



AN ASSESSMENT OF PSYCHIATRIC MORBIDITY AND QUALITY OF LIFE IN PATIENTS WITH DERMATOPHYTOSIS: A CASE-CONTROL STUDY

Dr. Deepak Sharma*	Assistant Professor, Department of Dermatology, Venereology & Leprosy, G.R. Medical College & J.A. Hospital, Gwalior. *Corresponding Author
Dr. Priyanka Sharma	Associate Professor, Department of Psychiatry, G.R. Medical College & J.A. Hospital, Gwalior.
Dr. Anubhav Garg	Professor & Head, Department of Dermatology, Venereology & Leprosy, G.R. Medical College & J.A. Hospital, Gwalior.
Dr. Atul Agrawal	Professor & Head, Department of Psychiatry, G.R. Medical College & J.A. Hospital, Gwalior.

ABSTRACT **Background:** Skin diseases like Dermatophytosis have a huge psychosocial impact resulting into psychiatric morbidity and decline in quality of life. **Method:** One hundred adult patients with dermatophytosis (18-60 years) and an equal number of age- and sex-matched healthy controls were screened for psychiatric morbidity using GHQ-12 status followed by ICD-10 checklist. Total body surface area involved (BSA) was assessed and disease severity was measured using 5D-Pruritus Scale. Quality of life of patients and controls was measured using WHO-BREF QoL Questionnaire. Statistical analysis was done using chi-square and student's 't'-test. Pearson correlation was used for bivariate correlations. **Results:** Mean age of cases was 42.84±11.72 years. Majority were females (58%). Mean BSA was 6.56±3.82%, duration of disease was 23.65±23.71 months and mean pruritus score was 14.03±5.76. Mean GHQ-12 scores were 10.70±6.15 in cases and 7.14±4.64 in controls (p<0.001). Among cases 36% and among controls 18% had psychiatric morbidity (p=0.004). Mean QoL scores of cases were significantly lower as compared to that of controls for all the four domains (p<0.05). Larger BSA, longer duration of disease, use of occlusive cloth, higher pruritus and GHQ-12 scores were significantly associated with psychiatric comorbidity (p<0.05). Patients with psychiatric comorbidity had significantly poor QoL for all the four domains (p<0.001). GHQ-12 scores showed significant positive correlation with BSA, duration of disease and 5D pruritus scores and a negative correlation with QoL Domain scores (p<0.05). **Conclusion:** Dermatophytosis had a high burden of psychiatric morbidity which was related with BSA, duration of disease, pruritus and poor quality of life.

KEYWORDS : Dermatophytosis, GHQ-12, ICD-10, 5D-Pruritus score, Psychiatric Morbidity, WHO QoL-BREF

INTRODUCTION

Dermatophytosis is a common superficial fungal infection among which tinea corporis and tinea cruris are the more frequent manifestations. *Trichophyton rubrum* is the predominant isolate in most clinical types^{1,2}. Dermatophytosis is often prolonged and persistent and is difficult to be cured in span of two to three weeks of therapy. Much of this prolongation can be attributed to the widespread use of topical steroid creams, changes in the dressing pattern of the host, change in the agent and also emergence of resistance patterns due to abundant usage of steroid combination creams^{3,4}. In persistent and recurrent dermatophytosis, the quality of life is affected, not only in the physiological aspects of the patients lives but also their emotional and social well-being, which resulted in difficulty in seeking a partner, or participating in other social activities got worsened⁵. Moreover, the persistent and recurrent pattern of disease affects the psychosocial aspects of patient's life leading to issues like social withdrawal and experiences of low dignity in the society⁷. Though, there are few studies of assessment of quality of life in various dermatosis like alopecia areata, acne vulgaris, atopic dermatitis, vitiligo vulgaris, psoriasis vulgaris and photodermatitis, but only few studies are available in the literature assessing the impact of dermatophytosis on psychological well-being and quality of life (QOL)^{6,7,8}. Hence the present study was carried out to detect psychiatric morbidity and quality of life in patients of dermatophytosis.

