

## Original Research Article

# Beyond the surface: confronting the impact of topical steroids on facial skin

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### ABSTRACT

**Background:** Topical steroids have become the primary therapeutic approach among dermatologists. The clinical outcomes are attributed to their anti-inflammatory, antiproliferative, and immunosuppressive effects. However, this miraculous remedy can lead to significant trouble when used improperly, especially on the face where it can lead to topical steroid damaged faces (TSDf).

**Methods:** study was conducted for 9 months among 30 patients presenting with chief complaints due to topical steroid abuse over face and data was collected and analysed after using self-designed open-ended questionnaire.

**Results:** Out of 30 patients, preponderance were seen in females (M:F=1:2.3) The most common age group was 18-28 years (50%). Majority of them (36.6%) used class-3 of highly potent steroid which is betamethasone valerate 0.1%. Most common indication for application was as fairness cream (46.7%). In majority of the patients (70%), suggestion for application was given by pharmacist. 73.3% of patients, purchase medication over the counter (OTC) without prescription. Duration of usage was more than 6 months in 10% patients. Dyspigmentation (32.1%) followed by erythema (28.6%) were the most common adverse effects.

**Conclusions:** Using too many topical corticosteroids may benefit manufacturers and sellers, but it harms unsuspecting people. It's crucial to evaluate and advise patients, as well as inform doctors about avoiding excessive use of these products on the face. This is an important step that needs attention now.

**Keywords:** TSDf, Fairness, OTC

### INTRODUCTION

Topical steroids occupy a prominent position and serve as a crucial tool for dermatologists due to their highly effective actions. They have become the primary therapeutic approach among dermatologists. The clinical outcomes are attributed to their anti-inflammatory, antiproliferative, and immunosuppressive effects.<sup>1</sup> However, this miraculous remedy can lead to significant trouble when used improperly and can quickly reveal itself as a two-sided weapon. Many portions of Indian society have, either knowingly or unknowingly, fallen

prey to the obsession with beautification. This has resulted in a virtual outbreak of monomorphic acne, steroid atrophy, steroid rosacea, telangiectasia, perioral dermatitis, striae, and various other expressions of a condition collectively termed as TSDf.<sup>2</sup> The facial epidermis is relatively thinner compared to the rest of the body, leading to enhanced drug absorption through the skin. Additionally, the face is richly supplied with blood, which raises the likelihood of experiencing side effects.<sup>3</sup> A thorough evaluation and appropriate guidance for these patients, as well as for general physicians and paramedical practitioners, regarding the use of these

products on the face, are the current necessity, because the mechanisms that account for their efficacy are likewise accountable for their detrimental effects.<sup>4</sup> There were few objectives to the present study. The first objective was to assess the prevalence of TSDF among the population and to clinically evaluate patients who are suspected to have developed topical steroid related side effects. The second objective was to enumerate the common topical steroid preparations used by patients.

**METHODS**

A cross sectional observational study was carried out in the OPD of dermatology, venereology and leprosy of Parul institute of medical sciences and research center, a tertiary care hospital in Vadodara, Gujarat. The institutional ethics committee clearance was taken before starting the study. Study was conducted from March 2023 to October 2023 for 9 months of duration on sample size of 30 patients.

Patients aged 12 years and above, with history of topical steroid use and clinical findings compatible with TSDS, or those that had unwarranted topical steroid use of more than 2 weeks were included. Patients not consenting for the study or photography and those on systemic steroids were excluded. Those patients with comorbidities that could cause changes similar to topical steroids side effects (Cushing’s syndrome/thyroid disorders/polycystic ovaries) were also excluded from the study.

All the patients included in the study were assessed for misuse of TC which was defined as inappropriate use of topical steroid on skin in terms of incorrect dosing, formulation, frequency, duration or indications used for certain skin problems. Patients were examined for cutaneous adverse effects of TCs. The above will be done based on a self-designed questionnaire with open ended questions including the type, potency, frequency of application, duration of therapy, reason, and source of information for its use were recorded. Photographic documentation of the patients was done.

