Prescribing trends of drugs and WHO core indicators among patients of psoriasis in a tertiary care teaching hospital

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Abstract

Background: The trends of prescribing drugs in patients of psoriasis with an emphasis on WHO core prescribing indicators have never been studied previously in India. Hence the present study was planned to analyse the prescribing pattern of drugs and WHO core prescribing indicators among inpatients of psoriasis in dermatology department of our institute.

Methods: An observational prospective study was conducted in 75 inpatients of psoriasis pregnant women for a period one year. Each prescription was analyzed for patient's demographic variables, type of psoriasis, total number of drugs prescribed, various categories of drugs prescribed, percentage of individual drugs in each class, World Health Organization (WHO) core prescribing indicators and percentage of drugs prescribed by their dosage forms. Statistical analysis was primarily descriptive with values mainly expressed as percentages and absolute numbers.

Result: Majority of the patients belonged to 30-40 age group and the most common type was plaque psoriasis (57.33%). Overall 317 medications were prescribed to a total of 75 patients among which antioxidant, vitamin and mineral preparations (32.40%) were the most commonly prescribed category followed by antihistamines (13.13%) and topical corticosteroids (12.57%). Methotrexate (4.19%) was the only immunosuppressant drug prescribed. Average number of drugs per prescription was 4.23%. Percentage of drugs prescribed by generic name was 36.91%. Percentage of encounters with antibiotic prescribed was 6.31% whereas injection prescribed was 1.89%. Percentage of drugs prescribed from National list of essential medicines (NLEM) was 59.10%. Tablet (57.14%) was the most commonly prescribed dosage form.

Conclusion: The study reveals inappropriately higher usage of multivitamin preparations, higher prevalence of polypharmacy and relatively under usage of topical antibiotics and emollient preparations. Measures to facilitate and encourage rational prescribing of drugs in psoriasis among the students and prescribers must be undertaken in order to derive the optimum benefit with least adverse effects.

Keywords: Antioxidants, Corticosteroids, Dermatology, National list of essential medicines, Polypharmacy

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Introduction

Often the way a health care professional prescribes the drugs indicate his or her ability to choose from the myriad of drugs that are available in the market for that particular disease and to determine the ones which will be most suitable for their needs[1,2]. This requires a thorough understanding of various aspects of both the disease and the drugs by the treating physician and finally providing the patient with safe and efficacious drugs in a cost effective manner. Therefore, rational prescribing of drugs plays a pivotal role in not only successfully treating the disease with minimal adverse effects but also skillfully using the meager resources that are available in a developing country like India[3].

Psoriasis is a non-communicable disease that manifests as a chronic inflammatory skin disease, characterized by sharply demarcated, scaly, red, coin-sized skin lesions most often on the elbows, knees, scalp, hands and feet. Symptoms include itching, irritation, stinging and pain. It also has a severe impact on the quality of life too[4].

There are various types of psoriasis like plaque, guttate, pustular, sebopsoriasis, palmoplantar psoriasis, and psoriatic erythroderma[5]. The worldwide prevalence of psoriasis is around 2%, but studies in developed countries have reported higher prevalence rates of on average about 4.6%[6]. As far as India is concerned, the overall prevalence varies from 0.44 to 2.8%[7]. High familial occurrence of psoriasis (7-36%) suggests the role of genetic factors in the etiology. It occurs with almost equal frequency in both males and females. However a higher prevalence in males has been noted in Indian population[8]. Psoriasis may begin at any age, but it is uncommon under the age of 10 years. A North Indian study found that the mean age of onset was higher for males than females.[9]

Many topical and systemically administered drugs are available for the treatment of psoriasis which are

selected on the basis of disease severity, comorbidities, cost, their efficacy, and on the patients response to that particular drug[10,11]. Analysis of their prescribing pattern can be conducted to assess the rational prescribing skills of clinicians and are helpful for the assessing the beneficial and adverse impacts of the prescribed drugs[12-14].

Assessment of drug use patterns with the WHO core drug prescribing indicators is becoming increasingly necessary to promote rational drug use in developing countries[15,16]. Without an accurate understanding of how drugs are being prescribed and used, it is difficult to suggest measures to improve the prescribing habits[17]. Hence the present study was planned to analyze the prescribing pattern of drugs and WHO core prescribing indicators among inpatients of psoriasis in dermatology department of our institute.

