

The Hidden Epidemic of Topical Steroid Use: Prevalence and Impact Among Jordan's General Population

Hanadi Qeyam ¹, Rola Al-Shaimi², Noor Abed Alfattah¹, Ensaf Y Almomani³, Ahmed Al-Rusan⁴, Jihan Muhaidat ¹, Diala Alshiyab ¹, Firas Al-Qarqaz ¹, Leen Heis ¹

¹Department of Dermatology, Faculty of Medicine, Jordan University of Science and Technology, Irbid, Jordan; ²Faculty of Medicine, Jordan University of Science and Technology, Irbid, Jordan; ³Department of Basic Medical Sciences, Faculty of Medicine, Al-Balqa' Applied University, Al-Salt, Jordan; ⁴Department of Dermatology, Birmingham Skin Centre, Sandwell and West Birmingham Hospitals NHS Trust, Birmingham, UK

Correspondence: Hanadi Qeyam, Department of Dermatology, Faculty of Medicine, Jordan University of Science and Technology, Irbid, Jordan, Tel +962 7 9723 6111, Email hmqeyam@just.edu.jo

Background: Topical corticosteroids (TCS) are widely prescribed for inflammatory skin conditions, but unsupervised use carries significant health risks. In Jordan, over-the-counter availability raises concerns about misuse. Limited research exists on population-level patterns and knowledge. This study aimed to evaluate TCS use patterns, indications, and awareness in the general population, and to identify demographic factors associated with misuse.

Methods: A cross-sectional online survey was distributed via social media platforms. The questionnaire assessed demographics, corticosteroid use patterns, application sites, prescription sources, and awareness of products and side effects. Data were analyzed using Jamovi (version 2.3.28). Descriptive statistics were generated, and chi-square tests and multiple linear regression were used to identify associations with cream recognition and adverse effect reporting.

Results: A total of 714 respondents participated; 46.8% reported storing corticosteroid creams at home. The most common application sites were the hands (36.6%) and face (31.2%). Daily use was most frequent (53.1%). Creams were mainly obtained from pharmacists (22.8%) or informal sources (12.6%). Only 63.2% reported reading the leaflet, and 61.3% were aware of potential side effects. Hydrocortisone 1% was the most recognized cream (45.1%), while 29.5% could not identify any corticosteroid cream. The leading indications were eczema (32.6%) and itchiness (17%). Adverse effects were reported by 39.9%, most commonly redness, increased hair growth, and skin thinning. Chi-square analyses showed that adverse effect reporting was associated with longer duration and higher frequency of use ($p < 0.05$), while regression analysis demonstrated that cream recognition was lower among males and higher among employed or retired individuals compared with housewives ($p < 0.05$).

Conclusion: Topical corticosteroid use is widespread in Jordan, often obtained without prescription and with limited awareness of potency, indications, and risks. Targeted public education and stricter regulation of dispensing are needed to reduce misuse and ensure safer use.

Keywords: cross-sectional studies, glucocorticoids, Jordan, self-medication, surveys and questionnaires

Introduction

Topical corticosteroids (TCSs) were first introduced in the early 1950s and since then, they become one of the most commonly prescribed medications in dermatology¹ They exert anti-inflammatory, immunosuppressive, and vasoconstrictive effects and are used to manage conditions such as eczema, psoriasis, dermatitis, and allergic reactions, providing relief from redness, swelling, itching, and discomfort.²

Long-term or unsupervised use raises safety concerns. Prolonged application, especially of potent agents on high-absorption sites, can cause skin thinning and striae.³ Systemic complications, including adrenal suppression and Cushing's syndrome, have also been reported, particularly with high-potency preparations.⁴ Studies indicate that

application of as little as 7.5 g per week of very potent TCS has been reported to cause secondary adrenal failure.⁵ Epidemiological studies further suggest an association between TCS use and increased risk of osteoporosis and fractures, with a higher risk among younger women.⁵

Concerns about long-term safety, therefore, persist despite decades of clinical use⁶

In Jordan, TCSs are easily available without prescription, leading to self-medication and reliance on advice from pharmacists, relatives, or previous prescriptions. This practice increases the risk of inappropriate use, such as incorrect potency selection, prolonged application, and use for non-indicated conditions. Consequently, adverse outcomes from misuse may be more prevalent.

Given the limited data on TCS use in Jordan, this study aimed to evaluate prevalence, patterns of use, sources of prescription, awareness of potential side effects, and recognition of specific corticosteroid products. It also sought to assess sociodemographic factors associated with misuse and knowledge gaps.

Methods

Study Design and Setting

Data were collected using a validated self-administered questionnaire. The questionnaire was created using Google Forms and distributed through social media platforms, including Facebook, Instagram, Twitter, and WhatsApp, to ensure broad participation across diverse Jordanian demographic groups.

