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Reasons for Non-Compliance to Inhaled Medications among Adult Asthma Patients Attending Referral Chest Hospital in North India

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Abstract:

Introduction: *Asthma is a major public health problem affecting a large number of individuals of all ages, characterized bychronic airway inflammation and inhaled medications are main stay of treatment but compliance to these medications is poor.* ***Aim:*** *This study was conducted to look for common reasons for non-compliance to inhaled medications (MDI and DPI) in asthmapatients attending out-patient department of a referral chest hospital.* ***Material and methods:*** *The study was conducted on 150diagnosed asthma patients on follow based on an open labeled questionnaire in a hospital from North India.* ***Results:*** *Overallcompliance of the patients to inhaled medications (MDI and DPI) was only 34.6% (52 /150 patients) and 65.4 % (98 out of 150) were found to be noncompliant. Among reason for non-compliance, belief that medications were not needed during symptom freeperiod was found in 43.8% (43/98), followed by feeling that they may become dependent/ develop addiction if used for long timein 32.6% (32/98) and social embarrassment in using inhalers found in 14.2%(14/98). All other reasons accounted for onlyaround 9% of non-compliance.* ***Conclusion:*** *The data indicates that despite strict instructions for adherence to medicationcompliance rate was poor, although majority of the patients believed that compliance was extremely important. This studysuggests that besides continued health education new health care initiatives are needed to be designed to improve the complianceof asthma patient for inhaled medications.*

Keywords: ***COPD: chronic obstructive pulmonary disease, DPI: Dry powder inhalation, pMDI: pressurized metered doseinhalation, WHO: world health organization***

Introduction

Asthma is a chronic inflammatory airway disease in which inhaled medications are main stray of treatment. It is a major public health problem affecting a large number of individuals of all ages affecting around 300 million people globally.[1] India has 20-28 million asthmatics and the prevalence among adults >15 years of age is 2.38 % as per a recent study.[2]

Asthma being a chronic medical condition, management requires continuous medical care for prolonged duration and a key issue in proper management is adherence to treatment. Adherence is defined as "the extent to which a person's behavior (in terms of taking medications, following diets, or executing lifestyle changes) coincides with medical or health advice."[3] Poor adherence to prescribed therapy increases morbidity and mortality and long-term compliance to prescribed therapy is difficult to attain.[4] A study published by the WHO found adherence to be 50% or less for patients on long-term pharmacotherapy.[5] Important reason for poor compliance being many but patient's health beliefs, experiences, and behaviors play a significant role in adherence to pharmacological therapy.

Objective: To study the reasons for non-compliance to inhaled medications (MDI and DPI) in asthma patients.

Method:

This study was conducted in a referral chest hospital from North India, based on an open labeled questionnaire over a period of 5 months from January to May 2018 after ethical clearance. The data of total 150 patients was collected who met the inclusion criteria.

Inclusion criteria were:

1) Age more than or equal to 18 yrs.
2) Diagnosed cases of bronchial asthma based on GINA guidelines.

Exclusion criteria

1) Comorbidities like cardiac diseases, renal diseases or other major functionally limiting disease.

2) Pregnant and lactating women.
3) Those patients who were not able to answer the questionnaire.

Strict instructions were given to the patients to remain adherent to the medications in previous out-patient department visits. An in depth interview were conducted and pre validated questionnaire was administered to assess the compliance of patients to the inhaled medications. The questionnaire was first pre validated on 15 patients and then administered after making the required changes. Assessment of patient about symptom control was also done using GINA symptom control for asthma. Socioeconomic status of patients was assessed based on latest kuppuswamy scale which includes education status, occupation, and family income per month.

Base line characteristics of study population:

Clinical and demographic data revealed that average age of patients was between 20-40 years. Regarding gender distribution, 58% (87/150) patients were females and 42 % (63/150) were males. (Table-1) Regarding average income, 67% of patients were in the middle class (upper and lower middle class), 19% were in lower class (upper lower and lower) and 14% were in upper class.

