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Original Research Article

Rising Burden of Dermatophytosis in Rural Communities: Clinical Profile and Associated Risk Factors

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Abstract:

Background: Dermatophytosis has emerged as a major public health concern in India, particularly in rural populations, with increasing chronicity, recurrence, and treatment failure.

Objectives: To assess the clinical profile, demographic distribution, and associated risk factors of dermatophytosis among rural patients.

Methods: A hospital-based observational study was conducted over 12 months among 100 clinically suspected cases of dermatophytosis attending the dermatology outpatient department of Mata Gujri Medical College, Kishan Ganj. Clinical details, epidemiological variables, and risk factors were recorded. Diagnosis was confirmed by KOH microscopy. Data were analyzed using descriptive statistics and chi-square test.

Results: The most affected age group was 21–40 years (46%). Tinea corporis (38%) and tinea cruris (26%) were the most common clinical types. Pruritus was present in 94% cases. Significant risk factors included excessive sweating ($p=0.002$), occlusive clothing ($p=0.01$), topical steroid misuse ($p<0.001$), and family history ($p=0.004$).

Conclusion: Dermatophytosis is highly prevalent in rural communities, with changing clinical patterns and strong associations with behavioral and environmental factors. Public health education and rational antifungal use are urgently required.

Keywords: Dermatophytosis, Rural population, Tinea, Risk factors, Clinical profile.

Introduction

Dermatophytosis refers to superficial fungal infections caused by dermatophytes of the genera Trichophyton, Microsporum, and Epidermophyton, affecting keratinized tissues such as skin, hair, and nails [1]. These infections constitute one of the most common communicable dermatoses worldwide, particularly in tropical and subtropical countries [2].

India has witnessed a marked epidemiological shift in dermatophytosis over the last decade, characterized by rising incidence, atypical presentations, chronicity, and therapeutic recalcitrance [3,4]. Warm climate, overcrowding, poor hygiene, and limited access to healthcare significantly contribute to disease burden in rural populations [5].

Dermatophytosis not only causes physical discomfort but also leads to psychosocial distress, sleep disturbance, and occupational impairment [6]. Persistent itching, recurrent infections, and widespread involvement have become increasingly common [7].

Studies from various regions of India indicate that misuse of topical corticosteroid combinations has played a pivotal role in altering the clinical spectrum of dermatophytosis [8,9]. Such irrational therapies suppress inflammation without eradicating the fungus, leading to tinea incognito, extensive disease, and frequent relapses [10].

Rural communities are particularly vulnerable due to low awareness, over-the-counter availability of potent steroids, and traditional practices [11]. Environmental factors such as excessive sweating, close physical contact, occlusive clothing, and poor sanitation further promote transmission [12].

Despite the increasing burden, region-specific data from rural eastern India remain limited. Understanding local clinical patterns and risk factors is essential for planning targeted interventions [13,14].

Therefore, this study was undertaken to evaluate the clinical profile and associated risk factors of

dermatophytosis in a rural population attending a tertiary care hospital in Kishan Ganj, Bihar**.**

Materials and Methods

Study design and setting: A hospital-based cross-sectional observational study was conducted over 12 months in the Department of Dermatology, Mata Gujri Medical College, Kishan Ganj.

Study population: A total of 100 consecutive patients with clinically suspected dermatophytosis were enrolled.

Inclusion criteria

- Patients of all age groups and genders
- Clinical features suggestive of dermatophytosis
- KOH microscopy positive

Exclusion criteria

- Patients on systemic antifungals in the past 4 weeks
- Non-consenting individuals

Data collection: Demographic data, clinical presentation, duration, recurrence, family history, steroid use, hygiene practices, and occupational exposure were recorded in a structured proforma.

Laboratory confirmation: Skin scrapings were examined using 10% KOH mount.

Statistical analysis: Data were analyzed using descriptive statistics. Categorical variables were expressed as percentages. Associations between dermatophytosis and risk factors were analyzed using chi-square test. A p-value <0.05 was considered statistically significant.

Results

1. **Demographic characteristics of the study population:** A total of 100 KOH-positive patients with dermatophytosis were included. Among them, 58 were males and 42 were females, with a male-to-female ratio of 1.38:1. The age of patients ranged from 5 to 72 years (mean ± SD: 31.4 ± 14.2 years).

   The highest number of cases was observed in the 21–40 years age group (46%), followed by 41–60 years (22%). Pediatric patients (<10 years) accounted for 6% of cases. These findings are summarized in Table 1. Table 1 shows maximum prevalence in young adults.

