



IJPPR

INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH

An official Publication of Human Journals

ISSN 2349-7203



Human Journals

Research Article

June 2016 Vol.:6, Issue:3

© All rights are reserved by Merin Susan Abraham et al.

# Prescribing Pattern of Corticosteroids and Cost Effective Analysis of Clobetasol and Fluticasone for Eczema in a Tertiary Care Teaching Hospital at Palakkad, Kerala

		ISSN 2349-7203	
IJPPR			
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH			
An official Publication of Human Journals			
<b>Merin Susan Abraham<sup>1*</sup>, Dr. C I Sajeeth<sup>2</sup>, Sreeja P A<sup>3</sup>, Bincy T Abraham<sup>4</sup></b>			
<i>1* Post graduate student, 2 Head of the Department, 3 Associate Professor, Department of Pharmacy Practice, Grace College of Pharmacy, Kodunthirapully, Palakkad, Kerala, India.-678004</i>			
<i>4 Associate Professor, Department of Pharmacy Practice, St. James College of Pharmacy, Chalakkudy, Kerala, India-678004</i>			
<b>Submission:</b>	31 May 2016		
<b>Accepted:</b>	5 June 2016		
<b>Published:</b>	25 June 2016		

**Keywords:** Drug Utilization Evaluation, Corticosteroids, Eczema, Cost effectiveness, Clobetasol, Fluticasone

## ABSTRACT

**Objectives:** To determine the prescribing pattern of corticosteroids for eczema. To determine the cost-effectiveness of Clobetasol and Fluticasone for eczema in the dermatology department of a tertiary care teaching hospital at Palakkad. **Materials & Methods:** This prospective observational study was carried out using a predesigned data collection form for 6 months in a tertiary care teaching hospital at 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 etc., a predesigned data entry form was used to obtain the data. A total of prescriptions were analyzed having corticosteroids during the study period. Then cost effectiveness is determined by using ICER method. **Results:** Amongst the 113 prescriptions 53.09 % were in the female category. The highest number of patients belongs to between the age group of 18-40 (36.17%). Out of drugs prescribed, 77.02 % of these formulations consisted of topical corticosteroids, 17.56% were oral corticosteroid preparations whereas only 5.40 % were parenteral corticosteroids. According to the potency of prescribed corticosteroids, the maximum percentage of the steroid was a potent category that is around 43.36% of a total number of steroids prescribed. The percentage of fixed dose combination with topical steroids prescribed was 14.15%. Cost effective analysis showed that fluticasone is Rs.13.69/EASI improvement than Clobetasol. **Conclusion:** Using ICER equation helps to obtain the most cost-effective treatment between two treatments. From our study, we determined that fluticasone is the most cost effective drug.



HUMAN JOURNALS

[www.ijppr.humanjournals.com](http://www.ijppr.humanjournals.com)

## INTRODUCTION

In general practice, skin diseases account for a 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.<sup>[1]</sup> Introduction to corticosteroids in 1950's is a milestone in dermatology. Corticosteroids (both topical & systemic) introduced in the late 1950's 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> Dermatology is a single such field where steroids are of particular use because of their powerful anti-inflammatory and immunosuppressive action. The topical corticosteroids are among the most commonly prescribed medication in the dermatological outpatients.<sup>[8]</sup>

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>

DUE is a systematic quality improvement activity. This helps to improve the quality and cost-effectiveness of drug use and thereby helps to improve the patient care. DUE can be applied to a drug, therapeutic class, disease state or a condition, a drug use processor specific outcome. DUE helps in identifying the problems in drug use, optimizing drug therapy etc.<sup>[5]</sup>

Corticosteroids are prescribed for many conditions including skin diseases. This study aims to assess the drug use of corticosteroids for eczema 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 the prescription so as to increase the therapeutic benefits and reduce the adverse effects. The impact on patients suffering from eczema is enormous, as no licensed systemic treatment option with proven efficacy for Eczema is available. Topical corticosteroids are the novel agents which showed high clinical efficacy in

patients with severe, refractory Eczema. We determined the cost-effectiveness of clobetasol and fluticasone as they were the most prescribed topical corticosteroids for Eczema patient's treatment.

