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Original Research Article

## Drug utilization study in patients visiting dermatology outpatient department in tertiary care hospital

Salman H. Rizvi\*, Ujwala P. Gawali, Prashant S. Mishra

Department of Pharmacology, Dr Vaishampayan Memorial Government Medical College, Solapur, Maharashtra, India

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**\*Correspondence:**

Dr. Salman H. Rizvi,

Email: [salman\\_rizvi31@yahoo.com](mailto:salman_rizvi31@yahoo.com)

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### ABSTRACT

**Background:** With the surge of basic and clinical research activities, and subsequent recognition of newer dermatological disorders; dermatology is now considered to be one of the most important specialties in a healthcare setup. Dermatological problem in India manifests as primary and secondary cutaneous complaints. The aim of this study was to assess current prescribing practices among physicians for dermatology patients in tertiary care hospital.

**Methods:** A prospective, observational and cross-sectional study was conducted in Department of Pharmacology in collaboration with Department of Dermatology in a tertiary healthcare hospital. As per inclusion criteria, patients visiting Dermatology Outpatient department (OPD) from October 2018 to December 2018 were enrolled in the study.

**Results:** The average number of drugs per encounter was 4.9. 100% of the drugs were prescribed by their generic name and those prescribed from World Health Organization (WHO) list of essential medicines were 68.9%. Analysis of polypharmacy showed maximum 11 and minimum 2 drug was prescribed. Overall analysis of the drugs showed, the most common route of administration was orally. Antihistamines, antifungals and steroids constitute the major bulk of drug prescribed.

**Conclusions:** In our study, though polypharmacy was found but it was necessary as per the conditions. Anti-fungal, antihistamines and steroids were the most common drugs prescribed. Prescriptions with injections and steroids were less in the study population. All the drugs were prescribed by their generic name and most were present in the essential list of medicines. Use of Nonsteroidal anti-inflammatory drugs (NSAIDs) was higher in our study as compared to other studies.

**Keywords:** Antihistamines, Anti-fungal, Drug utilization study, Dermatology

### INTRODUCTION

With the surge of basic and clinical research activities, and the subsequent recognition of newer dermatological disorders; dermatology, venereology and leprology is now considered to be the one of the most important specialties in a healthcare setup. The skin, the largest organ of the body, epitomize for most of the underlying internal diseases. Dermatological conditions accounts for up to 2% of consultations in general practice worldwide.<sup>1</sup>

Dermatological problem in India manifests as primary and secondary cutaneous complaints.<sup>2</sup>

Skin diseases contributed 1.79% to the global burden of disease measured in disability-adjusted life years (DALYs). Skin diseases arranged in order of decreasing global DALYs are as follows: dermatitis, acne vulgaris, psoriasis, urticaria, viral skin diseases, fungal skin diseases, scabies, melanoma, pyoderma, cellulitis, keratinocyte carcinoma, decubitus ulcer, and alopecia areata.<sup>3</sup>

Skin disease are also major causes of morbidity due to the presence of physical symptoms as they can cause anxiety, depression, anger and embarrassment, which lead to social isolation and absenteeism at work and school. They are extremely frequent and may be affect quality of life.<sup>4</sup>

The most crucial phase of pharmacotherapy of any disease is its appropriate diagnosis followed by rational prescribing of drugs. Irrational polypharmacy accounts for 28% of adverse drug reactions and also stimulate inappropriate patient demand leading to reduced access and attendance rates due to medicine stock outs and loss of patient confidence in health.<sup>5</sup> It has been estimated that 50% or more medicine expenditure is being wasted through irrational prescribing, dispensing and patient use of medicine.<sup>6</sup>

World Health Organization (WHO) convened a conference on “Rational drug use” in Nairobi in 1985 defined rational drug use as follows: The rational use of drug requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period and at the lowest cost to them and their community.<sup>7</sup> Along with this, competent and qualified pharmacist should be trained for dispensing and for giving proper instruction to the patients on safe and effective usage of drugs.<sup>8</sup>

Rational medication prescribing dictates that the fewest medications be used achieve the therapeutic goals as determined by clinician and patients. Multiple medications not only add to the cost and complexity of therapeutic regimens, but also play patients at greater risk for adverse drug reactions and drug-drug interactions.<sup>9</sup>

Prescription pattern studies identified problems before a drug is dispensed and greatly improve patient care.<sup>10</sup>

Hence, the current study evaluated the prescription pattern of dermatology medications and recent trends in dermatology polypharmacy at a tertiary health care centre.

