

Original Research Article

## **Drug Utilization Evaluation of Corticosteroids in Dermatology Department of a Tertiary Care Teaching Hospital at Palakkad, Kerala**

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### **ABSTRACT**

**Background:** Considering the economic burden of the skin disease treatment and because of its high disease prevalence, it is important to study the drug utilization patterns of skin diseases. The data pertaining to drug usage patterns of corticosteroids in skin conditions are particularly lacking. Monitoring and analysis of the prescription practices of topical steroids can help to achieve rational prescription of these drugs.

**Objectives:** To conduct the drug utilization evaluation of corticosteroids in dermatology department in a tertiary care teaching hospital at Palakkad.

**Method:** This prospective observational study was carried out using a predesigned data collection form from 5<sup>th</sup> October 2015 to 31<sup>st</sup> March 2016 Conducted in Dermatology Department, Karuna Medical College and Hospital, Chittur Palakkad Kerala India. All the prescriptions containing steroids were included in the study and the parameters evaluated were gender distribution, age of the patients, types of steroids according to the route of administration, potency of topical steroids, average number of steroids per prescription, number of fixed dose combinations was used to obtain the data. A total of 282 prescriptions were analyzed having 329 corticosteroids during the study period.

**Results:** Amongst the 282 prescriptions 48.9% were in male whereas 51.06 % were in female category. Highest number of patients belongs to between the age group of 18-40(36.17%). Out of 329 drugs prescribed, 77.74 % of these formulations consisted of topical corticosteroids, 18.29 % were oral corticosteroid preparations whereas only 4.26 % were parenteral corticosteroids. According to the potency of prescribed corticosteroids, the analysis ends with the result that 4.32% were mild, 12.19% & 32.67 % were moderate & potent steroids respectively whereas maximum percentage of steroid were very potent category that is around 50.78 % of total number of steroids prescribed. The percentage of fixed dose combination with topical steroids prescribed was 30.27%.

**Key words:** Drug Utilization Evaluation, Corticosteroids, Dermatology.

### **INTRODUCTION**

In general practice, skin diseases account for significant number of cases. Dermatological problems manifest as primary and secondary cutaneous complaints, which are particularly more common in India. Among these, allergy and itches are widely observed in most of these patients. Many people suffer from common

skin problems that are common in all the age groups. The skin problems that are commonly found are acne, burn scars, hyperhidrosis, psoriasis, scabies, vitiligo, pediculosis, herpes simplex infection, varicella, herpes zoster, erythema, urticaria, and so on. Corticosteroids play a vital role in the treatment of many diseases including skin. Probably, it has greater applications in

dermatological practice. These drugs are extensively prescribed by the consultants because of their strong immunosuppressive and anti-inflammatory actions. This practice has led to quite often overprescribing of these drugs.<sup>[1]</sup> Introduction to corticosteroids in 1950's is a milestone in dermatology. Corticosteroids (both topical & systemic) introduced in late 1950s had shown a dramatical improvement in dermatological diseases and till now remains a largest and commonly used measures in the management of various dermatological conditions.<sup>[2,5,8]</sup>

Corticosteroids are prescribed in many conditions including skin diseases. This study aims to assess the drug use of corticosteroids in dermatology department. Also find out the prescribing pattern to analyze the rationality of drug usage and feedback to the prescribers so that they must be able to modify the pattern of prescription so as to increase the therapeutic benefits and reduce the adverse effects.<sup>[2]</sup>

DUE is a systematic quality improvement activity. This helps to improve the quality and cost effectiveness of drug use and there b helps to improve the patient care. DUE can be applied to a drug, therapeutic class, disease state or a condition, a drug use process or specific outcome. DUE helps in identifying the problems in drug use, optimizing drug therapy etc.<sup>[5]</sup> Dermatology is a single such field where steroids are of particular use because of their powerful anti-inflammatory and immuno suppressive action. The topical corticosteroids are among the most commonly prescribed medication in the dermatological outpatients.<sup>[8]</sup>

## MATERIALS AND METHODS

### Study Design, Site, and Duration

This prospective observational study was conducted in the Dermatology Department, in Dermatology Department, Karuna Medical College and Hospital, Chittur, Palakkad Kerala, India, for 6 months.