## **MATERIALS AND METHODS**

### **Study Design, Site, and Duration**

This prospective observational study was conducted in the Dermatology of a tertiary care teaching hospital at Palakkad, for 6 months using a predesigned data entry form consists of EASI scoring method for determining the clinical outcome for cost effective analysis.

### **Study Schedule and Plan**

Patients with eczema 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 proforma containing relevant detail such as demographic, disease, and drug data. The prescriptions were analyzed for the following demographic details: 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) and also the cost of each drug and physician charge are determined to calculate the direct cost of treatment. Then the most cost effective treatment is obtained using the ICER formula

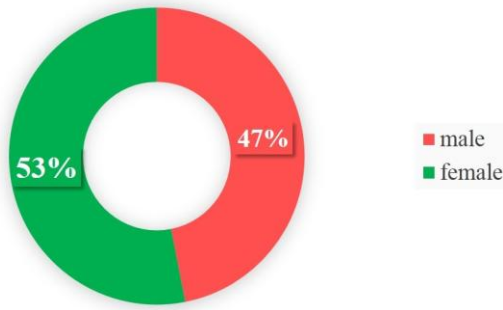
ICER (Incremental Cost Effective Ratio) =

$$\frac{\text{Cost of A}-\text{Cost of B}}{\text{Clinical outcome of A}-\text{Clinical outcome of B}}$$

## **RESULTS AND DISCUSSION**

The utilization of medicines is an integral part of health care 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 113 patients attending the Dermatology OPD for eczema.

**GENDER WISE DISTRIBUTION**



**Fig 1- Gender wise distribution**

Figure 1 shows the gender wise distribution of patients under corticosteroid treatment. This study showed that 60 (53.09%) patients were female and 53(46.91%) patients are male. M.H Sumana *et al* study shows that out of 310, 60% (186) patients were females and 40%(124) patients were males.

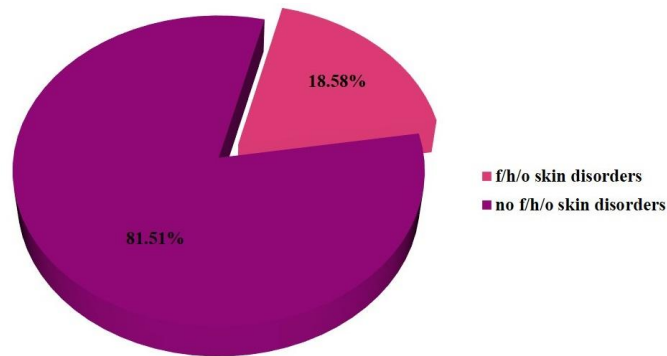
**AGE-WISE DISTRIBUTION**

**Table 1: Age-wise distribution.**

Age	No. of patients (n=113)	Percentage (%)
≤18	27	23.89
18-40	42	37.16
40-60	24	21.23
>60	20	17.69

From this study, we find that about 37.16% of patients are within the age limit of 18-40years. and 23.89% were in ≤18 years of age (Table 1). Rajesh Kumar Suman *et al* study shows that in 100 patients about 58 patients were within the limit of 21-40 years of age.

**DISTRIBUTION OF ECZEMA PATIENTS BASED ON FAMILY HISTORY**



**Figure 2: Distribution of Eczema patients based on family history.**

Figure 2 shows that around 18.58% patients having a family history of skin disorders or history of atopy.

