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Clinico-Mycological Correlation and Risk Factors in Tinea Corporis: A Cross-Sectional Study from Karachi

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Abstract

Background: Tinea corporis is one of the most common superficial fungal infections. Pakistan has seen a dramatic rise in chronic and recurrent dermatophytosis in recent years. Still, little is known about the clinico-mycological correlation and associated risk factors that are linked to it.

Objective: To determine the clinico-mycological correlation and identify risk factors of tinea corporis among patients presenting to a tertiary care hospital in Karachi.

Method: This cross-sectional study was conducted in the Department of Microbiology, Basic Medical Sciences Institute, Karachi, from June 2018 to June 2019. A total of 301 samples were taken from patients who visited the dermatology OPD of Jinnah Postgraduate Medical Centre.

Results: Of 301 patients, 171 (56.8%) were males and 130 (43.2%) females. The majority were employed in labor or manual occupations (48.8%) and belonged to the low socioeconomic class (94.6%). Recurrent and chronic infections were prevalent, with 72.7% experiencing recurrence and 45.5% reporting familial clustering. 56.8% of patients shared household objects, and 34.2% of patients had comorbidities like diabetes and hypertension, while in 37.8% animal exposure was reported. Mycological investigation shows dermatophyte growth in 84 patients (27.9%), with Trichophyton mentagrophytes (44.8%) being the most common isolate, followed by T. rubrum (32.8%) and T. tonsurans (22.4%). Clinical correlation revealed that T. mentagrophytes had more severe inflammatory lesions compared to T. rubrum.

Conclusion: Tinea corporis is a rising public health issue in Karachi, mostly affecting people from poor socioeconomic status and those with comorbidities. The shift in dominance from T. rubrum to T. mentagrophytes may be attributed to the growing tendency of chronic and recurrent cases. In addition to targeted medication, family-wide management addressing poor hygiene, overcrowding, corticosteroid misuse, and animal exposure is crucial to prevent transmission.

Keywords: Tinea corporis, Dermatophytes, Trichophyton mentagrophytes, Clinico-mycological correlation, Risk factors, Pakistan.

Introduction:

Human diseases caused by Fungi are diverse, ranging from allergic syndromes to superficial, disfiguring, and life-threatening invasive fungal diseases (IFDs), which collectively affect over

a billion people worldwide. [1] Due to the rising occurrence and diverse nature, Fungal infections pose significant challenges, including highly resistant strains, which can complicate diagnosis, prevention, and treatment.[2]

Dermatophytes are a group of pathogenic keratinophilic fungi that cause Dermatophytosis, a common superficial fungal infection.[3] Based on host preferences and ecological niches, dermatophytes can be classified into three types: anthropophilic dermatophytes (primarily spread from person to person and typically cause chronic infections with moderate clinical symptoms); zoophilic dermatophytes (prefer animal hosts but can infect other species, including humans, often causing inflammatory skin infections); and geophilic dermatophytes (survive on keratinized waste in the soil and are rarely pathogenic but can produce more severe inflammation than anthropophilic species)[3-4]. Dermatophytes responsible for tinea corporis include Trichophyton, Epidermophyton, and Microsporum. Over the past seven decades, Trichophyton rubrum has been the most common species responsible for dermatophyte infections, accounting for 80% to 90% of pathogenic strains[5]. Following tinea capitis, T. tonsurans is frequently the cause of tinea corporis, while close contact with dogs or cats often involves M. canis. Other causative organisms include T. interdigitale (previously known as T. mentagrophytes), T.verrucosum, T. violaceum, T. concentricum, Epidermophyton floccosum, M. audouinii, and M. gypseum[6]. However, a recent shift from T. rubrum to the T. mentagrophytes complex has been observed, likely due to advances in molecular identification[3].

