

Original Research Article

Use of topical corticosteroids in dermatological conditions: data from real world

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ABSTRACT

Background: Topical corticosteroids (TCS) are the first treatment option prescribed for various dermatologic conditions. When used as monotherapy or combination therapy, TCS can efficiently alleviate the symptoms of atopic dermatitis and psoriasis. This electronic medical records (EMR) based study was planned to evaluate the TCS usage pattern in atopic dermatitis and psoriasis.

Methods: This was a real-world, retrospective, cross-sectional, EMR-based study where anonymized data of patients diagnosed with psoriasis (≥ 18 years) or atopic dermatitis (all age groups) and prescribed with TCS from 2017-2023 was extracted from the EMR database for analysis. Demographic characteristics of patients (age, gender), duration of the TCS prescribed, comorbid conditions and the concomitant medications prescribed with TCS were evaluated.

Results: Monotherapy (single TCS) was the most preferred. Clobetasol propionate, mometasone furoate and desonide were commonly prescribed. For psoriasis, a combination of TCS with non-steroidal molecules was most preferred. The most prescribed was the fixed-dose combination (FDC) of clobetasol propionate and salicylic acid. Antihistamines and emollients were the most common concomitant medications prescribed for atopic dermatitis patients. Antihistamines and immunosuppressants were the commonly prescribed concomitant medications for psoriasis patients.

Conclusions: It can be inferred from the findings of the study that TCS remain the mainstay for the treatment of atopic dermatitis and psoriasis. TCS monotherapy was preferred for atopic dermatitis while combination therapy emerged as the preferred approach for psoriasis patients.

Keywords: Atopic dermatitis, Psoriasis, Real-world, Topical corticosteroids

INTRODUCTION

The incidence of skin diseases has risen in recent decades, placing a substantial burden on healthcare

systems worldwide. While the mortality rate from skin diseases is minimal and disability-adjusted life years due to skin diseases are less, the magnitude of their impact on disability or the years lived with disability is notably significant.¹ In India, the non-fatal burden associated with

various dermatological conditions surpasses that of cardiovascular diseases. The occurrence of skin diseases within the general population ranges from 11.6% to 63%, as indicated by diverse studies.^{1,2} Within the spectrum of dermatologic conditions, atopic dermatitis and psoriasis stand out as prevalent chronic inflammatory skin disorders, demonstrating substantial variations in their occurrence and prominence across diverse countries.³

They can affect individuals of all ages, manifesting in high-impact areas like the hands and affecting extensive body areas. They influence psychosocial well-being and impact the quality of life, especially in the presence of concurrent comorbidities.⁴⁻⁶ Further, both atopic dermatitis and psoriasis are strongly linked to increased economic burden and significant societal costs on the infected patients, which highlight the need for optimal disease control.^{7,8} Thus, managing both conditions are a routine aspect of medical practice and a key focus in specialized clinics.

Topical corticosteroids (TCS) have been the first choice of treatment option for various dermatologic conditions since their introduction in the 1950s.⁹ TCS is indicated for relieving the inflammatory and pruritic conditions of corticosteroid-responsive dermatoses (CRDs) including psoriasis, atopic dermatitis, eczema, cutaneous lupus and others.^{10,11}

The diverse biological properties of TCS such as potent immunosuppressive, anti-inflammatory, anti-proliferative and anti-histaminic effects appear to mediate its comprehensive therapeutic niche for the chronic exacerbations of dermatologic conditions.¹² TCS acts by modifying the functions of epidermal and dermal cells and of leukocytes participating in proliferative and inflammatory skin diseases.¹³

Currently, TCS include 7 classes that are categorized from mild to super potent agents and are used in the form of ointments, creams, lotions and gels.¹⁴ Despite emerging atopic dermatitis and psoriasis treatments, TCS are likely to remain the primary choice for most doctors in primary care due to their effectiveness and proven safety when used intermittently.¹⁵

