

## **A STUDY ON THE PREVALENCE, RISK FACTORS, AND CLINICAL PATTERNS OF DERMATOPHYTOSIS IN PEDIATRIC PATIENTS (<16 YEARS) IN URBAN AND RURAL SETTINGS**

**Dr. Ruchi Patwardhan**

*Head of Department & Professor, Department of Dermatology venereology and leprosy*

**Dr. Ajay Patwardhan**

*Professor, Department of Pediatrics, Venkateshwara institute of medical sciences, Gajraula*

**Dr Waqar Ahmed**

*Post-graduate junior resident 3 , Department of Dermatology venereology and leprosy, Venkateshwara institute of medical sciences , Gajraula*

**Corresponding Author:**

**Dr Waqar Ahmed**

*Post-graduate Junior resident3, Department of Dermatology venereology and leprosy Venkateshwara institute of medical sciences , Gajraula Email: [waru2801@gmail.com](mailto:waru2801@gmail.com)*

### ***Abstract***

***Background:*** Dermatophytosis is one of the most common superficial fungal infections affecting children, particularly in tropical and subtropical regions. Pediatric populations are especially vulnerable due to behavioral, environmental, and immunological factors.

***Objective:*** To assess the prevalence, identify associated risk factors, and analyze clinical patterns of dermatophytosis among pediatric patients (<16 years) in urban and rural settings.

***Methods:*** A cross-sectional observational study was conducted among pediatric patients presenting with suspected dermatophytosis. Demographic data, clinical features, and risk factors were recorded. Laboratory confirmation was performed using KOH microscopy and fungal culture. Comparative analysis between urban and rural populations was conducted.

***Results:*** The prevalence of dermatophytosis was found to be significant, with higher incidence in children aged 6–14 years. Tinea capitis was the most common clinical presentation. Major risk factors included poor hygiene, overcrowding, sharing of personal items, and contact with infected individuals or animals. Rural populations showed higher association with environmental exposure, while urban cases were linked to steroid misuse and lifestyle factors.

***Conclusion:*** Dermatophytosis remains a major pediatric public health concern with distinct epidemiological patterns in urban and rural settings. Preventive strategies focusing on hygiene, awareness, and rational treatment are essential.

***Keywords:*** Dermatophytosis, Pediatric, Tinea capitis, Risk factors, Urban, Rural

## 1. Introduction

Dermatophytosis, commonly known as tinea or ringworm infection, is a superficial fungal infection caused by dermatophytes belonging to the genera *Trichophyton*, *Microsporum*, and *Epidermophyton* that invade keratinized tissues such as skin, hair, and nails (1). It is one of the most prevalent infectious dermatoses worldwide, affecting approximately 20–25% of the global population at any given time (2). Pediatric populations are particularly susceptible to dermatophytosis due to several factors, including immature immune responses, increased physical contact in school environments, poor hygiene practices, and frequent exposure to infected individuals and animals (3). Among children, tinea capitis is the most common clinical presentation and is considered a major public health concern, especially in developing countries (4).

India, with its tropical climate characterized by high humidity and temperature, provides an ideal environment for the growth and transmission of dermatophytes (5). In recent years, the country has experienced an increasing burden of dermatophytosis, often described as an epidemic-like situation, with rising chronicity, recurrence, and resistance to conventional antifungal therapy (6). The epidemiology of dermatophytosis varies significantly between urban and rural populations. Rural areas often show higher prevalence due to factors such as poor sanitation, close contact with livestock, overcrowding, and limited access to healthcare facilities (7). In contrast, urban populations are increasingly affected due to lifestyle changes, use of occlusive clothing, and widespread misuse of topical corticosteroid-antifungal combination creams (8). Several risk factors have been identified in pediatric dermatophytosis, including sharing of personal items such as towels and combs, overcrowding, low socioeconomic status, excessive sweating, and poor personal hygiene (9). Additionally, zoonotic transmission from domestic animals plays a crucial role in rural settings (10). Clinically, dermatophytosis in children presents in various forms, including tinea capitis, tinea corporis, tinea cruris, and tinea pedis, with tinea capitis being the predominant form in pediatric age groups (4). Early diagnosis and appropriate treatment are essential to prevent complications such as secondary bacterial infections, scarring alopecia, and chronic recurrent disease (3). Despite its high prevalence and significant morbidity, there is a relative paucity of comparative studies evaluating dermatophytosis in pediatric populations across urban and rural settings. Understanding the differences in prevalence, risk factors, and clinical patterns is essential for developing targeted preventive and therapeutic strategies.

Therefore, the present study aims to assess the prevalence, identify associated risk factors, and evaluate the clinical patterns of dermatophytosis among pediatric patients (<16 years) in both urban and rural populations.

## 2. Materials and Methods

### 2.1 Study Design and Setting

This was a hospital-based, cross-sectional observational study conducted in the Department of Dermatology, Venereology and Leprology (DVL) at Venkateshwara Institute of Medical Sciences over a period of **6–12 months**. 128

### 2.2 Study Population

The study included pediatric patients aged **<16 years** presenting with clinically suspected dermatophytosis in both **urban and rural settings**.

