

# Impact of Dermatophytosis on the Quality of Life in Patients attending a Tertiary Care Hospital, Karachi

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<sup>1,2,3,4</sup> Conception of study

<sup>1,2,3</sup> Experimentation/Study conduction

<sup>1,2,4</sup> Analysis/Interpretation/Discussion

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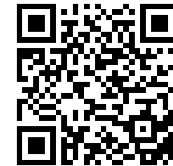
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## Abstract

**Objective:** To determine the impact of dermatophytosis on the quality of life (QoL) of patients at a tertiary care hospital in Karachi.

**Materials and Methods:** The cross-sectional descriptive research was piloted in the Departments of Dermatology and Microbiology, Jinnah Postgraduate Medical Centre (JPMC) Karachi, a leading public tertiary care hospital from July 2019 to December 2019. The patients <16 years aged were excluded from this study. The KOH (10%) wet mount was performed for fungal hyphae and spore observation in specimens. Quality of life was determined by dermatology life quality index (DLQI) scores and their association with different variables was evaluated by using the t-test and Fisher test.

**Results:** A total of 300 dermatophytosis patients were analyzed. Most of the patients were of no education category. The active age group (16-30 years) showed higher frequency (138; 46.0%) and followed by the age group of 31-50 years (126; 42.0%). In the present study DLQI score mean was  $13.4 \pm 7.3$ . The unexposed area was the main site 249 (83.0%). Dermatophytosis has an effect on the quality of life (QoL) in the majority (98.7%) of the patients. The DLQI score was significantly higher in unexposed and both site's involvement ( $P < 0.001$ ). DLQI score was not affected by age, sex, literacy, addiction, and other demographic variables.

**Conclusion:** This study revealed that dermatophytosis has a significant impact on the quality of life (QoL) in these patients.

**Keywords:** Dermatophytoses, Dermatology Life Quality Index, Quality of Life, Tinea cruris.

## Introduction

The prevalence of dermatophytosis is preponderance in almost 20%–25% of global populations and is most prevalent among skin and appendages diseases worldwide.<sup>1</sup> (Dermatophytosis involved the different areas and appendages of skin on which it is classified into various types; tinea pedis, tinea unguium, tinea capitis, tinea cruris, and tinea corporis.<sup>1,2</sup> Dermatophytosis is predominantly caused by dermatophytes, a group of filamentous fungi.<sup>1</sup> The risk factors associated with dermatophytosis are short incubation, chronic disorders, contact with animals, geographical region, humidity, high temperature, and immunocompromised.<sup>1,3</sup> Dermatophytosis is usually superficial and localized but generalized, chronic, and recalcitrant dermatophytic infections are increasingly reported.<sup>4</sup> Health correlated quality of life (QoL) is an essential tool to determine the burden of disease and the outcomes of its treatment. The high prevalence of dermatophytosis creates a considerable health problem and has a significant negative effect on the quality of life significantly.<sup>5,6</sup>

The skin disease including dermatophytoses involves physical, cosmetic, psychological, and societal concerns. The dermatophytoses lesion may be extensive and negatively affect behavioral, communal, and professional related health and the quality of life.<sup>4,7</sup> Precise measures of skin disease load may be evaluated not specifically in the manner of disabilities, but its negative impact on the quality of life.<sup>8</sup> Quality of life is an imperative public health problem and it is defined as intellectual attentiveness to a person's satisfaction in life. It includes the individual opinion of position in life and achievement of objectives, opportunities, standards, and their effect on social relationships, physical and mental health.<sup>9</sup> The clinical spectrum of dermatophytosis has a negative influence on the quality of life (QoL) of infected persons.<sup>5</sup> The present study was designed to evaluate the impact of dermatophytoses on the quality of life by the Dermatology Life Quality Index (DLQI) tool, (<https://www.cardiff.ac.uk/medicine/resources/quality-of-life-questionnaires>). Limited work has been conducted on this health issue in Pakistan in relation to dermatophytosis. Therefore this study was conducted and will help the research community and public health authorities with insight into this issue.

