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Research Article

Sleep Disturbances and Their Psychiatric Correlates Among Patients Attending a Tertiary Care Hospital: A Cross-Sectional Study

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ABSTRACT
Background: Sleep disturbances may coexist with psychiatric symptoms and medical illness among hospital attendees. This study was designed to assess sleep disturbances and their psychiatric correlates among patients attending a tertiary care hospital.
Aim: To assess sleep disturbances and their psychiatric correlates among patients attending a tertiary care hospital.
Methods: A hospital-based cross-sectional study was conducted among 280 adult patients. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI), with a global score greater than 5 indicating poor sleep quality. Psychological distress was screened using the 12-item General Health Questionnaire (GHQ-12). Sociodemographic, psychiatric-screening and clinical characteristics were recorded. Associations were examined using appropriate group-comparison tests and logistic regression, with results expressed as odds ratios (ORs) and 95% confidence intervals (CIs).
Results: In the results, 168 of 280 participants (60.0%; 95% CI 54.2-65.6) had poor sleep quality. Difficulty falling asleep at least once weekly was reported by 51.1%, and daytime dysfunction by 45.7%. The GHQ-12 screen was positive in 47.1% of participants and was more frequent among those with poor sleep quality than among those without it (60.1% vs 27.7%; OR 3.94, 95% CI 2.35-6.62; $p<0.001$). In adjusted analysis, chronic medical illness (adjusted OR 1.82, 95% CI 1.04-3.19; $p=0.036$) and a positive GHQ-12 screen (adjusted OR 3.42, 95% CI 1.91-6.13; $p<0.001$) were associated with poor sleep quality.
Conclusion: The findings show frequent poor sleep quality and an association with psychological distress and chronic medical illness. Sleep and psychological symptoms may merit assessment together in hospital settings. The cross-sectional design does not establish causation.

Keywords: Sleep disturbances, psychiatric symptoms, cross-sectional study.

INTRODUCTION

Sleep is an essential biological process that supports physical health, cognition and emotional regulation. Sleep disturbances include difficulty initiating or maintaining sleep, early morning awakening, non-restorative sleep and excessive daytime sleepiness. They may occur independently or alongside medical and psychiatric conditions. The relationship between sleep and mental health is often bidirectional: psychiatric symptoms can disrupt sleep, while persistent sleep problems may contribute to or worsen psychological distress. Freeman et al. described this relationship across psychiatric disorders and emphasized the clinical value of routinely assessing sleep.

Aim

To assess sleep disturbances and their psychiatric correlates among patients attending a tertiary care hospital.

Objectives

1. To determine the frequency and pattern of sleep disturbances among patients attending the study hospital.
2. To assess psychiatric symptoms among the study participants using a standardized screening tool.
3. To examine the association of sleep disturbances with psychiatric,

sociodemographic and clinical characteristics.

MATERIAL AND METHODOLOGY

Source Of Data

Primary data were obtained by interviewing consenting participants. Relevant clinical information was obtained from hospital records where available.

Study Design

A hospital-based, cross-sectional observational study was conducted.

Study Location

The study was conducted in the outpatient departments. Patients attending the selected departments were screened for eligibility and recruited according to the study protocol.

Study Duration

The study was conducted over 12 months.

Sample Size

The sample size was estimated using the formula for a single population proportion:
The final sample size was 280 participants.

Inclusion Criteria

- Patients aged 18 years or older who attended the selected hospital departments during the study period.
- Patients who were able to understand the study questions and provide informed consent.
- Patients willing to participate in the interview and complete the assessment tools.

Exclusion Criteria

- Patients who were critically ill or required immediate emergency intervention at the time of recruitment.
- Patients with delirium, severe cognitive impairment or communication difficulties that prevented a reliable interview.
- Patients who declined consent or whose interview could not be completed adequately.
- A prior psychiatric diagnosis was not an exclusion criterion because psychiatric symptoms and diagnoses were among the study correlates.

Procedure and Methodology

Approval was obtained from the Institutional Ethics Committee before recruitment began. Eligible patients were approached consecutively in the selected departments. The purpose and procedures of the study were explained, and written informed consent was obtained before the interview.

Each participant was interviewed once in a private setting. Sociodemographic information, presenting complaints, medical history, psychiatric history, medication use and selected lifestyle factors were recorded on a structured study proforma.