MATERIAL AND METHOD

The present case-control study was carried out at Dermatology OPD, Gajra Raja Medical College Gwalior Madhya Pradesh over a period of 3 months starting from February 2020 to April 2020 after seeking approval from Institutional Ethics Committee. A total of one hundred patients aged 18-60 years with clinically diagnosed dermatophytosis for ≥1 month with or without prior treatment were enrolled as cases and an equal number of apparently healthy age- and sex-matched individuals without any dermatological disorder were enrolled as controls after seeking informed consent for participation in the study. All the patients with isolated nail or scalp/hair involvement, bedridden moribund patients, and patients with intellectual disability, seizures, intra cranial tumour, were excluded. Patients on immunosuppressant were also excluded.

At enrolment, detailed history was recorded including age and sex, distribution (BSA), duration of disease, family history and clothing details. Socioeconomic status was assessed using Kuppuswamy's revised socio-economic status (SES) scale⁹.

In case group, 5D-pruritus scale was ranging from 5 to 25 points was used to assess the severity of dermatophytosis¹⁰, and the intensity of pruritus was assessed as points 5–10 (mild), 11–15 (moderate), 16–20 (severe), and 21–25 (very severe).

All the cases as well as controls were subsequently sent to psychiatric OPD where psychological morbidity was assessed using the validated 12-item General Health Questionnaire (GHQ-12). The GHQ-12, a brief self-administered questionnaire, has been used in various settings for screening psychological disorders¹¹. The responses were coded using Likert scoring (0–1–2–3), with higher scores indicating a more severe condition. A total GHQ score was generated by combining all the items to represent the overall level of psychological distress¹². Quality of life was assessed using WHO QOL-BREF¹³ and psychiatric co morbidities were assessed using ICD 10-symptom checklist¹⁴.

Data so obtained was analyzed using Statistical Package for Social Sciences (SPSS) version 21.0. Chi-square and Independent samples 't'-(Student's t) tests were used to compare the data. Bivariate correlations were assessed using Pearson correlation coefficient. A 'p' value less than 0.05 was considered as statistically significant.

RESULTS

Mean age of cases was 42.84±11.72 years while mean age of controls was 43.09±11.73 years, thus showing no significant difference between two groups (p=0.880). Majority of cases (58%) as well as controls (54%) were females (p=0.569). Majority of cases belonged to middle or above socioeconomic class (57%). Among controls too, majority belonged to middle or above socioeconomic class (62%) (p=0.345). Among cases, majority were educated upto Intermediate or above (59%) however among controls, majority were educated below Intermediate (51%), however, the difference between two groups was not significant statistically (p=0.864) (Table 1).

Table 1: General Profile and Characteristics of Cases and Controls

SN	Characteristic	Cases (n=100)	Controls (n=100)	Statistical significance
1.	Mean Age±SD (Range) years	42.84±11.72 (18-60)	43.09±11.73 (18-60)	t=0.151; p=0.880
2.	Sex			
	Male	42	46	χ ² =0.325; p=0.569
	Female	58	54	
3.	Socioeconomic Status			
	Upper	8	5	χ ² =4.477; p=0.345
	Upper Middle	23	24	
	Middle	26	33	
	Upper Lower	23	27	
	Lower	20	11	
4.	Education			
	Illiterate	5	6	χ ² =2.540; p=0.864
	Primary	5	8	
	Middle/Junior	9	10	
	High School	22	27	
	Intermediate	34	30	
	Graduate	20	16	
	Professional/Honors	5	3	
5.	Mean Body Surface area involved±SD (Range) %	6.56±3.82 (1-14)	-	-
6.	Mean duration of disease±SD (Range) months	23.65±23.71 (1-84)	-	-
7.	Family history	26	-	-
8.	Occlusive clothing use	33	-	-
9.	Mean 5D-Pruritus Score±SD (Range)	14.03±5.76 (5-25)	-	-
	Mild (5-10)	37	-	
	Moderate (11-15)	24	-	
	Severe (16-20)	26	-	
	Very severe (21-25)	13	-	
10.	Mean GHQ-12±SD (Range)	10.70±6.15 (0-24)	7.14±4.64 (0-16)	t=4.620; p<0.001
11.	Psychiatric comorbidity	36	18	χ ² =8.219; p=0.004
12.	Mean WHO-BREF QoL Score			
	Domain 1: Physical	40.30±10.63	64.14±14.07	t=13.52; p<0.001
	Domain 2: Psychological	39.37±11.49	64.49±13.77	t=14.00; p<0.001
	Domain 3: Social	40.72±12.19	63.66±13.66	t=12.53; p<0.001
	Domain 4: Environmental	40.41±11.21	66.56±13.78	t=14.72; p<0.001