## Materials and Methods

**Study design and setting:** Cross-sectional study was piloted for a period of 6 months (July 2019 to December 2019) at the Department of Dermatology, in collaboration with the Department of Microbiology Basic medical sciences institute (BMSI), Jinnah Postgraduate Medical Centre (JPMC) a tertiary care hospital of Karachi, Pakistan.

**Sample size:** A total of 300 patients with dermatophytosis were enrolled in this research. The patients were clinically diagnosed by the consultant dermatologist. The sampling technique was non-probability convenience. The sample size was calculated by the Open Epi online calculator. The reference study for sample size calculation was Mustaq et al.<sup>5</sup>

**Ethical approval:** The ethical approval for this study was taken from the Institutional Review Board (IRB) of Jinnah Postgraduate Medical Centre Karachi. Written consent was taken from patients.

**Inclusion and exclusion criteria:**

The patients were included based on clinical presentation of dermatophytosis and KOH mount test positive with the age of  $\geq 16$  years. Patients with pregnancy, chronic and pre psychiatric diseases, and other skin diseases with dermatophytosis were excluded from this study.

**Patient assessment**

A comprehensive history was taken for a socio-economic feature and a cutaneous examination was performed for clinical appearances of dermatophytosis. The patients were divided into 3 age groups, 16-30, 31-50, and 51-70 years to evaluate the effect between the age groups.

**Mycological assessment**

All patients were clinically evaluated for dermatophytosis and fungal involvement was confirmed by potassium hydroxide (KOH, 10%) wet mount direct microscopy. The KOH wet mount was performed at the Department of Microbiology, BMSI, JPMC, Karachi. The samples were collected following recommended procedures for the skin nail and hair and were processed accordingly for the observation of fungal hyphae and spores.<sup>10,11</sup>

The quality of life in dermatophytosis patients was determined by Dermatology Life Quality Index (DLQI) score system which is available on the website (<https://www.cardiff.ac.uk/medicine/resources/quality-of-life-questionnaires>). This was published in 1994 and their questionnaire consists of 10 questions, which is easy and user friendly. The permission was taken

from the Cardiff University for this study: (NO.F.2-81/2019-GENL/17327/JPMC-Impact of chronic and recurrent dermatophytosis on quality of life in patients reporting to a tertiary care hospital). DLQI Score was grouped into five groups, 0-1, 2-5, 6-10, 11-20, and  $\geq 25$ , and was interpreted as no effect, mild, moderate, very large, and extremely large effect respectively.

#### Statistical analysis

The data was recorded on Excel MS office and transferred to IBM SPSS version 22 and analyzed in accordance with variables. The qualitative data were stated in percentages and quantitative in mean with standard deviation. The correlation of DLQI scores with demographic and clinical characteristics was determined by the *t* and Fisher test.

## Results

A total of 300 diagnosed cases of dermatophytosis were enrolled in the present study. The mean age of subjects was  $34.50 \pm 13.35$ . The majority of the patients were 16-30 and followed by 31-50 years of age groups. There was male precedence (202/300; 67.3%) in dermatophytosis patients. The majority of the patients revealed no family history of dermatophytosis (184, 61.3%) and of a household size group of 6-10 family members. The prevalence of unexposed body involvement and recurrence cases of dermatophytosis was 249 (83.0%) and 94 (31.3%) respectively (Table 1). The lowest frequency of cases was reported in the postgraduates (7; 2.3%) and the highest (69; 23%) in the no education group (Fig. 1). The mean DLQI score was  $13.73 \pm 6.118$ . Dermatology Life Quality Index (DLQI) scores were determined, the majority of dermatophytosis patients fell in the 11-20 DLQI score (172/300; 57.3%), followed by 6-10 (57/300; 19.0%), and only four (4) 1.3% were showed no effect on the quality of life (Table 2). There was no statistically significant difference in DLQI scores between males and females,  $13.30 \pm 6.35$  and  $14.62 \pm 5.52$  respectively; it was analyzed by the *t*-test. Similarly, there was no effect of addiction on the DLQI score, in patients with addiction  $14.42 \pm 6.79$ , and with no addiction  $13.43 \pm 5.77$ .

