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Assessment of the Quality of Life (Qol) and Associated Factors in Patients Suffering from Tinea Infection Attending Dermatology OPD of a Tertiary Care Hospital, Gujarat, India: A Cross-Sectional Study

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Abstract:

Background: Dermatophytosis is a type of superficial fungal infection caused by Microsporum, Trichophyton, and Epidermophyton fungi. It can negatively impact the quality of life of patients. The objective of this study is to assess the quality of life of patients suffering from tinea infection. **Materials and Methods:** A cross-sectional study was conducted at the dermatology outpatient department of tertiary care hospital, Central Gujarat over two months, including 372 patients with tinea, selected through systematic random sampling. A semi-structured questionnaire was used to gather data on various characteristics, and the dermatological life quality index (DLQI) was assessed. The study evaluated the association between patient characteristics and the dermatological life quality index (DLQI) using ANOVA, t-test, and Pearson's correlation test. **Results:** The study included 372 patients with an average DLQI score of 11.5 ± 5.35, indicating varying degrees of effect on quality of life. Among them, 2.1% had no effect, 13.1% had a small effect, 27.4% experienced a moderate effect, 52.1% experienced a very large effect, and 5.3% experienced an extremely large effect. Statistically significant differences were found in DLQI scores based on bathing frequency and location. There were also differences based on seasonal variations. **Conclusion**: The impact of tinea on quality of life was moderate in more than half of the participants, with hygiene practices, place of stay, and religion significantly affecting DLQI scores.

Introduction

Dermatophytosis is a superficial fungal infection that affects the hair, skin, and nails. Fungi belonging to three genera (Microsporum, Trichophyton, and Epidermophyton) are responsible for causing this condition. It is the most common infective dermatosis encountered in dermatology outpatient department. It is estimated

that superficial fungal infections affect roughly 20 to 25% of the world's population [1]. The reported prevalence of dermatophytosis in India ranges from 36.6% to 78.4% [2,3].

Quality of Life is defined by WHO as an individual's perception of their position in life in the context of the culture and value systems in which they live and about their goals, expectations standards, and concerns [4]. The quality of life of the patients can be affected due to tinea infection. The concept of quality of life includes physical activities, occupational opportunities, social relationships, and psychological well-being [5]. A moderate effect on DLQI was observed in 40.8% of dermatophytosis patients, while a large effect was seen in 26.3% of patients. Small effects were noticed in 29% of patients [6]. The quality of life of patients can be negatively affected due to the itchy nature of lesions, especially when they are present on visible parts of the body, which can lead to social discrimination. Unfortunately, many people in our society suffer from poverty, illiteracy, unhygienic conditions, and a poor standard of living. Many of these patients do not take proper and regular treatment so the disease persists and naturally affects the QoL of the patient [7]. The quality of life is so affected in dermatophytosis because of multiple recurrences and refractoriness to treatment leading to a condition called dermatophyte menace because of the widespread involvement of body parts [8].

Numerous investigations have been conducted regarding the quality of life in chronic skin conditions such as psoriasis, vitiligo, and urticaria. In contrast, there is a minimal/ scarcity of studies focusing on the QoL implications of dermatophytosis. So, our purpose of the study was to assess the impact of tinea infection on the quality of life ofpatients and factors associated with it.

Materials and Methods

A cross-sectional analytical study was conducted at the Dermatology Outpatient Department (OPD) of a tertiary care hospital, Central Gujarat among patients diagnosed with tinea infection after getting permission from the IECHR (Institutional Ethics Committee for human research).

According to a reference study, 40.8% of patients with tinea experienced a moderate level of impact on their quality of life [6]. The sample size for the study was 372 and it was calculated using an OpenEpi sample size calculator. A confidence interval of 95% and a precision of 5% were used for the calculation.

The study included all patients above 18 years of age who were diagnosed with tinea infection and were willing to participate by giving written informed consent. Patients below 18 years of age with skin diseases other than tinea infection or those who did not provide consent were excluded.

Patients were selected using a systemic sampling technique, with an average of 50 to 60 tinea patients attending the dermatology OPD daily. Every fifth tinea patient was selected and interviewed using a semi-structured questionnaire with questions related to socio-demography, illness history, and a pre-validated questionnaire for the dermatology life quality index (DLQI) [9]. Responses were noted, and 7-8 patients were interviewed each day. The estimated sample size was covered in two months, and data was simultaneously entered into Microsoft Excel 2021.

