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Prescribing Pattern of Corticosteroid in Dermatologic Disorder at Tertiary Care Teaching Hospital in Western Indian

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Abstract

Based on their potent immunosuppressive and anti-inflammatory properties, corticosteroids are essential for treating several skin disorders. Due to their lesser systemic toxicity, topical treatments are recommended. The use of corticosteroids in Indian dermatology practice, however, is not well documented. This study aims to analyze the prescribing patterns of corticosteroids for dermatologic disorders. In the outpatient dermatology department of GCS Hospital, Ahmedabad, a cross-sectional, observational study was conducted for six months, from March 2021 to August 2021. We looked at prevalent skin problems and prescribing patterns in 500 prescriptions. A descriptive statistical analysis was done following the compilation of all the data into Microsoft Office Excel. 169 patients (out of 500) received corticosteroids. There were 53% men and 47% women, respectively. The Papulosquamous illness affected 33% of them. The average number of corticosteroids per prescription was 1.17. Out of 198 prescribed corticosteroids, 163 (82.32%) were topical formulations, and 35 (17.67%) were oral. Among the nine different corticosteroids prescribed, clobetasol was given to 29% of patients. Additionally, 39% of patients received a fixed-dose combination (FDC) of corticosteroids, with clobetasol and salicylic acid being the most commonly used FDC. The average cost of corticosteroids per prescription was 135.18 INR, ranging from 4 INR to 468 INR for 15 days of treatment. The mean cost of corticosteroids was significant compared to other concomitant drugs ($P < 0.05$). Topical corticosteroids were more commonly prescribed than oral ones, with psoriasis being the most common indication for topical corticosteroids. Clobetasol and mometasone were the most frequently used topical corticosteroids.

Keywords: Corticosteroids; Dermatology; Prescribing pattern.

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Introduction

Skin disorders, affecting all age groups and genders, are a prevalent concern in society, presenting a wide range of symptoms and severity. These conditions can be minor or life-threatening, acute or chronic, painless or painful. Due to their chronic nature, they significantly impact patients' quality of life, financial stability, and social interactions[1]. Common dermatological conditions include fungal infections, dermatitis, psoriasis, urticaria, eczema, and vitiligo[2]. In India, prescribing medications for skin conditions poses challenges, such as inappropriate drug combinations and the overuse of antimicrobial treatments and their combinations with corticosteroids[3]. Due to their potent immunosuppressive and anti-inflammatory properties, corticosteroids are widely prescribed and frequently overprescribed, which can increase the risk of adverse drug reactions. Despite this, corticosteroids remain essential in treating many skin diseases[4].

Glucocorticoids can be administered systemically via intramuscular, intravenous, and oral methods, or locally through topical and intralesional means. Topical corticosteroids come in various forms, including creams, ointments, lotions, and gels[5]. Topical applications are preferred as they allow direct medication delivery to the target organ, dose adjustment based on response, and reduced systemic toxicity[6]. However, adverse effects of topical preparations can include hypertrichosis, purpura, striae, steroid-induced rosacea, and epidermal and dermal thinning[7]. Systemic administration of corticosteroids may lead to serious adverse effects such as immunosuppression, cataracts, glaucoma, hypertension, hyperglycemia, cushingoid characteristics, and suppression of the hypothalamic-pituitary-adrenal (HPA) axis. Therefore, this study aims to examine the prescribing patterns of corticosteroids in dermatological practice, along with other relevant factors.

Methods

The outpatient dermatology department at GCS Medical College, Hospital and Research Center in Ahmedabad, a tertiary care teaching hospital, served as the site for an observational, cross-sectional study. Over six months, from March to August 2021, 500 patients' prescriptions were randomly collected through a bi-weekly survey. Data on patients of all ages and genders who provided written informed consent were gathered and analyzed. The study received prior approval from the Department of Dermatology and the Institutional Ethics Committee. Patients were informed about the study and given a brief explanation following their dermatologist visits. The investigator enrolled each patient by visiting the dermatology outpatient department. A case record form (CRF) was used to document patients' personal information after enrolment. Prescription data were analyzed for demographics, drug usage trends, and the proportion of medications prescribed as corticosteroids, including their specific formulations. The compiled data was entered into Microsoft Office Excel 2010 for descriptive statistical analysis. An independent t-test was applied to compare the costs of corticosteroids and concurrent medications.

