

Prescription auditing of corticosteroids in dermatology department at a tertiary care hospital: A retrospective study

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Abstract

Steroids are widely used by practitioners because of their effective pharmacological anti-inflammatory and immunosuppressive actions. Hence proper care should be practiced to support rational selection of steroids. our study aims to perform prescription auditing of corticosteroids practiced in the dermatology department, to identify, evaluate and verify the parts of prescriptions containing corticosteroids. A retrospective analysis of 188 patients was conducted over a period of six months at dermatology department in tertiary care hospital. Out of 188 patients, 122 were male patients and 66 were female patients. This study revealed that adequate information was not provided in the medical data sheet form with regarding to the site of application, abbreviations, duration and quantity of the corticosteroid to be dispensed. It was found that dexamethasone and prednisolone were highly associated with drug-drug interactions. Involvement of clinical pharmacists in the study created the scope to resolve the drug related problems like polypharmacy and drug –drug interactions and promote quality use of medicine and involves in enhancing the rationality of drugs among patient population.

Keywords: Corticosteroids, Prescription Auditing, Dermatology, Rational Drug Use.

Introduction

Dermatological diseases accounts for upto 2% of consultations in general practice worldwide. In India, the highly prevalent dermatological conditions includes dermatitis, urticarial, fungal skin infections, acne, alopecia and conditions such as burns, psoriasis, skin cancer and adverse drug reactions on the skin are less prevalent. However, the most crucial phase in the treatment of any disease is appropriate diagnosis, which is based on the physician's clinical experience and diagnostic tests. The second most crucial phase in the treatment is the rational prescribing, which is based on physician's knowledge on the Pathophysiology of disease to be treated, knowledge on the risks and benefits of the drug to be prescribed. The third most crucial phase in the treatment is the appropriate use of drugs by the patients and adherence to instructions given by the prescriber. These three phases lead to rational use of drugs. Irrational use of a drug/non-specific use of a drug that acts locally and/or enter into the systemic circulation may produce effects that may be either harmful or beneficial. However, in developing countries, irrational use of drug/non-specific use of drug leads to scarcity of drug resources and also increases the expenditure and burden to government/patients to treat the adverse clinical consequences of the drug ¹.

In developing countries, the constantly increasing number of medicine list and treatment option serves to increase the irrational medicine use and cost that ultimately leads to poor patient outcome and significant wastage of money and resources. Cost of each such irrational drug use is enormous in terms of both scarce resources and adverse clinical consequences of therapies that may have real risks but no objective benefits. Now a days, the prescribing pattern is changing and has become just an indication for the medicine with some instruction of doses without considering its rationality. The study of prescribing pattern is that part of medical audit which seeks to monitor, evaluate, and if necessary suggests modifications in prescribing practices of medical professionals so as to make medical care rational and cost effective²

Writing a prescription is an important mode of therapeutic intervention by the doctor for the patient. Prescription writing is a skill acquired through training. The quality of a prescription reflects the competence of a physician and his attitude towards rational prescribing. However, systematic reviews suggest that prescribing errors are common and can affect from 4.2 to 82% of prescriptions. These prescribing errors can also cause adverse effects. Almost four in 1000 prescriptions have errors that have the potential for causing adverse effects. Errors can arise from any step of prescribing such as the choice of drug, dose, Route of administration and wrong frequency or duration of treatment. Inaccuracy in writing and poor legibility of handwriting or incomplete writing of a prescription can lead to misinterpretation, thus leading to errors in dispensing and administration. Both individual and system related factors are responsible for prescribing errors. Detection is the first crucial step in building safer systems and preventing errors. These errors can be detected by systematic analysis of prescriptions through a prescription audit. Audit was first used by Florence Nightingale in 1854 to prevent post surgical mortality.³

Corticosteroids are an important class of naturally occurring and synthetic steroid hormones that affect virtually every aspect of human physiology. The cortex of the adrenal glands produces corticosteroids. There are two main forms- glucocorticoids and mineralocorticoids.