The aim of the study was to assess and evaluate current prescribing pattern for patients with skin diseases in tertiary care hospital. The objectives were to analyse the distribution of disease and demographic pattern of patients visiting dermatological Outpatient department (OPD), to analyse the distribution of drugs prescribed according to group of drugs, to evaluate the occurrence of polypharmacy, to analyse the distribution of drugs according to dosage forms and to calculate the percentage of drugs following guidelines of WHO prescription indicators.

## **METHODS**

This prospective and observational study was carried out in department of pharmacology in collaboration with department of dermatology of a tertiary healthcare teaching institute in Maharashtra.

### ***Study design***

It was a hospital based prospective, cross-sectional and observational study.

### ***Study period***

The study was conducted over a period of 3 months from October 2018 to December 2018 at Shri Chhatrapati Shivaji Maharaj Sarvopchar Rughalay, Solapur, Maharashtra.

### ***Sampling***

A total of 360 prescriptions were selected.

### ***Inclusion criteria***

All patients of either sex, and above the age of 18 years visiting dermatology OPD during the above-mentioned study duration were enrolled in the study.

### ***Exclusion criteria***

Patients below the age of 18 years, those unwilling to participate in the study and all Inpatient department (IPD) patients.

### ***Methodology***

The sampling frame was fixed as ten prescriptions/day, three days/week during the study period. In case of OPD holidays or non-fulfilment of target of ten prescriptions/day, the prescriptions of that day was done on next working day. Daily sampling must have at least one prescription of both genders.

Patients' prescription records were used to collect data on most recent prescribed medication.

The data was collected and analysed included demographic information (age and sex), diagnosis, drugs categorized into different classes and dosage form, prevalence of polypharmacy, percentages of fixed-dose combinations (FDCs), percentage of drugs following guidelines of “WHO prescription indicators”.<sup>11</sup>

### ***Ethical approval***

It was obtaining from the institutional ethics committee. Patients were given prior information.

### ***Statistical analysis***

Data was entered into Microsoft excel, 2013. Descriptive statistics such as frequencies and percentages were calculated for categorical variables.

## RESULTS

The present study was an observational study conducted in Department of Dermatology of a tertiary care teaching hospital after obtaining permission from the Institutional ethics committee (IEC) and Department of Dermatology. In this study, prescription of 360 patients attending the OPD of Department of Dermatology over a period of 3 months were assessed.

### *Distribution of patients according to gender*

Out of the total 360 patients, 204 (56.7%) were males and 156 (43.3%) were females (Table 1).

**Table 1: Distribution according to gender.**

Gender	No. of patient	Percentage
Male	204	56.7
Female	156	43.3

**Table 2: Distribution according to age group.**

Age in years	No. of patient	Percentage
18-30	69	19.2
31-50	129	35.8
51-70	84	23.3
>71	78	21.7

### *Distribution of patients according to age group*

In this study, patients were divided into four groups based on different age. Out of 360 patients 69 (19.2%) were from 18-30 years followed by 129 (35.8%) were from 31-50 years, 84 (23.3%) were from 51-70 years and 78 (21.7%) from >71 years respectively (Table 2).

### *Distribution of patients according to disease*

Out of the total 360 prescriptions seen, 29.2% were diagnosed with dermatophytosis, 21.1% were diagnosed with eczema and 13.9% were diagnosed with acne, 9.4% were diagnosed with pyoderma, 6.1% were diagnosed with urticaria, 4.7% were diagnosed with psoriasis, 4.1% were diagnosed with photodermatitis, 3.9% were diagnosed with scabies, 2.8% were diagnosed with alopecia, 4.7% were diagnosed with others (Table 3).

