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PRESCRIBING PATTERN OF TOPICAL CORTICOSTEROIDS IN THE PATIENTS WITH DERMATOLOGICAL DISORDERS VISITING AT A TERTIARY CARE HOSPITAL, KATHMANDU

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ABSTRACT

Background: The pattern of skin diseases differs significantly between nations and even between regions of the same nation. Different drug classes and combination products are frequently used in dermatology for therapeutic purposes. Topical steroids are well regarded and a valuable tool because of their strong anti-inflammatory and immunosuppressive effects, they are among the most often recommended medications in dermatology. However, these medications have negative side effects and are very likely to be abused by patients and medical practitioners. The main objective of the study was to determine the prescribing pattern of use of topical corticosteroids and decrease irrational prescribing. **Method:** This was a hospital-based, descriptive study conducted in tertiary care Hospital of Kathmandu, Nepal for three months. Patients meeting the inclusion criteria were enrolled in this study. Purposive sampling technique was used. Ethical approval was taken prior to study. A total of 381 prescriptions were collected during the study period. The data were collected from patient card and details were filled in the predesigned form. These data were studied and evaluated using SPSS and Microsoft Excel. **Results:** Total 381 prescriptions were collected and analyzed for demographic profile, disease incidence and drug prescription. The mean age was 35.73 years, with the most common age groups being 21-30 years (24.9%) and 31-40 years (22.6%). Medicines prescribed from the National List of Essential Medicines (NLEM) was41.84%. **Conclusion:** The pattern of skin conditions that were frequently seen at hospital in Kathmandu was described in this study, along with the numerous medications that were recommended to treat them. The dermatological problems were found to be higher in females than in males. People between the ages of 21 and 40 were found to be more common, indicating that this age group is more frequently exposed to the aggravating factors that contribute to skin illnesses. This study primarily used topical corticosteroids, antihistamines, and antifungal medications, suggesting that allergies, inflammation, and fungal infections are frequent in these disorders. This study also revealed that Class I Clobetasol cream was the Topical Corticosteroids that was most frequently recommended. The average number of drugs prescribed per patient was slightly higher to WHO's range.

KEYWORDS: *Prescribing pattern, Topical Corticosteroids, dermatological disorders, skin diseases.*

INTRODUCTION

The body's largest organ, the skin has a variety of purposes. In the fight against radiation, dangerous chemicals, and microbial diseases, it serves as the first line of defense. However, certain disorders might occasionally affect the skin. Skin disorders are frequent clinical entities. The patterns of skin illnesses vary from one country to the next and even within the same country's various regions.[1] Skin conditions have a significant negative impact on people's quality of life in developing nations like Nepal. Allergies and itching disorders are the most frequently reported issues in emerging nations.[1]

One of the most often given medications in dermatology for a variety of dermatological problems is Topical Corticosteroids (TCs).[2,3,4] Inevitably, due to their characteristics, such as their lightening and anti-inflammatory actions, many of these topical corticosteroids are misused for a variety of disorders, including pigmentation, acne, pruritus, infections, rashes, and countless other conditions. Topical corticosteroids possess anti-inflammatory, antipruritic, melanogenic, immunosuppressive and sex hormone-like effects on the skin, which can further lead to local adverse effects especially with long-term use.[4]

Topical steroids are well regarded and a valuable tool for dermatologists. They are quite effective and are becoming dermatologists' go-to treatment means.[5] Because of their strong anti-inflammatory and immunosuppressive effects, they are among the most often recommended medications in dermatology.[3,6] However, these medications have negative side effects and are very likely to be abused by patients and medical practitioners. TCs are thus both a blessing and a curse in the practice of dermatology.[3]

Although TCS are generally safe, improper usage might result in local (common) and systemic (uncommon) adverse effects. Highly strong steroids should not be applied, especially over extended periods of time, to the face, scrotum, eyelids, flexural sites, or any other regions where skin has been removed. When these medications are administered to individuals who are infants or elderly and are occluded, further special precautions are required. The main issues with abusing these drugs are that, while they initially aid in symptom relief and improve the aesthetics and facial appearance of whitening and redness facial characteristics, these features will subsequently deteriorate and experience tachyphylaxis upon discontinuation. The development of dependence and withdrawal symptoms follow from the Patients who abuse corticosteroids should be kept under medical supervision because the risk of side effects rises with dose dependence, duration, frequency, and potency.[4]

