



## PRESCRIPTION TREND OF TOPICAL CORTICOSTEROIDS IN OUTPATIENT OF DERMATOLOGY IN A TERTIARY CARE HOSPITAL IN AURANGABAD, MAHARASHTRA

### Pharmacology

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### ABSTRACT

**BACKGROUND:** Skin diseases amounts for a large fraction of patients attending the outpatient of dermatology and topical corticosteroids (TCS) are being commonly prescribed, the data related to drug usage patterns of TCS in skin conditions are particularly lacking. Hence it is vital to study the drug prescribing patterns of TCS in skin diseases.

**OBJECTIVE:** To study the demographic details and drug prescription pattern of TCS in patients with skin diseases.

**MATERIALS AND METHODS:** A cross-sectional study conducted in the Dermatology Department, MGM Medical College, and Aurangabad over a period of 6 months. The patients with skin diseases who were prescribed TCS were included. The data was collected by direct observation in a specially designed Performa containing relevant detail such as demography, skin conditions and drug used. The data were analyzed as counts and percentages.

**RESULT:** Majority of the patients were under the age of less than 20 years (38%) followed by those between the ages of 21 years to 40 years (36%). Female patients (57.4%) were more. Patients from rural and urban areas were almost equal. Most common condition identified was dermatitis (36.2%) followed by Psoriasis (24.5%). Clobetasol propionate (38.8%), mometasone furoate (12%) and betamethasone dipropionate (15.7%) were the commonly prescribed TCS. 38% molecules were of superpotent class while 29 % from potent class. Maximum dosage form was cream and ointment. Common concomitant drugs used were Antihistaminics (24%) and Antibiotics(36%). Fixed dose combinations (FDC) of TCS were commonly with fusidic acid and salicylic acid. Average drug per prescription was 2.85.

**CONCLUSION:** Prescription pattern provides critical feedback to prescribing physician by focusing on rationalizing drug therapy. FDC of TCS with salicylic acid and fusidic acids are rational and approved by CDSCO.

### KEYWORDS

Prescribing Pattern, Topical Corticosteroids, Dermatology, Rational, Skin Disease

### INTRODUCTION

Dermatological conditions account for up to 2% of consultations in general practice worldwide.<sup>1</sup> In 2013, it was observed that skin conditions contributed 1.79% to the total global burden of disease measured in disability-adjusted life years (DALYs) across 306 diseases and injuries. When comparing absolute DALYs/YLDs (years lived with disability), skin and subcutaneous disorders were the 4<sup>th</sup> leading cause of non-fatal disease burden, directly following iron-deficiency anemia, tuberculosis, and sense organ diseases.<sup>2</sup> The pattern of skin diseases in India is influenced by the developing economy, level of literacy, social backwardness, varied climate, industrialization, access to primary health care, and different religious ritual and cultural factors.<sup>3</sup> Among the Indian population, the prevalence of skin diseases in the general population has varied from 7.86% to 11.16% in various studies.<sup>4,5</sup>

In India, the most prevalent dermatological conditions include dermatitis, urticaria, fungal skin infections, acne, alopecia, psoriasis, skin cancer and adverse drug reactions on the skin.<sup>1</sup>

Introduced in late 1950s, corticosteroids have revolutionized the practice of dermatology showing dramatic improvements in dermatological diseases and till now remains the largest and the mainstay in the management of various dermatological conditions such as eczema, psoriasis, vitiligo, lichen planus, atopic dermatitis, contact dermatitis, alopecia areata, discoid lupus erythematosus, and drug rash. Since this group of drugs is readily and rampantly available in the market, it is frequently used for their palliative effect leading to its misuse in medicine practice.<sup>6</sup>

However, unjustifiable irrational prescription of Corticosteroids is a common occurrence in clinical practice and they are being abused by health professionals and patients. Irrational use of Corticosteroids causes complications in the patient's health since Corticosteroids are associated with a number of side effects, both superficial and systemic. Furthermore, the abuse of Corticosteroids is worsened when some general practitioners prescribe Corticosteroids for all skin rashes and for protracted periods.<sup>7</sup>

It has been estimated that 50% or more medicine expenditure is being wasted through irrational prescribing, dispensing and patient use of

medicine. Irrational polypharmacy paves path for adverse drug reactions (ADRs), which is reported to be as high as 28%.<sup>6</sup>

