Original Article

# Study on Awareness and Practices Related to Causation, Prevention, and Care-Seeking in Subjects with Resistant Dermatophytosis

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## Abstract

**Background:** Due to treatment persistence and recurrence, refractory dermatophytosis poses an escalating clinical challenge. Understanding patient perspectives regarding etiology, prevention, treatment-seeking, and hygiene practices reveals critical socio-cultural and economic barriers hindering effective disease management. This research explored patient knowledge concerning causation, preventive strategies, care-seeking patterns, and personal hygiene related to recalcitrant dermatophytosis. **Material and Methods:** Two focus group discussions (FGDs) with 24 patients diagnosed with refractory dermatophytosis were conducted using a qualitative methodology. The sessions were audio-recorded, transcribed, and subjected to thematic analysis to identify core perceptions and beliefs. **Results:** Participants identified sun-drying clothes and antiseptic soap washing as preventive measures, while pond bathing with mustard oil and infrequent undergarment changes were perceived as risk factors. Misconceptions included attributing infection to household chores, outdoor activities, prolonged sun exposure, and wearing wet garments. Five principal themes emerged: treatment-seeking behavior, influence of traditional/personal beliefs, preventive practices, understanding of predisposing factors, and disease awareness gaps. **Conclusion:** Addressing culturally rooted misconceptions is vital for effective management. Financial limitations and occupational constraints impede the adoption of preventive measures. Reducing anti-fungal treatment costs and enhancing patient education are crucial to mitigating this growing public health concern.

**Keywords:** dermatophytosis, care-seeking behavior, focus group, personal hygiene, traditional beliefs.

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## Introduction

Dermatophytosis encompasses superficial fungal infections caused by commensal yeasts, non-dermatophytic molds, and dermatophytes, exhibiting affinity for keratin-rich structures like skin, hair, and nails. "Recalcitrant tinea infection" encompasses chronic, persistent, recurrent, and relapsing forms[1]. Recently, recalcitrant dermatophytosis prevalence has surged due to diminished responsiveness to available topical and oral anti fungals, posing a significant obstacle to a complete cure. Assessing factors contributing to patients' financial, emotional, and social distress is imperative. For Indian dermatologists, recalcitrant dermatophytosis represents a formidable challenge.[1,2]

Existing literature inadequately explains the reasons behind the recalcitrant dermatophytosis outbreak. Host susceptibility is well-established in atopic, immunosuppressed, and diabetic individuals, alongside those undergoing systemic corticosteroid therapy. Topical corticosteroid use has recently emerged as another risk factor. Prior research has documented modifications in disease profile and increased recurrence of tinea attributable to corticosteroid abuse, with particular concern regarding indiscriminate over-the-counter medication use. With increasing reports of topical corticosteroid misuse and the escalating problem of antimicrobial resistance, the adoption of rational treatment strategies has become indispensable. In India, recalcitrant dermatophytosis has evolved into a common and pressing dermatological challenge. Literature also emphasises investigating shifts in causative agent patterns and anti-fungal resistance. A paradigm shift in etiology is observed, with Trichophyton mentagrophytes replacing T. rubrum as the primary agent. Increased Minimum Inhibitory Concentration (MIC) values are noted for griseofulvin, terbinafine, and fluconazole. However, high MIC alone cannot fully explain recalcitrant dermatophytosis, necessitating assessment of other factors, including therapy compliance.[3-5]

Patient perceptions offer real-world insights into deeply rooted host factors, providing avenues to overcome cultural and socio-economic barriers preventing recurrence and relapse.[6] Therefore, this qualitative study evaluated patients'

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understanding of causation, prevention, care-seeking behavior, and personal hygiene in recalcitrant dermatophytosis. It also sought to identify cultural and socio-economic factors contributing to this condition's persistence.

## Materials and Methods

The study was conducted at a tertiary center from January to May 2023 and received Institutional Ethical Committee approval. Participants were recruited from the Institute's Department of Dermatology, Venereology, and Leprosy. Written and verbal informed consent was obtained from all subjects, ensuring confidentiality and anonymity.

**Inclusion Criteria**

Participants qualified for the study if they presented with cutaneous dermatophytosis that reappeared within six weeks of completing an appropriate course of anti-fungal therapy. In addition, they were required to have experienced a minimum of two recurrences during the previous six months. These conditions were adopted to characterise recalcitrant dermatophytosis.

**Exclusion Criteria**

Individuals who declined to take part or were unable to provide informed consent were excluded.

From a total of 40 individuals fulfilling the eligibility requirements, 24 consented and were enrolled for analysis.