Table 1: Demographic features

Total number of patients 150	
Average Age of patients	20-40
Sex:	
Male	63
Female	87
Economy class:	
Upper	14%
Middle	67%
Lower	19%

Result

Overall compliance of the patients to inhaled medications (MDI and DPI) was only 34.6% (52 /150 patients) and noncompliant was observed in 65.4% (98/150 patients). (Figure-1) Among reason for non-compliance 43 out of 98 patients admitted their reason for non-compliance as belief that medications were not needed during symptom free period, which is most common reason for non-compliance in our study accounting for around 43.8% (43/98), followed by feeling that they may become dependent or develop addiction if used daily for long time- found in 32.6% (32/98) and social embarrassment in using inhalers was found in 14.2% (14/98). (Table 2) The other reasons for non-compliance in descending order were non availability of inhaled medications in nearby chemist, affordability, difficulty using inhalers, inadequate instructions, fear of side effects, laziness, religious practice like fasting and matrimonial problems. But all these accounted for only about 9 % of patients. (Figure-2)

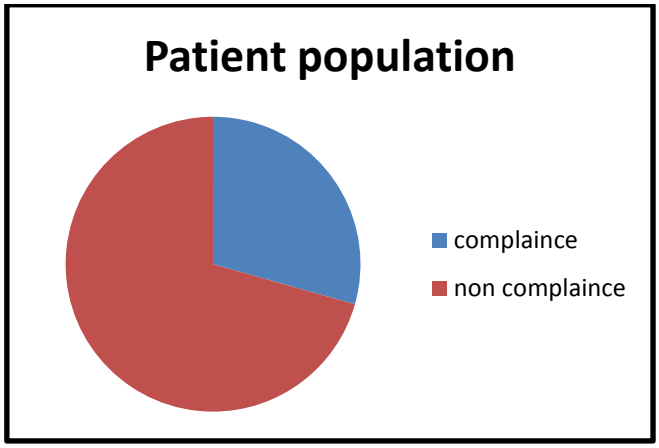

Figure-1

Compliance rate	
Compliant	52/150 patients of (34.6%)
Noncompliant	98/150 of patients (65.4%)

Table-2: Reson for Non Compliance:

1.	Belief that medications not needed during symptom free period	43.8% (most common)
2.	followed by feeling that they may become dependent/ develop addiction if used daily	32.6%
3.	Social embarrassment	14.2%
4.	All other reasons: Non availability of inhaled medications nearby chemist, affordability, difficulty using inhalers, Inadequate instructions, fear of side effects, laziness, religious practice like fasting and matrimonial problems.	9 %

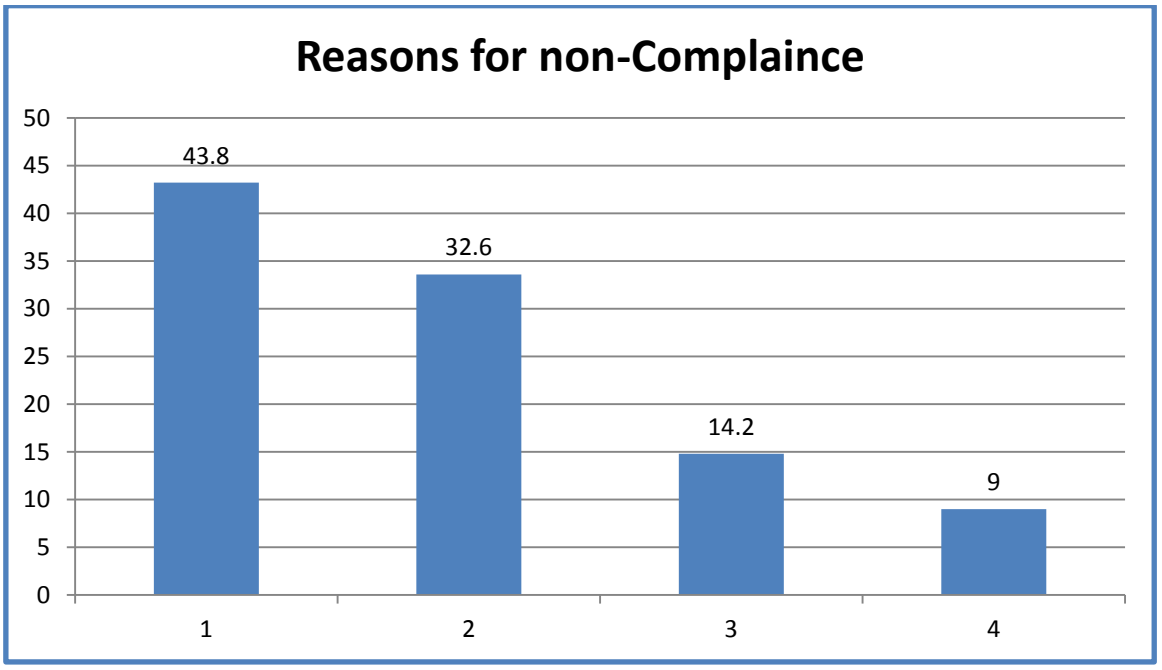

Figure-2

Discussion

The benefits of inhaled therapy for the treatment of asthma have been recognized for many years. In comparison with oral or parenteral formulations, minute but therapeutic drug doses are delivered topically into the airways leading to local efficacy within the lungs. Unwanted systemic effects are minimized, as the delivered drug acts with maximum pulmonary specificity combined with a rapid onset and longer duration of action.[6] Consequently, aerosol formulations of corticosteroids and bronchodilators are the mainstay of modern treatment for asthma.[7]