Many tropical and developing countries are experiencing an increase in dermatophyte infections because these organisms thrive in hot, humid environments.[7] In Pakistan, its prevalence ranges from 11.6 to 34.8%[8]. Most cases of tinea corporis occur in young adults and post-pubertal children. Humans become infected through close contact with an infected person, animal, contaminated fomites, or soil.[6] Tinea corporis is influenced by host, environmental, and behavioral factors. Host factors include a history of dermatophytosis, immunodeficiency, diabetes mellitus, genetic susceptibility (e.g., tinea imbricata), xerosis, and ichthyosis[6]. Environmental factors such as overcrowded housing, high humidity, and contact with infected domestic animals also facilitate transmission, while behavioral factors include sharing personal items, recreational activities (e.g., wrestling and martial arts), and misuse of topical corticosteroids[6-9]. It is often observed that chronic steroid use is linked to atypical presentations, altered clinical features, and more severe disease.[9] Tinea corporis generally presents as a well-defined, sharply demarcated, oval or circular, mildly erythematous, scaly patch or plaque with a raised border. The border is typically annular and irregular, but can sometimes be papular, vesicular, or pustular[6]. In Pakistan, we are currently seeing a significant rise in cases of chronic, recalcitrant tinea corporis, with atypical presentations, frequent relapses, and treatment failures.

Although many local studies have examined the prevalence and antifungal susceptibility of dermatophytes, limited research is available on the clinico-mycological relationship and related risk factors in our population. Addressing this gap is essential for guiding targeted diagnostic strategies, improving patient outcomes, and informing public health policies.

Methodology:

Study Design and Setting:

This cross-sectional study was conducted at the Department of Microbiology, Basic Medical Sciences Institute (BMSI), and Jinnah Postgraduate Medical Centre (JPMC) Karachi, in collaboration with the Department of Dermatology (JPMC), from June 2018 to June 2019 for sample collection. Ethical approval was obtained from the Institutional Review Board (IRB) of Jinnah Postgraduate Medical Centre (JPMC), Karachi, vide letter no (F.2 81/2019-GENL/33048/JPMC). Informed consent was secured from all participants. The data collected was kept highly confidential.

Sample size:

A total of 301 samples were collected in this study, which were clinically suspected as patients with tinea corporis. Sample size was calculated by using Open-Source Epidemiologic Statistics for Public Health, version 3.01 (online). The reference study used for this sample size is "Prevalence of tinea corporis and tinea cruris in an outpatient department of dermatology unit of a tertiary care hospital." [10]

Statistical Analysis:

The development and analysis of this database were conducted using the Statistical Package for Social Sciences (SPSS, version 21). Frequencies and percentages were calculated through descriptive statistics and the chi-square test. The association between variables was examined using the chi-square test. P-values less than 0.05 were considered statistically significant.

Inclusion and Exclusion Criteria

Inclusion: The study included all patients suspected of having tinea corporis, regardless of their gender or age.

Exclusion: The patients who were getting active treatment for the last two weeks with oral or topical antifungal agents and patients who refused consent were excluded from the study.

Data collection:

Every patient's detailed history was taken on a structured questionnaire consisting of many variables, i.e., age, sex, residence, drug, socioeconomic status, medical history, contact history, drug history, and lesion characteristics etc. Consent was also taken on a consent form. Thorough laboratory techniques and meticulous sample collection were used to diagnose and analyze tinea corporis. After cleaning the lesion site with ethanol, the specimen was collected by using a sterile surgical blade by scraping the edges of the lesions.

Laboratory identification:

Direct microscopic examination using potassium hydroxide (KOH) exposed fungal structures by degrading keratin. Specimens were cultured on Sabouraud Dextrose Agar (SDA) and Dermatophyte Test Medium (DTM), incubated at 25°C and 37°C, and monitored for six weeks. By using Lactophenol Cotton Blue (LPCB) and cellophane tape mounts, fungal growth was observed for colony morphology, pigmentation, and microscopic features. Accurate species identification and long-term viability were ensured by Urease tests and stock culture preservation via oil overlay and water culture techniques.