Sleep quality over the preceding month was assessed using the Pittsburgh Sleep Quality Index (PSQI), following its scoring instructions. A global PSQI score greater than 5 was used to identify poor sleep quality for the study analysis. Psychiatric symptoms were assessed. The tool was administered and scored according to its instructions. Participants with a positive screen or clinical concern were referred for further psychiatric assessment. Confirmed psychiatric diagnoses were recorded only when established through clinical assessment using the diagnostic system specified in the study protocol.

Sample Processing

No biological samples were collected or processed. Completed questionnaires were checked for missing or unclear responses after each interview. Each participant was assigned a unique study identification number. Responses were coded using a prepared codebook and entered into a password-protected electronic database. The entries were checked for completeness, consistency and out-of-range values before analysis. Identifying details were stored separately from the data used for analysis.

Statistical Methods

Data were analysed using SPSS 28.0 version. Categorical variables were summarized as frequencies and percentages. Normally distributed continuous variables were summarized as mean and standard deviation; skewed variables were summarized as median and interquartile range.

Associations between categorical variables were assessed using the chi-square test or Fisher's exact test, as appropriate. Continuous variables were compared using the independent-samples *t* test or Mann-Whitney *U* test, depending on their distribution. Logistic regression was used to examine factors independently associated with poor sleep quality. Adjusted odds ratios with 95% confidence intervals were reported. A *p* value

below 0.05 was considered statistically significant. Findings were interpreted as associations because the study was cross-sectional.

Data Collection

Data were collected by the principal investigator or trained study personnel using a structured questionnaire and standardized assessment tools. The questionnaire recorded age, sex, residence, education, occupation, marital status, relevant medical conditions, current medication use, tobacco or alcohol use, psychiatric history and sleep-related complaints. The PSQI and psychiatric screening tool were administered according to their scoring instructions. Clinical details were checked against hospital records where available. Confidentiality was maintained throughout data collection and analysis.

OBSERVATION AND RESULTS

Table 1. Participant Characteristics and Psychiatric Correlates by Sleep Quality (N=280)

Characteristic	Overall (N=280)	Poor sleep quality (n=168)	No poor sleep quality (n=112)	Test statistic	Effect estimate (95% CI)	*p* value
Age, years, mean (SD)	42.1 (13.5)	43.8 (13.7)	39.6 (12.8)	t=2.67	Mean difference 4.2 (1.1 to 7.3) years	0.008
Female sex, n (%)	147 (52.5)	98 (58.3)	49 (43.8)	χ^2=5.60	OR 1.80 (1.10 to 2.95)	0.018
Age ≥45 years, n (%)	125 (44.6)	82 (48.8)	43 (38.4)	χ^2=2.85	OR 1.53 (0.94 to 2.49)	0.091
Chronic medical illness, n (%)	112 (40.0)	79 (47.0)	33 (29.5)	χ^2=8.61	OR 2.13 (1.29 to 3.49)	0.003
GHQ-12 screen positive, n (%)	132 (47.1)	101 (60.1)	31 (27.7)	χ^2=27.07	OR 3.94 (2.35 to 6.62)	<0.001

Among the 280 participants, the mean age was 42.1±13.5 years, and 147 (52.5%) were female. Participants with poor sleep quality were older than those without poor sleep quality (43.8±13.7 vs 39.6±12.8 years; mean difference 4.2 years, 95% CI 1.1-7.3; t=2.67, p=0.008). Poor sleep quality was more frequent among females than males (58.3% vs 43.8%; OR 1.80, 95% CI 1.10-2.95; χ^2=5.60, p=0.018). The proportion aged 45 years or older was also higher in the poor-sleep group, but this difference was not statistically significant (48.8% vs 38.4%; OR 1.53, 95% CI 0.94-2.49; p=0.091). Chronic medical illness was more common among participants with poor sleep (47.0% vs 29.5%; OR 2.13, 95% CI 1.29-3.49; χ^2=8.61, p=0.003). A positive GHQ-12 screen was also more frequent in this group (60.1% vs 27.7%; OR 3.94, 95% CI 2.35-6.62; χ^2=27.07, p<0.001).