Rational use can minimise the systemic and cutaneous side effects associated with corticosteroids. In order to derive the optimum benefit with least adverse effects, various factors have to be taken into consideration while prescribing, including the nature of the disease, age of the patient, site affected, and the pharmacology of the corticosteroids like potency, frequency of use and the vehicle.<sup>3</sup>

Periodic or regular 'prescription auditing' may minimize overuse and misuse of drugs, plan essential drug selection and estimate the drug need of the community. The said data are of great value to health administrators, policy makers, manufacturers, distributors, health professionals and various consumer groups for their decision making.<sup>7</sup>

Intermittent monitoring of drug use patterns is one of the measures which is undertaken in order to analyze the rationality of drug usage and to offer feedback/ suggestions to the prescribers.<sup>9</sup>

The main aim of drug utilization research is to facilitate the rational drug use. Without a precise knowledge of how drugs are being prescribed and used, it is difficult to suggest measures to improve the prescribing habits.<sup>10</sup>

Hence the present study is designed to assess the prescribing pattern and cost analysis of topical steroids for various skin disorders in the dermatology OPD of a teaching hospital.

### MATERIALS AND METHODS

#### STUDY DESIGN, SITE, AND DURATION:

The cross-sectional study was conducted in the Dermatology Department of MGM Medical College, Aurangabad, Maharashtra. The study was conducted for a period of 6 months after approval of ethics committee.

#### METHOD OF COLLECTION OF DATA:

Patients with skin diseases who were prescribed topical corticosteroids were included. Patients who were unable to respond to verbal questions, pregnant and lactating women, and patients with psychological disorders were excluded. After obtaining informed consent from patients, information was collected in a specially

designed proforma by direct observation of prescriptions of patients attending skin out-patient. The proforma includes patient demographic information, diagnosis, prescription details like drug name, dosage form, strength, frequency of administration, duration of treatment, potency, whether generic name or trade name were used and if any drugs are combined or used concomitantly. The proforma also includes prescriber information.

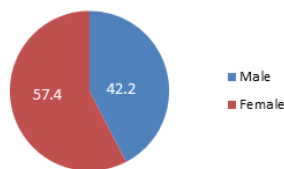
**STATISTICAL ANALYSIS:**

The data was analyzed using descriptive statistics such as mean, standard deviation and proportions.

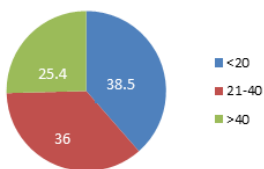
**RESULTS**

A total of 350 prescriptions of patients who were prescribed with topical corticosteroids at skin out-patient of dermatology department of MGM, Aurangabad, were analyzed over a period of 6 months. Among the study population Female patients (57.4%) were more (Graph 1). Majority of the patients were under the age of less than 20 years (38.5%) followed by those between the age of 21 years to 40 years (36%) and those above 40 years (25.4%). (Graph 2)

**Graph 1: % Gender Distribution**



**Graph 2: % Age Distribution**



There were almost equal patients from urban and rural area (Table 1). Majority of the patients were students (30%) followed by housewives (37.5%). (Table 2)

**TABLE 1: RESIDENCE**

Residence	No of prescriptions	%
Urban	176	50.2
Rural	174	49.7

**Table 2: Occupation**

Occupation	No of prescriptions	%
Students	105	30
Farmer	47	13.4
Housewife	111	31.7
Business	50	14.2
Unemployed	37	10.5

The skin conditions commonly encountered were dermatitis (36.2%), psoriasis (24.5%), urticaria(5.1%), pustulosis (3.4%). (Table 3) Topical corticosteroids prescribed alone were 52% and in combinations were 46%. (Table 4) Topical corticosteroids that were most commonly prescribed were clobetasol propionate (38.8%), mometasone furoate (12%), betamethasone dipropionate (15.7%), and hydrocortisone (12%). (Table 5) Fusidic acid, gentamicin, salicylic acid, neosporin, and clotrimazole were the common combinations that were prescribed. (Table 6)

**Table 3: Conditions that were diagnosed in study participants**

Conditions	No of prescriptions	%
Dermatitis	127	36.2
Psoriasis	86	24.5
Urticaria	18	5.1
Pustulosis	12	3.4
Polymorphous light eruption	6	1.7
Vitiligo	8	2.2
Lichen planus	14	4
Pompholyx	4	1.1
Tinea corporis	16	4.5
Pseudoacanthosis nigricans	4	1.1
Fissure foot	6	1.7
Pityriasis alba	10	2.8
Macular amyloidosis	3	0.8
Lichen simplex chronicus	7	2
Lichen sclerosis et atrophicus	2	0.05
Alopecia areata	9	2.5