Results:

This study was conducted on 301 patients with tinea corporis. Out of these, 171 (56.8%) were males and 130 (43.2%) were females. A larger portion of our study population (n=285, 94.6%) belonged to a low socioeconomic class; about 14 (4.6%) were from the middle class, and only 2 (0.66%) were from a high-income group. Regarding occupation, more individuals were labor/manual workers, totaling 147 (48.8%), while 77 (25.6%) were housewives. The rest of the population included 52 (17.3%) from other professions, and students were the least reported group, numbering 25 (8.3%). **Table 1.**

The duration of illness among our participants averaged more than five months, mostly in the 41- to 50-year-old and over 50-year-old age groups. In contrast, for the 1 to 30 years and 31 to 40 years age groups, the durations were two to three months and four to five months, respectively. A significant difference (p-value = 0.01) was observed between the duration of the disease and the age group. Data analysis revealed that 72.7% of patients had a history of recurrence of similar tinea corporis lesions. The majority (92.1%) experienced recurrence between the ages of 31 and 40, with the second-largest group (75%) between 21 and 30 years (71.4%), while only 35% of participants in the 1-to-10-year age group reported recurrence. The correlation between recurrence and age groups is significant (p-value=0.01). About 137 (45.5%) participants reported a family history of similar lesions. A significant difference (p-

Table 1. Socioeconomic and Occupational Profile of Study Participants (n = 301)

Variable	N	%
Socioeconomic Status		
Low	285	94.6
Middle	14	4.6
High	2	0.66
Occupation		
Labour/Manual Worker	147	48.8
Housewife	77	25.6
Professional/Office Job	52	17.3
Student	25	8.3

value=0.01) was also noted between family history and age groups. Our study showed that 171 (56.8%) participants shared household items, predominantly in the 31- to 40-year age group, but this was not statistically significant (p-value=0.07). Additionally, a correlation was observed between family history and the use of common apparel, as well as fungal positivity on cultures. The study found that 114 (37.8%) individuals were pet owners or animal handlers, and there was an association between fungal-positive cultures and pet handling. However, the connection between pet exposure and different age groups was not established (p-value=0.64). Furthermore, 103 (34.2%) patients had comorbid conditions, most commonly hypertension and diabetes mellitus (n=43, 14%), anemia (n=28, 9%), hypothyroidism (n=14, 5%), and psoriasis (n=18, 6%). Comorbidity showed a significant association with different age groups (p-value=0.01). **Table 2. (**$p<0.05$ considered statistically significant)

The majority (229, 76.1%) of patients presented with lesions at a single site (localized). The clinical presentations of these lesions in decreasing frequency were annular (n=133, 44%), discrete (n=76, 25.2%), confluent (n=53, 17.6%), and eczematous (n=39, 13%). The most common symptoms were redness (n=192, 63.8%), itching (n=176, 58.5%), and scaling (n=131, 43.5%). The most observed signs included papules (n=162, 53.8%), vesicles (n=92, 30%), and pustules (n=47, 15.6%) (Table 3). Of the isolates, 165 (54.8%) showed no fungal growth, while 136 (45.1%) demonstrated fungal growth. Among the fungal positives, dermatophytes accounted for 84 (28%), and non-dermatophytes were recovered in 52 (17.2%) cases. The type of fungi showed a significant relation with age groups (p-value=0.01). **Table 3.**

Table 2. Clinical History and Risk Factors

Factor	**n (%)**	**p-value**
Duration of Illness		0.01*
>5 months	110 (36.5)	
4–5 months	96 (31.8)	
2–3 months	81 (26.9)	
<1 month	14 (4.6)	
History of Recurrence	219 (72.7)	0.01*
Family History	137 (45.5)	0.01*
Sharing Household Items	171 (56.8)	0.07
Pet Exposure	114 (37.8)	0.64
Co-morbidities	103 (34.2)	0.01*
- Hypertension + Diabetes	43 (14)	
- Anemia	28 (9)	
- Psoriasis	18 (6)	
- Hypothyroidism	14 (5)	

Only Trichophyton species were isolated, with T. mentagrophytes (n=38, 44.8%) being the most common, followed by T. rubrum (n=27, 32.8%) and T. tonsurans (n=19, 22.4%).

