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Original Research Article

A questionnaire-based study on current trends and clinical decision drivers in the topical management of tinea infections: cross-sectional study

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ABSTRACT

Background: Dermatophytosis is a common superficial fungal infection that has increasingly become recurrent and difficult to manage in routine clinical practice. However, multicentric real-world data on topical antifungal prescribing trends in India remain limited.

Methods: This multicentric, cross-sectional, questionnaire-based study was conducted among 373 dermatologists across India to evaluate current prescribing trends and clinical decision drivers in the topical management of tinea infections, with particular emphasis on luliconazole use. Data regarding disease burden, treatment practices, combination therapy, and perceptions toward advanced topical formulations were collected using a structured electronic questionnaire and analyzed descriptively.

Results: A substantial proportion of dermatologists reported that dermatophytosis accounted for 30% to 42% of routine outpatient consultations (42.09%). Poor hygiene (74.26%) and climatic factors (61.39%) were commonly perceived risk factors, while itching (94.10%) was the predominant symptom. Topical antifungal therapy was mainly preferred for localized lesions (58.45%). Luliconazole emerged as the preferred topical antifungal agent (22.25%), and 56.57% of dermatologists reported prescribing it in most patients. Combination therapy with systemic antifungal agents was frequently practiced (67.02%), particularly in recurrent or difficult-to-manage infections. High efficacy, better penetration, and improved spread ability were the most perceived benefits associated with technology-based topical formulations.

Conclusions: Dermatophytosis continues to represent a substantial burden in routine dermatology practice in India. The findings highlight widespread use of luliconazole-based topical therapy and frequent adoption of combination treatment approaches, emphasizing the importance of individualized and rational management strategies in contemporary dermatophytosis care.

Keywords: Superficial fungal infections, Topical antifungal, Luliconazole, Systemic antifungal, Tinea cruris, Tinea corporis

INTRODUCTION

Dermatophytosis represents a group of superficial fungal infections involving keratin-containing tissues such as the skin, hair, and nails.[1] Superficial fungal infections are estimated to affect nearly 20-25% of the global population, making them one of the most common infectious skin disorders worldwide.[2] Although traditionally considered an easily manageable condition, the clinical pattern of dermatophytosis has changed considerably in recent years, particularly in India, where increasing numbers of chronic, recurrent, and treatment-resistant cases are being reported.[1,3] Common clinical presentations such as tinea corporis and tinea cruris are frequently associated with persistent itching, erythema, scaling, and discomfort, often affecting patients' daily activities and overall well-being.[3]

Topical antifungal agents continue to play an important role in the management of localized dermatophytosis and are commonly preferred for uncomplicated superficial infections.[4] However, the management of dermatophytosis has become increasingly challenging because of climatic conditions, poor response to antifungals, extensive lesions and spectrum in change of disease.[5,6] Recent evidence has also highlighted the growing clinical importance of antifungal stewardship and the need to avoid irrational use of topical corticosteroid-antifungal combinations that may contribute to persistent or atypical disease presentations.[4,5] In routine clinical practice, treatment selection is often influenced by multiple factors including disease extent, patient adherence, tolerability, formulation characteristics, and expected clinical response.[6] Among the newer topical antifungal agents, luliconazole has gained attention because of its favourable efficacy profile and utility in the treatment of superficial fungal infections.[7]

Recent surveys from India have demonstrated considerable variation in the diagnostic and therapeutic approaches adopted by dermatologists for the management of dermatophytosis in everyday clinical practice.[8] Luliconazole is among the commonly prescribed topical antifungal agents in current practice and is often preferred in localized dermatophytosis because of its convenient once-daily application and favourable clinical response.[8,9] Additionally, ongoing advances in topical formulation technologies designed to improve drug penetration and skin retention may further influence prescribing preferences and treatment outcomes.[10] Despite these evolving practices, there remains limited multicentric real-world evidence from India evaluating prescribing trends and the clinical factors guiding topical antifungal selection.[8]

In view of the evolving treatment landscape and changing clinical patterns of dermatophytosis, understanding real-world prescribing behaviour has become increasingly important. Therefore, the present cross-sectional questionnaire-based study was conducted to assess current prescribing trends and key clinical decision drivers in the topical management of tinea infections among dermatologists in India, with particular emphasis on the use of luliconazole, treatment practices, and perceptions regarding advanced topical formulations.

