ASSESSMENT OF ADHERENCE TO INHALERS IN COPD PATIENTS

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ARTICLE INFO	ABSTRACT
Article history Received 05/05/2020 Available online 05/06/2020 **Keywords** COPD; Inhalers; Adherence; Tai Questionnaire.	BACKGROUND: Asthma and chronic obstructive pulmonary disease (COPD) are of significant concern worldwide owing to their high prevalence and substantial clinical and economic burden. Adherence to inhaler may be evaluated by the specific inhaler adherence questionnaire, the Test of Adherence to Inhalers (TAI). OBJECTIVE: To assess the adherence profiles to inhaled therapies in COPD patients. SETTING: A 500 bedded tertiary care hospital in South India. METHOD: A prospective observational study was carried out in a tertiary care hospital in South India with a sample size of 150. MAIN OUTCOME MEASURE: To evaluate the adherence to inhalers in COPD patients and thereby taking measures to improve their adherence. RESULT: Among the study population 66% were males. The majority of patients (41.33%) were in the age group of 61-70 years. The present study shows that COPD was prevalent more in males than females. The elderly patients were at high risk of developing COPD. The non-adherence to inhalers were was associated with busy schedule, financial constraints and mood changes. CONCLUSION: Several factors may predict the incorrect use of inhalers or adherence in COPD outpatient, including the number of devices and the daily dosing frequency. Ideally, patient education, simplicity of the device operation, the use of just one device for multiple medications and the best adaptation of the patient to the inhaler should guide the physician in prescribing the device.

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INTRODUCTION

Asthma and chronic obstructive pulmonary disease (COPD) are of significant concern worldwide owing to their high prevalence and substantial clinical and economic burden. While asthma is the most prevalent respiratory disease in the world (and twice as common as COPD), the mortality rate associated with COPD is eight times higher than for asthma. The absolute number of patients with these two conditions is increasing as the global population grows. [1]

In addition, patients with COPD may experience episodes of exacerbation, characterized by worsening of symptoms in relation to their daily variation, which result in additional treatment and may result in hospitalizations and disease progression. Therefore, the exacerbation must be treated as soon as it is diagnosed to reduce the negative impact. The COPD exacerbation treatment is based on systemic corticosteroids, antibiotics (if necessary) and inhaled short action bronchodilators (beta-2 agonist and/or muscarinic antagonist). The Global Initiative for Chronic Obstructive Lung Disease (GOLD) document recommends that maintenance therapy with inhaled long-acting bronchodilators should be prescribed as early as possible, even during the hospitalization and before the discharge. So, the inhaled therapy is very important to treat the acute exacerbation and to prevent the next one. [2]

Medication delivery to the lungs is always preferable over systemic administration due to several advantages such as faster action onset, high therapeutic effect and lower systemic adverse events [3,4]. However, there are several factors that influence the optimal treatment of the patient such as patient characteristics (age, conscience, breathing pattern, airway diameter, disease severity, and inspiratory flow), aerosol characteristics (inhaler device and inhaled drug characteristics), pharmacokinetics and pharmacodynamics [5]. Patients must be instructed about the device use and how to inhale the medicines properly. However, not all patients will perform in the correct way due to either cognitive or physical reasons, or both. When an inhaler device is not used properly, it affects lung deposition, and thus results in lower efficacy and possibly increased chances of side effects. To improve treatment efficacy and efficiency, it is very important to individualize the inhaler device to specific patient populations and choose the friendliest inhaler for each patient.

The WHO believes low treatment adherence by patients to be a serious global health problem that affects all regions, cultures, ages, and diseases, and rates have remained unchanged in the last 30 years.[6] Poor therapeutic adherence is associated with higher mortality, frequent exacerbations, worse control, and greater socioeconomic costs, both in asthma[7] and in COPD.[8]

Assessing adherence to treatment is complex and many methods have been proposed in COPD (clinician estimates, patient self-reporting, pharmacy records, and electronic monitoring).

