



An Observational Study of the Clinical Spectrum of Superficial Fungal Infections in Patients Attending a Tertiary Care Hospital

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Received: 16-03-2026

Revised: 28-03-2026

Accepted: 11-04-2026

Published: 13-04-2026

Abstract

Background: Superficial fungal infections are among the most common dermatological disorders encountered in routine clinical practice, particularly in tropical regions where heat, humidity, occlusion, and close human contact facilitate transmission. Their clinical presentation varies by age, site, organism, and host-related risk factors, making local epidemiological data important for diagnosis and management. **Objectives:** To describe the demographic characteristics, clinical spectrum, symptom profile, mycological findings, and associated risk factors of superficial fungal infections among patients attending a tertiary care hospital. **Methods:** This hospital-based observational study was conducted in the Department of Dermatology, Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar, Telangana, India, from August 2025 to January 2026. One hundred consecutive patients with clinically suspected superficial fungal infections were evaluated using a structured proforma. Demographic details, symptoms, duration, recurrence, prior topical treatment, clinical diagnosis, site of involvement, and risk factors were recorded. Potassium hydroxide microscopy and fungal culture were performed using standard mycological methods. **Results:** The mean age of participants was 34.8 +/- 13.2 years, and most patients were aged 21-30 years. Males accounted for 62% of cases. Itching was the leading symptom, present in 92% of patients. Tinea corporis was the most frequent clinical diagnosis (32%), followed by tinea cruris (24%). KOH positivity was observed in 82% of patients and fungal culture positivity in 68%. Trichophyton rubrum was the predominant isolate, and excessive sweating and tight or occlusive clothing were the most common associated risk factors. **Conclusion:** Superficial fungal infections in this tertiary care setting predominantly affected young adult men and commonly presented as tinea corporis and tinea cruris. High KOH positivity and the predominance of dermatophytes underscore the relevance of clinicomycological evaluation. Local data on species distribution and risk factors can support timely diagnosis, rational therapy, and preventive counseling in routine dermatology practice.

Keywords: superficial fungal infections; dermatophytosis; tinea corporis; tinea cruris; potassium hydroxide mount; tertiary care hospital.



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INTRODUCTION

Superficial fungal infections are among the most prevalent infectious disorders of the skin, hair, and nails, and they continue to impose a considerable burden on dermatology services worldwide [1-4]. These infections are caused primarily by dermatophytes, yeasts, and certain non-dermatophyte molds, and their occurrence is strongly influenced by climate, personal hygiene, overcrowding, occupational exposure, diabetes, immunological status, and local sociocultural practices [1-5]. In tropical and subtropical regions, persistent heat, sweating, occlusion, and frequent interpersonal contact create favorable conditions for fungal proliferation and transmission. Although these infections are rarely life-threatening, they produce marked pruritus, cosmetic disfigurement, discomfort, social embarrassment, and recurrent health-care visits, thereby contributing substantially to morbidity and reduced quality of life [2-4].

The clinical spectrum of superficial fungal infections is broad and includes tinea corporis, tinea cruris, tinea faciei, tinea capitis, tinea pedis, tinea unguium, pityriasis versicolor, and candidal intertrigo, among others [1,2,6]. Their manifestations vary according to the infecting organism, anatomical site, duration of disease, host factors, and previous treatment exposure. In recent years, clinicians have also noted increasing chronicity, recurrence, atypical morphology, and partial treatment responses, particularly in the Indian subcontinent [3-5,7]. Widespread unsupervised use of topical preparations, including over-the-counter antifungal combinations and corticosteroid-containing creams, has further altered clinical appearance and complicated bedside diagnosis [4,7]. For this reason, clinicomycological correlation remains important in routine practice,

with potassium hydroxide microscopy serving as a rapid screening tool and fungal culture providing etiological confirmation wherever feasible [6-8].

Indian studies have documented substantial regional variation in the prevalence of clinical types and causative species of superficial mycoses [4,5,9-14]. While *Trichophyton rubrum* has historically been the predominant dermatophyte, several recent reports from India have shown a changing mycological pattern, with increasing prominence of *Trichophyton mentagrophytes* complex and recalcitrant disease in many centers [3-5,9-13]. At the same time, non-dermatophyte molds and *Candida* species continue to contribute to selected clinical presentations, especially nail and intertriginous infections [2,10-12]. Such variability underlines the need for hospital-level data because local epidemiological trends influence diagnostic suspicion, laboratory yield, therapeutic choice, and counseling on modifiable risk factors.

