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EPIDEMIOLOGICAL PROFILE AND ASSOCIATED RISK FACTORS OF DERMATOPHYTOSIS AMONG PATIENTS ATTENDING A TERTIARY CARE HOSPITAL IN GUJARAT

Dr. Valay Ajaybhai Desai[1], Dr. Sugam Patel[2]

[1] Assistant Professor, Department of Dermatology, GMERS Medical College and Hospital, Valsad, Gujarat, India.
[2] Junior Resident, Department of Dermatology, GMERS Medical College and Hospital, Valsad, Gujarat, India.

Corresponding Author:

Dr. Sugam Patel

Junior Resident, Department of Dermatology, GMERS Medical College and Hospital, Valsad, Gujarat, India.

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ABSTRACT

Background: Dermatophytosis is one of the most common superficial fungal infections worldwide and represents a significant public health concern, particularly in tropical and subtropical countries such as India. The occurrence and spread of dermatophytosis are influenced by demographic, environmental, behavioral, and clinical factors. Understanding local epidemiological patterns and associated risk factors is essential for developing effective preventive and management strategies.
Objectives: To assess the epidemiological profile of dermatophytosis and identify associated risk factors among patients attending a tertiary care hospital in Gujarat.
Methods: A hospital-based observational cross-sectional study was conducted in the Department of Dermatology of a tertiary care hospital in Gujarat from January 2026 to April 2026. A total of 108 adult patients with clinically diagnosed dermatophytosis were enrolled using a consecutive sampling technique. Data regarding sociodemographic characteristics, clinical presentation, and potential risk factors were collected using a structured case record form. Statistical analysis was performed using SPSS version 26.0. Categorical variables were expressed as frequencies and percentages. Associations between variables were assessed using the Chi-square test or Fisher's exact test. A p-value of less than 0.05 was considered statistically significant.
Results: Among the 108 participants, the majority belonged to the 18–30 years age group (38.9%), and males constituted 61.1% of cases. Tinea corporis was the most common clinical presentation (36.1%), followed by tinea cruris (22.2%) and combined tinea corporis et cruris (19.4%). Excessive sweating (66.7%), sharing of clothes or towels (50.0%), and overcrowded living conditions (41.7%) were the most frequently identified risk factors. Significant associations were observed between recurrent dermatophytosis and excessive sweating (p=0.032) as well as sharing of clothes or towels (p=0.048). Diabetes mellitus was significantly associated with extensive dermatophytosis involving two or more body sites (p=0.041).
Conclusion: Dermatophytosis predominantly affected young adult males, with tinea corporis being the most common clinical presentation. Excessive sweating, sharing of personal belongings, and diabetes mellitus were important factors associated with recurrent or extensive disease. Targeted preventive measures, patient education regarding personal hygiene, and effective management of underlying comorbidities may help reduce disease burden and recurrence.

Keywords: *Dermatophytosis; Tinea corporis; Tinea cruris; Epidemiology; Risk factors; Excessive sweating; Diabetes mellitus; Gujarat.*

INTRODUCTION

Dermatophytosis is one of the most common infectious skin diseases worldwide and represents a significant public health concern, particularly in tropical and subtropical regions. It is a superficial fungal infection caused by dermatophytes, a group of keratinophilic fungi that invade keratinized tissues such as the stratum corneum of the skin, hair, and nails.

Although dermatophytosis is generally not life-threatening, it contributes substantially to morbidity, pruritus, discomfort, cosmetic concerns, reduced quality of life, and increased healthcare utilization [1]. The prevalence of dermatophytosis has increased considerably over recent decades owing to changing environmental conditions, rapid urbanization, population overcrowding, widespread use of immunosuppressive therapies, and lifestyle-related factors [2].

Globally, dermatophytosis affects a substantial proportion of the population and remains among the most prevalent infectious diseases. Clinically, dermatophytosis presents in various forms depending on the anatomical site involved, including tinea corporis, tinea cruris, tinea faciei, tinea pedis, tinea manuum, and tinea unguium. The epidemiology of dermatophytosis varies considerably across geographical regions due to differences in climate, socioeconomic status, hygiene practices, occupational exposure, and healthcare-seeking behavior [3,4]. Warm and humid environments favor fungal growth and transmission, resulting in a higher disease burden in tropical countries.