The actions of glucocorticoids include gluconeogenesis, fat deposition, sodium retention, decrease the protein synthesis and immune response. Examples of glucocorticoids are Cortisol (Hydrocortisone), Prednisolone and Dexamethasone. Mineralocorticoids, such as Fludrocortisone, mainly act on the extracellular balance of sodium and potassium in the distal tubule of the kidney.

Corticosteroids are highly efficacious drugs for the treatment of various autoimmune, respiratory and dermatological conditions. However, these may show harmful effects when used for a longer duration of time. The dose of corticosteroids that are prescribed, dispensed and applied must be carefully considered as too little dose can show poor response whereas excess dose can increase the risk of adverse drug reaction. Corticosteroids have several side effects/adverse effects and interactions with other drugs. It is recommended that use of these drugs should not be stopped abruptly, but rather, they should be stopped gradually.²²

The main aim of drug utilization research is to facilitate rational use of corticosteroid use. Since there is lack of data regarding the utilization of corticosteroids, this study was performed to assess the utilization pattern of Corticosteroid So that the output of the study will be helpful to promote rational drug use of Corticosteroids and improves the standards of medical treatment. The long-term use of steroids can increase the risk of adverse effects; hence, the significance of the study is to improve patient safety by observing the prescribing pattern.

Glucocorticoids are one of the commonly prescribed drugs in a large fraction of patients in the dermatology department. The use of corticosteroids has brought a remarkable change in the field of dermatology as these drugs afford a dramatic relief in inflammatory and puritic skin conditions but may lead to deleterious effects if irrationally used. Moreover, the data related to drug usage pattern of corticosteroids in skin conditions is particularly lacking. Hence, it is vital to study the drug prescribing pattern of corticosteroids in skin diseases.

Objective -:

- To perform prescription auditing of corticosteroids in the dermatology department.
- To identify, evaluate and verify the parts of prescriptions containing corticosteroids.
- To categorize corticosteroids on the basis of therapeutic classification.

Materials and methods

It was a hospital based retrospective & observational study conducted for six months duration, Ethical clearance was granted by the institute. Data was collected by case sheets, following data were collected from the data sheet the patient's demography, past medical and medication histories, diagnosis, complete prescription, using a pre-designed pro forma. A retrospective evaluation of a patient's case record over a study frame period of one and half years (January 1, 2019 to June 31, 2020) who met the inclusion criteria with the sample size of 188 from the Medical Record section of a tertiary care hospital. Statistical analysis was carried by descriptive statistics using post hoc software.

Results

A total of 188 patients were included in the study. Out of which 122 were male patients and 66 were female patients, Out of 188 cases, the 53(28.2%) patients belongs to the age group of 50-59 years, followed by 44(23.4%) cases belongs to the age group of 30-40 years, followed by 41(21.8%) belongs to the age group 40-49years, followed by 30(16%) belongs to age group of 20-29 years, followed by 9(4.8%) cases belongs to the age group of 60-69 years, followed by 4(2.1%) cases belongs to the age group of 10-19 years and 3(1.6%) cases were belongs to the age group <10 as shown in table no.1. Out of 188 patients, 19(10.1%) patients were associated with co morbid conditions other than the skin diseases, and other 169 Patients (89.9%) were not having any comorbidities.

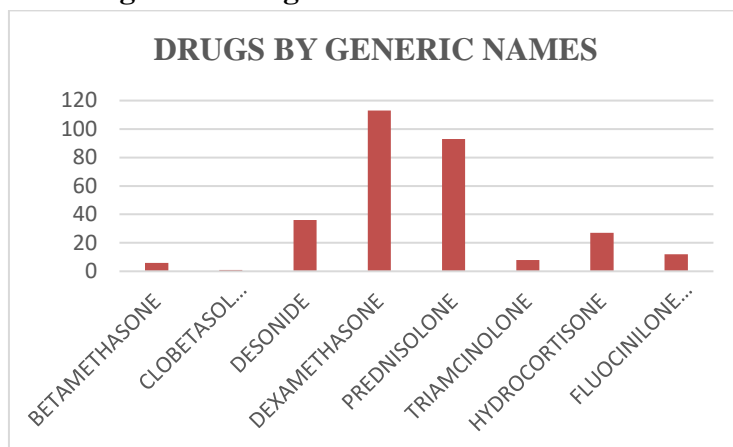
Table 1: Distribution of socio- demographic details.

