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Research Article

A Clinico-Epidemiological Study to Assess the Impact on Quality of Life and Financial Burden in Patients with Dermatophytosis

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ABSTRACT

Introduction: Chronic and recalcitrant dermatophytosis is an emerging disease burden in India that has a profound psychosocial impact on affected individuals. Tinea incognito, modified by steroid usage has a greater impact on quality of life (QoL).

Objectives: To assess the clinico-epidemiological profile, risk factors, QoL and financial burden among patients with dermatophytosis at a tertiary care centre in rural South India

Method: This was a prospective hospital-based cross-sectional study conducted at the Dermatology Outpatient Department between January 2022 and January 2023. Dermatology Life Quality Index (DLQI), 5D pruritus and financial burden scores were calculated to assess various parameters.

Results: Among 150 patients, females (95,63%) were more affected than males (55,37%). The mean age was 37.79 ± 13.8 years. Chronic dermatophytosis was seen in 95 (63.3%) patients. Tinea incognito 93 (62%) was the most common clinical type followed by tinea corporis 49 (32.6%). The mean DLQI score was 18.78 ± 6.78 (Range 3-30) with a very large impact seen in 79 (52.7%) patients followed by an extremely large impact in 58 (38.7%) patients. QoL was significantly more affected in tinea incognito (20.68 ± 6.73) compared to tinea corporis (14.90 ± 4.72). The mean 5D Pruritus score was 15.53 ± 2.52 (Range 9 to 23). Patients with huge financial burdens had a greater impact on QoL with a mean DLQI value of 6.67 ± 3.06.

Conclusion: Patients with tinea incognito had higher DLQI, 5D pruritus score, and a greater financial burden compared to tinea corporis. Psychological counselling should be given along with antifungal treatment to address the QoL and for better treatment compliance.

Keywords: Dermatophytosis, DLQI, Financial Burden, 5D Pruritus Score, QoL, Tinea Incognito

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Introduction

Cutaneous mycoses, predominantly caused by dermatophyte fungi, are among the most common fungal infections worldwide, especially in developing countries. The prevalence of superficial fungal infections is around 20–25% of the world's population, with dermatophytoses being the most common infection. Chronic dermatophytosis has been defined as an infection present for more than 6 months to 1 year, with or without recurrences.[1] It produces a profound psychological and social impact on affected individuals.[2,3] The visible lesions significantly impact social interaction, self-image, and sexual life, thereby drastically affecting the quality of life. Despite therapeutic advances, there is still a rise in the prevalence of dermatophytosis.[4] In addition, symptoms of discomfort and itching add to the psychological distress.

The various factors contributing to the epidemic of superficial dermatophytosis include erratic use of antifungals, increased prevalence of Trichophyton mentagrophytes infections causing more inflammatory lesions, irrational use of topical and systemic steroids, and probably increased resistance to antifungal agents.[5] Tinea incognito is a special variant of dermatophytosis where the morphology gets modified by the use of topical or systemic corticosteroids due to misdiagnosis or given for some other coexisting skin disease. Few studies nationwide have found a rise in the abuse of topical steroids sold as "over-the-counter drugs" (OTC).[6] Topical steroids reduce the inflammatory response, temporarily relieving the symptoms, but patients return with complaints again a few days to weeks after quitting the medication. The present study was conducted to assess the clinico-epidemiological profile, risk factors, quality of life, and financial burden among patients with dermatophytosis at a tertiary care centre in rural South India.

Materials and Methodology

This was a prospective hospital-based cross-sectional study conducted at the Dermatology Outpatient Department of a tertiary care centre in rural South India over a period of one year between January 2022 and January 2023 after getting ethical committee approval. A total of 150 patients with dermatophytosis participated in the study. Consecutive patients of both sexes and age groups over 18 years were included. Pregnant or lactating females, psychiatric patients, and patients with another coexisting skin condition such as psoriasis or eczema were all excluded. After obtaining written informed consent from all patients, baseline characteristics such as age, sex, socioeconomic status, occupation, literacy level, age of onset, total duration of the disease, family history, risk factors, body surface area involved, and previous treatment details were recorded on a pre-tested structured questionnaire. A detailed dermatological examination was performed to evaluate the lesion and the extent of involvement. KOH examination was done in all cases. Dermatology Life Quality Index (DLQI) score, 5D pruritus score, and financial burden score were calculated to assess various parameters.

