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Effect of Dermatophyte Infection on Mental Health in Terms of Anxiety and Depression: A Hospital Based Cross-Sectional Study

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Abstract

Problem: The skin, as the most visible part of the body, naturally draws attention. Psychocutaneous disorders often present a complex and varied burden. Despite dermatologists' growing awareness and adaptation to these changes, the impact of dermatophytosis on patients' quality of life (QoL) remains underappreciated. Although superficial fungal infections are recognized for causing social discomfort and psychological stress, the true extent of their effect on patients' daily lives has not been adequately explored or addressed. Acknowledging the emotional and psychological toll of such infections is essential to fully grasp their broader impact. **Approach**: To evaluate depression and assess its severity and association with dermatophyte infections in patients in a tertiary care centre. This cross-sectional observational study was conducted over a nine-month period, from January 2024 to September 2024, at the Department of Dermatology, Venereology and leprosy and Psychiatry, in a tertiary care hospital in Eastern India. Basic demographic and clinical feature details of the conditions were obtained by the Dermatologist and the severity of depression and anxiety was evaluated using the Hospital Anxiety and Depression Scale (HADS) and Beck's Depression Inventory (BDI) by the consultant Psychiatrist. The Dermatological Quality of Life Index (DLQI) was used to assess quality of life. **Findings**: 400 patients with clinically diagnosed dermatophytosis were recruited with females being the majority. Highest incidence was noticed among 25-35 years of age. The HADS indicated borderline anxiety and depression, with minimal to moderate depression. The DLQI showed minimal to moderate effects, significantly Impacting quality of life. **Conclusion**: This study focuses on the mental health impact of a common dermatological condition in Eastern India paving a way for more research in the field of derrmatophytosis as well the significance of its impact on mental health.

Keywords: Dermatophytosis, Tinea, Superficial Fungal Infections, Psychocutaneous disorders, Psychodermatology, Mental Health, Anxiety, Depression, DLQI, HADS, BDI

Problem

The skin, as the most visible part of the body, naturally draws attention. Individuals with skin conditions often find themselves constantly scrutinizing their appearance, feeling self-conscious, and going to great lengths to hide their lesions. In some cases, the psychological toll can be so severe that life may feel unbearable. When suicidal thoughts are apparent or even suspected, immediate psychiatric intervention is critical to prevent a tragedy that could deeply affect not only the individual's family but also their workplace and social network.

Psychocutaneous disorders often present a complex and varied burden. They range from understandable depression, anxiety about visible skin problems to disproportionate concern over minor imperfections, obsessive preoccupation with normal skin, and, in the most severe instances, delusional beliefs—aptly summarized by the Yiddish saying, "an imaginary illness is worse than a real one." Tragically, these psychological issues are often misinterpreted as signs of social inadequacy. As a result, emotionally distressed individuals may present their concerns as physical ailments, a process known as somatisation. Some patients exhibit a long-term tendency to exaggerate physical symptoms, repeatedly adopting the "sick role" and frequently cycling through various medical, surgical, and dermatological services. Others may be experiencing temporary reactions to stressful life events. [1]

Fungal infections represent a significant cause of skin disorders. [2,3] These infections, particularly superficial and cutaneous types, can be triggered by dermatophytes, yeasts, and non-dermatophyte molds. Despite advancements in healthcare, dermatophytosis and related superficial fungal infections continue to pose major public health concerns globally. [4,5]

Among the common fungal organisms, the lipophilic yeast Malassezia—a normal component of the skin's microflora—can become pathogenic under specific conditions. Malassezia species are most frequently implicated in conditions such as dandruff, seborrheic dermatitis, folliculitis, papillomatosis, and tinea (pityriasis) versicolor. [4,5]