**Table 1:** Demographic characteristics of study subjects with Dermatology Life Quality Index (DLQI) score (n=300)

Variables	Number (%)	DLQI mean, Std. deviation	P value
<b>Age (groups)</b>			
16-30	138 (46.0)	13.90 $\pm$ 5.538	
31-50	126 (42.0)	13.43 $\pm$ 6.429	0.95
51-70	36(12.0)	13.67 $\pm$ 6.021	
<b>Gender</b>			
Male	202 (67.3)	13.30 $\pm$ 6.35	0.08
Female	98 (32.7)	14.62 $\pm$ 5.52	
<b>Addiction</b>			
Yes	93 (31.0)	14.42 $\pm$ 6.796	0.19
No	207 (61.0)	13.43 $\pm$ 5.779	
<b>Family history</b>			
0	184 (61.3)	13.21 $\pm$ 6.175	
1-2	104 (34.7)	14.38 $\pm$ 5.850	0.11
$\geq 3$	12 (4.0)	16.17 $\pm$ 6.900	
<b>Household Size</b>			
0	4 (1.3)	13.25 $\pm$ 9.287	
1-5	78 (26.0)	14.26 $\pm$ 5.616	
6-10	156 (52.0)	13.79 $\pm$ 6.432	0.48
11-15	45 (15.0)	13.60 $\pm$ 5.642	
$\geq 16$	17 (5.7)	11.24 $\pm$ 5.911	
<b>Comorbidity</b>			
Yes	31 (10.3)	13.81 $\pm$ 5.199	0.95
No	279 (89.7)	13.72 $\pm$ 6.223	
<b>Duration (Months)</b>			
1-3	108 (36.0)	13.40 $\pm$ 6.284	
4-6	68 (22.7)	12.84 $\pm$ 5.765	
7-9	27 (9.0)	14.96 $\pm$ 5.324	0.26
10-12	40 (13.3)	15.23 $\pm$ 5.859	
> 12 Months	57 (19.0)	13.79 $\pm$ 6.118	
<b>Behavior of disease</b>			
Continuous	206 (68.7)	13.72 $\pm$ 6.123	0.95
Recurrence	94 (31.3)	13.77 $\pm$ 6.139	
<b>Sites</b>			
Exposed	17 (5.7)	8.59 $\pm$ 5.535	
Unexposed	249 (83.0)	14.14 $\pm$ 5.990	0.001
Both	34 (11.3)	13.32 $\pm$ 6.290	
<b>Number of sites</b>			
1	192(64.0)	13.47 $\pm$ 6.089	
2	88(29.4)	14.03 $\pm$ 5.999	0.50
$\geq 3$	20(6.6)	14.95 $\pm$ 6.985	

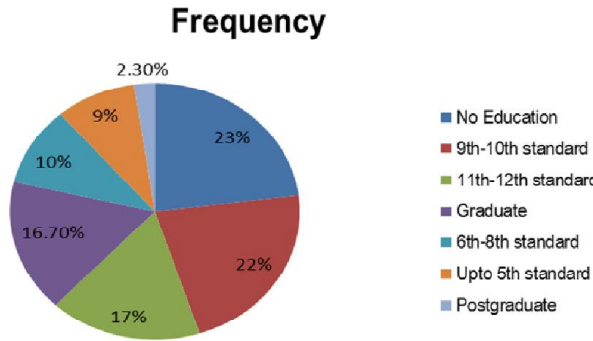


Figure 1: Distribution of patients of Dermatophytosis on the educational standard (n=300)

Table 2: Dermatology Life Quality Index (DLQI) score of the Dermatophytosis patients