The data was analysed using Microsoft Excel 2021 and Jamovi version 4.2.11. The quantitative data was calculated in the form of mean, range, and standard deviation, and results were presented in tables and appropriate graphs. The responses to the DLQI questionnaire were evaluated using a Likert scale and analysed based on the overall DLQI scores. The scores were interpreted as follows: 0 to 1 indicated no effect, 2 to 5 indicated a small effect, 6 to 10 indicated a moderate effect, 11 to 20 indicated a very large effect, and 21 to 30 indicated an extremely large effect. Patients with higher DLQI scores were considered to have a more impaired Quality of Life. Qualitative data was analysed in the form of proportions and percentages. The association of DLQI scores with socio-demographic variables and personal history of tinea infection was analysed using independent student t-test and one-way ANOVA tests of significance.

Results

Three quarters of the participants were male 74.5% (277) and Hindu 65.3% (243), and 62.9% (234)participants lived in urban areas and 82.3%(306) were married. The age distribution of participants was fairly even across the different age groups, with the largest percentage (26.1%, n=97) of participants falling in the 31-40 age range. Table 1 represents demographic information including their age, gender, religion, area, and marital status. Forty-four percent had a high school education and a job (26.9%). The group was mostly in socio-economic class IV (30.1%) and III (26.6%).(Table 2)

Table 1: *descriptive statistics of basic socio demographic details (n=372)*

Groups	Subgroups	Frequency(n=372)	Percentage	95% CI
Age	(<20)	27	07.3	04.87 - 10.43
	21-30	95	25.5	21.15 - 30.25
	31-40	97	26.1	21.71 - 30.88
	41-50	91	24.5	20.21 - 29.20
	51-60	41	11.0	08.01 - 14.63
	>60	21	05.6	03.49 - 08.45
Gender	Female	95	25.5	21.15 - 30.25
	Male	277	74.5	69.75 - 78.85
Religion	Hindu	243	65.3	60.22 -70.13
	Muslim	111	29.8	25.19 - 34.73
	Christian	09	02.4	01.10 - 04.52
	Other	09	02.4	01.10 - 04.52
Area	Urban	234	62.9	57.77 - 67.82
	Rural	117	31.5	26.81- 36.49
	Tribal	21	05.6	03.49 - 08.45
Marital status	Married	306	82.3	78.03 - 86.04
	Unmarried	66	17.7	13.96 - 21.97

Table 2: *descriptive statistics of education, occupation & socio-economic status (n=372)*

Groups	Subgroups	Frequency(n=372)	Percentage	95% CI
Educational status	Illiterate	33	08.9	06.21 - 12.27
	Primary education	89	23.9	19.65 - 28.57
	High school	163	43.8	38.69 - 49.01
	Graduate	80	21.5	17.43 - 26.03
	Postgraduate	07	01.9	0.77 - 03.86
Occupation	Student	24	06.5	04.22 - 09.50
	Unemployed	17	04.6	02.71 - 07.25
	Business	70	18.8	14.96 - 23.15
	Job	100	26.9	22.46 - 31.71
	Daily wager	89	23.9	19.65 - 28.57
	Housewife	72	19.4	15.50 - 23.79
Socio-economic class		36	09.7	06.89- 13.17
		88	23.7	19.47 - 28.36
		99	26.6%	22.18 - 31.40
		112	30.1%	25.48 - 35.04
		37	09.9%	07.06 - 13.40

Practices

Out of 372 patients, 63.2% (n=235) used non-medicated soaps, 24.2% (n=90) used medicated soaps, and the remaining 12.6% (n=47) did not use any soap. Among them, 73.9% (n=275) had the habit of sharing their towels with family members. Additionally, 75.3% (n=280) bathed daily, 24.2% (n=90) bathed twice a day, and only 0.5% (n=2) bathed once every two days. Only 8.6% (n=32) of the participants had a history of diabetes mellitus. Moreover, 80.9% (n=301) changed their undergarments once daily, 18.5% (n=69) changed twice a day, and only 0.5% (n=2) changed once every two days. It was observed that 84.1% (n=313) of patients washed their clothes commonly with their family members, while the remaining 15.9% (n=59) washed their clothes individually. Furthermore, 54.5% (n=203) of patients showed seasonal variation in tinea infection, with the highest occurrence in the monsoon (32.5%), followed by summer (17.2%) and winter (4.8%), while the remaining 45.5% (n=169) had no seasonal variation.

