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Original Research Article

Study of Drug Utilization Pattern and Use of WHO Core Indicators in Dermatology Department at Tertiary Care Teaching Hospital

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Abstract

Background: Skin diseases are widespread and contribute significantly to the global disease burden, ranking as the 18th leading cause of health burden worldwide. Periodic prescription audit through drug utilization studies is essential to evaluate the rationality of treatment and minimize the financial burden on patients.

Objectives: This study was designed to assess the prevalence of various skin disorders and analyse drug use patterns using WHO drug use indicators at the dermatology outpatient department (OPD) of a tertiary care teaching hospital.

Materials and Methods: A prospective, observational study was carried out in the Department of Pharmacology at a tertiary care teaching hospital in Gujarat, India. Over a period of one month, data from 103 patients attending the dermatology OPD were collected in a Case Record Form (CRF) and analyzed using descriptive statistics and WHO core indicators.

Results: Among the 103 patients, a slight male predominance was observed (male-to-female ratio of 1.14:1), with the 31–45year age group constituting the largest proportion (27.18%). Tinea was the most common diagnosis (39.80%), followed by eczema (9.70%) and scabies (5.82%). A total of 336 drugs were prescribed, with antihistamines being the most frequent therapeutic class (32.44%), followed by antifungals (22.61%). The oral route was the primary route of administration (65.47%), and tablets were the most common dosage form (61.01%). The average number of drugs per prescription was 3.26. Notably, 99.09% of drugs were prescribed by generic name, but only 11.90% were from the National/WHO Essential Medicines List.

Conclusion: The study demonstrates that tinea infections predominate and antihistamines are widely used in dermatological practice. While high generic prescribing reflects a positive trend toward cost-effective therapy, the low inclusion of essential medicines highlights a need for further interventions to improve adherence to WHO guidelines and optimize patient care.

Keywords: Dermatology, Drug utilization study, WHO drug use indicators, Essential drug list, Antihistaminic.
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Introduction

Skin diseases are widespread and contribute significantly to the global disease burden. In fact, skin conditions rank as the 18th leading cause of health burden worldwide, and in 2010, they were the fourth leading cause of non-fatal health burden globally. [1] Dermatological problem in India manifests as primary and secondary cutaneous complaints. [2] Skin is the part of integumentary system that constitutes the largest organ of human body and thus it is exposed to injury by various extrinsic factors such as environmental, chemical, infectious agents as well as intrinsic factors such as metabolic, genetic and immunological. In addition to this, many systemic diseases are also identified by their dermatological manifestations thus it is said metaphorically as a mirror to various internal diseases [3] The skin disorders have serious detrimental effect on quality of life of the general population by increasing the suffering in terms of physical, social, psychological as well as it increases financial burden as most of the skin diseases are chronic and requires longer duration of treatment [3] Different classes of drugs and combinational products are available in dermatology, which are generally used in the treatment of skin diseases which are usually based upon the prescriber's knowledge, clinical experience and choice. [4] Prescriptions are

detailed instructions about a patient's course of treatment that is provided in writing by a medical professional. Hence, prescription not only manifests the knowledge of medical practitioner but also perspective toward the patient, considering his or her economic and social condition.

The study which incorporates components such as availability of drugs, rationality of prescription, cost per prescription, and affordability is called drug utilization study. [5] Drug use evaluation is a system of ongoing, systematic, criteria-based drug evaluation ensuring appropriate drug usage. [2]

DUE is a systematic quality improvement activity. This helps to improve the quality and cost effectiveness of drug use and helps to improve the patient care. DUE can be applied to a drug, therapeutic class, disease state or a condition, a drug use process or specific outcome.

DUE helps in identifying the problems in drug use, optimizing drug therapy etc. [6] Drug use evaluation conducted across different regions of India in various disciplines of medicine have documented indiscriminate antibiotic usage, low generic prescribing, low selection and utilization of essential drug, thus raising the concern regarding rational use of drugs. [7-12]

The present study was thus designed to assess the prevalence of various skin disorders and monitor, evaluate and analyze the drug use pattern using WHO drug use indicators at Out Patient Department of Dermatology of a tertiary care teaching hospital.

Material & Method

A prospective, observational study was carried out in Department of Pharmacology of tertiary care teaching hospital, Gujarat, India after obtaining permission from Institutional Ethics Committee.

The study was conducted for one month. A total of 103 patients, who fulfilled the inclusion criteria while those who could not met inclusion criteria were excluded from study.

Inclusion criteria: Patients attending Dermatology OPD.

Exclusion criteria: Patients of leprosy, STD and admitted in Dermatology ward.

During the study period the investigator visited the Dermatology OPD daily. Case records of OPD patients that met the inclusion criteria were recorded in the Case Record Form (CRF) consisted of demographic profile (Name initials, Age, Gender), record information (OPD number), the chief complaints for which the patient was visited OPD, the diagnosis and data regarding prescribing pattern of drugs such as Name of the drug (Generic/Brand), Dose, Dose frequency, Route of administration. Collected data were analyzed using WHO core indicators. On completion of data collection for the study period all necessary information was entered in MS EXCEL 2019 and analysis was done by using descriptive statistics.