Moreover, utilizing a Class I TCS as the primary treatment during the initial two weeks can be highly effective, potentially producing visible results that encourage continued therapy.¹⁶ Research also emphasizes the efficacy and safety of TCS in alleviating symptoms associated with atopic dermatitis and psoriasis when integrated into a comprehensive management approach, whether as monotherapy or combination therapy.¹⁷

Given the rising prevalence of skin diseases and the economic burden of treatment, understanding the use of TCS is crucial. With limited real-world data on TCS prescription patterns for atopic dermatitis and psoriasis in the Indian population, this study was planned to assess

electronic medical records (EMR) data on TCS prescriptions. The findings will help healthcare professionals better understand the prevalence and usage patterns of TCS in atopic dermatitis and psoriasis conditions in real-world settings.

METHODS

Study design

This was a real-world, retrospective, cross-sectional, observational, EMR-based study. This included analysis of anonymized and aggregated data of the patients meeting eligibility criteria from January 2017 to December 2023. The patients ≥ 18 years of age diagnosed with psoriasis and prescribed TCS were included.

Patients diagnosed with atopic dermatitis or eczema (all age groups) prescribed TCS were also a part of the study.

However, those with incomplete data with respect to study requirements were excluded. The data was analyzed to understand the demographic characteristics of patients (age, gender), duration of the TCS prescribed, comorbid conditions and the concomitant medications prescribed with TCS.

Ethical approval

Ethics Committee (EC) approval for the study was obtained from the Royal Pune Independent Ethics Committee (IEC No. – RPIEC131123 dated 08/11/2023). The study was also registered on the Clinical Trials Registry of India (CTRI) portal vide number-CTRI/2023/12/060667. An informed consent waiver was obtained for this observational study.

Statistical analysis

STATA version 15.1 SE was used for carrying out the statistical analysis of this study. Descriptive statistics have been used to summarize demographic and baseline characteristics for continuous variables such as the number of patients (n), mean, standard deviation (SD), median, minimum and maximum. Counts and percentages have been used to summarize categorical data.

Concomitant medications are summarized using frequency counts (n) and percentages (%) of subjects. For the duration of TCS, the mean duration (days) is presented based on the available data.

Patients prescribed with monotherapy and/or combination therapy (with steroidal or non-steroidal interventions) of TCS have been presented using frequency and percentage. The most commonly prescribed monotherapy and the combination therapy of TCS have been presented using frequency and percentage.

RESULTS

Records of 29,822,062 patients were available in the EMR database for January 2017-December 2023. Of the total patients, 128,318 (0.43%) were diagnosed with atopic dermatitis and 57.89% of these patients were prescribed TCS. From the total adult patients (≥ 18 years) on EMR (26,461,108), 88,337 (0.33%) patients were diagnosed with psoriasis and 59.31% of those patients were prescribed TCS (Figure 1).

Demographic characteristics

Among the patients diagnosed with psoriasis and prescribed TCS, the majority of the patients (31.98%) belonged to the age group 18-39 years followed by 40-64 years (26.51%). 4.24% of the affected patients were less than 1 year of age.

The overall mean age of the patients was 32.07 ± 22.58 years (mean \pm standard deviation-SD) (Table 1). Similarly in psoriasis, patients in the age group 18-39 years were seen to be most affected and prescribed TCS (50.06%). At an overall level, males were more affected (59.32%) (Table 2).

Commonly prescribed TCS

Monotherapy was observed as the most preferred treatment choice for atopic dermatitis, with clobetasol propionate being the most prescribed (28.62%), followed by mometasone furoate (25.05%) and desonide (12.22%). In the category of FDC of TCS with molecules containing a steroidal ring, mometasone furoate+fusidic acid stood out as the most prescribed (43.15%). Halobetasol propionate+fusidic acid (20.85%) and betamethasone+fusidic acid (18.98%) were the other majorly prescribed combinations in this category.

In the category – combination of steroidal molecules with other non-steroidal molecules the combination of clobetasol propionate with salicylic acid was the most prescribed (69.14%) followed by a combination of clobetasol propionate with antifungal agent miconazole (16.12%) (Table 3).

