

## Study Of Corticosteroid Use In Dermatological Conditions With Adverse Effect Profile

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### Abstract:

**Introduction:** The ultimate goal in dermatological therapy is to use the safest and least number of drugs in order to obtain the best possible effect in the shortest period at reasonable cost. One step to achieve this is to monitor, evaluate and therapeutically analyze the prescribing pattern of dermatological drugs. Such analysis will not only improve the standards of medical treatment at all levels in the health system, but will also help in the identification of problems related to drug use such as polypharmacy, drug-drug interaction and adverse drug reactions. The ultimate outcome of the dermatological prescription analysis will be a message to the prescribing physician to achieve rational, cost-effective medical care. **Aim:** Evaluation of adverse effects of corticosteroids on systemic and topical administration of steroids in dermatological conditions- by monitoring prescriptions and to find the percentage incidence of adverse effects on topical, oral and both and in combination with other routes of administration. **Methods:** After obtaining approval from the IEC and valid informed consent, the participants were recruited into the study. This cross-sectional descriptive study was conducted in Andhra Medical College, Vishakhapatnam, Andhra Pradesh, India for 200 patients/ Five hundred prescriptions were randomly collected from the drug-dispensing counter and analyzed. The prescriptions were written by dermatologists. Data will be analyzed with respect to side effect profile. of gender wise age wise incidence will be noted. **Results:** Total of 200 patients got enrolled in this study, out of which 127 were female and 63 were male. Mean ( $\pm$ SD) age of the patients was 40.5 years ( $\pm$ 15.0) as the age increases the incidence of adverse effects increases. Majority of the patients (n=140(70%)) have used topical corticosteroids, 60 (30%) have used corticosteroids by systemic route. The ADE through other systemic routes were also considered along with topical corticosteroids **Conclusion:** prescriptions were monitored for adverse effects of topical corticosteroids and steroids on systemic therapy and found that various adverse effects on topical administration are equally carries the risk of ADR The study showed that there is increase in incidence of ADRs with corticosteroids as age advances. The incidence of ADRs also more in females when compared with males.

**Keywords:** corticosteroid, adverse effects, topical, systemic, oral

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### I. Introduction

The ultimate goal in dermatological therapy is to use the safest and least number of drugs in order to obtain the best possible effect in the shortest period at reasonable cost. One step to achieve this is to monitor, evaluate and therapeutically analyze the prescribing pattern of dermatological drugs. Such analysis will not only improve the standards of medical treatment at all levels in the health system, but will also help in the identification of problems related to drug use such as polypharmacy, drug-drug interaction and adverse drug reactions. The ultimate outcome of the dermatological prescription analysis will be a message to the prescribing physician to achieve rational, cost-effective medical care.

Among the drugs used in dermatology are vitamins/minerals, antibiotics, antiseptics, antifungals, antivirals, antihistamines, local anesthetic's, emollients, keratolytics, antiparasitics and corticosteroids. Corticosteroids have been a mainstay of pharmacotherapy because of their anti-inflammatory and immunosuppressive properties in dermatological practice<sup>1</sup> 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 use is associated

with a number of serious adverse effects in dermatology and they still constitute one of the largest groups of drugs used in this discipline<sup>1</sup>. Corticosteroids are mainly used for non-infective dermatologic disorders associated with inflammation such as psoriasis, vitiligo, eczema, atopic dermatitis, acute radiation dermatitis, and lichen sclerosus<sup>2,3</sup>.

The potent anti-inflammatory and immunosuppressant actions of oral, and sometimes topical, corticosteroids increase susceptibility to bacterial and fungal infections, and therefore may preclude their use when infection is the known main cause of the condition<sup>6</sup>. In addition, children may be more vulnerable than adults to systemic effects of topical corticosteroids because percutaneous absorption is greater<sup>4</sup>

Prolonged, inappropriate, or excessive use of systemic and topical steroids can lead to various cutaneous and systemic adverse effects. Local adverse effects of topical steroids include skin atrophy, contact dermatitis, tachyphylaxis, striae, telangiectasia, acne form dermatitis, and so on, whereas systemic reactions may occur in the form of hypothalamic-pituitary-adrenal suppression, Cushing's disease, and femoral head osteonecrosis<sup>7</sup>.

