Journal of Umm Al-Qura University for Medical Sciences

Journal homepage: https://uqu.edu.sa/en/mj

Research Article

Prevalence of Using Non-Prescribed Topical Corticosteroids on the Face of Female Citizens of Makkah, Saudi Arabia (2020-2021)

Ahmed ZahrAllayali[1*]

[1] College of Medicine, Umm Al-Qura University, Makkah, Saudi Arabia

ARTICLE INFO

Received: 02/02/2022
Accepted: 16/06/2022

Keywords:
Acne, Fixed erythema, Rosacea, Skin Atrophy, Steroid

***Corresponding author:**
Ahmed ZahrAllayali
E: amzahrallayali@uqu.edu.sa

DOI:
https://doi.org/10.54940/ms35095660

ABSTRACT

Topical corticosteroids (TCS) are among the most prescribed medications for the treatment of dermatological diseases. However, the inappropriate use on the face without any prescription might result in several adverse effects such as purpura, atrophy, and rosacea-like dermatitis. This emphasized the need to evaluate the prevalence of non-prescribed use of these products in females to determine appropriate action. In this cross-sectional study, we aimed to estimate the point prevalence of using non-prescribed TCS on the face of female citizens of Makkah, Saudi Arabia. This study was conducted among women living in Makkah using an electronic questionnaire distributed through social media applications from October 2020 to January 2021. The questionnaire comprised of various questions about the participant's characteristics, the pattern of using TCS, the reason for usage, and how frequently the participants used TCS. The study included 565 women from Makkah; 258 (45.7%) of the participants used topical skin treatment, 126 (48.8%) reported that the treatment contained TCS, most of the participants who used this topical skin treatment (52.4%) did not have a medical prescription. Doctor's prescription had no significant association with the duration of using TCS (p = 0.06), frequency of using TCS (p = 0.05), or how TCS was accessed (p = 0.06). Most of the women, 47 (71.2%), who used un-prescribed TCS did not know that TCS can cause acne (P = 0.003). A significant association was found between topical steroids and having no prior knowledge that it can cause telangiectasia (P=0.005). The most common area for TCS use was face (41.5%). The use of TCS among women in Makkah is high, primarily for the treatment of the face. However, more than half of the women use it without a doctor's prescription.

1. INTRODUCTION

Topical corticosteroids (TCS) are one of the most prescribed medications for treating various dermatological diseases globally [1]. TCS has provided a new therapeutic era in dermatology since its introduction approximately 50 years ago [2]. It is available in various formulations with a wide range of actions [3,4]. TCS has a wide range of properties including immunological, inflammatory, and hyperproliferative properties [5]. The rapid action and rampant use of TCS could be attributed to their multiple effects on different functions of leukocytes and epidermal and dermal cells. Additionally, TCS provides objective and subjective symptomatic relief in all the inflammatory dermatological diseases [4,6].

Although TCS is widely used, it is the inappropriate and unprescribed use on the face that leads to adverse events such as rosacea-like dermatitis, perioral dermatitis, purpura, atrophy, striae, steroid rosacea, and acne [4,5].

Al Hawsawi et al. conducted a study among the general population in the western region of Saudi Arabia to evaluate the prevalence of TCS misuse [4]. The results demonstrated that 78% of participants used TCS, 40% used it without any prescription, 67% used it for at least three months, and 52% did not know about the side effects associated with unprescribed TCS use. Another study conducted by Al-Omair et al. in Riyadh, Saudi Arabia, assessed the patients' knowledge about corticosteroids [7]. Nearly 35% of the participants were found to be aware of TCS, and most of these participants showed reluctance for using TCS for a long time and applying too much cream.

