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Original Article

# Facial abuse of topical steroids and fairness creams: a clinical study of 200 patients

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**Abstract**

***Objectives*** To estimate the magnitude of problem with reference to social demography, motivation and to record adverse effects of topical steroids (TCs) and fairness creams abuse on face.

***Methods*** This study was conducted at Dermatology Department of Nawaz Sharif Social Security Teaching Hospital affiliated with University of Lahore. Patients with steroidal rosacea reporting to the investigator were asked about their current use of topical steroids and fairness creams and observations recorded.

***Results*** Out of 200 patients studied 152 (76%) were females and 48 (24%) males, the majority belonging to low income group from urban area. Sixty six (33%) patients used potent TCs, 100 (50%) patients used TCs in combination with various fairness creams and 34 (17%) patients used fairness creams exclusively. The main indications for these creams, in order of preference were acne, improving dark complexion and melasma. Patients were ignorant of the ingredients and the adverse effects of TCs versus fairness creams among abusers were comparable.

***Conclusions*** Unwarranted cosmetic use of TCs with or without fairness creams is quite common in facial dermatoses resulting in steroidal dermatitis resembling rosacea.

***Key words***
Topical corticosteroids, fairness creams, steroidal dermatitis resembling rosacea.

## Introduction

Topical corticosteroids (TCs) were first introduced in dermatology in 1952[1] and are now one of the most widely used therapeutic formulations in practice. TCs creams offer rapid symptomatic relief in many inflammatory dermatoses, especially in short-term and even its improper use, for instance in infectious dermatoses, produces an initial clinical improvement. In addition to their antiinflammatory effects, TCs also have potent antipruritic, atrophogenic, melanopenic, sex-hormone-like and immunosuppressive effects on the skin and can lead to significant local adverse effects if used indiscriminately.[2] Not only the abuse, even the excessive, regular use of topical fluorinated steroids on the face is associated with eruption that is clinically indistinguishable from rosacea and is known by various names by different authors like, light sensitive seborrheid,[3] perioral dermatitis,[4] rosacea-like dermatitis,[5] steroid rosacea,[6] steroid dermatitis resembling rosacea,[7] and steroid-induced rosacea-like

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dermatitis.[8] Since there is no agreement on nomenclature we prefer to use the term of steroidal dermatitis resembling rosacea (SDRR) where it describes the comparable morphology of the disease due to TCs and fairness creams abuse on the face. The main clinical presentation of this dermatosis is diffuse facial redness with or without papulopustular lesions in addition to the development of rebound phenomenon after withdrawal of TCs.[6] This dermatosis is routinely seen in the daily clinical practice, but there is dearth of reports describing it in the medical literature.[6,8] In addition to steroid rosacea, prolonged use of TCs cause acneiform eruption, hypertrichosis, steroid addiction, and red face syndrome associated with severe rebound erythema, burning and scaling on the face on any attempted cessation of the application.[9]

Another dimension of TCs misuse is its cosmetic application particularly in combination with bleaching creams to make the skin fair among dark complexioned people. In spite of the widely perceived enormity of the problem, there are a few studies from Pakistan to highlight this issue. This cosmetic misuse of TCs is global and has been the subject of studies mainly from Africa,[10] Asia[11,12,13] and even developed countries like the USA are facing this problem.[14] The abuse of TCs is intertwined with fairness creams in our colour conscious society where people are obsessed with fair colour due to various social and historical reasons. Like fairness creams, TCs are readily available over the counter and in most instances, these are used as a depigmenting agent in combination with hydroquinone or mercury based bleaching creams in conditions such as acne, melasma, freckles, and many a times just to improve the dark complexion. Thus, the combination of factors like easy availability, lack of awareness regarding side effects, obsession for fair skin and poor access to dermatologists makes the situation in Pakistan ripe for their misuse in the community.

## Methods

This observational, descriptive study involved a total of 200 patients diagnosed as steroidal dermatitis resembling rosacea (SDRR) who consulted the Department of Dermatology at Nawaz Sharif Social Security Teaching Hospital affiliated with University College of Medicine, The University of Lahore, from 15th March 2013 to 30th October 2013. The study was approved by the ethical committee and inclusion criteria for patients to be enrolled were selective only for those, with clinical features suggestive of SDRR and who had history of TCs and/or fairness creams use on the face continuously for more than 1 month or intermittently (for more than 3 months) due to any purpose other than classical rosacea. Patients with natural history of rosacea and pregnancy and those taking systemic steroids were excluded.