The 5D pruritus scale formulated by Elman et al. was used.[7] The 5-D pruritus scale ranges from 5 to 50 points, and the intensity of pruritus was assessed as points 5–10 (mild), 11–15 (moderate), 16–20 (severe), and 21–25 (very severe). Patients were asked to fill out a standard DLQI questionnaire in the language of their choice without any assistance. The DLQI questionnaire developed by Finlay and Khan[8] was used. DLQI score interpretation was 0–1 with no effect on the patient's life, 2–5 with a small effect on the patient's life, 6–10 with a moderate effect on the patient's life, 11–20 with a very large effect on the patient's life, and 21–30 with an extremely large effect on the patient's life. The financial impact due to the treatment for dermatophytosis was evaluated using a composite financial burden score in which nine binary questions were asked. The patient self-reported the financial burden on a scale of 1–5, with 1 being "no-worry" and 5 being "very much worried".[9]

Data was entered in an Excel spreadsheet and assessed with SPSS software. All variables were expressed as numbers and percentages. The mean ± standard deviation was calculated for quantitative variables. Quantitative variables were analysed using the unpaired t-test or ANOVA test, and qualitative variables were analysed using the chi-square test. A p value less than 0.05 was considered significant.

Results

Patient Characteristics

During the study period, 150 new patients with dermatophytosis were observed. Females (95, 63%) outnumbered males (55, 37%), and the male-to-female sex ratio was 0.58:1. Majority of patients were between 30 and 50 years of age (72, 48%). The mean age of patients was 37.79 ± 13.8 years. Semi-skilled workers (58, 38.7%) were the predominant category among various occupations. The majority of patients belonged to the upper lower class (48, 32%), followed by the lower middle class (47, 31.3%). Baseline characteristics have been summarised in Table 1.

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Table 1.Patient and Disease Characteristics

Age (in years)	
< 30	52 (34.7%)
30–50	72 (48.0%)
> 50	26 (17.3%)
Mean age in years	37.79 ± 13.8
Marital status	
Married	111 (74.0%)
Unmarried	35 (23.3%)
Widow	4 (2.7%)
Education	
Illiterate	26 (17.3%)
Primary	20 (13.3%)
Secondary	92 (61.4%)
Graduate and above	12 (8.0%)
Occupation	24 (16.0%)
Student	
Unemployed	28 (18.7%)
Unskilled worker	32 (21.3%)
Semi-skilled worker	58 (38.7%)
Skilled worker	7 (4.7%)
Semi-professional	1 (0.7%)
Occupation	
Student	24 (16.0%)
Unemployed	28 (18.7%)
Unskilled worker	32 (21.3%)
Semi-skilled worker	58 (38.7%)
Skilled worker	7 (4.7%)
Semi-professional	1 (0.7%)
Socio-economic status	
Lower	11 (7.3%)
Upper lower	48 (32.0%)
Lower middle	47 (31.3%)
Upper middle	41 (27.3%)
Higher	3 (2.0%)
Duration of disease	
< 3 months	30 (20.0%)
3–6 months	25 (16.7%)
6–12 months	32 (21.3%)
Patient and Disease Characteristics	n (%) or Mean ± SD
> 1 year	63 (42.0%)
BSA involved (%)	
< 10	107 (71.0%)
> 10	43 (29.0%)
Clinical types	
Tinea incognito	93 (62.0%)
Tinea corporis	49 (32.6%)
Tinea cruris	4 (2.6%)
Tinea faciale	3 (2.0%)
Tinea manuum	1 (1.0%)

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Disease Characteristics

The majority had the onset of dermatophytosis between 30 and 50 years (68, 45.3%). A history of close contact was present in 55 (36.7%) patients. The type of clothing worn by patients was studied, and occlusive clothing was worn by 100 (66.7%) patients. On evaluating the risk factors, 67% wore occlusive clothing, 62% had a history of steroid intake, 5.3% had diabetes, 3.3% had obesity, 2% had excess sweating, and 2% had poor hygiene. Among steroid users, one had a history of using systemic steroids. Chronic dermatophytosis with a disease duration of more than 6 months was seen in 95 (63.3%) patients. More than 10% of BSA was involved in 43 (29%) patients. Regarding the clinical types, most of the patients suffered from tinea incognito (93, 62.0%), followed by tinea corporis (49, 32.6%). For patients with tinea incognito, pharmacists (51.55%) were the main providers of treatment, followed by other sources, as shown in Table 2. The various Prescribed OTC combination drugs are as follows.