A previous study was conducted in Iraq to assess the population misusing TCS along with the most common side effects of TCS misuse [6]. Approximately 8% of the participants had misused TCS, 26.4% knew about its side effects, with no participant being aware of the dosage. Sendrasoa et al. reported that only one patient (0.26%) used TCS through the physician's prescription, while most of the patients (61%) obtained TCS from cosmetic retailers, and 23% obtained it from beauticians [3]. A majority (44.8%) of the people used TCS to lighten their skin color, and the most common side effects due to

misuse of TCS were pigmentation disorders and cutaneous atrophy (63.2% and 52.1%, respectively). Another study from India showed that 5.63% of the participants had misused TCS, and 50% used TCS to lighten skin color and treat melasma and suntan. The most common side effects reported were acne (37.99%) and telangiectasia (18.99%) [8].

Although the misuse of TCS has become a significant health problem, to the best of our knowledge, only a few studies have investigated the prevalence of TCS on the face without proper prescription in Saudi Arabia, particularly in Makkah city. Therefore, the current study aimed to measure the prevalence of using non-prescribed TCS on the face of female citizens of Makkah, Saudi Arabia. We also assessed the association between the prevalence of non-prescribed TCS among women and their demographic characteristics in Makkah, Saudi Arabia. Moreover, in the present study, we further evaluated the most common reasons for using TCS on the face of female citizens of Makkah, Saudi Arabia along with the most used product of TCS among female citizens in Makkah. The most common side effects of using non-prescribed TCS on the face of female citizens of Makkah, Saudi Arabia were also explored in this study.

2. MATERIALS AND METHODS

2.1 Study Design and Population

This descriptive, cross-sectional, survey-based study was conducted via online survey distribution to the general population of Makkah. The study included female citizens of Makkah, Saudi Arabia, who used TCS on their faces.

2.2 Study Procedure

An online questionnaire comprised of 12 items, Data was collected using an online questionnaire which consisted of 12 items/questions about the demographics of the participants, the pattern of using TCS, the area of usage of the TCS, the reason for usage, whether TCS was prescribed or non-prescribed, previous knowledge about the side effects of using non prescribed TCS and if the development of any of the known side effects of TCS forced them to stop using it. This questionnaire was designed both in English and Arabic (the native language of the participants) using Google forms and was electronically distributed between October 2020 to January 2021, via social media applications (twitter, WhatsApp, snapchat). The duration of data collection was 3 months.

2.3 Validation

Questions were reviewed by five experts' dermatologists and a biostatistician to check for the consistency and appropriateness of the designed questions by the investigators. These questions were thereafter reviewed by a non-expert colleague to assess the dynamics, flow, and accessibility. The questionnaire was found to be comprehensible; therefore, no further modifications were required**.**

2.4 Statistical Analysis

Data were collected in Excel and analysis was done by using statistical package for the social science (SPSS) software, version 23 for statistical analyses. Descriptive statistics were used to summarize data and synthesize and report the variables. Description of the data also included proportions, frequencies, means, and standard deviations for continuous variables when appropriate. Chi-square test or Fisher exact test were used for categorical values (to determine the possible association between variables). $p< 0.05$ was considered to be significant.

2.5 Ethical Approval

This study was ethically approved by the Institutional Review Board of Umm Al-Qura University in Makkah, Saudi Arabia (Approval No. HAPO-02-K-012-2020-10-452).

3. RESULTS

3.1 Participant characteristics

A total of 565 female participants were included in the study. 333 (58.9%) women among all the participants were aged between 21-30 years. Most of the women (n=418; 74%) were studying at the university level. Among them, 330 (58.4%), were single and 500 (88.5%) were Saudi nationals. A total of 258 (54.7%) women confirmed undergoing the topical skin treatment, of which 126 (48.8%) reported that their treatment contained TCS. The women who were using TCS-containing applications for the face, 66 (52.4%) did not have a medical prescription (Table 1).

3.2 Prevalence of TCS by participants' characteristics

A Chi-square test was conducted to find associations between the use of TCS prescribed and not prescribed by a physician with the duration of TCS use, frequency of TCS use, and accessed method used to obtain it. Based on the results presented in Table 2, there were no statistical differences between the parameters ($p= 0.06$, 0.05, and 0.06, respectively). These findings indicate that doctor's prescription had no association with the duration of using TCS, on the frequency of using TCS, or on the access method to obtain TCS.