The most predominant symptoms among the dermatophyte isolates were redness (95.1%) and itching (89.2%), followed by mild scaling (44.5%) and vesicle development (21.3%) for T. mentagrophytes. In contrast to T. mentagrophytes, T. Rubrum shows lower rates of redness (81.6%) and itching (44.2%) but had similar proportions of vesicles (22.3%) and pustules (21.2%). Among the three species, T. tonsurans showed high itching prevalence (91.2%) and redness (88.6%) but exhibited the lowest vesicle production (8.9%), while pustules were seen in 22.5% of cases. These results demonstrate how the clinical appearance of tinea corporis

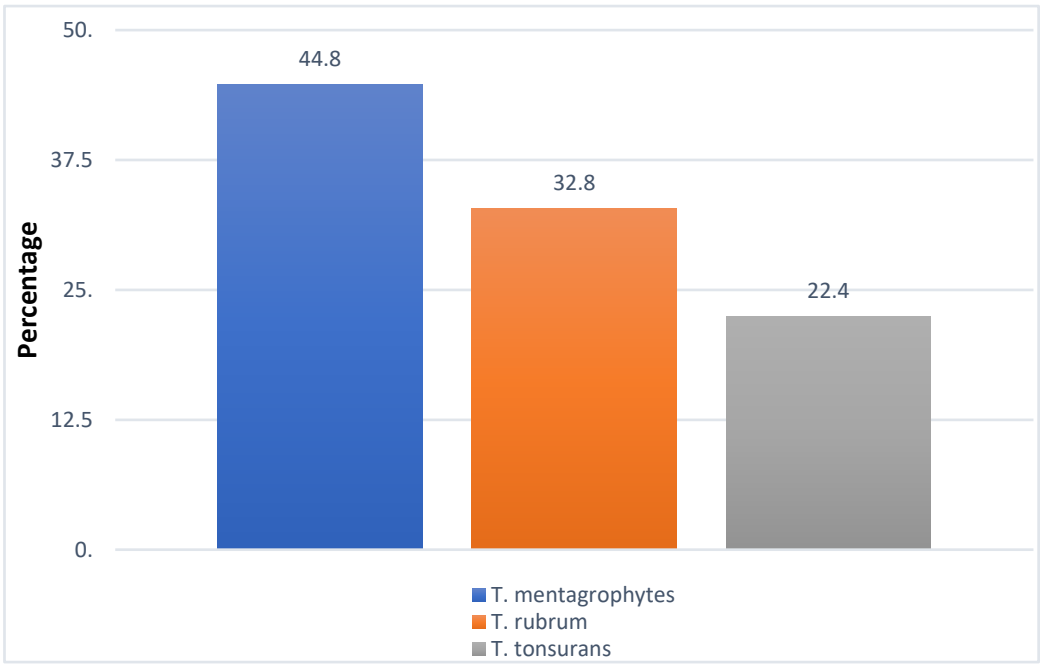
Table 3. Lesion Characteristics and Symptom Profile

Feature	**N**	**%**
Lesion Distribution		
Localized	229	76.1
Generalized	72	23.9
Lesion Morphology		
Annular	133	44.0
Discrete	76	25.2
Confluent	53	17.6
Eczematous	39	13.0
Symptoms		
Redness	192	63.8

varies by species. **Table 4**

Table 4. Clinic Etiologic Correlation of Tinea Corporis

Species	Redness (%)	Itching (%)	Scaling (%)	Papule (%)	Vesicle (%)	Pustule (%)
T. mentagrophytes	95.1	89.2	44.5	12.1	21.3	20.8
T. rubrum	81.6	44.2	39.5	18.4	22.3	21.2
T. tonsurans	88.6	91.2	38.4	17.3	8.9	22.5



Discussion:

Tinea corporis is one of the most prevalent forms of dermatophytosis, accounting for approximately 22% of all dermatophytosis cases[8]. Our analysis revealed a male predominance of 56.8%, which corresponds to Brigida and Muthiah (2017), who also reported a higher prevalence of males than females[10]. A greater part of our study population (94.6%) was fit into the low socioeconomic class, about 4.6% related to the middle class, and only 0.66% were from the high-income group. Our results are in concordance with Jahan, Farhana, and Kanth (2021) [11] and Das et al. (2022)[12]. According to them, the majority of their study participants belonged to low socioeconomic status (67%). Poor living conditions, scarcity of resources, inadequate nutrition, and living in cramped, overcrowded conditions result in a high load of

