

## Research Article

# Topical corticosteroid abuse on face: a clinical study of 100 patients

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### ABSTRACT

**Background:** Prolonged and uninterrupted use of topical corticosteroids on face is globally prevalent and this misuse has reached monstrous proportion in India. The topical corticosteroid abuse leads to various local adverse effects on face which are difficult to treat. The aim of this study was to ascertain the magnitude, demographics, cause and adverse effects of TC abuse on the face in the dermatology out-patient department.

**Methods:** A total of 100 patients with history of topical corticosteroid abuse on face for a minimum period of one month were enrolled in this study.

**Results:** In our study, majority of the patients were females (76%) and the most common age group was 21-30 years with 49% patients. The duration of application was <6 months (45%) in majority of patients. Most common topical corticosteroids abused were betamethasone valerate in 49% and clobetasol propionate in 40% cases.

**Conclusions:** Topical corticosteroid abuse on face is quite common with varied presentation. There is needed to take urgent remedial steps and increase awareness about this problem in general population.

**Keywords:** Topical steroid dependent face, Adverse effects, Abuse

### INTRODUCTION

Topical corticosteroids (TCs) have been the mainstay of treatment in eczematous and inflammatory skin diseases since the introduction of hydrocortisone in 1952.<sup>1</sup> TCs should not be used on the face except for acute inflammatory conditions and that too with caution and for not more than one month.<sup>2</sup> When used appropriately and in safe hands, it is of immense benefit with insignificant side effects. Along with the advantages, TCs carry with them the burden of misuse, abuse and indiscriminate use which can result in serious local side effects, especially on face. These local side effects can manifest on face as acneiform eruption, atrophy, hypopigmentation, contact allergy, perioral dermatitis, rebound phenomenon, hypertrichosis. Another adverse effect seen with topical corticosteroids is topical steroid dependent face, also

called red face syndrome, steroid addiction, dermatitis rosaceaformis steroidica, topical corticosteroid induced rosacea like dermatitis. etc.<sup>3,4</sup> It is characterized by severe erythema, burning and scaling on sudden cessation of topical corticosteroids.

The cosmetic misuse of topical corticosteroid preparations is global and is a cause of concern specially in Asia because of the colour conscious society. In the last few years, many studies have focused on TCs abuse in India. Similar studies have been published in China and Iraq highlighting the universality of TCs abuse.<sup>5,6</sup> There are at least 18 corticosteroid molecules available in Indian market for topical use, out of which a few are easily available at almost all medical stores without prescription.<sup>7</sup> This dermatosis is now routinely seen in all skin OPDs and needs proper evaluation so as to judge

the magnitude of topical corticosteroid abuse in the community.

**METHODS**

A total of 100 patients attending skin OPD from December 2015 to July 2016 were enrolled for this observational study after taking informed consent. Patients attending the OPD with relevant facial dermatosis were enquired about use of any TCs and over the counter topical formulation. Complete history was taken regarding the use of TCs, duration, trade name. Patient was enquired about the prescribing authority, indication of use, reason for OPD consult with present signs and symptoms. The age, sex, educational status was properly noted in the proforma. Cutaneous examination was done to note the type of skin, any erythema, scaling, telangiectasia, atrophy, wrinkles, hirsutism, papules, pustules. The systemic examination was done to rule out any other comorbidity. Photographic documentation of patients was done with proper informed consent. It was the investigator’s decision to judge whether the TC use was appropriate or not. Criteria for inappropriate use included: use in acne, nonspecific rash, as a fairness cream, undiagnosed dermatosis, inappropriate potency and duration.

**Inclusion criteria**

Patients who gave history of TCs use on face for more than one month due to any reason other than rosacea.

**Exclusion criteria**

Patients not giving consent, pregnant and lactating women, diagnosed cases of rosacea, cushing’s syndrome, PCOD, patients on systemic corticosteroids.

**RESULTS**

Out of the 100 patients studied, there were 76% females and 24% males. There was a slight rural preponderance in the study with a rural to urban ratio of 58:42. The most frequently involved age group was between 21-30 years with 49 patients. The least affected age group was beyond 40 years with only two patients. The youngest patient was six months old and oldest was 51 years old. (Table 1) The six months old child was prescribed a highly potent topical corticosteroid for seborrheic eczema on face for one week by a general physician, which was continued for one month by parents resulting in post inflammatory hypopigmentation. Patients of various educational status ranging from illiterate to postgraduate were seen, 76% being either uneducated or under matric (Table 2).

