

Unmasking the Risks: A Population-Based Cross Sectional Survey on Non-Prescribed Face Cream Usage and Associated Adverse ReactionsManali Tyagi¹, Satyanarayan V.², Manjula M. J.³¹3rd Year Postgraduate, Department of Pharmacology, Rajarajeshwari Medical College and Hospital, Bengaluru, Karnataka, India²Professor and Head of Department, Department of Pharmacology, Rajarajeshwari Medical College and Hospital, Bengaluru, Karnataka, India³Assistant Professor, Department of Pharmacology, Rajarajeshwari Medical College and Hospital, Bengaluru, Karnataka, India

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Abstract

Introduction: Non-prescribed face cream use has increased substantially due to easy availability, social media influence, and over-the-counter access. Many such products may contain harmful ingredients including topical steroids, hydroquinone, and heavy metals, leading to preventable dermatological adverse effects. Population-level data on usage patterns and associated reactions remain limited. The present study aimed to assess the knowledge, attitudes, and practices related to non-prescribed face cream usage and to evaluate the pattern of associated adverse reactions in the community.

Materials and Methods: A population-based cross-sectional online survey was conducted in India from July to December 2025 among adults aged ≥ 18 years using a structured questionnaire assessing knowledge, attitudes, practices, and adverse effects related to non-prescribed face creams. Participants with face cream use in the previous 12 months were included. The minimum calculated sample size was 300. Data were analyzed using SPSS v26 with descriptive statistics and chi-square tests; $p < 0.05$ was considered significant.

Results: Among 300 participants, most were aged 20–29 years (50%) and female (85%). Use of non-prescribed face creams was reported by 64.7%. Awareness of harmful ingredients was present in 60%, but detailed ingredient recognition was low. Only 53.3% stated they would consult a doctor before starting a new product. Commonly used creams included skin-lightening and sun-protection products. Adverse effects were reported by 70% of users, most frequently hyperpigmentation (10.3%), acneiform eruptions (10%), and rashes (8.7%). Recommendations were mainly from family/friends (30%) and social media (25%). Only 18% sought medical consultation after adverse reactions, while many relied on self-care measures.

Conclusion: Non-prescribed face cream use is highly prevalent and frequently associated with adverse effects, alongside gaps in ingredient awareness and low rates of professional consultation, underscoring the need for improved public education and cosmetovigilance.

Keywords: Self-Medication, Face Creams, Cosmetovigilance, Topical Steroids, Adverse Skin Reactions.

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Introduction

Self-medication, defined by the World Health Organization as the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms, has become an increasingly common health behavior worldwide [1]. While appropriate self-care may provide convenience and reduce healthcare burden for minor ailments, irrational self-medication is associated with inappropriate drug use, masking of underlying diseases, delayed diagnosis, adverse drug reactions, and the potential for drug resistance [2]. In developing countries such as India, easy over-the-counter (OTC) availability of medications, weak regulatory

oversight, aggressive marketing, and socio-cultural influences have further fueled unsupervised medication practices [3]. An under-recognized yet rapidly growing dimension of self-medication is the widespread use of non-prescribed face creams, particularly skin-lightening, fairness, and anti-acne products [4]. These preparations are often perceived as harmless cosmetic aids rather than pharmacologically active substances. However, several commonly used formulations contain potent topical corticosteroids, hydroquinone, mercury compounds, and other unlabelled or inadequately disclosed ingredients [5,6]. Prolonged or

inappropriate use without dermatological supervision can lead to a spectrum of adverse effects, including skin atrophy, pigmentary abnormalities, acneiform eruptions, steroid-induced rosacea, perioral dermatitis, and, in some cases, systemic effects due to percutaneous absorption [7]. In the Indian setting, cosmetovigilance remains an emerging and largely neglected public health domain [8]. Despite the high prevalence of cosmetic use, adverse reactions related to cosmetic products are frequently underreported or ignored [9]. This can be attributed to limited public awareness, absence of robust cosmetovigilance guidelines, poor integration with existing pharmacovigilance programs, and the common practice of self-directed cosmetic use influenced by peers, pharmacists, social media, and advertising [10]. The lack of population-based data further limits the formulation of effective regulatory and educational interventions.