Materials and Methods

This is a prospective observational study which was carried out in a total of 75 inpatients of Department of Dermatology of our institute, which was a tertiary care teaching hospital in a coastal town of south India. The duration of study was for one year i.e., from February, 2014 to January, 2015. Prescriptions of all the patients of either sex who were admitted as in-patients in Dermatology department and those who agreed to participate in the study were included and the prescriptions of patients with incomplete data and prescriptions of those patients who did not showed interest to participate in the study were excluded from analysis.

A written informed consent to participate in the study was obtained from all the patients who participated in the study. The study protocol confirmed to the ethical guidelines of the 1975 Declaration of Helsinki, and ethical clearance was obtained from Institutional Ethical Committee before commencing the study.

Data were collected regarding the patient's age, sex, type of psoriasis, total number of drugs prescribed, various classes of drugs prescribed, percentage of individual drugs in each class, WHO core prescribing indicators, percentage of parenteral versus oral drugs and percentage of drugs prescribed by their dosage forms were analyzed. For the purpose of calculation, fixed dose combinations were considered as one single drug.

The WHO core prescribing indicators that were measured include:

1. The average number of drugs prescribed per encounter to measure the degree of poly pharmacy was calculated by dividing the total number of different drugs prescribed by the number of prescriptions studied.
2. Percentage of drugs prescribed by generic name to measure the tendency of prescribing by generic name was calculated by dividing the number of drugs prescribed by generic name by total number of drugs prescribed, multiplied by 100.
3. Percentage of drugs in which an antimicrobial agent was prescribed was calculated to measure the usage of antibiotics. It was calculated by dividing the number antibiotics prescribed by the total number of drugs prescribed, multiplied by 100.
4. Percentage of injections prescribed was calculated to measure the overall use of commonly overused and costly forms of drug therapy. It was calculated by dividing the total number of injections prescribed by the total number of drugs prescribed, multiplied by 100.
5. To measure the degree to which the prescribing practices conform to our national drug policy, we have also analyzed the percentage of drugs prescribed from the National List of Essential Medicines (NLEM) of India. Percentage is calculated by dividing number of products prescribed which are in essential drug list of India by the total number of drugs prescribed, multiplied by 100.
6. Statistical analysis was primarily descriptive with values mainly expressed as percentages and absolute numbers.

Results

In the present study, 75 patients of various types of psoriasis received a total of 317 medications during the study period, among which 54 (72%) were males and the remaining 21 (28%) were females. **Fig. 1** shows the age distribution of patients with psoriasis whose prescriptions were analyzed in this study.

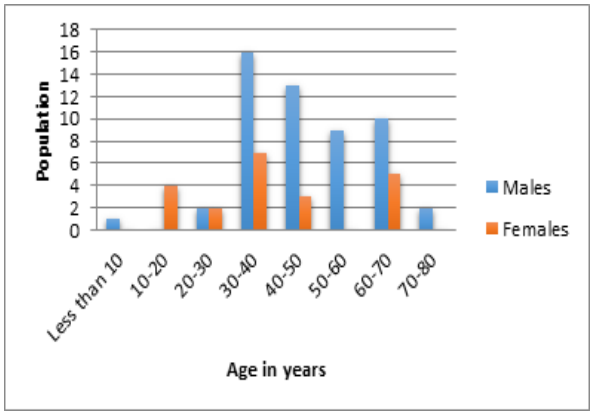

Fig. 1: **Age wise distribution of patients with Psoriasis**

The maximum patients were found to fall in 30-40 age group in both males (29.63%) and females (33.33%) which is followed by 40-50 in males (24.07%) and 60-70 in females (18.52%).

With regard to various types of psoriasis, most of the patients in our study have got chronic plaque

psoriasis (57.33%) followed by Psoriatic erythroderma (21.33%) and palmoplantar psoriasis (9.33%). **(Fig. 2)**

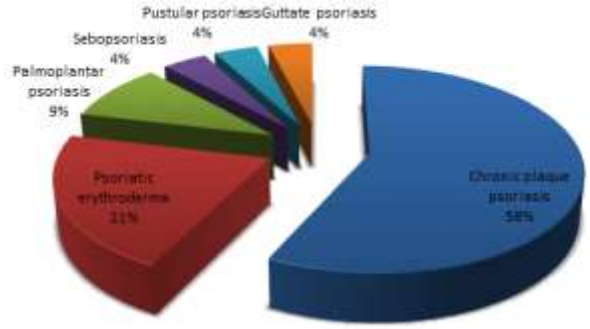

Fig. 2: **Incidence of various types of psoriasis in our study**

Overall Antioxidant, vitamin and mineral preperations (32.40%) were the most commonly prescribed category of drugs for patients with psoriasis in our study followed by antihistamines (13.13%) and topical steroids (12.57%). **(Table 1 and Fig. 3)**

