



Prescribing Patterns of Corticosteroids in Pulmonology Department

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Research Article

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Abstract

Drug utilization research is an essential part of pharmacoepidemiology as it describes the extent, nature and determinants of drug exposure. Our study was on the prescribing pattern of the corticosteroids in COPD, Asthma and Allergic Rhinitis on Pulmonary Department. The present study aims to answers of the following questions such as how does the use of corticosteroids vary with demographic factors, namely age, sex, socioeconomic status and locality of residence, What are the different types of steroids prescribed, its dose and route of administration, Difference in corticosteroids used in various diseases and How does the use of corticosteroids vary with severity of disease. In the study population we find out that there is a statistically significant relationship exist between age ($p < 0.007$), gender ($p < 0.016$), locality of residence ($p < 0.023$) & socioeconomic status ($p < 0.016$) with the prescribing pattern of corticosteroids. Most common route of administration was dry powder inhaler. Most commonly prescribed drug was Budesonide + Formoterol (78.4%) combination. Budesonide + Formoterol 200 mcg combination was given in 37 prescriptions and 400 mcg was given in 61 prescriptions. In the study population we find out that there is a statistically significant relationship exist between the use of corticosteroids and severity of disease such as COPD ($p < 0.008$) & Asthma ($p < 0.011$). At last through the present study the investigator is able to find a conclusion that the prescription patterns of drugs (corticosteroids) will be vary based on the several factors such as age, sex, socio economic status etc. And there is a difference present in the drug prescriptions based on the severity of the disease conditions In the current practice Dry Powder Inhaler is the

most common drug route and the Budesonide + Formoterol is the most common prescribed drug of choices among the physicians.

Keywords: corticosteroids, steroids, pulmonary disorders, clinical practices

Introduction

Drug utilization research is an essential part of pharmacoepidemiology as it describes the extent, nature and determinants of drug exposure. Drug use is a complex process. In any country a large number of socio-cultural factors contribute to the ways drugs.¹ Drug utilization evaluation can be used for the description of drug use pattern; early signals of irrational use of drugs; interventions to improve drug use; quality control cycle; continuous quality improvement. The principal aim of drug utilization research is to facilitate the rational use of drugs in populations.²

Drug utilization research can increase our understanding of how drugs are being used as follows.

- It can be used to estimate the numbers of patients exposed to specified drugs within a given time period. Such estimates may either refer to all drug users, regardless of when they started to use the drug, or focus on patients who started to use the drug within the selected period.
- It can describe the extent of use at a certain moment and/or in a certain area. Such descriptions are most meaningful when they form part of a continuous evaluation system, i.e. when the patterns are followed over time and trends in drug use can be discerned.
- Researchers can estimate to what extent drugs are properly used, overused or underused.
- It can determine the pattern or profile of drug use and the extent to which alternative drugs are being used to treat particular conditions.



• It can be used to compare the observed patterns of drug use for the treatment of a certain disease with current recommendations or guidelines.³

The study aims to answer the following questions:

1. How does the use of corticosteroids vary with demographic factors, namely age, sex, socioeconomic status and locality of residence?
2. What are the different types of steroids prescribed, its dose and route of administration?
3. Difference in corticosteroids used in various diseases.
4. How does the use of corticosteroids vary with severity of disease?⁴

Study objective was to analyze the prescribing patterns of corticosteroid drugs in the pulmonology department in a tertiary care hospital.

Material and Method

Study design

It was a prospective study.

Study setting

The study was conducted in the department of pulmonology and sleep medicine kovai medical center and hospital in Coimbatore, Tamil Nadu.

Study period

The study was conducted over a period of six months from June 2011 to December 2011.

Study criteria

Inclusion criteria

Patients with COPD, asthma and allergic rhinitis, attending the pulmonology clinic who receives corticosteroid drugs as their treatment plan.

Exclusion criteria

Patients with COPD, asthma and allergic rhinitis, attending the pulmonology clinic who is not receiving corticosteroids.

Sources of data

The data was collected from various sources such as patient's case reports and treatment charts.