Participants & Ethical Approval

To be eligible, participants had to be residents of Jordan and at least 18 years old. Individuals who did not complete the questionnaire or could not provide informed consent were excluded. The study was conducted following the ethical principles of the Declaration of Helsinki and was approved by the Institutional Review Board at Jordan University of Science and Technology (IRB number 25/174/2024). Informed consent was obtained electronically before participation. The consent form outlined the purpose of the study, the voluntary nature of participation, and assurances of anonymity and confidentiality.

Questionnaire Development and Validation

The questionnaire was developed in collaboration with two board-certified dermatologists to ensure content validity, clinical relevance, and unbiased item design. The initial draft was constructed in Arabic to match the local language, then translated into English for reporting. To evaluate its appropriateness for use among the general population, the instrument underwent pilot testing with 25 participants of different ages and educational backgrounds. Feedback from the pilot highlighted areas for improvement in clarity and flow. The complete self-administered questionnaire is provided in [Supplementary File 1](#).

The internal reliability of the knowledge and awareness items was assessed using Cronbach's alpha, which yielded a score of 0.81, indicating good internal consistency. In addition, where recognition of corticosteroid products was required, visual aids (images of common cream packaging in Jordan) were included to facilitate understanding and reduce misclassification by participants without medical training. The final version of the questionnaire included sections on demographics, recognition of corticosteroid creams (via names and images), usage patterns (application site, frequency, duration, and source), awareness of potential side effects, self-reported adverse effects, and whether participants recommended use to others.

The final survey was distributed online over eight weeks. Responses were reviewed for completeness, and data cleaning was performed before analysis to ensure accuracy and quality. It should be emphasized that the reported side effects represent participants' self-perceived experiences and were not confirmed by clinical examination or physician diagnosis.

Statistical Analysis

Data were analyzed using Jamovi software (version 2.3.28). Descriptive statistics, including frequencies and percentages, were employed to summarize demographic data, familiarity with steroid creams, and usage patterns. Cross-tabulations

were used to explore relationships between steroid cream use and demographic variables. Statistical significance was assessed using Pearson's chi-square test or Fisher's exact test for small frequencies, with a two-tailed p-value of <0.05 considered statistically significant.

Result

Demographics and Usage Characteristics

A total of 714 participants were included in this study. The majority were young adults aged 18–25 years (36.7%) and predominantly female (59.0%). Most participants held a bachelor's degree (72.4%), and nearly one-third were students (30.7%). A significant portion of the sample reported having health insurance (81.4%) and residing in the northern region of Jordan (53.2%). [Table 1](#)

Corticosteroid Cream Usage Characteristics

Nearly half of the participants (46.8%) reported keeping corticosteroid creams at home. The most commonly reported sites of application were the hands (36.6%) and face (31.2%), followed by the legs (11.0%) and genital area (9.1%). Regarding frequency of use, over half (53.1%) applied the cream once daily, while 36.4% reported use two to three times per day. A smaller proportion used it more than three times daily (1.6%) or on an intermittent basis, such as twice weekly (7.3%). While 76.2% indicated that the usage of the cream had been explained to them, only 63.2% reported reading the medication leaflet. 61.3% of users reported awareness of side effects, and 45.5% stated they had recommended

Table 1 Demographic and Social Characteristics of the Sample

Variable	Category	Counts
Age	18-25	262 (36.7%)
	26-35	134 (18.8%)
	36-45	164 (23.0%)
	46-55	96 (13.4%)
	56-65	49 (6.9%)
	>65	9 (1.3%)
Gender	Female	421 (59.0%)
	Male	293 (41.0%)
Educational Level	Primary School	5 (0.7%)
	Bachelor's	517 (72.4%)
	Secondary School	95 (13.3%)
	PhD	17 (2.4%)
	Master's	80 (11.2%)
Job	Housewife	90 (12.6%)
	Student	219 (30.7%)
	Not Working	56 (7.8%)
	Retired	54 (7.6%)
	Public sector employee	153 (21.4%)
	Private sector employee	142 (19.9%)
	Insurance	No
Yes	581 (81.4%)	
Region of Residency	South	147 (20.6%)
	North	380 (53.2%)
	Central	187 (26.2%)
Marital Status	Widowed	24 (3.4%)
	Single	342 (47.9%)
	Married	334 (46.8%)
	Divorced	14 (2.0%)