So, physicians should use the weakest possible steroid that will effectively treat the dermatological condition. Drug utilization studies not only improve standards of medical treatment at all levels in the health-care system, but also help in the identification of problems related to drug use such as polypharmacy, drug-drug interactions, and adverse drug reactions. Pharmacovigilance is an important tool in the detection, assessment, understanding and prevention of side effects. Patients were interviewed and their medical records were adverse effects or any other possible drug relatereviewed. The suspected ADRs were carefully analyzed<sup>9</sup>. Hence, one step to achieve rational prescribing is periodic auditing of prescriptions<sup>8</sup>. The purpose of this study is to monitor and analyze the pattern of prescribing corticosteroids in Dermatology department in a tertiary care and teaching hospital, Vishakhapatnam Andhra Pradesh, India.

## **II. Aims And Objectives**

Evaluation of adverse effects of corticosteroids on systemic and topical administration of steroids in dermatological conditions- by monitoring prescription and to find the percentage incidence of adverse effects on topical, oral and both and in combination with other routes of administration.

## **III. Materials And Methods**

Permission from the Institutional Ethics Committee was taken before initiation of the study. This cross-sectional descriptive study was conducted in Andhra Medical College, Vishakhapatnam, Andhra Pradesh, India for a 200 patients or Five hundred prescriptions fulfilling inclusion criteria and exclusion criteria were randomly collected from the drug-dispensing counter and analyzed. Duration of the study: Jan 2018 to Dec2018 Specific designed Performa were used to collect Data from the prescription of patients in dermatology OPD. The Performa included demographic profile of the patients like patients name, age, sex, registration no and Diagnosis of patient's, History & clinical examination and complete drug treatment. The Performa also included the drug Corticosteroid prescribed The prescriptions were written by dermatologists.

### **Inclusion criteria:**

- 1 Age from 6 months - 60 years both male and female.
2. Skin condition required corticosteroids therapy

### **Exclusion criteria:**

1. Pregnant women.
2. Lactating women.
3. Immunocompromised patients e.g. HIV patients.
4. Hypertensive patient.
5. Patients suffering from respiratory, cardiac renal and liver diseases.
6. Patients who are taking concomitant medications
7. Patients who are taking any study medication
8. Patients who are participating any study
9. Patients who are having allergy to foods and other chemicals
10. Patients on other immunosuppressant's and immune stimulants

The data collected included age, sex, symptoms, diagnosis, number of drugs, and potency of the steroid, and whether dose, duration, strength, quantity to be applied, and frequency of administration was mentioned. Data will be analyzed with respect to side effect profile.

**Statistical Analysis:** Statistical analysis was done by Corticosteroids are the most common medicaments using Microsoft excel

**IV. Results**

A total of 200 patients got enrolled in this study, out of which 127 were female and 63 were male. Mean ( $\pm$ SD) age of the patients was 40.5 years ( $\pm$ 15.0)Fig.1. Majority of the patients (n=140(70%)) have used topical corticosteroids, 60 (30%) have used corticosteroids by systemic route .Fig11 among topical corticosteroids users, majority of patients (n=15) have used low potency corticosteroids followed by high potency corticosteroids (n=13). As the age increases the incidence of adverse effects increases.Table111 fig

Adverse effect reported by patients enrolled in this study was Acne form eruptions:3%, Cough and parotid enlargement:2.5%, Mild stammering:2.5 % Stunted growth puffiness of face 3.5% Bruising atrophy of skin depigmentation:11.5% Gastrits:4.5% hypertension 7.5% Erythema of facial skin 8.5% Diabetes 10.5% Hormonal disturbances 2% Overweight: 7% Stunted growth: 3.5% Infections :17.5% Atrophy of skin :8% Telengectae & Strae: 2% Bone pan; 7.5%

**Table 1** showing Gender wise incidence

	Number
Female	127
Male	63

Table11 showing patients using topical and oral Corticosteroids who developed adverse effects

. Distribution of Patients Taking Oral & Topical Corticosteroids	
Oral Corticosteroid	60
Topical Corticosteroid	140