3.3 Knowledge on TCS use and side effects

Table 3 represents the association between the participant's knowledge of the use and side effects of TCS along with the status of TCS prescription. The chi-square test results demonstrated a significant association of the use of TCS with and without doctor's prescription with other variables. Most of the women, 47 (71.2%), who used un-prescribed. TCS did not know that TCS can cause acne ($P = 0.003$). Similarly, a significantly high number of women ($P = 0.005$) did not know that its use can cause small visible vessels on the skin, whether it

was prescribed (N= 54, 90%) or un-prescribed (N= 46, 69.7%). Surprisingly a significantly large number of women who were using TCS un-prescribed (N=45, 68%) (P = 0.001) were better informed regarding the occurrence of telangiectasia by TCS when compared to women with a prescription for using TCS (N= 55, 91.7%). Other associations were not found to be statistically significant.

Table 1: Overall demographics, N (%)

Variables		**N (%)**
Sex	Female	565 (100)
Age (years)	<20	90 (15.9)
	From 21 to 30	333(58.9)
	From 31 to 40	80 (14.2)
	From 41 to 50	38 (6.7)
	> 50	24 (4.2)
Education level	Before	116(20.5)
	University level	418(74.0)
	Postgraduate	31(5.5)
Marital status	Single	330(58.4)
	Married	218(38.6)
	Widow or divorced	17(3.0)
Nationality	Saudi	500(88.5)
	Non-Saudi	65(11.5)
Do you use any skin topical treatment?	Yes	258(45.7)
	No	307(54.3)
Is this topical skin treatment containing TCS?	Yes	126(48.8)
	No	59(22.9)
	Do not know	73(28.3)
Are you using TCS products with doctors' prescriptions?	Yes	60 (47.6)
	No	66(52.4)

*(TCS) = topical corticosteroids

The areas of TCS use among women were investigated and have been shown in Figure 1. There were 53 (42%), 40 (32%), and 18 (14%) women who reported using TCS on the face, extremities, and sensitive areas, respectively, whereas 9 (7%), 5 (4%), and 1 (1%) were using TCS on the trunk, neck, and whole body, respectively.

Table 2: Total TCS use/Prescribed-yes/prescribed-no/p-value

		Did a doctor prescribe it?		p-value
		Yes	No	
For what duration have you been using TCS?	Less than a month	35(51.5)	33(48.5)	0.06
	1– 6 months	9(28.1)	23(71.9)	
	6–12 months	6(66.7)	3(33.3)	
	More than 12 months	10(58.8)	7(41.2)	
How often do you use TCS?	Once a day	22(48.9)	23(51.1)	0.05
	Twice a day	8(30.8)	18(69.2)	
	More than 2 times a day	0	3	
	As needed	30(57.7)	22(42.3)	
How did you get access to TCS?	I am using someone else's TCS	4	0	0.06
	Pharmacy and/or online pharmacy	55(45.5)	66(54.5)	
	Online shopping websites	1	0	
*chi-square test or Fisher exact test as appropriate				
This table will contain only those who use TSC, N (%)				

Table 3:Participants knowledge about TCS side effects N(%)

		Did a doctor prescribe TCS		P-value
		Yes	No	
Do you know that using TCS can cause skin redness?	Yes	25 (41.7)	27(40.9)	0.931
	No	35 (58.3)	39(59.1)	
Do you know that using TCS can cause acne?	Yes	5 (8.3)	19(28.8)	0.003
	No	55 (91.7)	47(71.2)	
Do you know that using TCS can result in small visible vessels on the skin?	Yes	6(10.0)	20(30.3)	0.005
	No	54 (90.0)	46(69.7)	
Do you know that using TCS can make your skin thin and sensitive?	Yes	25(41.7)	36(54.5)	0.149
	No	35 (58.3)	30(45.5)	
Do you know that using TCS can cause skin disorders, including (Roscea /fixed erythema)?	Yes	5 (8.3)	21(31.8)	0.001
	No	55 (91.7)	45(68.2)	
* chi-square test				