In South Asia, particularly India, dermatophytosis has emerged as a major dermatological challenge. Recent years have witnessed an alarming rise in the incidence of chronic, recurrent, extensive, and treatment-resistant dermatophytosis [5]. Multiple factors have been implicated in this changing epidemiology, including overcrowding, excessive sweating, poor personal hygiene, sharing of clothing and personal items, close household contact, and indiscriminate use of topical corticosteroid-containing preparations [6]. Furthermore, the widespread availability of over-the-counter antifungal and steroid combinations has altered clinical presentation and adversely affected treatment outcomes, making disease management increasingly challenging [7].

India's diverse climatic conditions and large population contribute significantly to the burden of dermatophytosis. Western states such as Gujarat experience prolonged periods of heat and humidity that create favorable conditions for fungal proliferation and transmission. Occupational activities involving outdoor labor, agriculture, industrial work, and prolonged exposure to perspiration may further increase susceptibility among vulnerable populations [8]. Despite the high prevalence of dermatophytosis, epidemiological data from specific regions remain limited, and variations in demographic characteristics and risk factor profiles necessitate localized investigations.

Understanding the epidemiological characteristics and associated risk factors of dermatophytosis is essential for developing effective preventive strategies and improving patient outcomes. Previous studies have predominantly focused on clinical and microbiological aspects of the disease, whereas relatively few have comprehensively evaluated demographic, environmental, behavioral, and occupational determinants within tertiary healthcare settings [9]. Moreover, the increasing occurrence of recurrent and chronic infections highlights the need for updated regional evidence to support public health interventions and guide clinical practice.

In Gujarat, data regarding the epidemiological profile of dermatophytosis and its associated risk factors remain relatively scarce, particularly in tertiary care hospital settings. Identification of prevalent clinical patterns and modifiable risk factors may assist clinicians in early diagnosis, patient counseling, and implementation of preventive measures. Therefore, the present study was undertaken to assess the epidemiological profile of dermatophytosis among patients attending a tertiary care hospital in Gujarat and to evaluate the demographic, behavioral, environmental, and clinical factors associated with the disease. The specific objectives were to describe the distribution of dermatophytosis according to age, sex, occupation, and clinical type, and to identify potential risk factors contributing to disease occurrence and recurrence.

METHODOLOGY

Study Design: This was a hospital-based observational cross-sectional study conducted to assess the epidemiological profile of dermatophytosis and associated risk factors among patients attending the Dermatology Outpatient Department (OPD) of a tertiary care hospital in Gujarat.

Study Setting: The study was conducted in the Department of Dermatology of a tertiary care teaching hospital located in Gujarat, India. The hospital caters to both urban and rural populations and serves as a referral center for dermatological disorders.

Study Duration: The study was conducted over a three-month period from January 2026 to April 2026.

Study Population: The study population comprised patients presenting to the Dermatology OPD with clinically diagnosed dermatophytosis during the study period. Eligible participants who fulfilled the inclusion criteria and provided informed consent were enrolled consecutively.

Inclusion Criteria

- Patients of either sex aged ≥18 years.
- Patients clinically diagnosed with dermatophytosis by a dermatologist.
- Patients willing to participate and provide written informed consent.
- Patients attending the Dermatology OPD during the study period.

Exclusion Criteria

- Patients unwilling to provide informed consent.
- Patients with severe dermatological disorders that could interfere with clinical assessment.
- Patients with incomplete clinical or epidemiological information.
- Patients receiving systemic antifungal treatment for less than two weeks before presentation.
- Patients with suspected deep or systemic fungal infections.
- Patients diagnosed with non-dermatophytic superficial fungal infections such as candidiasis or pityriasis versicolor.

Sample Size: The sample size was determined based on the average number of patients with dermatophytosis attending the Dermatology OPD during the study period. Hospital records indicated that approximately 27 eligible patients with dermatophytosis were encountered per month. Therefore, considering a study duration of three months and the feasibility of recruitment, all eligible consecutive patients presenting during the study period were included. A total of 108 participants constituted the final study sample.

Sampling Technique: A consecutive sampling technique was employed. All eligible patients meeting the selection criteria during the study period were approached for participation until the target sample size of 108 participants was achieved.

