



“UTILIZATION PATTERN OF ANTIFUNGAL DRUGS IN SUPERFICIAL FUNGAL INFECTIONS: A CROSS-SECTIONAL STUDY”

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ABSTRACT

Background: Superficial fungal infections (SFIs) are among the most common dermatological conditions encountered in clinical practice, particularly in tropical countries. Rational use of antifungal drugs is essential to ensure therapeutic effectiveness, minimize resistance, and reduce economic burden. Drug utilization studies provide valuable insights into prescribing patterns and help promote rational pharmacotherapy.

Objectives: To evaluate the utilization pattern of antifungal drugs prescribed for superficial fungal infections in the dermatology outpatient department of a tertiary care centre.

Materials and Methods: A cross-sectional observational study was conducted over a period of six months (January–June 2025) in a tertiary care teaching hospital. A total of 120 prescriptions of patients clinically diagnosed with superficial fungal infections were analyzed. Data collected included demographic details, clinical diagnosis, and antifungal drugs prescribed. Antifungal utilization was assessed using World Health Organization (WHO) and International Network for Rational Use of Drugs (INRUD) prescribing indicators.

Results: The age of patients ranged from 12 to 68 years, with the majority (62.5%) belonging to the 18–40 years age group. Tinea corporis (38.3%) was the most common diagnosis, followed by tinea cruris (28.3%). Topical antifungal agents were prescribed in the majority of cases. Luliconazole (44.2%) was the most frequently prescribed topical antifungal, followed by eberconazole (32.5%) and clotrimazole (23.3%). Among systemic antifungals, itraconazole (48.1%) was the most commonly prescribed drug, followed by terbinafine (31.5%) and fluconazole (20.4%). The average number of antifungal drugs per prescription was 1.46. Prescribing by generic name was observed in 38.3% of prescriptions, and 41.7% of antifungal drugs were prescribed from the National List of Essential Medicines.

Conclusion: The study demonstrates a preference for newer topical azoles such as luliconazole and eberconazole for superficial fungal infections, with itraconazole being the most commonly used

systemic antifungal. Although prescribing practices largely align with current therapeutic trends, there remains scope for improving generic prescribing and adherence to essential medicine lists.

Keywords: Superficial fungal infections; Antifungal drugs; Drug utilization study; Dermatophytosis; WHO prescribing indicators; Tertiary care hospital

INTRODUCTION

Superficial fungal infections (SFIs), encompassing dermatophytosis, cutaneous candidiasis, and pityriasis versicolor, represent one of the most common infectious conditions encountered in dermatological practice worldwide¹. These infections affect the skin, hair, and nails and are particularly prevalent in tropical and subtropical regions due to hot and humid climatic conditions, overcrowding, poor hygiene, and increasing prevalence of immunocompromised states². It is estimated that nearly one billion people globally suffer from superficial mycoses, contributing to significant morbidity, reduced quality of life, and substantial healthcare expenditure³.

The management of SFIs primarily involves antifungal therapy, with topical agents being the first-line treatment for localized and uncomplicated infections. Commonly prescribed topical antifungals include newer azoles such as luliconazole and eberconazole, along with conventional agents like clotrimazole, owing to their favorable efficacy, shorter treatment duration, and better patient compliance⁴⁻⁶. Systemic antifungal agents such as itraconazole, terbinafine, and fluconazole are indicated in cases of extensive disease, recurrent infections, nail involvement, or failure of topical therapy^{7,8}.

In recent years, irrational prescribing practices, inappropriate duration of therapy, misuse of fixed-dose combinations, and easy over-the-counter availability of antifungal agents have emerged as major concerns^{9,10}. Such practices contribute to increasing antifungal resistance, treatment failures, adverse drug reactions, and unnecessary economic burden^{11,12}. Drug utilization studies play a crucial role in evaluating prescribing patterns, assessing rational drug use, and identifying deviations from standard treatment guidelines¹³. Understanding antifungal utilization patterns at tertiary care centres is essential for optimizing therapy, promoting rational prescribing, and developing antifungal stewardship strategies^{14,15}.

MATERIALS AND METHODS

A cross-sectional observational study was conducted in the dermatology outpatient department of a tertiary care teaching hospital over a period of six months, from January to June 2025. The study was approved by the Institutional Ethics Committee, and all procedures were carried out in accordance with the ethical standards laid down in the Declaration of Helsinki.

A total of 120 prescriptions of patients clinically diagnosed with superficial fungal infections were included in the study. The study population comprised patients diagnosed with dermatophytosis, cutaneous candidiasis, pityriasis versicolor, and onychomycosis attending the dermatology outpatient department during the study period. Only newly diagnosed cases were considered for analysis to accurately assess prescribing patterns. Patients with incomplete or illegible prescriptions and those receiving antifungal therapy for systemic fungal infections were excluded from the study.

Data were collected prospectively using a predesigned and structured case record form. The information recorded included demographic details such as age and gender, clinical diagnosis, and details of antifungal drugs prescribed. Antifungal medications were categorized into topical and systemic agents. The prescribing pattern was evaluated using the World Health Organization (WHO) and International Network for Rational Use of Drugs (INRUD) prescribing indicators, including the average number of antifungal drugs per prescription, proportion of drugs prescribed by generic name, and percentage of antifungal drugs prescribed from the National List of Essential Medicines (NLEM). The sample size of 120 prescriptions was determined using the standard formula for cross-sectional studies, assuming a prevalence of 50%, a confidence level of 95%, and an allowable error of 10%, with additional prescriptions included to compensate for incomplete data. Data were entered into

Microsoft Excel and analyzed using descriptive statistics. Results were expressed as frequencies and percentages.