Indian dermatology is currently facing a significant uptick in cases of dermatophytosis—a condition that has long been prevalent in the region. Dermatologists are observing notable changes not only in the number of cases but also in the clinical characteristics of the infection. Pinpointing the exact reasons behind this shift remains challenging, as it is unclear whether host factors, pathogens, environmental changes, or pharmacological influences are primarily responsible. Complicating the issue further is the changing pattern of healthcare-seeking behaviour among Indian patients, driven in part by the widespread availability of medications, including topical corticosteroids. As a result, dermatophytosis has become more persistent, with increased rates of recurrence and a rising number of patients presenting with chronic or relapsing infections. This evolving scenario highlights the urgent need for a deeper and more comprehensive understanding of dermatophytosis in the Indian context. [6.7]

Despite dermatologists' growing awareness and adaptation to these changes, the impact of dermatophytosis on patients' quality of life (QoL) remains underappreciated. Although superficial fungal infections are recognized for causing social discomfort and psychological stress, the true extent of their effect on patients' daily lives has not been adequately explored or addressed. Acknowledging the emotional and psychological toll of such infections is essential to fully grasp their broader impact.[8,9]

The interplay between dermatology and psychiatry is especially significant, as even minor skin changes can lead to considerable emotional distress. The way individuals perceive their skin condition can result in anxiety or depression, ultimately affecting their overall quality of life. Recognizing and addressing this connection is crucial for providing holistic patient care.[8,9,10]

Aims and Objectives

Primary: To evaluate depression in patients with dermatophyte infections at a tertiary care hospital.

Secondary: To assess the severity of depression and its association with dermatophyte infections.

Approach

Materials and methods:

This cross-sectional observational study was conducted over a nine-month period, from January 2024 to September 2024, at the Department of Dermatology, Venereology and leprosy and Psychiatry, in a tertiary care hospital in Eastern India. The study included all patients above 18 years, presenting with dermatophyte infections, either for an initial consultation or for follow-up visits.

Participants were provided with comprehensive information regarding the purpose and procedures of the study, and written informed consent was obtained prior to enrolment after institutional EthicsCommittee approval.A structured questionnaire was developed to collect sociodemographic information, including age, sex, residence, occupation, address, and comorbid conditions, the age at time of onset of the fungal infection, the timeof initiation of treatment, and any family history of similar infections by the consultant dermatologist. In addition, the questionnaire explored potential triggering factors such as psychological stress, depression, perceived stigma, substance useand prior medication usage by a consultant psychiatrist.

Patients diagnosed with fungal infections were evaluated and categorized based on observable changes in social behaviour and their level of depression. Depression severity was classified into three categories: no depression, mild depression, moderate depression, and severe depression by the psychiatrist.

A thorough dermatological examination was performed, focusing on both the face and body, to assess the distribution and extent of lesions by the dermatologist.

In this study, participants were recruited using convenience sampling. 400 patients and consenting adults aged over 18 years attending the Dermatology Out Patient Department of a tertiary care hospital in Eastern India with clinically diagnosed Tinea were recruited in the study over a duration of ninemonths.
All study participants were requested to complete the Dermatology Life Quality Index (DLQI) questionnaire, originally developed by Finlay and Khan in 1994.[11] This validated instrument assesses the impact of dermatological conditions on quality of life across six domains: (a) physical symptoms and feelings (Questions 1 and 2), (b) daily activities (Questions 3 and 4), (c) leisure (Questions 5 and 6), (d) work (Question 7), (e) personal relationships (Questions 8 and 9), and (f) treatment effects (Question 10). Each item is scored on a scale ranging from 0 to 3: "not at all" (0), "a little" (1), "a lot" (2), and "very much" (3), reflecting the impact of the skin condition over the past week. The total DLQI score, ranging from 0 to 30, is calculated by summing the responses. Higher scores indicate greater impairment in quality of life.

