ORIGINAL ARTICLE

# Impact of dermatophytosis on the quality of life in a subset of patients in Colombo, Sri Lanka

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## Abstract

**Background:** Dermatophytosis is a common superficial fungal infection, which often causes pruritic and extensive skin lesions that can be relapsing. In tropical countries like Sri Lanka, warm and humid conditions favour their spread. Lesions often involve visible areas, and this leads to discomfort and psychosocial distress. However, the impact of clinical and socio-demographic factors on quality of life remains insufficiently studied. This study assesses the effect of dermatophytosis on quality of life in a sample of patients from the Colombo district.

**Methods:** A cross-sectional study was conducted among 202 patients with clinically diagnosed tinea infections of glabrous skin. Data were collected using the validated Sinhala Dermatology Life Quality Index (DLQI) questionnaire. Associations of independent variables were analyzed using the Mann–Whitney U test and Spearman's correlation tests, with significance set as $P<0.05$.

**Results:** The DLQI scores ranged from 0 to 30 (mean 10.37 ± 6.68; median 9.00; IQR 11). The largest proportion of participants had a very large effect on quality of life (33.8%). Among DLQI domains, the highest impact was seen in the "symptoms and feelings", whereas the least impact was observed in the "treatment" domain.

Among the subset of 61 participants who completed the socio-demographic questionnaire, monthly income showed a significant negative correlation with DLQI (U = 314.5, $P = 0.049$), while education level and gender were not significantly associated. Among clinical factors, only groin involvement was significantly associated with higher DLQI scores (U = 192.5, $P = 0.047$). However, there's no significant association of disease duration and time for first consultation on the DLQI score.

**Conclusion:** Tinea infections have a considerable effect on quality of life, particularly among patients with groin involvement. Socioeconomic status, specifically income, appears as a significant determinant of disease burden. These findings highlight the importance of targeted management strategies addressing both clinical severity and psychological and socioeconomic factors.

**Keywords:** dermatophytosis; tinea; quality of life; DLQI; Sri Lanka

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## Introduction

Dermatophytosis (Tinea infection) is a common superficial fungal infection of the skin, hair, and nails caused by keratinophilic fungi. This remains among the most prevalent dermatological conditions worldwide, particularly in tropical regions such as Sri Lanka, where heat and humidity favour fungal growth.[1]

Recently, an epidemic-like scenario of rapidly spreading, extensive, treatment-resistant tinea infections was encountered in South Asia.[2] The newly identified species, *Trichophyton indotineae,* is found to be responsible for these recalcitrant tinea infections, and this species is also reported in Sri Lanka.[3] This treatment-resistant tinea infection largely contributes to the disease burden and is now found in other parts of the world as well.[4,5]

Tinea infections are usually symptomatic with itching and can affect visible areas, such as the face. Although it is not life-threatening, they can cause significant discomfort, cosmetic concern, and psychosocial distress.[6]

Recent evidence suggests that dermatophytosis has a considerable impact on patients' quality of life, and many patients are experiencing moderate to very large levels of impairment as measured by the Dermatology Life Quality Index (DLQI).[7]

In Sri Lanka, tinea infections are increasingly recognised as a common dermatological problem causing chronic and relapsing disease.[3] However, local data on their impact on patients' quality of life remain limited. Therefore, this study aimed to assess the quality of life of patients with tinea infections in a sample of patients in the Colombo district using the validated Sinhala version of DLQI.[8]

## Materials and Methods

This study was carried out in the dermatology clinics of Base Hospitals, Mulleriyawa and Homagama. All patients with a clinical diagnosis of tinea on glabrous skin were included in the study.

Informed written consent was obtained from all participants prior to inclusion. Data were collected using a self-administered Dermatology Life Quality Index (DLQI) questionnaire, which has been previously validated in the local Sinhala language.[8] In addition, sociodemographic details were collected through a self-administered form.

The DLQI consists of 10 questions assessing six domains: symptoms and feelings (questions 1 and 2), daily activities (questions 3 and 4), leisure (questions 5 and 6), work and school (question 7), personal relationships (questions 8 and 9), and treatment (question 10). Each question is scored on a 4-point Likert scale: 3 = very much, 2 = a lot, 1 = a little, and 0 = not at all or not relevant. The total DLQI score ranges from 0 to 30, with higher scores indicating greater impairment of quality of life.