Against this background, the present study was undertaken to assess the clinical spectrum of superficial fungal infections in patients attending a tertiary care hospital. The objectives of the study were to describe the demographic profile of affected patients, identify the major presenting symptoms and clinical types, document the anatomical distribution of lesions, evaluate direct microscopy and culture findings, and examine commonly associated host and environmental risk factors in the study population.

MATERIALS AND METHODS

Study design and setting

This hospital-based observational study was conducted in the Department of Dermatology, Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar, Telangana, India, over a six-month period from August 2025 to January 2026. The study was designed to characterize the demographic features, clinicomorphological spectrum, and mycological profile of superficial fungal infections among patients presenting to a tertiary care dermatology service. The observational design was considered appropriate because the primary intention was descriptive assessment of disease burden and pattern rather than intervention or comparison of therapeutic outcomes.

Study population

A total of 100 consecutive patients with clinical features suggestive of superficial fungal infection were included in the study. Patients of either sex and all age groups who attended the dermatology outpatient department during the study period and were willing to participate were evaluated. Cases were enrolled on the basis of characteristic clinical findings such as annular scaly lesions, erythematous plaques, pigmentary changes, intertriginous involvement, scalp infection, nail dystrophy, or other findings suggestive of dermatophytosis, pityriasis versicolor, or superficial candidiasis. Patients who had received prolonged systemic antifungal therapy immediately before presentation, had inadequate samples for laboratory confirmation, or had dermatoses mimicking fungal infection without clinicomycological support were not considered for final analysis.

Clinical and mycological evaluation

After obtaining informed consent, each participant underwent a detailed clinical assessment using a structured case record form. Information regarding age, sex, residence, duration of symptoms, recurrence, prior use of topical medications, associated comorbidities, and probable predisposing factors was recorded. A complete cutaneous examination was performed to determine the type of superficial fungal infection and the site or sites involved. Clinical specimens were collected from the active margin of skin lesions, infected hair, or nail clippings after cleaning the area with alcohol. Direct microscopic examination was performed using potassium hydroxide preparation, which remains a standard rapid method for demonstrating fungal elements in routine practice [6,7]. Fungal culture was performed on Sabouraud dextrose agar using standard microbiological procedures, and isolates were identified based on colony characteristics and microscopic morphology [6,8].

Data collection and variables

The major study variables included demographic characteristics, symptom profile, duration of illness, recurrence, previous topical treatment, clinical diagnosis, anatomical distribution, KOH microscopy status, culture positivity, isolated organism, and associated risk factors such as excessive sweating, diabetes mellitus, family history of similar lesions, and tight or occlusive clothing. Multiple clinical symptoms and more than one predisposing factor were allowed to be recorded where applicable. The clinical diagnosis was categorized into tinea corporis, tinea cruris, tinea unguium, tinea faciei, tinea pedis, tinea capitis, pityriasis versicolor, and cutaneous candidiasis. Laboratory confirmation was interpreted in conjunction with the clinical picture, as recommended in contemporary dermatophytosis literature and Indian consensus guidance [6,7].

Statistical analysis

All data were entered into a spreadsheet and analyzed using descriptive statistical methods. Continuous variables were summarized as mean $\pm$ standard deviation, and categorical variables were presented as frequency and percentage. The

findings were organized to present the demographic pattern, symptom burden, clinical spectrum, mycological profile, and distribution of associated risk factors in a clear journal-ready format. Because the study objective was descriptive, no comparative hypothesis testing was undertaken. The results were interpreted in the context of published data on superficial fungal infections from India and other comparable settings [1-5,9-14].

RESULTS

A total of 100 patients with superficial fungal infections were included in the study. The mean age of the participants was 34.8 +/- 13.2 years, with the highest proportion belonging to the 21-30 year age group (28%), followed by 31-40 years (24%). Males constituted 62% of the study population and females 38%, yielding a male-to-female ratio of 1.6:1. Most patients were from urban areas (58%), while 42% were from rural areas. The baseline demographic characteristics are shown in Table 1.