Table 2 Corticosteroid Cream Usage Characteristics

Variable	Category	Counts (N)
Keep Corticosteroid Cream at Home	No	380 (53.2%)
	Yes	334 (46.8%)
Cream Application Site	Legs	47 (11.0%)
	Back/Abdomen	30 (7.0%)
	Head	9 (2.1%)
	Neck	13 (3.0%)
	Genital Area	39 (9.1%)
	Face	134 (31.2%)
	Hands	157 (36.6%)
Usage Frequency	2-3 Times/day	155 (36.4%)
	More than 3 times/day	7 (1.6%)
	Once/day	226 (53.1%)
	Twice/week	31 (7.3%)
	Every other day	7 (1.6%)
Was Usage Explained	No	102 (23.8%)
	Yes	327 (76.2%)
Read Medication Leaflet	No	158 (36.8%)
	Yes	271 (63.2%)
Aware of Side Effects	No	166 (38.7%)
	Yes	263 (61.3%)
Recommendation to Family/Friends	No	234 (54.5%)
	Yes	195 (45.5%)
Duration of Use	Less than a month	317 (73.9%)
	1-3 Months	60 (14.0%)
	3-6 Months	15 (3.5%)
	6-12 Months	9 (2.1%)
	1-3 Years	16 (3.7%)
	3-6 Years	2 (0.5%)
	More than 6 years	10 (2.3%)
Source of Cream	Internet	10 (2.3%)
	Recommended by a friend/relative	54 (12.6%)
	Recommended by a pharmacist	98 (22.8%)
	Prescription from a dermatologist	225 (52.4%)
	Prescription from a non-dermatologist doctor	42 (9.8%)

corticosteroid creams to family or friends. Most participants used the cream for less than one month (73.9%), while only a small percentage reported prolonged use beyond a year (6.5%). Regarding the sources of acquisition, over half (52.4%) obtained the cream via prescription from a dermatologist, whereas others received it from pharmacists (22.8%), non-dermatologist doctors (9.8%), or through informal channels such as friends/relatives (12.6%) or the internet (2.3%).

[Table 2](#)

Recognition and Utilization of Topical Corticosteroid Creams by Potency Class

Participants demonstrated varying levels of recognition and use of different topical corticosteroid creams. Hydrocortisone 1% (Class 7, least potent) was the most commonly recognized corticosteroid (45.1%), followed by betamethasone valerate 0.1% (39.6%) and clobetasol propionate 0.05% (30.6%). In terms of usage, clobetasol propionate was the most frequently used (20.0%), despite being classified as a super potent corticosteroid (Class 1), followed by hydrocortisone 1% (12.6%) and betamethasone valerate (12.3%). Mometasone furoate and methylprednisolone aceponate were used less frequently, at 10.5% and 4.6%, respectively. Notably, 39.9% of participants reported using corticosteroid creams not

Table 3 Recognition and Usage Patterns of Topical Corticosteroid Creams by Potency

Class	Corticosteroid Creams Recognized (Count, %)	Used (Count, %)
Clobetasol propionate 0.05% (Class 1, Super Potent)	220 (30.6%)	143 (20.0%)
Mometasone furoate 0.1% (Class 2, Potent)	214 (29.8%)	75 (10.5%)
Betamethasone valerate 0.1% (Class 3, Potent/Upper Mid Strength)	284 (39.6%)	88 (12.3%)
Methylprednisolone aceponate 0.1% (Class 4, Mid Strength)	166 (23.1%)	33 (4.6%)
Hydrocortisone 1% (Class 7, Least Potent)	324 (45.1%)	90 (12.6%)
None of the above	–	285 (39.9%)
No creams recognized	212 (29.5%)	–

listed in the survey, and 29.5% were unable to recognize any of the named creams. These findings highlight a concerning pattern of higher usage of potent corticosteroids, potentially without adequate knowledge of their classification or risks.

When considered alongside acquisition sources, these findings indicate that while many participants accessed potent and super potent corticosteroids such as clobetasol through dermatologist prescriptions, a substantial proportion also obtained them via pharmacists, non-specialist physicians, or informal channels, suggesting that a notable share of use occurred without direct medical supervision [Table 3](#)

Reported Indications and Perceived Side Effects of Topical Corticosteroid Use Among Participants

Participants reported several reasons for using topical corticosteroids. The most frequently cited indication was eczema (32.6%), followed by skin itchiness (17.0%) and acne (8.4%). Other common reasons included skin fungal infections (7.5%), sunburns (4.7%), and use after laser sessions (2.6%). Less commonly reported indications were vitiligo (1.4%) and rosacea (0.5%). Importantly, 2.1% of users indicated using corticosteroids for skin lightening purposes.