Parameters	No. of Patients	Percentage %
GENDER		
Female	66	35.1
Male	122	64.9
AGE (YEARS)		
< 10	3	1.6
10 – 19	4	2.1
20 – 29	30	16.0
30 – 39	44	23.4
40 – 49	41	21.8
50 – 59	53	28.2
60 – 69	9	4.8
70+	4	2.1
COMORBIDITY		
With Comorbidity	19	10.1
Without Comorbidity	169	89.9

Distribution of Corticosteroids according to generic name

Out of 188 cases, most frequently prescribed corticosteroids were dexamethasone 113(38.17%), prednisolone 93(31.41%) followed by desonide 36(12.16%), hydrocortisone 27(9.1%) & others (9.16%) as shown in figure 1

Fig 1: Distribution of drugs according to Generic Names



Distribution of cases according to route of administration

Out of 188 cases, most prescriptions were prescribed parenterally (47.42%), while some were prescribed with oral (32.3%) and topical forms (20.27%) as shown in table no. 2

Table no. 2 Distribution of cases according to route of administration

Route of administration	No. of Patients	Percentage %
Parenteral	138	47.42
Oral	94	32.3
Topical	59	20.27
Total	291	100

Prescription audit parameters:

Out of 188 case files 129 (68.6) cases are found in which drugs were written in capital letters while in 59(31.4%) cases drugs are not written with capital letters as shown in table:3

Table no.3 : Distribution of patients according to Drug Capital

Drug Capital	No. of Patients	Percentage %
Yes	129	68.6
No	59	31.4
Total	188	100.0

Frequency of drugs:

Out of 188 cases, in 182(96.8) prescriptions the frequency of drugs was mentioned while in 6(3.2%) prescriptions the frequency of drugs was not mentioned as shown in table no. 4.

Table no. 4 Distribution of patients according to Frequency of drugs

Frequency of Drugs	No. of Patients	Percentage %
Yes	182	96.8
No	6	3.2
Total	188	100.0

Time of administration

Out of 188 cases, in 163(86.7%) prescriptions time of administration for drug administration was mentioned while in 25(13.3%) prescriptions time of administration was not mentioned as shown in table no.5

Table no.5 Distribution of patients according to Time of administration

Time of administration	No. of Patients	Percentage %
Yes	163	86.7
No	25	13.3
Total	188	100.0

Duration

Out of 188 cases, in 164(87.2%) prescriptions duration for drug administration was mentioned while in 24(12.8%) prescriptions duration was not mentioned as shown in table no.6

Table no.6 Distribution of patients according to Duration

Duration	No. of Patients	Percentage %
Yes	164	87.2
No	24	12.8
Total	188	100.0

Presence of any therapeutic duplicacy:

Out of 188 cases, in 166(88.3%) therapeutic duplicacy was not found while in 22(11.7%) prescriptions therapeutic duplicacy was found as shown in table no7

Table no.7 Distribution of patients according to Presence of any therapeutic duplicacy.

Presence of any therapeutic duplicacy	No. of Patients	Percentage %
Yes	22	11.7
No	166	88.3
Total	188	100.0

Drug-drug interaction:

Out of 188 cases, in 51(17.0%) prescriptions, drug interactions with corticosteroids were found while in 137 (83%) cases were identified with no drug interactions as shown in table no.13.

Table no.12 Distribution of patients according to Drug-drug interaction

Drug-drug interaction	No. of Patients	Percentage %
Yes	51	27.12
No	137	72.87
Total	188	100.0

Table no.13 Distribution of drugs based on severity of interactions.