Insect bite	5	1.4
Pellagra	1	0.2
Pityriasis rosea	8	2.2
Intertrigo	4	1.1

**Table 4: Topical steroid**

Used alone	182	52
In combination	168	48

**Table 5: Topical corticosteroid prescribed in study participants**

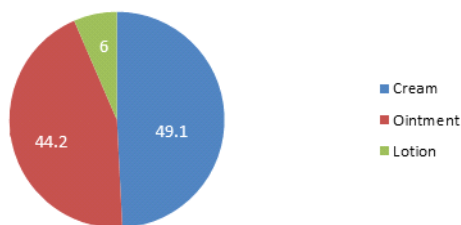
Clobetasol propionate	136	38.8
Mometasone furoate	42	12
Betamethasone dipropionate	55	15.7
Halobetasol	24	6.8
Hydrocortisone	43	12.2
Flucinolone acetonide	29	8.2
Fluticasoen propionate	21	6

**Table 6: Topical corticosteroid in combination with**

Fusidic acid	82	23.4
Gentamincin	46	13.1
Fusidic acid+clotrimazole	18	5.1
Salicylic acid+gentamicin	12	3.4
Salicylic acid+fusidic acid	6	1.7
Fusidic acid+Neosporin+clotrimazole	4	1.1

The topical corticosteroids were commonly in the form of cream (49%), ointment (44%) and lotion (6.5%). (Graph 3)

**Graph 3: % Formulation Used**



Potency of the topical corticosteroids commonly prescribed was of super potent (38%) and potent (29.4%). (Table 7) Oral dosage forms constituted 36%, injections 9% and both accounted 5%. (Table 8) Among the concomitantly prescribed drugs, H2 receptor blockers/proton pump inhibitors constituted 21.1% followed by antibiotics (36%) and antihistaminics (24%). (Table 9)

**Table 7: Potency of Topical steroid**

Class 1—Superpotent	133	38
Class 2—Potent	103	29.4
Class 3—Potent, upper mid-strength	43	12.2
Class 4—Mid-strength	30	8.5
Class 5—Lower mid-strength	15	4.2
Class 6—Mild strength	17	4.8
Class 7—Least potent	9	2.5

**Table 8: Dosage forms: Topical corticosteroid/Topical cortico steroid + Oral/Injection:**

Topical corticosteroid	350	100
Topical corticosteroid + Oral	126	36
Topical corticosteroid + Injection	34	9.7
Topical corticosteroid + Oral + Injection	18	5.1

**Table 9: Concomitant drugs**

Antihistaminic	84	24
H2Receptor blockers/Proton pump inhibitors	74	21.1
Antibiotics	126	36
Emollients and skin protective agents	54	15.4
Others	12	3.4

**DISCUSSION**

Drug utilization studies are the organized quality enhancement processes which are designed to review drug usage and prescribing patterns of with current recommendations or guidelines for the treatment of a certain disease. <sup>11</sup>In our study Female patients (57.4%) were

more than the male population. Majority of the patients were under the age of less than 20 years (38.5%). There were almost equal patients from urban and rural area. Majority of the patients were students (30%) followed by housewives (37.5%). In a study conducted by Puroshotam et al<sup>1</sup>, majority of the patients were under the age of less than 20 years (38%) followed by those between the age of 21 years to 40 years (36%). Female patients (61%) were more and majority were from rural areas (69%). Another study<sup>1</sup>, where total of 90 prescriptions were analyzed, showed that males were 45% and females were 55%. A maximum of around 32.63% prescriptions were collected from age group of 21-30 year followed by 23.64% from the age group of 11-20 year by a study conducted by MK Jaiswal et al.<sup>7</sup>

The skin conditions commonly encountered in our study was dermatitis (36.2%), psoriasis (24.5%), urticaria (5.1%), pustulosis (3.4%). Similar results were obtained by Puroshotam et al where dermatitis was diagnosed in 41% patients followed by psoriasis (12%) and pustulosis (8%). These findings are comparable to a study by Bylappa BK and Patil RT.<sup>12</sup> Where as in a study by Divyashanthi and Manivannan<sup>13</sup> Psoriasis followed by dermatitis were most common conditions for which topical steroid were prescribed.