In contrast to atopic dermatitis, a combination of steroids with non-steroidal agents was the most preferred option prescribed to 32,629 patients followed by monotherapy prescribed to 7,354 patients (Table 4).

Under the category combination of steroids with non-steroidal agents, combination of clobetasol propionate with salicylic acid was the most prescribed (49.97%) FDC followed by halobetasol propionate+salicylic acid (14.20%). Amongst the patients treated with monotherapy, halobetasol propionate and mometasone furoate were the top molecules prescribed to 35.76% and 29.03% of patients respectively.

Prescription pattern of TCS

The prescription pattern of TCS in atopic dermatitis and psoriasis by subgroups of age are depicted in Tables 5 & 6 respectively. In the patients diagnosed with atopic dermatitis, clobetasol propionate was predominantly prescribed to patients (37.02%) in the age group of 40-64 years followed by the 18-39 years (36.34%). On the other hand, mometasone furoate was most preferred for the age group 18-39 years (31.98%) followed by 1-11 years (26.31%). The maximum prescription of desonide was observed in the age group of 1-11 (44.27%).

Amongst the patients diagnosed with psoriasis and prescribed clobetasol propionate+salicylic acid – the maximum proportion of patients belonged to the age group 18-39 (51.07%) followed by 40-64 years (41.82%). For halobetasol propionate+salicylic acid maximum prescriptions were observed in the age group 18-39 years (46.58%). A similar pattern was observed for the prescription trend of halobetasol propionate, where 45.69% of patients belonged to the age group 18-39 years.

Duration of prescription of TCS

Amongst different TCS prescribed for the management of atopic dermatitis, the maximum mean prescription duration (days) was noted for fluocinolone (28.1 days). Clobetasol propionate, mometasone furoate and desonide were prescribed for a mean duration of 21.93, 18.97 and 15.35 days respectively (Table 7).

Comorbid conditions

The prevalent comorbidities in patients diagnosed with atopic dermatitis or psoriasis and prescribed TCS are presented in table 8. Scabies (3.05%), psoriasis (2.83%), acne (2.49%), urticaria (2.31%) and diabetes mellitus (2.23%) were the most reported for patients with atopic dermatitis. Among patients diagnosed with psoriasis and prescribed TCS, the top comorbid conditions were atopic dermatitis (4.25%), hypertension (2.93%), acne (1.95%), alopecia (1.85%) and Tinea cruris (1.55%).

Concomitant medications prescribed alongside TCS for atopic dermatitis patients were antihistamines (75.56%) and emollients (23.73%). Levocetirizine and hydroxyzine were the most commonly prescribed antihistamines and the most prescribed emollient was a combination of liquid paraffin and white soft paraffin.

For patients with psoriasis patients recommended with TCS, the highly prescribed concomitant medications were antihistamines (51.84% of patients) and immunosuppressants (27.88% of patients). Fexofenadine was observed to be the most commonly prescribed antihistamine, while methotrexate was the highly prescribed immunosuppressant (Table 9).

Table 1: Demographic characteristics of patients with atopic dermatitis.

Age group	N (%)	Mean age (SD)	Min, Max	Male, female N (%)
<1 (in months)	3,146 (4.24)	0.52 (0.25)	0, 1	1,717 (54.58), 1,429 (45.42)
1-11 years	15,424 (20.76)	5.10 (3.19)	1, 11	7,956 (51.58), 7,468 (48.42)
12-17 years	4,777 (6.43)	14.33 (1.74)	12, 17	2,290 (47.94), 2,487 (52.06)
18-39 years	23,757 (31.98)	28.83 (5.89)	18, 39	10,476 (44.10), 13,281 (55.90)
40-64 years	19,690 (26.51)	50.98 (7.19)	40, 64	9,720 (49.37), 9,970 (50.63)
>=65 years	7,490 (10.08)	72.72 (6.76)	65, 105	4,641 (61.96), 2,849 (38.04)
Overall	74,284 (100)	32.07 (22.58)	0, 105	36,800 (49.54), 37,484 (50.46)

N-Number of patients, SD-Standard Deviation, Min-Minimum, Max-Maximum

Table 2: Demographic characteristics of patients with Psoriasis.