Patient's self-report methods accompanied with inhaler technique assessment are considered the most suitable for measuring adherence to medication in clinical practice, even though patients tend to over-estimate adherence. [9]
Plaza et al have recently developed a self-reporting "Test of Adherence to Inhalers (TAI) "questionnaire (http://www.taitest.com) for assessing inhaler adherence in patients with COPD or asthma. The authors indicate that this is a reliable and homogeneous questionnaire that can be used to identify non-adherence and to classify from a clinical perspective the barriers related to the use of inhalers in asthma and COPD [10].

Test of the adherence to inhalers (TAI)

The TAI is a specific questionnaire designed to assess the adherence to inhaled medication. It consists of two complementary questionnaires with two domains, namely, the patient and the health professional domains. The 12-item TAI patient questionnaire was designed to assess the nonadherence level. The questionnaire specifically evaluates erratic and deliberate nonadherent behavioral patterns and assesses the non-adherence patterns observed by the health care professional. [10]

Increasing the rate of therapeutic compliance is a key factor in achieving adequate disease control. Instead of developing more effective and safe (and more expensive) molecules, the greatest challenge nowadays may be to achieve better therapeutic adherence among our patients. The first step is to measure adherence, and to this end, the TAI is an inexpensive, immediate and reasonably reliable tool that can be used to flag non-compliance patterns, and to guide subsequent specific corrective action.

AIM OF THE STUDY:

The aims of this study were to assess the adherence profiles to inhaled therapies in COPD patients.

ETHICS APPROVAL:

This study was approved by the Institutional Ethics Committee of the Tertiary care hospital.

METHODOLOGY

A prospective observational study was conducted in a tertiary care hospital located in South India with a sample size of 150. Adherence to the use of inhalers in COPD patients was measured using a validated TAI "Test of Adherence to Inhalers (TAI) "questionnaire (http://www.taitest.com).
Data was then statistically analysed using Microsoft excel.

INCLUSION CRITERIA

Male and female patients, aged >30 years, diagnosis of COPD at least for 1 year who are using inhalers

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EXCLUSION CRITERIA

Diagnosis of sleep apnea or any other chronic respiratory disease, any acute or chronic condition that would limit the patient's ability to participate in the study.

PROCEDURE

A structured validated TAI "Test of Adherence to Inhalers (TAI) "questionnaire (http://www.taitest.com) was used to collect information to measure the patient's adherence to inhalers.

DATA ANALYSIS:

The data was entered in Microsoft Excel 2010 and the results were analysed as tabular form and percentages.

OBSERVATIONS

FIGURE 1. GENDER WISE DISTRIBUTION.

Figure 1 shows that there are more number of male's patients (66%) in comparison to females (34%).
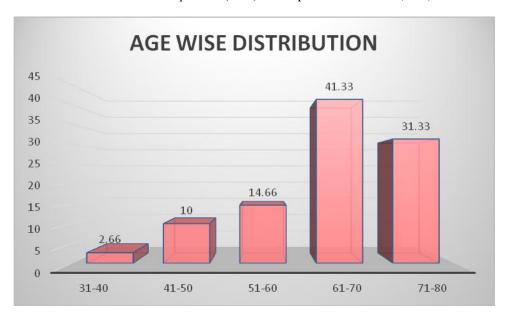

FIGURE 2. AGEWISE DISTRIBUTION.

Figure 2 illustrates that most of the study population belongs to age group 61-80 i.e., (41.33%) followed by age group 71-80(31.33%) and least was found in the age group of 31-40 i.e., (2.66%)
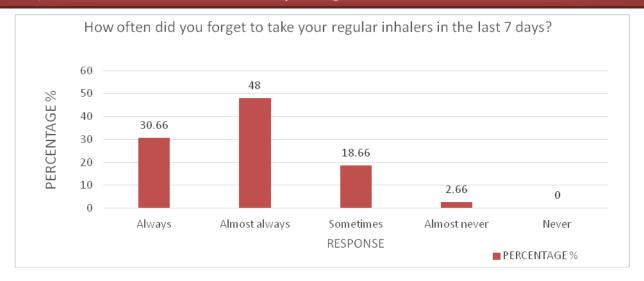
FIGURE 3. How often did you forget to take your regular inhalers in the last 7 days?

