

Prevalence of Dermatophytosis and Association with Diabetes Mellitus in Tertiary Care Medical College Hospital in Sirajganj District of Bangladesh

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ARTICLE INFO

Article history:

Received: 13 April 2025

Accepted: 27 June 2025

Online:

www.nbmc.ac.bd

Keywords:

Prevalence,
Dermatophytosis, Diabetes
mellitus

ABSTRACT

Introduction: Dermatophytosis is a superficial fungal infection characterized by itching, rashes, scaling, erythema and annular lesions. It is usually common in diabetic patients. The objective of this study was to find out the prevalence of dermatophytosis and association with Diabetes Mellitus among the patients attending in the outpatient department (OPD) of skin and venereology at North Bengal Medical College Hospital, Sirajganj, Bangladesh. **Methods:** This cross-sectional retrospective study was carried out in the department of community medicine of North Bengal Medical College Hospital, Sirajganj, Bangladesh during the period of January, 2024 to December, 2024. A total 406 dermatophytosis patients were selected for the study from 2660 patients suffering from various skin diseases attending OPD of skin and venereology at North Bengal Medical College Hospital, Sirajganj, Bangladesh. Dermatophytosis was diagnosed by clinical manifestations. Data was collected from hospital records. **Results:** Prevalence of dermatophytosis was 15.26%. Among 406 dermatophytosis patients, majority (195, 48.03%) of the patients were within 18-40 years age group, resided in rural area (247, 60.83%) and male (248, 61.08%) were higher than female. Most of the patients were suffering from *Tinea corporis* (302, 74.38%) followed by *Tinea cruris* (62, 15.27%). Dermatophytosis was common among diabetic patients. **Conclusion:** This study concluded that, maximum patients were young adult male and affected with *Tinea corporis*. It plays a crucial role for the prevention and management of dermatophytosis.

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INTRODUCTION

Dermatophytosis is a group of superficial fungal infection caused by dermatophytes which invade the keratinized tissue (skin,

hair, and nails). Dermatophytes consist of three basic genera: *Trichophyton*, *Microsporum*, and *Epidermophyton*, belonging to the class Phylum and the division *Deuteromycota*.¹

Because of their distinctive appearance of lesion, dermatophytosis infections are referred to as tinea infection or ringworm.² Tinea infections occur in various form such as: Tinea capitis (infection of the scalp, hair follicles and adjacent skin), Tinea barbae (infection of the beard region), Tinea faciei (infection of the face, chin, and lips), Tinea corporis (infection of of the trunk), Tinea cruris (infection of of the groin), Tinea magnum (affecting the hand), Tinea pedis (fungal infection of the toes), and Tinea unguium (infection of the nails).³ The increasing incidence of dermatophytosis has been correlated to various factors, including tropical climate (humidity, temperature), overcrowding, urbanization, lifestyle choices (unhygienic), communal living arrangements (hostels, the use of occlusive footwear, tight-fitting garments) and preexisting medical conditions like diabetes, malnutrition, hepatic and renal disorders, immunosuppression etc.⁴

Approximately 20–25% of people affected dermatophytosis in the world. These infections are common in tropical and subtropical nations such as Mexico, Italy, Japan, the USA, Canada, Brazil, Australia, India and Bangladesh.^{5,6} Numerous African countries have reported a high prevalence of dermatophytosis. Tinea capitis is common in children among the African continent.⁷ In India, 88% of cases are caused by tinea corporis.⁸ Bangladesh has a high prevalence of superficial fungal infections (SFIs), with rates ranging from 15.5% to 26.7% and affecting people of all ages and both sexes.⁹ Dermatophytosis is characterized by various symptoms including itching, rashes, scaling. The typical lesions are circular, dry, erythematous which have an inflamed border containing papules and vesicles surrounding a clear area of relatively normal skin. The genital and other areas are affected by intense itching and incapacitating lesions which can lead to humiliation, morbidity, and various psychological impacts.⁴ Though dermatophytosis is one of the common types of non-life-threatening skin infections but it reduces the patient's average

number of working days.¹⁰ The fungal clinical lesions are similar to other skin conditions, so confirmed laboratory diagnosis is important for superficial skin infection. These kinds of infections are more frequently treated with topical therapy using creams or lotions.¹¹ Despite being non-invasive and easily curable, dermatophyte infections are widespread and expensive to treat, which poses a serious public health concern and negatively impacts the economic standing of tropical nations like India and Bangladesh.¹² Dermatophytosis is common and potentially more severe in individuals with diabetes, particularly those with uncontrolled blood sugar. Although dermatophytosis are common in Bangladesh but very few studies have been conducted. So, this study aimed to find out the prevalence of dermatophytosis and association with Diabetes Mellitus in patients attending skin and venereology Department of the North Bengal Medical College Hospital, Sirajganj, Bangladesh.