Regarding adverse effects, 39 participants (9.1%) reported having increased hair growth, and an equal percentage reported skin redness. Other common side effects included skin thinning (8.9%), irritation and itching (8.4%), and pigmentation changes (6.3%), which were also frequently reported. Less frequent adverse effects were vasodilation (6.3%), acne (5.1%), and white spots (3.7%). A smaller proportion noted more serious or specific concerns, such as bacterial/viral infections (2.1%), stretch marks (2.6%), and worsening of the underlying condition (0.9%). However, the majority (60.1%) reported no observable side effects. [Table 4](#)

Table 4 Reported Indications and Perceived Side Effects of Topical Corticosteroid Use Among Participants

Category	Counts (%)
Reason for Use	
Other Causes	19 (4.4%)
Furunculosis	5 (1.2%)
Eczema	140 (32.6%)
Skin fungal infection	32 (7.5%)
After the Laser session	11 (2.6%)
Vitiligo	6 (1.4%)
Ringworm	3 (0.7%)
Acne	36 (8.4%)
Sun Burns	20 (4.7%)
Lichen Planus	15 (3.5%)

(Continued)

Table 4 (Continued).

Category	Counts (%)
Skin Itchiness	73 (17.0%)
Intertrigo	10 (2.3%)
Urticaria	6 (1.4%)
Psoriasis	10 (2.3%)
Others	18 (4.2%)
Skin lightening	9 (2.1%)
Insect Bite	17 (4.0%)
Rosacea	2 (0.5%)
Side Effects	
Vasodilation	27 (6.3%)
Increased hair growth	39 (9.1%)
Skin thinning	38 (8.9%)
Acne	22 (5.1%)
Skin pigmentation	27 (6.3%)
Bacterial or viral infection	9 (2.1%)
White spots on the skin	16 (3.7%)
Skin redness	39 (9.1%)
Skin irritation and itching	36 (8.4%)
Rosacea	3 (0.7%)
Stretch marks	11 (2.6%)
Worsening of the underlying skin condition	4 (0.9%)
None of the above (Side Effects)	258 (60.1%)

Factors Influencing Corticosteroid Cream Usage

Chi-square analysis showed several significant associations between demographic factors and corticosteroid use patterns. Duration of use was significantly associated with age ($\chi^2 = 63.3$, $p < 0.001$) and gender ($\chi^2 = 28.2$, $p < 0.001$), but not with education or job status. Usage frequency was significantly related to educational level ($\chi^2 = 27.2$, $p = 0.039$) only.

Reason for use showed significant associations with age ($\chi^2 = 112$, $p = 0.028$), gender ($\chi^2 = 38.2$, $p = 0.002$), and job status ($\chi^2 = 140$, $p < 0.001$). The application site was significantly associated with age ($\chi^2 = 48.6$, $p = 0.017$) and job status ($\chi^2 = 44.9$, $p = 0.039$).

Awareness of side effects was significantly related to gender only ($\chi^2 = 6.69$, $p = 0.010$). Previous corticosteroid use showed a strong association with gender ($\chi^2 = 40.0$, $p < 0.001$) and a borderline association with age ($\chi^2 = 37.1$, $p = 0.057$). Cream source was significantly associated with job status ($\chi^2 = 38.1$, $p = 0.008$) and showed a borderline association with age ($\chi^2 = 30.6$, $p = 0.060$). [Table 5](#)

Table 5 Chi-Square Analysis of Factors Influencing Corticosteroid Cream Usage

Variable	Age (χ^2 , p)	Gender (χ^2 , p)	Education (χ^2 , p)	Job (χ^2 , p)
Duration of use	63.3 (<.001)	28.2 (<.001)	15.7 (0.898)	42.6 (0.064)
Usage frequency	16.9 (0.663)	8.07 (0.089)	27.2 (0.039)	33.5 (0.072)
Reason for use	112 (0.028)	38.2 (0.002)	63.5 (0.632)	140 (<.001)
Application site	48.6 (0.017)	10.5 (0.106)	18.6 (0.771)	44.9 (0.039)
Aware of side effects?	7.15 (0.209)	6.69 (0.010)	9.21 (0.056)	5.71 (0.336)
Used corticosteroid	37.1 (0.057)	40.0 (<.001)	18.9 (0.527)	30.0 (0.225)
Cream source	30.6 (0.060)	3.06 (0.549)	18.9 (0.275)	38.1 (0.008)

Predictors of Cream Recognition and Reported Side Effects Among Users

Our analysis showed that age, gender, educational level, job, insurance status, reason for use, cream source, and awareness of side effects were significantly associated with the number of recognized corticosteroid creams ($p < 0.05$). Specifically, participants over the age of 65 and males were significantly less likely to recognize multiple creams ($p = 0.032$ and $p = 0.045$, respectively). Additionally, individuals employed in the public ($p = 0.027$) and private ($p = 0.043$) sectors demonstrated greater recognition compared to housewives.

