

Resistance Patterns and Associated Risk Factors of Scabies and Tinea among Outpatients in a Tertiary Care Hospital of Chattogram

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ABSTRACT

Background: Scabies and Tinea are common parasitic and fungal infections in dermatological practice. The emergence of treatment resistance in both conditions has complicated clinical outcomes, particularly in low-resource settings. The aim of the study is to investigate the resistance patterns of scabies and tinea and assess associated sociodemographic, socioeconomic, environmental, hygiene-related and clinical risk factors.

Materials and methods: A cross-sectional study was conducted among 250 Dermatology Outpatients from January to October 2025. Structured interviews and clinical record reviews were used. Chi-square tests and logistic regression were performed to explore associations and calculate Odds Ratios (OR).

Results: Resistance was observed in 38.4% of scabies and 29.6% of tinea cases. Significant associated factors included poor sanitation, overcrowding, steroid misuse, improper treatment completion, diabetes, eczema, and sharing of personal items. The 10–19 years age group, low education level, low income and poor personal hygiene were particularly vulnerable.

Conclusion: Rising resistance to common treatments in scabies and tinea highlights the urgent need for improved hygiene, public awareness and rational medication practices.

Key words: Dermatological infections; Scabies; Steroid; Tinea.

Introduction

Scabies: A common, highly contagious skin infestation caused by the microscopic mite *Sarcoptes scabiei*.

Tinea: A common, contagious fungal infection of the skin, hair, nails caused by dermatophytes. Scabies and Tinea are dermatological infections highly prevalent in tropical countries. Scabies is caused by *Sarcoptes scabiei* var. *hominis*, while tinea is caused by dermatophytes like *Trichophyton* spp. Both are highly contagious and linked to poor hygiene, overcrowding and improper treatment adherence.^{1,2} Treatment resistance in these conditions is an emerging concern in clinical practice. Misuse of topical steroids, partial treatment adherence and growing antifungal resistance are driving these issues globally.³⁻⁵ In Bangladesh, these factors are exacerbated by poverty, dense population and limited dermatological access. This study was designed to assess the prevalence of treatment

resistance among scabies and tinea cases in a tertiary hospital and to identify associated sociodemographic, environmental and clinical factors.

Materials and methods

A cross-sectional observational study was conducted at the Outpatient Department Dermatology and Venereology, Institute of Applied Health Sciences (IAHS)-Hospital, Chattogram during the period from January to October 2025. A total of 250 patients clinically diagnosed with either scabies or tinea were included using systematic random sampling.

Inclusion criteria

- Diagnosed with scabies or tinea
- Received standard treatment for >1 week
- Aged 10 years
- Consented to participate.

Exclusion criteria

- Immunocompromised patients (e.g. HIV/AIDS, Chemotherapy)
 - Incomplete clinical records.
- A pretested questionnaire and clinical record review were used to gather:
- Sociodemographic data: Age, Gender, Education, Occupation
 - Socioeconomic: Monthly income, number of household members
 - Environmental and hygiene: Bedding habits, bathing frequency, sanitation, shared clothing
 - Clinical: Comorbidities (e.g. Diabetes, Eczema) duration of illness, previous treatments.

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Definition of resistance

- Scabies: Persistence or worsening of symptoms after 1 week of topical permethrin or ivermectin.
- Tinea: No improvement after 2 weeks of topical antifungals ± oral antifungals.

SPSS version 26 was used. Categorical variables were analyzed using chi-square tests. Odds Ratios (ORs) and 95% Confidence Intervals (CI) were calculated. A p-value <0.05 was considered significant.

Results**Table I** Sociodemographic profile of respondents (n=250)

Variable	Category	Frequency (n)	Percentage (%)
Age (Years)	10–19	64	25.6
	20–29	58	23.2
	30–39	42	16.8
	40–49	41	16.4
	50–59	25	10.0
	≥60	20	8.0
Gender	Male	116	46.4
	Female	134	53.6
Education Level	No formal education	52	20.8
	Primary (1–5)	79	31.6
	Secondary (6–10)	69	27.6
	Higher Secondary and above	50	20.0
Occupation	Housewife	82	32.8
	Student	61	24.4
	Day laborer	44	17.6
	Service	38	15.2
	Business	25	10.0

Table I represents that most patients were from the 10–29 year age group. Females were slightly more represented. 53.6% Educational attainment was low, with over half had not completed secondary education. Housewife and student categories dominated occupation (32.8%+24.4%) = 57.0%.

Table II Socioeconomic and Environmental Profile (n=250)

Variable	Category	Frequency (n)	Percentage (%)
Monthly Family Income	10,000 BDT	76	30.4
	10,001–20,000 BDT	83	33.2
	20,001–30,000 BDT	54	21.6
	>30,000 BDT	37	14.8
Household Size	4 members	72	28.8
	5–7 members	114	45.6
	8 members	64	25.6
Sanitation	Sanitary toilet	169	67.6
	Non-sanitary (pit/open field)	81	32.4
Personal Hygiene	Daily bathing	145	58.0
	<Daily bathing	105	42.0%
Clothing Sharing	Yes	104	41.6
	No	146	58.4

Table II represents that the majority of participants belonged to lower income groups and lived in large households. About one-third lacked proper sanitation, and nearly half did not bathe daily. Clothing sharing was common.