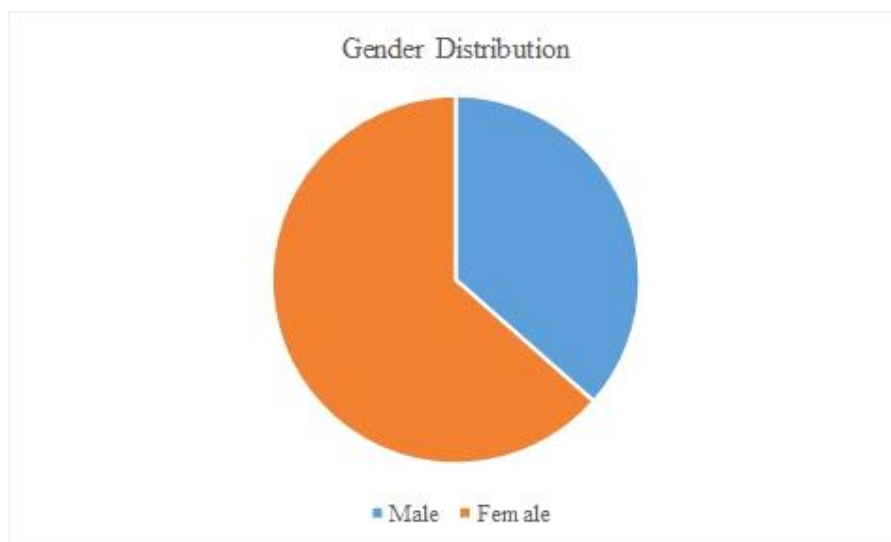
**Table111** Age wise incidence of ADR: average age 40.54

Age	number
Below 20 yrs	35
21-40 yrs	70
41- 60 and above	95

**Table 1V** showing percentage of patients used different routes of administration

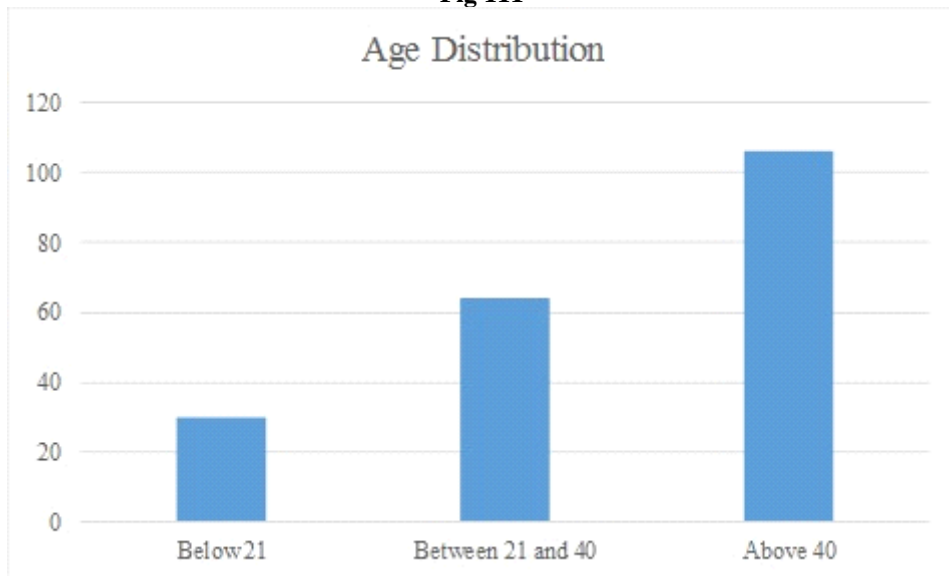
Route Of Administration	Number of patients	%
Inhalation	4	2
Intravenous	4	2
Oral	86	43
Oral and Local	18	9
Local	88	44