METHODS

Study design

This was a multicentric, cross-sectional, questionnaire-based study conducted among dermatologists across India to evaluate current prescribing trends and clinical decision drivers in the topical management of tinea infections, with particular emphasis on the use of luliconazole. Data was collected using a predesigned electronic case report form (eCRF)-based questionnaire developed according to the checklist for reporting results of internet e-surveys (CHERRIES) methodology. The questionnaire was shared with participating investigators through a secure web-based link.

The study was conducted over a period of 6 months across 373 study sites in India. Ethical approval for the study was obtained from an independent ethics committee named as healthcare ethics committee NIS/2025/33 dated 27/Nov/2025 prior to study initiation. The study was conducted in accordance with the principles of the declaration of Helsinki, International Council for Harmonization-Good Clinical Practice (ICH-GCP) guidelines, Indian good clinical practice guidelines, and applicable regulatory requirements.

Assessment

A structured questionnaire was used to collect information related to the clinical practice patterns of dermatologists in the management of tinea infections. The survey captured data on demographic characteristics, burden and risk factors associated with dermatophytosis, common clinical presentations, treatment practices related to topical antifungal therapy, preferred antifungal prescribing patterns, and clinical experience with luliconazole.

The questionnaire also assessed factors influencing antifungal selection, duration of therapy, use of combination therapy with systemic antifungals or topical antifungal powders, perceptions regarding efficacy and safety, and the anticipated benefits of advanced topical formulations. Data were captured electronically using an electronic data capture (EDC) platform with secure investigator-specific login credentials.

Endpoints

The primary objective of the study was to assess current prescribing trends and key clinical decision drivers in the

topical management of tinea infections among dermatologists in India.

The study additionally evaluated the use of topical antifungal agents, particularly luliconazole, including prescribing preferences, treatment duration, combination therapy practices, and perceptions regarding efficacy, safety, and advanced topical formulations.

Statistical analysis

All analysis was performed descriptively. Categorical variables were summarized using absolute numbers and percentages. The final analysis included data obtained from 373 dermatologists who completed the study questionnaire.

RESULTS

373 dermatologists' responses from different regions of India were analysed. Most dermatologists belonged to the 36-50 years age group and had between 5 and 20 years of clinical experience in dermatology practice (Table 1).

Most dermatologists reported that dermatophytosis constituted 30% to 42% of routine outpatient visits in clinical practice (42.09%). Poor hygiene (74.26%) was identified as the most common associated risk factor, followed by climatic factors (61.39%) and lifestyle-related factors such as tight clothing or footwear (55.76%). Itching was the most frequent clinical symptom (94.10%), followed by erythema (54.69%) and scaling (50.13%). Tinea cruris (78.55%) and tinea corporis (76.94%) were the predominant clinical presentations reported by the participants. These findings highlight the substantial clinical burden of dermatophytosis encountered in routine dermatology practice across India.

Topical antifungal therapy was preferred for localized lesions (58.45%) and single lesions (54.69%), although 46.38% of dermatologists also reported prescribing topical therapy for widespread lesions and treatment-naïve infections. The preferred duration of topical antifungal monotherapy for localized or treatment-naïve dermatophytosis was most commonly 2-4 weeks (34.32%), followed by 4-6 weeks (27.88%). Most dermatologists (90.62%) reported following the rule of two (The topical antifungals should be applied 2 cm beyond the margin of the lesion for at least 2 weeks beyond clinical resolution) which involves extending topical antifungal application beyond the lesion margin and continuing treatment after clinical resolution. These findings suggest broad acceptance of topical antifungal therapies in routine clinical practice, with notable variability in treatment duration and prescribing patterns.