- Clobetasol propionate + gentamycin+ iodochlorhydroxyquinoline + ketoconazole
- Clobetasol propionate + neomycin sulphate + micanazole nitrate + chlorhexidine gluconate
- Clotrimazole + beclomethasone dipropionate + neomycin sulphate
- Clotrimazole + beclomethasone

DLQI Scores

The mean DLQI score was 18.78 ± 6.78, with a minimum score of 3 and a maximum score of 30. Quality of life was affected by a very large impact in 79 (52.7%) patients, followed by an extremely large impact in 58 (38.5%) patients, a moderate impact in 11 (7.3%), and a small impact in 2 (1.3%). The mean DLQI among patients > 30 years of age was comparatively higher than other age groups. Other factors significantly associated with quality of life were close contact history, married patients, and duration of disease greater than 6 months. Quality of life was also significantly more affected in patients suffering from tinea incognito (20.68 ± 6.73) compared to tinea corporis (14.90 ± 4.72) (Table 3). The mean 5D Pruritus score was 15.53 ± 2.52, with a minimum score of 9 and a maximum score of 23.11 (7.3%) patients had complaints of itching all day, while 57 (38%) patients had itching for 12–18 hours per day. The rate of intensity of itching was severe in 67 (44.7%) patients. Patients with huge financial burdens had a greater impact on quality of life, with a mean DLQI value of 6.67 ± 3.06. 74 (49%) patients said they had to use their savings, while 70 (47%) patients said they had to borrow money for treatment expenses (Table 4). The financial burden was also higher among patients with tinea incognito (4.52 ± 3.82) compared to tinea corporis (1.58 ± 2.82) and was statistically significant (p = 0.000, unpaired t test).

Table 2.Treatment Taken From and Frequently Prescribed Topical Combination Drugs

Prescribed By	n	Percentage (%)
Pharmacist	51	55%
General practitioners	26	28%
TV/ internet advertisements	12	13%
Other specialist	3	3%
Family member/ contact	1	1%

Table 3.DLQI Comparison Among Different Characteristics

Clinical Characteristics	Number (n)	Mean DLQI (Score ± SD)	t test Value	p Value
Gender				
Male	55	18.71 ± 7.05	0.096	0.924
Female	95	18.82 ± 6.66		
Age (years)				
< 30	53	16.53 ± 6.93	3.020	0.003
> 30	97	20.01 ± 6.41		
Residence				
Rural	65	18.45 ± 6.54	0.530	0.597
Urban	85	19.04 ± 6.99		

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Socioeconomic status (SE)				
Middle and upper SE class	91	18.2 ± 6.35	1.268	0.207
Lower SE class	59	19.68 ± 7.36		
Close contact history				
Present	55	22.24 ± 6.47	5.066	0.000
Absent	95	16.78 ± 6.15		
Marital status				
Married	111	19.47 ± 6.66	2.098	0.04
Unmarried	39	16.82 ± 6.82		
Duration of illness (months)				
< 6	55	16.40 ± 5.55	3.604	0.000
> 6	95	20.16 ± 7.07		
BSA involved (%)				
< 10	107	20.83 ± 7.08	2.178	0.34
> 10	43	23.96 ± 5.39		
Clinical type				
Tinea incognito	93	20.68 ± 6.73	5.926	0.000
Tinea corporis	49	14.90 ± 4.72	-	-
Financial burden				
Small to moderate burden	13	1.23 ± 3.00	52.88	0.000
Very large burden	79	1.73 ± 2.77	-	-
Extremely large burden	58	6.67 ± 3.06	-	-

Discussion

Dermatophytosis often affects all aspects of quality of life, including physical, psychological, social, sexual, and occupational elements. The major concern among patients suffering from dermatophytosis is pruritus. Severe and prolonged presentation of a seemingly minor symptom, such as pruritus, significantly affects their daily activities and well-being, thereby having a drastic impact on their QoL.