METHODS

This retrospective cross-sectional study was conducted in the department of community medicine of North Bengal Medical College Hospital, Sirajganj, Bangladesh, during the period of January, 2024 to December, 2024. A total of 406 dermatophytosis patients were recruited purposively for this study among 2660 patients attending the outpatient department (OPD) of Skin and Venereology department of North Bengal Medical College Hospital, Sirajganj. Relevant data were collected from the hospital records. History and clinical examinations were used to diagnose the patients. All ages and both sexes of the patients were included in this study. Patients with comorbidities like hypertension, renal and hepatic failure were excluded from this study but diabetic patients were included. After data collection, the "Statistical Package for Social Sciences (SPSS)" software, version 24, was used to analyze the data. Data were presented as frequency and percentage. Chi-square test was applied to see the relationship between different variables. The value <0.05 was considered statistically significant.

RESULTS

A total of 2660 patients attended the outpatient department (OPD) of Dermatology and Venereology from January, 2024 to December, 2024. Among them 406 patients were infected with

dermatophytosis and prevalence was 15.26%. Majority of the patients were 18-40 years age group (195, 48.03%) and mean age was 31.25 years (Table I).

Table I: Distribution of dermatophytosis patients according to age group (n-406)

Age (in years)	Number	Percentage (%)	Mean age
<18	106	26.11	
18-40	195	48.03	
41-60	80	19.70	31.25
61-80	25	6.16	
Total	406	100	

Male (248, 61.08%) was the commonly affected with dermatophytosis than female (Table II).

Table-II: Distribution of the patients by gender (n-406)

Gender	Number	Percentage (%)	χ^2	p value
Male	248	61.08	39.90	0.00001
Female	158	38.92		
Total	406	100		

Maximum (247, 60.83%) patients resided in rural area (figure 1).

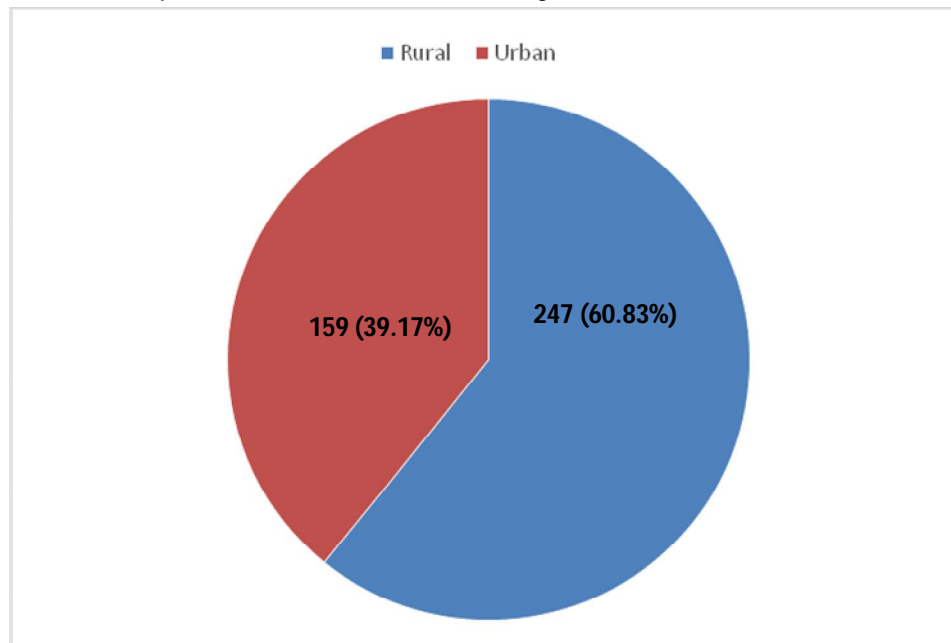


Figure 1: Allocation of patients by their residents (n-406)

Most of the patients were affected with tinea corporis (302, 74.38%) followed by tinea cruris (62, 15.27%) and tinea capitis (24, 5.91%) (Table III).