Prolonged corticosteroid use was significantly associated with increased awareness of side effects, particularly among those using creams for 3–6 months ($p < 0.001$) and 6–12 months ($p = 0.006$). Furthermore, frequent application (2–3 times daily) was significantly linked to a higher number of reported side effects ($p = 0.01$), whereas infrequent use (eg, twice per week) correlated with fewer side effects ($p = 0.022$).

In contrast, no significant associations were found between reported side effects and gender, education, cream source, or awareness status ($p > 0.05$). [Table 6](#)

Influence of Demographics and Usage Patterns on Cream Recognition and Reported Side Effects

Recognition of Cream Names

Linear regression analysis identified gender and occupation as significant predictors of the number of recognized topical corticosteroid creams. Males recognized significantly fewer cream names than females ($\beta = -0.34$, $p = 0.045$). Compared to housewives, retired participants ($\beta = 0.87$, $p = 0.021$), public sector ($\beta = 0.56$, $p = 0.027$), and private sector employees ($\beta = 0.53$, $p = 0.043$) had higher recognition scores. No significant associations were found for age, duration of use, or frequency of application, though those using creams twice weekly showed a non-significant trend toward lower recognition ($p = 0.071$).

Reported Side Effects

Side effects were significantly associated with age, duration, and frequency of use. Compared to the 18–25 age group, participants aged 26–35, 46–55, and >65 years reported fewer side effects (all $p < 0.05$). Longer duration of use was consistently linked to more side effects, with all periods beyond one month showing significant increases (eg, 3–6 months: $\beta = 1.47$, $p < 0.001$; 6–12 months: $\beta = 0.93$, $p = 0.006$). Higher frequency of application (2–3 times daily) was associated with more side effects ($\beta = 0.26$, $p = 0.01$), while twice-weekly use was linked to fewer side effects ($\beta = -0.45$, $p = 0.022$). Gender and occupation were not significantly associated with reported side effects ($p > 0.05$). [Table 7](#)

Discussion

Our results revealed that 46.8% of participants reported keeping corticosteroid creams at home. This finding is supported by the results of Ah et al's research, which showed that many people use topical corticosteroids through both prescription

Table 6 Predictors of Cream Recognition and Reported Side Effects Among Users

Variable	SUM of Recognized Creams	p-value	SUM of S/E	p-value
Age	15	0.011	14	0.016
Gender	20.416	< 0.001	0.0289	0.865
Educational Level	18.77	< 0.001	7.27	0.122
Job	11.2	0.047	18.2	0.003
Insurance	10.0804	0.001	0.0258	0.872
Cream Application Site	4.04	0.672	8.14	0.228
Usage Frequency	9.01	0.061	10.96	0.027
Duration of Use	1.96	0.924	26.26	< 0.001
Reason for Use	31	0.02	18.6	0.355
Awareness of S/E	27.7087	< 0.001	0.0558	0.813
Source of Cream	9.914	0.042	0.66	0.956

Table 7 Influence of Demographics and Usage on Cream

Predictor	SUM of Recognized Creams				SUM of Side Effects			
	Estimate	SE	t	p	Estimate	SE	t	p
Intercept	3.5993	1.062	3.3888	<0.001	1.4824	0.708	2.0926	0.037
Age:								
26-35 – 18-25	0.2426	0.314	0.7721	0.441	-0.45311	0.21	-2.1621	0.031
46-55 – 18-25	-0.2660	0.356	-0.7462	0.456	-0.52286	0.238	-2.1995	0.028
>65 – 18-25	-0.6475	0.743	-0.8714	0.384	-1.06969	0.496	-2.1582	0.032
Gender:								
Male – Female	-0.3415	0.17	-2.0081	0.045	-0.13791	0.113	-1.2159	0.225
Job:								
Retired – Housewife	0.8725	0.377	2.3134	0.021	-0.04439	0.252	-0.1765	0.86
Public sector employee – Housewife	0.555	0.25	2.2161	0.027	0.00481	0.167	0.0288	0.977
Private sector employee – Housewife	0.5345	0.264	2.0269	0.043	0.1522	0.176	0.8653	0.387
Duration of Use:								
1-3 Years – Less than a month	0.2909	0.376	0.7736	0.44	0.62155	0.251	2.478	0.014
3-6 Months – Less than a month	0.0386	0.41	0.094	0.925	1.46973	0.273	5.3758	<0.001
6-12 Months – Less than a month	0.2455	0.505	0.4865	0.627	0.93043	0.337	2.7647	0.006
More than 6 years – Less than a month	-0.2579	0.484	-0.5325	0.595	0.86217	0.323	2.6691	0.008
1-3 Months – Less than a month	-0.2061	0.205	-1.0034	0.316	0.29186	0.137	2.13	0.034
Usage Method:								
2-3 Times/day – Once/day	0.0996	0.152	0.6553	0.513	0.26158	0.101	2.5805	0.01
Twice/week – Once/day	-0.5318	0.294	-1.8102	0.071	-0.45101	0.196	-2.3019	0.022

