

The Social and Psychological Impact of Superficial Dermatophytic Infection using Dlqi and Ghq-12: A Cross-Sectional Study in 174 Patients at a Tertiary Care Centre in Southern-East Rajasthan

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ABSTRACT

Background: Dermatophytosis is a common fungal infection affecting 20-25% of the world population.

Aims: Our study was aimed to assess its impact on health-related quality of life(QoL), mental health, and various variables.

Materials and Methods: A cross-sectional study was done from April 2019 to September 2019 on 174 patients of dermatophytosis of aged more than 16 years with their informed consent. The impact of infection on the quality of life was assessed by using the Dermatology life quality index questionnaire and General health questionnaire-12 was used to assess psychological impact. A visual analogue scale was used to assess the severity of pruritus. Appropriate statistical tests were applied.

Results: Males to females ratio was 1.4:1. The age group of 21-30 was having the highest number of patients with the mean age of 27.8±9.97. Most patients had BSA under 10%. The mean value of DLQI and GHQ-12 were found 15.989±7.407 and 2.8563±2.8964, respectively. We found that dermatophytosis had a very large effect on the quality of life as the maximum number of patients(39%) were within this category. The “work and school” part in the questionnaire gained maximum importance(52.8%). The mean VAS score was 6±2.733 with most patients(32.7%) had moderate itching. We found a positive correlation between VAS and DLQI, VAS and GHQ-12, DLQI, and GHQ-12 with the statistical significance.

Conclusion: In our study dermatophytosis affected the quality of life as well as the psychological health of patients. Therefore proper treatment of superficial dermatophytosis is essential to prevent it from further complications.

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Background

Dermatophytosis, a common superficial mycotic infection is estimated to affect 20-30% of the population worldwide in their lifetime. It is caused by fungi genera Trichophyton, Epidermophyton, Microsporum. The most commonly occurring types of dermatophytosis in aged more than 16 years in India are tinea corporis (36-59%) and tinea cruris (12-27%) [1,2]. In tropical countries like India, fungal infections are very common due to environmental factors like heat and humidity and also depend upon socio-economic conditions like overcrowding and

poor hygiene. Its types, frequency, and recurrence of symptoms may impact the quality of life of people and mental health as well.

Geographic location, climate (temperature, humidity, wind, etc.), overcrowding, availability of health care, migration, environmental hygiene, culture, and socioeconomic conditions have been incriminated as major factors for these variations in its frequency [3,4].

Quality of life according to WHO is defined as “individual’s perception of their position in the context of culture and value system in which they live and in relation to their goals, expectations, standards, and concerns” [5].

Therefore, it should be assessed how much it affects adults life in terms of quality of life and psychologically.

Materials and Methods

It was a cross-sectional study conducted in GMC Kota, Rajasthan, a tertiary care hospital over six months between April 2019 and September 2018. A total of 174 clinically and mycologically diagnosed cases aged more than 16 years were randomly taken for the study. A detailed history was taken regarding their infection like duration, occupation, body surface area, and itching intensity. A semi-structured questionnaire was designed to record the socio-demographic profile, DLQI, and GHQ-12 of the patients. The study was duly approved by the institutional ethical committee. Informed written consent was taken from each patient, after explaining to them the purpose of our study.

The validated Hindi version of the original DLQI questionnaire was elicited for the study which was first introduced by Finlay and Khan in 1994 [6]. Likewise, the GHQ-12 Questionnaire(Hindi version) was also used to screen them for any psychological impact. Both questionnaires were explained to the subjects who were asked to complete that by themselves. DLQI consists of 10 multiple choice questions, points for each question ranging from “0” to “3” except 7th question, Each question is scored as “not at all” for score 0, “a little” for score 1, “a lot” for score 2 and “very much” for score 3. Total scoring was done by summing all the points attained. The minimum score is “0” and the maximum score is “30”. Higher is the score, impairs the quality of life more. Questionnaire was grouped into 6 domains: symptoms and feelings (question 1 & 2), daily activities (question 3 & 4), leisure (question 5 & 6), work and school (question 7), personal relationships (question 8 & 9), and treatment (question 10) [7]. Interpretation of the questionnaire is done as follows:

DLQI Scoring-

- 0-1-No effects on the patient’s life
- 2-5-Small effect on patient’s life
- 6-10-Moderate effect on patient’s life
- 11-20-Very large effect on patient’s life
- 21-30-Extremely large effect on patient’s life.