Table 1. Demographic profile of study participants [N = 100]

Variable	Category	n	%
Age group	<=20 years	16	16
	21-30 years	28	28
	31-40 years	24	24
	41-50 years	18	18
	>50 years	14	14
Sex	Male	62	62
	Female	38	38
Residence	Urban	58	58
	Rural	42	42

The most common presenting symptom was itching, reported by 92% of patients, followed by scaling in 71%, erythema in 49%, and burning sensation in 16%. Duration of illness ranged widely; 37% of patients presented with symptoms of 1-3 months duration, whereas 31% had symptoms for less than 1 month. A history of recurrent infection was noted in 29% of cases, and 36% reported use of over-the-counter topical medications before presentation. Clinical symptomatology and duration are summarized in Table 2.

Table 2. Clinical presentation of superficial fungal infections [N = 100]

Variable	Category	n	%
Symptoms*	Itching	92	92
	Scaling	71	71
	Erythema	49	49
	Hyperpigmentation	18	18
	Burning sensation	16	16
Duration of symptoms	<1 month	31	31
	1-3 months	37	37
	3-6 months	19	19
	>6 months	13	13
Recurrence	Present	29	29
	Absent	71	71
Prior topical treatment	Yes	36	36
	No	64	64

*Multiple responses were allowed.

Among the clinical types of superficial fungal infections, tinea corporis was the most common diagnosis, observed in 32% of patients, followed by tinea cruris in 24%, tinea unguium in 12%, tinea faciei in 9%, tinea pedis in 8%, pityriasis versicolor in 7%, tinea capitis in 5%, and cutaneous candidiasis in 3%. With regard to anatomical distribution, the trunk was the most frequently involved site (34%), followed by groin (24%), extremities (18%), nails (12%), face (9%), scalp (5%), and feet (8%). The distribution of clinical types is presented in Table 3.

Table 3. Spectrum of superficial fungal infections [N = 100]

Clinical diagnosis	n	%
Tinea corporis	32	32
Tinea cruris	24	24
Tinea unguium	12	12
Tinea faciei	9	9
Tinea pedis	8	8
Pityriasis versicolor	7	7
Tinea capitis	5	5
Cutaneous candidiasis	3	3

Direct microscopic examination with potassium hydroxide mount was positive in 82% of cases. Fungal culture was positive in 68% of the patients in whom culture was performed. The most commonly isolated organism was *Trichophyton rubrum* (44.1% of culture-positive isolates), followed by *Trichophyton mentagrophytes* (32.4%), *Microsporum* species (11.8%), *Epidermophyton floccosum* (7.4%), and *Candida* species (4.4%). Associated risk factors included excessive sweating in 46%, diabetes mellitus in 18%, family history of similar lesions in 21%, and use of tight or occlusive clothing in 39% of patients. Laboratory findings and associated factors are shown in Table 4.

Table 4. Mycological findings and associated risk factors [N = 100]

Variable	Category	n	%
KOH mount	Positive	82	82
	Negative	18	18
Fungal culture	Positive	68	68
	Negative	32	32
Culture isolates [n = 68]	<i>Trichophyton rubrum</i>	30	44.1
	<i>Trichophyton mentagrophytes</i>	22	32.4
	<i>Microsporum</i> spp.	8	11.8
	<i>Epidermophyton floccosum</i>	5	7.4
	<i>Candida</i> spp.	3	4.4
Risk factors*	Excessive sweating	46	46
	Tight/occlusive clothing	39	39
	Family history	21	21
	Diabetes mellitus	18	18

*Multiple responses were allowed.

Overall, superficial fungal infections in this cohort were more common in young adults and males, with tinea corporis and tinea cruris representing the predominant clinical forms. Pruritus was the leading symptom, and the high KOH positivity supported the clinical diagnosis in most patients. Dermatophytes, particularly *Trichophyton rubrum*, emerged as the principal etiological agents among culture-positive cases.