Since the introduction of topical corticosteroids in the early 1950s, there have been a large number of publications on the misuse of TCs worldwide.[2] The Drug Act of Nepal 1973 is explicitly focused on the ethical use and sale of medicines, although its rational usage has not been realized. Despite the fact that TCs usage is a serious problem, very few studies have been done on the subject.[3] Studies have attempted to draw attention to the numerous negative effects and harm brought on by the improper use of topical steroids and their mixtures.[7] In dermatology outpatient clinics across Nepal, steroid-induced and aggravated dermatoses are frequent.[6] In our subcontinent, it is more prevalent.[2]

Compared to the primary ailments for which TCs were improperly administered, these conditions are harder to treat and give patients a great deal more distress.[6] The prevalence of skin diseases in a population is typically influenced by several ecological factors, such as the environment, the economy, literacy, and social custom. Additionally, the pattern changes within the same country as well as between different regions.[7]

TCs are commonly used in various dermatological disorders. Likewise, Eczema, Atopic Dermatitis, Psoriasis, Scabies, Lichen Planus, Vitiligo, lichen simplex chronicus, Paronychia, Folliculitis, Varicella, Candidiasis, Alopecia, Ringworm, Rashes, etc. They are also being used for conditions such as melasma, urticarial and even undiagnosed skin rash by dermatologists and more so by general physicians. This is because of the quick symptomatic relief of many skin disorders by the application of TC in the first instance. This can develop confidence in patient a little longer with a general physician or specialists other than dermatologist.[16]

According to the severity of the underlying condition, anatomic location of application and patient age, corticosteroids of different potencies are prescribed either in topical or systemic routes. They are highly effective; however, their improper and long-term uses are associated with a number of serious adverse effects. The amount and potency of corticosteroid which is prescribed, dispensed and applied should be considered carefully because too little steroid can lead to a poor response, and too much can increase the risk of adverse effects. It has now been well established that rational use of these drugs can minimize the adverse effects associated with them. Therefore, in order to achieve the optimum benefit with least adverse effects, safe and effective use of these agents is very crucial. This requires various factors to be considered while prescribing, including the nature of the disease, knowledge of their mechanism of action, age of the patient, site affected their pharmacology like potency, frequency of use and duration and other potential complicating factors. So, the role of intermittent monitoring of drug use pattern has been emphasized in today's clinical practice. Without a precise knowledge of how drugs are being prescribed and used and different factors associated with them, it is difficult to suggest measures to improve the prescribing as well as drug use habits.[17]

TCs misuse has become one of the burning issues in many countries across the globe. Some of the factors are Non-prescription sales, Lack of awareness, and Non-availability of a qualified dermatologist.[3] In dermatology outpatient clinics across Nepal, steroid–induced and steroid–aggravated dermatoses are frequent. Compared to the primary diseases for which TCs were overused, these conditions are harder to treat and give patients a lot more distress.[3]

Some of the most commonly used Topical Corticosteroids [TCs] are: Clobetasone, Beclomethasone, Betamethasone, Clobetasol, Fluticasone, Mometasone, Halobetasol, Hydrocortisone, etc.[8,9,10,11,12] Some of the most common Dermatological Disorders are: Acne, Psoriasis, Eczema [Atopic Dermatitis], Ringworm, Rosacea, Vitiligo, Hives, Seborrheic Dermatitis, Rashes, Scabies, etc.[1,2,3,4,5,6,7,8]

MATERIALS AND METHODS

Patients visiting Dermatology Outpatient department diagnosed with dermatological disorders, was taken data through data collection form. Non probability purposive sampling technique was used for the data collection for the period of 4 months. Hence, the total sample size was 381. Quantitative research methods were conducted where statistical, mathematical, or numerical analysis of data collected through data collection form was visualized into graphs, charts and table.

RESULTS AND DISCUSSION

Pattern of skin diseases in developing countries like Nepal is influenced by the economy, level of literacy, social backwardness, varied climate, occupation, access to primary health care, and different religious, ritual and cultural factors. Nowadays, it is important to study about the of skin diseases from the point of view of public health as the factors associated with high occurrence of skin diseases include low socioeconomic status, malnutrition, and poor standards of hygiene, limited access to health care facilities.[13,14,15]

Table 1: Demographic of Patients.