Age (in years)	N (%)	Mean (SD)	Min, Max	Male, female N (%)
18-39 years	26,231 (50.06)	28.98 (5.86)	18, 39	16,212 (61.80), 10,019 (38.20)
40-64	22,121 (42.22)	50.27 (6.93)	40, 64	12,318 (55.68), 9,803 (44.32)
≥65	4,044 (7.72)	70.73 (5.84)	65, 104	2,549 (63.03), 1,495 (36.97)
Total	52,396 (100)	41.19 (14.73)	18, 108	31,079 (59.32), 21,317 (40.68)

N-Number of patients, SD-Standard Deviation, Min-Minimum, Max-Maximum

Table 3: Commonly prescribed TCS – Atopic dermatitis.

Therapy	Monotherapy (n=46,399)			Combination therapy with steroidal interventions (n=13,496)			Combination therapy with non-steroidal interventions (n=8,175)		
	Clobetasol Propionate	Mometasone Furoate	Desonide	Mometasone Furoate+ Fusidic Acid	Halobetasol Propionate+ Fusidic Acid	Betamethasone+ Fusidic Acid	Clobetasol Propionate+ Salicylic Acid	Clobetasol Propionate+ Miconazole	Beclometasone+ Clotrimazole
No. of patients	13,278	11,625	5,670	5,823	2,814	2,561	5,652	1,318	1,205
% of patients	28.62	25.05	12.22	43.15	20.85	18.98	69.14	16.12	14.74
Mean age[§]	42.1	29.37	12.75	27.9	41.33	31.9	41.63	27.59	30.76

§: Mean age was calculated by converting the age-in-months for infants to years (dividing the month by 12) and then merging the observations to the main “age” variable. Combination therapy with steroidal interventions: FDC of TCS with molecule with steroidal ring. Combination therapy with non-steroidal interventions: Combination of TCS with non-steroidal molecule(s)

Table 4: Commonly prescribed TCS-psoriasis.

Therapy	Monotherapy (n=7,354)			Combination therapy with steroidal interventions (n=1,837)			Combination therapy with non-steroidal interventions (n=32,629)		
	Halobetasol Propionate	Mometasone Furoate	Beclometasone	Clobetasol Propionate+ Fusidic Acid	Calcipotriol+ Clobetasol Propionate	Calcitriol+ Clobetasol Propionate	Clobetasol Propionate+ Salicylic Acid	Halobetasol Propionate+ Salicylic Acid	Calcipotriol+ Clobetasol Propionate
No. of patients	2,630	2,135	806	1,808	27	2	16,305	4,632	1,970

Continued.

Therapy	Monotherapy (n=7,354)			Combination therapy with steroidal interventions (n=1,837)			Combination therapy with non-steroidal interventions (n=32,629)		
% of patients	35.76	29.03	10.96	98.42	1.47	0.11	49.97	14.20	6.04
Mean age	44.16	40.02	39.01	45.71	42.63	40	41.07	42.90	43.02

Combination therapy with steroidal interventions: FDC of TCS with a molecule with steroidal ring. Combination therapy with non-steroidal interventions: Combination of TCS with non-steroidal molecule(s).

Table 5: Usage of TCS in atopic dermatitis patients by subgroups of age.

