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Original Article

Fungal Skin Diseases and Associated Factors in Outpatients of Bangabandhu Memorial Hospital, Chattogram

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Abstract

Background: *Fungi are ubiquitous in nature and exist as free living saprobes that derive no obvious benefits from parasitizing human. Fungal infection or mycosis is a disease caused by fungi. The prime objective was to determine the prevalence of the fungal skin diseases and explore the associate factors including socio-economic status, demographical and personal hygiene of the patients.*

Materials and methods: *This cross sectional research study was performed in the Outpatients Department of Dermatology and Venereology, Bangabandhu Memorial Hospital, Chattogram during the period from January 2023 to April 2023 (120 days). A total number of 200 patients were randomly selected.*

Results : *Among 200 patients, 75 patients had fungal infection with highest prevalence (37.50%) where ringworm 58(77.33%) and oral candidiasis 3(4.00%) where highest and lowest. In case of associate factors, summer season (60.00%) married (77.67%) secondary education (36.00%) Tk 15000/- Tk-20,000/- monthly (37.33%) and upper middle class status (37.33%) Muslims (86.67%) Traders (32.00%) Urban areas (70.66%) tap water (69.33%) recurrent infections (62.66%) and Overcrowding family (66.66%) had higher prevalence of fungal infections of skin.*

Conclusion: *This study provides a fair picture of fungal skin diseases, better health education, properly maintain personal hygiene, improvement of standard of living, proper case diagnosis and proper treatment and management may remain of importance in managing fungal skin diseases.*

Key words: Dermatology; Fungal skin diseases; Mycosis.

INTRODUCTION

In human anatomy, the largest outer organ, covering throughout the whole body is skin. Skin performs a very significant role in immunization by defending against outer microbes and pathogens. Moreover, the elements of skin help the body to regulate the temperature throughout the body and create the feelings of heat, cold and touch. However, this important organ of the body has been exposed to a variety of infections and medical sufferings varying from simple acne to very intricating skin cancer types. Worldwide, among human diseases, the most common is skin disease. It can affect individuals anytime during their life time can strike at any age, can spread over all societies and cultures.[1] In time skin disease can lead to systematic disorders. Its damaging effects lead to physical disability even death.[2]

In 2010, the Global Burden of Disease [GBD] published that skin diseases ranked fourth as the prominent reason for non-fatal disease burden affecting both high- and low-income countries.[3] In 2013, GBD published that skin diseases are responsible for 39 million Years Lived with Disability [YLDs] and in case of Disability Adjusted life Years [DALYs] sit has attributed 1.79% to the global burden of diseases.[4]

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Fungal Disease: Ringworm (Dermatophytosis)

Ringworm, also known as dermatophytosis or Tinea, is a fungal infection of the skin. The name "Ringworm" is a misnomer, since the infection is caused by a fungus, not a worm. Ringworm infection can affect humans. The infection initially presents with red patches on affected areas of the skin and later spreads to other parts of the body. The infection may affect the skin of the scalp, feet, groin, beard, or other areas. Ringworm can go by different names depending on the part of the body affected.

i. Tinea Capitis [Ringworm of the scalp] is a fungal infection affecting on scalp.
ii. Tinea Corporis [Ringworm of the body] is a fungal infection that affects the skin of body.
iii. Tinea Cruris [Jock itch] is a fungal infection that affects the warm and moist area such as buttocks, groin, inner thighs etc.
iv. Tinea Pedis [Athlete's foot] is a fungal infection that affects the skin of feet.
v. Tinea Unguium [Onychomycosis] is a fungal infection that affects either the finger nails or toe nails.
vi. Tinea Facie is a fungal infection that affects the face.
vii. Tinea Barbae is a fungal infection that affects the beard area of men.
viii. Tinea Mannum is a fungal infection that affects the area of hands.
ix. Tinea Versicoloris a fungal infection that affects the whole body as the form of discolored patches of skin.

Dermatophytosis tends to get worse during summer, with symptoms alleviating during the winter. The disease can be transmitted to humans [Zoonotic disease]. Three different types of fungi can cause this infection. They are called Trichophyton, Microsporum and Epidermophyton. It's possible that these fungi may live for an extended period as spores in soil. Humans can contract ringworm after direct contact with this soil. The infection can also spread through contact with infected humans. The infection is commonly spread among children and by sharing items that may not be clean. Fungi thrive in moist, warm areas, such as locker rooms, tanning beds, swimming pools and in skin folds. It can be spread by sharing sport goods, towels and clothing.

Symptoms and severity of skin disorders vary greatly. The consequence of this problem is serious for the patient as well as for the society. Among skin diseases, fungal, bacterial, parasitic and viral infections are very common.