Luliconazole alone was the preferred topical antifungal agent (22.25%), followed by combinations of luliconazole with ciclopirox (17.96%) and amorolfine (16.35%). In routine clinical practice, 56.57% of dermatologists reported prescribing luliconazole in most patients (> 75% patients) with dermatophytosis, while 11.80% prescribed it in all patients. Relief from itching was identified as the earliest sign of clinical improvement by 82.84% of participants, followed by reduction in erythema (52.82%) and decrease in scaling (38.07%). High efficacy (77.75%), better absorption (70.51%), and improved spread ability (67.02%) were common benefits observed with technology-based topical formulations, whereas only 0.54% of dermatologists reported no specific perceived benefit (Figure 1). Overall, these findings reflect favourable clinical experience and widespread acceptance of technology-based luliconazole in routine dermatology practice.

Combination therapy with luliconazole and systemic antifungal agents was preferred by 67.02% of dermatologists, whereas 30.03% reported prescribing such combinations selectively in certain patients. The most preferred duration of combination therapy with systemic antifungals was 2-4 weeks (40.48%), followed by treatment durations exceeding 4 weeks (33.24%). In addition, 39.41% of participants reported routinely combining luliconazole with topical antifungal powders, while 47.18% prescribed these combinations selectively. The preferred duration of combination therapy with topical antifungal powders was typically 2-4 weeks (38.87%). These findings indicate frequent utilization of combination therapeutic approaches, particularly in patients with recurrent or difficult-to-manage dermatophytosis (Table 3).

Table 1: Demographic characteristics of participating dermatologists, (n=373).

Characteristics	Category	N	Percentages (%)
Gender	Male	209	56.03
	Female	164	43.97
Age group (in years)	25-35	117	31.37
	36-50	196	52.55
	Above 50	60	16.09
Years in clinical practice	Less than 5 years	42	11.26
	5-10 years	129	34.58
	11-20 years	125	33.51
	More than 20 years	77	20.64