The overall DLQI score was categorized as follows: no effect (0–1), small effect (2–5), moderate effect (6–10), very large effect (11–20), and extremely large effect (21–30).

Data were analysed using SPSS version 27.0. As the DLQI scores were non normally distributed, quantitative data were summarised using the median and interquartile range (IQR), while categorical variables were presented as frequencies and percentages. The Mann–Whitney U test was used to compare DLQI scores between two groups. Spearman's rank correlation was used to assess associations between DLQI scores and continuous ordinal variables. A *P*-value of less than 0.05 was considered statistically significant.

## Results

A total of 202 patients were included in the study. Of the study population, 78 (38.8%) were males, and 124 (61.4%) were females. Participants were recruited from the dermatology clinics of Base Hospital Homagama and Mulleriyawa, representing individuals from the general community.

**Socio-demographic and clinical characteristics:** Only 61 participants had completed the questionnaire on socio-demographic and clinical characteristics. The following socio-demographic and clinical characteristics were observed in this subset.

Regarding education, the majority had attained up to secondary education (n = 36, 59.0%), while the remainder had attained more than secondary education (n = 25, 40.9%). Most patients belonged to the monthly income category of less than LKR 50,000 (n = 33, 54.1%), while the remaining patients had a monthly income of more than LKR 50,000 (n = 28, 45.9%).

The duration of disease varied among participants, with 31.1% having the disease for less than 3 months, 29.5% for 3-6 months, and 39.3% for more than 6 months. The median time to first medical consultation was 2 weeks (IQR 2).

Regarding clinical distribution, groin involvement was the most common (n = 48, 78.7%), followed by upper body (n = 37, 60.7%), lower body (n = 22, 36.1%), and lastly face (11.5%).

**DLQI Response:** A total of 202 patients were enrolled in the study; however, one participant failed to complete the primary DLQI questionnaire items. Consequently, primary quality-of-life descriptive analyses were performed on the evaluable sample of 201 patients. DLQI scores showed a skewed distribution; therefore, non-parametric tests such as the median and interquartile range (IQR) were also considered. The total DLQI scores ranged from 0 to 30, with a mean of 10.37 ± 6.68, a median of 9.00, and an IQR of 11. (Table 1).

Based on DLQI categorisation, the largest proportion of participants experienced a "very large effect" on quality of life (33.8%), followed by a "moderate effect" (32.3%) and a "small effect" (17.9%). Only 7.5% reported "no effect," while 8.5% experienced an "extremely large effect" (Table 1).

Among DLQI domains, the highest impact was observed in the "symptoms and feelings" domain (3.16 ± 1.60; median 3.00; IQR 2), followed by "daily activities" (2.12 ± 1.73; median 2.00; IQR 2). The "leisure activities" domain showed moderate impairment (1.64 ± 1.67; median 1.00; IQR 3), while "personal relationships" (1.29 ± 1.61; median 1.00; IQR 2), "work and study" (1.17 ± 1.18; median 1.00; IQR 2), and "treatment" (1.00 ± 0.92; median 1.00; IQR 2) demonstrated relatively lower impact (Table 2). Overall, the symptoms and feelings domain was the most affected, whereas the treatment domain showed the least impact on quality of life.

**Table 1. Distribution and Descriptive Summary of Total DLQI Scores (n=201)**

| Total DLQI Score Range | Frequency (n) | Percentage (%) |
|---|---|---|
| 0-1 (No effect) | 15 | 7.5% |
| 2-5 (Small effect) | 36 | 17.9% |
| 6-10 (Moderate effect) | 65 | 32.3% |
| 11-20 (Very large effect) | 68 | 33.8% |
| 21–30 (Extremely large effect) | 17 | 8.5% |
| Total | 201 | 100.0% |

Mean +/- SD = 10.37 +/- 6.68; Median (IQR) = 9.00 (11). Total scale range: 0–30
One patient was excluded due to incomplete DLQI questionnaire documentation.