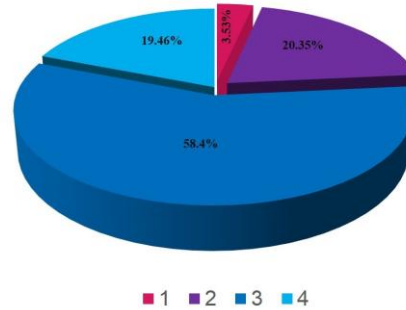
**ANALYSIS OF PRESCRIPTION**

**Table 2: Analysis of Prescription.**

Total no. of prescriptions	113
Total no. of corticosteroids prescribed	148
Average no. of corticosteroids prescribed per prescriptions	1.30
Percentage of fixed-dose combinations with topical steroids	14.15%

An average number of drugs per prescription is an important index of prescription analysis and in the present study, it was 1.30. The percentage of fixed-dose combination drugs with topical steroids prescribed was 14.15% (Table 2). This result similar to the study conducted by Monalisa Jena *et al* and it shows that fixed drug combination with corticosteroids is about 32%.

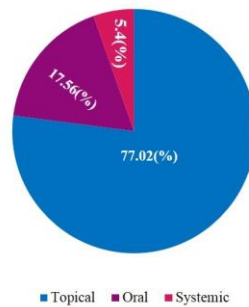
### NUMBER OF DRUGS PER PRESCRIPTION



**Figure 3- Number of drugs per prescription**

In our study 58.40% prescriptions contain 3 drugs per prescription and 19.46% patients receiving 4 drugs per prescription (Figure 3). Rajesh Kumar Suman *et al* discussed that in our study about 86% of patients received more than 3 drugs per prescription.

### DISTRIBUTION OF CORTICOSTEROIDS BASED ON ROUTE OF ADMINISTRATION



**Figure 4- distribution of corticosteroids based on route of administration**

A number of drugs prescribed by parenteral route were 8(5.40%), oral routes were 26(17.56%) and topical 114(77.02%) (Figure 4). M.H Sumana *et al* having similar results in their study on prescription analysis of drugs in dermatology department.

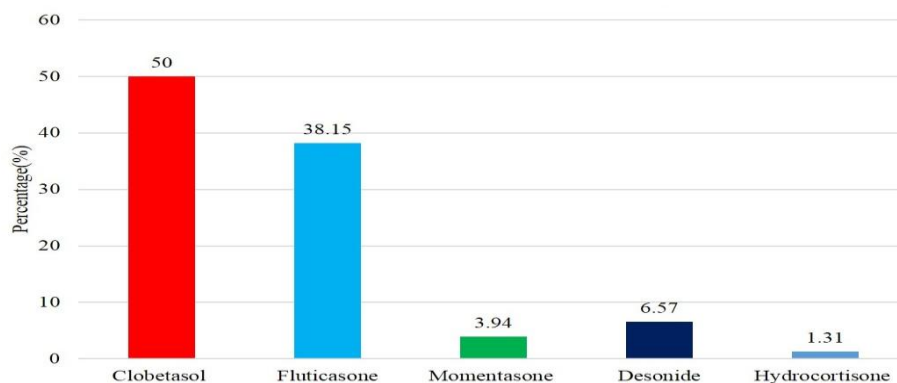
## TYPES OF TOPICAL CORTICOSTEROIDS BASED ON POTENCY

**Table 3: Types of Topical Corticosteroids Based on Potency.**

Corticosteroids	No of Topical Corticosteroids (n=114)	Percentage of Corticosteroids (%)
<b>VERY POTENT</b>		
Clobetasol	47	41.59
<b>POTENT</b>		
Fluticasone	49	43.36
<b>MODERATE POTENT</b>		
Betamethasone	7	6.19
Mometasone	4	3.53
<b>MILD POTENCY</b>		
Hydrocortisone	1	0.88
Desonide	6	5.30

In the study result, the percentage of topical steroids prescribed according to the potency was 6.18% mild, 9.72% moderate and 41.59% were very potent but the maximum number of prescription having topical steroids were of potent 43.36% (Table 3) which is similar to the study result of Monalisa Jena *et al* which concluded that potent steroids were more commonly prescribed (44%).