DLQI scores are interpreted as follows:

- 0–1: No effect on the patient's life
- 2–5: Small effect
- 6–10: Moderate effect
- 11–20: Very large effect
- 21–30: Extremely large effect

To evaluate the psychological impact of fungal infections, depression severity and prevalence were assessed by the psychiatrist after referral using the Hospital Anxiety and Depression Scale (HADS) [13] and Beck's Depression Inventory (BDI).[13]
Data collected from the questionnaires will be scored and tabulated. Statistical analysis will be conducted using SPSS version 20.0, employing descriptive statistics, frequency distribution, Spearman's rho, and the chi-square test to examine the relationships between depression, anxiety, and quality of life among study participants.
Based on the questionnaire rating scale answered, the scores were totalled and results tabulated. The data were entered and analysed using SPSS 20.0 software for frequency distribution, descriptive analysis, spearman's rho and chi square test to assess depression, anxiety and quality of life and their correlation among the subjects.

Inclusion Criteria:
All patients aged above 18 years with fungal infections who visit the dermatology OPD.

Exclusion Criteria

The following patients were excluded from the study:

1. Individuals with fungal infections who declined to provide consent for participation.
2. Patients younger than 18 years of age.
3. Patients diagnosed with other dermatological comorbidities.
4. Pregnant or lactating women.
5. Patients presenting with secondary bacterial infections.
6. Individuals who had received any form of antifungal therapy (oral, topical, or systemic) within the past four weeks.
7. Patients in immunocompromised states or those who had used systemic immunosuppressants within the preceding 14 days.
8. Individuals with a prior diagnosis of psychiatric illness.
9. Patients with chronic medical conditions such as cardiovascular, pulmonary, or joint diseases, diabetes, or epilepsy, which could influence mental health status.
10. Patients who had used topical or systemic medications known to affect mental or dermatological status within the past month, including anabolic steroids, corticosteroids, corticotrophin, phenytoin, phenobarbital, lithium, isoniazid, iodides, bromides, cyclosporine, and azathioprine.

Ethical Consideration:

Written informed consent was obtained from all participants prior to their inclusion in the study. The study design does not involve any active interventions that could pose a risk to the participants.

Findings

400 patients with clinically diagnosed dermatophytosis (Tinea corporis, Tinea Faciei, Tinea Faciei, Tinea cruris, Tinea pedis, Tinea manuum, Tinea unguium) were recruited in the study. The socio-demographicand clinical features are listed. (Table 1).Among the study participants 173 (43.2%) were males and the remaining 227(56.7%) were females. Among these patients 289(72.2%) were married. The highest incidence was observed in the age group above 35 years which was around 46.7% with age of onset of being highest in the age group of 25 to 35 (45.7%). On42 (10.5%) of patients were illiterate, 73 attended primary school(18.2%), 203 completed the 10^{th} grade (50.7%) and 20.3% were graduates. Among the patient 57.2% had comordities like hypertension, diabetes mellitus, Ischaemic heart disease, dyslipidemia, hypo or hyperthyroidism and84(21%) had history of addiction predominantly alcohol (73.5%). The duration of the illness was prominently seen to be more than six months in 250 (62.5%), 154 reported having the duration to somewhere around one to six months and the rest were below one month.

Majority of the patients presented with itching as the major complaint followed by gradual progression and involvement of more than one site. 184 patients had lesions below the waist involving the groin(69%), buttocks, scrotum(in males),vulva(in females) and 119 (29.7%) of patients had extensive tinea involving both the upper and lower trunk as well as extremities. 177(44%) of patients belonged to the lower economic strata(income below Rs 2000/-per month and 53 (13.2%) of patients had contact with an infected individual in form of a family member or the sexual partner/partners or close friends. 51 patients(12.7%) had poor hygiene and history of irregular bathing. The Hospital Anxiety and Depression Scale(HADS) that was being used to assess the anxiety (Figure 1) and depression showed presence of borderline anxiety in 53 patients(13.2) and only 38 patients(9.5%) suffered from higher levels of anxiety, 53 patients(13.2%) were found to have borderline depression with 18 patients(4.5%) had abnormal levels of depression. The severity of depression assessed by the Beck's Depression Inventory helped concluding that majority of patients, 309 (77.2%) had no depression, 48 (12%) had mild depression, 32 had moderate depression and only 2.7% had severe depression (Figure 2). The Dermatology quality of life index was utilised to evaluate the impact on quality of life and majority of the patients, around 131 (161%) showed minimal effect, 136 (33.7%) were moderately affected and only 33 (8.2%) were largely affected. (Figure 3)