DLQI was further classified into two categories based on scores: score 0-5 was interpreted no or small effect on patient’s life and more than 5 scores dictated moderate to severe effect on patient’s life.

To assess psychological distress, a well-validated and widely used GHQ-12 (General Health Questionnaire-Hindi version) score was used [8]. GHQ is a reliable screening instrument developed by British scholar Goldberg to recognize and measure mental health in the general population. The GHQ-12 is most popular due to its simplicity among GHQ-1, GHQ-12, GHQ-20, GHQ-28, GHQ-30, and GHQ-60. The GHQ-12 contains 12 items, in which questions can be evaluated by any of two methods, bi-modal (0-0-1-1) and Likert model (0-1-2-3) methods [9]. We used the bi-modal method due to its ease. Its score ranges from 0 to 12. GHQ-12 score 2 or more than 2 were considered cases or having psychological distress according to original Goldberg’s GHQ-12 [8].

VAS score was used for the intensity of pruritus with the score ranging from 0 to 10 (100 mm long scale) [10]. Score was given according to the patient’s intensity to itch, which is graded as no pruritus, mild pruritus, moderate pruritus, severe pruritus, and very severe pruritus.

Clinically and mycologically diagnosed cases of dermatophytosis were given both the Hindi version of DLQI and GHQ-12 on printed

paper. All the data regarding the questionnaire, VAS scores, and needful information were recorded on the MS Excel sheet. Statistical analysis was carried out using SPSS version 22(Chicago). The mean and the standard deviation were calculated for quantitative data, while for the qualitative data we used unpaired student t-test. The correlation of coefficient using Pearson’s coefficient was calculated between variables to assess any positive or negative correlation. P-value <0.05 was considered statistically significant.

Results

In our study males were found more than females with a ratio of 1.4:1. The mean value for age was 27.8±9.97. A maximum number of patients (81,46.5%) were in the age group of 21-30 years, followed by age group 17-20 years (43,24.7%). Age of more than 60 years had the least number of patients (2,1.1%). Most of the patients (78,44.82%) had a duration of infection up to 1 month, followed by 2 months (17.8%) with a mean duration of 4±1.86.

Tinea corporis (47,27%) was the most common infection, we found in our study. The second most common dermatophytosis was the coexistence of tinea corporis and tinea cruris (32,18.4%). 102(58.6%) patients had body surface area under 10%, followed by 11-20% BSA(57,32.75%).[Table 1, Figure1, 2]

Table 1: Demographic Data

According to Sex	
Sex	Numbers (%)
Male	101(58%)
Female	73(42%)
Total	174
According to Age	
Age group (Years)	Numbers (%)
17-20	43(24.7%)
21-30	81(46.5%)
31-40	31(17.8%)
41-50	12(6.8%)
51-60	6((3.4%)
>60	2(1.1%)
According to Body surface area (BSA)	
BSA(%)	No. of patients (%)
1-10%	102(58.6%)
11-20%	57(32.75%)
21-30%	15(8.6%)

