is significantly low and the percentage of non-compliance of aerosol therapy in bronchial asthma is 67% and is statistically highly significant.

Some patients had a poor follow-up and missed the doses, as they felt better. Regular compliance is an important aspect in the management and control of bronchial asthma, so patients should be advised to take regular and long-term aerosol therapy for reducing the acute attacks of asthma and maintaining the disease state. Thus it may influence the long-term prognosis by reducing the attacks of asthma.

The best predictor of compliance is patient's attitude toward the treatment. Patients who have faith in the physician and the prescribed method of treatment are more likely to remain adherent. The same is true of the parents of children with asthma. In a study<sup>5</sup> they observed that parents who had an unfavorable attitude towards the use of inhaled therapy were less likely to administer their child's treatment according to physician guidelines. To ensure better compliance, patients must believe that by following a prescribed regimen, the severity of their condition will be reduced.

## REFERENCES:

1. Rhodes L, Moorman JE, Redd SC. Sex differences in asthma prevalence and other diseases characteristics in eight states. *J. Asthma* 2005 Nov;42(9):772-82.

2. Cegala DJ, Marinelli T, Post D. The effects of patient communication skills training on compliance. *Arch Fam Med* 2000; 9:57-64.
3. Johnson G, et al. Factors associated with medication nonadherence in patients with COPD. *Chest* 2005; 128: 3198 – 3204.
4. Malou L, Tommy E, Margareta M, Johan A. Asthma care and factors affecting medication compliance: *Int J QH care* 2001; vol 13, 5:375-383.
5. Rieker KA, Butz AM, Eggleston PA, et al. Caregiver-physician medication concordance and undertreatment of asthma among inner-city children. *Pediatrics* 2003; 111:214-220.