Figure 3 illustrates that about 48% of the study population almost always forgot to take inhalers in the last 7 days followed by 30.66% who always forgets.
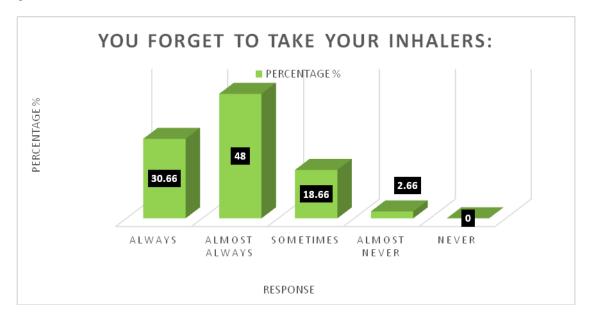

FIGURE 4. You forget to take your inhalers:

Figure 4 depicts that 48% of the population forgets to take inhaler followed by 30.66% who always forgets and only 2.66% who almost never forgets.
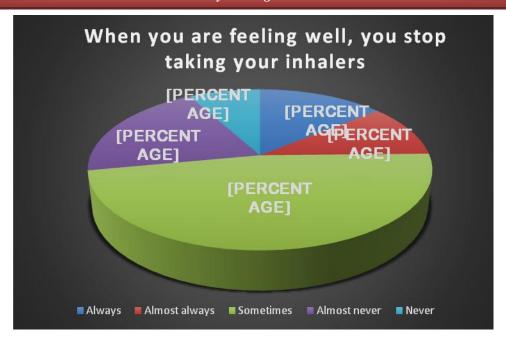
FIGURE 5. When you are feeling well, you stop taking your inhalers.

Figure 5 shows that 47% of study population stops using inhaler when they are feeling better and only 8% adhere to the use of inhalers as prescribed by physician.

FIGURE 6. At the weekend or when you go on holiday, you stop taking your inhalers.

Figure 6 shows that 47.33% of study population sometimes stops usage of inhalers when they are on a vacation whereas only 8% use it as usual.
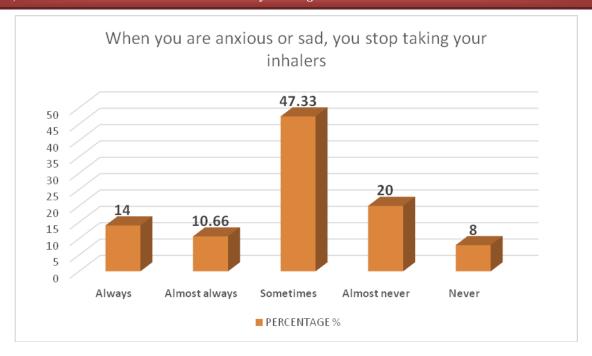
FIGURE 7. When you are anxious or sad, you stop taking your inhalers.

Figure 7 illustrates that 47.33% of study population sometimes stops usage of inhalers depends on their mood, 14% always discontinue the usage, only 8% adhere to the therapy
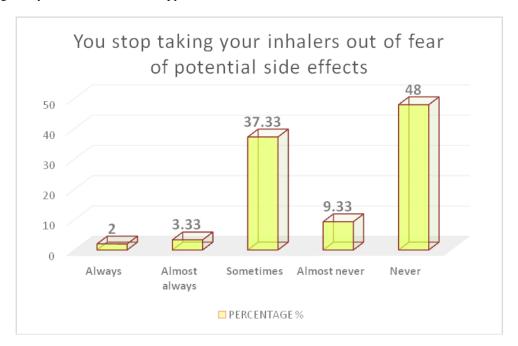

FIGURE 8. You stop taking your inhalers out of fear of potential side effects.

Figure 8 depicts that 48% of the study population never stopped the usage of inhalers in fear of side effects and adhere to the therapy whereas 2% always stopped their therapy.

FIGURE 9. You stop taking your inhalers because you believe that they are of little help in treating your condition.