Table 1: Age distribution of patients with dermatophytosis (n = 100)

Age group (years)	Number of patients	Percentage (%)
<10	6	6
11–20	18	18
21–40	46	46
41–60	22	22
>60	8	8

2. **Clinical pattern of dermatophytosis:** Tinea corporis was the most common clinical presentation (38%), followed by tinea cruris (26%). Mixed dermatophytosis involving more than one site was observed in 14% of patients. Facial involvement (tinea faciei) accounted for 12%, while tinea pedis constituted 10%. The distribution of clinical types is presented in Table 2. Table 2 demonstrates predominance of truncal and groin involvement.

Table 2. Distribution of clinical types of dermatophytosis

Clinical type	Number of patients	Percentage (%)
Tinea corporis	38	38
Tinea cruris	26	26
Tinea faciei	12	12
Tinea pedis	10	10
Mixed infections	14	14

3. **Symptom profile:** Pruritus was the predominant symptom and was reported by 94% of patients, followed by erythema (82%) and scaling (76%). A burning sensation was present in 28% of cases, particularly among patients with steroid-modified lesions. The symptom distribution is illustrated in Figure 1. Figure 1 highlights pruritus as the most frequent presenting complaint.

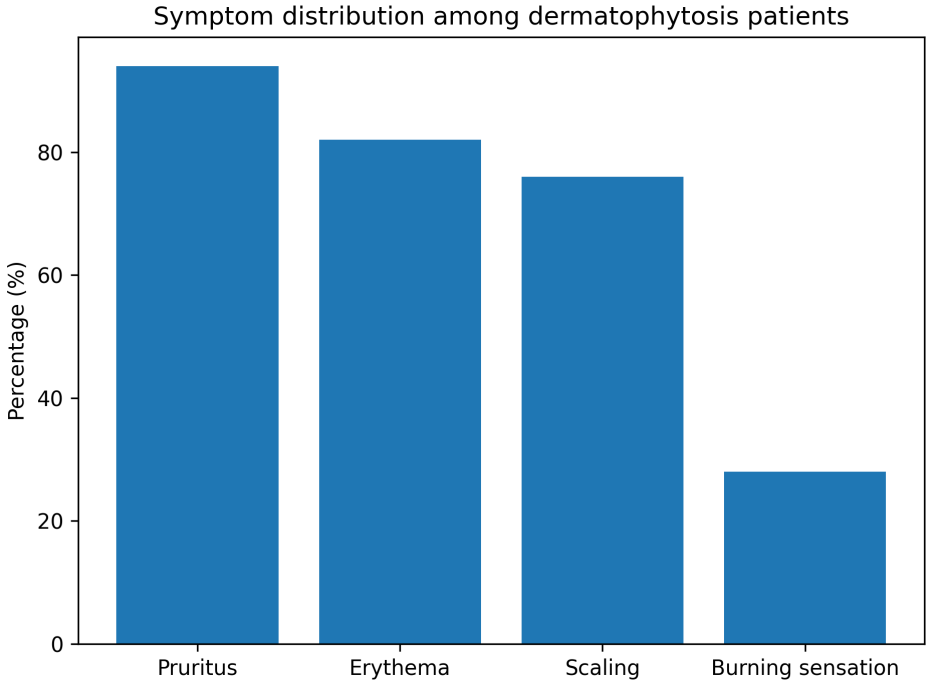

Figure 1. Symptom distribution among dermatophytosis patients

4. **Risk factors associated with dermatophytosis:** The most frequently identified risk factor was excessive sweating (62%), followed by occlusive clothing (54%), misuse of topical steroid combinations (48%), family history of similar lesions (40%), and poor personal hygiene (36%).

Statistical analysis revealed a significant association between dermatophytosis and excessive sweating ($p = 0.002$), occlusive clothing ($p = 0.01$), steroid misuse ($p < 0.001$), family history ($p = 0.004$), and poor hygiene ($p = 0.03$). These associations are detailed in Table 3. Table 3 shows strong associations between behavioral factors and dermatophytosis.

Table 3. Risk factors associated with dermatophytosis

Risk factor	Patients (n)	Percentage (%)	p-value
Excessive sweating	62	62	0.002*
Occlusive clothing	54	54	0.01*
Steroid misuse	48	48	<0.001*
Family history	40	40	0.004*
Poor hygiene	36	36	0.03*

*Statistically significant

5. **Chronicity and recurrence:** Chronic dermatophytosis (duration >6 months) was observed in 44% of patients, while 31% had a history of recurrent infection. Only 25% presented with first-episode acute infection.