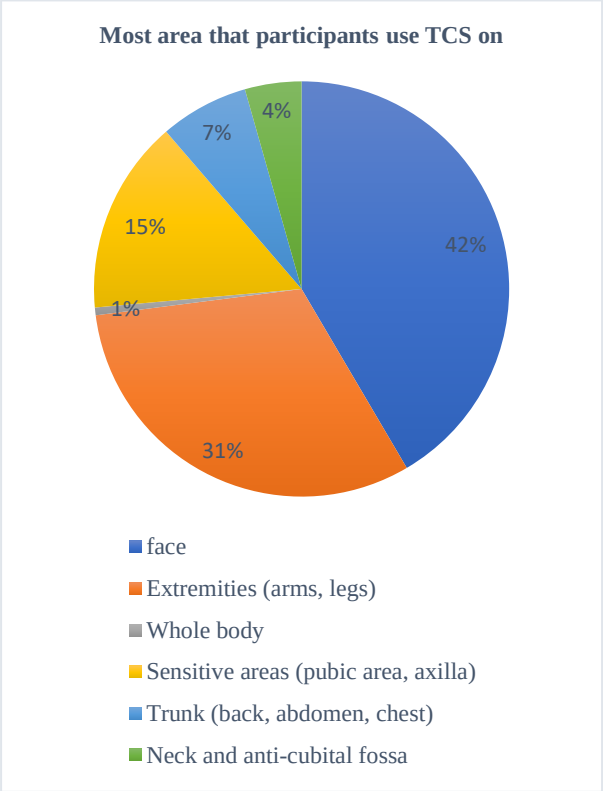

Figure 1:The sites where participants commonly applied TCS

3.4 Types of TCS used and reasons for use

Figure 2 demonstrates the different reasons reported by our participants for TCS use, including inflammation by 19%, ulcers by 9%, acne by 20%, eczema (otherwise unspecified) by 32%, skin whitening by 14%, and post-laser treatment by 6%.

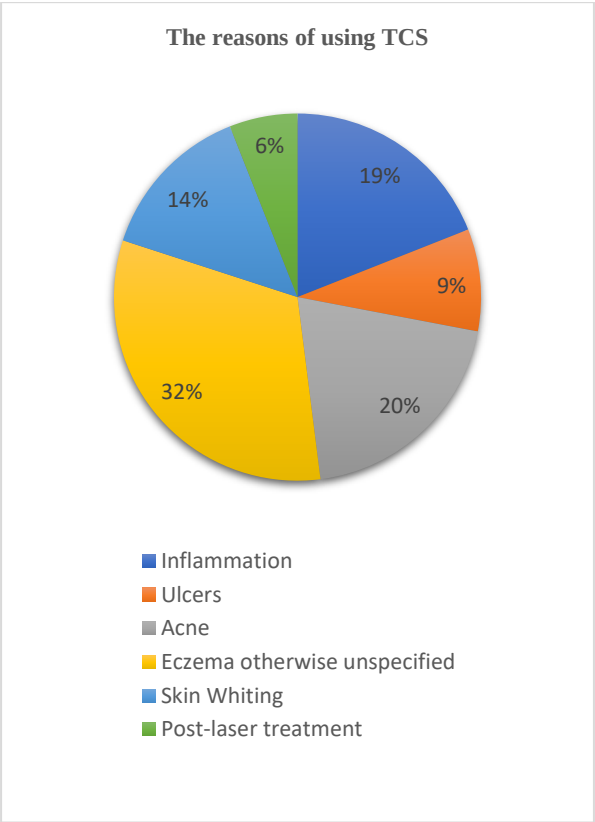

Figure 2:The etiologies for using TCS

Table 4 demonstrates the most popular Topical steroids used, and it shows that the majority of the participants preferred fluorinated steroids viz. Mometasone furoate (N= 343, 39%) and Betamethasone valerate (N= 280, 31.9%).

