



MAGNITUDE, CHARACTERISTICS AND CONSEQUENCES OF TOPICAL STEROID MISUSE AMONG DERMATOLOGY OUTPATIENTS IN RURAL NORTH INDIA: AN OBSERVATIONAL STUDY

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ABSTRACT

Introduction: Irrational use of Topical Corticosteroid (TC) is quite common in India due to unrestricted availability and use of TC not only by public but also by physicians and chemists due to quick relief of symptoms in different dermatological conditions.

Aim: The present study was conducted to evaluate and analyse the prevalence of misuse of TC and the causes behind misuse of TC among patients in a dermatology outpatient department in district Almora, Uttarakhand.

Materials and Methods: This was a cross-sectional observational questionnaire-based study conducted over a period of 6 months (1st July 2025 to 31st December 2025). Patients were questioned and assessed for misuse of TCs in terms of indication, dose, frequency, duration, adverse effect and source of recommendation of TC.

Result: Out of 243 patient's majority over half were females and less than 27 years of age, residing in urban area. Approximately half of them were home maker. In terms of the association of duration of use of different topical steroids among the participants it was found to be insignificant. Papule and erythema were the most common adverse effect among the patients. Source of advice for initiation of TS application was majorly Pharmacist/ O.T.C drugs (46.05%). Dermatologists contributed only 3.29% to the source. Most common indication for which TS were used was acne (39.50%)

Conclusion: Inappropriate topical corticosteroid use is a common problem due to its easy accessibility, resulting in several difficult-to-treat cutaneous adverse effects.

KEYWORDS: Corticosteroids, Acne, Adverse Effects, Irrational Use, Over The Counter.

Introduction

Topical corticosteroids (TCS) are perhaps the most prescribed medications in dermatological practice and since its introduction in 1951, they are increasingly used for a

wide range of inflammatory skin diseases[1]. The usefulness of topical steroids (TS), the most widely used therapeutic agents in dermatology, has become a double-edged sword with increasing prevalence of misuse, leading to disastrous consequences[2]. Of concern is the unprecedented increase

in fungal infections as well as the emergence of resistant dermatophytosis in India, most likely due to unnecessary use of fixed drug combination (FDC) creams containing steroids[3].

Non-medical use of TS in fairness creams has led to increasing occurrences of a condition that has been described as TS damaged face (TSDF)[4]. Pharmacists and often qualified medical practitioners readily prescribe and dispense potent TS given that they provide dramatic symptomatic relief. This problem is further compounded by the unregulated over-the-counter supply and unrestricted sale of TS. Public and professional ignorance, legal ambiguity and government inaction create a serious problem whereby FDC creams are used as a panacea for all skin problems[5]. Though efforts are being made to draw attention to the multiple factors behind this problem in India[6], it remains largely under researched in rural areas. Earlier studies were conducted in the urban setting of tertiary care hospitals with emphasis on TS usage on face[7]. However, no data are available to understand the impact of this epidemic in the rural areas where 68.84% of the Indian population dwells[8].

This study aims to analyse the frequency, causes and clinical presentation of misuse of topical corticosteroids, in a tertiary care teaching hospital in north Indian state of Uttarakhand and to aware the people about it.

Materials and Methods

A mixed-method observational study of patients was conducted over a period of 6 months (July 2025 to December 2025) among all new patients attending the dermatology outpatient department of a tertiary care teaching hospital, located in Almora district of Uttarakhand, North India. The patients included were of any age and sex attending dermatology OPD using TCs presently or in past for any indication.

Patients were interviewed directly by the investigator using an anonymous questionnaire. Questions covered age, sex, address, type of TS used and reason for using the drug. Patients were also asked who had prescribed/recommended the remedy [patient himself, friends, family members (i.e. over-the-counter), pharmacist, paramedical personnel, physician/general practitioner, dermatologist].

Inclusion Criteria

Current use was defined as any continuous use of seven or more consecutive days or intermittent use over a period of 15 or more days. This use should have been going on till the day of presentation to the centre, or if stopped, not more than 15 days before. Wrong indication (e.g., acne), undiagnosed dermatoses, inappropriate potency or more than 1 month's use after the last consultation were criteria used to define unjustifiable/inappropriate use.

Exclusion Criteria

All patients complaining of facial dermatoses (dermatosis papulose nigra, melanocytic nevi, adnexal tumours and xanthelasma), and patients who were on oral steroids for any reason were excluded.

Data Analysis

Data so collected was tabulated in an excel sheet. The means and standard deviations of the measurements per group were used for statistical analysis (SPSS 22.00 for windows; SPSS inc, Chicago, USA). Difference between various was determined using chi square test and the level of significance was set at $p < 0.05$.