Among cases, mean body surface area involvement ranged from 1 to 14% with a mean of 6.56±3.82%. Duration of complaints ranged from 1 to 84 months with a mean duration of 23.65±23.71 months. A total of 26% cases had a family history of dermatophytosis and 33% had a history of use of occlusive clothing. 5D-Pruritus scores ranged from 5 to 25 with a mean of 14.03±5.76. Maximum patients had a mild disease (37%) followed by severe (26%), moderate (24%) and very severe (13%) pruritus (Table 1).

Mean GHQ-12 scores of cases were significantly higher (10.70±6.15) as compared to that of controls (7.14±4.64) (p<0.001). A total of 36 cases and 18 controls had psychiatric morbidity as per ICD-10 evaluation, thus showing the prevalence of psychiatric morbidity to be significantly higher in cases as compared to that of controls (p=0.004). Mean QoL scores for domains 1, 2, 3 and 4 were 40.30±10.63, 39.37±11.49, 40.72±12.19 and 40.41±11.21 respectively in cases as compared to 64.14±14.07, 64.49±13.77, 63.66±13.66 and 66.56±13.78 respectively in controls. For all the four domains, cases had significantly lower mean scores as compared to that of controls (p<0.001) (Table 1).

On evaluation of association of psychiatric morbidity in cases with different clinicodemographic variables, we could not find a significant relationship with age, sex, socioeconomic status, education and family history (p>0.05). However, larger body surface area involvement, longer duration of complaints, absence of occluding clothing use,

higher or more severe pruritus scores and higher GHQ-12 scores showed a significant association with psychiatric morbidity (p<0.05). Mean QoL scores for all the four domains were significantly lower in patients with psychiatric comorbidity as compared to that of patients without psychiatric comorbidity (p<0.001) (Table 2).

Table 2: Association of Psychiatric Comorbidity in Dermato phytosis patients with different study variables

SN	Characteristic	Psychiatric Morbidity (n=36)	No psychiatric morbidity	Statistical significance
1.	Mean Age±SD (years)	46.50±10.77	41.83±13.30	t=1.800; p=0.075
2.	Sex			
	Male	17 (47.2%)	25 (39.1%)	χ ² =0.630; p=0.427
	Female	19 (52.8%)	39 (60.9%)	
3.	Socioeconomic Status			
	Upper	4 (11.1%)	4 (6.3%)	χ ² =3.853; p=0.426
	Upper Middle	6 (16.7%)	17 (26.6%)	
	Middle	7 (19.4%)	19 (29.7%)	
	Upper Lower	10 (27.8%)	13 (20.3%)	
	Lower	9 (25.0%)	11 (17.2%)	
4.	Education			
	Illiterate	3 (8.3%)	2 (3.1%)	χ ² =7.280; p=0.296
	Primary	1 (2.8%)	4 (6.3%)	
	Middle/Junior	4 (11.1%)	5 (7.8%)	
	High School	7 (19.4%)	15 (23.4%)	
	Intermediate	9 (25.0%)	25 (39.1%)	
	Graduate	11 (30.6%)	9 (14.1%)	
	Professional/Honors	1 (2.8%)	4 (6.3%)	
5.	Mean Body Surface area involved±SD (%)	7.64±3.23	5.97±4.04	t=2.125; p=0.036
6.	Mean duration of disease±SD (months)	37.54±21.93	15.61±20.82	t=5.051; p<0.001
7.	Family history	9 (25.0%)	17 (26.6%)	χ ² =0.029; p=0.854
8.	Occlusive clothing use	6 (16.7%)	27 (42.2%)	χ ² =6.787; p=0.009
9.	Mean 5D-Pruritus Score±SD	16.36±5.74	12.72±5.39	t=3.170; p=0.002
	Mild	8 (22.2%)	29 (45.3%)	χ ² =9.698; p=0.021
	Moderate	7 (19.4%)	17 (26.6%)	
	Severe	13 (36.1%)	13 (20.3%)	
	Very severe	8 (22.2%)	5 (7.8%)	
10.	Mean GHQ-12±SD	17.17±3.91	7.06±3.69	t=12.86; p<0.001
11.	Mean WHO-BREF QoL Score			
	Domain 1: Physical	35.58±9.16	42.95±10.54	t=3.514; p=0.001
	Domain 2: Psychological	33.53±42.66	42.66±11.15	t=4.11; p<0.001
	Domain 3: Social	34.83±9.71	44.03±12.25	t=3.869; p<0.001
	Domain 4: Environmental	33.81±9.40	44.13±10.47	t=4.905; p<0.001