Associated factors can influence the prevalence of skin infections mentioning geographical and cultural factors , educational status, nutritional status, socio-economic status, as well as seasons, overcrowding, unhygienic habits, and environments are significant factors of defining the distribution of skin diseases in developing countries.[5-9]

The socio-demographic aspects are very significant to know because in different societies and social clusters rationalize the reasons of illness, what types of treatments and whom they believe in case of their treatments .[10] The prime objective was to determine the prevalence of the fungal skin diseases and explore the associated factors including socio-economic status, demographical and personal hygiene of the patients.

MATERIALS AND METHODS

This cross sectional research study was performed in the Outpatients Department of Dermatology and Venereology, Bangabandhu Memorial Hospital, Chattogram during the period from January 2023 to April 2023 (120 days). A total number of 200 patients were randomly selected. A structured questionnaire was prepared for interviewing the patients about their demographics and socio-economical aspects. Analysis of the data has been achieved by using the statistical software SPSS [Version-20.0] and the results were presented in percentages.

RESULTS

In this present study 58 patients were infected by ringworm, the highest prevalence was ringworm 58(77.33%) and the lowest prevalence of Oral thrush 3(4.00%) Table I.

Table I Prevalence of fungal skin disease among the patients

Fungal infections	Number of patients	Prevalence (%)
Ringworm	58	77.33%
Pityriasis versicolor	8	10.67%
Seborrheeic dermatitis	6	8.00%
Oral thrush / Candidiasis	3	4.00%
Total	75	100%

It was observed that out of 75 patients, 45 [60.00%] were male patients and 30 [40.00%] were female patients. Among the 75 male patients highest 66.67% were infected by Oral thrush/ Candidiasis and lowest 50.00% were infected by Seborrhoeic dermatitis whereas, among the 23 female patients highest 50.00% were infected by Seborrheeic dermatitis and 33.33% were infected by Oral thrush/ Candidiasis] (Table II).

Table II Prevalence of fungal skin diseases according to the gender of patients

Fungal infections	Total patients	Number of male patients	Prevalence (%) in male	Number of female patients	Prevalence (%) in female
Ringworm	58	35	60.34%	23	39.66%
Pityriasis Versicolor	8	5	62.50%	3	37.50%
Seborrhoeic Dermatitis	6	3	50.00%	3	50.00%
Oral thrush/Candidiasis	3	2	66.67%	1	33.33%
Total	75	45	60.00%	30	40.00%

Moreover, in ringworm causing agents highest 62.50% male were infected by Tinea pedis and lowest 25% males were infected by Tinea facie while in female group highest 75% were infected by Tinea facie and lowest 37.50% were infected by Tinea pedis (Table III).

Table III Prevalence of ringworm causing agents according to gender of patients

Ringworm causing agents	Total patients	Number of male patients	Prevalence (%) in male	Number of female patients	Prevalence (%) in female
Onychomycosis	18	11	61.11	7	38.89
Tinea Corporis	13	7	53.85	6	46.15
Tinea Cruris	10	6	60.00%	4	40.00%
Tinea Pedis	8	5	62.50%	3	37.50%
Tinea Mannum	3	1	33.33%	2	66.33%
Tinea Facie	4	1	25.00%	3	75.00%
Tinea Capitis	2	1	50%	1	59%

Finally, it was observed the associate factors from the personal interviews of the 75 patients mentioning marital status, socio-economic status, educational status, monthly income, occupation, religions, sources of water, residence location, regular bath, types of clothes, personal items sharing, history of recurrent infections, times of recurrent infections, overcrowding family (Table IV).