Result & Observations

Of the 937 new patients seen in the dermatology outpatient department (OPD), 248 (26.46%) had a history of TS misuse and were eligible for the study. Five did not give written consent to be involved leaving 243 patients for final evaluation. Out of them majority over half were females and less than 27 years of age, residing in urban area who were using different topical steroids. Approximately half of them were home maker while some had positive history for the same [Table 1]. Table 2 depicted the association of duration of use of different topical steroid among the study participants. It was not significantly associated with them. Table 3 showed the association of use of different topical steroid among the study participants with adverse effect and it depicted significant association with pustule, papule and telengectasia. Source of advice for initiation of TS application was majorly Pharmacist/ O.T.C drugs [Table-4]. Dermatologists contributed only 3.29% to the source. Various indication for which TS were used are delineated in Table 5.

Table 1: Socio - demographic profile of the participants (n=243)

Variables		Frequency (No. %)
Age	≤ 27 Yrs	161 (66.3)
	>27 Yrs	82 (33.7)
Gender	Female	172 (70.8)
	Male	71 (29.2)
Residence	Urban	174 (71.6)
	Rural	69 (28.4)
Occupation	Home maker	96 (39.5)
	Student	94 (38.7)
	Professionals*	24 (9.9)
	Business	21 (8.6)
	Retired	08 (3.3)
Family History of steroid abuse	Yes	31 (12.8)
	No	212 (87.2)

Table 2: Association of Topical steroid abused with its duration of application among the study groups (n=243)

Topical Steroid	Duration (in Months)						Chi Square p-value
	1	2	3	4	5	6	
Clobetasol (total 81)	16 (19.8)	15 (18.5)	12 (14.8)	08 (9.9)	12 (14.8)	18 (22.2)	17.12 0.07
Betamethasone (total 134)	24 (17.9)	20 (14.9)	24 (17.9)	16 (11.9)	12 (09.0)	38 (28.4)	
Mometasone (total 28)	10 (35.7)	08 (28.6)	0 (0.0)	0 (0.0)	04 (14.3)	06 (21.4)	
Duration in Months (Mean±SD)							
3.51±1.90 months							

Table 3: Association of Topical steroid abused with adverse effect among the study group (n=243)

Variables	Topical Steroid						Chi Square p value
	Clobetasol		Betamethasone		Mometasone		
	Present	Absent	Present	Absent	Present	Absent	
Papules	73 (90.1)	08 (9.9)	134 (100)	00 (00)	28 (100)	00 (00)	16.54 <0.01*
Pustule	19 (23.5)	62 (76.5)	60 (44.8)	74 (55.2)	14 (50.0)	14 (50.0)	11.56 0.003*
Erythe-ma	81 (100)	00 (00)	134 (100)	00 (00)	28 (100)	00 (00)	
Telangiectasia	26 (32.1)	55 (67.9)	32 (23.9)	102 (76.1)	20 (71.4)	08 (28.6)	24.02 <0.01*
Eye Involvement	17 (21)	64 (79)	20 (14.9)	114 (85.1)	04 (14.3)	24 (85.7)	1.47 0.47

*: statistically significant

Table 4: Source of recommendation for use of topical corticosteroid (n=243)

Source	Number of patients (%)
Dermatologist	8 (3.29)
General practitioner	16 (6.58)
Quack	24 (9.9)
Pharmacist / O.T.C drug	112 (46.09)
Friends/relatives	83 (34.16)

Table 5: Underlying causes for topical corticosteroid use (n=243)

Cause of application	Number of patients (%)
Acne	96 (39.50)
Melasma	64 (26.33)
Fairness	41 (16.87)
Dryness	13 (5.34)
Regular night cream	29 (11.93)

Discussion

Glucocorticoids are used topically for a large variety of dermatological conditions. The intensity of the action depends on the extent of absorption to the deeper layers; thus, lipophilicity of the compound largely determines potency. Ever since, the invention of TCs like hydrocortisone in 1952, many similar molecules were discovered including Triamcinolone Acetonide (1958), Fluocinolone Acetonide (1961), Betamethasone (1963), Clobetasol Propionate (1974), Clobetasol Butyrate (1978), Fluticasone (1990), Halobetasol (1990), Fluticasone (1990), Mometasone (1991) and a lot of other molecules. These molecules are of varying potencies as determined by their vasoconstrictive properties[9].