		Frequency (N=381)	Percent
Age Group (in years)	<10	13	3.4%
	10-20	46	12.1%
	21-30	95	24.9%
	31-40	86	22.6%
	41-50	63	16.5%
	51-60	43	11.3%
	>60	35	9.2%
Sex	Male	170	44.6%
	Female	211	55.4%

A total of 381 OPD prescriptions were collected and analyzed for demographic profile, disease incidence and drug prescription. This study showed the mean age of the patients was 35.73 years, with the most common age groups being 21-30 years (24.9%) and 31-40 years (22.6%) as shown in table 1. This study showed that the most common age group affected by skin diseases is the age group between 20-60 years (57%), as this age group is mostly exposed to the aggravating factors that serve as the reason for skin diseases in New Delhi by Mahar S.*et al.*[16] Other studies from Nepal and India showed that majority of patients were in the age group of 21-30 years, whereas studies from Iraq showed 10-19 age group.[17,18,19]

In this study most commonly, female patients (55.4%) were affected with skin diseases compared to male (44.6%). This is because the female population in Nepal is more than the male population and females are highly exposed to the causative factors of skin diseases as males, as they share the same working environment. This finding is similar to studies in KMC, Kathmandu by Shrestha B.*et al.*[1], in Civil Service Hospital, Kathmandu by PaudelS. *et al.*[2] and in South India conducted by Chudal D. *et al.*[3] and Mahar S.*et al.*[16]

Table 2: Disease Diagnosed.

Disease	Frequency	Percent
Dermatitis/Eczema	230	60.4%
Psoriasis	33	8.7%
Scabies	27	7.0%
Fungal infection (Lichen planus)	17	4.5%
Paronychia	12	3.1%
Folliculitis	11	2.9%
Varicella	6	1.6%
Candidiasis	6	1.6%
HFMD [Hand Foot Mouth Disease]	6	1.6%
Alopecia	5	1.3%
Others	28	7.3%

The most common reasons of patients using TCs were fungal infections, pigment disorders, fairness creams, allergic disorders like dermatitis etc. Various studies in Nepal and abroad concluded that the main reason for using the TCs were treatment of eczema, as a fairness cream, antifungal treatment, etc.[17,18,20]

In this study, we found that most common disease pattern seen in patients attending the dermatology OPD was primarily dermatitis (60.4%) as the major skin disease followed by Psoriasis (8.7%), Scabies (7.0%), Fungal Infection (4.5%), Paronychia (3.1%). This study is similar to study conducted in Kathmandu Medical College (KMC) by Shrestha B.*et al.*[1], and in Gauhati

Medical College and Hospital (GMCH), Gauhati by Das K.*et al.*[21], who reported eczema (23.10%), as the major skin disease. Eczema and dermatitis are both similar terms often used concomitantly except when the inflammation part is there then the term dermatitis can be used. Eczema is associated with IgE and is more common in children up to 5years of age whereas dermatitis is not always associated with IgE.[22] Narwane K.*et al.*[23] in Mumbai reported pyoderma (19%) as most common skin disease while Devi B. and Zamzachin G. in a study conducted in Imphal reported eczema (23.10%).[21,24] Such results may be due to the variation in the geographical location as well as difference in the socio-economic status of the patients.

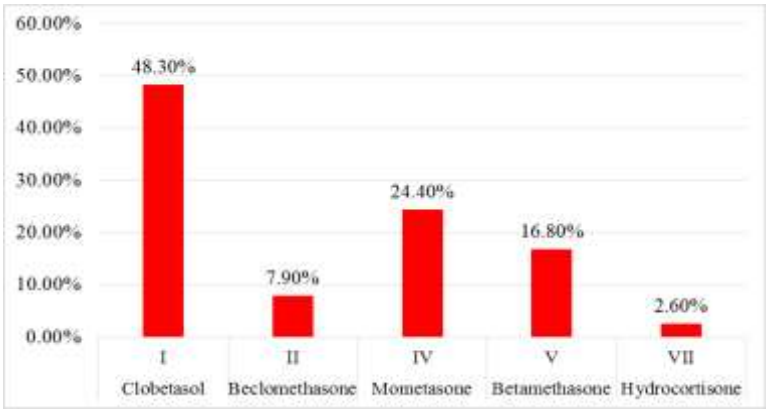

Figure 1: Class of Topical Corticosteroids.