fungal spores, which increases the risk of infection, chronicity, recurrence, and promotes dermatophyte growth[12]. About 37.8% of participants in our study reported a history of exposure to animals. Studies conducted by Soror, Abdo, and Ebada (2015)[13] reported that 50% of patients had a history of animal exposure. It can be observed that in underdeveloped or poor countries, very few people keep pets or animals due to economic constraints, limited space in homes, and cultural factors. There is a probability that clothes and linen become contaminated either directly or indirectly from the environment[14]. Other studies indicated a higher incidence of fungal cases with animal exposure in rural areas compared to urban areas. This difference may be due to better personal care, early recognition of fungal infection, and lesser exposure to animals in urban settings. Therefore, the lower percentage of animal exposure in our study could be explained, as it was conducted in an urban population[15]. The majority of participants in the current study had been ill for more than 5 months (36.5%), while the fewest had been ill for less than a month (4.6%). Our results align with those of Mahajan et al. (2017)[16] and Vineetha et al. (2019)[17]. Possible reasons for the prolonged duration of illness include non-compliance with treatment, inadequate dosage of antifungal drugs, comorbidities, family history, changes in the predominant species, weakened immunity, and steroid use. Steroids provide a conducive environment for fungal growth by suppressing cell-mediated immunity, which results in reduced inflammation and pruritus[9,16].

In the present study, 72.7% of individuals had a history of recurrence. A study conducted by Sharma, Adhikari, and Sharma (2017)[18] observed similar results. The likelihood of recurrence might be due to living in a humid and damp environment that promotes the survival and growth of fungi, leading to recurrent infections. Other contributing factors include habits such as poor personal hygiene, close contact with animals, professions involving excessive sweat production, and sharing clothes. These factors can cause re-infection in the same patient or new infections in others. In our study, 76.1% of patients showed localized lesions, while 23.9% had generalized lesions spread across multiple body parts. Studies by Elmegeed, Moussa, and Eltahlawi (2015)[19], Sorour, Abdo, and Ebada (2015) [13], and George, Godbole, Mali, and Pawar (2018)[20] also reported similar findings. However, Singh et al. (2020)[21] and Mahajan et al. (2017) [16] in India observed that most patients presented with generalized body involvement, which contrasts with the current study.

In the current study, 48.8% of patients were labor/manual workers, while 25.6% were household workers and 17.3% were professionals. Our results also align with Vineetha et al. (2019) [17], whereas Pandit and Mehta (2018)[22] and Verma et al. (2021)[23] in India showed a higher prevalence among housewives. The most probable reason for this in these groups could be increased sun exposure and house chores, leading to excessive sweat production and increased susceptibility to infection. According to our study, 45.5% had a positive contact history with one or more family members with similar infections. About 56.8% of patients had a habit of sharing common household items like clothes, linen, and veils. Similar findings were reported by Dimple, Pratima, and Samarjit (2015),[24] Mahajan et al. (2017), [16] Vineetha et al. (2019),[25] and Singh et al. (2020). [21] They noted that chronic and recurrent cases contribute to the rise in familial infections. Sometimes the entire family is affected; there is also a high prevalence among residents of overcrowded houses, slums, and dormitories, especially when sharing a common washing machine or fomites. Fungal spores tend to disseminate easily in the environment and can be transmitted from person to person, particularly in crowded settings.

Sharing household items is common in lower socioeconomic classes, where maintaining personalized belongings is often prohibitive. Since most of our participants belonged to this socioeconomic group, resource sharing facilitates the spread of fungal diseases within families. To prevent chronicity and recurrence, treating all family members and taking a thorough history should become standard practice. The study found that 34.2% of individuals had comorbidities. The most common were Diabetes Mellitus (14%) and hypertension, followed by anemia (9%), psoriasis (6%), and hypothyroidism (5%). Our findings support those of Varalakshmi and Pushpalatha (2019)[26] and Karamkar et al. (2018)[27], who also reported similar results.