Figure 9 shows that 48% of the study group never stopped their therapy in belief of little effective, only 2% stopped their use of inhalers.
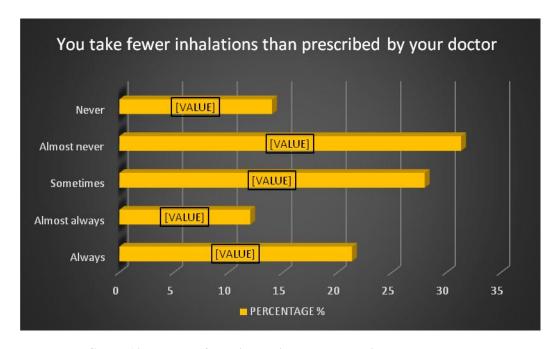

FIGURE 10. You take fewer inhalations than prescribed by your doctor.

Figure 10 depicts that 21.33% always omit some of the inhalers prescribed by the doctor only whereas only 14% take the inhalers as prescribed.
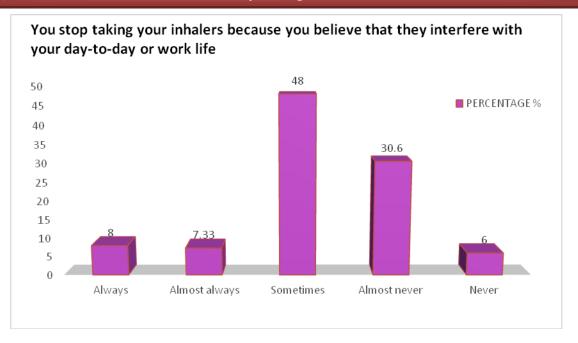
FIGURE 11. You stop taking your inhalers because you believe that they interfere with your day-to-day or work life.

Figure 11 illustrates that 8% of the study population stopped inhalers because they believe that it may interfere their day to day life whereas 6% completely adhere to it and 48% sometimes stopped their use.
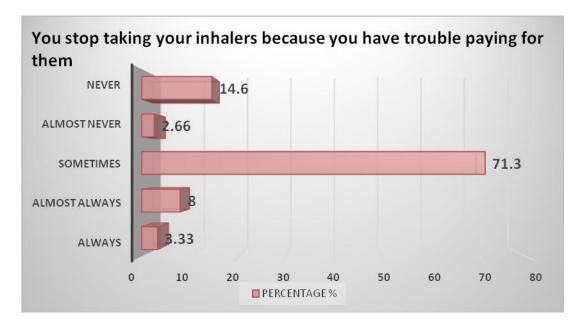

FIGURE 12. You stop taking your inhalers because you have trouble paying for them:

Figure 12 shows that 3.33% of the study population stopped use of inhalers due to financial constraints whereas 71.33% sometimes stopped their use, only 14.6% never stopped their use.
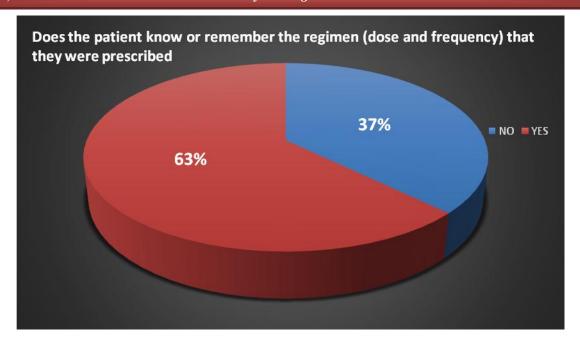
FIGURE 13. Does the patient know or remember the regimen (dose and frequency) that they were prescribed.

Figure 13 illustrates that only 37% of the study population knows about their treatment regimen and its usage but 63%, i.e. majority doesn't know well about their treatment regimen.
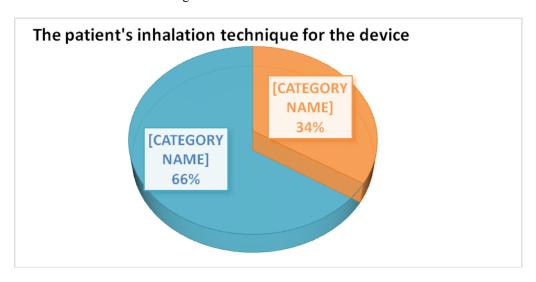

FIGURE 14. The patient's inhalation technique for the device.