Table 4.Financial Burden on Patients with Dermatophytosis

Financial Impact of Dermatophytosis on Study Subjects	Frequency	Percentage
Had to use savings for treatment purposes	74	49
Had to borrow money or a loan	70	47
Couldn’t be able to pay other bills	58	39
Had to cut down spending on clothes and/ or food	62	41
Had to cut down spending on the health expenses of other family members	53	35
Had to cut down on recreational activities	61	41
Had to cut down expenses in general	66	44
Had to delay/ interrupt treatment due to financial constraints	51	34
Had to self-medicate/ consult a general practitioner due to financial reasons	45	30

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Another major impact is cosmetic embarrassment due to the obvious visibility of the lesions. This in turn restricts the patient's social interactions, stigmatization, and isolation. Excessive abuse of topical steroids and their adverse effects have further added to the treatment woes of patients. Chronic and recalcitrant tinea is an emerging disease burden in India that affects QoL for a longer duration. Tinea incognito, caused by prolonged use of topical steroids alone or in combinations as a consequence of self-medication or OTC availability and sometimes prescribed as a result of an incorrect diagnosis, poses a greater risk of chronicity and recurrence of the condition by suppressing the local immune response.[6]

The majority of patients in the present study belonged to the age group of 30 to 50 years of age (72, 48%). Sonthalia et al.[10] conducted a case-control study, which revealed a similar age distribution of 21–40 years. Furthermore, the study also observed a higher preponderance of tinea among females (65%). A similar observation was noted in our study, with females (63%) more affected than males. The most common risk factor in our study was occlusive clothing, seen in 67% of patients. A study by Bhargava et al.[11] also found that poor hygiene and occlusive clothing were significant risk factors for tinea infection. The use of occlusive clothing in particular can cause abnormal transepidermal water loss, leading to incomplete cure rates and more likely recurrences after initial treatment. As a result, it is important general advice that all patients should avoid sharing clothing, linens, towels, and even bathroom napkins to prevent cross-infection among family members and close contacts.[12] In the present study, most patients (63%) had chronic dermatophytosis persisting for more than six months, consistent with a study by Shaw et al.[13]

Steroid use is an important deterrent to achieving a complete cure, leading to chronic and recurrent dermatophytosis. Sardana et al.[14] in their study reported all patients using antihistamines and topical steroids, with a mean duration of 3.2 months for the latter. Another study conducted by Nahid et al.[15] reported a significantly higher mean DLQI among patients with tinea incognito. In the current study, the mean DQLI score was significantly higher in patients with tinea incognito (20.68 ± 6.73) compared to tinea corporis (14.90 ± 4.72). Patients with tinea incognito also suffer from steroid side effects such as striae, atrophy, and excess financial burden, which add to the physical and psychological distress.

A very large impact on QoL was seen in 79 (52.7%) patients, consistent with previous studies by Das et al.[16] (55.3%) and Rajasekhar et al.[17] (52.7%). The mean DLQI in Das et al.[16] study conducted among 153 patients with chronic and recurrent dermatophytosis was 21.4 ± 5.6, and the primary domain affected was "symptoms and feelings." Patro et al.[18] observed a mean DLQI of 12.12 ± 5.04 in the age group of 18–40 years and 12.46 ± 5.83 in patients between 41–60 years of age. This was slightly lower than the current study, where the mean DLQI was higher in patients > 30 years of age (20.01 ± 6.41) compared to patients < 30 years (16.53 ± 6.93). This could be attributed to the financial problems and the symptoms affecting daily activities among the occupationally and economically active age group.

Chronic itching in dermatophytosis can significantly impair QoL, leading to severe disability. The mean 5D pruritus score in our study was 15.53 ± 2.52 and was much higher among patients with tinea incognito (20.68 ± 6.73) compared to tinea corporis (14.90 ± 4.72). The higher intensity of pruritus in tinea incognito can be due to steroid-induced skin atrophy/ thinning of skin, and rebound of skin lesions upon steroid withdrawal. Patro et al.[18] reported a similar 5D pruritus score, and the intensity was measured as moderate (score 11–15) in almost all patients. The majority of patients attending the outpatient department for dermatophytosis belonged to either the middle class (58.0%) or lower socioeconomic class (7.3%). The mean DLQI scores were significantly higher among patients with extremely large financial burdens (6.67 ± 3.06). The high cost and extended duration of therapy pose a financial burden for low- to average-income groups, leading to treatment non-adherence and forcing them to opt for OTC treatment with cheaper topical steroid combinations.

Conclusion

Dermatophytosis has a significant impact on the quality of life of individuals affected by it. The financial burden due to increased treatment expenses further exacerbates this impact. Patients with tinea incognito were found to have a higher DLQI and 5D pruritus score, as well as a greater financial burden compared to those with tinea corporis. There is a need to spread awareness among the public about the risk of applying topical steroid combination agents. Psychological counselling, in addition to antifungal treatment, is necessary to address the emotional impact of the disease. It is also important to assess the patient's financial status in order to ensure that they are able to afford the necessary treatment and maintain compliance with the treatment plan.

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Conflict of Interest: None

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