Background characteristics were documented using a semi-structured pro-forma. Two FGDs (12 males, 12 females) were conducted using a predetermined guide with open-ended questions to explore disease perceptions, preventive measures, treatment-seeking behavior, and hygiene practices. A moderator facilitated discussions, while a recorder documented proceeding. Participants sat semi-circularly to ensure visibility. Neutral questioning encouraged participation, with follow-up questions posed as needed. Leading questions were avoided, and responses received no judgment. Equal participation was confirmed via sociograms. Sessions were electronically recorded and limited to 30 minutes.

## Results

Participants expressed varied perceptions regarding disease causation, preventive measures, care-seeking practices, and personal hygiene. Cultural norms and socio-economic constraints emerged as additional factors contributing to recalcitrant dermatophytosis. The cohort included 24 subjects (12 male, 12 female). Mean ages were 36.8±11.41 years (males) and 33.8±11.48 years (females). Fourteen participants resided urbanely, 10 rurally; 16 were literate, eight illiterates. Dermatophytosis types included tinea corporis and manuum (4 subjects), tinea corporis only (2), and tinea cruris and corporis (18) [Table 1]. Pile sorting revealed five themes: attitudes toward care-seeking, the influence of personal and traditional belief systems, preventive strategies, perceptions of predisposing factors, and gaps in disease-related knowledge

Attitudes toward care-seeking: Some subjects used government health facilities, with cost-free services being the main reason for their preference. Two believed local shop ointments could cure the disease; two initially consulted local quacks, who referred them to tertiary care. High dermatologist consultation and medication costs deterred specialist visits. Four subjects expressed frustration over disease recurrence despite significant expenditures.

Understanding of predisposing factors: Participants identified various causes, including pond bathing with oil as a cure. Prolonged undergarments use and wearing wet clothing were strongly linked to disease propagation. Working in synthetic garments and sweating were considered predisposing factors. Conjugal transmission was noted. Pregnant women avoided medication for fetal safety, exacerbating the spread and treatment resistance. Diabetes was viewed as a major predisposing factor reducing treatment efficacy.

Ignorance about the disease: Most participants shared towels, toiletries, and soaps, unaware that this facilitated transmission. Sharing was partly attributed to economic constraints (e.g., inability to afford individual soaps). Some believed the disease stemmed from treating other illnesses (e.g., leprosy) or drugs for heartburn/acidity.

Traditional beliefs: Cow dung smearing on walls and floors was believed to be preventive—no participant associated wet sacred threads or amulets (worn for protection) with disease. Neem leaf baths were considered protective.

Personal hygiene and prevention: Most believed cleaning floors with chlorhexidine/cetrimide antiseptics could eliminate persistent infection. Changing sweat-soaked clothes twice daily, followed by antiseptic/soap washing, was emphasized for recurrence prevention. Sun-drying clothes and regular bathing were strongly believed to be preventive. Financially constrained siblings sharing clothes facilitated family transmission. Female participants noted using cloth pads due to the inability to afford menstrual absorbent pads.

**Table 1: Background Characteristics of Study Subjects with Dermatophytosis**

| Characteristics | Subgroup | Number (n) | Percentage (%) |
|---|---|---|---|
| Mean age (years) | Males | 36.8±11.41 | |
| | Females | 33.8±11.48 | |
| Gender | Males | 12 | 50 |
| | Females | 12 | 50 |
| Residence | Rural | 10 | 41.66 |
| | Urban | 14 | 58.33 |
| Education | Literate | 16 | 66.6 |
| | Illiterate | 8 | 33.3 |
| Dermatophytosis type | Tinea corporis & manuum | 4 | 16.6 |
| | Only tinea corporis | 2 | 8.33 |
| | Tinea cruris & corporis | 18 | 75 |

**Table 2: Ranking of Perceptions by Study Participants (Smith's Salience Score)**

| S. No | Parameter | Smith's Salience Score |
|---|---|---|
| 1 | Treatment interrupted due to pregnancy | 0.028 |
| 2 | Not bathing regularly predisposes to tinea | 0.036 |
| 3 | Frustration by disease recurrence despite financial burden | 0.088 |
| 4 | Government hospital visit as treatment was free | 0.097 |
| 5 | Treatment by a dermatologist is costly with expensive medicine | 0.103 |
| 6 | Change clothes only when wet | 0.107 |
| 7 | Change clothes twice for disease prevention | 0.118 |
| 8 | Depends on OTC owing to limited resources | 0.129 |
| 9 | Share clothes due to limited resources | 0.132 |
| 10 | Consulted quacks | 0.159 |
| 11 | Diabetes cause dermatophytosis | 0.194 |
| 12 | No effect of sharing towels, toiletries, or soap | 0.216 |
| 13 | Clothes shall not be shared | 0.230 |
| 14 | Not changing amulet/sacred thread when wet | 0.316 |
| 15 | Caused by drugs for treating other diseases | 0.321 |
| 16 | Neem leaves bath prevent disease | 0.362 |
| 17 | Conjugal life spread disease | 0.388 |
| 18 | Smearing wall and floor with cow dung prevent disease | 0.411 |
| 19 | Working in synthetic clothes causes disease | 0.455 |
| 20 | Cleaning the room with antiseptic prevents disease | 0.460 |
| 21 | Wet clothes cause tinea | 0.498 |
| 22 | Bathing in water using mustard oil cause disease | 0.572 |
| 23 | Not changing undergarments for prolonged cause disease | 0.641 |
| 24 | Sundried clothing prevents disease | 0.721 |
| 25 | Washing clothes with antiseptic and soap prevent disease | 0.751 |