Result

A total of 103 patients were included in the study. A total of 336 drugs were prescribed in these prescriptions. Among the study population, 55 patients were male and 48 were female, giving a male-to-female ratio of 1.14:1. The 31–45 year age group constituted the largest proportion of patients (27.18%), followed by 46–60 years (23.30%) and 16–30 years (20.38%). Patients aged 0–15 years accounted for 16.50%, while 12.62% were above 60 years. (Table 1) Most patients had education up to the secondary level (42.71%), followed by students (20.38%), while 19.41% were uneducated. Only 3.88% were graduates, and 13.59% had no documented educational status. (Table 2) The majority of patients were from urban areas (91.26%), with 8.73% belonging to rural areas.

Table 1: Age wise distribution

Age distribution	No. of patients	Percentage
0-15 yrs	17	16.50
16-30 yrs	21	20.38
31-45 yrs	28	27.18
46-60 yrs	24	23.30
>60 yrs	13	12.62

Table 2: Education Wise Distribution

Education level	No. of patients	Percentage
Uneducated	20	19.41
Students	21	20.38
Till secondary education	44	42.71
Graduated	4	3.88
Not mentioned	14	13.59

Table 3: Pattern of dermatological diseases

Diagnosis	No. of patients	Percentage
Tinea	41	39.80
Eczema	10	9.70
Scabies	6	5.82
Acne vulgaris	6	5.82
Lichen planus	3	2.91
photodermatitis	3	2.91
Others	34	33

Among the diagnosed dermatological conditions, tinea was the most common diagnosis (39.80%). This was followed by eczema (9.70%), scabies (5.82%), and acne vulgaris (5.82%). Lichen planus and photodermatitis each accounted for 2.91% of cases, while other dermatological conditions like fixed drug eruption, contact dermatitis, psoriasis and others, together constituted 33% of the cases. (Table-3) In Tinea majority of patient had T. corporis followed by T. cruris.

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

Class of drug	No. of drugs	Percentage
Antihistaminic	109	32.44
Antifungal	76	22.61
Steroid and combinations	42	12.5
Antibiotics	32	9.52
Vitamins	27	8.03
Antacids	11	3.27
Antiparasitic	6	1.78
Antiviral	1	0.29
Others	32	9.52

Analysis of drug utilization according to therapeutic class showed that antihistamines were the most commonly prescribed drugs (32.44%), followed by antifungal agents (22.61%). Steroids and their combinations accounted for 12.5% of prescriptions, whereas antibiotics contributed to 9.52% of the total drugs prescribed. Other medications included vitamins (8.03%), antacids (3.27%), antiparasitic drugs (1.78%), and antiviral agents (0.29%), with 9.52% belonging to other drug categories. (Table-4)

Table 5: Dosage form of drugs:

Dosage forms	No. of drugs	Percentage
Tablets	205	61.01
Cream	88	26.19
Capsule	11	3.27
Topical Solution	10	2.97
Lotion	9	2.67
Gel	6	1.78
Syrup	4	1.19
Ointment	3	0.89

Regarding the prescribing pattern, the oral route was the most commonly used route of administration (65.47%), while 34.52% of drugs were administered topically. In terms of dosage forms, tablets constituted the majority (61.01%), followed by creams (26.19%), whereas capsules, topical solutions, lotions, gels, syrups, and ointments were prescribed less frequently. (Table 5)

Table 6: Distribution of drugs prescribes per prescription:

No. of drug prescribed	No. of prescription	Percentage
1	7	6.79
2	20	19.41
3	27	26.21
4	38	36.89
5	10	9.70
6	1	0.97

The majority of prescriptions contained four drugs (36.89%), followed by three drugs (26.21%) and two drugs (19.41%). Five-drug prescriptions accounted for 9.70%, while single-drug prescriptions were observed in 6.79% of cases, and six-drug prescriptions in 0.97%.(Table 6) Table 7 shows the analysis of drugs prescribed in Dermatology OPD according to WHO core indicators.

Table 7: WHO core drug use indicators - Prescribing Indicators

Average number of drugs per prescription	**3.26**
Percentage of drugs prescribed by generic name	99.09%
Percentage of drugs prescribed from the National/WHO Essential Medicines List	11.90%
Percentage of prescriptions containing antibiotics	9.52%
Percentage of prescriptions containing corticosteroids	12.5%

Discussion

In the present drug utilization study conducted in the dermatology department, a slight male predominance (male 58%, female 42%) was observed. This is consistent with several Indian studies such as Rizvi S H et al. (male 56.7%) [13], Baig MS et al. (male 54.6%) [14], and Prasath D et al. (male 55%) [15]. Conversely, Yadav A et al. [16] reported a female predominance (58.4%), reflecting regional and sociocultural variations in healthcare-seeking behavior. These demographic trends indicate that dermatological conditions are prevalent across genders but may differ according to healthcare access, societal norms, and awareness of skin disorders.