## Study Schedule and Plan

Patients with skin diseases who were on topical corticosteroids were included. Patients who were unwilling to respond and patients with psychological disorders were excluded. The data were collected prospectively by direct observation in a specially designed pro forma containing relevant detail such as demographic, disease, and drug data. The prescriptions were analyzed for the following demographic details: different skin conditions that were diagnosed, details of drugs prescribed (corticosteroid prescribed alone or in fixed dose combination, potency, and topical corticosteroid, number of drugs per prescription) and details of information not included or specified on prescriptions for topical corticosteroids (generic name, strength, quantity, area of application, route of administration, and frequency of administration).

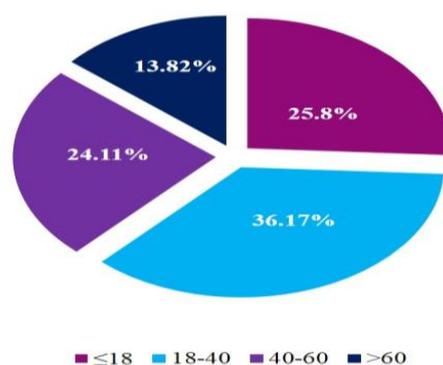
## RESULTS

A total of 282 patients who is on corticosteroid therapy attending the dermatology OPD were included in the study. Among 282cases included in the stud, 144(51.06%) were female category and 138 (48.9%) were male (table 1). Whereas highest number of patients belongs to between the age of 18-40 (36.17%) (Figure 2).

Table/Fig 1: Gender wise distribution of patients

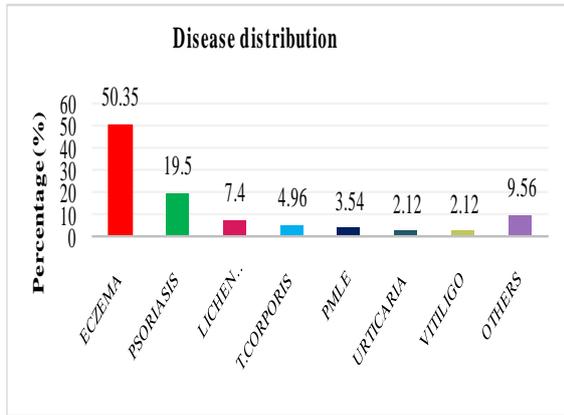
Gender	No of Patients (n=282)	Percentage (%)
Male	138	48.9
Female	144	51.06

### AGE WISE DISTRIBUTION



Table/Fig 2: Age wise distribution

In this study the disease diagnosis most common in the study population was eczema with a total of 142 (50.35%) patients. The number of patients who presented with psoriasis was 55 (19.5% out of 282 patients (figure 3).



Table/Fig 3: Distribution of Common Skin Diseases

A total number of 329 (Table 4) topical corticosteroids were prescribed in 282 prescriptions analyzed our study population and the average number of drugs per prescription was found to be 1.16. The percentage of fixed dose combination drugs with topical steroids prescribed was (30.19%).

Table/ Fig 4: Analysis of Prescription

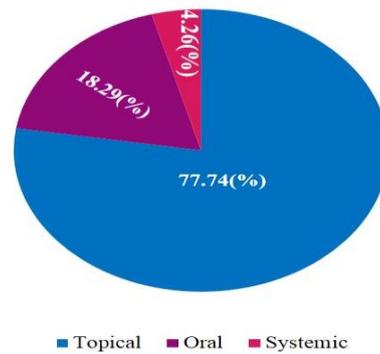
Total no. of prescriptions	282
Total no. of corticosteroids prescribed	329
Average no. of corticosteroids prescribed per prescriptions	1.16
Percentage of fixed dose combinations with topical steroids	30.19(%)

Out of all the formulations of corticosteroids prescribed in our study populations, around 77.74% of these formulations consisted of topical corticosteroids, 18.29% were oral corticosteroid preparations whereas only 4.26% were parenteral corticosteroids (figure 5).