On assessing bivariate correlation between different study characteristics, body surface area showed a significant positive correlation with duration of disease and GHQ-12 scores and a negative correlation with all the four domains of QoL. Duration of disease showed a significant positive correlation with GHQ-12 score and a negative correlation with Domains 2 and 4 of QoL. 5D-Pruritus scores showed a significant positive correlation with GHQ-12 scores and a significant negative correlation with Domain 2 of QoL. GHQ-12 scores showed a significant negative correlation with all the four domains of QoL. A positive significant correlation was observed between all the four domains of QoL (Table 3).

Table 3: Correlation of Body surface area involved, duration of disease, pruritus score and GHQ scores with Domain scores of QoL (Pearson correlation coefficient 'r')

Variable	Variables							
	BSA	Duration	5D Pruritus score	GHQ-12 Score	Domain 1	Domain 2	Domain 3	Domain 4

BSA	1	0.229*	0.136	0.220*	-0.229*	-0.229*	-0.226*	-0.194
Duration	1	0.019	0.347*	-0.072	-0.255*	-0.069	-0.199*	
5D Pruritus score		1	0.292*	-0.111	-0.216*	-0.109	-0.109	
GHQ-12 Score			1	-0.548*	-0.506*	-0.572*	-0.538*	
Domain 1				1	0.693*	0.645*	0.665*	
Domain 2					1	0.664*	0.662*	
Domain 3						1	0.696*	
Domain 4							1	

DISCUSSION

The present study showed a high prevalence of psychiatric comorbidity (36%) and declined quality of life in all the four domains (physical, psychological, social and environmental) among dermatophytosis patients as compared to that in controls. We also found that the presence of psychiatric morbidity in dermatophytosis patients was affected by larger body surface area involvement, longer duration of complaints, absence of occluding clothing use, higher or more severe pruritus scores and higher GHQ-12 scores and subsequently it further deteriorated the quality of life of dermatophytosis patients. A high prevalence of psychiatric morbidities and impaired quality of life among dermatophytosis has also been reported previously by some other workers too. In a recent study, Khan *et al.* (2019)¹⁵ reported prevalence of depression and altered social behavior in 40.28% and 14.28% respectively in fungal infection patients at a tertiary care centre in Pakistan. They also noted that cutaneous and mucocutaneous fungal infections affect the quality of life of people, their social and professional life. The findings of present study also showed that dermatophytosis had a high psychological burden as indicated by high GHQ-12 scores and a poor quality of life as indicated by low QoL domain scores as compared to controls. In another study, Varshney *et al.* (2020)¹⁶ observed a significant difference in quality of life scores of dermatophytosis cases as compared to that of controls. In their study they also found that quality of life was significantly affected by larger affected body surface area. In present study, we also made a similar observation showing a significant negative correlation between body surface area involved and three out of four domains of QoL. A significant association between psychological morbidity and quality of life as observed in present study was also observed by Narang *et al.*⁸ in their study who found a significant correlation between GHQ-12 scores and quality of life scores. In present study, we also observed a negative and significant correlation between GHQ-12 scores and all the four domain scores of QoL. Dermatophytosis has been shown to have an association with loss of work or study hours due to illness, difficulties in sexual activity and has been shown to be associated with financial worries too¹⁷. All these factors have an impact on psychosocial life of the affected individual which might be responsible for decay in quality of life and resultant psychiatric morbidity.

In present study, decline in quality of life of patients was significantly associated with presence of psychiatric comorbidity and higher GHQ-12 scores. Moreover, quality of life domain scores also showed a significant inverse correlation with body surface area involvement, duration of disease and severity of disease (5D Pruritus scores). Association of quality of life with longer duration of disease and larger body surface area involvement has also been enumerated by Bashir *et al.*¹⁷. In present study, both psychiatric morbidity as well as quality of life seem to be affected by duration of disease, body surface area involved, disease severity and overall psychological well-being (GHQ-12). The findings of the study thus indicate the need of psychological evaluation and rehabilitation of dermatophytosis patients, especially those with longer duration or disease, having larger body surface area involvement and higher severity.