Therefore, the present study is aimed to assess the knowledge, attitudes, and practices related to non-prescribed face cream usage and to evaluate the pattern of associated adverse reactions in the community, with the objective of highlighting potential risks and informing strategies for safer cosmetic use and public health policy development.

Materials and Methods

A population-based cross-sectional study was conducted among individuals aged 18 years and above residing in India using a structured online questionnaire. Data was collected through a Google Form designed to evaluate knowledge, attitudes, practices, and self-reported adverse effects related to the use of non-prescribed face creams. The study was carried out over a period of six months, from July 2025 to December 2025.

Only participants who reported face cream usage within the previous 12 months and who provided electronic informed consent were included. Responses that were incomplete or submitted by individuals with pre-existing dermatological conditions unrelated to face cream use were excluded.

The sample size was estimated using a standard prevalence-based formula, taking a previously reported proportion of skin irritation of 74.4%, a 95% confidence level, and an absolute precision of 5%. The calculated minimum sample size was approximately 293, which was rounded to 300 participants to ensure adequate representation. Participants were selected using simple random sampling through online dissemination channels to obtain a broad and diverse respondent base.

Prior to data collection, approval was obtained from the Institutional Ethics Committee of Rajarajeswari Medical College and Hospital, Bengaluru. Participation was voluntary and anonymous, and electronic informed consent was obtained from all participants before access to the questionnaire was granted. The survey tool included sections on demographic details, awareness of harmful ingredients and side effects, perceptions regarding safety and regulation, usage patterns and sources of face creams, and any adverse effects experienced along with treatment-seeking behavior.

All responses were downloaded, screened, and cleaned in Microsoft Excel before analysis. Statistical analysis was performed using SPSS version 26 and Microsoft Excel.

Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize variables. Associations between categorical variables were tested using the chi-square test, and a p-value of less than 0.05 was considered statistically significant.

Results

Most participants were young adults, with half of the respondents belonging to the 20–29 year age group (50.0%), followed by 30–39 years (30.0%). Females constituted a large majority (85.0%). Regarding education, 60.0% were graduates or postgraduates, and most respondents resided in urban areas (70.0%), indicating predominantly young, educated, urban representation in the study population (Table 1).

Table 1: Sociodemographic Characteristics (n=300)

Characteristic	Categories	Frequency (%)
Age group	<20	30 (10.0%)
	20–29	150 (50.0%)
	30–39	90 (30.0%)
	≥40	30 (10.0%)
Gender	Female	255 (85.0%)
	Male	45 (15.0%)
Education	Primary	30 (10.0%)
	Secondary	90 (30.0%)
	Graduate	120 (40.0%)
	Postgraduate	60 (20.0%)
Residence	Urban	210 (70.0%)
	Rural	90 (30.0%)

Overall, 60.0% of participants were aware that non-prescribed face creams may contain harmful ingredients, while 40.0% lacked such awareness. Only a minority could correctly identify specific harmful components, with parabens (17.7%),

hydroquinone (11.0%), and steroids (10.7%) being the most recognized. Notably, 14.7% could not identify any harmful ingredient, reflecting knowledge gaps despite moderate overall awareness (Table 2).

Table 2: Knowledge Regarding Non-Prescribed Face Creams

Parameter	Response	Frequency (%)
Awareness of harmful ingredients	Aware	180 (60.0%)
	Not aware	120 (40.0%)
Known harmful ingredients	Multiple (≥ 2)	61 (20.3%)
	Parabens	53 (17.7%)
	Hydroquinone	33 (11.0%)
	Steroids	32 (10.7%)
	Mercury	26 (8.7%)
	Fragrance	31 (10.3%)
	Alcohols	20 (6.7%)
	None	44 (14.7%)

With respect to attitude toward safe cosmetic use, just over half of the respondents (53.3%) reported that they would consult a doctor before starting a new face cream, whereas 28.7% would not seek medical advice and 18.0% were unsure, indicating mixed perceptions regarding the need for professional guidance (Table 3).

