Research Article

A Prospective Observational Study on the Prevalence and Prescription pattern with tropical and systemic formulation in dermatological disease in a Tertiary Care Hospital

Jeevajothi. M[1]*, Manivannan. E[2], Hema Chandran .B[1], Jonah Raj Singh. R[1], Hashem. A[1], Arul. B[1]

[1]Department of Pharmacy Practice, Vinayaka Mission's College of Pharmacy, Vinayaka Mission's Research Foundation (Deemed to be University), Salem – 636008, Tamil Nadu, India, E-mail: [1]jeevajothipharma10@gmail.com
[2]Department of Pharmacology, Vinayaka Mission's Kirupananda Variyar Medical College and Hospitals, Vinayaka Mission's Research Foundation (Deemed to be University), Salem, Tamil Nadu, India.

Abstract

Background: Infectious dermatological diseases are commonly encountered in clinical practice and may require antimicrobial, antifungal, topical, or systemic therapies. Variations in dosage forms and prices among available brands may influence treatment costs and contribute to the economic burden on patients. Therefore, evaluating prescribing patterns and cost variations is essential for promoting rational, effective, and affordable treatment. Methods: A prospective observational study was conducted in the Department of Dermatology at a tertiary care hospital in Salem, Tamil Nadu, from January 2025 to June 2025. A total of 100 patients with dermatological disorders were included based on predefined inclusion and exclusion criteria. Demographic characteristics, prescribed medications, dosage forms, pharmacological drug classes, and medication costs were recorded. Cost variation was assessed by comparing the minimum and maximum prices of different brands of commonly prescribed dermatological medicines. Results: Among the study population, patients aged 48–57 years constituted the largest age group (45%). Topical preparations were the most frequently prescribed dosage forms (50%), followed by solid preparations (45%) and parenteral preparations (5%). Antihistamines constituted the most frequently prescribed drug class (43%), followed by corticosteroids (30%), antibiotics (19%) and antifungals (8%). Considerable variation was observed in the prices of the commonly prescribed dermatological medicines. Levocetirizine showed the highest percentage cost variation among the analysed medicines (383.33%), whereas Betnovate showed the lowest cost variation (20.02%). Conclusion: The study demonstrated considerable variation in prescribing patterns, dosage forms, and prices of commonly prescribed dermatological medicines. Identifying price variations and selecting appropriate and affordable brands may promote rational prescribing and help reduce the financial burden associated with dermatological treatment.

Keywords: Infectious dermatological diseases, Dermatology, Prescribing pattern, Dosage forms, Cost variation, antimicrobial drugs, Rational drug use.

1. Introduction

Skin is the largest organ in the body. Skin diseases are one of the biggest contributors to non-fatal disease burden and are highly prevalent worldwide, being the 18th overall health impact in the economy (1,2). Dermatological problems account for around 2% of Outpatient Department (OPD) consultations. (3) Psoriatic diseases, pruritic disorders, Bacterial diseases, Lichen disorders, fungal infections and alopecia are common skin diseases seen in India (4,5). Treatment of such conditions often requires antibiotics, antifungals, and corticosteroids. Antihistamines, vitamins, and analgesics, and the choice of which to use, are frequently at the discretion of the clinician. (6).

The World Health Organisation defines rational drug use as "the use of essential, appropriate drugs in the right quantities at the right time, and for the lowest cost to the individual and the community. est cost to the individual and the community. (7,8). The goals of rational drug use are to lower treatment cost while maintaining therapeutic effectiveness, to minimise drug side effects and interactions, to enhance quality of care and to minimise non-adherence (9,10). There are, however. irrational prescribing practices like polypharmacy, inappropriate drug selection, and unnecessary brand prescribing, which are common worldwide (11). Lack of awareness, availability of medicines over the counter, misleading promotion and financial incentives are factors that contribute to irrational drug use(12,13).

With substantial out-of-pocket health expenditure in India, economic evaluation has become an integral part of healthcare research. especially in developing countries.(14,15). There are four main approaches to economic evaluation: cost-analysis variation(16). India is home to one of the world's largest pharmaceutical markets. With many branded and generic versions of the same drug being available, this results in a wide variation in drug prices (17). Such variations may create challenges for physicians and patients, particularly in the long-term management of chronic dermatological conditions (18).

The pharmacology of the active substance and the dosage form of delivery is also significant for therapeutic effect. Topical dos. age for.ms including creams, ointments, gels, lotions, and solutions have been developed to maximise absorption into local tissues and minimise systemic absorption and its effects (19). With the increasing cost of dermatological treatments, it is important to assess the costs of various brands and formulations to promote rational prescribing and optimise the use of healthcare resources (20).