**Fig: 1**



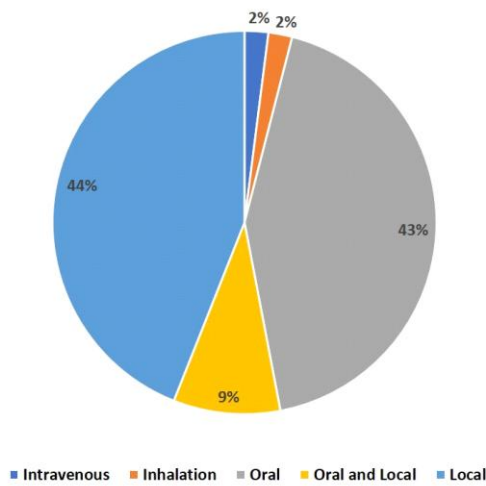
**FIG11**

Fig 111



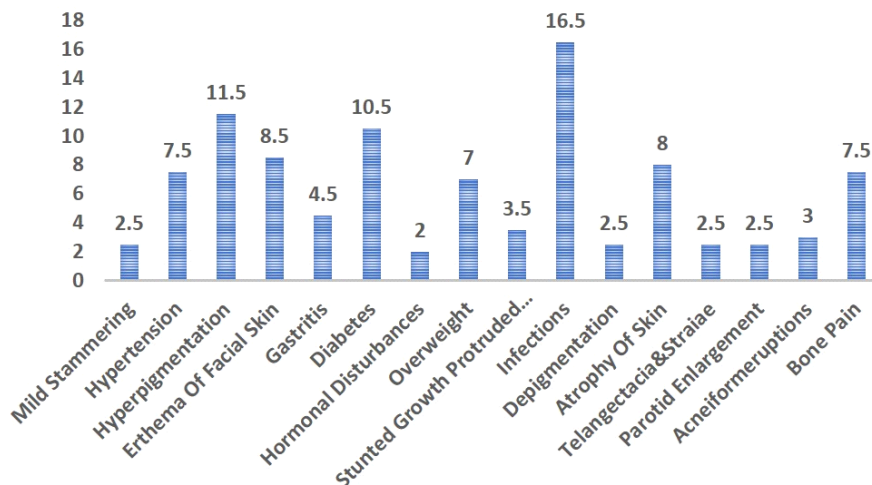
FIGIV

Route Of Administration



FIGV

SIDE EFFECTS (%)



## V. Discussion

In our study we evaluated 200 patients who attended dermatology outpatient department. Upon monitoring 500 prescriptions we found corticosteroid therapy can even lead more ADR in females when compared to males as shown Table1 and Fig<sup>8</sup>, In consistence with the findings of our study, previous study has also reported that higher numbers of females were prescribed with corticosteroids along with antimicrobials for different dermatological conditions The high number of females using corticosteroids for dermatological purposes might be due to women being more conscious about the health of their skin. Additionally, women outnumber men in using cosmetics, which might have especially, predisposed them to a number of skin disorders. In another study corticoid therapy can lead to gastrointestinal bleeding which is more risky when given with non-steroidal anti-inflammatory drugs as reported by other studies<sup>10,11</sup>. Worsening of pre-existing condition has also been reported in this study as reported by several other studies<sup>12,13</sup>. Hypertension is due to corticosteroids directly stimulate cardiac output & potentiate the responses of vascular smooth muscle to the presser effects of catecholamine's., Facial hyperpigmentation Multiple complications such as osteoporosis, delayed wound healing, cutaneous effects including purpura, atrophy, striae, alopecia, hyper/hypopigmentation, facial plethora, and fat redistribution were reported with long-term use of systemic& topical corticosteroids are also seen in our study FIG V<sup>14</sup>. Acne is another adverse effect reported by the patients in our study which is consistent to the findings of previous studies in which topical corticosteroids rapidly induced an acne form eruption<sup>15</sup>. In the present study, adverse effects were significantly high in females. This might be due to the higher number of females being prescribed with corticosteroids for skin disorders which was consistent to the findings of previous study<sup>16</sup> additionally; adverse effects were significantly associated with the use of systemic corticosteroids than topical corticosteroids. In agreement to the finding of our study, even low doses of systemic corticosteroids used for prolonged periods, was associated with significant morbidity and mortality<sup>15</sup>. , another study has suggested that topical corticosteroids when used incorrectly, either missing the prescribed dose or withdrawing abruptly can produce more frequent local adverse effects and an occasional systemic effects<sup>15</sup>. Consistent to our findings, another study has also reported that the risk of osteoporosis, one of the most serious complications in patients receiving long-term corticosteroid therapy, was highly related to the daily corticosteroid dose which worsened upon incomplete medication<sup>15</sup>. Although, the adverse effects encountered with corticosteroids use is bothersome, it is more likely that the patients following the appropriate and prescribed dosage regimen will have less adverse effects as suggested by previous studies<sup>17</sup> Furthermore, our study found that a significantly higher number of patients in whom adverse effects were seen had discontinued corticosteroids abruptly. It might be because of the occurrence of withdrawal symptoms or relapse of underlying disease or aggravation of corticosteroids induced adverse effects on stopping the drug abruptly as suggested by other studies.<sup>18</sup> Such symptoms are seen when topical corticosteroids are used for longer duration, generally > 2 weeks and/or given in high doses and stopped abruptly<sup>19,20</sup> and the adverse effects like stunted growth Hormonal disturbances are due to pituitary suppression are also shown in the studies<sup>21</sup>.

## VI. Conclusion

In the present study we evaluated 200patients prescriptions were monitored for adverse effects of topical corticosteroids and found that various adverse effects. The study showed that there is increase in incidence of ADRs with corticosteroids as age advances. The incidence of ADRs also more in females when compared with males. Self-medication and erratic use of corticosteroids by patients can increase the risk of unwanted side effects There rational use of corticosteroids can cause cutaneous and systemic side effects. Careful use of corticosteroids and patient education will lower the risk of undesirable effects and of great use in dermatological conditions

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