This study showed that the most commonly Prescribed Topical Corticosteroids seen in patients attending the dermatology OPD was primarily Clobetasol (48.3%) followed by Mometasone (24.4%), Betamethasone (16.8%), Beclomethasone (7.9%) and Hydrocortisone (2.6%).

Out of 381 patients, among them 48.3% patients were using Super – potent topical corticosteroids namely Clobetasol. Mid-potent topical corticosteroids namely betamethasone and Mometasone creams were used by 41.2% whereas the remaining were using low potent steroids like hydrocortisone 2.6%.

In our study, Clobetasol (class I) was the most commonly prescribed TCs followed by class IV TCs. This finding is similar with study done in Iraq by Al-Dhalimi M. A.*et al.*[19], in Gandaki Medical College (GMC), Pokhara by Parajuli *et al.*[20], and in Guntur, India by Inakanti Y.*et al.*[25], whereas different from study done in TU Teaching Hospital (TUTH) by Chudal D. *et al.*[3], & in Maharajgunj Medical Campus, Maharajgunj by Kumar A.*et al.*[17], where beclomethasone (Class II) was more common. In a Korean study, betamethasone was the most commonly used TCs.[23,26] According to Kumar S.*et al.* study conducted in All India Institute of Medical Sciences (AIMS), New Delhi, 98% of the TCs abused were super potent TCs.[27] Similarly, Saraswat A.*et al.*[23], found potent and super potent TCs were more frequently used even over face.

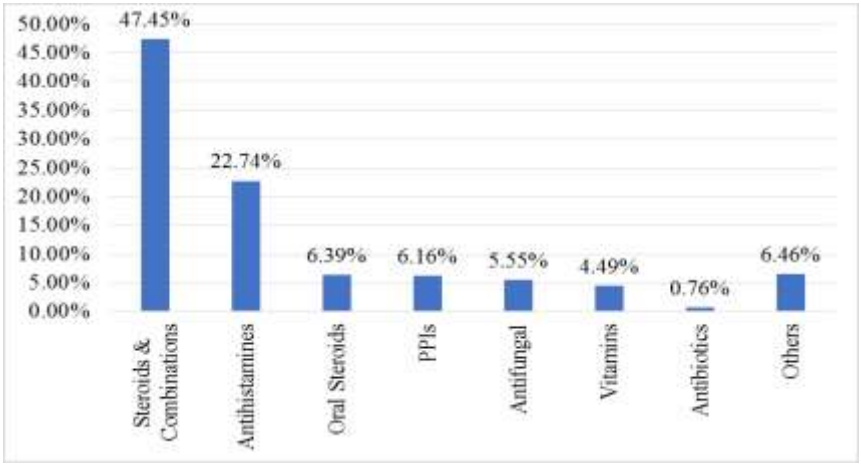

Figure 2: Prescribed Classes of Drugs.

As shown in Figure 2 (N=1269), steroids and combinations were the most common drugs prescribed (47.45%). An antihistamine (22.74%) was the second most commonly prescribed drug class. Among histamines, loratadine was prescribed for 18.10% and levocetirizine was prescribed for only 2.74%. Oral

Steroids, PPIs, Antifungal and Vitamins were prescribed only for 6.39 %, 6.16%, 5.55%, and 4.49% respectively. Pantoprazole was the only prescribed PPIs which was 6.16%. Oral antibiotics was least prescribed, however topical antibiotics were prescribed with combinations with steroids.

This study is comparable with the study done by Pathak A. K.*et al.*[28] in Indian tertiary care hospital IGIMS, Patna which showed that 24.13 % antihistamines and 13.01% steroids and combinations were prescribed; and study done by Bhandari S. & Khan G. M. *et al.*[35] in Pokhara University, showed that 33.38% antihistamines and 27.1% steroids were prescribed. This study is similar with the study done by Shrestha S.*et al.*[6] in Nepal Medical College and Teaching Hospital, Kathmandu which showed that 46.3% of steroids and combinations were prescribed.