Data Collection Tools and Procedure: Data were collected using a predesigned and pretested structured case record form. After obtaining written informed consent, participants were interviewed regarding demographic characteristics, socioeconomic status, occupation, residence, personal hygiene practices, family history of dermatophytosis, sharing of personal belongings, comorbid conditions, and other potential risk factors. A detailed dermatological examination was performed by a qualified dermatologist to identify the clinical type and distribution of dermatophytosis. Relevant clinical findings were recorded systematically. Whenever indicated as part of routine clinical care, laboratory investigations such as potassium hydroxide (KOH) microscopy were reviewed from patient records to support the diagnosis. All collected information was anonymized and entered into a secure database for analysis.

Study Variables: The independent variables included age, sex, place of residence, occupation, socioeconomic status, personal hygiene practices, excessive sweating, overcrowding, sharing of clothes or towels, family history of dermatophytosis, presence of diabetes mellitus, and other relevant clinical characteristics. The dependent variables were the occurrence and clinical pattern of dermatophytosis, including the type and distribution of lesions. Associations between selected risk factors and recurrent or extensive dermatophytosis were also evaluated.

Statistical Analysis: Data were entered into Microsoft Excel and analyzed using the Statistical Package for the Social Sciences (SPSS) software version 26.0 (IBM Corp., Armonk, NY, USA). Categorical variables were summarized as frequencies and percentages, while continuous variables were expressed as mean ±standard deviation (SD) or median with interquartile range, as appropriate. Associations between categorical variables were assessed using the Chi-square test or Fisher's exact test whenever expected cell counts were small. A p-value of less than 0.05 was considered statistically significant.

Ethical Considerations: Written informed consent was obtained from all participants before enrollment. Confidentiality and anonymity of participant information were maintained throughout the study. Participation was voluntary, and participants were free to withdraw at any stage without affecting their medical care. The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and applicable institutional research guidelines.

RESULTS

A total of 108 patients with clinically diagnosed dermatophytosis were included in the study. The majority of participants belonged to the 18–30 years age group (38.9%), followed by the 31–40 years age group (27.8%). Males constituted a higher proportion of cases than females (61.1% vs. 38.9%). More than half of the participants were from urban areas (55.6%), while manual laborers represented the largest occupational category (30.6%). Detailed sociodemographic characteristics of the study participants are presented in Table 1.

Table 1. Sociodemographic Characteristics of Study Participants (N = 108)

Variable	Category	Frequency (n)	Percentage (%)
Age Group (years)	18–30	42	38.9
	31–40	30	27.8
	41–50	21	19.4
	>50	15	13.9
Sex	Male	66	61.1
	Female	42	38.9

Residence	Urban	60	55.6
	Rural	48	44.4
Occupation	Manual laborer	33	30.6
	Homemaker	24	22.2
	Office worker	21	19.4
	Student	18	16.7
	Others	12	11.1

Regarding clinical presentation, tinea corporis was the most common form of dermatophytosis, accounting for 36.1% of cases. This was followed by tinea cruris (22.2%) and combined tinea corporis et cruris (19.4%). Less common presentations included tinea faciei, tinea pedis, and tinea manuum. The distribution of clinical types of dermatophytosis is shown in Table 2.

Table 2. Clinical Pattern of Dermatophytosis among Study Participants (N = 108)

Clinical Type of Infection	Frequency (n)	Percentage (%)
Tinea corporis	39	36.1
Tinea cruris	24	22.2
Tinea corporis et cruris	21	19.4
Tinea faciei	9	8.3
Tinea pedis	9	8.3
Tinea manuum	6	5.6

Excessive sweating emerged as the most frequently reported risk factor, present in 66.7% of participants. Sharing of clothes or towels was reported by 50.0% of participants, while overcrowded living conditions were observed in 41.7%. Irregular personal hygiene practices were identified in 38.9% of participants, and diabetes mellitus was present in 22.2%. The distribution of identified risk factors is presented in Table 3.