The diagnosis was established on clinical basis and formal consent was sought from each patient. Patients were interviewed directly by the dermatologist using structured questionnaire, recording relevant clinical data like demographics, income, complexion and clinical details of the disease which prompted the patients to visit the dermatology clinic. In addition, a full skin examination was performed to detect any condition related to abuse of topical steroids. Particular attention was given to TCs with or without fairness creams therapy regarding the type, potency, duration of therapy, purpose, and the source of its use. Patients were also probed, who had prescribed the remedy, patient herself/himself, friend, family members, pharmacist, or physician/general practitioner. We asked if the patients knew brands and

adverse effects of the creams and if they had read the leaflet (package insert) before use.

## Results

Out of the 200 patients studied, 152 (76%) were females and 48 (24%) males. The age distribution of patients was from 15 to 35 years and 128 (64%) were unmarried and 72 (36%) were married. The urban-rural ratio was 166: 34, and 176 (88%) patients belonged to lower and 24 (12%) to middle socioeconomic class. Regarding skin colour 158 (79%) patients had brown to light brown skin while 42 (21%) were fair complexioned. Majority of the patients 82 (41%) were students, followed by 76 (38%) household workers and 42 (21%) were factory employees. Regarding literacy status 128 (64%) were literate with minimum qualification of secondary school certificate and 72 (36%) were either uneducated or under matric. The different formulations used by the patients are highlighted in **Table 1** and popular TCs and fairness cream brands are shown in **Table 2**. Most of the patients used more than one brand of fairness creams and none of the patients was familiar with the ingredients or acknowledged awareness about adverse effects of these creams. Various indications for which TCs and fairness creams were used are delineated in **Table 3**. We also ascertained the advice or recommendation regarding the misuse of these creams and found that in majority of the patients, these were prescribed by friends, relatives and peers in 128 (64%), physicians or general practitioners in 32 (16%), beauticians in 16 (8%), self in 14 (7%), chemists in 8 (4%), and others 2(1%). Source of supply was pharmacy in 118 (59%), general stores in 72 (36%) and beautician in 10 (5%) cases. The adverse effect profile of TCs with or without fairness creams versus fairness creams only was comparable as highlighted in **Table 4**, and in majority of the patients more than one adverse effect was observed.

**Table 1** Type of topical formulations used by patients (n=200).

| *Topical formulations* | *N (%)* |
|---|---|
| Potent steroids plus fairness | 100 (50) |
| Potent topical steroids: betamethasone valerate and clobetasol propionate | 66 (33) |
| Fairness creams | 34 (17) |

**Table 2** Different brands used by the patients (n=200).

| *Trade name* | *N (%)* |
|---|---|
| Betnovate® cream | 162 (76) |
| Dermovate® cream | 68 (34) |
| Fair & Lovely® cream | 60 (30) |
| Golden Pearl® cream | 40 (20) |
| Stillman's Bleach® cream | 32 (16) |
| Archie® cream | 32 (16) |
| Face Fresh® cream | 16 (8) |
| Faiza Beauty® cream | 8 (4) |

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

**Table 3** Indications of topical steroids/fairness creams.

| *Condition* | *N (%)* |
|---|---|
| Acne | 103 (51.5) |
| Dark complexion | 37 (18.5) |
| Acne with melasma | 34 (17) |
| Melasma with freckles | 13 (6.5) |
| Tinea faciei | 9 (4.5) |
| Nonspecific dermatoses | 4 (2) |

**Table 4** Adverse cutaneous reactions

| *Adverse effects* | *TCs/TCs with fairness cream* | *Fairness creams* |
|---|---|---|
| Facial erythema | 51.8% | 64.7% |
| Aggravation of existing lesions | 49% | 41% |
| Addiction to formulation | 32.5% | 32.3% |
| Hypertrichosis | 26.5% | 29% |
| Telangiectasia | 18% | 20% |
| Acneiform eruption | 13.8% | 20% |
| Papular rosacea-like rash | 6% | 5.8% |
| Hypopigmentation | 4.8% | 5.8% |
| Tinea incognito | 5.4% | 0 |
| Atrophy | 1.2% | 0 |

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

## Discussion

The excessive facial use of TCs for inflammatory dermatoses and its abuse for cosmetic purposes is a common problem, often associated with eruption resembling rosacea. The rapid symptomatic relief in many dermatoses prompts the patients to abuse the medication resulting in the array of the adverse effects, dependence to TCs and this dilemma is confronted by dermatologists not only in Pakistan but also reported from many countries across the globe.[12,15,16,17]

