

Clinical Correlates of Itch Severity, Sleep Quality, and Depression in Patients with Chronic Pruritus: A Cross-Sectional Study from a Tertiary Care Centre

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Abstract

Background: Chronic pruritus is a distressing symptom encountered in a wide spectrum of dermatological and systemic disorders. Beyond the physical discomfort caused by persistent itching, patients often experience impaired sleep quality and psychological distress, resulting in substantial deterioration in quality of life. Although the relationship between itch, sleep disturbance, and depression has been described in previous studies, data from Indian tertiary care settings remain limited. The objective is to evaluate itch severity, sleep quality, and depression among patients with chronic pruritus and to determine the correlations among these parameters. **Material and Methods:** A hospital-based cross-sectional observational study was conducted among 100 adult patients presenting with chronic pruritus of more than six weeks' duration. Itch severity was assessed using the Visual Analogue Scale (VAS), sleep quality using the Pittsburgh Sleep Quality Index (PSQI), and depressive symptoms using the Patient Health Questionnaire-9 (PHQ-9). Correlations among study variables were analysed using Spearson's correlation coefficient. **Results:** The mean age of the participants was 44.8 ± 13.6 years, with a female predominance. Eczematous dermatoses constituted the most common underlying diagnosis (34%). The mean VAS score was 7.4 ± 1.8 , and severe pruritus was observed in 63% of patients. Poor sleep quality (PSQI >5) was present in 76% of participants, while clinically significant depressive symptoms (PHQ-9 ≥ 10) were observed in 37%. Significant positive correlations were found between VAS and PSQI scores ($r = 0.68$, $p < 0.001$), VAS and PHQ-9 scores ($r = 0.55$, $p < 0.001$), and PSQI and PHQ-9 scores ($r = 0.61$, $p < 0.001$). **Conclusion:** Chronic pruritus is associated with substantial sleep disturbance and depressive symptoms. The significant correlations observed among itch severity, sleep impairment, and depression highlight the multidimensional burden of chronic pruritus and emphasize the need for a holistic approach to patient management. **Keywords:** Chronic pruritus; Sleep quality; Depression; Pittsburgh Sleep Quality Index; Patient Health Questionnaire-9; Visual Analogue Scale.

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INTRODUCTION

Pruritus is an unpleasant sensation that provokes the desire to scratch and represents one of the most common symptoms encountered in dermatological practice. When itching persists for six weeks or longer, it is classified as chronic pruritus. Chronic pruritus may arise secondary to dermatological, systemic, neurological, or psychogenic disorders and can significantly impair quality of life.^[1,2] The burden of chronic pruritus extends beyond cutaneous discomfort. Persistent itching interferes with daily activities, social functioning, emotional well-being, and overall health-related quality of life. Previous studies have demonstrated that the impact of chronic pruritus on quality of life may be comparable to that of chronic pain.^[3] Sleep disturbance is among the most frequently reported consequences of chronic pruritus. Nocturnal exacerbation of itch can interfere with both sleep initiation and sleep maintenance, resulting in prolonged sleep latency, fragmented sleep, daytime fatigue, and reduced productivity.^[4,5] Circadian variations in skin physiology and itch mediators have been proposed as contributing factors to

nocturnal worsening of pruritus.^[6]

Psychological comorbidities are increasingly recognized in patients with chronic pruritus. Depression, anxiety, emotional distress, and impaired psychosocial functioning occur more frequently in patients experiencing persistent itch.^[7,8] Furthermore, sleep disturbance and psychological distress may amplify itch perception, creating a self-perpetuating cycle that contributes to chronicity and increased disease burden.^[5,9] Although several studies have independently evaluated the effects of chronic pruritus on sleep quality and psychological

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well-being, data examining the relationship between itch

severity, sleep quality, and depressive symptoms in Indian patients remain limited. The present study was undertaken to assess these parameters and explore their clinical correlations among patients presenting with chronic pruritus at a tertiary care centre.