Molecules/FDC	Age group (in years) N (%)					
	<1	1-11	12-17	18-39	40-64	≥65
Clobetasol Propionate (n=15,566)	31 (0.20)	848 (5.45)	868 (5.58)	5657 (36.34)	5763 (37.02)	2399 (15.41)
Mometasone Furoate (n=12,966)	367 (2.83)	3412 (26.31)	1034 (7.97)	4147 (31.98)	2869 (22.13)	1137 (8.77)
Desonide (N=6,863)	1313 (19.13)	3038 (44.27)	384 (5.60)	1302 (18.97)	664 (9.68)	162 (2.36)
Clobetasol Propionate+Salicylic Acid (N=6,446)	3 (0.05)	214 (3.31)	302 (4.67)	2589 (40.04)	2661 (41.15)	697 (10.78)
Mometasone Furoate+Fusidic Acid (N=6,302)	166 (2.63)	1828 (29.01)	527 (8.36)	2022 (32.09)	1231 (19.53)	528 (8.38)
Halobetasol Propionate (N=4,045)	3 (0.07)	120 (2.97)	207 (5.12)	1599 (39.53)	1550 (38.32)	566 (13.39)
Halobetasol Propionate+Fusidic Acid (N=3,001)	4 (0.13)	214 (7.13)	182 (6.06)	1069 (35.62)	1097 (36.55)	435 (14.50)
Betamethasone+Fusidic Acid (N=2,988)	79 (2.64)	706 (23.63)	253 (8.47)	892 (29.85)	706 (23.63)	352 (11.78)
Hydrocortisone (2,677)	479 (17.89)	1191 (44.49)	175 (6.54)	556 (20.77)	220 (8.22)	56 (2.09)
Betamethasone (2,568)	34 (1.32)	273 (10.63)	184 (7.17)	888 (34.58)	883 (34.38)	306 (11.92)
Beclometasone+Fusidic Acid (2,479)	60 (2.42)	638 (25.74)	221 (8.91)	764 (30.82)	558 (22.51)	238 (9.60)
Clobetasol (2,151)	1 (0.05)	141 (6.56)	121(5.63)	791 (36.77)	778 (36.17)	319 (14.83)
Beclometasone (2080)	40 (1.92)	351 (16.88)	115 (5.53)	658 (31.63)	630 (30.29)	286 (13.75)
Clobetasol Propionate+Miconazole (1,738)	151 (8.69)	337 (19.39)	86 (4.95)	582 (33.49)	442 (25.43)	140 (8.06)
Beclometasone+Clotrimazole (1,688)	87 (5.15)	334 (19.79)	113 (6.69)	614 (36.37)	404 (23.93)	136 (8.06)
Mometasone (1,185)	20 (1.69)	442 (37.3)	110 (9.28)	376 (31.73)	177 (14.94)	60 (5.06)
Fluocinolone (452)	31 (6.86)	149 (32.96)	35 (7.74)	113 (25.00)	79 (17.48)	45 (9.96)
Triamcinolone (274)	3 (1.09)	17 (6.20)	13 (4.74)	101 (36.86)	106 (38.69)	34 (12.41)

FDC–Fixed Dose Combinations, N–Number of patients prescribed with topical corticosteroids monotherapy/FDCs, n–Number of patients prescribed with topical corticosteroids/FDCs in the respective age groups

Table 6: Usage of TCS in psoriasis patients by subgroups of age.

Molecules/FDC	Age groups (in years) N (%)		
	18-39	40-64	≥65
Clobetasol Propionate+Salicylic Acid (21,540)	11,001 (51.07)	9,009 (41.82)	1,530 (7.10)
Halobetasol Propionate+Salicylic Acid (6,337)	2,952 (46.58)	2,911 (45.94)	474 (7.48)
Halobetasol Propionate (3,911)	1,787 (45.69)	1,782 (45.56)	342 (8.74)
Clobetasol Propionate+Coal Tar+Salicylic Acid (3,698)	3 (0.05)	214 (3.31)	302 (4.67)
Mometasone Furoate (3,345)	1,873 (55.99)	1,202 (35.93)	270 (8.07)
Calcipotriol+Clobetasol Propionate (2,872)	1,356 (47.21)	1,314 (45.75)	202 (7.03)

Continued.