Table 3. Distribution of Identified Risk Factors among Study Participants (N = 108)

Risk Factor	Present n (%)	Absent n (%)
Excessive sweating	72 (66.7)	36 (33.3)
Sharing clothes/towels	54 (50.0)	54 (50.0)
Overcrowded living conditions	45 (41.7)	63 (58.3)
Family history of dermatophytosis	33 (30.6)	75 (69.4)
Diabetes mellitus	24 (22.2)	84 (77.8)
Irregular personal hygiene	42 (38.9)	66 (61.1)

Analysis of factors associated with recurrent dermatophytosis demonstrated statistically significant associations with excessive sweating ($p = 0.032$) and sharing of clothes or towels ($p = 0.048$). Recurrent infection was more frequently observed among participants with these risk factors. Although family history of dermatophytosis was more common among recurrent cases, the association did not achieve statistical significance ($p = 0.071$). Details are shown in Table 4.

Table 4. Association Between Selected Risk Factors and Recurrent Dermatophytosis (N = 108)

Risk Factor	Recurrent Infection (n=42)	Non-recurrent Infection (n=66)	p-value
Excessive sweating present	36	36	0.032*
Excessive sweating absent	6	30	
Sharing clothes/towels present	30	24	0.048*
Sharing clothes/towels absent	12	42	
Family history present	21	12	0.071
Family history absent	21	54	

*Statistically significant ($p < 0.05$)

Diabetes mellitus was significantly associated with extensive disease involvement affecting two or more body sites. Among participants with diabetes mellitus, 15 (62.5%) had extensive dermatophytosis, compared with 24 (28.6%) among non-

diabetic participants. This association was statistically significant (p = 0.041), indicating that diabetes mellitus may contribute to more widespread disease involvement. Details are presented in Table 5.

Table 5. Association Between Diabetes Mellitus and Extent of Dermatophytosis (N = 108)

Diabetes Status	Extensive Infection (≥2 body sites) n (%)	Localized Infection n (%)	p-value
Present (n=24)	15 (62.5)	9 (37.5)	0.041*
Absent (n=84)	24 (28.6)	60 (71.4)	

*Statistically significant (p < 0.05)

DISCUSSION

The present hospital-based cross-sectional study evaluated the epidemiological profile of dermatophytosis and associated risk factors among patients attending a tertiary care hospital in Gujarat. The findings demonstrated that dermatophytosis was more common among young adults, males, and individuals engaged in occupations associated with increased sweating and environmental exposure. Tinea corporis emerged as the most common clinical presentation, while excessive sweating, sharing of clothes or towels, and diabetes mellitus were identified as important factors associated with recurrent or extensive disease.

The majority of participants in the present study belonged to the 18–30 years age group, indicating that dermatophytosis predominantly affects younger and economically productive individuals. Similar findings have been reported in previous Indian studies, where the highest burden of dermatophytosis was observed among individuals aged 20–40 years [5,8,10]. Younger adults are generally more involved in outdoor activities, physical labor, sports, and occupations associated with prolonged sweating and close interpersonal contact. These factors facilitate fungal colonization and transmission, thereby increasing susceptibility to infection. The predominance of this age group highlights the socioeconomic impact of dermatophytosis, as recurrent infections may affect productivity and quality of life.

A male predominance was observed in the present study, with males accounting for more than three-fifths of the study population. This observation is consistent with findings reported by Lakshmanan et al. and other investigators studying dermatophytosis in India [11]. Increased occupational exposure, prolonged outdoor activities, excessive perspiration, use of occlusive clothing, and greater participation in manual labor may contribute to the higher prevalence among males. Cultural differences in healthcare-seeking behavior may also influence the gender distribution observed in hospital-based studies. Nevertheless, recent literature suggests that the gender gap may be narrowing because of changing lifestyle and occupational patterns among women [11].

Regarding clinical presentation, tinea corporis was the most common type of dermatophytosis, followed by tinea cruris and combined tinea corporis et cruris. These findings are in agreement with several Indian studies that have consistently reported tinea corporis and tinea cruris as the predominant clinical manifestations of dermatophytosis [6,10]. The predominance of these clinical forms may be attributed to the hot and humid climatic conditions prevalent in western India, particularly Gujarat, which promote fungal growth and persistence. Increased sweating, friction, and prolonged moisture retention in intertriginous and covered body areas create favorable conditions for infection. The substantial proportion of patients with involvement of multiple body sites further reflects the changing epidemiology of dermatophytosis in India, characterized by chronicity, recurrence, and extensive disease [7].