The present study aims to evaluate the prescribing patterns of various dosage forms used in dermatology and analyse the cost variations among commonly prescribed dermatological medicines. This helps identify price differences among various brands and formulations, supporting rational prescribing and reducing the financial burden on patients.

2. Materials And Methodology

The observational study was conducted in collaboration with the Dermatology Department of a tertiary care hospital. In Vinayaka Mission's Kirupandha Variyar Medical College and Hospital in Salem for the duration of January 2025 to June 2025. Institutional Ethics Committee (Tracking No. VMKVMC&H./IEC/25/236) approved the study.

The sample size was determined based on the inclusion and exclusion criteria. The total population size (N) was assumed to be 120, with a margin of error (e) of 0.05. Based on these parameters, the calculated sample size was 92 participants (21,22). The sample size was calculated using Slovin's formula. Based on the formula, 110 participants were selected; based on the inclusion and exclusion criteria, a total of 100 patients were selected for the study.

The study included male and female patients attending the Inpatient Department (IPD) with dermatological diseases who fulfilled the predefined inclusion and exclusion criteria. Adult patients aged 18 years and above, including those with dermatological disorders and other comorbid conditions, were eligible for participation. Patients were included in this study only if they were able to communicate effectively, understand the study procedures, and provide the required information for data collection.

The following criteria were used to exclude patients from this study: Patients who were unconscious, critically ill, or too disabled to be interviewed were not included in the study. In addition, patients undergoing treatment with other systems of medicine, including Ayurveda, Unani, and Homoeopathy, were also excluded. Patients who had experienced adverse effects due to drug overdose, suicidal thoughts, substance abuse, or accidental drug use were also excluded from the study.

IBM SPSS Statistics (Version 28.0) was used to analyse the data. The study results were summarised and presented using descriptive statistics. Categorical variables were presented as frequencies and percentages, while continuous data were analysed and presented using the Mean and Standard Deviation (SD). Pearson's chi-square test was used to assess the association between baseline characteristics, including age, gender, years of experience, and educational background. A p-value of ≤ 0.05 was considered statistically significant.

2.1 Cost analysis of dermatological drugs

Cost analysis and variation are calculated by following the formula. (23)

$$\frac{\textit{The Price of the most expensive brand – The price of the least expensive brand} \times 100}{\textit{The price of the least expensive brand}}$$

3. Results

The age distribution of the study population showed that the largest proportion of patients (45%) were aged 48–57 years, followed by 25% of patients in the 58–60 years age group. Conversely, younger age groups accounted for a smaller proportion of the sample, with 4% of patients aged 18–27 years and 4% aged 28–37 years. These results suggest that older people, particularly those over 50 years of age, had a higher prevalence of dermatological conditions.

3.1 Infectious disease from the prescription

The disease-wise distribution showed that fungal diseases accounted for 5%, bacterial diseases for 3%, eczema-related diseases for 17%, psoriatic diseases for 14%, allergic and contact dermatitis for 21%, pruritic disorders for 6%, urticarial diseases for 5%, lichen disorders for 6%, keratinisation disorders for 3%, pigmentary disorders for 9%, autoimmune bullous diseases for 6%, autoimmune connective-tissue diseases for 2%, and drug-related hypersensitivity disorders for 3%.