Table 4:The most popular TCS products that participants used, N(%)

Name of products	N (%)
Mometasone furoate (class 4)	343(39.0)
Betamethasone valerate (class 4)	280(31.9)
Betamethasone dipropionate (class 1)	66(7.5)
Triamcinolone acetonide (class 4)	65(7.4)
Hydrocortisone(class7)	70(8.0)
Clobetasol propionate (class 1)	30(3.4)
Hydrocortisone butyrate 0.1% (class 5)	20(2.3)
Methylprednisolone (class 7)	5 (0.5)
Total	879(100)

The class of TCS used in the topical treatment have been represented in Table 5 and Figure 3, and it shows that majority of the participants preferred to use class 4 fluorinated topical steroids i.e. 439.9 (78%) followed by class 1 super potent topical steroids 96 (11%).

Table 5:Most common steroid classes used

Class	N (%)
Class 4	688 (78)
Class 1	96 (11)
Class 7	75 (9)
Class 5	20 (2)
Total	879 (100)

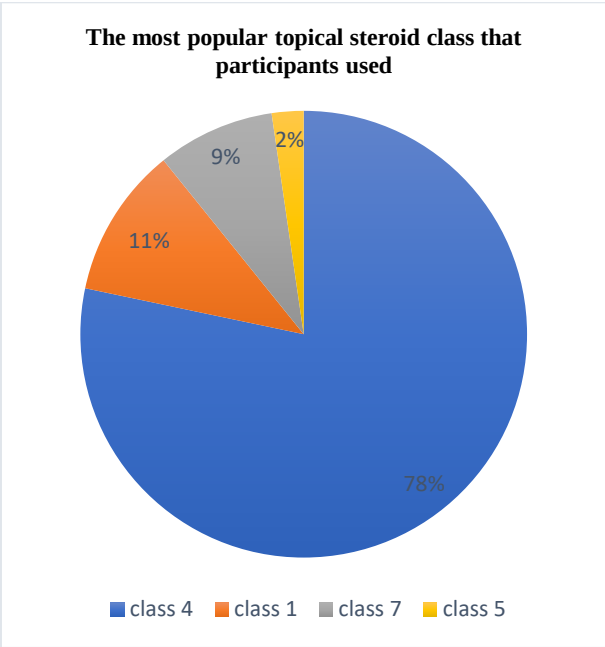

Figure 3:The most popular topical steroid classes used

4. DISCUSSION

This study investigated the prevalence of TCS and its side effects in Makkah city of Saudi Arabia among 565 female participants. A total of 258 (54.7%) participants used topical skin treatment, among which 126 (48.8%) reported that their treatment contained TCS. Most of the participants who used this topical skin treatment (52.4%) did not have a medical prescription. This alarming data is showing the ruthless use of topical steroids without any prescription. Another point of concern was that most of the females used fluorinated steroids of class 4 followed by class 1. Moreover, most of the women either using prescribed or un-prescribed TCS were not aware of its side effect. The most used area was the face, followed by extremities, and the most common reason for using TCS was skin allergy. Only 14% of the women used TCs for skin whitening purposes.

A previous study in 2017 assessed the prevalence of misuse of corticosteroids among populations in the western region of Saudi Arabia [4]. The study included 458 participants and reported misuse of TCS among participants. The study included both sexes and found that a large number of participants (78.4%) were using TCS. When compared to the data obtained from our study, one can infer that TCS usage is decreasing in Saudi Arabia. The study found that TCS usage without a medical prescription was significantly related to being unaware of side effects of TCS use such as acne, small visible vessels on the skin, and skin disorders. The frequent use of TCS among women without a medical prescription can be attributed to the lack of education and awareness regarding the side effects of TCS. According to a previous study [4], there was a lack of knowledge regarding the adverse effects of TCS in more than half of the participants (52%) among both sexes, which explains the high prevalence of TCS usage in Saudi Arabia.