We observed that Topical corticosteroids prescribed alone were 52% and in combinations were 46%. Another study conducted by Mukharjee et al<sup>6</sup> showed that Most of the corticosteroids prescribed were given topically (86.21%). 8.64% of drugs prescribed were oral corticosteroids, while 5.15% were Parenteral. PV Mirshad et al<sup>8</sup> observed that 64% of the patients receiving corticosteroids were prescribed a topical corticosteroid preparation.

We found that topical corticosteroids that were most commonly prescribed were clobetasol propionate (38.8%), mometasone furoate (12%), betamethasone dipropionate (15.7%), and hydrocortisone (12%). Comparable results were obtained by Puroshotam et al.<sup>11</sup> Mukharjee et al<sup>6</sup> also observed that most commonly prescribed steroids were clobetasol, followed by betamethasone dipropionate, mometasone, prednisolone, respectively.

We analysed that topical steroids were prescribed with combination in 48% of prescriptions. Fusidic acid, gentamicin, salicylic acid, neosporin, and clotrimazole were the common combinations that were prescribed. Another study by Mukharjee et al<sup>1</sup> showed that out of 328 prescriptions encountered, 84 (25.61%) presented with fixed drug combinations.<sup>6</sup> PV Mirshad et al<sup>8</sup> observed Fixed dose combinations (FDCs) consisted of 47.5% (48/101) of the formulations which were prescribed and all the prescribed FDCs were topical. The most common FDCs prescribed along with a corticosteroid preparation were gentamicin (19/48) followed by salicylic acid (12/48), fusidic acid (11/48) and miconazole (3/48).

In our study we observed that the topical corticosteroids were commonly in the form of cream (49%), ointment (44%) and lotion (6.5%). Oral dosage forms constituted 36%, injections 9% and both accounted 5%.

Potency of the topical corticosteroids commonly prescribed was of super potent (38%) and potent (29.4%). which shows a trend toward prescribing potent steroids. The prescription of very potent steroids should be limited when possible. Long and excessive use may carry the risk of suppression of the hypothalamic-pituitary-adrenal axis as well as local adverse effects.<sup>15</sup> Similar results were obtained by Srenath et al.<sup>1</sup> Topical steroids commonly prescribed were super potent among them, Clobetasol 34.4% and Halobetasol 22.2% and among mid potent, Betamethasone 14.4% and Mometasone 17.7%, hydrocortisone, desonide, fluocinolone were least prescribed. Cream and ointment formulation was commonly used.<sup>1</sup> PV Mirshad et al<sup>8</sup> also observed that among the topical preparations prescribed 78% were highly potent corticosteroids including clobetasol, halobetasol and mometasone. Intermediate potency ones like hydrocortisone, Fluticasone and betamethasone consisted of 18% and the remaining 4% consisted of a less potent dexamethasone preparation.

We observed that, among the concomitantly prescribed drugs, antibiotics (36%) followed by antihistaminics (24%) and H2 receptor blockers/proton pump inhibitors constituted 21.1%. Mukharjee et al observed that 58.33% of them contained combinations of corticosteroids and antibacterials, 34.52% had steroidal combinations with antifungals, and 7.14% were combined with other agents. Analysis of

the prescriptions showed that prescribing information about topical steroids was inadequate in majority of the prescriptions. The use of such medicines, when they are not indicated, can lead to an unnecessary burden on the health-care system. Another concern was the use of FDCs of topical steroids with an antimicrobial agent. Studies have shown that topical antimicrobial/steroid combinations do not confer any benefit over steroids alone in patients with atopic eczema.<sup>14</sup> Topical antibiotics should only be used where infection is limited to a small area of the skin. A short course of a suitable oral antibiotic may be indicated in more severe cases. To prevent the development of resistance, all antimicrobials, including topical agents, should be used very judiciously.<sup>14</sup>

The average number of drugs per prescription was 2.8. The number of drugs prescribed must be minimal since higher numbers leads to increased risk of drug interactions, adverse drug reactions, reduced compliance, and economic burden of prescription on the patient.

## CONCLUSION

Prescription pattern studies help to generate baseline data which can be of utmost value to researchers and policymakers. This pattern of prescription may be influenced by the availability of the preparation in the hospital pharmacy and the choice of the dermatologist. Incomplete prescription of topical steroids will either limit their clinical benefit or may predispose the patient to potential side effects. The hospital authorities should make provisions for making low-potency steroids available in the hospital pharmacy taking into consideration the adverse effects of potent steroids. There is a need to put more emphasis on rational and complete prescription of topical steroids. The medical community should prescribe with a social perspective in mind and should stay away from practices which will be detrimental to the society at large.

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## CONFLICT OF INTEREST: None

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