In our study, dermatophytes were isolated from 27.9% of samples, 17.2% non-dermatophytes, and 54.8% showed no growth. Regardless, the focus of this research was on dermatophytes. The Trichophyton genus accounted for the majority of the dermatophyte isolates. T. mentagrophytes (44.8%) was the most common isolate, which was found in our samples, having dermatophytes, T. rubrum (32.7%), and T. tonsurans (22.4%). There are unusually high frequencies in the distribution of dermatophytosis and its etiological agents with significant variance in prevalence from country to country and even variance within the different regions of the same country, which shows that dermatophytosis and its etiological agents have diverse and variable distribution[28]. The variance in dermatophytes prevalence from region to region was also explained by Hayette and Sachelli (2015)[29] in detail, that every region of the globe has its own pattern of prevalence concerning the type of species. They also discussed that T. mentagrophytes is the leading cause of tinea corporis in the Middle East, which is similar to our region. Shakir et al. (2019) [28] conducted a study in Lahore, Pakistan, and also cultured T. mentagrophytes as the most common isolate. Ebrahimi et al. (2019)[30] in Iran also showed T. mentagrophytes as the dominating agent of tinea corporis. Leung et al. (2020) [6] in Hong Kong have also reported that in recent years, T. mentagrophytes has replaced T. rubrum as the most common cause of tinea corporis in Southeast Asia. A study conducted by Shenoy and Jayaraman (2019)[31] showed T. verrucousum as the most common cause of tinea corporis in Iran, M. canis in Europe, and T. rubrum in Asia. The explanation for the shift in dominant species from T. rubrum to T. mentagrophytes is not clearly understood; one possibility is that the recent increase in recurrent and chronic dermatophytosis is partly owing to this changing epidemiology, which is also evident in our study. Other reasons for the rise in incidence could be antifungal resistance to drugs commonly used in tinea infections. In culture, T. mentagrophytes grows quickly within 5 to 7 days and is considered to be both anthropophilic and zoophilic, so it is capable of inducing more inflammation and highly contagious glabrous skin infection than T. rubrum, which was only anthropophilic [23,32]. The increased rate of inflation and slow economic growth in Pakistan have shifted Pakistan's demographic dynamics. This has accelerated urbanization and forced people to live in cramped quarters. As a result, it encourages the spread of fungal infections from person to person. On this basis, we found Trichophyton species to have a significant dominance in our research. Poor hygienic conditions and a shabby lifestyle are also linked to anthropophilic organisms of the Trichophyton genus.

Conclusion:

Our study indicates that tinea corporis is a significant public health issue in Karachi, mainly affecting individuals who perform physical labor and come from low socioeconomic

backgrounds. Most cases were chronic, with a high recurrence rate of 72.7%, notable familial clustering at 45.5%, and a history of sharing personal items. Conditions such as diabetes and hypertension show a strong association with the infection. Mycological analysis reveals that the primary causative agents are from the Trichophyton genus, predominantly T. mentagrophytes (44.8%), T. rubrum (32.8%), and T. tonsurans (22.4%). The shift in dominant species from T. rubrum to T. mentagrophytes may explain the recent rise in recurrent and chronic dermatophytosis cases. The research highlights the importance of addressing behavioral and environmental risk factors, such as poor hygiene, overcrowded living conditions, contact with animals, and corticosteroid misuse, to prevent ongoing transmission. Early detection, targeted treatment, and family-wide management are essential to decrease recurrence and prevent chronic cases. Overall, our findings support the need for improved patient education, public health efforts, and local monitoring of fungal resistance, providing essential insights into the clinical and mycological aspects and risk factors of tinea corporis in Karachi.

References

1. Fisher MC, Alastruey-Izquierdo A, Berman J, Bicanic T, Bignell EM, Bowyer P, et al. Tackling the emerging threat of antifungal resistance to human health. Nat Rev Microbiol. 2022;20:557–71. doi:10.1038/s41579-022-00720-1.

2. Pagano L, Fernández OM. Clinical aspects and recent advances in fungal diseases impacting human health. J Antimicrob Chemother. 2025;80:i2–8. doi:10.1093/jac/dkaf004.