Figure 14 depicts that 66% of the study population's method of inhalation technique has no critical errors, i.e. their method of usage of inhalers is correct whereas 34% has critical errors with their usage.

DISCUSSION

The main findings on adherence to inhaled therapies in COPD patients were: first, around 50% of patients had good adherence to inhaled therapies according to TAI questionnaire; second, low adherence was associated with busy schedule, financial constraints and mood changes.

Inhaler therapy is the cornerstone of COPD management but adherence to it is very low even in very severe disease. Plaza et al found that adherence to inhaled therapy was higher in COPD patients versus those with asthma (49% v/s 28%), with COPD patients having a higher proportion of unwitting non-adherence, and less erratic and deliberate non-adherence than asthma patients. [10]On the other hand, previous studies have shown that the effectiveness of inhaled treatment can be adversely affected by incorrect inhaler technique and prescribing multiple devices requiring different inhalation techniques may lead to poorer outcomes in COPD patients. [11] In our study it was found that majority of the study population (>60%) non adhere to their inhalers. These results indicate that greater efforts must be made to improve adherence in COPD patients. It is important to highlight that we used only the 12-item TAI questionnaire (for identifying non-adherent patients and establish the non-adherence level), so it was not possible to analyze whether patients actually take their inhaler properly or not, as well as to evaluate if the use of multiple devices could influence the adherence level. Therefore, it is not possible to make conclusions on the non-adherence pattern, because it is only available the data on erratic and deliberate non-adherence pattern (unwitting non-adherent behavior data was not collected).

The availability of an accurate method to measure inhaled therapy adherence in COPD patients is essential for detecting patients with poor adherence. There are several approaches to detect non-adherence, such as pharmacy refill methods, electronic monitoring (smart-inhaler), and self-report measures, but they are all burdened with important limitations. Recently, several methods to objectively quantify adherence to inhaler therapy (electronic audio recording device) have been assessed. [12]

In the clinical setting, the most convenient approach is using self-report questionnaires because they are easy to use, inexpensive, and not time-consuming. However, compared with data obtained via electronic monitoring, studies have demonstrated that self-reports can be inaccurate because patients generally over-report medication use. To date, there is no "gold standard" self-report questionnaire to assess treatment adherence in COPD patients. [9]

In our study we found that the prevalence of COPD is more in men (66%) than compared to women and also it was observed that prevalence increases with progressing age. It also founds that majority of population are non-adhere to their inhalers due to various reasons such as they forget to take the inhaler, busy life schedule, in fear of possible side effects or in a belief it may interfere with their life.

Among the study group only 37% of the study population knows about their treatment regimen and its usage but 63%, i.e. majority doesn't know well about their treatment regimen and also 66% of the study population's method of inhalation technique has no critical errors, i.e. their method of usage of inhalers is correct whereas 34% has critical errors with their usage.

Here comes the role of a clinical pharmacist who can help them in using the inhalers thereby improving their adherence to their medications and inhalers.

In conclusion, our results indicate that suboptimal adherence to medication is frequent in COPD patients. Low adherence is associated with worse health status and more exacerbations.

LIMITATION

In the present study, we used the 12-items TAI questionnaire, these items were designed to identify unwitting non-adherent behavior (failure in understanding medication use, dosage or inhalation technique). Therefore, it was no possible to analyze whether patients take their inhaler properly or not, so that the pattern of non-adherence was not completely evaluated.

CONCLUSION

The evaluation of therapeutic adherence to inhaled medication represents an essential element in the therapeutic strategy for patients with COPD and a current challenge in the clinic. The consideration of the factors that are associated with a lack of adherence in clinical practice can help the clinician to identify patients at risk of low adherence, which, in turn, can serve to reinforce the importance of a correct adherence in certain populations. Health care professionals should be aware of the issues pertaining to adherence and take the opportunity to make clinical pharmacist to educate patients each time they contact the health care system.

CONFLICTS OF INTEREST:
NIL

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