Molecules/FDC	Age groups (in years) N (%)		
Clobetasol Propionate+Fusidic Acid (2,721)	960 (35.28)	1,459 (53.62)	302 (11.10)
Clobetasol Propionate+Lactic Acid+Salicylic Acid+Urea (2,274)	1,125 (49.47)	996 (43.80)	153 (6.73)
Beclometasone+Clotrimazole (1,822)	1,282 (70.36)	461 (25.30)	79 (4.34)
Clobetasol+Salicylic Acid (1,674)	1,008 (60.22)	585 (34.95)	81 (4.84)
Betamethasone+Salicylic Acid (1,520)	832 (54.74)	586 (38.55)	102 (6.71)
Fluocinolone Acetonide (1,391)	859 (61.75)	433 (31.13)	99 (7.12)
Betamethasone (1,226)	403 (32.87)	709 (57.83)	114 (9.30)
Methylprednisolone (1,214)	586 (48.27)	547 (45.06)	81 (6.67)
Beclometason (1,138)	653 (57.38)	379 (33.30)	106 (9.31)
Clobetasol Propionate+Lactic Acid+Urea (1,138)	340 (29.88)	656 (57.64)	142 (12.48)
Betamethasone+Zinc Sulphate (1,097)	555 (50.59)	431 (39.29)	111 (10.12)
Desonide (952)	556 (58.40)	331 (34.77)	65 (6.83)
Clobetasol Propionate+Gentamicin (868)	292 (33.64)	467 (53.80)	109 (12.56)
Calcipotriol+Clobetasol (848)	441 (52)	346 (40.80)	61 (7.19)
Fluticasone (704)	392 (55.68)	260 (36.93)	52 (7.39)
Hydrocortisone (351)	204 (58.12)	123 (35.04)	24 (6.84)
Triamcinolone Acetonide (203)	80 (39.41)	90 (44.33)	33 (16.26)
Betamethasone Valerate (75)	27 (36.00)	37 (49.33)	11 (14.67)
Hydrocortisone+Acetate (71)	46 (64.79)	22 (30.99)	3 (4.23)
Fluticasone Propionate (25)	12 (48)	12 (48)	1 (4)

FDC–Fixed dose combinations, N–Number of patients prescribed with topical corticosteroids monotherapy/FDCs, n–Number of patients prescribed with topical corticosteroids/FDCs in the respective age groups

Table 7: Duration of prescription of TCS–Atopic dermatitis & Psoriasis.

Atopic dermatitis		Psoriasis	
Molecule/FDC	Mean duration-days (SD) of prescription	Molecule/FDC	Mean duration-days (SD) of prescription
Halobetasol Propionate+Fusidic acid	14.38 (7.65)	Clobetasol Propionate+Salicylic Acid	26.94 (15.57)
Clobetasol Propionate+Miconazole	20.15 (11.69)	Clobetasol Propionate+Coal Tar+Salicylic Acid	31.07 (21.02)
Triamcinolone	20.43 (18.89)	Calcipotriol+Clobetasol	30.40 (29.49)
Hydrocortisone	15.74 (10.54)	Calcipotriol+Clobetasol Propionate	30.90 (19.36)
Clobetasol	20.52 (10.55)	Clobetasol Propionate+Lactic Acid+Salicylic Acid+Urea	28.80 (16.26)
Halobetasol Propionate	20.8 (9.53)	Clobetasol Propionate+Fusidic Acid	17.60 (8.55)
Mometasone	15.05 (8.37)	Clobetasol+Salicylic Acid	28.85 (15.13)
Fluocinolone	28.1 (27.88)	Clobetasol Propionate+Lactic Acid+Urea	31.53 (8.55)
Beclometasone+Fusidic Acid	16.17 (9.83)	Calcitriol+Clobetasol Propionate	24.16 (18.76)
Desonide	15.35 (10.78)	Clobetasol Propionate+Gentamicin	19.56 (8.23)
Betamethasone+Fusidic Acid	14.51 (8.09)	Halobetasol Propionate	25.14 (15.02)
Mometasone Furoate	18.97 (11.33)	Halobetasol Propionate+Salicylic Acid	26.81 (15.11)
Mometasone Furoate+Fusidic Acid	13.55 (8.07)	Betamethasone+Zinc Sulphate	25.99 (13.65)
Beclometasone+Clotrimazole	17.27 (19.33)	Betamethasone+Salicylic Acid	28.30 (10.59)

Continued.