Table 3: Commonly Used TCs in Dermatological Diseases

Disease	N	Clobetasol	Beclomethasone	Mometasone	Betamethasone	Hydrocortisone
Dermatitis/Eczema	230	113 (49.1%)	18 (7.8%)	61 (26.5%)	35 (15.2%)	3 (1.3%)
Psoriasis	33	26 (78.8%)	0 (0.0%)	7 (21.2%)	0 (0.0%)	0 (0.0%)
Scabies	27	7 (25.9%)	0 (0.0%)	1 (3.7%)	18 (66.7%)	1 (3.7%)
Fungal infection (Lichen planus)	17	9 (52.9%)	0 (0.0%)	8 (47.1%)	0 (0.0%)	0 (0.0%)
Paronychia	12	12 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Folliculitis	11	6 (54.5%)	3 (27.3%)	0 (0.0%)	2 (18.2%)	0 (0.0%)
Varicella	6	0 (0.0%)	0 (0.0%)	0 (0.0%)	6 (100.0%)	0 (0.0%)
Candidiasis	6	0 (0.0%)	4 (66.7%)	2 (33.3%)	0 (0.0%)	0 (0.0%)
HFMD [Hand Foot Mouth Disease]	6	1 (16.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	5 (83.3%)
Alopecia	5	0 (0.0%)	4 (80.0%)	0 (0.0%)	1 (20.0%)	0 (0.0%)
Others	28	10 (35.7%)	1 (3.6%)	14 (50.0%)	2 (7.1%)	1 (3.6%)

As shown in Table 3, Clobetasol (49.1%) was most commonly prescribed in Eczema followed by Mometasone (26.5%), Betamethasone (15.2%), Beclomethasone (7.8%) and Hydrocortisone (1.3%). Similarly, in Psoriasis, Clobetasol was prescribed for 78.8% followed by Mometasone 21.2%. In Scabies, Betamethasone (25.9%) was most commonly prescribed along with Permethrin (21.1%). In fungal infections, Clobetasol was prescribed for (52.9%) and Mometasone was prescribed for (47.1%). Only clobetasol was prescribed in Paronychia. Similarly, Betamethasone was only given in Varicella. In HFMD, Hydrocortisone was prescribed most commonly which was 83.3%. In Alopecia, 80.0% were prescribed with 20.0% of Beclomethasone lotion. In this way, this table gives the idea about the most common disease occurred and tells the frequently used drug in those diseases.

Table 4: Different dosage forms prescribed.

Route of Administration	Dosage Form	Frequency	Percentage	Frequency	Percentage
Topical	Cream	535	42.2%	778	61.31%
	Ointment	100	7.9%		
	Gel	4	0.3%		
	Lotion	117	9.2%		
	Shampoo	22	1.7%		
Oral	Tablet	467	36.8%	491	38.69%
	Capsule	14	1.1%		
	Syrup	10	0.8%		
Total		**1269**	**100%**	**1269**	**100%**

Among the total number of drugs prescribed (n=1269), most of them were prescribed by topical routes (61.31%) followed by oral routes (38.69%). The reason for high percentage of topical drugs being prescribed is that topical route has minimum side effects, site specific action and is convenient for patient use. This was comparable with the studies conducted in Kathmandu Medical College and Teaching Hospital, Duwakot, Bhaktapur, Nepal by Shrestha B.*et al.*[1]; where topical dosage forms prescribed were 50.6 % followed by oral 48.96% and Parenteral route 0.44 %; and conducted in India by Pathak A. K.*et al.*[28]; where topical dosage forms prescribed were 51.93 % followed by oral 47.11%.

Among the drugs prescribed by the topical route (61.31%), cream (42.2%) was found to be the commonly prescribed by topical route whereas tablet (36.8%) was the most preferred dosage form for oral route. This study is similar to studies conducted in Kathmandu Medical College and Teaching Hospital, Duwakot, Bhaktapur, Nepal by Shrestha B.*et al.*[1]; where cream (32.09%) was found to be the most commonly prescribed for topical use whereas tablet (34.97%) was the most preferred for oral application and conducted in Civil Service Hospital, Kathmandu, Nepal by Paudel S. *et al.*[2]; where cream was found to be the most commonly prescribed followed by Tablet.

Figure 3: Oral Corticosteroids Prescribed.

Among oral corticosteroids prescribed during the course of treatment, prednisolone(95.2%) was found to be the commonest followed by methylprednisolone (4.8%). The finding of the study done in Shri B.M.Patil Hospital Medical College Hospital and Research Center, Vijayapur (BLDE, DU)by Sunanda P.*et al.*[29]; showed that the most widely prescribed corticosteroids were Prednisolone (31.41%) followed by Methylprednisolone (4.0%). The finding of the study by Wondmkun Y. T. & Ayele A. G. *et al.*[30]; in Menelik II Referral Hospital, Addis Ababa, Ethiopiaalso showed that prednisolone was the most commonly prescribed corticosteroid 42.4% while beclomethasone was the least prescribed drug (2.6%).