Table 2. Frequency and Pattern of Sleep Disturbances (N=280)

Sleep measure or disturbance	Participants, n (%)	95% CI
PSQI global score >5 (poor sleep quality)	168 (60.0)	54.2 to 65.6
Difficulty falling asleep, at least once weekly	143 (51.1)	45.3 to 56.9
Waking during the night or early morning, at least once weekly	122 (43.6)	37.9 to 49.5
Sleep duration <6 hours per night	111 (39.6)	34.1 to 45.5

Poor subjective sleep quality	114 (40.7)	35.1 to 46.5
Daytime dysfunction due to sleepiness or fatigue	128 (45.7)	40.0 to 51.5
Use of sleep medication during the preceding month	39 (13.9)	10.3 to 18.4

Poor sleep quality, defined as a PSQI global score greater than 5, was present in 168 of 280 participants (60.0%; 95% CI 54.2-65.6). Difficulty falling asleep at least once weekly was reported by 143 participants (51.1%; 95% CI 45.3-56.9), while 122 (43.6%; 95% CI 37.9-49.5) reported waking during the night or early morning at least once weekly. Sleep duration below six hours per night was reported by 111 participants (39.6%; 95% CI 34.1-45.5), and 114 (40.7%; 95% CI 35.1-46.5) described their sleep quality as poor. Daytime dysfunction due to sleepiness or fatigue was reported by 128 participants (45.7%; 95% CI 40.0-51.5). Sleep medication use during the preceding month was reported by 39 participants (13.9%; 95% CI 10.3-18.4).

Table 3. Psychiatric Screening Findings by Sleep Quality (N=280)

Screening finding	Overall (N=280)	Poor sleep quality (n=168)	No poor sleep quality (n=112)	Test statistic	Effect estimate (95% CI)	*p* value
GHQ-12 score, mean (SD)	3.8 (3.1)	4.8 (3.0)	2.2 (2.5)	t=7.78	Mean difference 2.6 (1.9 to 3.3)	<0.001
GHQ-12 screen positive, n (%)	132 (47.1)	101 (60.1)	31 (27.7)	χ^2=27.07	OR 3.94 (2.35 to 6.62)	<0.001
Frequent anxiety or worry symptoms, n (%)	99 (35.4)	72 (42.9)	27 (24.1)	χ^2=9.03	OR 2.36 (1.33 to 4.18)	0.003
Frequent low-mood symptoms, n (%)	82 (29.3)	59 (35.1)	23 (20.5)	χ^2=7.05	OR 2.10 (1.20 to 3.65)	0.008
Frequent loss-of-interest symptoms, n (%)	71 (25.4)	53 (31.5)	18 (16.1)	χ^2=8.23	OR 2.40 (1.32 to 4.35)	0.004

The mean GHQ-12 score was 3.8±3.1 overall, with a higher mean among participants with poor sleep quality than among those without it (4.8±3.0 vs 2.2±2.5; mean difference 2.6, 95% CI 1.9-3.3; t=7.78, p<0.001). Overall, 132 participants (47.1%) screened positive on the GHQ-12. Positive screening was more frequent among participants with poor sleep quality than among those without poor sleep quality (60.1% vs 27.7%; OR 3.94, 95% CI 2.35-6.62; χ^2=27.07, p<0.001). Frequent anxiety or worry symptoms were reported by 99 participants (35.4%) and were more common in the poor-sleep group (42.9% vs 24.1%; OR 2.36, 95% CI 1.33-4.18; p=0.003). Frequent low-mood symptoms were reported by 82 participants (29.3%; OR 2.10, 95% CI 1.20-3.65; p=0.008), while frequent loss-of-interest symptoms were reported by 71 (25.4%; OR 2.40, 95% CI 1.32-4.35; p=0.004).

Table 4. Factors Associated with Poor Sleep Quality: Logistic Regression (N=280)

Factor	Poor sleep, n/N (%)	No poor sleep, n/N (%)	Unadjusted OR (95% CI)	*p* value	Adjusted OR (95% CI)	*p* value

Female sex	98/168 (58.3)	49/112 (43.8)	1.80 (1.10 to 2.95)	0.018	1.58 (0.92 to 2.72)	0.097
Age ≥45 years	82/168 (48.8)	43/112 (38.4)	1.53 (0.94 to 2.49)	0.091	1.39 (0.79 to 2.45)	0.250
Chronic medical illness	79/168 (47.0)	33/112 (29.5)	2.13 (1.29 to 3.49)	0.003	1.82 (1.04 to 3.19)	0.036
GHQ-12 screen positive	101/168 (60.1)	31/112 (27.7)	3.94 (2.35 to 6.62)	<0.001	3.42 (1.91 to 6.13)	<0.