Table 3: Attitude Towards Safe Cosmetic Use

Attitude Statement	Frequency (%)
Would consult a doctor before starting a new product	160 (53.3%)
Would not consult a doctor	86 (28.7%)
Unsure / Maybe	54 (18.0%)

Nearly two-thirds of participants (64.7%) reported using face creams without prescription. Skin-lightening, sun-protection, and moisturizing creams were the most commonly used categories. Usage frequency was commonly daily or weekly (30.0% each), and 55.0% reported using such products for more than one month, including 15.0% with use beyond one year, suggesting sustained exposure among many users (Table 4).

Table 4: Practices Related to Non-Prescribed Face Creams

Parameter	Categories	Frequency (%)
Ever used face creams without prescription	Yes	194 (64.7%)
	No	106 (35.3%)
Type of cream used	Skin lightening	55 (18.3%)
	Sun protection	53 (17.7%)
	Moisturizer	48 (16.0%)
	Anti-aging	31 (10.3%)
	Medicated	28 (9.3%)
	Acne treatment	31 (10.3%)
	Herbal/Ayurvedic	30 (10.0%)
Frequency of use	Daily	90 (30.0%)
	Weekly	90 (30.0%)
	Monthly	60 (20.0%)
	Occasionally	60 (20.0%)
Duration of use	<1 month	75 (25.0%)
	1–6 months	120 (40.0%)
	6–12 months	60 (20.0%)
	>1 year	45 (15.0%)

Among users of non-prescribed creams (n=194), 70.0% reported at least one adverse effect, while 30.0% reported no reaction. The most frequent adverse events were hyperpigmentation (10.3%), acne or pimples (10.0%), rashes (8.7%), and burning sensation (8.3%), with smaller proportions reporting skin thinning, pigmentary changes, and excess facial hair growth (Table 5).

Table 5: Adverse Events after Cream Use (n=194 users)

Adverse Event	Frequency (%)
No reaction	90 (30.0%)
Hyperpigmentation	31 (10.3%)
Acne / Pimples	30 (10.0%)
Rashes	26 (8.7%)
Burning sensation	25 (8.3%)
Redness	24 (8.0%)
Itching	21 (7.0%)
Skin thinning	15 (5.0%)
Swelling	14 (4.7%)
Hypopigmentation	14 (4.7%)
Excess facial hair growth	4 (1.3%)

Recommendations for cream use most commonly came from family or friends (30.0%) and social media or influencers (25.0%), followed by pharmacists or shopkeepers (16.7%) and advertisements (13.3%). Products were most often purchased through online platforms (30.0%) and pharmacies (26.7%), highlighting the major role of informal advice and digital markets (Table 6).

Table 6: Source of Recommendation and Purchase

Parameter	Categories	Frequency (%)
Source of recommendation	Family/friends	90 (30.0%)
	Social media / influencers	75 (25.0%)
	Pharmacist/shopkeeper	50 (16.7%)
	Advertisements	40 (13.3%)
	Other	15 (5.0%)
	Not applicable	30 (10.0%)
Source of purchase	Pharmacy	80 (26.7%)
	Cosmetics shop	70 (23.3%)
	Online platforms	90 (30.0%)
	Supermarket	30 (10.0%)
	Others	30 (10.0%)

Regarding expenditure, the largest group of participants spent ₹100–300 per month (30.0%) on face creams, followed by ₹301–500 (25.0%). Only 25.0% consistently checked product ingredients, whereas 40.0% never reviewed ingredient lists, demonstrating low vigilance toward product composition (Table 7).

Table 7: Expenditure and Ingredient-Checking Behavior

Parameter	Categories	Frequency (%)
Monthly expenditure on creams	<₹100	60 (20.0%)
	₹100–300	90 (30.0%)
	₹301–500	75 (25.0%)
	₹501–1000	45 (15.0%)
	>₹1000	15 (5.0%)
	Don't use creams	15 (5.0%)
Ingredient checking habit	Always	75 (25.0%)
	Sometimes	90 (30.0%)
	Never	120 (40.0%)
	Not applicable	15 (5.0%)

Following adverse reactions, the most common response was discontinuation of the product (38.7%). However, many relied on home remedies or over-the-counter medications (20.6%), and only 18.0% sought consultation with a dermatologist or doctor, while 10.3% continued product use despite reactions (Table 8).