CONCLUSION

The pattern of skin conditions that were frequently seen at a tertiary care hospital Kathmandu Nepal, was described in this study, along with the numerous medications that were recommended to treat them. The dermatological problems were found to be higher in females than in males. People between the ages of 21 and 40 were found to be more common, indicating that this age group is more frequently exposed to the aggravating factors that contribute to skin illnesses. This study primarily used topical corticosteroids, antihistamines, and antifungal medications, suggesting that allergies, inflammation, and fungal infections are frequent in these disorders. This study also revealed that Class I Clobetasol cream was the Topical Corticosteroids that was most frequently recommended. The average number of drugs prescribed per patient was slightly higher to WHO's range.

LIMITATIONS

This study might not reflect the actual scenario of the prescribing pattern of TCs. This study was only done at one tertiary care facility and the findings presented here should be interpreted with caution and cannot be generalized to the entire population. In this investigation, the possible systemic side effects of long-term TCs use did not become apparent. The fact that the study's duration was quite short and its study sample was tiny is another drawback.

RECOMMENDATIONS

Future research must include multicenter studies, evaluations of the safety and effective ness of corticosteroid medications, additional research into patients' dermatological problems, and identification of factors associated to the prescription of various categories of topical corticosteroids. It's important to encourage rational use of drug in future. Further research on the cost-effectiveness of such medications can be conducted along with an evaluation of life quality.

REFERENCES

1. Shrestha B, Shrestha PR. Pattern of skin diseases and common drugs prescribed in dermatology outpatient department of Kathmandu Medical College-Teaching Hospital, Duwakot. J Kathmandu Med Coll, 2020; 8(3): 141–5.
2. Paudel S, Parajuli N, Dahal SC, Paudel S. Improper Use of Topical Corticosteroids in Tinea Infections in a Tertiary Care Hospital. J Nepal Health Res Counc, 2021; 19(1): 71–5.
3. Chudal D, Paudel V. Misuse of Topical Corticosteroids in Dermatological Disorders in Tribhuvan University Teaching Hospital. J Nepal Health Res Counc, 2021; 18(4): 729–33.
4. Jaccob AA, Yaqoub AA, Rahmani MA. Impact of Abuse of Topical Corticosteroids and Counterfeit Cosmetic Products for the Face: Prospective Demographic Study in Basrah City, Iraq. Curr Drug Saf., 2019; 15(1): 25–31.
5. 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.
6. Shrestha S, Joshi S, Bhandari S. Prevalence of misuse of topical corticosteroid among dermatology