The age distribution in our study showed that most patients belonged to the 31–45-year age group, which is in agreement with Rizvi et al. [13], Baig MS et al. [14], and Mer RJ et al. [17]. This highlights that dermatological conditions commonly affect young and middle-aged adults, who are socially and economically active, and therefore more likely to seek medical care for visible skin disorders. Prasath D et al. [15] also observed a similar pattern, with the 31–40-year age group being most affected, indicating a national trend across diverse regions of India.

Regarding the pattern of dermatological diseases, tinea infections emerged as the most common condition in our study (39.8%), followed by eczema (9.7%), scabies (5.8%), and acne vulgaris (5.8%). This finding aligns with Naik P S et al. [18] and Mer RJ et al. [17], who reported tinea infections as the predominant dermatological disorder in their outpatient populations. Rizvi et al. [13] and Prasath D et al. [15] also reported dermatophytosis as the leading disorder (29.2% and 31%, respectively), followed by eczema and pyoderma, suggesting a consistent regional pattern. Baig MS et al. [14] similarly reported tinea as the most prevalent condition, followed by acne and eczema, emphasizing that superficial fungal infections dominate outpatient dermatology practice in India.

In terms of drug utilization, antihistaminic were the most commonly prescribed drugs in our study (32.44%), followed by antifungals (22.61%), corticosteroids (12.5%), and antibiotics (9.52%). This is consistent with Prasath D et al. [15] (antihistamines 36.4%) and Balakrishnan A et al. [19] (penicillin and cephalosporins 32% each), reflecting a national trend in dermatology prescribing. Mer et al. [17] and Naik PS et al. [18] observed antifungals as the leading class (31–39%), reflecting slight local variations in dermatophytosis prevalence. Steroid usage in our study was comparable to Baig MS et al. [14], showing the widespread use of topical corticosteroids for inflammatory skin conditions.

The route of administration in our study showed oral medications (65.47%) over topical formulations (34.52%), with tablets being the most common dosage form (61.01%). This trend aligns with Rizvi et al. [13] (oral 54.2%), Prasath D et al. [15] (oral 48.4%), and Balakrishnan A et al. [19] (oral 80%). Some studies, such as Baig MS et al. [14], reported higher topical prescription rates (71.67%), indicating that local disease characteristics and patient compliance influence the choice of therapy. Overall, oral therapy was preferred for systemic involvement or widespread dermatological conditions, whereas topical therapy was reserved for localized or mild presentations.

Polypharmacy in our study was observed in 36.89% of prescriptions containing four drugs, with an average of 3.26 drugs per prescription. This is comparable to Mer RJ et al. [17] (3.68), Prasath D et al. [15] (3.59), and Rizvi SH et al. [13] (4.9), indicating moderate polypharmacy across Indian dermatology OPDs. Naik PS

et al. [18] reported slightly lower averages (2.5–3.5), reflecting differences in prescription habits, disease burden, and physician preferences. Moderate polypharmacy necessitates careful monitoring to avoid potential drug drug interactions and adverse effects.

The adherence to WHO core prescribing indicators in our study showed that 99.09% of drugs were prescribed by generic name, though only 11.9% were from the National/WHO Essential Medicines List (NLEM/EML). Comparatively, Prasath D et al. [15] reported 36.5% drugs from NLEM, Mer RJet

al. [17] observed only 15.43% from WHO EML, and Naik P S et al. [18] reported 74% from NLEM. Generic prescribing in our study was higher than most regional studies, reflecting a positive trend toward cost-effective therapy. Antibiotics were included in 9.52% of encounters, lower than Baig MS et al. [14] (17.7%) and Prasath V et al. [15] (21.8%), indicating rational use of antimicrobial agents.

The duration of therapy in our study mostly did not exceed one week, which aligns with Balakrishnan A et al. [19] and Rizvi SH et al. [13], particularly for secondary pyoderma and superficial fungal infections. Short-course therapy is consistent with contemporary dermatology guidelines, aiming to minimize side effects, reduce microbial resistance, and improve patient adherence. Fixed-dose combinations were limited (≤5%), similar to Naik P S et al. [18], suggesting careful use to prevent unnecessary polypharmacy and cost burden.

Cost-effectiveness and rational prescribing remain key challenges. High generic prescribing in our study, compared with other regional studies, suggests that physicians are aware of financial implications for patients. However, low inclusion of essential medicines highlights the need for further interventions to improve adherence to NLEM and WHO guidelines, which could optimize therapeutic outcomes and reduce healthcare expenditure.

Conclusion

Our study demonstrates trends consistent with other Indian dermatology drug utilization studies: tinea infections predominate, antihistamines and antifungals are widely prescribed, oral medications are favored, and polypharmacy is moderate.

Minor variations in disease prevalence, drug class selection, and prescription indicators across studies reflect regional demographics, climate, and physician practices. These findings reinforce the importance of rational prescribing, adherence to WHO core indicators, and increased use of essential medicines to optimize patient care and reduce healthcare costs.

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