DLQI score	Interpretation	Number (%)
0-1	No Effect	4 (1.3)
2-5	Mild effect	29(9.7)
6-10	Moderate effect	57(19.0)
11-20	Very large effect	172(57.3)
(≥21)	Extremely large effect	38(12.7)
Total		300 (100.0)

## Discussion

The idea of the quality of life (QoL) in a health system is multidirectional including, physical, mental, and social well-being, financial and functional objectivity.<sup>5</sup> Skin diseases such as acne, psoriasis, and eczema are associated with a significant impairment in the quality of the patient's daily life.<sup>8,12</sup> Several instruments assess quality-of-life (QoL) in adults and children with skin disease and help us understand its impact.<sup>12</sup> Dermatophytosis is a major public health problem because recurrence and chronicity cause a great impact on a patient's well-being physically and psychologically. Therefore, their effect on the quality of life was determined by using the analytical tool, Dermatology Life Quality Index (DLQI). This tool is already in use for different skin diseases and is an easy way of measuring the impact of skin illness on the quality of life.<sup>13</sup> The DLQI is an important tool and plays a significant role in assessing the impact of dermatophytosis and other skin diseases on the community, treatment guidelines, social, financial, and skills of the patients.

Fungal infection of the skin and its appendages are more prevalent in India, as it is a tropical country with favorable climatic, economic, and social conditions such as temperature, humidity, poverty, and

overcrowding.<sup>14</sup> Similar conditions in Pakistan are associated and the prevalence is also similar. The hot and humid environmental conditions are associated with dermatophytosis.<sup>15</sup>

The majority of patients were aged 16-30 years; this may be physical activity that results into increase sweating. Sweating is a risk factor in dermatophytosis. In the present study, the male preponderance was determined in the dermatophytosis cases. Similar findings have been reported by Hussain et al<sup>16</sup> and Sharma et al<sup>17</sup> this may be due to the occupational activities and more exposure to the dermatophytes. The other demographic characteristics were determined. The behavior of the disease revealed that the continuous presentation of dermatophytosis was higher and statistically significant ( $P = 0.0001$ ). The recurrence of dermatophytosis is an emerging problem reported in previous study.<sup>17</sup> Similarly in present research a significant number of cases were of recurrence of dermatophytosis. The most affected age group was 16-30 followed by the 31-50 years group. The majority of patients had no family history of dermatophytosis but a significant number of the patients were with family history. The family members have a significant role in dermatophytosis as it is a highly contagious disease. Comorbidity is a significant risk factor in all infectious diseases. However, at present the majority of cases were healthy and it is an alarming situation for public health or the community. The majority of patients were with history of more than 3 months duration of dermatophytosis. This indicates the negligence of this disease and patients avoid visiting the clinics or it may be due to poverty. Similarly, a significant number of recurrence cases of dermatophytosis are in this research. The recurrence of the diseases may result from different factors including, financial, social, lack of awareness, treatment discontinuity, and the emergence of resistance.

The idea of the quality of life (QOL) is progressively vital in medicine, especially in the field of clinical dermatology as skin diseases have a more negative impact on the quality of life than the length of life or severity and complications.<sup>5,7</sup> In the present study, the majority of dermatophytosis patients revealed that quality of life is significantly affected. In the present study, the DLQI score was 11-20, followed by 6-10. This indicates that dermatophytosis has a significant negative impact on the quality of life. Similar results have been reported by Mushtaq et al<sup>5</sup> and Putri et al<sup>9</sup> in onychomycosis, which is an example of dermatophytosis.<sup>5,9</sup> The demographic variables have

no association with the DLQI score except the sites of the body. These findings are in agreement with the former study of Mushtaq et al.<sup>5</sup> This means the quality of life of all patients is equally affected without gender, age, and other variables. This is summarized that dermatophytosis has a negative effect on the quality of life.

## Conclusion

Dermatophytosis has a substantial impact on the quality of life of the patients. There was no association between the DLQI score and the demographic characteristic of the patients. Therefore, awareness needs to be created in the community about this common health problem.

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