According to the potency of prescribed corticosteroids, the analysis ends with the result that 4.32% were mild, 12.19% & 32.67% were moderate & potent steroids respectively and whereas maximum percentage of steroid were of very potent

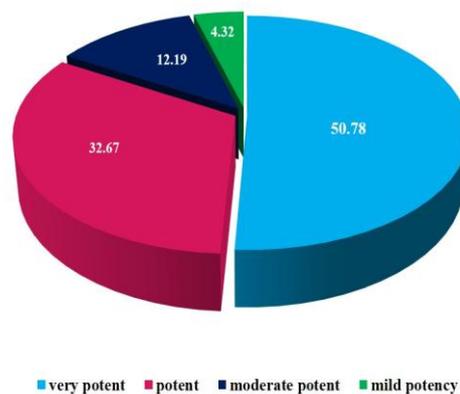
category that around 50.78% of total number of steroids prescribed (Table/ Fig 6).

**DISTRIBUTION BASED ON ROUTE OF ADMINISTRATION**



Table/ Fig-5 Distribution of Corticosteroids Based on Route of Administration

**Topical corticosteroids based on potency**

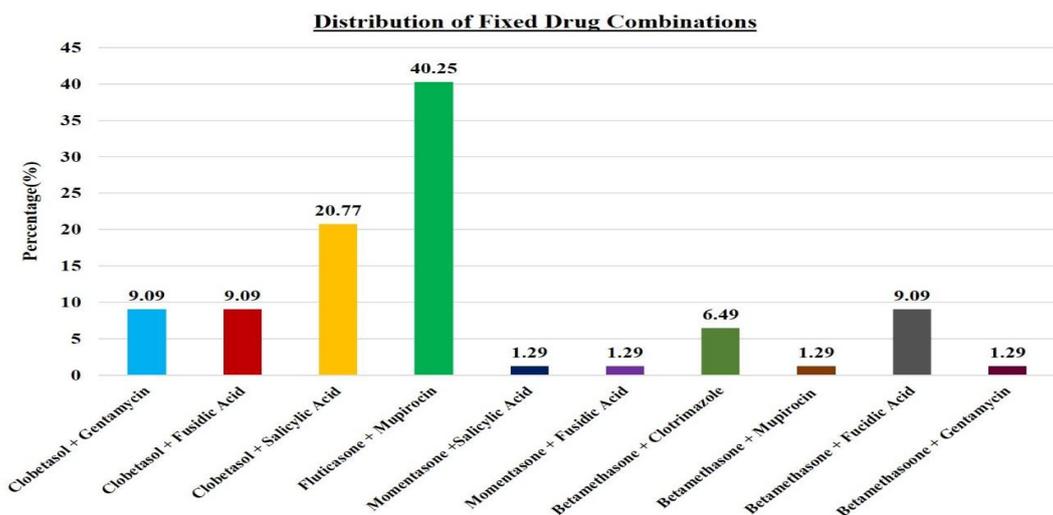


Table/ Fig 6: Types of Topical Corticosteroids Based on Potency

The most commonly employed topical steroid preparation as monotherapy was Clobetasol (49.70%), followed by Fluticasone (35.50%) and Desonide (9.46%) (Table/fig-7) Considerable number of prescription used topical antibacterials in combination with topical corticosteroids (Table/Fig-8). Of which, 40.25% of prescriptions included a combination of fluticasone with mupirocin (40.25%).

Table/Fig 7: distribution of topical corticosteroid as monotherapy

Dosage Form	No. of drugs prescribed (169)	Percentage (%)
Clobetasol	84	49.70
Fluticasone	60	35.50
Mometasone	8	4.73
Desonide	16	9.46
Hydrocortisone	1	0.59