In Pakistan, like India problem is complex as patients are under influence of disinformation, where TCs have acquired reputation of being antiacne and antiblemish cream among dark complexioned people.[15] The adverse effects in patients using TCs with or without fairness creams observed in our study as depicted in **Table 4**, were facial erythema associated with irritation in 86 (51.8%), aggravation of preexisting dermatosis like acne 82 (49%), steroid addiction in 54 (32.5%), hypertrichosis in 44 (26.5%), telangiectasia 30 (18%), acneiform eruption 23 (13.8%), papular rosacea like rash 10 (6%), hypopigmentation 8 (4.8%), tinea incognito 9 (5.4%) and atrophy in 2 (1.2%) patients. Similar findings with some variations were observed in other studies.[18,19,20] It has been suggested that multiple pathways including rebound vasodilatation and proinflammatory cytokine release by chronic steroid use induce erythema and rosacea-like eruption.[21] Most of the patients in our study 166 (83%) patients used potent to very potent TCs, which is in concordance with aforementioned studies from other countries.[15,16,17,20] The most preferred brands in our study was betamethasone valerate (Betnovate®) followed by clobetasol propionate (Dermovate®/ Clobevate®) and this preference is attributed to increased familiarization, inexpensiveness and poor regulatory oversight.

In our study the profile of a typical abuser is a young female from lower socioeconomic status and urban background, totally ignorant to the adverse effects of topical formulations irrespective of the educational status and who uses a potent TCs with or without fairness creams usually recommended by a friend or relative for the quest of fairness or underlying skin ailment. This attitude is prevalent across the board with minor variations in other countries dwelled by dark-complexioned inhabitants where cosmetic use of TCs as a depigmenting agent has become quite common as published in series of population based studies. In a representative sample of adults visiting dermatology center in Nigeria, 58.7% were using TCs for cosmetic purposes associated with many adverse effects.[22,23] These statistics may be comparable to other prevalence studies carried out in Senegal and Togo, where TCs used as bleaching agents in 37.7% and 18.2% people, respectively.[24,25] Considering this craziness, there is yearning for the developing a safe, non-toxic, non-irritating skin whitening agent for both beauty and therapeutic purposes that is devoid of adverse effects.[26] Some of the products used for this purpose may be harmless, but many contain potentially hazardous ingredients such as inorganic mercury compounds, hydroquinone, steroids as active agents and some additives to enhance the bleaching effect.[27]

Apparently, this cocktail formulation with multidimensional mechanisms seems to be seductive to optimize dark complexion in pursuit of fair skin, and thus reinforcing the widely held belief "fair is beautiful". This obsession crosses boundaries of age, caste, religion, and social status particularly in South Asia.[28] The TCs are cytostatic to the epidermis, leading to less-

pigmented melanocytes in the skin, mercury bleaches the skin by inactivating the sulfhydryl enzymes and hydroquinone is a known inhibitor of melanin synthesis by suppressing tyrosinase activity.[26,29] Percutaneous absorption of this blend increases with long-term use particularly in hot and humid conditions resulting in plethora of adverse cutaneous reactions and systemic complications.[29] Most important adverse effect of hydroquinone is exogenous ochronosis, while contact dermatitis, discoloration of nails and postinflammatory hyperpigmentation are categorized as acute and higher concentrations of hydroquinone lead to irreversible hypopigmentation leading to leukoderma.[29]

In Pakistan, a Lahore-based study revealed 59% of female university students and staff were using fairness creams[30] and PCSIR laboratories determined the variable amount of hydroquinone in 11 out of 22 various skin lightening creams flooding the Pakistani market and labels on the packages noticeably did not indicate the levels of hydroquinone.[31] Similarly in Nigeria, ten fairness creams were randomly sampled and all revealed level of hydroquinone varying from below 0.4% to 6.2%.[32] Until 2006, hydroquinone 2% was declared safe concentration and allowed for over the counter (OTC) by US Food and Drug Administration (FDA) but after 29th August 2006, all hydroquinone products were banned until they comply with the new drug application process.[33]

Products tested in a variety of countries in Africa, Asia, Latin America and North America have contained mercury from 660 to 57,000 parts per million (ppm), very much above the safe limit of 1ppm set by FDA.[34] In India, 61% of the dermatological market consists of skin lightening products containing toxic ingredients.[35] According to WHO report Pakistan is included in the list of countries manufacturing mercury contaminated fairness creams.[36] Like TCs abuse, dermatologic complications associated with mercury include dyschromia, acne, hypertrichosis, striae, tinea corporis, pyoderma, erysipelas, scabies, and contact dermatitis.[37]