### *Distribution of drugs according to class of drugs*

Out of the total 360 prescriptions, 21.5% were antihistamine, 19.1% were anti-fungal, 12.3% were steroids, 12% were NSAIDs, 10.6% were antacids, 8.6% were vitamins and mineral supplements, 7.9% were anti-bacterial, 3.4% with anti-parasitic and 4.6% with others (Table 3).

**Table 3: Distribution according to disease.**

Disease distribution	No. of patient	Percentage
Dermatophytosis	105	29.2
Eczema	76	21.1
Acne	50	13.9
Pyoderma	34	9.4
Urticaria	22	6.1
Psoriasis	17	4.7
Photodermatitis	15	4.1
Scabies	14	3.9
Alopecia	10	2.8
Others	17	4.7
Total	360	

**Table 4: Distribution of patients according to class of drugs.**

Class of drug	Percentage
Antihistamines	21.5
Anti-fungal	19.1
Steroid	12.3
NSAIDs	12
Antacids	10.6
Vitamins and mineral supplements	8.6
Anti-bacterial	7.9
Others	4.6
Anti-parasitic	3.4

**Table 5: Distribution of drugs prescribed per prescription.**

No. of drugs prescribed	No. of prescription	Percentage
2	36	10
3	33	9.2
4	93	25.8
5	87	24.2
6	45	12.5
7	42	11.7
8	12	3.3
9	6	1.7
10	3	0.8
11	3	0.8

### *Number of drugs prescribed per prescription*

Number of drugs per prescription varied from 2 to 11 with average of 4.9 drugs per prescription. Most of them, consisting of 180 prescriptions (50%) had 4 to 5 drugs, followed 87 prescriptions (24.2%) having 6 to 7 drugs (Table 4).

**Distribution of drugs according to dosage forms.**

Out of all the drugs prescribed in 360 prescriptions, 54.2% were tablets, 18.6% were creams, 14.7% were capsules and 1.7% were syrups (Table 5).

**Table 6: Distribution drugs according to dosage form.**

Dosage form	No	Percentage
Tablets	1109	63.2
Creams	358	20.4
Capsules	258	14.7
Syrups	30	1.7

**Table 7: WHO core drug use indicators - prescribing indicators.<sup>11</sup>**

WHO core drug use indicators- prescribing indicators	
Average number of drugs per prescription	4.9%
Percentage of drugs prescribed by generic name	100%
Percentage of encounters with an antibiotic prescribed	7.9%
Percentage of encounters with a steroid prescribed	12.3%
Percentage of encounters with an injection prescribed	0%
Percentage of prescribed drugs featuring in WHO essential drugs list <sup>12</sup>	68.9%
Percentage of drugs prescribed by FDCs	10.8%

**WHO/INRUD rational drug-use indicators**

The drug usage was assessed as per WHO core drug use indicators, Prescribing indicators revealed that out of the total drugs prescribed, 100% were prescribed by generic names and about 68.9% of the drugs were prescribed from the WHO essential drug list. Overall, the average number of drugs per encounter was 4.9. The proportions of encounters with at least one antibiotic prescribed was 7.9%. Present study shows that total of 10.8% drugs prescribed as fixed drug combination. 12.3% of the total prescriptions encountered with a steroid prescribed while injections were found to be prescribed in 0 encounters. 68.9% drugs prescribed were WHO essential drug list 2017 (Table 6).<sup>12</sup>

**DISCUSSION**

The present study was an observational study conducted in Department of Dermatology of a tertiary care teaching hospital after obtaining permission from the IEC and Department of Dermatology. In this study, prescription of 360 patients attending the OPD of Department of Dermatology over a period of 3 months were assessed.