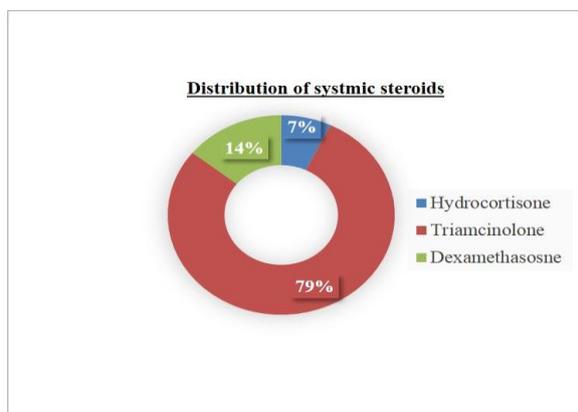
Table/Fig 8: Other topical agents used in combination with topical corticosteroids

Oral corticosteroids were prescribed for 60 patients (18.29%), the oral steroids Prednisolone (48.66%) was most commonly prescribed followed by Methyl prednisolone (40%) and Betamethasone (13.33%) (Table/Fig 9)

Table/Fig 9: Distribution of Oral Corticosteroids

Oral Corticosteroids	No. of Prescriptions with oral corticosteroids (n=60)	Percentage (%)
Prednisolone	28	46.66
Methyl prednisolone	24	40
Betamethasone	8	13.33

Among the parenteral injectable steroids prescribed for 14 patients (4.26%), Dexamethasone was the only parenteral corticosteroid (14.28%) prescribed intramuscularly. Majority was prescribed with triamcinolone (78.57%) (Table/Fig 10)



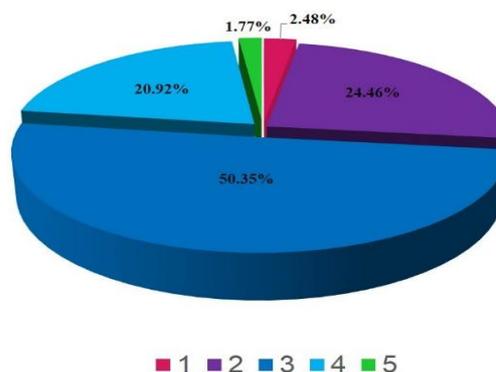
Table/Fig 10: Distribution of Systemic Corticosteroids

Among the total number of drugs prescribed, dosage was not mentioned for 183(71.76%), duration was not mentioned for 243(95.29%) and site of application was not mentioned for 185(72.54%) of total drugs [Table/Fig 11]

Table/ Fig 11: Consideration of Various Parameters While Prescribing Topical Corticosteroids

Parameters	Number (%)
Frequency not mentioned	183(71.76%)
Duration of treatment not mentioned	243(95.29%)
Site of application not mentioned	185(72.54%)

**NUMBER OF DRUGS PER PRESCRIPTION**



Table/ Figure 12: Number of Drugs per Prescription

Average number of prescription is the important index of prescription audit. It is preferable to keep the average no. of drugs as low as possible since higher figures always lead to increased risk of drug interaction, development of drug resistance and increase hospital cost. In our study 50.35% of patients were received 3 drugs

per prescription. And 1.77% was poly pharmacy prescriptions (Table/ Figure 12).

Table/ Fig 13-Distribution of Drugs Prescribed in Dermatology Department

Drug Category	No. of Drugs	Percentage (%)
Antiallergics	210	25.24
Antifungals	48	5.77
Antibiotics	7	0.84
Corticosteroids	328	39.42
Antacids	34	4.08
Emollients	118	14.18
Miscellaneous	87	10.45

Corticosteroids are the major class of drugs most commonly prescribed drugs in dermatology department (39.42%). Antiallergics around 25.24% and emollients about 14.18% (Table/ Fig 12) were prescribed during study period.

## DISCUSSION

The utilization of medicines is an integral part of healthcare and represents a relatively safe, effective, and inexpensive mode of treatment. Third-world countries spend 30-40% of their total health budget on drugs, many of which are prescribed irrationally. This study included 282 patients attending the Dermatology OPD.

Table 1 shows the gender wise distribution of patients under corticosteroid treatment. This study showed that 144(51.06%) patients were female and 138(48.9 %) patients are male. Bhuvana C Coplar [1] et al study shows that out of 100 patients 62 were females and 38 patients were males.