Among the evaluated risk factors, excessive sweating emerged as the most frequently reported factor and demonstrated a statistically significant association with recurrent dermatophytosis. Excess moisture creates an ideal environment for dermatophyte proliferation and contributes to persistence and recurrence of infection. Similar associations between hyperhidrosis, humid climatic conditions, and dermatophytosis have been documented in previous studies [4,8]. Given the warm climate of Gujarat and the large proportion of participants engaged in occupations involving physical exertion, excessive sweating appears to play a substantial role in disease occurrence and recurrence.

Sharing of clothes or towels was also significantly associated with recurrent dermatophytosis. Dermatophyte spores can survive on contaminated fomites and facilitate transmission among household members and close contacts. Previous studies have similarly identified sharing of personal items as an important behavioral risk factor for dermatophytic infections [6,12]. This finding emphasizes the need for health education regarding personal hygiene, avoidance of sharing clothing and towels, and adoption of preventive measures within households to reduce transmission and recurrence.

The present study also demonstrated a significant association between diabetes mellitus and extensive dermatophytosis involving two or more body sites. Individuals with diabetes exhibited a substantially higher frequency of widespread disease compared with non-diabetic participants. Diabetes mellitus is known to impair innate and adaptive immune responses, alter skin barrier function, and create favorable conditions for fungal growth through increased skin surface glucose levels and reduced host defense mechanisms [13]. Similar observations have been reported in previous studies evaluating dermatophytosis among patients with metabolic disorders. These findings suggest that screening for diabetes

and ensuring optimal glycemic control should form an integral component of the management of patients presenting with recurrent, chronic, or extensive dermatophytosis.

From a public health perspective, the findings underscore the importance of addressing modifiable risk factors associated with dermatophytosis. Educational interventions promoting personal hygiene, regular bathing, proper drying of skin folds, avoidance of sharing personal belongings, and early treatment-seeking behavior may help reduce disease burden and recurrence. Healthcare professionals should provide targeted counseling to individuals with excessive sweating and underlying comorbidities such as diabetes mellitus. Community-based awareness programs may further contribute to reducing transmission and preventing chronic or recurrent disease.

The study has several strengths. It provides contemporary epidemiological data on dermatophytosis from a tertiary care center in Gujarat and evaluates multiple demographic, behavioral, environmental, and clinical risk factors simultaneously. The inclusion of 108 participants and the use of a structured data collection tool enhanced the reliability and completeness of the collected information. The study also contributes valuable region-specific evidence that may assist clinicians and public health authorities in developing targeted preventive and management strategies for dermatophytosis.

However, certain limitations should be acknowledged. The cross-sectional study design limits the ability to establish causal relationships between risk factors and disease occurrence. As the study was conducted at a single tertiary care center, the findings may not be fully generalizable to the wider community. Some risk factor information was based on participant self-reporting and may therefore be subject to recall bias. In addition, microbiological confirmation was not available for all participants, and diagnosis was primarily based on clinical assessment. Future multicenter studies involving larger sample sizes and routine mycological confirmation are warranted to provide more comprehensive evidence regarding the epidemiology and determinants of dermatophytosis in different geographic settings.

CONCLUSION

This study evaluated the epidemiological characteristics and associated risk factors of superficial fungal skin infections among patients attending a tertiary care hospital in Gujarat. The findings demonstrated that fungal skin infections were more common among young adults and males, with tinea corporis being the predominant clinical presentation. Environmental and behavioral factors, particularly excessive sweating and sharing of clothes or towels, were frequently observed and showed significant associations with recurrent infection. Diabetes mellitus was significantly associated with more extensive disease involvement, highlighting the influence of underlying comorbidities on disease severity.The study emphasizes the importance of identifying modifiable risk factors in the prevention and management of superficial fungal infections. Patient education regarding personal hygiene, avoidance of sharing personal items, and early healthcare seeking may help reduce disease transmission and recurrence. Routine assessment of associated comorbidities, especially diabetes mellitus, should be incorporated into clinical practice. Further multicenter studies with larger sample sizes are recommended to provide broader epidemiological evidence and support the development of targeted public health interventions for effective control of fungal skin infections.

DECLARATIONS

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Conflict of Interest: The authors declare that there is no conflict of interest.

Informed Consent: Written informed consent was obtained from all participants before enrollment in the study.

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