Statistical analysis SPSS software was used for analysis. Continuous variables were compared using the Chi-square test.

**RESULTS**

The study was done on a total of 30 clinically diagnosed cases of TSDF. Following observations were made during the study.

We found that females outnumbered males (2.33:1) in using topical steroids probably because of the fact that they were more concerned in the fairness and beauty than males. We divided the age of the patients into 4 groups as <18 years, 18-28 years, 29-39 years, and above 40 years. Of them, mostly young adults between 18 and 28 years (50%) were using TC, and their cause of application was

mainly for fairness. Next came the age group between 29 and 39 years (26.7%) who were mostly concerned about melasma, 20% patients were with higher education.

**Table 1: Socio-demographic characteristics of patients.**

Socio-demographic characteristics	N (%)
<b>Gender</b>	
Male	9 (30)
Female	21 (70)
<b>Age (In years)</b>	
<18	3 (10)
18-28	15 (50)
29-39	8 (26.7)
>40	4 (13.3)
<b>Educational status</b>	
1-12 grade	24 (80)
Higher education	6 (20)
<b>Occupational status</b>	
Student	4 (13.3)
Government employee	3 (10)
Unemployed	18 (60)
Non-government employee	3 (10)
Private work	2 (6.7)

Most of the subjects received a plain steroid (60%), while other received steroid with combination of other drugs. major steroids prescribed as a single ingredient were betamethasone valerate (36.6%), clobetasol propionate (13.3%), mometasone furoate (6.7%).

**Table 2: Topical steroid formulations misused.**

Topical steroid formulations misused	N (%)
<b>Betamethasone valerate (0.1%)</b>	11 (36.6)
<b>Clobetasole propionate (0.05%)</b>	4 (13.3)
<b>Mometasone furoate (0.1%)</b>	2 (6.7)
<b>Betamethasone dipropionate (0.025%)</b>	1 (3.3)
<b>Fluticasone (0.05%)</b>	0
<b>Hydrocortisone acetate (0.1%)</b>	0
<b>Multiple drugs</b>	12 (40)

Around half of the patients used TC as a Fairness cream (14/30; 46.7%) and this is mainly because most of the patients believed that these creams are mainly skin lightening creams; followed by melasma (8/30; 26.7%), Tinea (5/30; 16.6%).

**Table 3: Reasons for use of steroids as mentioned by patients.**

Reasons for use of steroids as mentioned by patients	N (%)
<b>Fairness creams</b>	14 (46.7)
<b>Pigmentation/melasma</b>	8 (26.7)
<b>Tinea</b>	5 (16.6)
<b>Acne</b>	2 (6.7)
<b>Undiagnosed disease</b>	1 (3.3)

A large number of patients (22/30; 73.3%) obtained TC without prescription while only eight (26.7%) patients purchased TC on prescription. Only 6.7% patients were prescribed TC by a dermatologist (shown in the Table 4). Majority of patients applied TC for one month to six-month (18/30; 60%) duration. This was followed by <1 month (9/30; 30%), >six months (3/30; 10%). 53.3 percentages patients (sixteen) applied TC once a day, and 33.3 percentages patients (ten) applied TC twice in the day.

**Table 4: Pattern of topical corticosteroid utilisation by the patients.**

Pattern of topical corticosteroid utilisation	N (%)
<b>Type of prescription</b>	
Prescriptional	
General practitioner	5 (16.7)
Dermatologist	2 (6.7)
Quacks	1 (3.3)
<b>OTC</b>	
Pharmacist	21 (70)
Friends	1 (3.3)
Relatives/media	0
<b>Duration of the application (In months)</b>	
<1	9 (30)
1-6	18 (60)
>6	3 (10)
<b>Frequency of application</b>	
Once	16 (53.3)
Twice	10 (33.3)
Three or more than the three times	4 (13.3)
<b>Formulation of steroid</b>	
Plain steroid	18 (60)
Steroid with combination of other drug	12 (40)

Dyspigmentation was the most common adverse effect (18/30; 32.1%) recorded in the study. This was followed by erythema (16/30; 28.6%), tinea incognito (10/30; 17.8%), photosensitivity (8/30; 14.3%), acneiform lesions (2/30; 3.6%), telangiectasia (1/30; 1.8%) and hypertrichosis (1/30; 1.8%).