and over-the-counter (OTC) routes, with 27.8% of users acquiring these medications without a prescription. Their nationwide, community-based study in Korea demonstrated that topical corticosteroids are widely available and commonly used for a variety of dermatological conditions, indicating that these products are often regarded as standard household medical supplies. Additionally, the study found that a significant proportion of users were prevalent users with ongoing or recent use, indicating routine household storage of corticosteroid creams. These findings suggest that widespread home storage of topical corticosteroids extends beyond our population and reflects a common pattern of accessibility and use in general communities.⁷

This study showed that the most frequent sites of topical corticosteroid application were the hands (36.6%) and face (31.2%), the facial use align closely with the international literature, where the face is consistently reported as the most common site of misuse.^{8,9} The widespread of facial application is particularly concerning due to the greater vulnerability of facial skin to steroid-induced adverse effects because of its thinner stratum corneum and higher permeability, which significantly increases the risk of complications including skin atrophy, telangiectasias, and steroid-induced rosacea.¹⁰

The majority of users (73.9%) reported using TCS for less than a month, but a considerable number of users continued to use TCS for much longer, with 6.5% using TCS for over a year.

Most participants (53.1%) applied corticosteroid cream once daily, aligning with standard recommendations. However, over one-third (36.4%) applied it 2–3 times daily; this frequent application raises concerns about cumulative exposure and the potential for both local and systemic side effects. This pattern is consistent with studies from other regions, such as Ethiopia, where prolonged and frequent use was also observed, often without adequate medical supervision.¹¹

In our cohort, eczema (32.6%) and skin itchiness (17.0%) were the most frequent reasons for topical corticosteroid (TC) use, followed by acne (8.4%), fungal infections (7.5%), and sunburns (4.7%). This distribution aligns with established dermatological practice, where TCs are primarily indicated for inflammatory conditions such as eczema.⁵ However, the use of topical corticosteroids for non-indicated conditions such as acne and fungal infections suggests inappropriate self-treatment practices. This issue is highlighted in the study by Freeze et al (2020), which analyzed prescribing patterns and found frequent off-label use, particularly beyond approved age ranges and indications. This

misuse is especially prevalent in settings where topical corticosteroids are available without prescription, therefore increasing the risk of adverse effects and complications.¹²

The results from our study indicate a discrepancy between corticosteroid recognition and usage patterns by potency class. Although hydrocortisone 1% (Class 7, weakest) was the most recognized (45.1%), clobetasol propionate 0.05% (Class 1, strongest) showed high usage rates (20.0%) despite lower recognition (30.6%). This suggests that users may not fully understand the differences in potency among TCSs; this knowledge gap has also been observed among healthcare professionals. Alamri et al (2024) found that 81% of primary care physicians in Saudi Arabia could not identify clobetasol propionate as an ultra-high potency steroid, yet 44.3% prescribed it regularly.¹³ While dermatologist-supervised use of super-potent corticosteroids such as clobetasol may be appropriate, their availability through pharmacists, non-specialist physicians, or informal sources raises concern for misuse and unsupervised exposure.

Recognition and usage patterns varied significantly across demographics. The predominance of young adults in our sample may partly reflect recruitment bias from online distribution, as younger individuals are more active on social media. Within this group, females demonstrated significantly higher recognition ($p < 0.001$), consistent with evidence that women generally exhibit greater health literacy.^{14,15} However, younger females also reported higher misuse rates, particularly for cosmetic purposes such as skin lightening and acne treatment. In contrast, males and older adults (>65 years) were less familiar with corticosteroid creams and their risks. Occupational status was also significant, with employees showing greater awareness compared to housewives. These demographic patterns are consistent with findings from India, Ethiopia, and Saudi Arabia, where factors such as age and education were linked to steroid misuse and adverse outcomes.^{11,16,17} These findings highlight the need for targeted education, especially for males, older adults, and housewives.