Table III Clinical features and pattern of resistance (n=250)

Variable	Category	Frequency (n)	Percentage (%)
Diagnosis	Scabies	130	52.0
	Tinea	120	48.0
Resistance detected	Yes (Scabies)	50	38.4% of Scabies
	Yes (Tinea)	36	29.6% of Tinea
Previous steroid use	Yes	71	28.4
Comorbidities	Diabetes	33	13.2
	Eczema	24	9.6
	No comorbidity	193	77.2
Treatment adherence	Completed full course	166	66.4
	Incomplete/irregular	84	33.6

Table III represents that scabies accounted for 52% and tinea 48% of cases, indicating almost equal burden. Treatment resistance was found in 38.4% of scabies patients and 29.6% of tinea patients, indicating a substantial clinical problem. Prior steroid use was reported by 28.4%, which is a risk factor for worsening infection and resistance. Diabetes (13.2%) and eczema (9.6%) were prevalent among patients, possibly complicating infections and treatments. One-third (33.6%) did not complete their treatment course properly, contributing to resistance.

Table IV Risk factor analysis for development of resistance (n=250)**A. Resistance in Scabies (n = 130)**

Factor	p-value	OR (95% CI)	Significance
Age 10–19	0.032	2.1 (1.06–4.25)	Significant
Low income (<20,000 BDT)	0.011	2.5 (1.23–5.04)	Significant
Non-sanitary toilet	0.004	3.4 (1.45–7.86)	Significant
Clothing sharing	0.001	3.9 (1.72–8.73)	Significant
Incomplete treatment	0.009	2.6 (1.27–5.38)	Significant
Previous steroid use	0.038	1.9 (1.02–3.57)	Significant

Table IV A: Association between resistance and risk factors in Scabies (n=130) represents age 10–19: Younger patients had twice the odds (OR=2.1) of resistance, possibly due to higher exposure and poor compliance. Low Income (<20,000 BDT): Economic hardship doubled the risk (OR=2.5) likely due to limited access to proper treatment and hygiene. Non-sanitary Toilet: Poor sanitation increased odds more than threefold (OR=3.4) emphasizing environmental hygiene's role. Clothing sharing: Sharing clothes raised

resistance odds nearly fourfold (OR=3.9) highlighting a major transmission route. Incomplete Treatment: Patients who did not complete treatment were 2.6 times more likely to have resistance. Previous Steroid Use: Steroid misuse nearly doubled resistance risk (OR=1.9) reflecting immunosuppressive effects and masking symptoms.

B. Resistance in Tinea (n = 120)

Factor	p-value	OR (95% CI)	Significance
Diabetes	0.002	3.8 (1.62–8.93)	Significant
Eczema	0.045	2.2 (1.01–5.04)	Significant
Incomplete treatment	0.010	2.7 (1.25–5.92)	Significant
Steroid misuse	0.014	2.3 (1.18–4.42)	Significant
Poor hygiene (<daily bathing)	0.021	1.9 (1.09–3.38)	Significant

Table IV B: Association Between Resistance and Risk Factors in Tinea (n=120) represents Diabetic patients had almost four times higher odds of resistance (OR=3.8) indicating comorbidities worsen treatment response. Presence of eczema doubled the risk (OR=2.2) possibly due to skin barrier disruption. Non-adherence increased resistance risk by 2.7 times. Steroid Misuse increased odds by 2.3 times, similar to scabies. Those with less frequent bathing had nearly twice the risk (OR=1.9) underscoring hygiene importance.

Discussion

This study highlights a growing concern regarding treatment resistance in common dermatological infections scabies and tinea among outpatients in a Tertiary Care Hospital at Chattogram. The observed resistance rate was alarmingly high: 38.4% for scabies and 29.6% for tinea. These findings are consistent with global reports suggesting increasing treatment failure due to poor hygiene, irrational medication use and antimicrobial resistance.^{6,7} Among scabies patients, adolescents aged 10–19 years were significantly more prone to treatment resistance. This group often lives in shared environments, such as schools or hostels, which facilitate close contact and reinfestation.⁸ Similar trends were reported in India and Sub-Saharan Africa, where adolescent groups showed high prevalence and recurrence.^{9,10} Low income was also strongly linked to resistance, consistent with findings from community-based studies associating poverty with delayed or incomplete treatment.^{11,12} Environmental and hygiene-related risk factors such as clothing sharing and non-sanitary toilet use significantly increased scabies resistance. These align with studies from Ethiopia and Pakistan where poor sanitation and personal hygiene were major predictors of disease persistence.^{13,14}