Corticosteroids	Major interactions	Moderate interactions	Minor interactions	Total	Percentage %
Dexamethasone	4	16	3	23	45.0
Prednisolone	1	10	9	20	39.2
Hydrocortisone	3	2	0	5	9.8
Methylprednisolone	0	1	1	2	4.0
Triamcinolone	0	1	0	1	1.9
Total	8	30	13	51	100%

Discussion:

Out of 188 prescriptions, in 3 (1.6%) cases inappropriate abbreviations were found and 149 (79.3%) were found appropriate abbreviation and in 36 (19.1%) cases abbreviations were not mentioned and around 184 (97.9%) cases were found which are legible and 4 (2.1%) cases found with illegible handwriting. In 129 (68.6%) cases the drugs were written in capital letters while in 59 (31.4%) cases drugs were not written with capital letters. In 182 (96.8%) prescriptions frequency of drugs were mentioned while in 6 (3.2%) prescriptions frequency of drugs were not mentioned. Site of application for topical corticosteroids was not mentioned in the record. In 163 (86.7%) prescriptions which was compared with study, time of administration for drugs were mentioned while in 25(30.3%) prescriptions, time of administration for drugs were not mentioned and the duration for drug administration was mentioned in 164 (87.2%) cases while in 24 (12.8%) it was not mentioned. In the total of 188 prescriptions, 22(11.07%) prescription were having therapeutic duplicacy where as in 166 (88.03%) prescriptions therapeutic duplicacy were not present. Drug -drug interactions were found in 51(27.12%) prescriptions which includes major, moderate and minor drug -drug interactions while in 137 (72.87%) cases no drug -drug interactions were found. The food-drug interactions, adverse drug reactions and allergies were not mentioned in any of the prescriptions. In our study we identified that, Majority of patients were prescribed with low potent class of corticosteroids (59.43%) i.e. dexamethasone (38.17%) desonide (12.16%) and hydrocortisone (9.1%) in Dermatology department. The most widely prescribed

corticosteroids were dexamethasone (38.17%), followed by Prednisolone (31.41%), desonide(12.16%), hydrocortisone (9.1%) and fluocinilone acetonide (4.05%), triamcinolone (2.7%), betamethasone (2.02%), clobetasol propionate (0.33%) were found to be least in dermatology departments. In this study the total incidence of major interactions were 8 with 4 interactions with Dexamethasone, 1 interaction with prednisolone, 3 interactions with hydrocortisone. The total incidence of moderate interactions are 30 with 16 interactions with dexamethasone, 10 interactions with prednisolone, 2 interactions with hydrocortisone and 1 incidence with Methylprednisolone and Triamcinolone. Total incidence of minor interactions are 13 out of which e incidence with dexamethasone, 9 interactions with prednisolone and 1 interaction with Methylprednisolone.

Conclusion

- The study was conducted to assess the prescribing patterns of corticosteroids in the dermatology department. This study reveals that dermatitis is the most common skin disease observed. Gender distribution was found to be more in males than females.
- In our study we found that, adequate information was not written in the medical data sheet with regard to the site of application, abbreviations, duration and quantity of the corticosteroid to be dispensed. It was also found out that Dexamethasone, desonide and prednisolone were the most commonly prescribed low potency and moderate potency corticosteroids. The brand name of these drugs was more highly prescribed than the generic name.
- In our study we found that, parenteral corticosteroids were given in higher numbers than oral and topical corticosteroids.
- In conclusion we identified that corticosteroids remain the mainstay in the treatment of dermatitis, Pemphigus foliaceus and chronic actinic reticuloid.
- It is found that dexamethasone and prednisolone are highly associated with drug-drug interactions.
- Involvement of clinical pharmacists provide scope to resolve the drug related problems like polypharmacy and drug –drug interactions and promote quality use of medicine and involves in enhancing the rationality of drugs among patient population.

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