MATERIALS AND METHODS

Study Design and Participants: A hospital-based cross-sectional observational study was conducted in the Department of Dermatology, Venereology and Leprosy at a tertiary care teaching hospital from March 2025 to August 2025 for a total duration of 6 months. Adult patients presenting with chronic pruritus of more than six weeks duration were screened for eligibility. Chronic pruritus was defined as itching persisting for six weeks or longer, in accordance with the International Forum for the Study of Itch definition.^[10]

A total of 100 consecutive patients fulfilling the inclusion criteria were enrolled after obtaining written informed consent. Patients with diagnosed primary sleep disorders, severe psychiatric illness, or those receiving psychotropic or sedative medications were excluded from the study.

Detailed demographic and clinical information including age, sex, duration of symptoms, associated comorbidities, and underlying diagnosis was recorded using a predesigned proforma. Diagnoses were established based on clinical evaluation and relevant investigations whenever indicated.

Assessment Tools: Itch severity was assessed using the Visual Analogue Scale (VAS), a widely used instrument for evaluating subjective symptom intensity. Participants were asked to rate the severity of their itch on a scale ranging from 0 (no itch) to 10 (worst imaginable itch).^[11] Scores were categorized as mild (0–3), moderate (4–6), and severe (7–10).

Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI), a validated self-administered questionnaire that evaluates seven components of sleep quality over the preceding month. The global score ranges from 0 to 21, with higher scores indicating poorer sleep quality. A global PSQI score greater than 5 was considered indicative of poor sleep quality.^[12]

Depressive symptoms were evaluated using the Patient Health Questionnaire-9 (PHQ-9), a validated screening instrument based on the diagnostic criteria for depressive disorders. Scores range from 0 to 27 and are categorized as minimal, mild, moderate, moderately severe, and severe depression.^[13]

Statistical Analysis: Data were entered into Microsoft Excel and analysed using Statistical Package for the Social Sciences (SPSS) version XX. Continuous variables were expressed as mean \pm standard deviation, while categorical variables were expressed as frequencies and percentages. Correlation analysis was performed to assess the relationship between itch severity, sleep quality, and depressive symptoms. A p-value of less than 0.05 was considered statistically significant.

Ethical Considerations: The study was approved by the Institutional Ethics Committee before commencement. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki, and written informed consent was obtained from all participants prior to enrolment.

RESULTS

A total of 100 patients with chronic pruritus were included in the study. The mean age of the study population was 44.8 ± 13.6 years. Patients aged 31–50 years constituted the largest age group (46%). Females outnumbered males, with a male-to-female ratio of 1:1.3. The mean duration of pruritus was 11.4 ± 7.2 months. Diabetes mellitus was the most common associated comorbidity, present in 18% of patients, followed by hypothyroidism (6%) and chronic kidney disease (4%) [Table 1].

Eczematous dermatoses represented the most frequent underlying diagnosis and accounted for 34% of cases. Lichen simplex chronicus was observed in 18% of patients, followed by psoriasis (14%), chronic urticaria (12%), prurigo nodularis (10%), fungal infections (6%), and systemic causes of pruritus (6%) [Table 2].

The mean Visual Analogue Scale (VAS) score for itch severity was 7.4 ± 1.8 . Severe pruritus (VAS 7–10) was observed in 63% of patients, while 31% had moderate pruritus and only 6% had mild symptoms. Among individual disease groups, the highest mean VAS scores were recorded in patients with prurigo nodularis (8.3), lichen simplex chronicus (8.1), and chronic urticaria (7.9) [Table 5].

The mean Pittsburgh Sleep Quality Index (PSQI) score was 9.8 ± 3.7 . Poor sleep quality (PSQI >5) was present in 76% of patients. Moderate sleep disturbance was observed in nearly half of the study population, whereas severe sleep disturbance was noted in 12%. The highest PSQI scores were observed among patients with lichen simplex chronicus (11.2) and prurigo nodularis (11.0), indicating greater impairment of sleep quality in these conditions [Table 5].

The mean Patient Health Questionnaire-9 (PHQ-9) score was 8.4 ± 4.5 . Minimal depressive symptoms were observed in 24% of patients, while 39% had mild depression. Moderate depression was identified in 27% of participants, and 10% demonstrated moderately severe to severe depressive symptoms. Overall, clinically significant depressive symptoms (PHQ-9 ≥ 10) were present in 37% of patients. The highest mean PHQ-9 scores were observed in patients with prurigo nodularis (11.1) and chronic urticaria (9.6) [Table 5].