DISCUSSION

The present study demonstrates that superficial fungal infections in a tertiary care dermatology setting were concentrated largely in young adults, with a clear male predominance. This age and sex distribution is consistent with the epidemiological profile reported in earlier reviews and hospital-based Indian studies, where greater occupational mobility, increased sweating, outdoor activity, and prolonged use of occlusive clothing were considered important contributors to transmission and persistence [1-5,9-13]. The predominance of urban patients in the present series may reflect greater access to tertiary care and a higher likelihood of seeking specialist consultation rather than indicating exclusive urban occurrence.

Clinically, itching was the most frequent symptom, and tinea corporis followed by tinea cruris formed the major disease burden. These observations align with published Indian data in which glabrous tinea, particularly involving the trunk and groin, accounts for the largest proportion of superficial fungal infections [4,5,10-13]. The predominance of trunk and groin involvement in the present study is biologically plausible because these sites favor fungal growth through warmth, friction, sweating, and occlusion. The notable proportion of recurrent cases and prior topical treatment further suggests that superficial fungal infections are no longer uniformly acute, self-limited presentations in routine practice, but increasingly chronic, partially treated, or recurrent disorders, a trend also emphasized in Indian literature [4,5,7,10].

The mycological findings in this study are also important. KOH positivity was recorded in 82% of patients, while culture positivity was observed in 68%. This pattern is comparable to the clinicomycological literature, where direct microscopy

usually yields a higher positivity rate than culture because fungal viability, sampling technique, prior treatment exposure, and transport conditions affect isolation on culture media [6,8-13]. The present results therefore support the continued value of KOH mount as a rapid bedside investigation, while reaffirming the role of fungal culture for species identification and epidemiological surveillance. The predominance of *Trichophyton rubrum* in culture-positive specimens is in agreement with several classic studies, although recent Indian reviews have highlighted an increasing contribution of *Trichophyton mentagrophytes* complex and region-specific variation in dominant species [3-5,9-14]. In the present series, *Trichophyton mentagrophytes* was the second most frequent isolate, which supports the view that the mycological landscape remains dynamic and geographically heterogeneous.

Among the associated risk factors, excessive sweating and tight or occlusive clothing were prominent, followed by family history and diabetes mellitus. These associations are clinically meaningful because they reflect a combination of environmental exposure, household transmission, host susceptibility, and favorable local conditions for fungal proliferation [1-4,7]. Diabetes has long been recognized as a factor associated with recurrent and extensive superficial fungal infection, while close contact and shared fomites within households facilitate clustering of disease. The present findings therefore reinforce the need for counseling on hygiene, avoidance of shared clothing or towels, adequate drying of intertriginous areas, and early treatment of household contacts where indicated. The observation that over one-third of patients had used topical medication before consultation also highlights the importance of supervised therapy and rational prescribing, as stressed in consensus recommendations from India [7]. Overall, the study adds institution-specific data to the growing body of Indian evidence on the clinical and mycological spectrum of superficial fungal infections and underscores the continued relevance of clinicomycological evaluation in tertiary dermatology practice.

Limitations

This study was conducted in a single tertiary care hospital and included a sample of 100 patients, which restricts external generalizability. Species identification relied on conventional microscopy and culture without molecular confirmation. Antifungal susceptibility testing was not performed. The study was descriptive in design and did not assess treatment outcomes, long-term recurrence after follow-up, steroid misuse patterns, or independent associations between individual risk factors and specific fungal isolates

CONCLUSION

Superficial fungal infections in this tertiary care cohort predominantly affected young adults and men, with tinea corporis and tinea cruris emerging as the commonest clinical presentations. Pruritus was the dominant symptom, and the trunk and groin were the most frequently involved sites. KOH microscopy showed high diagnostic yield, while fungal culture confirmed dermatophytes as the major etiological agents, with *Trichophyton rubrum* predominating among isolates. Excessive sweating, tight clothing, family history, and diabetes were important associated factors. These findings support the importance of careful clinical examination, routine mycological evaluation, and focused patient counseling to improve early diagnosis, appropriate treatment, and prevention of recurrence in routine dermatology practice.

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Citation: Sangem A, Chandana ST. An observational study of the clinical spectrum of superficial fungal infections in patients attending a tertiary care hospital. *Int. J. Med.*, 2026;**8**(4):267-272.

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