Table 1: Category wise drug prescription among patients of psoriasis

S. No.	Drugs	Total No.	Percentage (%)
1.	Anti-microbial agents	20	5.59
2.	Topical steroids	45	12.57
3.	Immunosuppressant's	15	4.19
4.	Antioxidant, vitamin and mineral preparations	116	32.40
5.	Antihistamines	47	13.13
6.	Coal tar preparations	21	5.87
7.	Emollients	27	7.54
8.	Miscellaneous		
	a. Anti-ulcer drugs	13	3.63
	b. Analgesics	10	2.79
	c. Anti-diabetic drugs	03	0.84
Total		317	100

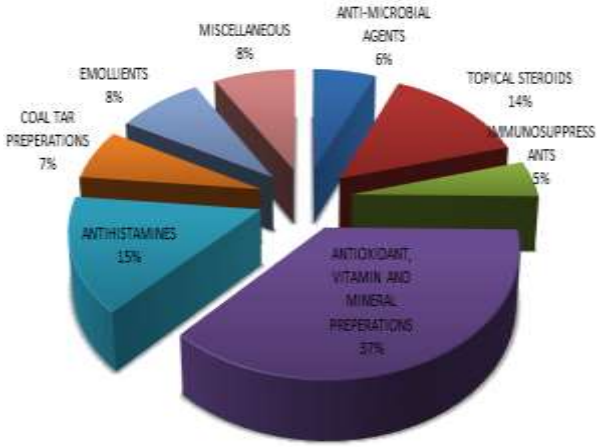

Fig. 3: Category wise drug prescription among patients of psoriasis

Among the Antioxidant, vitamin and mineral preperations, multivitamin tablets (35.34%) were the highest prescribed drugs followed by omega 3 fatty acids (27.57%) and ferrous sulfate (16.38%). (**Fig. 4)**

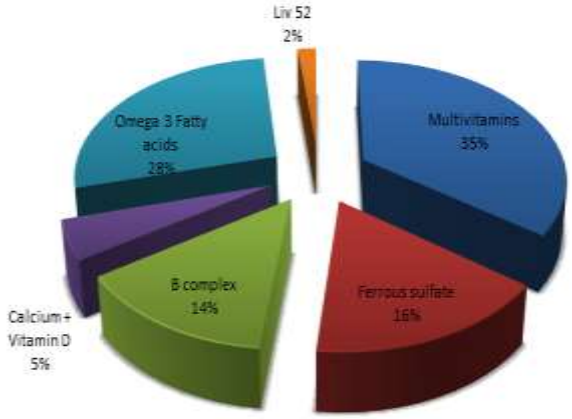

Fig. 4: Prescription of Antioxidant, Vitamin and Mineral preparations among patients with psoriasis

Cetririzine (35.34%) was the most commonly prescribed antihistaminic drug prescribed to patients with psoriasis in our study followed by pheniramine and (27.57%) and hydroxyzine (16.38%).

Among the topical corticosteroid preperations, mometasonefuroate (20.00%) and clobetasol (13.33%) were found to be the most commonly prescribed single drugs whereas clobetasol (48.89%) along with salicylic acid was the most commonly prescribed topical steroid combination drug. **(Fig. 5).**

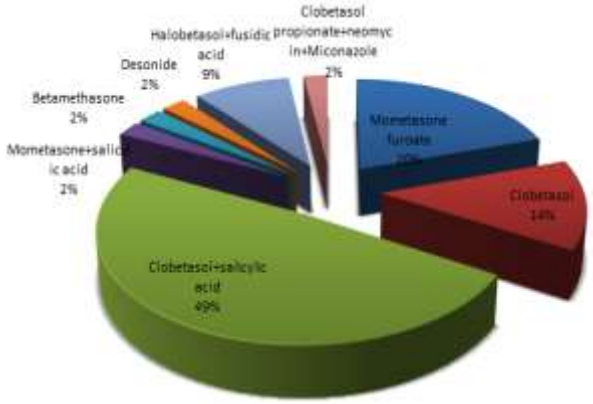

Fig. 5: Prescription of topical corticosteroids among patients with psoriasis

With regard to the antimicrobial agents prescribed, macrolides (35%) were most commonly prescribed followed by cephalosporins (25%) and penicillins (15%). (Table 2)