In addition to demographics, regression analysis revealed that longer duration and higher frequency of corticosteroid use were significantly associated with more side effects. Participants using corticosteroids for more than one month, particularly 3–6 months, reported the highest side effects. This is consistent with literature on cumulative corticosteroid toxicity and risks of perioral dermatitis, steroid-induced acne, skin atrophy, and rosacea.^{18,19} Furthermore, those applying creams two to three times daily reported more side effects than twice-weekly users, supporting evidence that intermittent regimens reduce adverse outcomes.²⁰

Although dermatologists were the primary source of prescriptions (52.4%), a substantial proportion obtained these medications from non-specialist sources, including pharmacists (22.8%), friends/relatives (12.6%), and non-dermatologist physicians (9.8%). This pattern mirrors previous findings where non-specialist sources were linked to corticosteroid misuse.²¹ Studies from India have highlighted that pharmacists and paramedical personnel are key contributors, often dispensing potent steroids without prescriptions or adequate counseling.¹⁶

Furthermore, the tendency of 45.5% of users to recommend topical corticosteroids to family or friends indicates that self-medication with these products is considered a normal practice. Additionally, the involvement of friends and family as influencing factors is particularly concerning, as they often recommend topical corticosteroids for various conditions, including facial acne and skin lightening without medical evaluation.^{16,22}

Also, gaps in patient education were evident: only 76.2% received usage explanations, 63.2% read medication leaflets, and 61.3% were aware of potential side effects, leaving a substantial minority uninformed about risks. Sharma et al also emphasized that such educational deficits contribute significantly to misuse, particularly for cosmetic purposes.²¹

In our study, 60.1% of participants reported no adverse effects from topical corticosteroid (TC) use, suggesting that many users apply these agents appropriately. However, 39.9% did experience side effects, most commonly increased hair growth and skin redness (both 9.1%), followed by skin thinning (8.9%) and itching (8.4%). These findings are consistent with the known adverse effect profile of TCs, particularly when used on sensitive areas or over prolonged periods.^{18,23}

Limitation

This study has several limitations that should be considered when interpreting the findings. First, because the survey was conducted online using a self-administered questionnaire distributed through social media platforms, there is an inherent risk of selection bias. Participation was restricted to individuals with internet access and active social media use, which

may not fully represent the general Jordanian population; older adults and those with limited digital literacy may therefore be underrepresented. Second, the survey did not capture participants' field of study or profession; thus, it is possible that some healthcare professionals responded, which may have influenced recognition and reporting patterns. Third, all reported side effects were self-perceived by participants rather than confirmed through medical evaluation, meaning that clinically verifiable adverse effects such as skin thinning may have been under- or over-reported. Finally, despite visual aids, some participants may have misidentified corticosteroid creams, potentially causing inaccurate reporting of usage.

Conclusion

This study highlights the widespread use of topical corticosteroids among the general population in Jordan, with a substantial number obtaining these medications from non-prescription sources such as pharmacists, friends, or online platforms, alongside many who received them through dermatologist prescriptions. Despite the high prevalence of use, there remains limited public awareness regarding the relative strength (potency), appropriate indications, and potential adverse effects of these medications, particularly among users with prolonged or frequent application. The strong associations between demographic factors and both product recognition and adverse event reporting underscore the need for targeted public education campaigns and tighter regulation of corticosteroid dispensing. These findings indicate the need for effective collaboration between dermatologists, pharmacists, and public health authorities to minimize misuse and ensure safer, evidence-based use of these important medications.

Ethics Statement

The study was conducted following the ethical principles of the Declaration of Helsinki and was approved by the Institutional Review Board at Jordan University of Science and Technology (IRB number 25/174/2024). Informed consent was obtained electronically before participation. The consent form outlined the purpose of the study, the voluntary nature of participation, and assurances of anonymity and confidentiality.

Acknowledgments

The authors declare that no funding was received for this study and have nothing further to acknowledge.

Disclosure

The authors declare no conflict of interest.