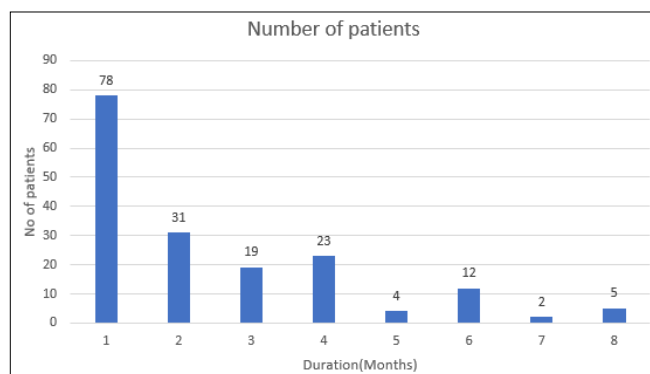


Figure 1: Bar diagram according to duration of dermatophytic infection

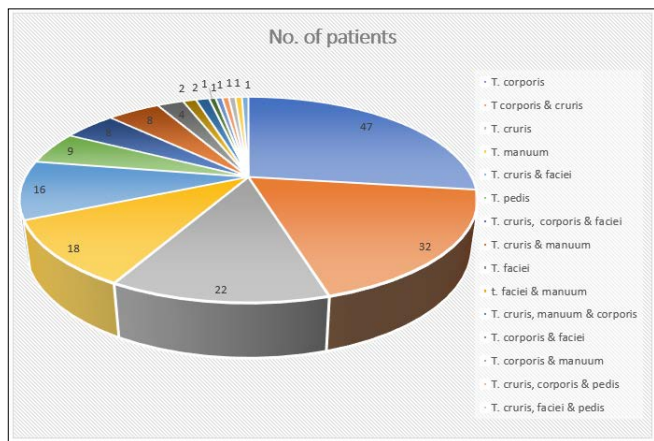


Figure 2: Pie chart showing distribution of cases according to the type of dermatophytic Infections

Coming to the occupation of patients, laborers (54,31%) were found the most common, and the second most common group was occupied in the private job(48,27,58%).[Figure 3]

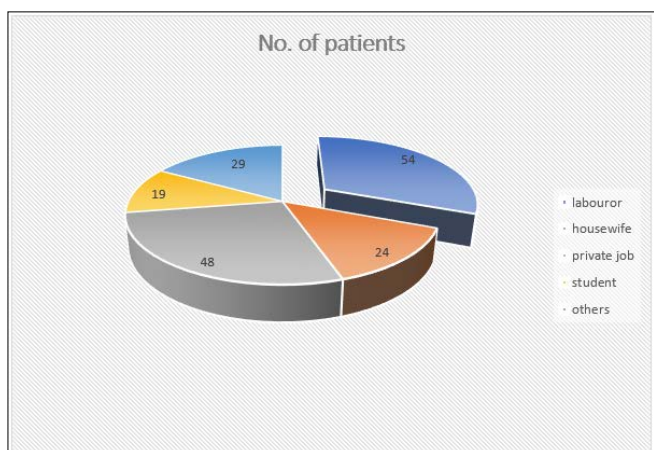


Figure 3: Pie chart showing distribution of cases according to the occupation

The mean DLQI score was found 15.98 ± 7.40 . 39% (68) patients had a score of 11-20, suggesting the disease had a very large impact on the quality of life. This score was followed by 6-11, in which 21.2% (37) patients were found. Only 2(1.1%) patients had no effect of infection.[Table 2]. Along with the summing of the DLQI score, inter-analysis for the questionnaire was also done for maximum scoring [Table 3].

Table 2: Distribution Of Cases Based On Impact Of Life (DLQI)

DLQI Score	Number of patients (%)
0-1 (No effect)	2 (1.1%)
2-5 (Small effect)	12 (6.8%)
6-10 (Moderate effect)	37 (21.2%)
11-20 (Very large effect)	68 ((39%)
21-30 (Extremely large effect)	55 (31.6%)

Table 3: Inter-Analysis for Questionnaire for Maximum Scoring With Effect on Quality of Life

Question no.	1,2	3,4	5,6	7	8,9	10
Number of patients	42	23	12	92	21	43
Percentage	24.1%	13.2%	6.8%	52.8	12%	24.7%

For psychological health assessment, the GHQ-12 score was calculated, in which 99 (56.8%) patients had a score ≥ 2 with the mean GHQ-12 score of 2.85 ± 2.89 [Table 4].

Table 4: Cases According to GHQ-12

GHQ-12 scoring	Number of patients(%)
<2	73(41.9%)
≥ 2	99(56.8)

According to the VAS scoring, the maximum number of patients(32.7%) had moderate itching due to infection. While the least number of patients(32,18.3%) had very severe itching [Table 5].

Table 5: Cases according to VAS scoring

VAS score	Number of patents (%)
0 point (No effect)	0
>0 to <4 points (Mild effect)	51(29.3%)
≥ 4 to <7 points (Moderate effect)	57(32.7%)
≥ 7 to <9 points (Severe effect)	34(19.5%)
≥ 9 to 10 points (Very severe effect)	32(18.3%)

We applied unpaired student t-test to know the significance of gender with DLQI and GHQ-12. Mean DLQI scores were 15.07 ± 7.61 and 17.24 ± 6.97 for males and females, respectively and their corresponding T values were .056 and .954. Likewise, the mean GHQ-12 score was 2.64 ± 2.98 for males and females, respectively. And their T value was .255 and .798. The P-value for both DLQI and GHQ-12 was more than 0.05, so they were not statistically significant [Table 6].