Study protocol

Patients who met the study criteria were included in the study. Demographic details, different corticosteroids and their dose and route of administrations were noted. According to the prescription of patients were divided into outpatient and inpatient. Severity of the asthma and COPD were classified based on GINA and GOLD guidelines respectively.

Severity of disease

Using GOLD and GINA guidelines for assessing the severity of COPD and asthma respectively.

Statistical analysis

Demographic characteristic have been expressed as percentages. Analysis of the relationship between variables was compared by using chi square test and the p value ≤ 0.05 was taken to be significant. All statistical data was assessed by using spss (v-16.0).

Results and Discussion

In this Prospective study, the prescribing patterns of corticosteroid drugs was evaluated in a total of 108 prescriptions

Among corticosteroid prescriptions, 58 (53.7%) were males and 50(46.3%) were females. Highest number of prescriptions (25 out of 108) were belonging to the age group of 60-69 years (23.14%) and lowest number of prescriptions (4 out of 108) were belonging to the age group of 10-19 years (3.7%).

The total study population were categorized into four group on the basis of diagnosis. It was given as Asthma, COPD, AR & AR+ Asthma with percentage population of 37.96%, 33.33%, 19.44% & 9.25% respectively. Most common route of administration was dry powder inhaler (67.2%) followed by MDI (16.8%), Nasal spray (10.4%), and Oral (5.6%) respectively. Most commonly prescribed drug was Budesonide + Formoterol (78.4%) combination where as Budesonide(2.4%) alone was less commonly prescribed. Budesonide + Formoterol 200 mcg combination was containing in 5 and 400 mcg was containing in 31 in total 41 Asthma prescriptions. Our study revealed that in majority of the COPD patients have smoker 52.77% and 16.66% have a history of smoking.

TABLE 1 : Effect of various demographic factors on the prescribing patterns of corticosteroids.

SI NO	PARAMETER	BUDESONIDE+FORMOTEROL	BUDESONIDE	FLUTICASONE+SALMETEROL	MOMETASONE	PREDNISOLONE	P VALUE
1	AGE						
	<50	46	3	3	11	1	<0.007
>50	52	0	1	2	6		
2	GENDER						
	MALE	58	1	2	2	6	<0.016
FEMALE	40	2	2	11	1		
3	LOCALITY						
	RURAL	22	2	3	1	1	<0.023
URBAN	76	1	1	12	6		
4	SOCIO-EC						
	HIGH	12	2	1	7	2	<0.016
	INTER	46	0	2	3	3	
LOW	40	1	1	3	2		

The most prominent AR drug was Budesonide + Formoterol 200 mcg combination(73.68%) in 21 AR prescriptions. AR+Asthma prescriptions containing Budesonide + Formoterol 200 mcg combination in 3 and Budesonide + Formoterol 400 mcg combination in 5 in the total 21 prescriptions . Budesonide 100 mcg and Budesonide 200 mcg containing two prescriptions in the total AR+Asthma prescriptions.



In the study population, we found a significant relationship between age ($p < 0.007$), gender ($p < 0.016$), locality of residence ($p < 0.023$) & socioeconomic status ($p < 0.016$) and prescribing patterns of corticosteroids. (Table 1, Figure 1). There was a significant relationship with severity of disease such as COPD ($p < 0.008$) & Asthma ($p < 0.011$) and the prescribed corticosteroids. (Table 2)

TABLE 2 : Effect of disease severity on the prescribing patterns of corticosteroids.

SINO	PARAMETER	BUDESONIDE+FORMOTEROL	BUDESONIDE	FLUTICASONE+SALMETEROL	MOMETASONE	PREDNISOLONE	P VALUE
1	STAGES(COPD) V SEVERE SEVERE MODERATE	14 19 2			1 0 0	1 1 3	<0.008
2	STAGES(Asthma) SEVERE MODARATE	29 7	0 1	1 2		0 2	<0.011

In this Prospective study, the prescribing patterns of corticosteroid drugs were evaluated in a total of 108 prescriptions. Among corticosteroid prescriptions, 58 (53.7%) were males and 50 (46.3%) were females. Highest number of prescriptions (25 out of 108) were belonging to the age group of 60-69 years (23.14%) and lowest number of prescriptions (4 out of 108) were belonging to the age group of 10-19 years (3.7%).