RESULTS

A total of 120 prescriptions of patients diagnosed with superficial fungal infections were analyzed during the study period. The age of patients ranged from 12 to 68 years, with the majority belonging to the 18–40 years age group (62.5%), indicating higher disease burden among young and middle-aged adults. Males constituted 72 (60%) of the study population, while 48 (40%) were females. The demographic distribution of the study participants is detailed in Table 1.

Regarding clinical presentation, tinea corporis was the most commonly diagnosed superficial fungal infection, accounting for 46 (38.3%) cases, followed by tinea cruris in 34 (28.3%) patients. Onychomycosis was observed in 18 (15%) cases, while pityriasis versicolor accounted for 14 (11.7%) cases. Cutaneous candidiasis was noted in 8 (6.7%) patients. The distribution of various superficial fungal infections is shown in Table 2.

Analysis of antifungal drug utilization revealed that topical antifungal agents were prescribed in the majority of cases. Among topical preparations, luliconazole was the most frequently prescribed drug (44.2%), followed by eberconazole (32.5%) and clotrimazole (23.3%). The preference for newer topical azoles reflects current prescribing trends aimed at improved efficacy and shorter treatment duration. Systemic antifungal therapy was prescribed in patients with extensive, recurrent, or nail involvement. Among systemic agents, itraconazole was the most commonly prescribed drug (48.1%), followed by terbinafine (31.5%) and fluconazole (20.4%). The pattern of antifungal drug utilization is summarized in Table 3.

Assessment of prescribing practices using WHO/INRUD indicators showed that the average number of antifungal drugs per prescription was 1.46. Prescribing by generic name was observed in 38.3% of prescriptions, while 41.7% of the prescribed antifungal drugs were from the National List of Essential Medicines (NLEM). These prescribing indicators are presented in Table 4.

Overall, the prescribing pattern observed in the present study was consistent with findings from other Indian tertiary care centres, with predominant use of topical antifungal agents for localized infections and systemic agents such as terbinafine and itraconazole for extensive disease.

TABLES

Table 1: Demographic Distribution of Study Participants (n = 120)

Age Group (years)	Male n (%)	Female n (%)	Total n (%)
≤18	6 (5.0)	4 (3.3)	10 (8.3)
18–40	46 (38.3)	29 (24.2)	75 (62.5)
41–60	16 (13.3)	12 (10.0)	28 (23.3)
>60	4 (3.3)	3 (2.5)	7 (5.9)
Total	72 (60)	48 (40)	120 (100)

Table 2: Distribution of Superficial Fungal Infections (n = 120)

Clinical Diagnosis	Number of Patients (n)	Percentage (%)
Tinea corporis	46	38.3
Tinea cruris	34	28.3
Onychomycosis	18	15.0
Pityriasis versicolor	14	11.7
Cutaneous candidiasis	8	6.7
Total	120	100

Table 3: Pattern of Antifungal Drug Utilization

Antifungal Agent	Route	Number Prescribed (n)	Percentage (%)
Luliconazole	Topical	53	44.2
Eberconazole	Topical	39	32.5
Clotrimazole	Topical	28	23.3
Itraconazole	Systemic	39	48.1
Terbinafine	Systemic	26	31.5
Fluconazole	Systemic	17	20.4

Table 4: WHO/INRUD Prescribing Indicators

Indicator	Value
Average antifungals per prescription	1.46
Prescriptions with generic name (%)	38.3%
Drugs prescribed from NLEM (%)	41.7%

DISCUSSION

The present study evaluated the utilization pattern of antifungal drugs in patients with superficial fungal infections at a tertiary care centre and revealed that the majority of cases occurred in the 18–40 years age group, which is consistent with findings reported by Kalola et al. and Deb et al., who observed higher prevalence among young and middle-aged adults due to increased physical activity, sweating, and occupational exposure^{14, 15}. A male predominance noted in this study is also comparable with observations by Panda et al., possibly reflecting greater outdoor exposure among males¹².

Tinea corporis and tinea cruris were the most common clinical diagnoses in the present study, similar to patterns reported by Kalola et al. and Bansal et al., where dermatophytosis constituted the majority of superficial fungal infections^{14, 4}. The predominant use of topical antifungal agents observed in the present study is in accordance with standard treatment recommendations for superficial fungal infections. The preference for luliconazole and eberconazole over clotrimazole may be attributed to their broader antifungal spectrum, higher potency, shorter treatment duration, and better patient compliance, as reported in earlier studies^{4, 5}. Among systemic antifungals, itraconazole emerged as the most commonly prescribed agent, followed by terbinafine. This prescribing trend is consistent with recent Indian studies highlighting itraconazole’s superior efficacy in chronic and extensive dermatophytosis^{7, 15}. Fluconazole was prescribed less frequently, possibly due to concerns regarding resistance and comparatively lower efficacy against dermatophytes. However, the relatively low proportion of generic prescribing and limited use of drugs from the National List of Essential Medicines observed in this study underscores the need for continued efforts to promote rational and cost-effective antifungal therapy. Overall, the results of the present study are in concordance with other Indian tertiary care studies and underscore the need for continued antifungal stewardship.

CONCLUSION

The present study highlights a clear preference for newer topical azoles, with luliconazole being the most commonly prescribed topical antifungal, followed by eberconazole and clotrimazole. Itraconazole was the most frequently used systemic antifungal, reflecting current therapeutic trends in the management of extensive and recurrent superficial fungal infections. While overall prescribing practices were largely rational, improvement in generic prescribing and greater adherence to essential

medicine lists are warranted. Regular prescription audits and antifungal stewardship initiatives may further enhance rational antifungal use in tertiary care settings.

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