A Study on Drug Utilisation Pattern in Management of COPD

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ABSTRACT:

Drug utilization study is a tool to identify the issues regarding drug use and helps in contributing feedback to prescribers to create awareness about irrational drug use. It provide useful insights into current prescribing practices and can thus help to reform and update practices in clinical medicine and pharmacotherapy. Chronic Obstructive Pulmonary Disease (COPD) has become a major public health concern of today. Bronchodilators represent the mainstay of pharmacological management of COPD. Therefore the present study was planned to know the recent patterns of drug utilization in treatment of COPD with the objective to analyze the pattern of drug utilization in COPD. Under treatment was the problem with stage III and IV and use of long acting bronchodilators without ICS was responsible for it. The results of our study reveals that COPD treatment had little rate of adherence to GOLD recommendations which had result into either over treatment or under treatment of condition. Therefore, it is necessary to create efforts to make clinicians more adequate to aware the GOLD treatment guidelines of COPD.

Key Words: Drug Utilisation Pattern; Chronic Obstructive Pulmonary Disease; COPD.

INTRODUCTION:

Irrational prescribing pattern is a notable problem of healthcare delivery, especially in developing countries (1). It has a negative effect on health and economy of both individuals and community, leading to ruination of assets and widespread health hazards (2). Drug utilization study is a tool to identify the issues regarding drug use and helps in contributing feedback to prescribers to create awareness about irrational drug use. It provide useful insights into current prescribing practices and can thus help to reform and update practices in clinical medicine and pharmacotherapy (3).

Chronic Obstructive Pulmonary Disease (COPD) has become a major public health concern of today. Due to the high prevalence, morbidity and mortality of COPD, it is rapidly becoming a significant health issue creating powerful challenges in future COPD is characterised by airflow obstruction which is not completely reversible. The airflow flow obstruction remains unchanged for several years but, in the long term it worsens as it progresses (4). In COPD, pharmacotherapy aims to reduce symptoms, decrease the frequency and severity of exacerbations, improve health status and exercise tolerance. Bronchodilators represent the mainstay of pharmacological management of COPD. Short-acting bronchodilators are given for immediate symptom relief, one or more long-acting bronchodilators (long- acting beta 2 agonists (LA☐As) or long-acting muscarinic antagonist (LAMAs) are used for long term maintenance treatment in subjects with moderate to severe disease. Inhaled corticosteroids (ICS) are central to the treatment of asthma, but their role is controversial in the management of COPD. In COPD, ICS are primarily given to decrease the risk of exacerbations. The new Global Initiative for Chronic Obstructive Lung Disease (GOLD) strategy recommends the addition of a second bronchodilator in patients with moderate airflow obstruction, reserving the ICS use along with a LABA and/or LAMA for those with severe or very severe airflow obstruction and/or two or more exacerbations of COPD *per* year (5). But there is evidence that prescriptions are not always written according to GOLD recommendations or other national guidelines (6), so this study was planned to know the recent patterns of drug utilization in treatment of COPD. The aim of this study is to know the recent trends in pattern of drug utilization in management of COPD.

METHODS:

Study design and duration:

It was a prospective, observational study, conducted on 217 consecutive cases of COPD over a period of eight months from October 2021 to May 2022 in the internal Medicine OPD of a tertiary care teaching hospital, .

Inclusion criteria:

- Patients of all age groups having COPD as the primary diagnosis attended the outpatient Department of Medicine.

Exclusion criteria:

- Patients with tuberculosis or bronchial asthma.

- Patients in intensive care unit (ICU).

- Pregnant and lactating women.

- Patients who were not willing to participate in the study were excluded.

Study procedure

A written informed consent was taken from each patient involved in the study. Relevant data which include the following details were personally collected by the investigator from all patients in a specially designed proforma:

- Demographic data: patient age, gender

- H/O Smoking

- Disease condition details: Co-existing diseases, if any

- Prescribed drug details: Drug prescribed for treating COPD were assessed and analyzed as *per* GOLD treatment guidelines (7), disease severity was categorized according to guidelines (8).

Statistical Analysis:

The data was analyzed with the help of Microsoft Excel software.

RESULTS:

Demographic details of the study population

In this study we analysed prescription data of 217 patients in which 64.97 % were males and rest were females in which 51.15% were between 61-70 years of age while 25.34 % patients were between 51-60 years of age, thus 76.49 % patients were between 51 to 70 years of age.

Smoking history

It was found in 91.7 % of patients in which 58.06% of total patients were Ex-smoker while 33.64 % of the same were still smoking.

Disease comorbid status

Hypertension (35.02 %) was most common comorbidity found among COPD population followed by Diabetes mellitus (22.11%), Ischemic Heart Disease (5.99%), CCF & Anemia (5.06%), CKD (3.68%), Hypothyroidism (1.84%), Cervical spondylosis (1.38%), Rheumatic arthritis(0.92%).