Table 1: Socio-Demographic and clinical characteristics of study participants

Parameters	**Frequency/Number**	**Percentage (%)**
Gender		
Male	173	43.2
Female	227	56.7
Age		
18-25 years	91	22.7
25-35 years	122	30.5
More than 35 years	187	46.7
Age of onset		
Less than 25 years	107	26.7
25-35 years	183	45.7
More than 35 years	110	27.5
Parameters	**Frequency/Number**	**Percentage (%)**
Education		
Ill-literate	42	10.5
Primary school	73	18.2
Matriculate	203	50.7
Graduate	82	20.5
History of comorbidity		

Present	229	57.2
Absent	171	42.7
History of substance abuse		
Present	84	21
Absent	316	79
Duration of illness		
Less than 1 month	96	24
1 month to 6 months	154	38.5
More than 6 months	250	62.5
Distribution of lesions		
Above waist	97	24.2
Below waist	184	46
Both	119	29.7
Per capita income per month		
Less than Rs 2000	177	44.2
More the Rs 2000	223	55.7
History of contact with infected individuals		
Present	53	13.2
Absent	347	86.7
Frequency of bathing		
Daily	349	87.2
Irregular	51	12.7
HADS (Anxiety)		
Normal	287	71.7
Parameters	**Frequency/Number**	**Percentage(%)**
Borderline abnormal	75	18.7
Abnormal	38	9.5
HADS (Depression)		
Normal	329	82.2
Borderline abnormal	53	13.2
Abnormal	18	4.5
DLQI		
No effect on patient's life	71	17.7
Minimal effect	161	40.2
Moderate affect	135	33.7
Very large affect	33	8.2
BDI		
No depression	309	77.2

Parameters	Frequency/Number	Percentage (%)
Mild depression	48	12
Moderate depression	32	8
Severe depression	11	2.7