Correlation analysis demonstrated a significant positive association between itch severity and sleep disturbance ($r = 0.68$, $p < 0.001$). A significant positive correlation was also observed between itch severity and depressive symptoms ($r = 0.55$, $p < 0.001$). Furthermore, sleep quality scores showed a significant positive correlation with depression scores ($r = 0.61$, $p < 0.001$). These findings indicate that increasing itch severity is associated with worsening sleep quality and a greater burden of depressive symptoms [Table 4].

Table 1: Demographic and Clinical Characteristics of the Study Population

Variable	Value
Number of patients	100
Mean age (years)	44.8 ± 13.6
Male : Female ratio	1 : 1.3
Mean duration of pruritus (months)	11.4 ± 7.2
Diabetes mellitus	18 (18%)
Hypothyroidism	6 (6%)
Chronic kidney disease	4 (4%)

Table 2: Distribution of Underlying Diagnoses

Diagnosis	n (%)
Eczematous dermatoses	34 (34%)
Lichen simplex chronicus	18 (18%)
Psoriasis	14 (14%)
Chronic urticaria	12 (12%)
Prurigo nodularis	10 (10%)
Fungal infections	6 (6%)
Systemic causes	6 (6%)

Table 3: Severity of Itch, Sleep Disturbance and Depression

Parameter	Mean ± SD
VAS score	7.4 ± 1.8
PSQI score	9.8 ± 3.7
PHQ-9 score	8.4 ± 4.5

Table 4: Correlation Between Itch Severity, Sleep Quality and Depression

Variables	Correlation coefficient (r)	p-value
VAS vs PSQI	0.68	<0.001
VAS vs PHQ-9	0.55	<0.001
PSQI vs PHQ-9	0.61	<0.001

Table 5: Disease-wise Comparison of Mean VAS, PSQI and PHQ-9 Scores

Disease	VAS	PSQI	PHQ-9
Eczematous dermatoses	7.1	9.2	7.6
Lichen simplex chronicus	8.1	11.2	8.8
Psoriasis	6.8	7.6	6.2
Chronic urticaria	7.9	10.1	9.6
Prurigo nodularis	8.3	11.0	11.1

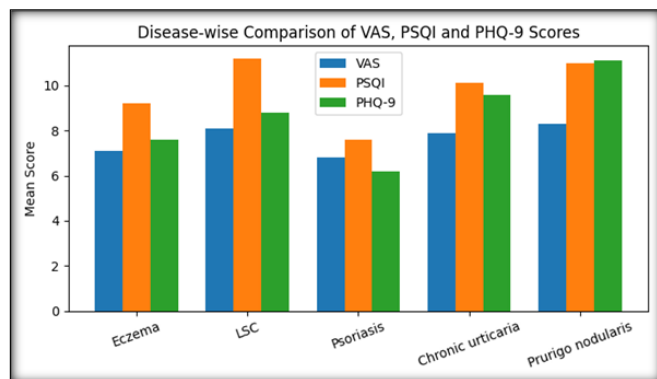


Figure 1: Disease-wise comparison of mean itch severity (VAS), sleep quality (PSQI), and depression (PHQ-9) scores among patients with chronic pruritus.

DISCUSSION

The present study examined the correlation between the severity of the itch, sleep disruption and depressive symptoms in chronic pruritus and highlighted significant correlations between the three variables.^[1,2]

In our study, the mean itch severity score was 7.4 ± 1.8 and 63% reported having severe pruritus. These results show

that the symptom burden of patients seen in the tertiary care centre is high. Higher scores were found with the itch questionnaire as inflammatory dermatoses like eczema, lichen simplex chronicus and prurigo nodularis are conditions that are associated with having itch and scratching.^[1,15] Why this is the case remains unclear as chronic pruritus is seen in many other dermatoses and may in part be due to the predominance of inflammatory dermatoses in our cohort.