COPD Severity Status

Based on the severity of COPD all the patients were categorized to to GOLD stages I to IV. Thus we found that 17.51 % were from GOLD Stage I, 57.14 % from stage II, 22.11% from stage III and 3.22 % from stage

Table 1:

Gender	No. of Patients	% of Patients
Male	141	64.97 %
Female	76	35.02 %

Table 2:

Age	No of Patients	% of Patients
40-50	21	9.63
51-60	55	25.34
61-70	111	51.15
71-80	30	13.82

Table 3:

Smoking status	No of Patients	Percentage of Patients
Current Smoker	73	33.64
Ex-smoker	126	58.06
Nonsmoker	18	8.29

Table 4:

Co-Morbid Condition	No. of Patients	Percentage of Patients
Hypertension	76	35.02
Diabetes mellitus	48	22.11
Anemia	11	5.06
CKD	8	3.68
Cervical spondylosis	3	1.38
Hypothyroidism	4	1.84
Rheumatic arthritis	2	0.92
CCF	11	5.06
Ischemic Heart Disease	13	5.99

Table 5:

GOLD Stage	Appropriate treatment	N(%)	Inappropriate treatment	N(%)
One	Short acting Bronchodilators (SOS)	8(21.05)	LABA+ICS LABA+LAMA+ICS LAMA+T LABA+LAMA	7 13 6 4
	Total	8(21.05)	Total	30(78.94)
Two	LAMA+T LAMA+LABA	12 19	LABA+ICS LAMA+ICS LABA+ICS+LAMA	18 12 63
	Total	31(25)	Total	93(75)
Three	LABA+ICS LABA+ICS+LAMA+T LABA+ICS+LAMA	3 12 26	LAMA+T LABA+LAMA+T LABA+LAMA	1 3 3
	Total	41(85.41)	Total	7 (14.58)
Four	LABA+ICS+LAMA LABA+ICS+LAMA+T	1 5	LABA+LAMA+T	1
	Total	6(85.71)	Total	1(14.28)
Total		86(39.63)		131(60.36)

Table 6:

Class of Drugs	Drugs	No. of Prescriptions	%	Route of Administration
SABA	Salbutamol	8		Inhalational
LABA	Formeterol Salmeterol	129 49		Inhalational
Methylxanthines	Theophylline	40		Oral
Anticholinergic	Tiotropium	181		Inhalational
Corticosteroids	Budesonide Fluticasone	112 48		Inhalational
Antihistamines	Levocetirizine	217		Oral
Leukotriene antagonists	Montelucast	217		Oral
Antibiotics	Ceftriaxone Azithromycin Amoxicillin& Clavulanic acid	9 120 45		Injectable Oral Oral

Routes of administration

Oral route (54.38%) was the most common route of drug administration in this study, followed by the Inhalational route (44.85%) and enteral route (0.76 %.)

Prescription pattern: Antihistamines & Leukotriene antagonists were given to all patients, Tiotropium was the single anticholinergic drug which was used in 83 % of patients. Long acting beta 2 agonists were used in 82.02% of patients in which Formeterol was most commonly prescribed drug which was given to 59.44% of patients. Antibiotics were used in 80.18 % of patients in which Azithromycin was most frequently used (55.29%). Corticosteroids were used in 73.73% of patients in which Budesonide and Fluticasone were used in 51.61 % and 22.11 % patients respectively. Salbutamol was the solo short acting beta 2 agonists which was used in 3.68 % of patients.

Adherence to GOLD recommendations: Our study results showed that the overall adherence to GOLD guideline treatment recommendations for diffe- rent stages of COPD was 39.63 %. In stage I only (21.05%)   patient were treated as per GOLD recommendations, while rest were over treated with combination of either one or two long-acting bronchodilators and ICS or combination of two long-acting bronchodilators .In stage II adherence to GOLD re- commendations was seen only in 25% of prescriptions . Use of ICS was responsible for non-adherence to GOLD re- commendations. Over treatment was the problem which continued in this group also. In stage III 85.41% patient were treated according to GOLD re- commendations while in stage IV 85.71% patient were treated according to the same. Under treatment was the problem with stage III and IV and use of long acting bronchodilators without ICS was responsible for it.

DISCUSSION:

In our study we found that the incidence of COPD was higher in males in compare to females, which is in accordance with the study done by Niffy A. *et al* (9), Gigi A. *et al*. (10), Unni et al (11)   Sawant MP et al (12) and DB JYOTHI *et al.* In the present study highest number of COPD patients were between 61-70 years of age which is in accordance with the study done by Sawant MP et al (12).

We found history of smoking in 91.70% of patients which is in line with the study of *and* Maryam M. Hypertension was most common comorbid condition amoung our study population which is similar to the results obtained from the study of Sawant MP et al (12) and Unni A et al (11). In our study maximum number of patients were in GOLD stage II followed by stage III, Stage I and   stage IV. This is in line with the study done by David P et al but not in line with the study done by DB JYOTHI in which maximum number of patients were from GOLD stage III followed by stage II, stage IV and Stage I.

Our study results showed that the overall adherence to GOLD guideline treatment recommendations in different stages of COPD was 39.63 % which is not in line with the

study done by DB JYOTH in which 56% patients were treated as per GOLD guideline treatment recommendations. In stage I only (21.05%) patient were treated as per GOLD recommendations, this is in accordance with the study done by DB JYOTH in which in which 18.18 % patient were treated as per GOLD recommendations, while rest were over treated with combination of either one or two long-acting bronchodilators and ICS   or combination of two   long-acting bronchodilators. In stage II adherence to GOLD re-commendations was seen only in 25% of prescriptions. This is not in line with DB JYOTHI study in which only 15.75% prescriptions were adherent to the same. Use of ICS was responsible for non-adherence to GOLD re- commendations. Over treatment was the problem which continued in this group also.   In stage III 85.41% patient were treated according to GOLD re- commendations this is in line with DB JYOTHI study in which 82.6% patient were treated according to GOLD re- commendations while in stage IV 85.71% patient were treated according to the GOLD re- commendations which is also in line with DB JYOTHI study in which 79.7 %   patient were treated according to the GOLD re- commendations. Under treatment was the problem with stage III and IV and use of long acting bronchodilators without ICS was responsible for it.

CONCLUSION:

Our study reveals that COPD treatment had little rate of adherence to GOLD recommendations which had result into either over treatment or under treatment of condition. So, efforts are required to make clinicians more aware of the GOLD treatment guidelines of COPD.

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