Table 6: Gender based statistical values

Gender	Mean DLQI±Std Deviation	T Value, P Value	Mean GHQ-12±Std Deviation	T Value, P Value
Male	15.0792±7.6114	0.056588, .954945 (Not Significant)	2.6435±2.9852	0.255588, .798579 (Not Significant)
Female	17.2465±6.9717		3.1506±2.7622	
Total	15.989±7.407		2.8563±2.8964	

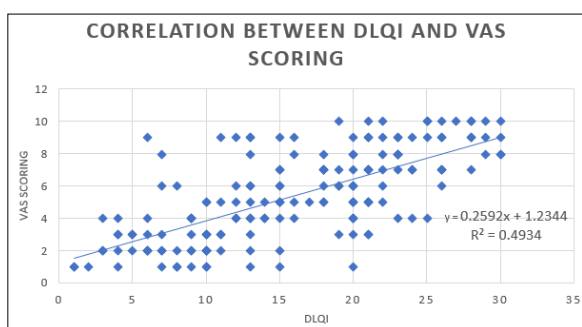
We calculated Pearson’s correlation coefficient (r) between the means of age and DLQI, age and GHQ-12, VAS score and DLQI, VAS score, and GHQ-12, DLQI and GHQ-12, duration of infection and DLQI, duration of infection and GHQ-12. P-value was >0.05 for age and DLQI, age, and GHQ-12, so there was no significance statistically. But we found a positive correlation in the above-mentioned variables except for age and gender. They were statistically significant as the p-value was <0.5. [Table 7, Figure 4,5,6]

Table 7: Correlation table between variables

Variables	Mean with Std Deviation	Correlation Coefficient (R Value) with Confidential interval (CI=95%)	P Value	Statistical Significance
Age DLQI	27.8±9.97 15.989±7.407	0.0768	0.3138	Not Significant
Age GHQ-12	27.8±9.97 2.8563±2.8964	0.00783	0.9183	Not Significant
VAS DLQI	6±2.733 15.989±7.407	0.7024	<.00001	Significant
VAS GHQ-12	6±2.733 2.8563±2.8964	0.5843	<.00001	Significant
DLQI GHQ-12	15.989±7.407 2.8563±2.8964	0.53338	<.00001	Significant
Duration DLQI	4±1.867 15.989±7.407	0.6944	<0.00001	Significant
Duration GHQ-12	4±1.867 2.8563±2.8964	0.6523	<0.00001	Significant

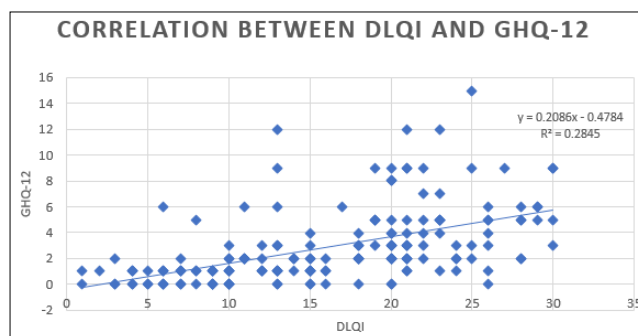
P value<0.05 is considered statistically significant