In another study conducted on the misuse of TCS in women in the Hail region of Saudi Arabia in 2019 [9], most of the participants reported no side effects after using cortisone or corticosteroids. The primary reason for using TCS was to lighten skin color (68.9%) and reduce wrinkles [9]. This use of topical creams for skin whitening is common in many countries. A study from India demonstrated that TCS was used for fairness among 29%, whereas 24% used it for acne treatment [10]. In Nepal, the primary reason for using TCS was whitening followed by treating acne [11]. This could support the fact that TCS is widely used among females. Women who do not experience any side effects by the use of TCS, recommend it to others which further increases the use of TCS without considering prescription or seeking any medical advice regarding their side effects. Although the lighter tone is associated with beauty and social advantage in Saudi Arabia, our study reported only 14% of participants used it for skin whitening, and a larger group used it to treat allergies. However, there is a need to raise awareness about the misuse of skin lighteners and discourage the preconception of associating beauty with skin tone especially, among the young females, which requires targeted public health campaigns [12].

In this study, majority of the participants (52.4%) did not consult a physician and instead used un-prescribed topical treatment. A Saudi study conducted among university students found that sources of advice to use TCS on the face came from friends and relatives (0.31%) and social media (1.11%) instead of medical professionals [1]. However, only 6.83% of the 819 respondents reported using TCS on their faces [1]. Another study from Pakistan also reported that TCS was mainly prescribed by friends and relatives [13]. In India, more than half of the participants (59.3%) reported a non-physician recommendation for TCS use [10]. In a patient-completed questionnaire study in Great Britain almost 50% of participants treating different dermatological skin conditions exceeded the limits of the rather restrictive over the counter marketing authorization [14]. In this study, participants mainly used TCS for treating eczema, followed by acne and inflammation. Women reported that the most common usage of TCS was on the face and extremities. Furthermore, the access to TCS was similar in both, those with a prescription or without it. Seeing the severe side effects of TCS reported by many studies [4,5] and its easy availability, there should be some clear warnings regarding its side effects on the packaging, even if the law does not necessitate prescription for its sale.

Noticeably, there was a lack of awareness regarding the side effects of TCS among the women using TCS with prescriptions. According to Saraswat et al. [10], dermatologists routinely prescribe TCS for better and quick results in various skin conditions. However, due to a lack of awareness regarding potent side effects, the patients continue to use it chronically for better results, mostly without further consulting their dermatologists. Therefore, dermatologists should counsel their patients regarding the side effects of prolonged use of TCS and use or recommend it without consultation. It could be a step towards curbing this issue faced by dermatologists in clinics where patients visit due to skin conditions caused by misuse of TCS [10].

There were several limitations of the study. Firstly, it only included the women population due to cultural restrictions in Saudi Arabia. Secondly, it was a cross-sectional study to determine point prevalence over a short of time and determining overall prevalence would require larger studies, also our study did not provide in-depth details about the behaviors and perceptions of TCS users. Furthermore, as most did not know if their topical therapy contains TCS or know its harms, it would be worthful to explore if they would continue to use TCS without consultation after being provided awareness about it.

5. CONCLUSION

TCS use among women in Makkah was high due to their low awareness of the side effects. TCS is primarily used for the treatment of the face. More than half of the participants in this study used it with a doctor's prescription. To the best of our knowledge, no previous study has investigated the prevalence of TCS among women in Saudi Arabia. As we detected a high usage of TCS among women, we suggest increasing the awareness regarding the side effects of using TCS without medical prescription through educational programs and doctor's advice during women's visits to the hospitals.

DATA SHARING STATEMENT

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

ETHICAL CONSIDERATION

This study was approved by the IRB of Umm Al-Qura University in Makkah, Saudi Arabia (Approval No.HAPO-02-K-012-2020-10-452). All participants provided informed consent to complete the online survey.