Atopic dermatitis		Psoriasis	
Clobetasol Propionate+Salicylic Acid	23.73 (15.66)	Betamethasone	26.25 (10.45)
Clobetasol Propionate	21.93 (12.02)	Fluocinolone Acetonide	31.84 (16.41)
Betamethasone	19.46 (9.77)	Betamethasone Valerate	25.82 (11.58)
Beclometasone	21.35 (13)	Desonide	22.59 (17.84)
		Fluticasone Propionate	22.63 (9.68)
		Fluticasone	19.28 (12.35)
		Triamcinolone Acetonide	26.34 (10.76)
		Hydrocortisone	22.94 (25.52)
		Hydrocortisone Acetate	22.36 (17.27)
		Mometasone Furoate	25.72 (15.56)
		Methylprednisolone	10.66 (9.20)
		Beclometasone+Clotrimazole	20.48 (12.20)
		Beclometasone	27.44 (16.69)

FDC-Fixed Dose Combinations, SD-Standard Deviation

Table 8: Comorbid conditions of patients diagnosed with Atopic dermatitis or Psoriasis and prescribed TCS.

Atopic dermatitis			Psoriasis		
Comorbid condition	Number of patients	% of patients [§]	Comorbid condition	Number of patients	% of patients [*]
Scabies	2,268	3.05%	Atopic dermatitis	2,225	4.25
Psoriasis	2,099	2.83%	Hypertension	1,533	2.93
Acne	1,846	2.49%	Acne	1,023	1.95
Urticaria	1,718	2.31%	Alopecia	968	1.85
Diabetes mellitus	1,658	2.23%	<i>Tinea cruris</i>	811	1.55
Xerosis	1,647	2.22%	Seborrheic Dermatitis	628	1.20
Tinea cruris	1,460	1.97%	<i>Tinea Corporis</i>	469	0.90
Hypertension	1,137	1.53%	Melasma	464	0.89
Secondary infection	760	1.02%	Allergic Contact Dermatitis	438	0.84
Pruritus	707	0.95%	Hypothyroidism	387	0.74

§: Denominator for %s is 74,284, *:Denominator for %s is 52,396

Table 9: Concomitant medications of patients diagnosed with Atopic dermatitis or Psoriasis and prescribed TCS.

Atopic dermatitis			Psoriasis		
Concomitant medications	Number of patients	% of Patients [§]	Concomitant medications	Number of patients	% of patients [*]
Emollient			Antihistamine		
Liquid paraffin+white soft paraffin	6,801	9.16	Fexofenadine	2,146	4.10
Aloe vera+cocoa butter+glycerin+mangifera indica+shea butter	4,405	5.93	Dexchlorpheniramine maleate	696	1.33

Continued.

Atopic dermatitis			Psoriasis		
Lactic acid+liquid paraffin+propylene glycol+urea	1,529	2.06	Hydroxyzine	3,470	6.62
Aloe vera+borage seed oil+ceramide+wheat germ oil	1,360	1.83	Bilastine	2,715	5.18
Glycerin	1,205	1.62	Desloratadine	3,218	6.14
Avocado+d-panthenol+vitamin B3+vitamin E	888	1.20	Levocetirizine	14,915	28.47
Ceramide+propylene glycol	756	1.02	Antibiotic		
Avena sativa+citric acid+panthenol	338	0.46	Cefpodoxime+cloxacillin+lactobacillus	122	0.23
Petroleum jelly	347	0.47	Azithromycin	2,085	3.98
Antihistamine			Emollient		
Levocetirizine	22,741	30.61	Petroleum jelly	339	0.65
Hydroxyzine	9,710	13.07	Cocos nucifera	1,110	2.12
Loratidine	6,441	8.67	Olive oil+sodium lactate+sodium pyrrolidone carboxylic acid	1,093	2.09
Bilastine	4,947	6.66	Cetostearyl alcohol+glycerin+panthenol+shea butter+tocopherol acetate	211	0.40
Desloratadine	4,441	5.98	Allantoin+dimethicone+glycerin+liquid paraffin	46	0.09
Levocetirizine+montelukast	4,333	5.83	Aloe vera+cocoa butter+glycerin+mangifera indica+shea butter	1,912	3.65
Fexofenadine	4,256	5.73	Lactic acid+liquid paraffin+propylene glycol+urea	1,538	2.94
Proton Pump Inhibitor			Liquid paraffin+white soft paraffin	4,808	9.18
Domperidone+pantoprazole	1,994	2.68	Antifungal		
Oral corticosteroids			Ketoconazole+salicylic acid	1,588	3.03
Prednisolone	12,199	16.42	Ketoconazole	1,374	2.62
Deflazacort	3,207	4.32	Fluconazole	1,438	2.74
Immunosuppressant			Retinoid		
Tacrolimus	2,434	3.28	Acitretin	1,401	2.67
Methotrexate	1,705	2.30	Immunosuppressant		
			Tacrolimus	1,249	2.38
			Methotrexate	13,357	25.49
			Proton pump inhibitor		
			Domperidone+rabeprazole	1,467	2.80
			Vitamin supplement		
			Folic acid	7,918	15.11