## DISTRIBUTION OF TOPICAL CORTICOSTEROID AS MONOTHERAPY



**Figure 5-Distribution of topical corticosteroid as monotherapy**

*Citation: Merin Susan Abraham et al. Ijppr.Human, 2016; Vol. 6 (3): 67-77.*

Out of all topical agents, 76 were given as single preparations and 38 as combination agents. In single preparations clobetasol was the common drug prescribed (50%) (Figure 5).

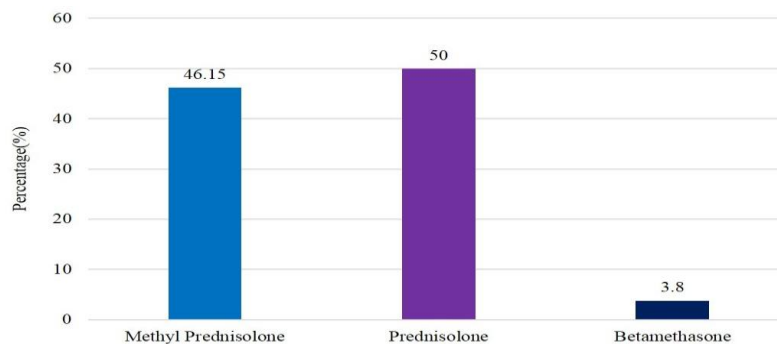
**OTHER TOPICAL AGENTS USED IN COMBINATION WITH TOPICAL CORTICOSTEROIDS.**

**Table 4: Other topical agents used in combination with topical corticosteroids.**

Fixed-drug combination	No. of prescriptions(38)	Percentage(%)
Clobetasol + Gentamycin	2	5.26
Clobetasol + Fusidic Acid	4	10.52
Clobetasol + Salicylic Acid	3	7.89
Fluticasone + Mupirocin	21	55.26
Momentasone + Fusidic Acid	1	2.63
Betamethasone + Mupirocin	1	2.63
Betamethasone + Fucidic Acid	5	13.15
Betamethasoone + Gentamycin	1	2.63

In the case of fixed-drug combinations, a combination of fluticasone with mupirocin was commonly prescribed (55.26%) (Table 4). C.M. Divyashanthi et al found that a considerable number of prescriptions (10.65%) used topical antibacterials in combination with topical corticosteroids. Of which 51.68% of prescriptions included a combination of a fusidic acid with mometasone.

**DISTRIBUTION OF ORAL CORTICOSTEROIDS**



**Figure 6- Distribution of Oral Corticosteroids**



In this study, Prednisolone (50%) was most commonly prescribed oral corticosteroid followed by Methylprednisolone (46.15%) and Betamethasone (3.8%) (Figure 6). The commonly prescribed systemic agent for eczema is triamcinolone.

**COST EFFECTIVE ANALYSIS OF FLUTICASONE & CLOBETASOL**

**Table 5: Cost Effective Analysis of Fluticasone & Clobetasol.**

Brands	Flutivate Cream (N=23)	Topinate Cream (N=16)
Average Value Of Direct Cost	281.54	213.61
Average Value Of Clinical Outcome From EASI Method ( $\Delta$ EASI)	14.43	12.93

**ICER**

$$= \frac{\text{Mean of Direct Cost of Clobetasol} - \text{Mean of Direct Cost of Fluticasone}}$$

$$\frac{\text{Mean of } \Delta \text{ EASI of Clobetasol} - \text{Mean of } \Delta \text{ EASI of Fluticasone}}$$

$$= \frac{281.54 - 213.61}{14.43 - 9.47} = \frac{67.93}{4.96}$$

$$= \text{Rs } 13.69/\text{EASI}$$

Cost effective analysis showed that Flutivate is the most effective drug compared to Topinate cream as they showed Rs 13.69/EASI improvement as using ICER method (Table 5). Andrew .A .Nelson et al conducted a similar cost-effective analysis of biological agents for 12 week treatment period. They obtained infliximab is the most cost-effective agent for treatment of psoriasis by literature review and PASI75 scoring system.

