

Original Article:

Health seeking behavior and clinical profile of superficial fungal infection

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Abstract

Introduction: Superficial fungal infection is one of the most common skin problems in Bangladesh. But the patients do not have enough consciousness to seek proper treatment from authorized doctors. Thus, they suffer a long time for wrong treatment. With proper diagnosis and treatment, all types of fungal infection can be cured. **Aim of the study:** To assess the health seeking behavior and presenting features of superficial fungal infection. **Methods:** This cross-sectional study was conducted in the department of dermatology, US-Bangla Medical College Hospital, Bangladesh, from July 2020 to July 2021. Clinical profile and health seeking behavior was seen from clinically and microscopically diagnosed cases of superficial fungal infection. **Result:** Majority of the study people (28.70%) in this study were in the age group of 21-30 years and the mean age of the study people was 29.44 years (SD±15.72 years) ranged between 6 months to 79 years. Over half the study population (54.82%) were male. In this study, the most prevalent (93.72%) complaint of the study was itching. T. cruris was found in the majority of the participants in this research (80.83 percent). The bulk of the respondents in this research (91.26 percent) had a family member who was afflicted. The sickness lasted 319 days on average (SD 793 days). The highest number of respondents in the survey (42.49 percent) had not seen a doctor. Around half of the study people (54.04%) had taken treatment from pharmacy man. The topical steroid treatment was mostly used (48.76%) by the participant. Most of the participants in this research (60.09 percent) had used medium-potency topical steroids. **Conclusion:** T. cruris is the commonest type of superficial fungal infection. Pruritus was present in almost all of the patients with fungal infection. Most of the patients have the tendency of self-medication and seeking advice from pharmacy dispensers (medicine shop) and misuse of medium potent topical steroid for superficial fungal infection.

Key word: Health seeking behaviors, superficial fungal infection.

Introduction:

Infections caused by pathogenic fungi that invade the corneal layer of the skin, hair or nails are called superficial fungal infections (SFIs).¹ Fungi are parasitic micro-organisms that can affect the skin and mucous membranes as well as the generation of systemic infections from different internal organs.² Skin fungal infections are classified as superficial, cutaneous, subcutaneous and deep fungal infection based on the level of tissue invasion.³ Superficial fungal infection is one of the most common skin diseases around the world. In recent decades, fungal infections of the skin and nails have been found to affect 20 to 25 per cent of the world's population

which makes them one of the most frequent forms of infection.⁴ Only fully keratinized tissues, such as the stratum corneum, hair, and nails, have been invaded by superficial mycoses.⁵⁻⁶ Dermatophytes, yeast, and non-dermatophyte moulds are the most common causal agents of superficial fungal infections.⁷⁻⁸ Black yeast-like fungi and other fungi have been identified as the causal agent of SFIs on rare occasions.⁹⁻¹⁰ Dermatophytes are the most common cause, however, the range of species involved varies based on factors such as geographic and climatic zones, human migration, athletic activities, lifestyle, patient age, and pharmacological

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therapy.¹¹ There are different types of dermatophytes infection. Tinea is another term for dermatophytosis which could take a different name based on the infected site of the human body such as tinea unguium (onychomycosis) in fingernails, tinea faciei on the face, tinea pedis (athlete's foot) on the feet, and tinea corporis on any glabrous skin.¹²⁻¹³ These infections are especially common in tropical countries like India, Nepal and Bangladesh due to environmental factors like heat and humidity. In a study of superficial mycoses in Bangladesh, out of 320 clinically suspected cases, 105 (32.8%) were found to be positive for fungi by direct microscopy, and 97 (30.3%) were culture positive, tinea unguium being the most common dermatophyte infection followed by tinea corporis. *T. rubrum* was the most common etiological agent (80.6%), followed by *T. mentagrophyte* (8.2%) and *Epidermophyton floccosum* (5.2%).¹⁴ In addition, the risk factors include socioeconomic conditions like overcrowding, poverty and neglect of personal hygiene.¹⁵ Although mortality due to dermatophytosis has not been reported to date it does cause morbidity and hence the cosmetic importance of these infections cannot be ignored.¹⁶ Health seeking behavior is preceded by a decision-making process that is further governed by individuals and/or household behavior, community norms, and expectations as well as provider-related characteristics and behavior.¹⁷ Early diagnosis and treatment can prevent the seriousness and of superficial fungal infection and recover it. Conventionally, skin fungal infections are treated with creams, gels and lotions containing free antifungal agents.¹⁸ Topically delivered antifungal agents show local action, therefore, they exhibit less toxic effects compared to oral antifungal agents.¹⁹ Topical formulations used for the treatment of skin fungal infections may be fungicidal or fungistatic depending upon therapeutic nature of incorporated antifungal drugs.²⁰

Objectives:

To assess the health seeking behavior and clinical profile of superficial fungal infection.