3. Deng R, Wang X, Li R. Dermatophyte infection: from fungal pathogenicity to host immune responses. Front Immunol. 2023;14:1285887. doi:10.3389/fimmu.2023.1285887.

4. Ma Y, Wang X, Li R. Cutaneous and subcutaneous fungal infections: recent developments on host–fungus interactions. Curr Opin Microbiol. 2021;62:93–102. doi:10.1016/j.mib.2021.05.005.

5. Yee G, Syed HA, Al Aboud AM. Tinea corporis. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 [cited 2025 Aug 22]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK544360/

6. Leung AK, Lam JM, Leong KF, Hon KL. Tinea corporis: an updated review. Drugs Context. 2020;9:1–12. doi:10.7573/dic.2020-5-6.

7. Kruithoff C, Gamal A, McCormick TS, Ghannoum MA. Dermatophyte infections worldwide: increase in incidence and associated antifungal resistance. Life (Basel). 2023;14:1. doi:10.3390/life14010001.

8. Suleri ZS. Recurrent tinea corporis and cruris: antifungal resistance or poor compliance? J Pak Assoc Dermatol [Internet]. 2020;30:1–2 [cited 2025 Aug 22] Available from: https://www.jpad.com.pk/index.php/jpad/article/view/1570.

9. Verma S, Madhu R. The great Indian epidemic of superficial dermatophytosis: an appraisal. Indian J Dermatol. 2017;62:227. doi:10.4103/ijd.IJD_206_17.

10. Brigida S, Muthiah NS. Prevalence of tinea corporis and tinea cruris in outpatient department of dermatology unit of a tertiary care hospital. Journal of Pharmacy and Clinical Research. 2017;3:1–3. doi:10.19080/JPCR.2017.03.555602.

11. Jahan T, Farhana A, Kanth F. Prevalence and spectrum of dermatophytes in patients attending a tertiary care hospital Srinagar, Kashmir. Int J Res Med Sci. 2021;9:1064–70. doi:10.18203/2320-6012.ijrms20211352.

12. Das D, Mondal H, Deb Roy A, Anand A, Maiti P, Ray A. A cross-sectional clinicomycological study on dermatophytosis: a report from a single tertiary healthcare center in Eastern India. Cureus. 2022;14:e31728. doi:10.7759/cureus.31728.

13. Sorour FA, Abdo HM, Ebada MA. Study of tinea corporis in patients attending the dermatology clinic of Al-Hussein University Hospital, Cairo, Egypt. J Egypt Womens Dermatol Soc. 2015;12:180–5. doi:10.1097/01.EWX.0000464890.25449.5e.

14. Singh Kalsi A, Thakur R, Kushwaha P. Extensive tinea corporis and tinea cruris et corporis due to Trichophyton interdigitale. J Dermatol Cosmetol. 2019;3(1):16–20. doi:10.15406/jdc.2019.03.00108.

15. Ahmed LT, Darweesh ZA, Hussain WM. Prevalence of dermatophytes fungal infection among different gender. Indian J Forensic Med Toxicol. 2020;14:3184. doi:10.37506/ijfmt.v14i2.3184.

16. Mahajan\\\\\\ S, Tilak R, Kaushal S, Mishra R, Pandey S. Clinico-mycological study of dermatophytic infections and their sensitivity to antifungal drugs in a tertiary care center. Indian J Dermatol Venereol Leprol. 2017;83:436. doi:10.4103/ijdvl.IJDVL_519_16.

17. Vineetha M, Sheeja S, Celine MI, Sadeep MS, Palackal S, Shanimole PE, et al. Profile of dermatophytosis in a tertiary care center. Indian J Dermatol. 2018;63:490–5. doi:10.4103/ijd.IJD_177_18.

18. Sharma R, Adhikari L, Sharma RL. Recurrent dermatophytosis: a rising problem in Sikkim, a Himalayan state of India. Indian J Pathol Microbiol. 2017;60:541. doi:10.4103/IJPM.IJPM_831_16.

19. Abd Elmegeed ASM, Ouf SA, Moussa TAA, Eltahlawi SMR. Dermatophytes and other associated fungi in patients attending to some hospitals in Egypt. Braz J Microbiol. 2015;46:799–805. doi:10.1590/S1517-838246320140615.