The total study population were categorized into four group on the basis of diagnosis. It was given as Asthma, COPD, AR & AR+ Asthma with percentage population of 37.96%, 33.33%, 19.44% & 9.25% respectively. Most common route of administration was dry powder inhaler (67.2%) followed by MDI (16.8%), Nasal spray (10.4%), and Oral (5.6%) respectively. Most commonly prescribed drug was Budesonide + Formoterol (78.4%) combination where as Budesonide (2.4%) alone was less commonly prescribed. Budesonide + Formoterol 200 mcg combination was containing in 5 and 400 mcg was containing in 31 in total 41 Asthma prescriptions. Our study revealed that in majority of the COPD patients have smoker 52.77% and 16.66% have a history of smoking,

The most prominent AR drug was Budesonide + Formoterol 200 mcg combination (73.68%) in 21 AR prescriptions. AR+Asthma prescriptions containing Budesonide + Formoterol 200 mcg combination in 3 and Budesonide + Formoterol 400 mcg combination in 5 in the total 21 prescriptions. Budesonide 100 mcg and Budesonide 200 mcg containing two prescriptions in the total AR+Asthma prescriptions.

In the study population, we found a significant relationship between age ($p < 0.007$), gender ($p < 0.016$), locality of residence ($p < 0.023$) & socioeconomic status ($p < 0.016$) and prescribing patterns of corticosteroids. (Table 1, Figure 1). There was a significant relationship with severity of disease such as COPD ($p < 0.008$) & Asthma ($p < 0.011$) and the prescribed corticosteroids. (Table 2, Figure 2)

Conclusion

Drug use is a complex process. In any country a large number of socio-cultural factors contribute to the ways drugs. Hence drug utilization research is an essential part of pharmacoepidemiology as it describes the extent, nature and determinants of drug exposure. Drug utilization evaluation can be used for the description of drug use pattern; early signals of irrational use of drugs; interventions to improve drug use; quality control cycle; continuous quality improvement.

Our study was on the prescribing pattern of the corticosteroids in COPD, Asthma and Allergic Rhinitis on Pulmonary Department. In the study population we find out that there is a statistically significant relationship exist between age ($p < 0.007$), gender ($p < 0.016$), locality of residence ($p < 0.023$) & socioeconomic status ($p < 0.016$) with the prescribing pattern of corticosteroids.

Most common route of administration was dry powder inhaler (67.2%) followed by MDI (16.8%), Nasal spray (10.4%), and Oral (5.6%) respectively. Most commonly prescribed drug was Budesonide + Formoterol (78.4%) combination where as Budesonide (2.4%) alone was less commonly prescribed. Budesonide + Formoterol 200 mcg combination was given in 37 prescriptions and 400 mcg was given in 61 prescriptions.

The most prominent route of administration was nasal spray in AR prescriptions. Median drug of administration in Asthma (41), COPD (36) and AR+Asthma prescription was Budesonide + Formoterol 36 (87.80%), 35 (97.22%), 8 (80%) respectively. The most prominent drug of administration was Mometasone furoate 13 (61.90%) in 21 AR prescriptions.

There is a statistical significance is exist over the use of corticosteroids with the severity of diseases such as COPD ($p < 0.008$) & Asthma ($p < 0.011$). is able to find a conclusion that the prescription patterns of drugs (corticosteroids) will be vary based on the several factors such as age, sex, socio economic status etc. In the current practice Dry Powder Inhaler is the most common drug route and the Budesonide + Formoterol is the most common prescribed drug of choices among the physicians. Also from the present study investigator were able to recognize that there is a



difference present in the drug prescriptions based on the severity of the disease conditions.

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AUTHORS’ CONTRIBUTIONS

Authors contributed equally to all aspects of the study.

PEER REVIEW

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CONFLICTS OF INTEREST

The authors declare that they have no competing interests