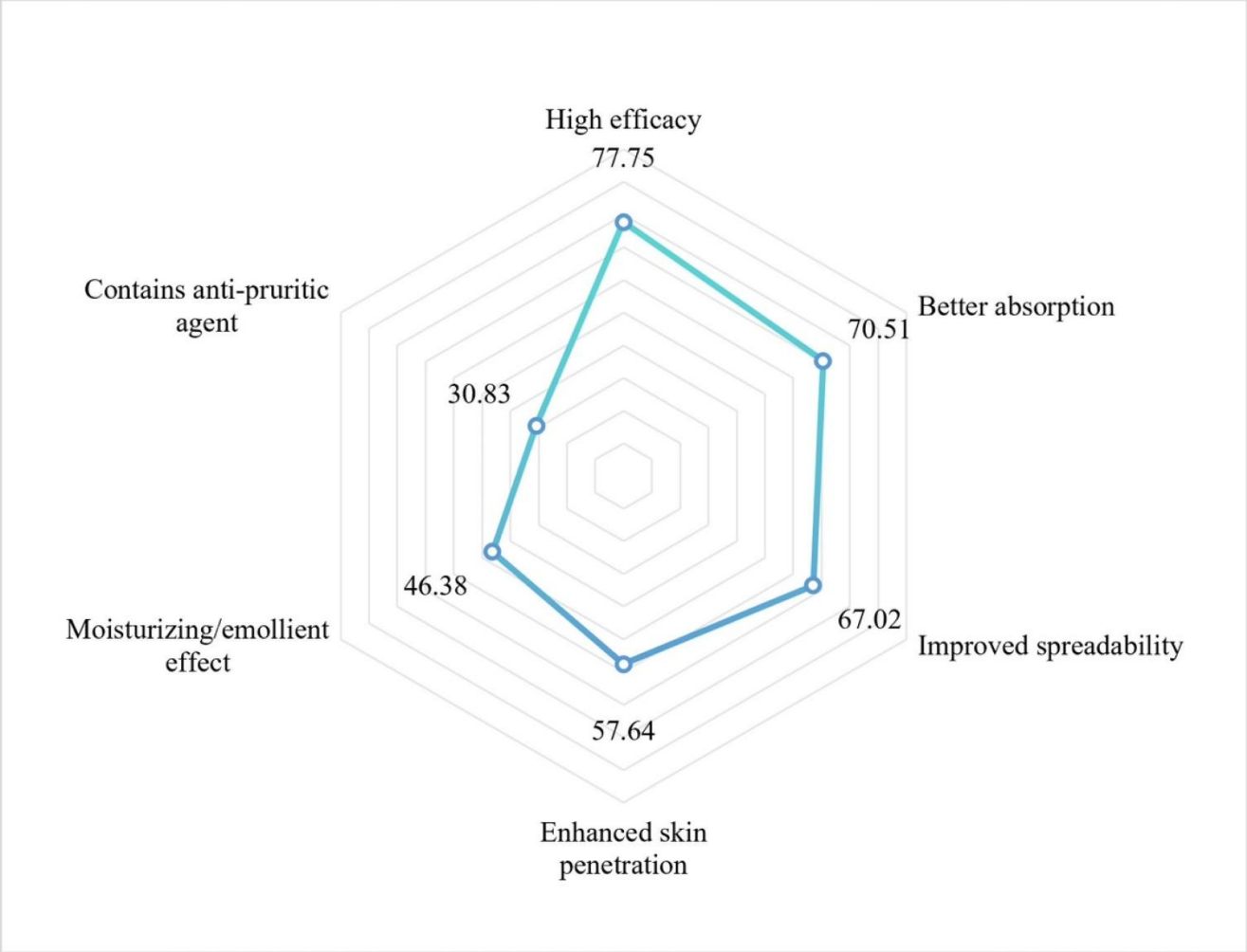

Figure 1: Perceived benefits associated with technology-based topical antifungal formulations among participating dermatologists.

Table 2: Burden, risk factors, and clinical presentation of tinea infections reported by participating dermatologists, (n=373).

Parameters	Category	N	Percentages (%)
Estimated proportion of patients present with tinea infections in routine practice	<20%	22	5.90
	20-40%	150	40.21
	41-60%	157	42.09
	61-80%	40	10.72
	>80%	4	1.07
Commonly reported risk factors*	Poor hygiene	277	74.26
	Climate changes	229	61.39
	Tight clothing/shoes and lifestyle-related factors	208	55.76
	Chronic diseases such as diabetes and obesity	189	50.67
Common clinical symptoms*	Itching	351	94.10
	Erythema	204	54.69
	Scaling	187	50.13
	Vesicles	57	15.28
Common clinical types of tinea*	Tinea cruris	293	78.55
	Tinea corporis	287	76.94
	Tinea pedis	134	35.92
	Others	9	2.41

*Multiple responses were permitted for risk factors, symptoms, and clinical types of tinea infections.

Table 3: Combination therapy practices involving luliconazole in dermatophytosis management, (n=373).

Parameters	Category	N	Percentages (%)
Luliconazole + systemic antifungal therapy	Yes	250	67.02
	Sometimes	112	30.03
	No	11	2.95
Preferred duration of combination therapy with systemic antifungals	<2 weeks	31	8.31
	2-4 weeks	151	40.48
	>4 weeks	124	33.24
	Duration varies based on clinical response	66	17.69
Luliconazole + topical antifungal powder	Yes	147	39.41
	Sometimes	176	47.18
	No	50	13.40
Preferred duration of combination therapy with topical antifungal powder	<2 weeks	22	5.90
	2-4 weeks	145	38.87
	>4 weeks	121	32.44
	Duration varies based on clinical response	51	13.67

DISCUSSION

The present multicentric real-world study provides insights into contemporary prescribing practices and clinical decision drivers in the topical management of dermatophytosis among dermatologists in India. Dermatophytosis accounted for 30% to 42% of routine outpatient consultations in 42.09% of participating practices, highlighting its substantial clinical burden in routine dermatology care. Topical antifungal therapy was predominantly preferred for localized and treatment-naïve infections, reaffirming its continued importance in routine disease management. Among the available topical antifungal agents, luliconazole alone emerged as the most preferred therapy (22.25%), with dermatologists reporting favourable perceptions regarding efficacy (77.75%), absorption, and spread ability of technology-based topical formulations. Combination therapy with systemic antifungal agents was also commonly practiced (67.02%), particularly in recurrent or difficult-to-manage infections. Collectively, these findings reflect evolving therapeutic approaches and emphasize the importance of individualized management strategies in contemporary dermatophytosis care.