Topical steroid misuse showed a strong correlation with chronic dermatophytosis ($\chi^2 = 11.6$, $p = 0.0007$). The pattern of disease chronicity is shown in Figure 2. Figure 2 demonstrates the high burden of chronic and recurrent dermatophytosis.

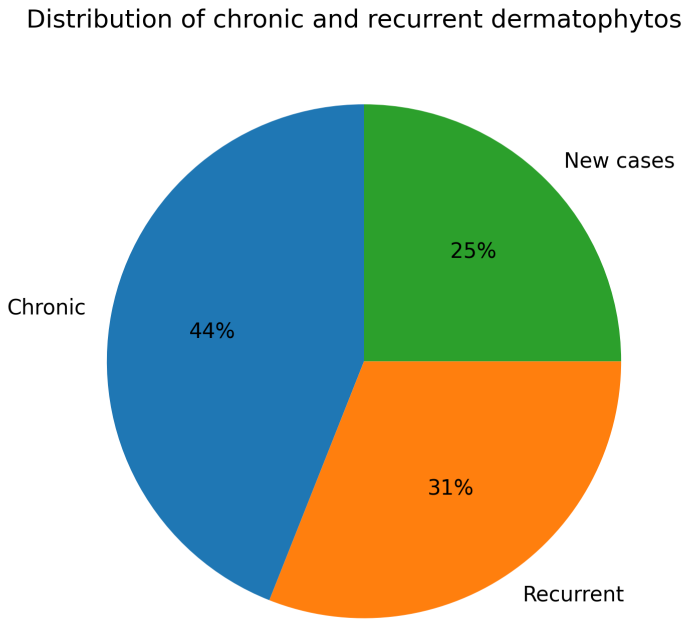

Figure 2. Distribution of chronic and recurrent dermatophytosis

Summary of Results

Young adults were most commonly affected, with a clear male predominance. Tinea corporis and tinea cruris were the predominant clinical types, and pruritus was the leading symptom. Excessive sweating, occlusive clothing, topical steroid misuse, family history, and poor hygiene showed significant associations with dermatophytosis. A high proportion of patients had chronic and recurrent disease, with steroid misuse strongly linked to chronicity, highlighting the rising burden of dermatophytosis and its changing clinical pattern in rural communities.

Discussion

Dermatophytosis is rapidly evolving from a superficial nuisance infection into a chronic, recurrent dermatosis with substantial public health implications. In the present study, young adults were most commonly affected, consistent with other Indian studies, likely due to greater outdoor activity, occupational exposure, and sweating [15,16].

Male predominance observed in this study mirrors earlier reports and may reflect increased physical labor, occlusive clothing, and healthcare-seeking behavior [17]. The predominance of tinea corporis and tinea cruris aligns with recent epidemiological data suggesting truncal and flexural involvement as the dominant clinical forms [18].

Pruritus was the leading symptom, significantly impairing quality of life. The high prevalence of erythema and scaling indicates active inflammatory disease, frequently exacerbated by inappropriate topical agents [19].

A striking finding was the strong association between dermatophytosis and misuse of topical steroid combinations. Nearly half of patients admitted to prior steroid application, and this factor showed a highly significant correlation with chronic disease ($p<0.001$). Similar alarming trends have been reported across India, where irrational fixed-dose combinations are driving treatment resistance and atypical morphology [20,21].

Environmental and behavioral risk factors such as excessive sweating, occlusive clothing, and poor hygiene were also significantly associated. Rural populations often lack awareness regarding fungal transmission, clothing practices, and need for treatment completion, facilitating reinfection and intrafamilial spread [22].

Family history in 40% of patients highlights the contagious nature of dermatophytosis and emphasizes the importance of treating household contacts and disinfecting fomites [23].

The rising burden in rural communities demands urgent multipronged strategies involving public education, regulation of topical steroid sales, early diagnosis, and standardized treatment protocols [24]. Without intervention, dermatophytosis may continue to evolve into a major endemic dermatosis with escalating antifungal resistance [25].

Conclusion

Dermatophytosis in rural communities shows increasing prevalence, chronicity, and association with preventable risk factors. Young adults are most commonly affected, with truncal and groin involvement predominating. Misuse of topical corticosteroids and poor hygienic practices play a central role in disease persistence. Community-based awareness programs and strict regulation of topical antifungals are urgently required.

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