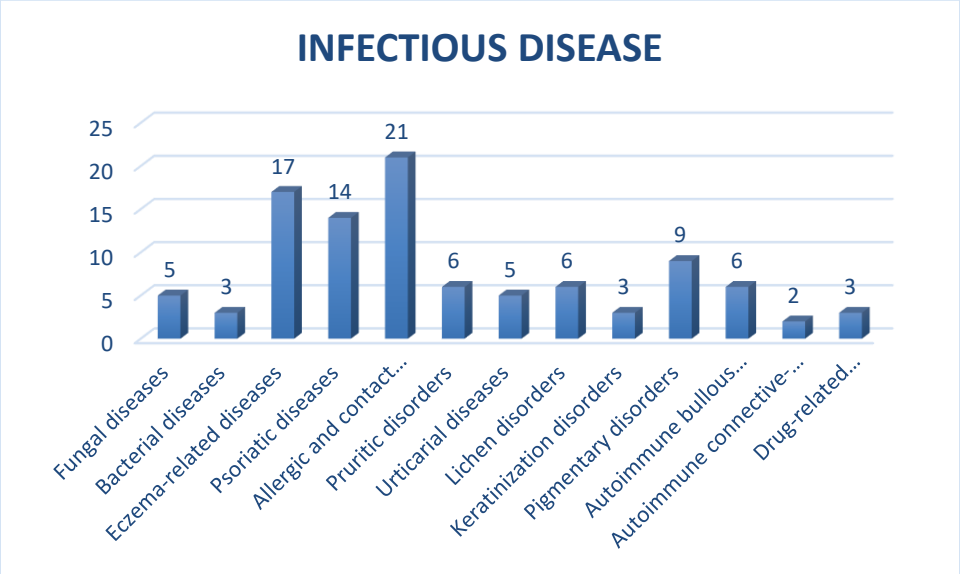


Figure No.1: Infectious Disease from the Prescription

3.2 Prescribed dosage forms

The analysis of 100 prescriptions showed that the most frequently prescribed dosage forms were topical preparations (50%), followed by solid dosage forms (45%). Parenteral dosage forms accounted for the lowest proportion (5%).

3.3 Various classes of drugs

Among the prescribed drugs, antihistamines constituted the highest proportion at 43%. Corticosteroids accounted for 30% of the prescribed drugs, making them the second most used class. Antibiotics accounted for 19% of the prescriptions. Antifungal agents accounted for the lowest proportion, at 8%. Overall, antihistamines and corticosteroids together comprised 73% of the prescribed drugs. These findings indicate that antihistamines and corticosteroids were the predominant therapeutic classes prescribed in the study population.

3.4 Prescribed drugs in various dosage forms

Analysis of the different dosage forms revealed that Tab. CPM, an antihistamine, was the most frequently prescribed drug (18%), followed by Tenovate ointment, a corticosteroid, and Soframycin gel, an antibiotic, each accounting for 16% of prescriptions. Momate cream, a corticosteroid, was prescribed less frequently (8%). Cap. Syntran, an antifungal, and Inj. Dexamethasone, a corticosteroid, accounted for 11% each, while Fucibet cream and Diprobate lotion, both corticosteroid preparations, accounted for 10%.

3.5 Cost analysis of dermatological drugs

Table No. 1: Cost Analysis of different classes of drugs

Class	Drug	Dose	Minimum Cost	Maximum Cost	Differnce	Percentage of cost variation%
Corticosteroids	Oint.Betamethasone	20g	18.50	46.00	27.5	148.65
	Oint. Tenovate	15g	82.00	123.94	41.94	51.15
	T.Prednisolone	5mg	12.50	35.00	22.50	180
	Momate F Ointment	15g	229.00	369.50	140.50	61.35
	Betnovate Ointment	20g	18.63	22.36	3.73	20.02
	Fucibet Cream	15g	220.00	285.00	65.00	29.55
	Inj.Dexamethasone	2ml	5.50	24.00	18.50	336.36
	Momate cream	20g	175.22	330.00	154.78	88.34
	Hydrocortisone Cream	15g	18.00	55.00	37.00	205.56
	Diprobate lotion	30ml	145.00	209.00	64.00	44.14
Antihistamines	T.Hydroxyzine	25mg	18.00	72.00	54.00	300
	T.CPM	4mg	6.50	24.00	17.50	269.23
	T.Cetrizine	10mg	9.00	42.00	33.00	366.67
	T.Levocetrizine	5mg	12.00	58.00	46.00	383.33
Antifungal	Oint. Whitefield	25g	32.00	65.00	33.00	103.13
	C.Syntran	100 mg	95.00	160.00	65.00	68.42
	T.Fluconazole	150 mg	12.00	48.00	36.00	300.00
	Cream.Luniconazole	10g	72.00	175.00	103.00	143.06
	T.Terbinafine	250mg	68.00	240.00	172.00	252.94
	Lulifin Cream	10g	75.00	159.00	84.00	112
Antibiotics	T.Bact ointment	5g	88.00	121.84	33.84	38.45
	C.Amoxcillin	500 mg	28.00	98.00	70.00	250
	T.Metronidazole	400 mg	12.00	38.00	26.00	216.67
	T.Azitral	500 mg	65.00	118.00	53.00	81.54
	Inj.Xone	1 g	24.00	98.00	74.00	308.33

The cost variation analysis of 25 prescribed dermatological drugs demonstrated substantial differences in the prices of different brands within the same therapeutic category. Among corticosteroids, Inj.Dexamethasone showed the highest price variation (336%), followed by hydrocortisone (206%) and T.Prednisolone (180%), whereas Betnovate showed the lowest variation (20%). Among antihistamines, T.levocetirizine exhibited the highest cost variation (383%), followed by cetirizine (367%), hydroxyzine (300%), and chlorpheniramine maleate (269%). In the antifungal category, fluconazole tablets showed a cost variation of 300%, followed by terbinafine tablets (253%) and luliconazole cream

(143%). Among antibiotics, Inj.Ceftriaxone demonstrated the highest cost variation (308%), followed by amoxicillin Capsules (250%) and metronidazole tablets (217%), while T-Bact ointment showed the least variation (38%). These findings indicate a wide variation in the market prices of commonly prescribed dermatological medications, highlighting the importance of selecting cost-effective brands to reduce patients' financial burden.