Figure 1: Severity of anxiety in study participants

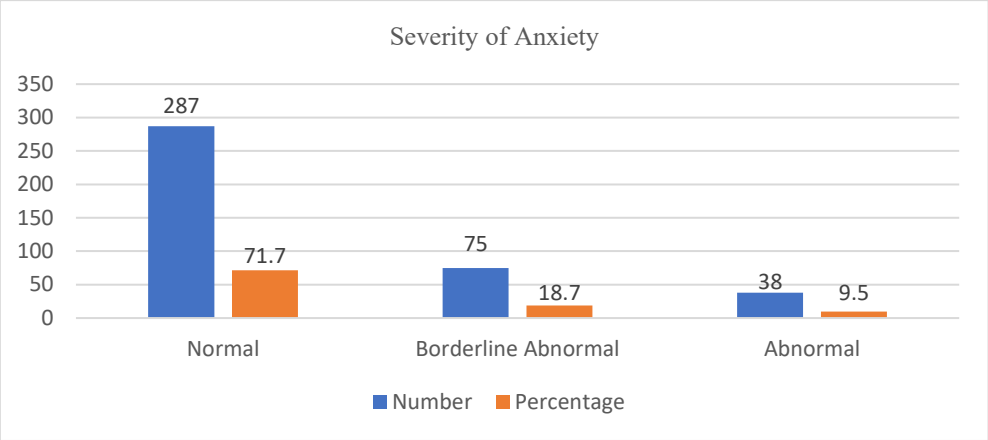


Figure 2: Severity of depression in study participants

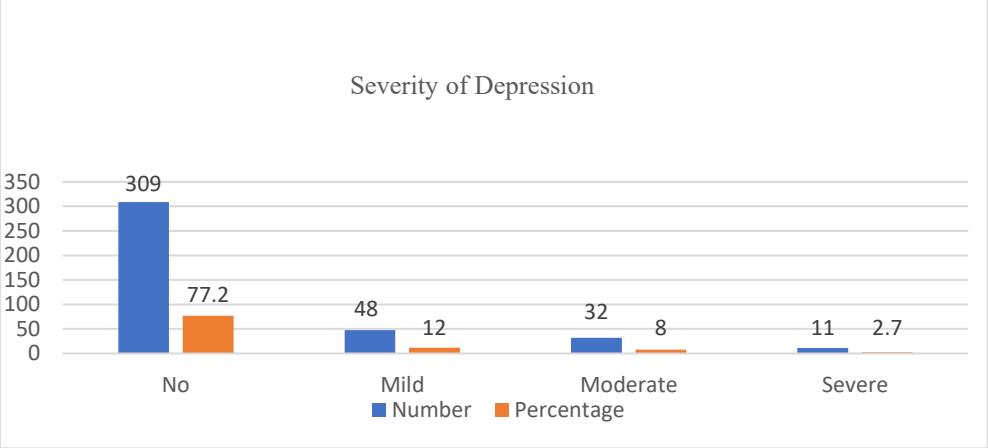
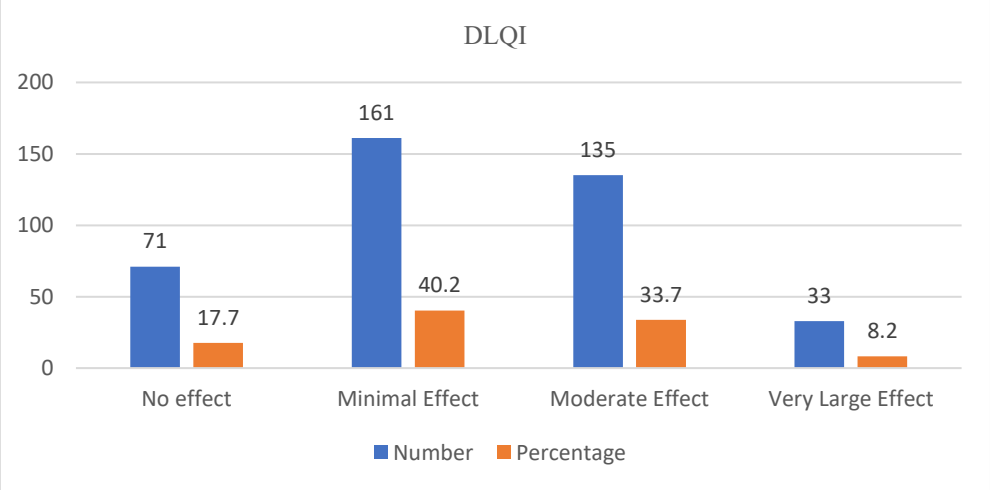


Figure 3: Disease impact on quality of life in study participants



Discussion

Psychodermatology is an interdisciplinary domain that examines the complex interplay between dermatological conditions and psychological health. It recognizes the bidirectional relationship between the skin and the mind, wherein psychological factors can influence the onset, progression, and severity of skin diseases, while dermatological disorders can, in turn, have profound effects on an individual's mental health and overall quality of life.

Dermatophytosis, the most prevalent fungal infection affecting the skin, nails, and hair, impacts an estimated 40 million individuals globally. In recent years, India has witnessed a marked increase in the prevalence of dermatophytosis, with reported rates ranging from 36% to 78%, underscoring its growing public health significance. [14, 15]

Depression associated with fungal infections reflects a complex, multifactorial relationship between mental health and physical illness. Fungal infections, which may involve the skin, nails, and other body sites, can significantly compromise an individual's quality of life, often leading to psychological distress. The emotional burden stemming from chronic or recurrent fungal infections, particularly those with visible manifestations, can contribute to or exacerbate depressive symptoms. Despite this, the psychological dimension of such infections remains underrecognized in clinical practice.