Results and Discussion

Skin conditions significantly impact the quality of life, particularly in a country like India, where there are regional variations in climate, social standing, and religious customs. Certain disorders may worsen with seasonal changes; for example, psoriasis and dermatitis often worsen in the winter, while scabies and fungal skin infections are more prevalent in the summer[8]. The prescribing physician gains valuable feedback regarding the sensible use of prescription patterns. Studies like these

are useful for identifying current trends in treatment adherence and usage[9]. In India, corticosteroids are very popular, and their use has increased over time. Even though their rational use is not always apparent, they are continuously produced and sold.

In our study, out of 500 patients, 169 (33.80%) were prescribed corticosteroids. Of these, 142 (84.02%) received one corticosteroid, 25 (14.79%) received two, and only 2 (1.18%) were prescribed three corticosteroids. Each prescription was written using brand names. Out of the 169 patients, 82% received a prescription for topical corticosteroids, while 18% received an oral prescription. Our findings were similar to those of Javsen C et al[10]. and Narwane SP et al[11], who also showed that topical corticosteroids were prescribed more frequently than oral ones. In our study, the majority of patients (46.74%) were between the ages of 21 and 40. Among these, there were slightly more male patients (50.63%) compared to female patients (49.37%). These results were consistent with studies by Ankit et al[12] and Bylappa et al[13].

According to the WHO ICD-10[14] classification, the most prevalent dermatological condition observed was papulosquamous disease of the skin (33.13%), followed by dermatitis and eczema (20.71%), both of which required the prescription of corticosteroids. Our findings aligned with those of Gupta R et al[4], Mukherjee S[15], Sarvanakumar RT, et al[16], and Mirshad PV et al[17]. According to the current study, 33.72% of corticosteroid prescriptions included clobetasol as the most frequently prescribed medication. This finding differs from the study by Javsen C et al[10], where 55% of prescriptions were for betamethasone. In our study, salicylic acid was most commonly combined with topical corticosteroids due to its keratolytic activity and ability to enhance penetration. This is similar to the findings by Khan et al[18] and Sarkar et al.[19], who also reported the use of fusidic acid and clotrimazole in conjunction with topical corticosteroids.

The average total cost per prescription was INR 640, which is slightly higher than the INR 487.50 recorded in a study by Pathak et al[20]. However, some prescriptions had significantly higher costs due to the inclusion of expensive medications such as immunomodulators (tacrolimus) and decapeptide-containing melgain lotion, which raised the overall average cost. Other factors contributing to the high cost include the generally high prices of dermatological products, polypharmacy, and the limited availability of generic medications.

Conclusion

The current study concludes that dermatitis and eczema, which often require corticosteroids, are the most prevalent dermatological disorders, followed by papulosquamous skin diseases. Topical corticosteroids were prescribed more frequently than oral ones, with the highest usage for psoriasis. Mometasone and clobetasol were the most commonly prescribed topical corticosteroids. There were fewer prescriptions for injections listed in the essential medications list and prescribed by their generic names, which may not be a positive indicator. Further research on the safety profile of corticosteroids is necessary.

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Conflict of Interest

None declared.