In the present study sleep disturbance was also found to be very common; 76% patients had poor sleep quality and the mean PSQI score was 9.8 ± 3.7. The poor sleep reported in our study may be explained by the fact that itch typically increases in severity during the evening and night time hours, causing repeated awakenings and non-restorative sleep.^[4,17]

A total of 37% of the participants had clinically significant depression symptoms, with a mean PHQ-9 score of 8.4 ± 4.5. Chronic itching can also have a negative impact on a patient's self-esteem, social interactions, work, and sleep patterns which can lead to depressive symptoms.^[7,18] Zachariae et al. found that patients with dermatological diseases were more likely to have psychological morbidity than the general population while Gupta and Gupta argued that there is a close connection between chronic skin disease and psychiatric comorbidity.

A particularly high positive correlation between itch severity

and sleep disturbance ($r = 0.68, p < 0.001$) was one of the most significant findings of the present study. This observation agrees with previous reports of poorer sleep quality with greater itch intensity, as patients with severe itch have been shown to have problems falling to sleep, more frequent nocturnal awakening, and shorter sleep. In turn, a heightened sensitivity to itch perception can be induced by sleep deprivation, through modifications in the processing of itch perception in the central nervous system and neuroimmune mechanisms, promoting the itch-scratch cycle, as illustrated by the strong correlation observed in our study.^[4,16]

There was also a significant positive correlation between itch severity and depressive symptoms ($r = 0.55, p < 0.001$). As reported by Dalgard et al. and Gupta and Gupta, higher levels of symptom burden in a chronic skin disease can lead to increased levels of psychological distress.^[1,18] Increased psychological distress may be a result of chronic pruritus and its associated symptoms of discomfort, embarrassment of social interactions, cosmetic concerns, and sleep disturbances. Psychological stress and depressive symptoms can at the same time amplify itch perception via central nervous mechanisms, creating a bidirectional relationship between stress and itch perception.^[19]

The strong positive correlation between sleep disturbance and depressive symptoms ($r = 0.61, p < 0.001$) further emphasizes the linkage of these domains. Sleep disturbances have been known to be a risk factor for mood disorders and are thought to be a significant mediator between chronic itch and psychological morbidity. Our study's findings support the notion that sleep impairment could have a positive impact beyond symptom control, as patients with more severe sleep impairments in our study were more likely to have lower scores on the SF-12. Previous studies also reported that poorer sleep quality was found in dermatology patients with higher rates of depression and lower quality of life.^[7,8]

The analysis of the disease showed that patients with prurigo nodularis and lichen simplex chronicus had the highest scores for itch severity, sleep disturbance and depression symptoms. Clinically plausible because both conditions have a high level of chronicity, intense itching, repetitive scratching and high social burden. Compared to psoriasis, patients with prurigo nodularis and lichen simplex chronicus were more severely affected in all three reviewed domains, but not as severely as patients with psoriasis.

One strength of the present study is that the degree of itch, sleep quality and depression symptoms were assessed simultaneously with validated instruments. This study offers a more comprehensive assessment of the multidimensional burden of affected patients as was previously not described in many studies. In addition, several dermatological and systemic causes of chronic pruritus are included, which will make the results more clinically applicable.

There are a few minor drawbacks to be noted, however. Because this is a cross sectional study, it is not possible to conclude causal relationships between itch severity, sleep disturbance and depression. The study was performed at one TCC, so results might not be generalisable. Further, sleep

quality and depression were assessed using self-reported questionnaires and thus could be open to reporting bias. Nevertheless, the study adds important information about the intricate relationship between CP, sleep and psychological morbidity in the local clinical setting in India.

CONCLUSION

Chronic itchy skin can cause a tremendous discomfort for both the person and the caregivers, and may have a severe impact on the quality of sleep and overall psychological health of the individual. More than 3/4 of the patients in the present study showed poor sleep quality, and more than 1/3 of patients in the study had clinically significant depressive symptoms. Itch severity and sleep disturbance, as well as depression, are correlated at the significant level indicating close interaction among the domains. The highest overall disease burden was seen in patients with lichen simplex chronicus and/or prurigo nodularis. Patients with chronic pruritus should have a routine assessment of sleep quality and psychological health as part of the assessment process to aid in comprehensive and multidisciplinary management.

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Conflicts of interest

There are no conflicts of interest.

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