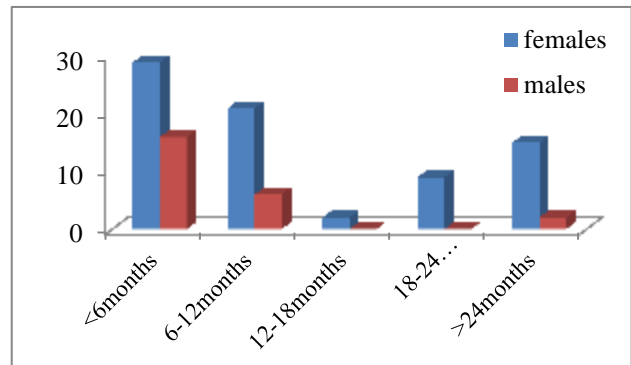
The duration of steroid application on face was <6 months in 45% patients, followed by 6-12 months in 27% and beyond 24 months in 17% of patients. The maximum duration of use was 12 years on an intermittent basis for fairness by an illiterate, rural woman (Figure 1).

**Table 1: Age distribution of patients using TCs on face.**

Age group (years)	No. of patients
<10	7
11-20	23
21-30	49
31-40	19
>40	2

**Table 2: Educational status of patients using TCs on face.**

Education status	No. of patients
Illiterate	9
Upto 5 <sup>th</sup> class	19
6 <sup>th</sup> -10 <sup>th</sup> class	48
Upto 12 <sup>th</sup> class	8
Graduate	11
Post graduate	5



**Figure 1: Duration of TCs abuse on face.**

The source of prescription was a non-physician in 70% cases. The main source of prescription or recommendation was chemist in 41% cases followed by friends and relatives in 18% of cases, general physician and BAMS doctors in 14% cases, village doctor in 14% while only two patients had prescription from a dermatologist. On analysing the prescription slips of dermatologists and two of general physicians, the patient had inappropriately continued the application beyond the mentioned duration (Table 3).

The underlying condition for which the patient started TCs was melasma in 33 patient, acne in 23 and as fairness cream in 20 cases. There were six patients who used TCs for miscellaneous reasons like tinea, molluscum contagiosum, non-specific rash. There was female preponderance in patients who used TCs for melasma and fairness (Figure 2). In the spectrum of adverse effects, the topmost was photosensitivity in 53% patients. The patients who fulfilled the criteria of topical steroid dependent face (TSDF) were 35%. There were 35 patients with acneiform eruption and acne aggravation. On inspection, telangiectasia was observed in 26 patients,

atrophy in eight patients. The number of patients who suspected their clinical features due to the topical formulation was 19% (Table 4). Some representative photographs of the study subjects with adverse effects are shown in Figure 3-8.

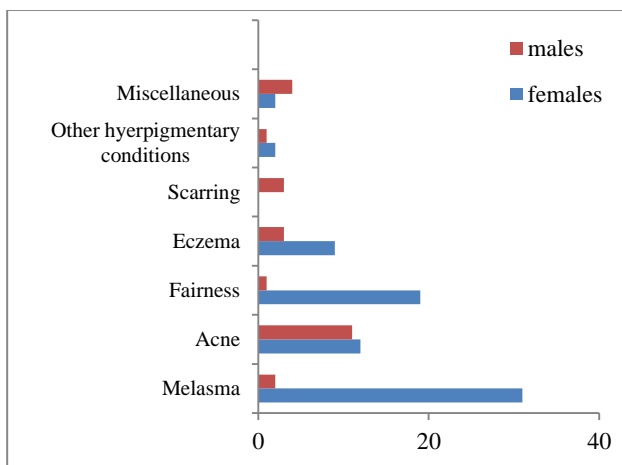
**Table 3: Source of prescription in patients using TCs on face.**

Source of Prescription	Number of patients
Chemist	41
Relative, friend	18
Village doctor	14
General physician, BAMS doctor	14
Dermatologist	2
Beautician	6
Self,online	5

**Table 4: Local adverse effects seen in patients using TCs on face.**

Side effects	No of patients
Photosensitivity	53
Acneiform eruption and acne aggravation	35
Topical steroid dependent face	35
Darkening or aggravation of melasma	34
Telangiectasia	26
Hypertrichosis	13
Atrophy	8
Hypopigmentation	7
Tinea faceii	3
Perioral dermatitis	2
Warts	2

Because of multiple responses, the sum of the percentages is above 100.