Quality of life

Overall DLQI mean value with standard deviation (Mean ± SD) was 11.5 ± 5.35, and the 95% confidence interval (CI) was between 10.9 and 12.0. Out of the total participants, 2.1% (8) had no effect, 13.1% (49) had a small effect, 27.4% (102) experienced a moderate effect, 52.1% (193) experienced a very large effect, and 5.3% (20) experienced an extremely large effect due to the condition.(Figure 1)

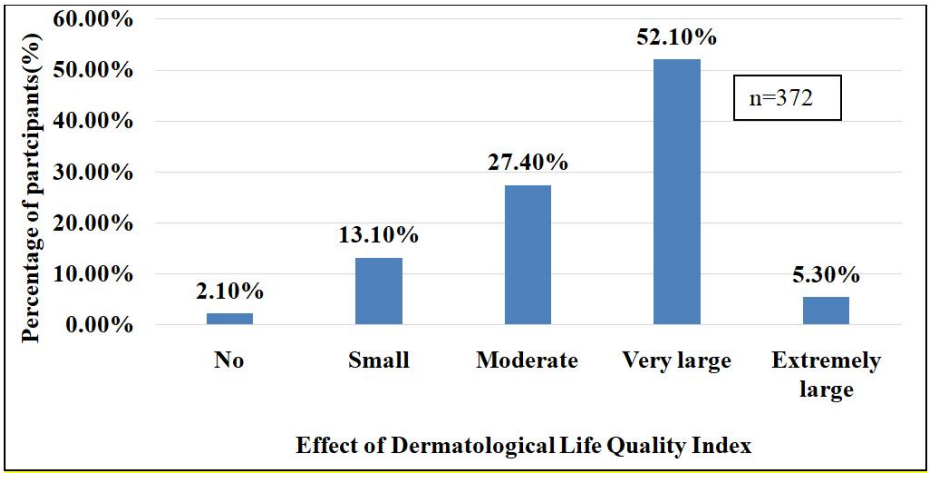

Figure 1: *Simple bar diagram showing percentages of DLQI effects among tinea patients*

Factors associated with Quality of life

Among the male patients, only 3 (1.1%) individuals did not experience any effect on their quality of life (QoL) due to tinea, while 32 (11.6%) had a small effect, 78 (28.2%) had a moderate effect, 152 (54.9%) had a very large effect, and 12 (4.3%) had an extremely large effect. On the other hand, among the female patients, 5 (5.3%) did not experience any effect on their QoL due to tinea, while 17 (17.9%) had a small effect, 24 (25.3%) had a moderate effect, 41 (43.2%) had a very large effect, and 8 (8.4%) had an extremely large effect.

According to the unpaired t-test, there is a significant difference in the total score of DLQI between those who share their towels with family members and those who do not (p=0.005). However, there is no significant difference in the total DLQI score based on gender, marital status, type of laundry, or history of diabetes (Table 3). Additionally, there is no significant correlation between age and DLQI score (p=0.539), as indicated by a Pearson's r of 0.032.

Table 3: ***Association of dermatology life quality index by various parameters/groups***

Groups	Variables	Mean ± SD	T-value	P-value
Gender	Male	11.6±4.89	0.671	*0.503*
	Female	11.2±6.53		
Marital status	Married	11.5±5.59	0.517	*0.605*
	Unmarried	11.2±4.10		
Sharing of towel	Yes	11.6±5.15	-2.83	***0.005***
	No	10.6±5.71		
Laundry	Commonly (with family members)	11.6± 5.37	0.691	*0.490*
	Individually	11.0± 5.26		
History of diabetes	Yes	10.6±5.82	0.941	*0.347*
	No	11.6±5.31		

After conducting a one-way ANOVA (Welch's) to compare means across multiple groups, a significant difference was found in the dermatological life quality index (DLQI) among patients in different geographical distributions ($p<0.001$), religious groups ($p=0.001$), and with different frequencies of bathing ($p=0.022$), washing undergarments ($p=0.031$), and during various seasonal variations ($p<0.001$). However, there was no statistically significant difference in total DLQI scores between different levels of education ($p=0.117$) or occupation ($p=0.333$). (Table 4)