Table IV Prevalence of fungal infections according to associated factors

Factors		Number of patients & prevalence (%)
Marital status	Married	53 (70.67%)
	Unmarried	12(16.00%)
	Widow/ Widower	4 (5.33%)
	Separated/ Divorced	6 (8.00%)
	Total	75(100%)
Socio-economic status	Lower	13 (17.33%)
	Middle	18 (24.00%)
	Upper-middle	28 (27.33%)
	Higher	16 (21.34%)
	Total	75(100%)
Educational status	Illiterate	7 (9.33%)
	Primary	12 (16.00%)
	Secondary	27(36.00%)
	Higher secondary	18 (24.00%)
	Degree or above	11 (14.67%)
	Total	75(100%)
Monthly income	Below than Tk 6000	12 (16.00%)
	Tk 6000-12000	15 (20.00%)
	Tk 15000-20000	28 (37.33%)
	Tk 20000+	20 (26.67%)
	Total	75(100%)
Occupation	Govt. Service	4 (5.34%)
	Non-Govt. Service	8(10.67%)
	Treaders	24 (32.00%)
	Industrial worker	6 (8.00%)
	Housewife	7 (9.33%)
	Driver (Rickshaw, van, bus, truck)	6 (8.00%)
	Student	5 (6.66%)
	Day labor	7 (9.33%)
	Others	8 (10.67%)
	Total	75(100%)
Seasons	Summer (March-June)	45 (60.00%)
	Rainy (July-October)	20(26.66%)
	Winter (November-February)	10 (13.34%)
	Total	75(100%)
Religions	Muslim	65 (86.67%)
	Hindu	8 (10.66%)
	Others	2 (2.67%)
	Total	75(100%)
Sources of water	Tap	52 (69.99%)
	Tube well	20 (26.66%)
	Pond	2 (2.66%)
	Others	1 (1.35%)
	Total	75(100%)
Residence location	Urban	53 (70.66%)
	Semi-urban	18 (24.00%)
	Rural	4 (5.34%)
	Total	75(100%)
Regular bath	Yes	45(60.00%)
	No	30 (40.00%)
	Total	75(100%)
Types of clothes	Cotton	20 (26.67%)
	Synthetic	15 (20.00%)
	Nylon	8 (10.67%)
	Mixed	26 (34.68%)
	Others	6 (7.98%)
	Total	75(100%)
Personal items sharing	Yes	47 (66.67%)
	No	28(37.33%)
	Total	75(100%)
History of recurrent infections	Yes	47 (62.66%)
	No	28 (37.34%)
	Total	75(100%)
Overcrowding family	Yes	50 (66.66%)
	No	25 (33.34%)
	Total	75(100%)

DISCUSSION

In this cross sectional research study was found that out of total 200 patients, 50 patients had fungal infections with the highest prevalence [37.50%] followed by other fungal skin problems. Out of fungal infections ringworm had highest prevalence [77.33%] followed by Pityriasis versicolor, Seborrhoeic dermatitis and Oral thrush/ Candidiasis. Among the ringworm, onychomycosis [61.11%], Tinea corporis [53.85%], Tinea cruris [60.00%] had the highest prevalence. It was also observed were male patients had high prevalence [60.00%] than female patients [40.00%].

A study found that fungal infection [20.19%] and seborrhoeic dermatitis [8.80%] were most common among the skin diseases.[11] A study reported that in Abha city from Saudi Arabia among the fungal disease developing pathogens, Tinea capitis [9.6%] and Tinea pedis [1.9%] were most common but we found Tinea corporis [93.85%], Tinea cruris [60.00%] had the highest prevalence.[7] A study found that Tinea corporis [22.63%] was the most frequent infection as well as males were mostly infected with fungal infections which is similar to the results of this present study.[12]

A study informed that among the fungal infected patient's majority [42.7%] were infected by ringworm, 45.36% by Pityrious versicolor and lowest [12%] were infected by Candidiasis.[13] One study from a Dhamrai area near to Dhaka had reported that among the patients with cutaneous skin diseases, fungal infections were the commonest and highest [22.9%] and males had high prevalence [63.4%] than females [36.6%].[14] Another study revealed among the 504 patients who were surveyed from Rajshahi, an unbar city of Bangladesh with different types of skin disease, male had highest prevalence of fungal infections .[15]

In this research study we had explored not only the demographical and socio-economic aspects but also seasonal aspect and the hygiene habits of the patients to better understand the associated factors to the fungal skin diseases. It has been witnessed in this study, that among the fungal infected patients who were married [70.67%], had secondary education [36.00%], earned tk 15000-20000 monthly [37.33%] and had upper-middle class status [37.33%] had higher prevalence. Moreover, patients who were Muslims [86.67%], had treaders [32.00%], lived in urban areas [70.66%], used tap water as the source of water [69.33%] also had higher prevalence of fungal infections of skin. In case of personal hygiene of the patients, who wears cotton clothes regularly [34.68%], baths regularly [60.00%], shares personal items [66.67%], had recurrent infections [62.66%] and had overcrowding family [66.66%] had higher prevalence. Additionally, in summer season fungal infections had higher prevalence [60.00%]. This study had found high prevalence in Muslims as the study was conducted in an Islamic country.[7]

There are several studies conducted in Bangladesh had found different results than ours. According to them, the prevalence was higher is rural areas, among students, patients from low socio-economic status, among illiterate patients in rainy season.[12,13,16,17] A study showed that 52.16% of the patients with low socio-economic status showed a high reoccurrence of skin disease which contradicts our study result.[13] From this study it can be said that fungal skin diseases in patients is very frequent and has risen steadily.

CONCLUSION

Fungal skin diseases occur in the outmost layers of the skin, nails and hair. In recent years the prevalence of these diseases has rised steadily due to some associated factors such as marital status, low socio-economic status, poor skin health, low level of hygiene, personal hygiene, climatic condition overcrowding family and poor level of awareness.

DISCLOSURE

The author declared no competing interest.

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