Aerosols can be delivered from different pMDIs, DPIs and nebulizers. Aerosols are either solutions containing the medication or, solid drug particles suspended in a gas or in a dry powder.[8]

Therapies for asthma can be effective and improve outcomes only if well prescribed and used by patients as per advice. The most common type of non-adherence to therapy is underuse.[9] Underuse can be intentional, like whenever feel better they stop the medicine, or it can be unintentional, like forgetfulness. The major reported reasons to stop/miss medication in our study was belief that medications are not needed during symptom free period followed by followed by feeling that they may become dependent/ develop addiction if used daily for long time, both accounting for 76.4% (43.8+32.6). Many studies report similar reasons to stop/miss medication.[10]

Stopping therapy when they feel better is particularly more common in asthma, as many patients have a symptom free period unlike COPD patients who always have some amount of baseline persistent symptoms depending upon severity of underlying illness. Stopping therapy suddenly without physician advice lead to more exacerbations, high cost of emergency treatment and poor outcome of disease overall. Furthermore, poor adherence to the inhalational therapy often leads to the suboptimal control of the disease.[11] Hence it is mandatory to obtain an optimal control of the disease to improve outcomes for these patients.

In India, poor people don't have health or medical insurance as found in western countries and hence cost of therapy is believed to be one of major factors in non-compliance in India, but in our study cost of therapy was not a major factor for non-compliance. Other studies have shown similar inferences with insufficient funds (cost of therapy) being of limited importance as a factor limiting adherence to a medication regimen.[12-13] However one study from south India showed cost of therapy as one of important reasons for non-compliance.[14] Significant differences in health beliefs, experiences, and behaviors are observed between patients with different levels of adherence.[15]

While education plays an important role on modifying beliefs, patients with suboptimal adherence have insufficient understanding about their illness and show a low level of satisfaction with and faith in the treating physician, and rely more on natural remedies. Patients' acceptance and knowledge of the disease process as well as the recommended treatment, faith in the treatment, effective patient – clinician interaction are all critical for optimal medication adherence.[16]

When selecting an aerosol delivery device for patients, the following aspects should be considered to improve adherence to therapy: device - medication availability, clinical setting-patient age and the ability to use the selected device correctly, device use with multiple medications, cost and reimbursement, medication administration time as per

patient convenience and physician and patient preference. Almost all popular inhalers seem to be acceptable when overall preference is assessed, but most patients should choose their devices based on ease of use in general and during an exacerbation, the feel of the device in the hand, ease of opening the cap, and the ability to take the medication quickly in case of an impending exacerbation.[17]

Although patients may adhere to the dosing schedule, they may use the inhaler improperly. This lead to poor asthma control and hence negative belief about medication effect, leading to further decrease in compliance.[18] Patients technique in using a device encompasses an individual's previous experiences, education, abilities, and the teaching received on the specific device. These factors may interact to various degrees with the different types of inhaler devices to influence eventual technique and adherence.

Regular instructions, supervision, and check-up of inhalation technique are the responsibility of the treating physician. Improving efforts by the physicians to increase education about the illness and the treatment options along with the inclusion of psychological treatments in management plans is critical to improving adherence to therapy in patients who find every day a challenge to adhere to their therapeutic regimen.[19]

However here is still need for further research to determine how, when, and where in the course of treatment patients need to be educated on all aspects of their disease to improve adherence to their prescribed therapeutic regimen.

Conclusion

Our study indicates that despite strict instructions for adherence to inhaled medication compliance rate is poor, although majority of the patients believed that compliance was extremely important.

Research implication: This study suggests that besides continued heath education, new health care initiatives are needed to be designed to improve the compliance of asthma patient for inhaled medications and to give health education about disease behavior, proper medication use outcome benefits and benefits of both short term and long term compliance with clear facts about cost –benefit ratio.

Conflict of interest: None

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