It is estimated that approximately 30–40% of patients presenting with dermatological complaints have an underlying psychiatric or psychological issue that either triggers or worsens their skin condition [16]. Furthermore, evidence indicates that stress and other psychological factors can influence the course and severity of many skin disorders [17].

In our study, the gender distribution was nearly balanced; however, a significant proportion of participants were from urban areas, likely reflecting the study's geographic setting. This urban predominance may be associated with higher socioeconomic status, which can decrease the financial burden on affected families and result in treatment adherence. But this finding definitely outweighs the old belief of tinea is a disease of the poor.In our study limited literacy and educational attainment further hindered patients' understanding of their condition and the importance of consistent, appropriate therapy, contributing to higher recurrence rates since majority had passed the primary school only. However shockingly the patients with infected contacts in their close proximitywere found to be much less. Also hygiene strikingly was maintained in majority of the patients. These findings could definitely point towards the development of change in patterns in the pathogenesis of the recent world dermatophytosis infections raising questions on antifungal resistance, emergence of recalcitrant dermatophytosis which definitely opens up the scope for further research regarding the newly emerging species of Tinea like Tinea indotinea, Tinea interdigitale and Tinea mentagrophytes.

The majority of participants were married, a factor that may serve as a protective buffer against severe psychological distress. Nonetheless, a higher prevalence of abnormal anxiety and depression scores was observed among female patients. This disparity may be attributed to limited social support and cultural norms emphasizing physical appearance, which can exacerbate psychological vulnerability in women. Many female participants reported feelings of helplessness, embarrassment, and self-consciousness. Such emotional distress may perpetuate a vicious cycle, in which the psychosocial impact of the infection exacerbates mental health symptoms, which in turn may worsen disease perception and adherence to treatment. These observations align with findings from previous studies [18–20].

However, the correlation between dermatophytosis and levels of anxiety and depression in our study was found to be weak. This may be attributable to the relatively short duration of illness in the majority of participants, with most cases being of less than six months' duration. Additionally, all participants were recruited from individuals attending the dermatology outpatient department, which may have excluded more severe or chronic cases that are less likely to seek routine care.

It is also noteworthy that many previous studies have primarily documented the presence or absence of anxiety and depression without assessing the severity of these psychological conditions. This limitation could account for discrepancies in findings and underscores the importance of evaluating not just the prevalence but also the extent of psychological distress in patients with dermatophytosis.

This study specifically focused on patients with dermatophytosis; however, it is important to acknowledge that numerous other dermatological conditions are prevalent and can have profound implications for mental health and overall well-being. The study population was limited to individuals who voluntarily presented to the outpatient department of dermatology, which may not be fully representative of the broader community or patients with more severe or chronic manifestations.

While anxiety and depression emerged as primary psychiatric concerns, the potential association of other psychiatric conditions with dermatological disorders remains underexplored. A more comprehensive assessment encompassing a broader spectrum of psychiatric morbidity is warranted in future research.

Furthermore, longitudinal follow-up of patients would offer valuable insights into the progression and fluctuation of psychological symptoms over time. Such data would be instrumental in informing targeted psychotherapeutic interventions, ultimately supporting the development of integrated care models within the emerging field of psychodermatology.

Conclusion

This study examines the impact of dermatophytosis on quality of life and mental health among individuals in a rural population. By employing validated instruments to assess the severity of depression, the research highlights the multifaceted nature of fungal infections, revealing their significant psychosocial and emotional dimensions beyond physical symptoms alone.

Recommendentions

In light of the findings from this study, it is recommended that healthcare professionals and dermatologists implement community-based awareness programs focused on the early recognition, diagnosis, and treatment of fungal infections. Increasing public awareness can play a pivotal role in reducing the stigma associated with these conditions, promoting timely medical intervention, and ultimately enhancing the quality of life for affected individuals.

Conflict of interest: Nil
Resource Funding: Nil

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