CONSENT FOR PUBLICATION

No consent was taken from the participants since the report has been sufficiently anonymized and show no nominative information.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this paper.

SOURCE OF FUNDING

No funding was received for the conduction of this study

ACKNOWLEDGEMENTS

Rouqaya Azhar, Layan Alkhayat, Raghad Alraees, Hamza Al-harbi for their contribution in data collection

REFERENCES

[1] D. Majed, M. Alnujaidi, N. Almohammadi, A.A. Kokandi, "Use of topical steroids on the face among university students in Saudi Arabia," *Biomedical Research*, vol. 29, no. 13, pp. 2786–9, 2018.

[2] World Health Organization. Estimated incidence, mortality and 5-year prevalence: both sexes, 2015.

[3] F.A. Sendrasoa, I.M. Ranaivo, M. Andrianarison M, et al., "Misuse of topical corticosteroids for cosmetic purpose in Antananarivo, Madagascar," *Biomedical Research International*, Article ID 9637083, 2017.

[4] K. Al Hawsawi, S. Alaauldeen, N. Albarnawi, et al., "Prevalence of misuse of topical corticosteroids among populations in western region of Saudi Arabia," *International Journal of Advanced Research*, vol. 5, pp. 297–307, 2017.

[5] S. Gabros, T.A. Nessel, P.M. Zito, "Topical Corticosteroids," In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2020. Available from: https://www.ncbi.nlm.nih.gov/books/NBK532940/.

[6] M.A. Al-Dhalimi and N. Aljawahiry, "Misuse of topical corticosteroids: a clinical study in an Iraqi hospital," *Eastern Mediterranean Health Journal*, vol. 12, no. 6, pp. 847–52, 2016.

[7] I. Al-Omair, L.E. Alghamdi, D.A. AlSadoun, S. Altalhab, A.A. Al-Omair, S.M. Alkassimi, "Topical corticosteroid phobia among patients with dermatological diseases," *International Journal of Medicine in Developing Countries*, vol. 3, no. 7, pp. 570–6, 2019.

[8] V.K. Dey, "Misuse of topical corticosteroids: A clinical study of adverse effects," *Indian Dermatology Online Journal*, vol. 5, no. 4, pp. 436–40, 2014.

[9] S.S. Alafnan, S.A. Alhussaini, A.A. Alshammarie, R.S. Alshammari, H.M. Elagib, "Misuse of topical corticosteroids in women in Hail region Saudi Arabia," *International Journal of Community Medicine and Public Health*, vol. 6, no. 5, pp. 1880–5, 2019.

[10] A. Saraswat, K. Lahiri, M. Chatterjee, et al., "Topical corticosteroid abuse on the face: A prospective, multicenter study of dermatology outpatients," *Indian Journal of Dermatology, Venereology and Leprology*, vol. 77, no. 2, pp. 160, 2011.

[11] A. Kumar, S. Neupane, P.R. Shrestha, J. Pun, P. Thapa, M. Manandhar, B. Sathian, "Pattern and predictors of topical corticosteroid abuse on face: A study from Western Nepal," *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, vol. 6, pp. 1154–9, 2015.

[12] S.F. Alrayyes, S.F. Alrayyes, U.D. Farooq, U.D, "Skin-lightening patterns among female students: A cross-sectional study in Saudi Arabia," *International Journal of women's dermatology*, vol. 5, no. 4, pp. 246-50, 2019.

[13] S.N. Chohan, M. Suhail, S. Salman, U.M. Bajwa, M. Saeed, S. Kausar, T. Suhail, "Facial abuse of topical steroids and fairness creams: a clinical study of 200 patients," *Journal of Pakistan Association of Dermatologists*, vol. 24, pp. 204–11, 2014.

[14] P.J. Rogers, S.M. Wood, E.L. Garrett, et al., "Use of nonprescription topical steroids: patients' experiences," *British Journal of Dermatology*, vol. 152, no. 6, pp. 1193–8, 2005.