**Table 2. Domain-Specific Dermatology Life Quality Index (DLQI) Scores (n=201)**

| DLQI domain | Mean ± SD | Median (IQR) | Clinical Impact Level |
|---|---|---|---|
| Symptoms and Feelings | 3.16 ±1.60 | 3 (2) | Highest Impact |
| Daily Activities | 2.12 ±1.73 | 2 (2) | High Impact |
| Leisure Activities | 1.64 ±1.67 | 1 (3) | Moderate Impact |
| Work and school | 1.17 ±1.18 | 1 (2) | Low Impact |
| Personal Relationships | 1.29 ±1.61 | 1 (2) | Low Impact |
| Treatment | 1.00 ±0.92 | 1 (2) | Lowest Impact |

DLQI: Dermatology Life Quality Index; SD: Standard Deviation; IQR: Interquartile Range.
One patient was excluded due to incomplete DLQI questionnaire documentation

**Table 3. Association of socio-demographic and clinical factors with DLQI scores (n=61)**

| Variable | Category | Median DLQI (IQR) | Test statistic | *P*-value |
|---|---|---|---|---|
| Monthly income | < LKR 50,000 vs. > LKR 50,000 | <LKR 50,000 = 9(10) >LKR 50,000 = 7(7) | U = 314.500 | **0.049*** |
| Education level | Up to Secondary vs. > Secondary | Up to Secondary = 7(11) >Secondary = 7(9) | U = 362.500 | 0.262 |
| Face involvement | Yes/No | Yes = 3(12) No = 7(9) | U = 145.000 | 0.353 |
| Upper body involvement | Yes/No | Yes = 7(11) No= 8(7) | U = 420.000 | 0.858 |
| Lower body involvement | Yes/No | Yes = 9(7) No = 7(10) | U= 320.000 | 0.132 |
| Groin involvement | Yes/No | Yes = 8(9) No = 5(9) | U= 192.500 | **0.047*** |
| Time to seek the first medical consultation | (weeks) | 2(3) | rs= 0.139 | 0.310 |
| Disease Duration | (Weeks) | 16(20) | rs= -0.119 | 0.364 |

**Association with Socio-demographic Factors:** There was no significant difference in DLQI scores between males and females (U = 4767.0, $P = 0.940$) in the total sample (N=202). The rest of the sociodemographic features and association of DLQI were assessed in the subset of patients who completed the additional form (n=61) (Table 3).

(A) Association with Income and Educational Level: DLQI scores differed significantly according to income category (U = 314.5, $P = 0.049$), indicating that higher income levels were associated with better quality of life. In contrast, no significant association was found between education level and DLQI scores (U = 362.5, $P = 0.262$) (Table 3).

(B) Association with Clinical Factors: No significant associations were observed between DLQI scores and face involvement ($P=0.353$), upper body involvement ($P = 0.858$), or lower body involvement ($P = 0.132$) (Table 3). However, groin involvement showed a marginally statistically significant association with DLQI scores ($P = 0.047$), indicating greater impairment in quality of life among affected patients (Table 3).

(C) Duration of Disease and Health-Seeking Behaviour: There was no significant correlation between DLQI scores and duration of disease in weeks ($r_s = -0.119$, $P = 0.364$). The time to first medical consultation, analysed as a continuous variable, also showed no significant correlation with DLQI scores ($r_s = 0.139$, $P = 0.310$) (Table 3).

## Discussion

Skin lesions of dermatophytosis often occur on visible or sensitive areas such as the face, limbs, or groin, which can be persistent, recurrent, and bring significant distress to the patient, especially from a cosmetic perspective. Although not a life-threatening disease, it may lead to discomfort, embarrassment, and social stigma, particularly in cases with chronicity or post-inflammatory hyperpigmentation. The disfigurement, stigmatization, and subsequent lifestyle modifications thus associated have been linked to psychological effects such as depression, anxiety, and a reduced quality of life, as is the case with many other chronic skin diseases.[9]

In the present study, moderate impairment in quality of life was observed among patients with dermatophytosis, with a mean DLQI score of 10.37 ± 6.68. Although this is slightly lower than the mean DLQI reported by other regional studies (13.07± 8.51) and 12.7, the overall burden remains comparable.[9,10] Notably, a considerable proportion of patients in both studies experienced a "very large effect" on quality of life, a pattern also observed in our cohort, highlighting the substantial psychosocial

impact of the disease. The slightly lower mean DLQI in our study may be attributed to better healthcare accessibility and early treatment-seeking behaviour, particularly in urban settings such as Colombo.