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Table 1. Demographic Characteristics of Patients

Characteristic	Number (%)
Gender	
Male	90 (53.25%)
Female	79 (46.74%)
Age	
0-20 years	26 (15.38%)
21-40 years	79 (46.74%)
41-60 years	48 (28.40%)
>61 years	16(9.46%)

Table 2. Different Types of Topical Formulations

Formulation	Prescribed number n (%)
Oral	**35(17.67)**
Tablet	35(17.67)
Topical	**163(82.32)**
Ointment	39(23.92)
Cream	68(41.71)
Lotion	48(29.44)
Paste	8(4.90)

Table 3. Steroid-Containing Topical Formulations Fixed Dosage Comnations (FDCs)

Topical steroid	Salicylic acid	Clotrimazole	Calcipotriol	Fusidic acid	Total
Clobetasol	34	0	5	1	40
Betamethasone	0	8	0	11	19
Mometasone	0	0	0	2	2
Hydrocortisone	0	0	0	2	2
Total					63

Table 4. Cost Analysis of the Research Participants Prescription

Cost of Variable	Result (INR)	P value*
1. Total cost/prescription (Mean ± SD)	640.00±397.03	
2. Corticosteroids/prescription (Mean ± SD)	135.18±88.07	<0.0001
3. Concomitant medicine cost/prescription (Mean ± SD)	504.65±411.15	
* P value < 0.05, that is, statistically significant		

Table 5. Cost of Corticosteroids by Subgroup Analysis

Type of prescription	1- Corticosteroids (N=142)	2- Corticosteroids (N=25)	3- Corticosteroids (N=2)
Corticosteroids /prescription Cost in INR (Mean ± SD)	118.73 ± 77.70	226.20 ± 92.34	165.00±0.0
Concomitant medicine cost/prescription **Cost in INR (Mean ± SD)**	531.36 ± 424.42	383.08 ± 305.51	128 ±0.0
P value	**<0.0001**	0.020	-

P value < 0.05 for 1&2 corticosteroids/prescription, that is, statistically significant