Table 8: Actions Taken After Adverse Events

Action Taken After Reaction	Frequency (%)
Stopped using product	75 (38.7%)
Used home remedies / OTC meds	40 (20.6%)
Consulted dermatologist/doctor	35 (18.0%)
Continued using cream	20 (10.3%)
Not applicable	24 (12.4%)

Discussion

The present study demonstrated that nearly two-thirds of participants (64.7%) reported using non-prescribed face creams, indicating a high prevalence of unsupervised cosmetic product use. This finding is comparable to the community-based survey by Raseena NM et al., which reported a 67.9% prevalence of over-the-counter cosmeceutical usage among college students [11]. Similarly, Rathod P et al. observed that 60% of participants practiced self-medication for minor ailments [12]. Together, these findings suggest that self-directed product use, whether medicinal or cosmetic is widespread, particularly among younger and educated populations, which also aligns with the demographic pattern seen in the present study where most users were young adults and graduates.

Knowledge regarding harmful ingredients in non-prescribed face creams was moderate in the present study, with 60% reporting awareness, yet detailed ingredient recognition remained low, and a notable proportion could not identify any harmful components. This partial awareness pattern mirrors observations from Raseena NM et al., where safety concerns were frequently expressed but did not consistently translate into informed or cautious behavior [11]. The gap between perceived awareness and actionable knowledge indicates that consumers may recognize risk in general terms but lack specific understanding of ingredients such as steroids, hydroquinone, and mercury, which has also been emphasized in studies examining topical corticosteroid misuse [13,14].

Attitude and practice patterns in the present study further reinforce concerns about unsafe cosmetic use. Although just over half of respondents stated they would consult a doctor before starting a new product, actual behavior showed that 64.7% had used face creams without prescription. Comparable discordance between attitude and practice has been documented in prior Indian studies on topical corticosteroid misuse, where Chaudhary S et al. found that nearly 80% of users applied topical steroids without consulting qualified practitioners [13]. Chaudhary R et al. similarly reported that 48.9% of patients used steroid-containing creams without prescription, often obtained through informal channels [14]. These parallels suggest that stated willingness to seek medical advice does not reliably prevent unsupervised product use.

The pattern of influence and procurement observed in the present study is also consistent with earlier literature. Recommendations most commonly came from family/friends (30%) and social media/influencers (25%), while purchases were frequently made online or through pharmacies. Raseena NM et al. likewise identified social media

and peer groups as dominant drivers of cosmeceutical use [11], and Chaudhary S et al. reported that friends, chemists, and non-medical sources were major suppliers of topical steroid products [13]. Urban predominance in the present sample (70%) also corresponds with findings by Limaye D et al., who demonstrated significantly higher self-medication rates in urban compared to rural populations (51.5% vs. 7.7%) [15], highlighting the role of accessibility and market exposure.

Adverse effects were reported by a substantial proportion of users in the present study, with pigmentary changes, acneiform eruptions, and irritant reactions being common, yet only a minority sought dermatological consultation. This trend closely reflects the observations by Raseena NM et al., where high rates of irritation (74.4%) and even chemical burns (52.1%) were reported, but only 16.1% sought professional care [11]. Prior studies on topical corticosteroid misuse have similarly documented frequent cutaneous complications alongside low rates of appropriate medical consultation [13,14], underscoring a persistent pattern of risk exposure combined with delayed or absent professional intervention.

The present study has certain limitations that should be considered while interpreting the findings. As the data were collected through a self-reported online survey, responses were subject to recall bias and reporting bias, and could not be independently verified. The use of an online questionnaire may have led to selection bias, with overrepresentation of younger, urban, and digitally literate participants, thereby limiting generalizability to the entire population. Being cross-sectional in design, the study could identify associations but not establish causal relationships between cream usage and adverse effects. Additionally, specific product ingredients and clinical confirmation of reported adverse reactions were not validated through medical examination.

Conclusion

The present study highlights a high prevalence of non-prescribed face cream usage, particularly among young and urban individuals, with substantial reliance on informal sources such as family, peers, and social media for recommendations. Although moderate awareness about potential harmful ingredients was observed, detailed knowledge and safe usage practices were inadequate, and a considerable proportion of users experienced adverse effects without seeking professional medical care. The findings underscore the need for stronger public education on cosmetic safety, stricter regulation of over-the-counter and online cosmetic products, and improved cosmetovigilance systems to promote informed

decision-making and reduce preventable skin-related complications.

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