outpatients. J Nepal Med Assoc, 2020; 58(231): 834–8.
7. Poudyal Y, Rajbhandari S. Pattern of Skin Diseases in Patients Visiting Universal College of Medical Sciences-Teaching Hospital (UCMS-TH) from the Three Districts of Terai Region in Nepal. J Univers Coll Med Sci., 2014; 2(3): 3–8.
8. Mahar S, Mahajan K, Agarwal S, Kar HK, Bhattacharya SK. Topical corticosteroid misuse: The scenario in patients attending a tertiary care hospital in New Delhi. J Clin Diagnostic Res., 2016; 10(12): FC16–20.
9. Parajuli S, Paudel U, Poudyal AK, Pokhrel DB. A Clinical Study of Steroid Induced Dermatoses. Nepal J Dermatology, Venereol Leprol, 2018; 16(1): 12–6.
10. Nagesh TS, Akhilesh A. Topical steroid awareness and abuse: A prospective study among dermatology outpatients. Indian J Dermatol, 2016; 61(6): 618–21.
11. Menter A, Korman NJ, Elmets CA, Feldman SR, Gelfand JM, Gordon KB, et al. Guidelines of care for the management of psoriasis and psoriatic arthritis. Section 3. Guidelines of care for the management and treatment of psoriasis with topical therapies. J Am Acad Dermatol, 2009; 60(4): 643–59. Available from: http://dx.doi.org/10.1016/j.jaad.2008.12.032
12. Eichenfield LF, Tom WL, Berger TG, Krol A, Paller AS, Schwarzenberger K, et al. Guidelines of care for the management of atopic dermatitis: Section 2. Management and treatment of atopic dermatitis with topical therapies. J Am Acad Dermatol [Internet], 2014; 71(1): 116–32. Available from: http://dx.doi.org/10.1016/j.jaad.2014.03.023
13. Zaenglein AL, Pathy AL, Schlosser BJ, Alikhan A, Baldwin HE, Berson DS, et al. Guidelines of care for the management of acne vulgaris. J Am Acad Dermatol [Internet], 2016; 74(5): 945-973, e33. Available from: http://dx.doi.org/10.1016/j.jaad.2015.12.037
14. Eichenfield LF, Tom WL, Chamlin SL, Feldman SR, Hanifin JM, Simpson EL, et al. Guidelines of care for the management of atopic dermatitis: Section 1. Diagnosis and assessment of atopic dermatitis Work Group. J Am Acad Dermatol, 2014; 70(2): 338–51.
15. Mehta AB, Nadkarni NJ, Patil SP, Godse K V., Gautam M, Agarwal S. Topical corticosteroids in dermatology. Indian J Dermatol Venereol Leprol, 2016; 82(4): 371–8.
16. Nepal A. Efficacy of topical terbinafine and clotrimazole in the treatment of dermatophytoses: a Clinical and Microbiological Comparision. Med J Pokhara Acad Heal Sci., 2018; 1(1): 31–4.
17. Hashim MJ. We appreciate your patience as we work to bring you an improved Patient-Centered Communication : Basic Skills, 2022; 3: 1–14.
18. Shrestha Shakya S, Bhandari M, Shrestha R, Thapa SR, Karki A, Prajapati M, et al. Study on corticosteroids use pattern in dermatological practice and investigating adverse effect of corticosteroids including its associated factors. Kathmandu Univ Med J., 2015; 13(51): 266–72.
19. Al-Dhalimi MA, Aljawahiry N. Misuse of topical corticosteroids: A clinical study in an Iraqi hospital. East Mediterr Heal J., 2006; 12(6): 847–52.
20. Neupane S. Topical Corticosteroids Misuse: A Burning Issue. Nepal J Dermatology, Venereol Leprol, 2019; 17(1): 1.
21. Das K. Pattern of dermatological diseases in gauhati medical college and hospital Guwahati. Indian J Dermatol Venereol Leprol, 2003; 69(1): 16–8.
22. Kumar P, Clark M. Kumar & Clark's Clinical Medicine 8th Edition [Internet]. Russell The Journal Of The Bertrand Russell Archives, 2013; 1508-1510.
23. Saraswat A, Lahiri K, Chatterjee M, Barua S, Coondoo A, Mittal A, et al. Topical corticosteroid abuse on the face: A prospective, multicenter study of dermatology outpatients. Indian J Dermatol Venereol Leprol, 2011; 77(2): 160–6.
24. Devi TB, Zamzachin G. Pattern of skin diseases in Imphal. Indian J Dermatol, 2006; 51(2): 149–50.
25. Inakanti Y, Rao Thimmasarthi VN, Anupama, Kumar S, Nagaraj A, Peddireddy S, et al. Topical corticosteroids: Abuse and Misuse. Our Dermatology Online, 2015; 6(2): 130–4.
26. Kim SC, Ahn KJ, Hann SK, Kim JW, Sung KJ, Kye YC, et al. Clinico-Epidemiologic study on the Abuse, Misuse, and Adverse Effects of Topical Dermatologic Drugs. Korean J Dermatology, 2003; 41(9): 1129–35.
27. Kumar S, Goyal A, Gupta YK. Abuse of topical corticosteroids in India: Concerns and the way forward. J Pharmacol Pharmacother, 2016; 7(1): 1–5.
28. Pathak AK, Kumar S, Kumar M, Mohan L, Dikshit H. Study of drug utilization pattern for skin diseases in dermatology opd of an indian tertiary care hospital - A prescription survey. J Clin Diagnostic Res., 2016; 10(2): FC01–5.
29. Nandikol SP, Rohan M, C RMHS, Aishwarya M. Prescription auditing of corticosteriods in dermatology department at a tertiary care hospital : A retrospective study.http://ymerdigital.com, 21(11): 97–108.
30. Wondmkun YT, Ayele AG. Assessment of prescription pattern of systemic steroidal drugs in the outpatient department of menelik ii referral hospital, Addis Ababa, Ethiopia, 2019. Patient Prefer Adherence, 2021; 15: 9–14.