Methodology & Materials:

This cross-sectional study was conducted in the department of Dermatology of Us-Bangla Medical College Hospital, Narayangonj, Bangladesh, during the period from July 2020 to July 2021. Total of 892 patients with superficial fungal infection were included in this study. Numerical variables were

expressed as mean and standard deviation, whereas categorical variables were counted with percentage. Categorical variables were analyzed by Chi-square test. Quantitative data among groups were analyzed by ANOVA test followed by an exploration of significant difference between all possible paired group means by Bonferroni test. P value of less than 0.05 was considered statistically significant. All clinically or microscopically diagnosed cases of superficial fungal infection were included.

Results:

Table-I shows the demographic characteristics of the study people. The maximum number of study people (28.70%) in this study were in the age group of 21-30 years. Mean age of the study people was 29.44 years (SD±15.72 years). Most of the study people (54.82%) were male. In this study, most of the study people (91.26%) had a family member affected. Table II shows the clinical features and background history of the study people. In this study, the most common (93.72%) complaint was itching (Table III). In this study 94.73% of study people had no predisposing disorder (Table III). The mean duration of disease was 319 days (SD± 793 days) (Table-III). Figure 1 shows the site of involvement of the infection. In this study, most of the study people (80.83%) had *T. cruris*. Table III shows the consultation history of the study people. Most of the study people (42.49%) had not consulted any doctor. In this study, most of the study people (54.04%) had taken treatment from a pharmacy man. Table IV shows the drug history of the study people. In this study, most of the study people (48.76%) had taken topical steroid treatment. Followed by, 18.61% did not taken any treatment, 16.37% had taken treatment of oral antifungal, and the rest of the patients took other treatments (For example- systemic steroids, antihistamines, soap and shampoo, acidic treatment etc.). Figure 4 shows the types of topical steroids taken by the study people. In this study, most of the study people (60.09%) had taken medium-potency topical steroids.

Table I: Demographic characteristics of study people. (n=892)

	Characteristics	n	%
Age (years)	≤10	68	7.62
	11-20	231	25.90
	21-30	256	28.70
	31-40	158	17.71
	41-50	90	10.09
	51-60	60	6.73
	61-70	24	2.69
	71-80	5	0.56
	Mean± SD	29.44±15.72	
	Range	6 months-79 years	
Sex	Male	489	54.82
	Female	403	45.18
Address	Rural	512	57.40
	Urban	380	42.60
Occupation	Job	212	23.77
	Student	264	29.60
	Housewife	305	34.19
	Child	35	3.92
	Farmer	4	0.45
	Business	59	6.61
	Day labour	3	0.34
	Retired	8	0.90
Expatriate	3	0.34	

Table II: Clinical features and background history of the study people. (n=892)

	Characteristics	n	%
Presenting complaints	Itching	836	93.72
	Typical patch	728	81.61
	Scaling	771	86.43
	Oozing	200	22.42
	Eczematization	10	1.12
	Erythema	189	21.19
	Erosion	52	5.83
	Hyperpigmentation	118	13.23
	Hyperpigmentation	3	0.34
	Polycyclic lesion	34	3.81
	Pustule	24	2.69
	Papule	22	2.47
	Crust	8	0.90
	Plaque	3	0.34
	Blackening	10	1.12
Lichenification	3	0.34	
Alopecia	4	0.45	
Concentric patch	3	0.34	
Ulcer	3	0.34	
None	53	5.94	
Predisposing disorder	None	845	94.73
	DM	42	4.71
	Long-term steroid use	2	0.22