Table III: Distribution of patients by different types of dermatophytosis (n-406)

Type	Number	Percentage (%)
Tinea Corporis	302	74.38
Tinea Cruris	62	15.27
Tinea Capitis	24	5.91
Tinea Faciei	10	2.46
Tinea Pedis	08	1.98
Total	406	100

Out of the 406 patients, Diabetes mellitus with dermatophytosis were 108 (26.60%) (Table IV).

Table IV: Association of dermatophytosis with diabetes mellitus (n-406)

Patients	Frequency (%)	χ^2	p value
Dermatophytosis without diabetes	298 (73.4%)		
Dermatophytosis with diabetes	108 (26.60%)	177.83	0.00001
Total	406		

DISCUSSION

Bangladesh is situated in a tropical region, and its climate is favorable for dermatophytosis. It is common comorbidity in diabetic patients specially when it is left untreated or uncontrolled. Identifying the prevalence of dermatophyte infections and their different clinical manifestations as well as association with diabetes are helpful in prompt diagnosis and appropriate treatment.

This study revealed that prevalence of dermatophytosis was 15.26%. Rahman et al.⁸ reported that prevalence of dermatophytosis was 17%. Dermatophytosis is common in Bangladesh due to hot and humid climate, overcrowding, poverty and malnutrition. Majority (195, 48.03%) of the patients were 18-40 age group in this study. Ramraj et al.² found that most of the patients (103, 49.04%) were age group of 21-40 years. Nagaral et al.¹⁴ reported that maximum patients were 21-30 age group. Rahman et al.⁸ showed that most (59%) of the patients were aged 15-64 years. Dermatophytosis is widespread in adults because of more engagement in working environments like agriculture, construction and other labor-intensive jobs. Wearing tight clothing or footwear, frequent use of communal facilities such as sharing towels, shoes, or personal grooming tools are responsible for fungal infection. In this study, male (248, 61.08%) was infected more than female (158, 38.92%). Ramraj et al.² reported that male (120, 57.14%) was

higher than female (90, 42.86%). Sengupta et al.¹³ mentioned that male (40, 58.62%) was commonly affected by dermatophytosis than female (28, 41.18%). Rahman et al.⁸ found that male (310, 51.58%) was affected most than female (291, 48.42%). Dermatophytosis is common in male due to increased outdoor exposure and hard physical work that causes increased sweating and less cosmetics consciousness.

This study revealed that Tinea corporis and Tinea cruris were found 302 (74.38%) and 62 (15.27%) patients. Sengupta et al.¹³ reported that Tinea corporis 46 (67.64%) and Tinea cruris 08 (11.76%) patients. Nagaral et al.¹⁴ mentioned that Tinea corporis and Tinea cruris were found 107 (53.05%) and 50 (25%) patients. Ramraj et al.² revealed that Tinea corporis and Tinea cruris were 133 (63.27%) and 29 (13.86%) patients. Saxena et al.¹⁵ found that Tinea corporis were 77% patients. Tinea corporis and tinea cruris were more frequently affected of people in combination of some factors such as increased humidity and temperature, tight clothing, excessive sweating which are suitable environment for dermatophytes growth.

In this study, 26% patients with diabetes mellitus have been suffering from dermatophyte infection. Diabetes mellitus was significantly associated with dermatophytosis. Lugo-Somolinos et al.¹⁶ and Dinesh et al.¹⁷ Reported 31% and 35% diabetic patients presented with different types of dermatophyte infection

respectively. Dermatophytosis is common in diabetic patients due to several causes like impaired immune response, increased skin folds and sweating, dry and cracked skin etc.

CONCLUSION

Dermatophytosis is more prevalent in young adult male diabetic patients. Proper health education regarding diabetes and fungal infection as well as early diagnosis and adequate treatment will be helpful to reduce the prevalence of dermatophytosis.

Acknowledgments: Authors are thankful to staff of the department of skin and venereology in North Bengal Medical College.

Conflict of Interest: None

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