20. George AJ, Godbole D, Mali M, Pawar S. Assessment of etiology pattern and treatment of tinea infections in a tertiary care hospital. Archives of Medicine and Dental Health Sciences. 2018;1:8–11. doi:org/10.5530/amdhs.2018.1.4.

21. Singh S, Subba N, Tilak R. Efficacy of terbinafine and itraconazole in different doses and in combination in the treatment of tinea infection: a randomized controlled parallel group open labeled trial with clinico-mycological correlation. Indian J Dermatol 2020;65:284. doi:org/10.4103/ijd.IJD_548_19.

22. Pandit VS, Mehta H. A hospital-based cross-sectional clinical and mycological study of dermatophytoses in a tertiary care centre. J Pak Assoc Dermatol. 2018;27:375–80. [cited 2025 Aug 22] Available from: https://www.jpad.com.pk/index.php/jpad/article/view/974.

23. Verma SB, Panda S, Nenoff P, Singal A, Rudramurthy SM, Uhrlass S, et al. The unprecedented epidemic-like scenario of dermatophytosis in India: I. Epidemiology, risk factors and clinical features. Indian J Dermatol Venereol Leprol 2021;87:154-75. doi:org/10.25259/IJDVL_301_20.

24. Raina D, Gupta P, Roy S. Prevalence of dermatophytosis: a cross-sectional study. Int J Curr Microbiol Appl Sci [Internet]. 2015;4:1115–22 [cited 2025 Aug 22]. Available from: https://www.ijcmas.com/vol-4-12/Raina%20Dimple,%20et%20al.pdf.

25. Vineetha M, Sheeja S, Celine M, Sadeep M, Palackal S, Shanimole P, et al. Profile of dermatophytosis in a tertiary care center in Kerala, India. Indian J Dermatol 2019;64:266. doi:org/10.4103/0019-5154.265814.

26. Varalakshmi E, Pushpalatha M. A study to assess the knowledge on tinea corporis among clients attending dermatology unit in a selected hospital. Int J Res Eng Sci Manag [Internet]. 2019;2:287–90 [cited 2025 Aug 22]. Available from: https://www.ijresm.com/Vol.2_2019/Vol2_Iss9_September19/IJRESM_V2_I9_62.pdf.

27. Karmakar A, Biswas B, Dasgupta A, Bhattacharyya A, Mallick N, Ghosh A. A study on superficial skin infection and their risk factors among rural population of West Bengal. J Datta Meghe Inst Med Sci Univ. 2018;13:20–3. doi:10.4103/jdmimsu.jdmimsu_47_17.

28. Shakir S, Saleem S, Rizvi W, Aslam W, Iqbal J. Isolation, identification and antifungal susceptibility of dermatophytes isolated from clinically suspected cases of tinea infections in Pakistan. Microbiology Research Journal International. 2019;29:1–11. doi:10.9734/mrji/2019/v29i530178.

29. Hayette MP, Sacheli R. Dermatophytosis: trends in epidemiology and diagnostic approach. Curr Fungal Infect Rep 2015;9:164-79. doi:10.1007/s12281-015-0231-4.

30. Ebrahimi M, Zarrinfar H, Naseri A, Najafzadeh MJ, Fata A, Parian M, et al. Epidemiology of dermatophytosis in northeastern Iran: a subtropical region. Curr Med Mycol 2019;5:26-31. doi”org/10.18502/cmm.5.2.1156.

31. Shenoy MM, Jayaraman J. Epidemic of difficult-to-treat tinea in India: current scenario, culprits, and curbing strategies. Archives of Medicine and Health Sciences. 2019;7(1):112–17. doi:10.4103/amhs.amhs_72_19.

32. Saxena V, Shenoy M, Devrari J, Pai V, Agrawal V. A mycological study of tinea corporis: a changing epidemiological trend from Trichophyton rubrum to Trichophyton mentagrophytes in India. Indian J Dermatol Venereol Leprol 2020;86:607-10. doi:10.4103/ijdvl.IJDVL_766_17.