Table 2: Prescription of Antimicrobial agents among patients with psoriasis

S. No	Antimicrobial agent	No.	Percentage (%)
1	Penicillins	3	15%
2	Cephalosporins	5	25%
3	Flouroquinolones	2	10%
4	Macrolides	7	35%
5	Sulfonamides	1	05%
6	Tetracyclines	1	05%
7	Nitroimidazoles	1	05%
	Total	20	100

The prescribing trend of individual antimicrobial drugs is shown in Fig. 6. Methotrexate (4.19%) was the only immunosuppressant drug prescribed to the patients of psoriasis in our study and it was always prescribed along with folic acid.

Among the coal tar preparations, shampoo contain combination of coal tar and salicylic acid was the commonly prescribed followed by coal tar soap. Among the emollients, liquid paraffin was the most commonly prescribed followed by dermadew soap. Among the miscellaneous drugs, ranitidine was the most commonly prescribed anti-ulcer drug; paracetamol was the most common analgesic and metformin was the most common anti diabetic drug prescribed. Table 3 shows the results of WHO core prescribing indicators among the patients with psoriasis.

Table 3: WHO core drug prescribing indicators among patients with psoriasis

S. No	Indicator	Value
1	Average number of drugs per prescription	4.23
2	Percentage of drugs prescribed by generic name	36.91%
3	Percentage of encounters with antibiotic prescribed	6.31%
4	Percentage of encounters with an injection prescribed	1.89%
5	Percentage of drugs prescribed from essential drug list	59.10%

With regard to various dosage forms of drugs prescribed for psoriasis patients, tablets (57.41%) were the most commonly prescribed distantly followed by capsules (11.67%) and creams (11.36%). Injections were the least commonly prescribed dosage form in our study (1.89%). (Table 4)

Table 4: Prescription of drugs according to the dosage forms among patients with psoriasis

Dosage forms	Number	Percentage (%)
Tablets	182	57.41
Capsules	37	11.67
Injections	06	1.89
Creams	36	11.36
Ointments	13	4.10
Lotions	16	5.05
Shampoos	16	5.05
Soaps	11	3.47
Total	317	100

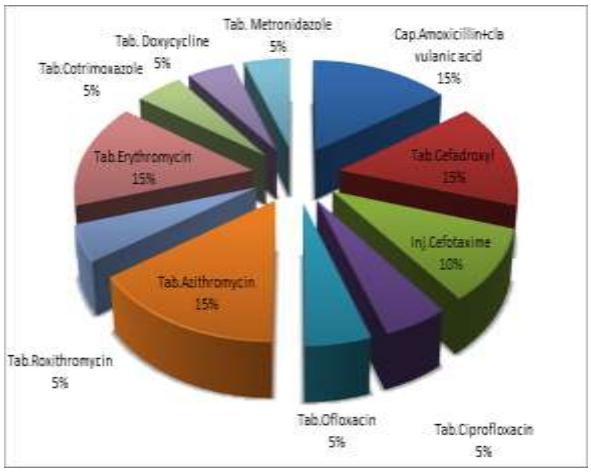

Fig. 6: **Prescription of Antimicrobial agents among patients with psoriasis**

Discussion

Even though there were few studies which have analyzed prescribing pattern among hospitalized

patients with psoriasis, our study for the first time has comprehensively analyzed all the drugs prescribed to patients with psoriasis along with an emphasis on WHO core prescribing indicators among them.

In our study, most of the patients of psoriasis belonged to 30-40 age group among both males and females and 60-70 age group especially among females which is in line with previous study[18] but in contrast to a study done by Steinke et al[19] where majority of patients belonged to more than 50 years. There seem to be two peaks for the age of onset: one between the ages of 30 and 39 years and another between the ages of 50 and 69 years[20].

Males constituted 72% of all the patients and females only 28% and this kind of male preponderance is reported from many other Indian studies, whereas international studies do not show any such bias[21].

With regard to various types of psoriasis, most of the patients in our study have got chronic plaque psoriasis (57.33%) which correlates well with other previous studies[22-26].

In our study, Antioxidant, vitamin and mineral preparations (32.40%) were the most commonly prescribed category of drugs for patients with psoriasis in our study followed by antihistamines (13.13%) and topical steroids (12.57%) but in a previous study done by Rashed MR et al. in kerala[27], antihistamines (14.18%) and corticosteroids (11.48%) were the most commonly prescribed drugs.