Table 4: ***one-way ANOVA (Welch's) -comparison of mean DLQI scores with various parameters/groups***

Groups	F-statistic	P-value
Religion	7.35	***0.001***
Area	13.9	***<0.001***
Levels of education	1.98	*0.117*
Type of occupation	1.16	*0.333*
Frequencies of washing undergarments	15.3	***0.031***
Frequencies of bathing	19.5	***0.022***
Seasonal variation	14.8	***<0 .001***

The inter-group analysis revealed that there was a statistically significant difference in DLQI score between those who hailed from rural and tribal($p=0.005$) and also between patients hailing from urban and tribal($p=0.012$); and between those who bathed once a day and twice a day($p<0.001$) and also between those bathed twice a day and once in 2 days($p=0.018$) and between those who experienced changes monsoon season and those who did not face any variation($p<0.001$) when seasonal variation was considered.

Discussion

According to Baur et al., dermatophytosis is the second most commonly reported infectious disease at the outpatient department of a tertiary medical care centre in Kolkata [10]. Patients with dermatophytosis experience pruritus, visible lesions causing embarrassment, and incur high costs for prolonged treatment. These factors collectively have a negative impact on their quality of life [11].

In this study, tinea was more prevalent in males than in females. In Rajashekar ts et al's study, 73.65% were males and 26.34% were females out of 186 patients. Patro et al's study had 294 patients, with 46.93% males and 53.06% females. Das et al's study, 46.95% were males and 53.05% were females out of 328. The male-to-female ratio was higher in Das et al's study (2.92:1) than in D. Meena et al's study (1.69:1), indicating a greater prevalence of tinea among males [7,11–13].

In a study conducted by Das N.K. et al., it was found that the mean and standard deviation of the

DLQI score among a total of 328 patients was 10.08±5.01. In another study by Rajashekar TS et al., the total mean and standard deviation of the DLQI score was 12.79±5.96. In the present study, which included 372 patients, the total mean DLQI score was 11.5±5.35. This score was higher than the score in Das N.K. study and lower than the score in Rajasekhar TS study. These findings suggest that the quality of life was largely affected among tinea patients in the present study and the study by Rajasekhar TS [7,12].

In the present study, it was found that there was no significant correlation (p=0.54) between age and DLQI score, which is similar to the outcome of Das N.K. et al., study [7]. However, Rajashekar TS et al., conducted a study that showed an increase in the mean DLQI score with an increase in age [12].

The study found that the quality of life (QoL) of tinea patients was significantly associated with their habit of sharing towels, bathing frequency, seasonal variation, geographical distribution, and frequency of changing undergarments. Similar results were reported in a study by D. Meena et al., The patient's religion also had a significant impact on their QoL. However, factors such as age, gender, educational status, and socioeconomic status did not significantly affect the QoL of tinea patients, which is contrary to the findings of study done by D. Meena et al., [13]. The findings also highlight the need for targeted interventions to prevent and manage tinea infection, especially in regions with high prevalence rates.

Nayan Patel et al., conducted a study on 299 participants and found that 1.0% reported no impact, 8.4% reported a small impact, 29.4% reported a moderate impact, 51.5% reported a very large impact, and 9.7% reported an extremely large impact on their quality of life (QoL). These results indicate that the majority of participants, almost half, experienced a very large effect on their QoL [14]. Similarly, in our study of 372 patients, we found that 2.10% reported no impact, 13.10% reported a small impact, 27.40% reported a moderate impact, 52.10% reported a very large impact, and 5.3% reported an extremely large impact on their QoL. These findings align with the results of the previous study.

Limitations

The study included only participants above 18 years of age and hence the quality of life of patients of lesser age was not assessed in this study. This being a hospital-based single-centric study the generaliz ability of results is a limitation that can be further addressed by community-based and multi-centric studies. This was a snapshot study so that the quality of life recorded of the patients could have altered later which a longitudinal follow-up study could give insights about. As the responses of the participants used for the assessment of QoL were self-declared this could have affected the results and hence a possible chance of bias.

Conclusion

The study found that more than half of the participants suffering from tinea infection had a moderately affected quality of life. The frequency of bathing, washing undergarments, geographical distribution, seasonal variation, and religion were all significant factors that impacted the DLQI scores. Sharing towels with family members is a significant risk factor for tinea infection, which has a considerable impact on a patient's quality of life.

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