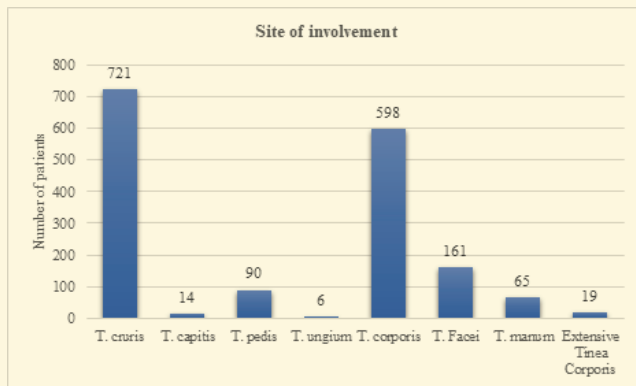


Figure 1: Site of involvement (n=892)

Table III: Consultation history of the study people. (n=892)

Characteristics	n	%
Number of the previous consultation		
None	379	42.49
1	377	42.26
2	70	7.85
3	31	3.48
4	10	1.12
5	13	1.46
≥6	12	1.35

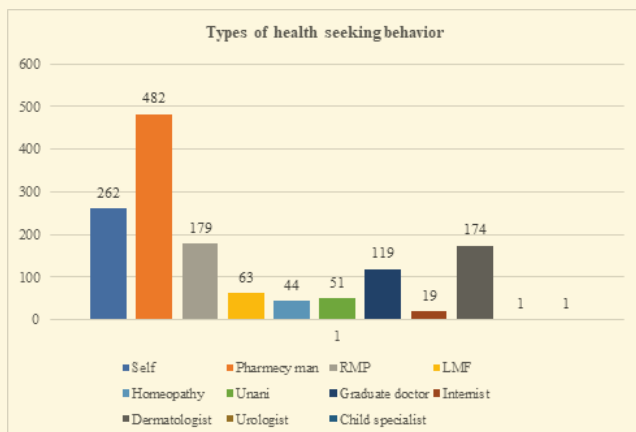


Figure 2: Types of health seeking behavior of the study people (n=892)

Table IV: Drug history of the study people. (n=892)

Characteristics	n	%
Type of treatment taken		
Topical Steroid ointment	144	16.14
steroid treatment and antifungal ointment	253	28.36
Steroid antifungal and antibiotic ointment	38	4.26
Oral antifungal	146	16.37
Systemic steroid	10	1.12
Antihistamines	15	1.68
Soap and shampoo	6	0.67
Topical antifungal	57	6.39
Herbal cream and capsule	19	2.13
Antibiotic	8	0.90
Antiscabietic	2	0.22
Others		
Salicylic acid	16	1.79
Boric acid	8	0.78
Mebendazole	1	0.11
Antiseptic alcohol	1	0.11
Acyclovir	1	0.11
Crisaborole	1	0.11
No treatment taken	166	18.61

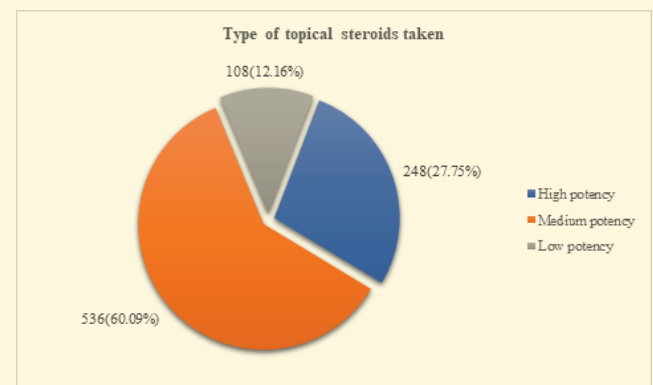


Figure 3: Types of topical steroids taken (n=892)