**Table 5: Adverse effects by use of topical corticosteroid.**

Adverse effects	N (%)
Dyspigmentation	18 (32.1)
Erythema	16 (28.6)
Tinea incognito	10 (17.8)
Burning sensation (photosensitivity)	8 (14.3)
Acneiform lesions	2 (3.6)
Telangiectasias	1 (1.8)
Hypertrichosis	1 (1.8)



**Figure 1: Erythema, photosensitivity and telangiectasia after prolonged use of potent topical steroid (red face syndrome).**



**Figure 2: Hypopigmentation at corner of mouth.**



**Figure 3: Hypertrichosis in TSDF.**



**Figure 4: Aggravation of acne vulgaris due to topical corticosteroid application.**

## DISCUSSION

Our results clearly show that misuse of topical corticosteroids is common in our country. The core issue concerning these topical steroid medications lies in patients receiving them from a local pharmacist through a single prescription, often leading to side effects and dependency when repeatedly used. This situation results in the overuse of these medications. In our country, it poses a significant concern as patients can obtain the drug without a valid prescription from a medical professional. The problem is exacerbated when these creams containing steroids are openly promoted not only on television but also as a social issue.

Females outnumbered males. The most common age group affected was 18-28 years. This comes as no surprise, as this age group exhibits a higher awareness of their appearance and is also more inclined to turn to self-medication.

Majority (18/30; 60%) used plain steroid, while 40% (12/30) patients used steroid with combination of other drug. Saraswat et al observed the use of potent and super potent steroid in majority, and our study demonstrated maximum use of upper mid-potent steroid (Class 3, USA classification).

Topical steroids are often misused for their strong skin-lightening effects, being employed as fairness creams, and as an anti-inflammatory agent in various skin conditions.<sup>5-7</sup> In this study, majority of patients used TC on the advice of pharmacist (21/30; 70%). This likely necessitates stringent regulations on the sale of these products, requiring prescriptions from qualified

individuals exclusively. Additionally, individuals who are not dermatologists should be educated about the adverse consequences of topical steroid misuse, as they may be unaware of the harm caused by such improper usage.

A total of 56 adverse effects were noted in 30 patients. Dyspigmentation followed by erythema are the most common adverse effects. TCs by suppressing the normal cutaneous immune response enhance fungal infections.<sup>8</sup> Tinea incognito was found in 10/30 patients. The clinical symptoms can hide or be mistaken for various other skin conditions.

TCs induce comedone formation by rendering follicular epithelium more responsive to comedogenesis.<sup>9,10</sup> Acneiform eruption was seen in 2/30 patients.

TSDF, also known as red face syndrome, is a recently recognized condition marked by a multitude of symptoms that arise from the unmonitored misapplication, misuse, or excessive use of topical corticosteroids of any strength over an unspecified or prolonged duration.<sup>11</sup> Most of the patients presented with diffuse burning, erythema and scaling of the face that got worsened on attempting to stop the application of TC.

## Limitations

As this was an OPD-based study, the number of study population was limited and this may or may not accurately reflect the community data, however it certainly highlights misuse of topical steroids in the society.

## CONCLUSION

Our research shows that many people in our country misuse topical steroids. However, we don't have enough data about this problem. One of the main reasons for this misuse is that people want quick relief from their symptoms. The situation gets worse when patients can easily get these medications without a proper prescription. Using too many topical corticosteroids may benefit manufacturers and sellers, but it harms unsuspecting people. It's crucial to evaluate and advise patients, as well as inform doctors about avoiding excessive use of these products on the face. This is an important step that needs attention now.

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