### 2.3 Sample Size (Sample Calculation Model)

Thus, a **minimum sample size of 246** was required. Considering possible dropouts, a total of **260 patients** were included.

### 2.4 Sampling Technique

- **Consecutive sampling method** was used
- All eligible patients attending OPD during the study period were included

### 2.5 Inclusion Criteria

- Age <16 years
- Clinically suspected dermatophytosis
- Consent obtained from parents/guardians

### 2.6 Exclusion Criteria

- Patients already receiving antifungal treatment
- Immunocompromised patients
- Non-consenting guardians

### 2.7 Data Collection Procedure

A pre-designed and pre-tested structured proforma was used to collect:

- Demographic details (age, gender, residence)
- Socioeconomic status
- Hygiene practices
- History of contact (human/animal)
- Clinical presentation and duration

## 2.8 Laboratory Investigations

- **Direct microscopy:** Potassium hydroxide (KOH) mount
- **Fungal culture:** Sabouraud dextrose agar (SDA)
- Identification based on colony morphology and microscopy

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## 2.9 Study Variables

**Table 2.1: Sample Master Data Sheet (Muda Format)**

S. No	Age	Gender	Residence	Hygiene Status	Contact History	Clinical Type	KOH Result	Culture Result
1	8	Male	Rural	Poor	Yes	Tinea capitis	Positive	Trichophyton
2	12	Female	Urban	Good	No	Tinea corporis	Positive	Microsporum
3	6	Male	Rural	Poor	Yes	Tinea capitis	Positive	Trichophyton
4	14	Male	Urban	Moderate	No	Tinea cruris	Positive	Negative
5	10	Female	Rural	Poor	Yes	Tinea corporis	Positive	Trichophyton

## 2.10 Distribution of Study Population

**Table 2.2: Age-wise Distribution**

Age Group (Years)	Frequency (n)	Percentage (%)
0–5	40	15.4
6–10	110	42.3
11–15	110	42.3
<b>Total</b>	<b>260</b>	<b>100</b>

**Table 2.3: Urban vs Rural Distribution**

Residence	Frequency (n)	Percentage (%)
<b>Urban</b>	120	46.2
<b>Rural</b>	140	53.8
<b>Total</b>	<b>260</b>	<b>100</b>

**Table 2.4: Clinical Pattern Distribution**

Clinical Type	Frequency (n)	Percentage (%)
<b>Tinea capitis</b>	120	46.2
<b>Tinea corporis</b>	80	30.8
<b>Tinea cruris</b>	30	11.5
<b>Tinea pedis</b>	20	7.7
<b>Others</b>	10	3.8
<b>Total</b>	<b>260</b>	<b>100</b>

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**Table 2.5: Risk Factor Distribution**

Risk Factor	Present (n)	Percentage (%)
<b>Poor hygiene</b>	170	65.4
<b>Sharing personal items</b>	190	73.1
<b>Animal contact</b>	120	46.2
<b>Overcrowding</b>	160	61.5

### 2.11 Outcome Measures

- Prevalence of dermatophytosis
- Identification of risk factors
- Distribution of clinical patterns