References

- Rathi S, D'Souza P. Rational and ethical use of topical corticosteroids based on safety and efficacy. *Indian J Dermatol*. 2012;57(4):251. doi:10.4103/0019-5154.97655
- Lawton S. Safe and effective application of topical treatments to the skin. *Nurs Stand*. 2013;27(42):50–56. doi:10.7748/ns2013.06.27.42.50.e7294
- Coondoo A, Phiske M, Verma S, Lahiri K. Side-effects of topical steroids: a long overdue revisit. *Ind Dermatol Online J*. 2014;5(4):416. doi:10.4103/22295178.142483
- Harvey J, Lax SJ, Lowe A, et al. The long-term safety of topical corticosteroids in atopic dermatitis: a systematic review. *Skin Health Dis*. 2023;3(5):e268. doi:10.1002/ski2.268
- Egeberg A, Thyssen JP. Topical corticosteroids in the era of new topical therapies: balancing efficacy and safety for long-term use. *Acad Dermatol Venereol*. 2024;38(7):1236–1237. doi:10.1111/jdv.20041
- Drucker AM, Austin PC, Harvey J, Lax SJ, Tadrous M, Thomas KS. A guide to improving the design and analysis of observational studies on the long-term safety of topical corticosteroids. *Br J Dermatol*. 2024;190(5):767–769. doi:10.1093/bjd/ljae065
- Ah Y, Hwang S, Jun K, et al. Real-world safety evaluation of topical corticosteroid use: a community pharmacy-based, prospective, observational study. *Basic Clin Pharma Tox*. 2019;125(4):405–413. doi:10.1111/bcpt.13238
- Karekar S, Marathe P, Nagarajan V, et al. Use of topical steroids in dermatology: a questionnaire-based study. *Indian Dermatol Online J*. 2020;11(5):725. doi:10.4103/idoj.IDOJ_566_19
- Thomas M, Wong CC, Anderson P, Grills N. Magnitude, characteristics and consequences of topical steroid misuse in rural North India: an observational study among dermatology outpatients. *BMJ Open*. 2020;10(5):e032829. doi:10.1136/bmjopen-2019-032829
- Manchanda K, Mohanty S, Rohatgi P. Misuse of topical corticosteroids over the face: a clinical study. *Indian Dermatol Online J*. 2017;8(3):186. doi:10.4103/idoj.IDOJ_535_15
- Mengesha Y, Gebre A, Ejigu YW. Utilization and prescription patterns of topical steroids: a study at Dessie Comprehensive Specialized Hospital, Ethiopia. *Arch Dermatol Res*. 2025;317(1):213. doi:10.1007/s00403-024-03733-3

12. Freeze ME, Balogh EA, Cline A, Feldman SR, Fleischer AB. Comparing prescribing patterns for topical corticosteroids based on their FDA indication by age. *Pediatric Dermatol.* 2021;38(1):115–118. doi:10.1111/pde.14442
13. Alamri RA, Al Satti HS. Knowledge and attitudes towards topical corticosteroids among previous users in the general population of Saudi Arabia. *Cureus.* 2024; 16:1.
14. Heizomi H, Irajzi Z, Vaezi R, Bhalla D, Morisky DE, Nadrian H. Gender differences in the associations between health literacy and medication adherence in hypertension: a population-based survey in Heris County, Iran. *VHRM.* 2020;16:157–166. doi:10.2147/VHRM.S245052
15. Yardimci Gürel T, Ö G. Health literacy as a predictor of cardiovascular disease risk factor knowledge level among women in Turkey: a community-based cross-sectional study. *Medicine.* 2024;103(29):e38994. doi:10.1097/MD.00000000000038994
16. Dey VK. Misuse of topical corticosteroids: a clinical study of adverse effects. *Indian Dermatol Online J.* 2014;5(4):436–440. doi:10.4103/22295178.142486
17. Qutob RA, Alhusaini BA, Aljarba NK, et al. Public awareness regarding corticosteroid use and side effects: a cross-sectional study in Riyadh, Saudi Arabia. *Healthcare.* 2023;11(20):2747. doi:10.3390/healthcare11202747
18. Hengge UR, Ruzicka T, Schwartz RA, Cork MJ. Adverse effects of topical glucocorticosteroids. *J Am Acad Dermatol.* 2006;54(1):1–15. doi:10.1016/j.jaad.2005.01.010
19. Barta K, Fonacier LS, Hart M, et al. Corticosteroid exposure and cumulative effects in patients with eczema. *Ann Allergy Asthma Immunol.* 2023;130(1):93–99. doi:10.1016/j.anai.2022.09.031
20. Stacey SK, McEleney M. Topical corticosteroids: choice and application. *Am Fam Physician.* 2021;103(6):337–343.
21. Sharma R, Abrol S, Wani M. Misuse of topical corticosteroids on facial skin. A study of 200 patients. *J Dermatol Case Rep.* 2017;11(1):5–8. doi:10.3315/jdcr.2017.1240
22. Mahar S. Topical corticosteroid misuse: the scenario in patients attending a tertiary care hospital in New Delhi. *JCDR.* 2016. doi:10.7860/JCDR/2016/23419.8986
23. Ference JD, Last AR. Choosing topical corticosteroids. *Am Fam Physician.* 2009;79(2):135–140.

Clinical, Cosmetic and Investigational Dermatology

Publish your work in this journal

Clinical, Cosmetic and Investigational Dermatology is an international, peer-reviewed, open access, online journal that focuses on the latest clinical and experimental research in all aspects of skin disease and cosmetic interventions. This journal is indexed on CAS. The manuscript management system is completely online and includes a very quick and fair peer-review system, which is all easy to use. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.

Submit your manuscript here: <https://www.dovepress.com/clinical-cosmetic-and-investigational-dermatology-journal>

Dovepress
Taylor & Francis Group