Discussion

In this current study, 892 patients with superficial fungal infections were included. The maximum study people (28.70%) in this study were in the age group of 21-30 years. The mean age of the study people was 29.44 years (SD±15.72 years) ranging between 6 months to 79 years. The reason of affecting this age group mostly is their more active working life and mixing with more people than other groups which increase the risk of skin diseases. More than half of the study people (54.82%) were male which indicates that male people are more prone to fungal infection than female. As male works outside more than female, they are at more risk. In the study of Gamage H. et al.²¹, among 585 dermatophyte-infected patients, men were most frequently affected (63.48%) with a male: female ratio of 1.74:1 which is similar to our study. Almost all of the study people (91.26%) had at least an affected family member. This indicated the contagiousness of this disease. In the study of Vineetha et al.²², 28.00% had family history of dermatophytosis. In this study, the most common (93.72%) complaint of the study was itching. The mean duration of the disease was 319 days (SD± 793days). In a developing country like Bangladesh, people are not much conscious about skin disease and suffer for a long time. In the study of Joshi S. et al.²³, the mean duration of illness was 20.68±6.44 months which is not consistent with our study. In this study, a large portion of the study people (80.83%) had *T. cruris*. In the study of Cai W. et al.²⁴ on 697 patients, 28.55% had *Tinea unguium* which is not similar to our study. In this study 94.73% study people had no predisposing disorder. Most of the study people (42.49%) had not consulted any doctor and 42.26% had consulted one doctor. Similar result was found in the study of Joshi S. et al.²³, where among 91 study people, forty-two patients had not visited any doctor for their skin condition (46.15%). In this study, most of the study people (54.04%) had taken treatment from a pharmacy man. In the study of Joshi S. et al.²³, they found that seventy patients reported seeking advice and purchasing medication from a local community pharmacy (76.92%) and 40 patients claimed as having visited dermatologist at least once for their problem (43.95%). The study of by Narang et al.²⁵ also reported same findings where 72.90% had sought advice from local pharmacy for their skin condition. These findings are supported by our study. The reasons behind not consulting professional doctors might be a lack of consciousness

and poverty. In this study, almost half of the study people (48.76%) had taken topical steroid as a treatment. Followed by, 18.61% who did not take any treatment, 16.37% who took treatment of oral antifungal, and the rest of the patients who took other treatments (systemic steroid, antihistamine, soap and shampoo, acidic treatment etc.). In this study, most of the study people (60.09%) had taken medium-potency topical steroids. Topical steroids are more common to people and readily available. Pharmacists suggest these medicines to the patients approaching them without proper diagnosis. These findings are supported by the study of Agrawalla et al.²⁶ In their study, the majority of patients (71%) of dermatophytosis had used medication before recruitment in the study, in which 40.80% had used topical antifungal agents, 32.40% had taken native medicines and 14% had used topical steroids. Over one and a half decades it could be observed that topical steroids (30.10%) and topical steroids with antifungal agents (30.20%) were used by the majority of individuals in a study on dermatophytosis done by Poudyal and Joshi which is similar to our study.²⁷ Through this study, it was found that people are not conscious about skin problems and prefer self-treatment and advice from pharmacy dispensers.

Conclusion and recommendations

This study highlighted the tendency of patients to seek advice from pharmacy dispensers and self-treatment, use of topical steroids with medium potency containing agents in the treatment of superficial fungal infection. *T. cruris* is the commonest type of superficial fungal infection. Itchiness was present in almost all of the patients with fungal infections. Superficial fungal infection is contagious as most of the family members were also affected. Further study can be conducted with follow up data.

Limitations of the study

The sample size of the study was relatively smaller. In this study, all patients were enrolled from a single tertiary level hospital which does not reflect the whole population of the country, so the current study suffered from a lack of multicentric patients. Follow up data were not included in this study.

Conflict of interest:

None

References:

1. Odum R. Pathophysiology of dermatophyte infection. *J Am Acad Dermatol* 2005;5:52-9.
2. Kim JY. Human fungal pathogens: why should we learn?. *2016;54(3):145-148.*
3. Bseiso EA, Nasr M, Sammour O, Abd El Gawad NA. Recent advances in topical formulation carriers of antifungal agents. *Indian J Dermatol Venereol Leprol.* 2015;81(5):457-463.
4. Havlickova B, Czaika VA, Friedrich M. Epidemiological trends in skin mycoses worldwide. *Mycoses.* 2008 Sep;51:2-15.
5. Bolognia JL, Jorizzo JL, Schaffer JV. *Dermatology 3rd edition- chapter: fungal infections.* 2012-p1251.
6. Hayette MP, Sacheli R. Dermatophytosis, trends in epidemiology and diagnostic approach. *Curr Fungal Infect Rep.* 2015;9:164-179.
7. Nenoff P, Krüger C, Hanselmayer SJ, GG, Beerbühl RS, Tietz HJ. Mycology – an update Part 1: Dermatormycoses: causative agents, epidemiology and pathogenesis. *JDDG.* 2014;12:188-210.
8. Cai W, Lu C, Li X, et al. Epidemiology of superficial fungal infections in Guangdong, Southern China: a retrospective study from 2004 to 2014. *Mycopathologia.* 2016;181(5-6):387-395.
9. Saunte DM, Tarazooie B, Arendrup MC, de Hoog GS. Black yeast-like fungi in skin and nail: it probably matters. *Mycoses.* 2012;55(2):161-7.
10. Kang D, Jiang X, Wan H, Ran Y, Hao D, Zhang C. Mucor irregularis infection around the inner canthus cured by amphotericin B: a case report and review of published literatures. *Mycopathologia.* 2014;178(1-2):129-33.
11. Havlickova B, Cziaka VA, Friedrich M. Epidemiological trends in skin mycoses worldwide. *Mycoses.* 2008;51(suppl. 4):2-15.
12. Al-Janabi AA. Dermatophytosis: Causes, clinical features, signs and treatment. *J Sympt Signs* 2014;3:200-3.
13. Weitzman I, Summerbell RC. The dermatophytes. *Clin Microbiol Rev* 1995;8:240-59.
14. Rahim R, Saleh AA (2012) Pattern of dermatophytosis in Bangabandhu Sheikh Mujib Medical University. *Bangladesh J Med Microbiol* 6(2):11-14
15. Sharma S, Berthakur AK. A clinic epidemiological study of dermatophytosis in north east India. *Indian J of Dermatology*
16. Venkatesan G, Ajar S, Munniganeshan AG, Janaki C, Shankar SG. Trichophyton rubrum- the predominant aetiological agent in human dermatophytosis in Chennai, India. *Afr J Microbiol Res.* 2007; 2: 9-12.
17. Ihaji E, Gerald EU, Ogwuche CH. Educational level, sex and church affiliation on health seeking behaviour among parishioners in Makurdi metropolis of Benue state. *JEPER.* 2014;1:311-6.
18. Güngör S, Erdal MS, Aksu B. New formulation strategies in topical antifungal therapy. *J Cosmet Dermatol Sci Appl.* 2013;3:56-65.
19. Amichai B, Grunwald MH. Adverse drug reactions of the new oral antifungal agents – Terbinafine, fluconazole, and itraconazole. *Int J Dermatol.* 1998;37:410-415.
20. Gupta AK, Chow M, Daniel CR, Aly R. Treatments of tinea pedis. *Dermatol Clin.* 2003;21:431-462.
21. Gamage H, Sivanesan P, Hipler UC, Elsner P, Wiegand C. Superficial fungal infections in the department of dermatology, University Hospital Jena: A 7-year retrospective study on 4556 samples from 2007 to 2013. *Mycoses.* 2020 Jun;63(6):558-65.
22. Vineetha M, Sheeja S, Celine MI, et al. Profile of dermatophytosis in a tertiary care center. *Indian J Dermatol* 2018; 63: 490-5.
23. Joshi S, Shrestha S, Timothy U, Jha AK, Thapa DP. Health seeking behavior and cost of care of chronic dermatophytosis: A hospital-based cross-sectional study. *Nepal Medical College Journal.* 2020 Nov 2;22(3):181-8.
24. Cai W, Lu C, Li X, Zhang J, Zhan P, Xi L, Sun J, Yu X. Epidemiology of superficial fungal infections in Guangdong, southern China: a retrospective study from 2004 to 2014. *Mycopathologia.* 2016 Jun 1;181(5-6):387-95.
25. Narang T, Bhattacharjee R, Singh S, et al. Quality of life and psychological morbidity in patients with superficial cutaneous dermatophytosis. *Mycoses* 2019; 62: 680-5.
26. Agarwalla A, Jacob M, Sethi M, Parija SC, Singh NP. A clinico-mycological study of dermatophytoses in Nepal. *J Dermatol* 2001; 28: 16-21.
27. Poudyal Y, Joshi SD. Medication practice of patients with dermatophytosis. *J Nep Med Assoc* 2016; 55: 7-10.