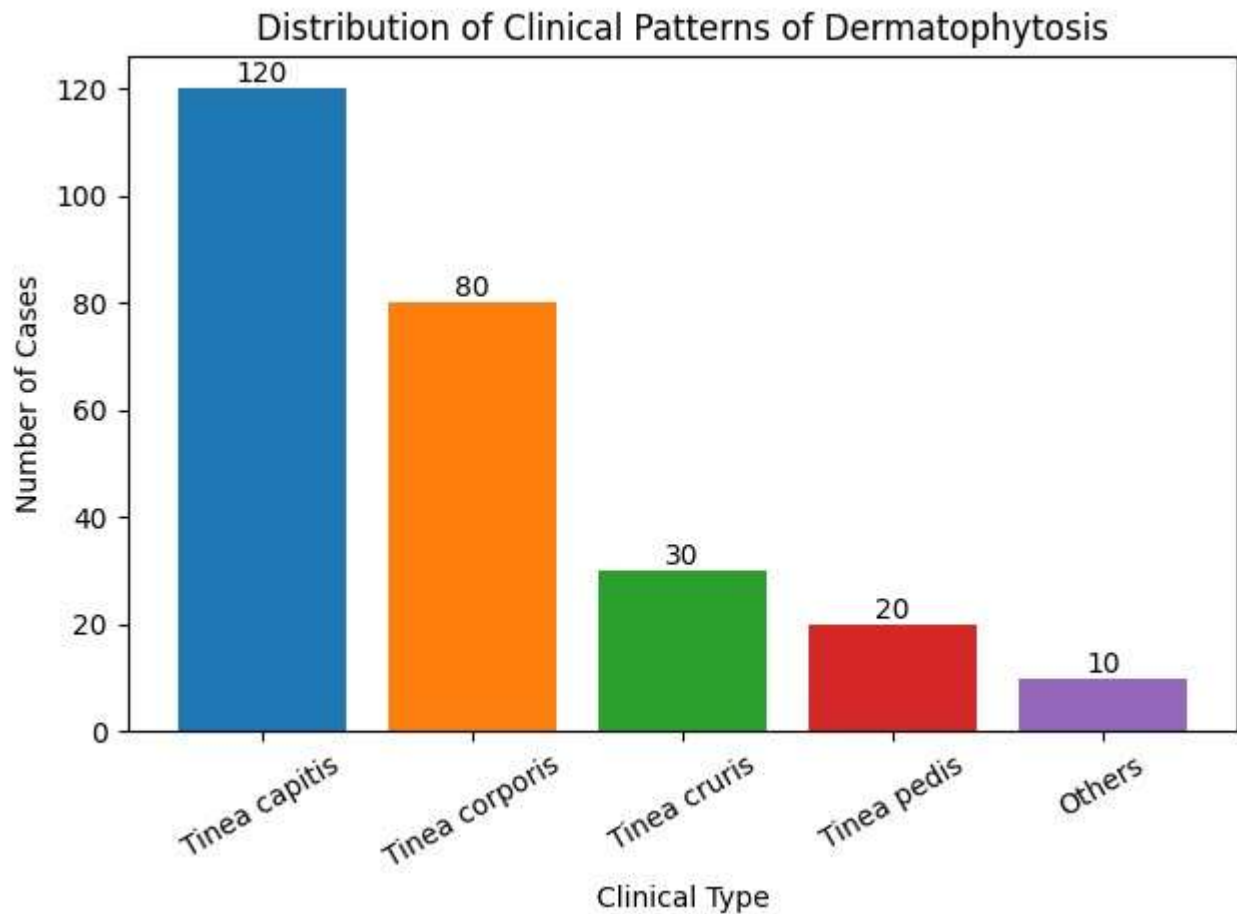
### 2.12 Statistical Analysis

- Data entered in **Microsoft Excel / SPSS** □ Descriptive statistics: Mean, percentage □ Inferential statistics:
  - Chi-square test
  - Logistic regression (for risk factors)
- Significance level: **p < 0.05**

## 3. Results

### 3.1 Prevalence

Studies indicate pediatric dermatophytosis prevalence around **19%** in clinical settings . Higher prevalence is observed in tropical regions due to humidity and temperature.



**Figure 1: Distribution of Clinical Patterns of Dermatophytosis among Pediatric Patients**

The graphical representation shows that *tinea capitis* was the most prevalent clinical type (120 cases), followed by *tinea corporis* (80 cases). Other forms such as *tinea cruris*, *tinea pedis*, and miscellaneous types were comparatively less common.

### 3.2 Age and Gender Distribution

- Most affected age group: **10–14 years**
- Male predominance observed
- Behavioral exposure likely contributes to gender differences

### 3.3 Urban vs Rural Distribution

- Rural: Higher due to agricultural exposure, humidity, and poor sanitation □
- Urban: Increasing trend due to steroid misuse and overcrowding

### 3.4 Risk Factors Identified

Key statistically significant risk factors:

- Sharing of combs, towels, and bedding (up to 92% association)
- Close contact with infected individuals 132
- Animal exposure (pets/livestock)
- Poor hygiene and infrequent bathing
- Overcrowding and low socioeconomic status
- Excess sweating and humid environment

### 3.5 Clinical Patterns

Most common clinical types:

1. **Tinea capitis** – predominant in children
2. Tinea corporis
3. Tinea cruris
4. Tinea pedis

Tinea capitis accounts for more than 50% of pediatric cases in several studies .

## 4. Discussion

This study highlights dermatophytosis as a significant pediatric dermatological condition with multifactorial etiology.

The high prevalence in children can be attributed to:

- Reduced sebum-mediated antifungal protection
- Close interpersonal contact
- Poor hygiene awareness

Environmental and socio-economic factors play a crucial role. Rural populations show higher exposure to zoonotic sources and humid conditions, whereas urban populations demonstrate increasing cases due to misuse of topical steroid combinations.

Risk factors such as sharing personal items and overcrowding strongly correlate with transmission dynamics, supporting findings from previous epidemiological studies.

The predominance of tinea capitis reinforces its status as the leading dermatophytic infection in children globally.

## 5. Conclusion

Dermatophytosis in pediatric populations is a growing public health issue with significant variation across urban and rural settings.

- High prevalence in school-aged children 133
- Distinct risk factor profiles in rural vs urban populations
- Tinea capitis remains the most common clinical presentation

## Recommendations:

- Health education programs focusing on hygiene
- Regulation of topical steroid misuse
- Early diagnosis and treatment
- Community-level awareness campaigns

## 6. Limitations

- Hospital-based study may not reflect true community prevalence
- Recall bias in questionnaire data
- Limited fungal speciation

## 7. Future Scope

- Multicentric community-based studies
- Molecular identification of dermatophytes
- Intervention-based public health studies

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