Cetririzine was the most commonly prescribed antihistaminic drug prescribed to patients with psoriasis in our study but hydroxyzine was the most prescribed antihistamine (67%) in the study done by Rashed MR et al. Hydroxyzine has got a high sedative property and that may help in patients of psoriasis[28].

Among the topical corticosteroid preparations, mometasonefuroate and clobetasol were found to be the most commonly prescribed drugs. Since their introduction to dermatology, more than 50 years ago, topical corticosteroids have become the mainstay of treatment of various dermatoses including psoriasis, mainly due to their immunosuppressive, anti-inflammatory and anti-proliferative properties, which makes.

Methotrexate was the only immunosuppressant drug prescribed to the patients of psoriasis in our study and it was always prescribed along with folic acid. Psoriasis being an immunological disorder, immunosuppressants will be having an effective role in ameliorating the major symptoms.

All the antimicrobial agents used in our study were found to be given systemically. Topical antibiotics may be used where there is a limited infection. A short course of a suitable oral antibiotic should be reserved in severe cases. To prevent development of resistance, all antibiotics, whether topical or systemic, should be used carefully and judiciously[31].

Average number of drugs per prescription was found to be 4.23 which was more and indicates more of polypharmacy in our institute which increases both the cost of therapy and also expose the patients to undue adverse effects. In our study, most medications were prescribed by their brand names and generic names were less used. This practice is known to increase the cost of therapy and should be discouraged. Use of generics usually provides flexibility to the dispensing pharmacist and generic drugs are less expensive than brand-name drugs[32].

Percentage of encounters with antibiotic prescribed was 6.31% and it indicates a very good practice of not unnecessarily using the antibiotics which increases the development of resistance. Percentage of encounters with an injection was found to be 1.89% which was also a positive prescribing attitude. Injections are very expensive compared to other dosage forms and require trained personnel for administration. Moreover, unhygienic use of injections can increase the risk of transmission of potentially serious pathogens, such as hepatitis, HIV/AIDS, and blood-borne diseases. Percentage of drugs prescribed from essential drug list was comparatively less (59.10%) which must be improved as more drugs must be prescribed from the NLEM. Drugs which are included in NLEM are cheaper than those drugs which are not included in the list which decreases the economic burden on the patients.

Tablets were the most commonly prescribed dosage form of drugs which were only distantly followed by creams and emollients. Emollients were underused in spite of the evidence of their steroid sparing effect i.e., their ability to reduce the need to use topical steroids[33].

Repeated and intermittent monitoring of drug usage pattern combined with regular feedback to the prescribers is essential. Measures to facilitate and encourage rational prescribing among the students and prescribers should be undertaken. Rational use of therapies available for psoriasis can minimize the systemic and cutaneous adverse effects associated with them. In order to derive the optimum benefit with least adverse effects, various factors have to be taken into consideration while prescribing, including the nature of the disease, age of the patient, site affected, and the pharmacology of these drugs such as potency and frequency of use[34,35].

Monitoring patterns of drug use at regular intervals is one of the many measures which is commonly undertaken to analyze the rationality of their use to offer feedback or suggestions to clinicians[36]. The irrational use of drugs is an important issue in the present day medical practice and due to which few consequences like development of resistance to antibiotics, improper treatment, adverse effects, side effects and increased economic burden on the patients. More number of pharmacoepidemiological studies may

provide an insight regarding the existing pattern of drug use and in planning appropriate treatment to ensure rational drug therapy.

Conclusion

Antioxidant, vitamin and mineral preparations were the most commonly prescribed category followed by antihistamines and topical corticosteroids. The study reveals inappropriately higher usage of multivitamin preparations, higher prevalence of poly pharmacy and relatively under usage of topical antibiotics and emollient preparations. Percentage of drugs prescribed from essential drug list was comparatively less which must be improved. Repeated and intermittent monitoring of drug usage pattern combined with regular feedback to the prescribers is essential. Measures to facilitate and encourage rational prescribing among the students and prescribers should be undertaken. Rational use of therapies available for psoriasis can minimize the systemic and cutaneous adverse effects associated with them. In order to derive the optimum benefit with least adverse effects, various factors have to be taken into consideration while prescribing, including the nature of the disease, age of the patient, site affected, and the pharmacology of these drugs such as potency and frequency of use.

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