Recent years have witnessed substantial changes in the clinical management of dermatophytosis which have further influenced contemporary therapeutic approaches.[11,12] In the present study, dermatophytosis represented a major component of routine outpatient consultations, and topical antifungal therapy remained the preferred approach for localized disease. A notable proportion of dermatologists also reported frequent use of combination therapy with systemic antifungal agents, which may reflect evolving management strategies adopted in recurrent or difficult-to-treat infections. Collectively, these findings underscore the dynamic nature of dermatophytosis management in current clinical practice.

Our findings are consistent with previously published Indian real-world studies evaluating contemporary dermatophytosis management practices.[8] Earlier surveys have reported substantial variability in treatment approaches among dermatologists, with frequent use of combination therapy and widespread preference for luliconazole in routine clinical practice.[8] Similar observations were noted in the present study, where a large proportion of dermatologists reported prescribing combination therapy with systemic antifungal agents and topical antifungal powders, particularly in recurrent or difficult-to-manage infections. The preference for continuing therapy beyond clinical clearance observed in our study also aligns with previous reports emphasizing prolonged treatment duration in current dermatophytosis management.[8,13] Recurrent dermatophytosis and treatment non-responsiveness have also been increasingly recognized in Indian clinical settings, with factors such as topical corticosteroid misuse, inadequate treatment duration, and poor adherence contributing to persistent disease.[14] The widespread use of luliconazole observed in the present study may be attributable to its favourable clinical experience and convenient topical application, which have also been highlighted in earlier observational studies and real-world practice surveys.[8] Collectively, these findings support the ongoing shift toward combination-based therapeutic approaches in contemporary dermatophytosis management.

Previous clinical and observational studies have demonstrated effective clinical response and faster lesion clearance with luliconazole in localized dermatophytosis, which may contribute to improved patient adherence and treatment satisfaction.[9] In the present study, luliconazole was one of the most commonly preferred topical antifungal agents, and dermatologists frequently perceived technology-based topical formulations to offer advantages such as high perceived efficacy, better absorption, and improved spread ability. These observations may be clinically relevant in dermatophytosis, where prolonged treatment duration and

poor adherence often contribute to recurrence and incomplete clearance.[13,14] In addition, advances in topical drug delivery systems have been suggested to improve skin penetration and local drug retention, thereby potentially enhancing therapeutic performance in superficial fungal infections.[10] Collectively, these findings indicate that formulation characteristics and ease of application may play an important role in influencing therapeutic preference and real-world treatment practices in dermatophytosis management.

The findings of the present study have important practical implications for routine dermatology practice, particularly in regions with a high burden of recurrent and difficult-to-treat dermatophytosis. The continued preference for topical antifungal therapy in localized disease highlights its central role in initial management, while the frequent use of combination therapy reflects the need for individualized treatment strategies in selected patients. In addition, adherence to adequate treatment duration and rational prescribing practices remain essential to optimize clinical outcomes and minimize treatment failure. The widespread use of luliconazole and favourable perceptions regarding advanced topical formulations observed in this study also suggest that formulation characteristics and ease of application may influence treatment adherence in routine practice. Collectively, these findings reinforce the importance of patient-centred and evidence-based therapeutic approaches in contemporary dermatophytosis management in India.

A major strength of the present study is its multicentric real-world design involving dermatologists from different regions of India, which provides practical insights into contemporary prescribing trends and management approaches in routine clinical practice. The study also captured perspectives regarding topical antifungal therapy, luliconazole use, and combination treatment strategies in a relatively large participant population. However, certain limitations should be acknowledged. The questionnaire-based design may be associated with reporting and recall bias, and the findings primarily reflect physician-reported practices rather than patient-level clinical outcomes. In addition, microbiological confirmation, treatment response assessment, and long-term follow-up data were not evaluated. Therefore, the findings should be interpreted within the context of real-world practice patterns rather than controlled clinical outcomes.

CONCLUSION

In summary, dermatophytosis continues to represent a significant burden in routine dermatology practice in India. Topical antifungal therapy, particularly luliconazole-based treatment, was widely preferred for localized infections, while combination therapy was commonly utilized in recurrent or difficult-to-manage cases. The findings highlight evolving real-world prescribing practices and emphasize the importance of individualized and rational management strategies in contemporary dermatophytosis care.

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