**Table 3: Pile Sorting of Perceptions into Themes**

| Theme | Participant's Perception of Tinea | Grouping Reason |
|---|---|---|
| Care-seeking behavior | Government hospital visit as treatment was free | Directly related to care-seeking behavior |
| | OTC dependence owing to limited resources | |
| | Visiting quacks owing to trust and word of mouth | |
| | Frustration of disease recurrence despite spending money | |
| | Dermatologist's treatment is expensive with costly medications | |
| Understanding of predisposing factors | Diabetes causes tinea | Directly related to understanding predisposing factors |
| | Interruption of treatment in pregnancy | |
| | Disease spread by prolonged wearing of unchanged underwear | |
| | Wet clothes cause tinea | |
| | Working in sun/synthetic clothes cause tinea | |
| | Conjugal life spread disease | |
| | Pond bath with mustard oil spread tinea | |
| Ignorance about the disease | Sharing towel, toiletries, and soaps do not influence disease | Related to lack of awareness/knowledge gap |
| | Caused by seeking treatment for other diseases with drugs | |
| Traditional belief | Bathing in neem leaves prevents tinea | Related to traditional beliefs |
| | Floor smearing and wall earthing with cow dung prevent disease | |
| Role of personal hygiene & Prevention | Not taking regular bath predispose to tinea | Related to personal hygiene and prevention |
| | Using cloth sanitary pads during menstruation due to limited resources | |
| | Avoiding clothes sharing | |
| | Changing clothes only when wet | |
| | Changing clothes twice to prevent disease | |
| | Changing clothes with antiseptic prevents tinea | |
| | Sun drying the clothes prevent disease | |
| | Washing clothes with antiseptics and soap prevents disease | |

Post-FGD, audio recordings and notes were translated into participants' language, then into English. Transcripts were independently coded by researchers; discrepancies were resolved through discussion. Coded data underwent thematic analysis to identify key themes with illustrative quotes. Pile sorting and free listing using Smith's salience value were performed. Perceptions were grouped based on harmonization by individual researchers. Data analysis utilized SPSS version 21.0.

## Discussion

The study sample was composed of 24 individuals who met the inclusion criteria (12 male, 12 females; mean ages 36.8±11.41 and 33.8±11.48 years). Fourteen resided urbanely, 10 rurally; 16 were literate, eight illiterates. Dermatophytosis presentations included tinea corporis and manuum (4), tinea corporis only (2), and tinea cruris and corporis (18). Five overarching themes emerged from the findings: attitudes toward care-seeking, the influence of personal and traditional

belief systems, preventive strategies, perceptions of predisposing factors, and gaps in disease-related knowledge—demographic findings aligned with Dogra S (2016) and Rajagopalan M et al (2018).[7,8]

Care-seeking behavior: Government hospital use was driven by free treatment. Local shop ointments and quacks were initial options; cost deterred dermatologist visits. Recurrence despite spending caused frustration. These findings mirrored Sil A et al (2012) and Patel NH et al (2020).[9,10]

Understanding of predisposing factors: Pond bathing with oil, prolonged undergarment use, wet clothing, synthetic garments, sweating, conjugal transmission, pregnancy-related treatment avoidance, and diabetes were identified. This concurred with Verma S (2017) and Singh S et al (2019).[11,12]

Ignorance about the disease: Sharing towels, toiletries, and soaps without recognizing transmission risk was common and linked to poverty. Misconceptions included disease causation by other illness treatments or heartburn drugs. This aligned with Leung AK et al (2020) and Chen L (2010).[13,14]

Traditional beliefs: Cow dung smearing and neem leaf baths were considered preventive; wet amulets were unrelated to disease. Verma S et al (2020) and Rengasamy M et al (2020) reported similar beliefs.[15,16]

Personal hygiene and prevention: Antiseptic floor cleaning, frequent clothing changes, antiseptic washing, sun-drying clothes, and regular bathing were emphasized. Shared clothing due to poverty and cloth pad use were noted. Panda S (2017) and Pathania S et al (2018) supported hygiene's preventive role.[17,18]

## Conclusion

Despite limitations, this study highlights the need to address scientifically unsupported traditional beliefs. Anti fungal treatment costs require control. The implementation of preventive strategies is often impeded by work-related commitments and socio-economic disadvantage.

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### Conflicts of interest

There are no conflicts of interest.

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