In the present study, males, 56.7% were more than females, 43.3%, which was similar to studies conducted by Khobragade et al, males 58.7% and females 41.3%, but was different from the study conducted by Kumar et al, males 47.1% and females 52.9%.<sup>14,15</sup>

In the present study, more than 30% of the patients belonged to the age group of 31 to 50 years followed by 23.3% in the age group of 51 to 70 years and 19.2% in the age group of less than 30 year, which was similar to the study conducted by both, Khobragade et al and Kumar et al.<sup>14,15</sup>

The findings of the present study suggested that dermatophytosis was the most common disease of skin at out institute, followed by eczema and acne, which was similar to study conducted by Khobragade et al, but was slightly different from the study conducted by Anuj Kumar et al, in which, the order was reversed as acne being most common followed by eczema and lastly dermatophytosis comprising the top 3 spots.<sup>14,15</sup>

The present study findings suggested that anti-histamines was the most common class of drugs prescribed, which was similar to the study conducted by Kumar et al, but different than the study conducted by Khobragade et al where anti-fungals were the most common drug prescribed.<sup>14,15</sup>

The notable difference was in the prescription of anti-fungal, comprising of 19.1% in the present study but 35% in the study conducted by Khobragade et al.<sup>14</sup> And NSAIDs being 12% in present study but only 0.3% in study conducted by Khobragade et al, which could be the reason to increase in prescriptions of antacids in current studies when compared to study conducted by Khobragade et al.<sup>14</sup>

The average number of drugs / prescription in current study were 4.9 drugs, which was similar to studies conducted by Khobragade et al (3.9) and Kumar et al (5.1).<sup>14,15</sup>

The current study findings suggested that 63.2% of the drugs were prescribed in the form of tablets, 20.4% were prescribed in the form of creams, 14.7% was in the form of capsules and 1.7% were in the form of syrups, which was similar to the study conducted by Khobragade et al, having 55% in the form of tablets, 23.1% in creams and 6.4% in the form of capsules and Kumar et al, having 35% in the form of tablets, 21% in creams and 4.1% in the form of capsules.<sup>14,15</sup>

Under WHO core drug use indicators, in the present study, 100% of the drugs were prescribed by generic names, which was 89.3% in study conducted by Khobragade et al, and just 2.1% in the study by Mukherjee et al.<sup>12,14,16</sup> Whereas only 7.9% of the encounters had an antibiotic prescribed in present study, compared to 23.1% in study by Khobragade et al and 34.8% by Mukherjee et al.<sup>14,16</sup> Percentage of encounters having at least one steroid prescribed were 12.3% in the present study, was 11.9% in study conducted by Khobragade et al and 51.8% in study

conducted by Mukherjee et al.<sup>14,16</sup> Percentage of encounters having at least one injectable prescribed were 0% in present study, was 3.1% in study conducted by Khobragade et al and 11.9% in study conducted by Mukherjee et al.<sup>14,16</sup> Percentage of prescribed drugs featuring in WHO essential drugs list were 68.9% in present study, was 90.3% in study conducted by Khobragade et al.<sup>12,14</sup> Percentage of drugs prescribed by FDCs were 10.8% in current study and 9.75% in study conducted by Mukherjee et al.<sup>16</sup>

### Limitations

There exists some limitation to our study. The study was conducted in a tertiary care hospital located in urban area which cannot reflect the health care facilities available to all health centres particularly in the rural areas. This research was limited by size and site of the study population, a larger population size could give a better result and more reliable outcomes which could be generalized for the entire community.

### CONCLUSION

Increasing dermatological prescribing has necessitated assessment of their rational usage. In our study, though polypharmacy was found but it was necessary as per the condition of the patients and mainly prescribed drugs were for common disorders found in the study population. Anti-fungal, antihistamines and steroids were the most common drugs prescribed in our study population and as such no deviations in the prescription of the drugs were found which can be harmful to the patients. Prescriptions encountered with injections and steroids were less which is an encouraging sign and need to be promoted. All the drugs were prescribed by their generic name and most were present in the essential list of medicines, which advocates awareness among prescribers regarding WHO policies for generic prescribing. Use of NSAIDs was higher in our study as compared to other studies. Moreover, promoting 'WHO rational drug use policy' is further recommended for effective healthcare management.

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