From this study we find that about 36.17% of patients are within the age limit of 18-40. And 25.8% were in  $\leq 18$  years of age (Figure 2). Rajesh Kumar Suman [4] et al study shows that in 100 patients about 58 patients were within the limit of 21-40.

Figure 3 shows that eczema was the most common diagnosis in the study population with a total of 142. Veena Rani Somaraju [8] et al study shows similar result.

Average number of drugs per prescription is an important index of prescription analysis and in the present study, it was 1.16. The percentage of fixed dose combination drugs with topical

steroids prescribed was 30.19% (Table 4). This result similar to the study conducted by Monalisa Jena [2] et al and it shows that fixed drug combination with corticosteroids is about 32%.

Number of drugs prescribed by parenteral route were 14(4.26%), oral route were 60(18.29%) and topical 255 (77.74%) (Figure 5) M.H Sumana [6] et al having similar results in their study on prescription analysis of drugs in dermatology department.

In the study result, the percentage of topical steroids prescribed according to the potency was 4.32%, 12.19% moderate and 32.67 were potent but the maximum number of prescription having topical steroids were of very potent (Figure 6) which contradicts the study result of Haftay Berhane Mezgebe [7] et al which concluded that mild steroids were more commonly prescribed (29.25%).

Out of all topical agents, 169 were given as single preparations and 77 as combination agents. In single preparations clobetasol was the common drug prescribed (49.70%) (Table 7) which is similar to the result of a study conducted by Bhuvana C Coplar [1] et al. In case of fixed drug combinations a combination of fluticasone with mupirocin was commonly prescribed (40.25) (Figure 8). C.M. Divyashanthi [3] et al found that considerable number of prescriptions (10.65%) used topical antibacterials in combination with topical corticosteroids. Of which 51.68% of prescriptions included a combination of fusidic acid with mometasone.

In this study Prednisolone (48.66%) was most commonly prescribed oral corticosteroid followed by Methyl prednisolone (40%) and Betamethasone (13.33%) (Table 9). The commonly prescribed systemic agent was triamcinolone i.e. about 78.57% followed by dexamethasone (14.28%) and 7.14% were hydrocortisone (Figure 10).

The frequency and duration of treatment were also not mentioned in some of prescriptions (71.16% and 95.29% respectively) (Table 11) and also and this

can also lead to an increase in the financial burden to the patients and also may lead to therapeutic failure or toxicity. Bhuvana C Coplar <sup>[1]</sup> et al also discussed about these parameters.

In our study 50.35% prescriptions contains 3 drugs per prescription and 1.77% prescriptions contains 5 numbers of drugs per prescription (figure 12). Rajesh Kumar Suman <sup>[4]</sup> et al discussed that in our study about 86% of patients received more than 3 drugs per prescription.

Among the drugs prescribed, corticosteroids were the most commonly prescribed drugs (39.42%) followed by antiallergics (25.24%), emollients (14.18%) which contradicts the study of M.H Sumana <sup>[6]</sup> et al.

It is imperative that the physician chooses the right drug for a patient, at a price that he can afford and also provide the relief that he is seeking. It is equally important to spend more time with the patient to explain the dosing and the adverse effects associated with self-prescription of the same drug. It would however be encouraging to have more generic prescribing. Even though the temptation is high to prescribe a fixed dose combination containing a corticosteroid it is necessary to prescribe them as single preparations as the adverse effects associated with their use are more. <sup>[8]</sup>

Among the total number of drugs prescribed, most of them were prescribed by topical followed by oral routes. The reason for high percentage of topical drugs being prescribed is that topical route has minimum side effects hence is the preferred route of administration in dermatology. The use of fixed dose combinations may help to bring down the cost and improve compliance.

## CONCLUSION

This study provides an insight into the dermatological disease pattern and is mainly focused on drug prescribing pattern of corticosteroids in the department of dermatology. There is a need to emphasize all prescribers adhere to the prescription

format, to keep the average number of drugs per prescription as low as possible and encourage prescribing by generic name. Proper dosage form, frequency of administration and duration of therapy should be mentioned in all prescriptions to reduce the cost of treatment.

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