§: Denominator for %s is 74,284, *: Denominator for %s is 52,396

DISCUSSION

TCS play a pivotal role in the treatment of various skin conditions, revolutionizing dermatologic therapeutics. They serve as the gold standard for managing inflammatory skin diseases and are recommended as the first-line therapy for acute exacerbations of different dermatologic conditions. Persistent inflammatory skin disorders like psoriasis and atopic dermatitis significantly impact both skin and systemic health, leading to a diminished health-related quality of life. Managing these conditions typically starts with topical therapies, including corticosteroids. In developed healthcare systems, substantial expenses are incurred to alleviate the symptoms of patients with the above-mentioned skin conditions due to the significant impact of these diseases on individuals and society. The American Academy of Dermatology (AAD) guidelines strongly advocate for using TCS in the treatment regimen for atopic dermatitis and psoriasis.^{18,19} TCS are deemed essential tools for treating inflammatory skin conditions such as psoriasis and atopic dermatitis and their effectiveness is attributed to their potent immunosuppressive and anti-inflammatory effects.²⁰⁻²²

In our current study, more number of patients diagnosed with atopic dermatitis and psoriasis were found to be prescribed TCS, which is similar to the findings from studies conducted by Artime et al and Lee et al.^{23,24} The evaluation of the usage of TCS in atopic dermatitis and psoriasis patients by subgroups of age suggested that the patients within the age group of 18-39 years were more affected, consistent with the research conducted by Asif et al, This trend was similarly noted in the Derma-Atopic study conducted in Spain.^{23,25}

Our study found clobetasol propionate to be the most commonly used TCS for atopic dermatitis, in conjunction with the findings of Nerukar et al, Furthermore, our study highlighted a preference towards TCS monotherapy in managing atopic dermatitis, aligning with Ah et al and Reethika et al, In line with the results presented by Thouseef et al, our analysis also indicated that clobetasol propionate, mometasone furoate and desonide were the most frequently prescribed TCS.²⁶⁻²⁹

In contrast, psoriasis patients were more frequently recommended combination therapies, typically involving 1 FDC of TCS with non-steroidal molecule(s). This outcome is coherent with the research of Gupta and Malhotra,³⁰ exemplifying clobetasol propionate+salicylic acid and halobetasol propionate+salicylic acid as the most common combinations.

The current study also evaluated comorbidities in patients. The most common comorbid conditions in the patients with atopic dermatitis were scabies, psoriasis, acne and urticaria. For psoriasis patients, common comorbidities included atopic dermatitis, hypertension, acne, alopecia and Tinea cruris. Antihistamines and

emollients were the common co-prescribed drug categories for patients with atopic dermatitis, whereas psoriasis patients were commonly co-prescribed with antihistamines and immunosuppressants. These patterns are consistent with the findings by Artime et al and Lee et al.^{23,24}

CONCLUSION

The study thus presents a comprehensive and intricate picture of the usage pattern of the TCS in real-world clinical practice in patients with dermatologic conditions like atopic dermatitis and psoriasis. This analysis is expected to help healthcare providers to understand the current treatment landscape.

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