4. Discussions

The study indicates that prescription practices involving some of the most frequently used dermatological drugs, along with their cost-effectiveness, are highly significant in-patient management. The findings showed that the largest proportion of patients (45%) were in the age group of 48–57 years, followed by 25% of patients in the age group of 58–67 years. This may be related to age-associated factors, such as loss of skin integrity, impaired immune function, and the development of chronic comorbidities, which may make older people more vulnerable to skin diseases.

The study showed that allergic and contact dermatitis was the most frequently observed disease category (21%), followed by eczema-related diseases (17%) and psoriatic diseases (14%). Fungal and bacterial diseases accounted for 5% and 3%, respectively. These findings indicate that the study population included a wide range of dermatological conditions requiring different treatment approaches.

Prescription dosage forms were analysed for their usage. The most used dosage forms were topical (50%), followed by solid preparations (45%) and parenteral preparations (5%). Solid dosage forms may be more prominent, possibly because systemic medications and antihistamines are commonly used for inflammatory and allergic skin diseases. However, topical products remain important in dermatology because they provide a localised effect and have fewer systemic side effects.

From a therapeutic classification perspective, the most used drugs were antihistamines (43%), corticosteroids (30%), antibiotics (19%), and antifungals (8%). The widespread use of antihistamines suggests that dermatological disorders associated with allergic symptoms and pruritus were prevalent among the study participants. In addition, corticosteroids were commonly used, highlighting their importance in the treatment of inflammatory dermatoses.

The Present cost analysis revealed considerable price variation among different brands of dermatological drugs available in the Indian pharmaceutical market. The greatest variation was observed for levocetirizine tablets (383%) among antihistamines and Inj. Dexamethasone injection (336%) among corticosteroids. Similar variations have been reported in Indian pharmacoeconomic studies, indicating that multiple branded formulations of the same active ingredient contribute to significant differences in treatment costs. High-cost variation may increase out-of-pocket expenditure and reduce medication adherence, particularly in patients requiring long-term therapy for chronic dermatological conditions. The comparatively lower variation observed with T-Bact ointment and Betnovate suggests better price uniformity among available brands. These findings emphasise the need for rational prescribing of affordable generic or lower-cost brands without compromising therapeutic effectiveness.

A study by Divya Shanthi CM et al. (2014) was conducted in Karaikal, Puducherry, where 291 patient samples were analysed to assess the pattern of dermatological diseases, where psoriasis and eczema were the most common dermatological diseases reported (23). Likewise, Vineeta D et al. (2016) observed the prescription analysis of 309 patients from the Dermatology Outpatient Department of a tertiary care teaching hospital in Belgaum, Karnataka, and observed that combination products (mostly steroid + antifungal) were the most prescribed, followed by antibiotics and antihistamines(24). A study done by Indurkar et al. (2019) in a tertiary care hospital of Western Maharashtra included 3869 patients, of which 61% were male and 39% were female, which showed that there were more dermatological conditions among males(25) . Further, Patil et al. (2023) performed a study in the Dermatology OPD of Shri BM Patil Medical College Hospital and Research Centre in Vijayapura, India, where they analysed 617 prescriptions, finding levocetirizine to be the most commonly prescribed antihistamine, which plays an important role in pruritus and allergic dermatological conditions (26).

5. Conclusion

Skin disorders often affect a person's well-being, comfort, and day-to-day life. The results of this study indicate that antihistamines and steroids were the most frequently prescribed medications in the dermatology department, and the

dosage form or brand of these medications may significantly contribute to treatment costs. The cost analysis revealed substantial price variation among commonly prescribed dermatological drugs, with levocetirizine showing the highest cost variation and Betnovate showing the lowest. This emphasises the need for prescribing clinically effective and affordable medications to reduce patients' financial burden and improve treatment adherence.

There is a strong need to raise awareness about the rational use of medicines among the public. Self-medication should be avoided, doctors' instructions should be followed correctly, and patients should be encouraged to ask about more affordable alternatives when appropriate. Many patients may discontinue treatment because of associated costs, which can worsen their condition. Doctors and pharmacists also have a responsibility to promote rational and cost-conscious prescribing, minimise unnecessary polypharmacy, and prefer generic medicines wherever appropriate. Promoting awareness of affordable and appropriate treatment options can reduce the financial burden, improve treatment adherence, and contribute to better health outcomes.

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