This study demonstrates that TS misuse is a significant public health issue in rural area, with prevalence of 28.4% new dermatology outpatients using TS inappropriately. This result is much higher than those found in urban studies in India where prevalence of misuse was 11.8% in Delhi[10] and 15% in a Pan Indian urban study[11]. Our study demonstrated female preponderance which is consistent to the Pan Indian study which showed a female preponderance[11]. However Other studies also demonstrate male predilection[12]. Sexual predilection has been variable in different studies with most showing abuse to be more common in women[13,14,15], and this has been attributed to greater awareness for skin tone and cosmesis in women from Asia. The average age of usage in our study was under 27 years (66.3%), which was similar to findings from the studies in urban areas of India[10,11].

In our study Urban population outnumbered rural, this may be due to location of hospital in urban area leading to

hospital bias. More than 30 brands of steroids were used by patients. betamethasone valerate 0.1% was the most commonly abused steroid (55.14%) followed by Clobetasol propionate 0.05% and mometasone furoate 0.1%. Most studies conducted throughout the world also show that betamethasone abuse is more common [11,16,14]. However Clobetasol has been reported to be more common in others studies[12,17,18]. The widespread use of these molecules is due to their low cost, over the counter availability and decades of presence in Indian market. Even though most topical steroids are now under schedule H of Drug and Cosmetic Rules 1945 i.e. they can only be used under the supervision of qualified physician and not sold as over-the-counter drug[19] these preparations are easily available from the chemist in the absence of adequate enforcement of law.

Mean duration of steroid use among participants was 3.51 ± 1.90 months. Whereas Teraki et al[20] in their study revealed the duration of steroid use ranged from 1 week to 10 years. We found that the nature and number of side effect can be correlated with the duration of the usage of topical steroid. The most common adverse effect found in our study was papules and erythema (100%). Steroid-induced telangiectasia was most observed in patients using mometasone (71.4%). Table 3 showed the association of use of different topical steroid among the study participants with adverse effect and it depicted significant association with pustule, papule and telangiectasia ($p < 0.05$). Chohan et al. found facial erythema to be the most prominent adverse effect in their study of facial abuse of topical steroids and fairness creams in Pakistan[15]. Dey VK, also reported papules in almost 78 % due to misuse of TC[14].

In our study, approximately half of the patients (46.09%) received their TS from pharmacists followed by friends/

relatives (34.16%) while only 3.29% people had correctly gone through the proper channel to consult a dermatologist. Likewise, in studies from other parts of the India, pharmacists were the most common source of inappropriate steroid use[21,22]. They often function as doctors, especially where the local health services are underdeveloped or unavailable. This indicates the need for training of medical/paramedical personnel about the judicious use of topical corticosteroids and their potentially serious side effects. Saraswat's study on facial steroid use found that poor availability of physicians in rural areas was associated with non-physicians being likely to prescribe TS[11].

Acne was by far the most common indication for steroid misuse in our study followed by melasma. This concurs with some recent studies[23,10] but other studies in India showed the greatest TS use for acne[24] and melasma[14]. In another study by Saraswat et al, TS were most used for both melasma and acne[13]. We also observed a pattern of use of TC as fairness cream in our study with 16.87% of our patient's using TC for this indication. A study by Agarwal et al., on evaluation of steroids in face creams of different marketed brands observed that more than 60% of all skin products/cosmetics that claim to produce instant glow, contain steroid which can lead to serious damage to the skin[25]. Skin lightening was the main reason for the use of the TC (65.7%) in another study done in an Iraqi hospital[22].

Unfortunately, many clinicians and occasionally even dermatologists also promote these TC. Regular continuing medical education and workshops to create awareness regarding this important issue will go a long way to ensure rational use of TCs. Along with this, there is need to sensitize patients, the actual user, about the adverse effects of TC abuse on face.

Limitations

Generalisability of our study is limited by the sample being restricted to one outpatient department in one location. To capture the true magnitude of the multifaceted problem of TS misuse in rural areas, a multicentric community study across the country is recommended.

Conclusion

Our study reveals that problem of topical misuse of corticosteroids is very common. People use these preparations irrespective of their literary and residential status. Most of the people are unaware of their side effects and using them for years. The widespread abuse of topical steroids is compounded by poor health infrastructure, lack of adequate specialist services in country, practice of self-medication, poor affordability and easy access over the counter. Awareness should be created among public about the adverse effects related to topical steroids. The campaign against topical steroid abuse needs to be given further impetus regarding sensitizing doctors, chemists,

pharmaceutical and cosmetic industries, regulatory agencies, and the public regarding this menace of topical steroid abuse.

Declaration of patient consent:

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published, and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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None

Conflict of Interest

None

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