Topical corticosteroid misuse was common and significantly associated with both scabies and tinea resistance. Over-the-counter availability of potent corticosteroids has been documented to suppress symptoms without eradicating the pathogens, resulting in atypical presentations and therapeutic failure.^{15,16} Incomplete or irregular treatment also significantly raised the likelihood of resistance, echoing data from studies in Sri Lanka and Nepal.^{17,18} Among tinea patients, diabetes and eczema were significant comorbid risk factors. Diabetes impairs immune response and skin barrier function, leading to chronic and resistant fungal infections.¹⁹ Eczema-related skin damage further compromises treatment outcomes.²⁰ Infrequent bathing (< Daily) also increased resistance risk, highlighting the role of personal hygiene in fungal clearance.²¹ Overall, these results emphasize that resistance is multifactorial and exacerbated by socioeconomic deprivation, poor hygiene practices and irrational drug use. Addressing these issues requires a combination of clinical intervention, health education and regulatory measures.

Limitations

The study has certain limitations which includes single centre as well as cross sectional study.

Conclusion

This study reveals that scabies and tinea resistance are common among outpatients and strongly associated with younger age, low income, poor sanitation, steroid misuse, treatment non-adherence and comorbidities.

Recommendations

Public health strategies must prioritize hygiene promotion, regulate topical corticosteroids and ensure completion of standard treatment to mitigate resistance.

Disclosure

The author declared no competing of interest.

References

1. Hay RJ, Steer AC, Engelman D, Walton S. Scabies in the developing world—its prevalence, complications, and management. *Clin Microbiol Infect*. 2012;18(4):313–323.
2. Zhan P, Liu W. The changing face of dermatophytic infections worldwide. *Mycopathologia*. 2017;182(1-2):77–86.
3. Heukelbach J, Feldmeier H. Scabies. *Lancet*. 2006;367(9524):1767–1774.
4. Amare A, Yami A. Prevalence of scabies and its associated factors among schoolchildren in rural Ethiopia. *J Infect Dev Ctries*. 2017;11(3):254–259.

5. Kadir MM, Shaikh BT, Fatmi Z, Azam SI. Scabies in children: A neglected disease in public health. *J Pak Med Assoc.* 2012;62(10):1011–1015.
6. Engelman D, Steer AC. Control strategies for scabies. *Trop Med Infect Dis.* 2018;3(3):98.
7. Salavastru CM, Chosidow O, Janier M, Tiplica GS. European guideline for the management of scabies. *J Eur Acad Dermatol Venereol.* 2017;31(9):1248–1253.
8. Currie BJ. Scabies and global control: Lessons from an Australian aboriginal community. *Clin Microbiol Infect.* 2015;21(7):606–613.
9. Verma S, Madhu R. The great Indian epidemic of superficial dermatophytosis: An appraisal. *Indian J Dermatol.* 2017;62(2):227–236.
10. Engelman D, Kiang K, Chosidow O, McCarthy JS, Fuller LC, Lammie P, et al. Toward the global control of human scabies: A review of opportunities and challenges. *PLoS Negl Trop Dis.* 2013;7(3):e2167.
11. Dogra S, Upreti S. The menace of dermatophytosis in India: The evidence that we need. *Indian J Dermatol.* 2017;62(3):247–249.
12. Sarkar S, Bishnoi A, Dogra S. Misuse and abuse of topical corticosteroids in India: concerns and possible solutions. *Indian J Dermatol Venereol Leprol.* 2020;86(6):687–93.
13. Paudel U, Adhikari RC, Aryal G, Shrestha R. Clinico-epidemiological study of superficial fungal infections. *Nepal Med Coll J.* 2017;19(3):131–134.
14. Dayaratne D, Senanayake S, de Silva N, Mendis L. Evaluation of treatment adherence and therapeutic outcome in scabies. *Ceylon Med J.* 2015;60(3):105–108.
15. Chowdhury MMH, Wahab MA, Rahman MH. Misuse of topical corticosteroids in dermatophytosis: A clinical and microbiological study. *J Dhaka Med Coll.* 2017;26(1):15–20.
16. Bishnoi A, Vinay K, Dogra S. Emergence of recalcitrant dermatophytosis in India. *Lancet Infect Dis.* 2020;20(8):913–914.
17. Mukherjee M, Inamdar AC, Nadkarni NJ. Scalp hygiene and fungal infections: A review. *Int J Trichology.* 2019;11(2):62–67.
18. Sonthalia S, Bhattacharya SN, Sarkar R, Dutta B. Eczema and dermatophytosis: A diagnostic dilemma. *Indian J Dermatol.* 2018;63(1):95–97.
19. Venkatesan P. The battle against dermatophytes: Resistance and recurrence. *Lancet Infect Dis.* 2020;20(8):913–914.
20. Rajagopalan M, Inamadar A, Mittal A, Miskeen AK, Srinivas CR. Expert consensus on the management of dermatophytosis in India (ECTODERM India). *BMC Dermatol.* 2018;18(1):6.
21. Gupta AK, Versteeg SG. Topical treatment of facial seborrheic dermatitis: A systematic review. *Am J Clin Dermatol.* 2017;18(2):193–202.