In our study 100 (50%) patients used fairness creams in combination with TCs and 34 (17%) patients used only the fairness creams and adverse effects were almost similar to steroidal dermatitis resembling rosacea (SDRS) in both the groups with minor differences as highlighted in the **Table 4**. Increased frequency of erythema in patients using only fairness creams might be irritant contact due to combined effect of mercury and hydroquinone present in fairness creams. Similarly addictive potential and comparable adverse reactions of fairness creams in our study may be attributed to the contamination of fairness creams with steroids, in addition to mercury, and this is in concurrence to other aforementioned analytical study from India.[12] This study concluded that more than 60% of all marketed skin cosmetics in India that promise to produce instant fairness, glow and brightening of skin contain one or another steroid which can lead to serious cutaneous side effects.[12] Similarly a Saudi Arabian study on skin-lightening creams, documented the toxic presence of mercury, hydroquinone and steroids in analyzed samples.[27,28] Another study from Saudi Arabia highlighted the potential of systemic toxicity of popular Fair and Lovely cream and found the traces of mercury in ovarian tissue of mice despite the level of mercury was less than 1 ppm in the tested samples and authors warned that women who regularly use such products are at particular risk, despite having no early symptoms of mercury toxicity.[38] Similarly a Mexican study concluded that mercury poisoning has been associated with

the use of mercury containing beauty cream.[39] Even in USA, mercury containing skin-lightening creams were a source of exposure for increased urinary secretion of mercury among dark complexioned adult New Yorkers and recommended these formulations dangerous and illegal.[40]

In our study the use of TCs was entwined with fairness creams as 100 (50%) of the patients screened in our study, used fairness creams in combinations with TCs and 34 (17%) used only fairness creams and the most popular brands used were Fair & Lovely® cream 60 (30%) followed by Golden Pearl® cream 40 (20%), Stillman's Bleach® cream 33 (16.5%), Archie® cream 32(16%), Face Fresh® cream14 (7%) and Faiza Beauty® cream 6 (3%) as shown in **Table 2**. Most of the patients used more than one brand of fairness creams and none of the patients was familiar with the ingredients and adverse effects of these creams. According to WHO report many of these creams used in local market were contaminated with very high toxic levels of mercury like Stillman's Bleach® cream (39000 to 42000mg/kg), Golden Pearl® (4750mg/kg) and Face Fresh® cream (3500mg/kg), Faiza Beauty® cream (5940mg/kg) and Brite Face® Cream (1500mg/Kg) and no warning was found on the label or leaflet.[41,42,43] Another study revealed the presence of lead, cadmium, copper and other heavy metals in Fair & Lovely® cream from Pakistani market.[44] In other regional countries, similar situation prevails as Sri Lankan research report, revealed presence of mercury in 25 out of 46 samples of fairness creams.[45] In Bangladesh, 56% consumers purchase beauty products of Unilever, and analytical report revealed the high concentration of mercury in Fair & Lovely Ayurvedic® (4004 ppm) and Fair & Lovely Max Fairness® cream (4174 ppm).[47] Fair & Lovely® cream was also the popular brand in our study like the India where its market share is whooping 76%,[48] reflecting the magnitude of fairness obsession, brand consciousness on the part of consumers in subcontinent.

In our study as depicted in **Table 3** main indications for using most of these creams were acne, dark complexion and melasma, comparable to that of an Indian and other aforementioned studies.[15,16,20] We also ascertained the advice regarding the prescription of these creams and found that in majority of the patients, these were recommended by friends, relatives and peers in 128 (64%), general practitioners in 32 (16%), beauticians in 16 (8%), self in 14 (7%), chemists in 8 (4%), and others 2(1%). In our study, effortless source of supply of these products were pharmacies in 118 (59%), general stores in 72 (36%) and beauty parlors in 10 (5%) of the cases, reflecting the lax regulatory oversight, social factors and influence of aggressive marketing and advertising strategies of manufactures to dupe the people.

**Limitations**

As this was an OPD-based study and, therefore, it may or may not accurately reflect the community data but it certainly highlights misuse of TCs with or without fairness creams particular among dark complexioned people.

**Conclusion**

Unwarranted cosmetic use of TCs with or without fairness creams is quite common in facial dermatoses resulting in steroidal dermatitis resembling rosacea. The craving to use these products by people oblivious to adverse effects is regrettable and the situation is likely to get worse until remedial measures are taken on multitude of fronts to regulate the

business with appropriate oversight and change the public perception and attitude to accept their natural skin tone despite social resistance to such advice. It is also incumbent that primary health care providers be sensitized regarding the adverse effects of TCs / fairness creams abuse on the face and enable them to recommend suitable and safe alternatives.

Conflict of interest

The authors declared no potential conflict of interests with respect to the research, authorship, and/or publication of this paper.

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