**Figure 2: Different reasons of TCs misuse.**

**Table 5: Trade names and composition of various TC formulations abused by the study patients.**

Brands	Ingredients	No of patients	Class of TCs	
Betnovate	Betamethasone valerate 0.1%	40	II	
Betnovate N	Betamethasone valerate 0.1%, Neomycin sulphate 0.5%	9		
Panderm plus	Ofloxacin 0.75%, Ornidazole 2%, Terbinafine 1%, Clobetasol Propionate 0.05%	9	I	
Lobate	Clobetasol propionate 0.05%	5		
Cosvate G	Clobetasol propionate 0.05%, gentamicin sulphate 0.1%	4		
Clop G	Clobetasol propionate 0.05%, gentamicin sulphate 0.1%	7		
Tenovate GN	Clobetasol propionate 0.05%, Neomycin sulphate 0.5%	1		
Lobate GM	Clobetasol propionate 0.05%, gentamicin sulphate 0.1%, miconazole nitrate 2%	4		
Medisalic	Clobetasol propionate 0.05%, Salicylic acid 3%	10		
Triple combination (Skinlite, metosol plus, Elosone-ht etc.)	Hydroquinone, tretinoin mometasone/flucinolone acetamide	14		IV
Ultiderm	Flucinolone acetamide 0.01%	2		IV
Flutivate	Fluticasone propionate 0.05%	2		V
Fexin	Fluticasone propionate 0.05%	1		
Momate	Mometasone furoate 0.1%	2	IV	
Candiderm	Beclomethasone dipropionate	1	II	



**Figure 3:** A 35 year old female developed TSDF after years of topical steroid abuse.



**Figure 4:** Telangiectasia and hypertrichosis on face after potent topical corticosteroid abuse for 1 year for melisma.



**Figure 5:** Warts on the mandibular region in same patient.



**Figure 6:** Tinea faciei post topical corticosteroid abuse for fairness.



**Figure 7:** Perioral dermatitis post topical corticosteroid abuse in a young female for fairness.



**Figure 8:** Erythema on face post topical corticosteroid abuse for 2 months for acne vulgaris.

Most commonly used TC was betamethasone valerate 0.1% (plain or in combination) in 49% followed by clobetasol propionate 0.05% cream (plain or in combination) in 40 % patients. In total, 23 brands of TCs alone or in various combinations with antifungals, antibiotics and depigmenting agents were identified in the

study. The maximum number of topical preparations tried by a single patient were five while 73% of patients were using a single preparation. None of the patient was familiar with the ingredients (Table 5).

## DISCUSSION

The classical profile of a patient of TCs abuse in our study was a young female, illiterate or matric pass, using the formulation with full faith and confidence for either melasma, acne or as a fairness cream. Even on development of adverse effects, the patient seems to be in denial.

Similar to the results seen in other studies done on TCs misuse on face, our study also observed 21-30 years as the most common age group.<sup>3,8</sup> The 58:42 ratio of rural to urban population is a clear indication of ubiquitous presence of this problem. In rural areas, another major problem was the web of village doctors who were prescribing authority in 14% of cases in our study. Majority of these village doctors don't even possess the minimal educational qualification needed to practice medicine. In our study, chemists were the most common source of prescription involved in 41% cases, mainly because of lack of government regulations on dispensing of drugs and secondly because a layman in India considers the salespersons at chemist counter equal to doctors. Friends and relatives are undoubtedly a very common source of prescription by sharing and copying as seen in various studies. In contrast to our study, where they were involved in 18% cases, incidence was quite high at 64% in a study from Pakistan and at 51% by Brar KB et al.<sup>9,10</sup>

In our study, 35% of patients developed TSDF which is characterised by development of persistent pin point, red coloured papules, pustules and nodules, along with telangiectatic vessels and firm oedematous skin.<sup>11</sup> TSDF and rebound phenomenon is explained by the sudden cessation of vasoconstrictor effect and release of proinflammatory cytokines on withdrawal of TCs.<sup>11</sup> The incidence of TSDF was almost similar in studies done by Kaur Brar B et al and Chohan SN et al with 26% and 32.5% reported patients respectively.<sup>9,10</sup> This is a difficult to treat condition because of steroid addiction and less treatment options. We tried Tacrolimus ointment, physical sunscreen, oral tetracyclines, alovera gel and antihistamines with some relief. There was improvement in signs and symptoms but the patients were distressed by the repigmentation and darkening.

The adverse effect of photosensitivity topped our study with 53 % cases. Similar results were observed by Inakanti Y et al with 55.6% and Bhat YJ et al with 48% patients complaining of photosensitivity. In our study, acne aggravation and acneiform eruption due to TCs was seen in 35% patients.<sup>8,12</sup> This is almost similar to the result of study by Bhat YJ et al reporting 35% patients with acneiform eruption.<sup>10</sup> Brar KB et al observed

acneiform eruption in 56% cases as the most common side effect.<sup>10</sup> Saraswati A et al and Inakanti Yet al observed high incidence of acneiform eruption in their study of 57.5 % and 88.5% respectively.<sup>3,8</sup> It was observed that on short term use, the TCs had good results in controlling acne while the situation worsened on continuous long time application.