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.

Among the total number of drugs prescribed, most of them were prescribed by topical followed by oral routes. The reason for a 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. The Fluticasone is the most effective analysis than Clobetasol for the treatment of eczema as determined using ICER method.

## 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, the frequency of administration and duration of therapy should be mentioned in all prescriptions to reduce the cost of treatment. Cost effective analysis helps to determine the most effective treatment among fluticasone and clobetasol. Using ICER equation helps to obtain the most cost-effective treatment between two treatments. From our study, we determined that fluticasone is the most cost effective drug.

## ACKNOWLEDGEMENT

We would like to express sincere thanks to Management and Principal of The Grace College of Pharmacy, Kodunthirapully, Palakkad, Kerala for providing necessary facilities to carry out research. Also, would like to thanks to faculty members of Department of Pharmacy Practice, Grace College of pharmacy for their constant support and help. Authors also thank the faculties of Dept of Dermatology of tertiary care teaching hospital at Palakkad, Kerala, India for providing facilities.

## REFERENCES

1. Bhuvana Kolar Bylappa, Rajesh T Patil, Rathish T Pillai. Drug Prescribing Pattern of Topical Corticosteroids in Dermatology Unit of a Tertiary-Care Hospital. *Int. J Medical Science and Public Health* 2015;4(12):1-6
2. Monalisa Jena, Maitreyee Panda, Nibedita Patro, Swati Mishra. Pattern of Utilization of Corticosteroids in Department of Dermatology at a Tertiary Care Teaching Hospital. *J Chem and Pharm Res.* 2014;6(8):86-91

3. C.M.Divyashanthi, A.Nandhini, S.Adithiya Kumar. Study on Drug Utilization Pattern of Antibiotics among Dermatology In-Patients of a Tertiary Care Teaching Hospital, Karaikal, Puducherry. *Int J Basic & Clinical Pharmacology*. 2014;3(6):1072-1077
4. Rajesh Kumar Suman, Chetan Javsén, Vithal G. Patil, Y. A. Deshmukh. To Study Prescription Pattern of Corticosteroids in Skin OPD in Tertiary Care Teaching Hospital. *Asian Journal of Pharmacology and Toxicology*. 2014;2(4):23-26.
5. C. Dhandapani, K.S.G Arulkumaran, P. Asha. Drug Utilization Evaluation of Corticosteroids Based on Safety. *Int. J. Pharmacy Teaching and Practices*. 2015;6(1):1591-1597
6. S.P Narwane, T.C. Shetty, S.B.Chikhalkar. Drug Utilization and Cost Analysis for Common Skin Diseases in Dermatology OPD of an Indian Tertiary Care Hospital- A Prescription Survey. *British J Pharmaceutical Research*. 2011;1(1):9-18
7. Haftay Berhane Mezgebe, Martha kifle, Minyahil Alebachew Woldu. Drug Prescribing Pattern in Dermatology Unit of Ayder Referral Hospital. *World J Pharmaceutical Research*. 2015;4(1): 133-141.
8. Veena Rani Somaraju, Usha V. Nayak. Corticosteroids in Dermatology, A Drug Utilization Study. *J Chem and Pharm Res*. 2015;7(3):2208-2213.
9. Andrew A Nelson MD, Daniel J Pearce, MD, et al. cost effectiveness of biologic treatments for psoriasis based on objective and subjective efficacy measures assessed over a 12-week treatment period. *J Am Acad Dermatol*. 2007;58(1):125-135.
10. Patricia R Blank, Armin A Blank, et al. Cost effectiveness of oral alitretinoin in patients with severe chronic hand eczema- a long term analysis from swiss perspective. *Biomed central dermatology*. 2010;10(4):1-9