Figure 4: Correlation graph between DLQI and VAS scoring



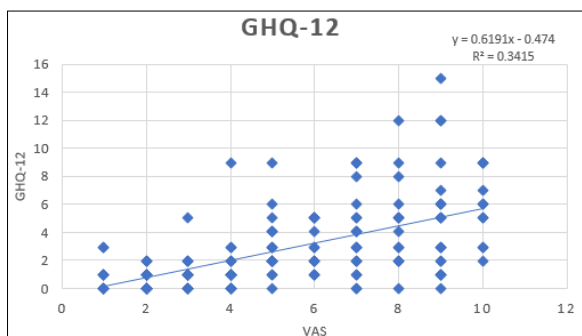
R = 0.702420544, p value is <.00001

Figure 6: Correlation graph between DLQI and GHQ-12



R = 0.533385414, p value is <.00001

Figure 5: Correlation graph between VAS and GHQ-12



R = 0.5843, p value<0.00001

Discussion

Dermatophytosis is the most widespread fungal infection of skin, nail, hairs, and affect 40 million human population worldwide, in various forms. In the recent few years in India, the prevalence of dermatophytosis has been consistently rising, ranging from 36% to 78% [11, 12]. With the current alarming situation of consistently rising in incidence and prevalence of superficial dermatophytosis over the past 4-5 years across the country, it is safe to regard it as a public health problem [13-16]. There are multiple contributing factors for the higher incidence of dermatophytosis and a recent shift in epidemiology, which include overcrowding, poverty, poor hygiene, contact with animals, hot and humid climate [1]. occupations which require working in hot and humid conditions, etc. There are very few studies done to see its impact on psychology

and quality of life. So, we tried to explore it more in our area using DLQI and GHQ-12 [17, 18].

In our study we found males (101,58%) outnumbered females (73,42%) with a ratio of 1.4:1, which was similar to other few studies [19]. The only difference we could find that in our study there was not much difference based on gender. It can be explained as males are outdoor workers most of the time comparative to females.

In our study maximum no. of patients were in the age group of 21-30 years (81) followed by the age group of 17-20 years (43). It was unlike a study done by Rajashekar et al [19]. In which age group 21-30 was most commonly found. This indicates that its occurrence is higher in the younger age group. It can be justified as younger patients are having a lot of burden for getting settled and this age group is most susceptible to work outside.

Assessing the QOL by DLQI questionnaire in the result section, we found a mean DLQI score 15.989 ± 7.407 with the maximum no. of patients (68,) were found having a very large effect (score 11-20) on QOL followed by an extremely large effect (score 21-30) in 55(%) patients. The greatest impact of dermatophytes was on "work and school" (92,) followed by "treatment" (43,) symptoms and feelings" (23.34%), treatment (23.02%), personal relationship (13.81%), daily activity (13.15%) and leisure (8.55%). Comparing to the study done by Tarun Narang et al [20]. its mean DLQI score was 13.41 ± 7.56 with the maximum impact on symptoms and feelings followed by daily activities. In our study, most patients were at a young age, so dermatophytosis affected their outdoor activity most.

There are a lot of QOL studies done in chronic skin conditions like vitiligo, psoriasis, acne, and others. The mean DLQI of patients with psoriasis was 13.01 in a study from South India. Likewise, the mean DLQI in patients with vitiligo has ranged from 4.84 to 10.67 in studies in the Indian population [21-23].

In our study, the most common subtype of dermatophytes infection found was Tinea corporis (47,%) followed by the coexistence of Tinea corporis and Tinea cruris (32,%). It was similar to other studies in which tinea corporis was the most common type. The maximum no. of patients were laborers (54,31%) followed by occupied in the private job(48,27%). While in the study done by S Mushtaq et al. homemakers were maximum. This can be explained as tinea is aggravated in a hot and humid environment [24-26].

According to VAS scoring, the mean score was 6 ± 2.733 with the maximum no. of patients (57,) were found having a moderate effect on itching followed by mild effect(51,). While Narang T et al [14]. showed mean VAS score 7.0 (IQR= 6.0 to 8.0).

Most patients suffering from dermatophytosis had a duration of 1 month (78,) followed by 2 months (31,) with a mean of 4 ± 1.867 (Months). This indicates most cases were acute in our study. While in another study maximum number of patients were found in 1-6 months [14].

According to the body surface area, the mean BSA was 11.218 ± 6.595 (%) in which most patients(102,) had BSA 1-10%.

As we used the bi-model method for the scoring of GHQ-12 which was not used in any previous study on dermatophytosis, so we can not compare its values with other studies. Our mean GHQ-12

score was found at 2.856 ± 2.896 . A general survey was done by Montazeri A et al [27]. found mean GHQ-12 3.7 ± 3.5 . Our study found a positive correlation between GHQ-12 and DLQI similar to another study [14].

Conclusion

As dermatophytes infection is known to be rising very fastly to become a common health problem, we gave our effort to assess its impact on social and psychological health. This study found a greater impact on the quality of life and mental health which were found correlations with other variables. While treating infection dermatologists must keep this in mind and also, patients should be given all the knowledge regarding this.

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