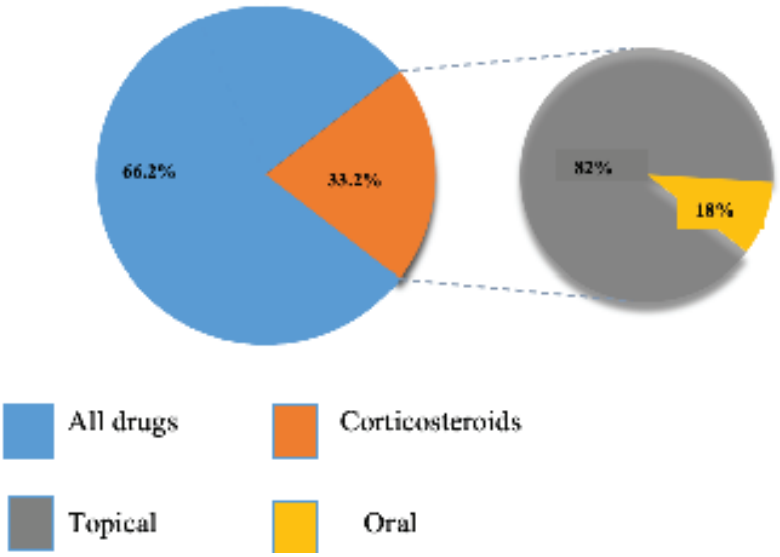

Figure 1. Frequency of Corticosteroid Prescribing

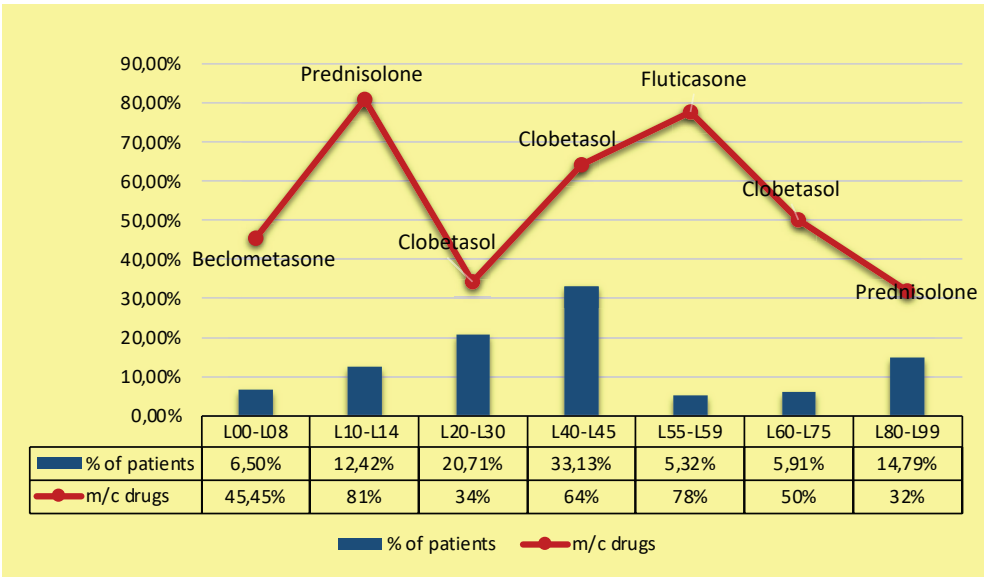

Figure 2. Patient Distribution Based on Diagnosis with the Most Widely Used Corticosteroids Indicated.

- L00-L08 – Infectious disease (Pyoderma ,candidiasis, scabies, herpes zoster)
- L10-L14 – Bullous disorder (pemphigus)
- L20-L30 – Dermatitis and eczema (prurigo, pityriasis alba)
- L40-L45 – Papulosquamous disease (Psoriasis and lichen planus)
- L55-L59 – Radiation related disorder (PMLE)
- L60-L75 – Skin appendages disease (Acne hair loss, alopecia areata,keloid)
- L80-L99 – Other (pigmentation disorder, SLE,insect bite, nutritional deficiency)

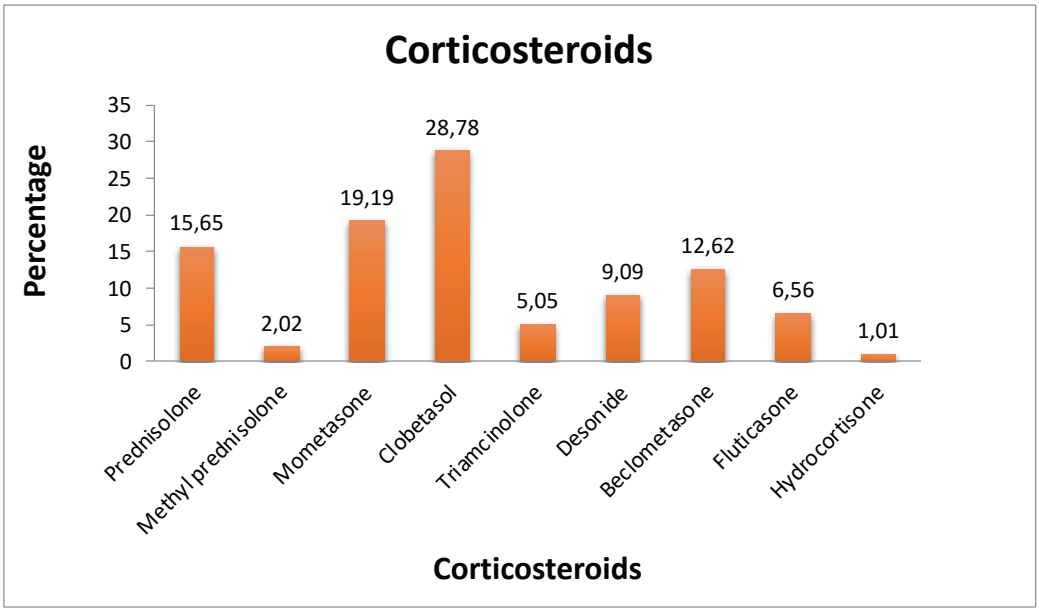

Figure 3. Pattern of Corticosteroid Prescription