CONCLUSION

The findings of present study show a high prevalence of psychiatric morbidity, high degree of psychological burden and poor quality of life of dermatophytosis issues thus indicating a need to adopt a holistic treatment approach incorporating medical management of patients along with their psychosocial counseling in order to assure recovery from both physical and psychological effects of the disease.

REFERENCES

- Noronha TM, Tophakhane RS, Nadiger S. Clinicomicrobiological study of dermatophytosis in a tertiary care hospital in North Karnataka. *Indian Dermatol Online J.* 2016;7:264-71.
- Sahoo AK, Mahajan R. Management of tinea corporis, tinea cruris, and tinea pedis: A comprehensive review. *Indian Dermatol Online J.* 2016;7:77-86.
- Verma S, Madhu R. The Great Indian Epidemic of Superficial Dermatophytosis: An Appraisal. *Indian J Dermatol.* 2017;62:227-36.
- Dutta B, Rasul ES, Boro B. Clinico-epidemiological study of tinea incognita with microbiological correlation. *Indian J Dermatol Venereol Leprol.* 2017;83:326-31.
- Zhang M, Zhang N. Quality of life assessment in patients with alopecia areata and androgenetic alopecia in the People's Republic of China. *Dovepress.* 2017;11:151-5.
- Abedini R, Hallaji Z, Lajevardi V, Nasimi M, Khaledi MK, Tohidini HR. Quality of life in mild and severe alopecia areata patients. *Int J Womens Dermatol.* 2018;4:91-4.
- Al-Mutairi N, Eldin ON. Clinical profile and impact on quality of life: Seven years experience with patients of alopecia areata. *Indian J Dermatol Venereol Leprol.* 2011;77:489-93.
- Narang T, Bhattacharjee R, Singh S, et al. Quality of life and psychological morbidity in patients with superficial cutaneous dermatophytosis. *Mycoses.* 2019;62:680-685.
- Saleem MS. Modified Kuppaswamy Socioeconomic Scale updated for the year 2020. *Ind. J. Forensic Community Med.* 2020; 7(1): 1-3.
- Elman S, Hynan LS, Gabriel V, Mayo MJ. The 5-D itch scale: a new measure of pruritus. *Br J Dermatol.* 2010;162(3):587-593.
- Goldberg DP, Gater R, Sartorius N, et al. The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychol Med.* 1997;27 (1): 191-197.
- Bryant RA, Schafer A, Dawson KS, et al. Effectiveness of a brief behavioural intervention on psychological distress among women with a history of gender-based violence in urban Kenya: a randomised clinical trial. *PLoS Medicine.* 2017;14 (8): e1002371.
- The World Health Organization Quality of Life (WHOQOL)-BREF. World Health Organization, 2004.
- Janca A, Ustun TB, van Drimmelen J, Dittman V, Isaac M. ICD-10 Symptom Checklist for Mental Disorders. Version 1.1. Division of Mental Health, World Health Organization, Geneva, 1994.
- Khan MI, Kashif M, Iqbal J, Aslam M, Waseem H, Mubbashir R, et al. Depression in patients with fungal infections in tertiary care hospital. *J. Pakistan Assoc. Dermatol.* 2019; 29(4): 402-408.
- Varshney AP, Gahalaut P, Pardal PK, Mishra N, Rastogi MK, Thapa M. Quality of Life in Patients with Chronic Dermatophytosis. *Nepal Journal of Dermatology, Venereology & Leprology* 2020; 18(1): 44-51.
- Patel NH, Padhiyar JK, Patel AP, Chhebbher AS, Patel BR, Patel TD. Psychosocial and financial impact of disease among patients of dermatophytosis, a questionnaire-based observational study. *Indian Dermatol Online J* 2020;11:373-7.
- Bashir S, Hassan I, Wani RT. Influence of dermatophytosis on quality of life: a cross sectional study from Kashmir Valley in North India. *Int J Community Med Public Health* 2020;7: 1711-1716.