Furthermore, when comparing the DLQI of similar chronic dermatological conditions, a study conducted in India regarding leprosy demonstrated a mean DLQI score of 8.4 ± 4.4 with a range of 0-21. However, the demographic profiles of age, gender, and occupation did not have a statistically significant correlation with DLQI in their findings, similar to our study.[11] Other similar studies have also shown mean DLQI scores for leprosy with upper limits lower than those in the present study, with scores of 8.48 ± 5.48, and 8.31±6.15.[12,13] Furthermore, the highest possible DLQI seen for psoriasis patients in the study, which was done at the Colombo South Teaching Hospital's skin clinic, is 8, while tinea infection patients are excluded from this assessment.[14]

The comparatively higher DLQI observed in dermatophytosis may be related to the associated severe itching, sleep disturbances, irritability, and the involvement of exposed/body-sensitive areas with the tinea infection.[15,16] In contrast to our results, a different study carried out in Sri Lanka that used the validated Sinhala DLQI questionnaire to measure quality of life (QoL) in patients with leishmaniasis found lower mean DLQI scores for civilians (3.18 ± 4.055) and army personnel (4.32 ± 4.537).[17] This discrepancy could be due to the asymptomatic nature of cutaneous leishmaniasis and patient characteristics. When considering the domains of DLQI, "symptoms and feelings" were the primary domains affected by dermatophytosis, followed by daily activities, leisure, and personal relationships, similar to findings reported in other studies.[7,18] These results are in line with ours and could be explained by the same reasons mentioned above that lead to higher DLQI scores.

A statistically significant but weak negative correlation was observed between monthly income and DLQI scores (U = 314.5, $P$ = 0.049), thus demonstrating the comparatively poorer quality of life among lower-income individuals. This relationship may be explained by differences in access to healthcare, living conditions, and coping capacity. Although the association between financial burden and DLQI was only marginally significant ($P$ = 0.06), and worry showed no significant association ($P$ = 0.22), similar variability has been reported by Karanam et al., which highlights the complex relationship between economic and emotional factors and quality of life. Furthermore, our findings are supported by Abdul Jamil et al., who have demonstrated an increasing financial worry with decreasing socioeconomic status, aligning with the negative correlation observed between income and DLQI in our study.[6,19]

## Limitations

This study has several limitations. First, the analysis of socio-demographic and clinical factors was limited to a subset of 61 participants due to incomplete responses in the additional self-administered questionnaire, which may have reduced the representativeness and statistical power of these findings. Second, the study was conducted in dermatology clinics within the Colombo district, an urban setting with relatively better healthcare accessibility; therefore, the findings may not be generalisable to rural populations or other regions of Sri Lanka. In addition, the cross-sectional study design limits the ability to establish causal relationships between clinical or socioeconomic factors and quality of life impairment. Despite these limitations, the study provides important local data on the psychosocial burden of dermatophytosis in Sri Lankan patients.

## Conclusion

Dermatophytosis has a considerable negative impact on quality of life, with many patients experiencing moderate to very large impairment in daily functioning and well-being. The greatest impact was observed in the symptoms and feelings domain, highlighting the significant physical discomfort and psychosocial distress associated with the disease. Groin involvement and lower income were associated with poorer quality of life in this cohort. Given the increasing burden of chronic and recurrent dermatophytosis in the region, these findings emphasise the importance of comprehensive management approaches that address both the clinical manifestations and the psychosocial effects of the disease.

## Recommendations

The present study assesses the impact of dermatophytosis on quality of life in a subset of patients from Colombo district, which represents one of the most urbanised areas in the country. It is

important to extend similar research to other areas of the country, especially the rural areas with more limited resources and poverty. Such studies would help the development of more effective strategies for prevention, treatment, and improvement of the quality of life of the affected patients with tinea infections.

## Ethics statement

Ethical clearance was obtained from the Ethics Committee of the Sri Lanka Medical Association. Informed written consent was obtained from all the study participants, and the study participants were kept anonymous to maintain confidentiality.

## Data Availability Statement

The datasets used and analyzed during the current study are available from the corresponding author upon reasonable request.

## Authors' Contributions

NM conceptualized and supervised the study and contributed to data collection. PK collected and analyzed the data and drafted the manuscript. SE contributed to data analysis and manuscript writing. TA assisted in data collection and preliminary study activities. All authors reviewed and approved the final manuscript.

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