The most common underlying conditions for TCs abuse was melasma (33%), acne (23%) and as fairness cream (20%) in our study. This result replicates the results seen in various studies where these same indications topped the list.<sup>3,9,10</sup> This result further highlights the pursuit of Indian population for fair, clear skin and reinforces the belief that 'fair is beautiful'. This obsession for fair skin has led to skin lightening products occupying 61% of the Indian dermatological market.<sup>13</sup>

The most common TC used in our study was Betnovate valerate 0.1% in 49% cases. Inakanti Y et al reported betnovate (containing Betnovate valerate 0.1%) use in 79.2% cases and Saraswati A et al in 50% cases.<sup>8,3</sup> The reason for rampant use of this molecule is its low cost, over the counter availability and decades of presence in Indian market. Another fast emerging molecule to be abused was clobetasol propionate, mainly used in combination with antifungal or antibiotic. It was used by 40% patients in our study. Both of these molecules belong to the high potency group of topical corticosteroids and are known to produce adverse effects when used inappropriately and for long duration.

The use of triple combination depigmenting creams (mainly containing corticosteroid mometasone furoate 0.1% or flucinolone acetone) was observed in 14% cases, alone or in combination with TCs formulations. There was no appreciable difference in adverse effect profile in these patients in comparison to those using only TCs.

## CONCLUSION

The unhindered, free availability of TCs in Indian market and unconstrained use by Indian population for cosmetic purpose has made the situation of TCs abuse worse. The factors which result in this enormity of problem include: easy over the counter availability of TCs, obsession of Indian people with fair colour, lack of awareness about its side effects, lack of first interaction with a dermatologist and inadequate control over medical shops by government authorities. There is need to assess the magnitude of problem and making the general population aware about the serious side effects of using TCs inappropriately.

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## REFERENCES

1. Jones BJ. Topical therapy. In: Burns T, Breathnach S, Cox N, Griffith C, editors. *Rook's Textbook of Dermatology*. 8<sup>th</sup> ed. Oxford: Wiley Blackwell; 2010:731-732.
2. Hameed AF. Topical steroid misuse on the face: a medical and social problem in Iraq. *Iraqi Postgraduate Med J*. 2014;13(3):413-7.
3. Saraswat A, Lahiri K, Chatterjee M, Barua S, Coondoo A, Mittal A et al. Topical corticosteroid abuse on the face: a prospective, multicenter study of dermatology outpatients. *Indian J Dermatol Venereol Leprol*. 2011;77(2):160-6.
4. Rathi SK, Kumrah L. Topical corticosteroid-induced rosacea-like dermatitis: a clinical study of 110 cases. *Indian J Dermatol Venereol Leprol*. 2011;77(1):42-6.
5. Lu H, Xiao T, Lu B, Dong D, Yu D, Wei H, et al. Facial corticosteroid addictive dermatitis in Guiyang city, China. *Clin Exp Dermatol*. 2010;35:618-21.
6. Dhalimi MA, Aljawahiry N. Misuse of topical corticosteroids: A clinical study in an Iraqi hospital. *East Mediterr Health J*. 2006;12:847-52.
7. Coondoo A. Topical corticosteroid misuse: the Indian scenario. *Indian J Dermatol*. 2014;59(5):451-5.
8. Inakanti Y, Thimmasarthi VN, Anupama, Kumar S, Nagaraj A, Peddireddy S, Rayapati A. Topical corticosteroids: abuse and misuse. *Our Dermatol Online*. 2015;6(2):130-4.
9. Chohan SN, Sohail M, Salman S, Bajwa UM, Saeed M, Kausar S, Suhail T. Facial abuse of topical steroids and fairness creams: a clinical study of 200 patients. *J Pak Asso Dermatol*. 2014;24(3):204-11.
10. Brar KB, Nidhi K, Brar KS. Topical corticosteroid abuse on face: A clinical, prospective study. *Our Dermatol Online*. 2015;6(4):407-10.
11. Lahiri K, Coondoo A. Topical steroid damaged/dependent face (TSDf): An entity of cutaneous pharmacodependence. *Indian J Dermatol*. 2016;61:265-72.
12. Bhat YJ, Manzoor S, Qayoom S. Steroid-induced rosacea: a clinical study of 200 patients. *Indian J Dermatol*. 2011;56(1):30-2.
13. Ladizinski B, Mistry N, Kundu RV. Widespread use of toxic skin lightening compounds: medical and psychosocial aspects. *Dermatologic Clinics*. 2011;29:111-23.

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