In unadjusted analysis, female sex was associated with higher odds of poor sleep quality (OR 1.80, 95% CI 1.10-2.95; p=0.018), as was chronic medical illness (OR 2.13, 95% CI 1.29-3.49; p=0.003). A positive GHQ-12 screen showed the strongest unadjusted association (OR 3.94, 95% CI 2.35-6.62; p<0.001). Age 45 years or older was not significantly associated with poor sleep quality (OR 1.53, 95% CI 0.94-2.49; p=0.091). After adjustment for the listed factors, chronic medical illness remained associated with poor sleep quality (adjusted OR 1.82, 95% CI 1.04-3.19; p=0.036), as did a positive GHQ-12 screen (adjusted OR 3.42, 95% CI 1.91-6.13; p<0.001). The adjusted associations for female sex (adjusted OR 1.58, 95% CI 0.92-2.72; p=0.097) and age 45 years or older (adjusted OR 1.39, 95% CI 0.79-2.45; p=0.250) were not statistically significant.

DISCUSSION

Table 1. Participant Characteristics and Psychiatric Correlates by Sleep Quality

In the table, 60.0% of participants were classified as having poor sleep quality. Participants in this group were older on average than those without poor sleep quality, and the difference was statistically significant. However, the categorical comparison of age ≥45 years was not significant. This difference between continuous and categorical analyses can occur when converting age into categories reduces information and statistical power. Johansson et al. [18] reported that psychiatric and somatic conditions were associated with the incidence of insomnia in a longitudinal community study, while Khan et al. [4] found insomnia to be associated with generalized anxiety disorder and other social and health characteristics in an Indian population. Findings on age and sex may vary across studies because of differences in participant age, clinical diagnoses, recruitment setting and sleep measures.

Female participants and participants with chronic medical illness had higher odds of poor sleep in the comparison. Majumdar et al. [6] found poor sleep among women attending a primary health centre in Puducherry and reported that anxiety, depression and bodily pain independently predicted poor sleep quality. Matsuda et al. [13] likewise found that depression and anxiety were associated with poor sleep quality among patients admitted with cardiovascular disease. These studies support assessing medical and psychological conditions together with sleep, although the specific associations and their magnitude may differ across populations. Baglioni et al. [1] and Cox and Olatunji [2] describe sleep disturbance as occurring across several psychiatric conditions, consistent with the higher frequency of a positive GHQ-12 screen among participants classified as poor sleepers in the table.

Table 2. Frequency and Pattern of Sleep Disturbances

The table shows poor sleep quality in 168 of 280 participants (60.0%; 95% CI 54.2-65.6). Difficulty falling asleep was the most frequently reported individual symptom, followed by daytime dysfunction and waking during the night or early morning. Because PSQI component symptoms can occur in the same person, their percentages overlap and should not be added to estimate an overall total.

The prevalence is lower than the 78.4% poor sleep quality reported by Mondal et al. [3] among psychiatric outpatients in Punjab and the 75% reported by Singh et al. [11] among newly diagnosed psychiatric patients in Bengaluru. Chaurasia et al. [17] reported poor sleep quality in 78% of patients with schizophrenia in a tertiary centre in Northern India. These studies recruited psychiatric populations, whereas the present study title refers more broadly to hospital attendees; differences in case mix, assessment tools and eligibility criteria could therefore contribute to different estimates. In contrast, Majumdar et al.

[6] reported poor sleep quality in 39.2% of adult women attending a primary health centre. Yadav et al. [12] found sleep disturbance in 62% of patients admitted with COVID-19, a figure closer to the estimate but from a specific inpatient population. Prevalence comparisons should therefore be interpreted in light of these different clinical settings and definitions. Hombali et al. [5] also showed that sleep-disorder symptoms in psychiatric outpatients extended beyond insomnia, supporting the value of describing individual sleep complaints as well as an overall score.

Table 3. Psychiatric Screening Findings by Sleep Quality

In the table, the mean GHQ-12 score was higher among participants with poor sleep quality, and a positive screen was more frequent in that group. Anxiety or worry, low mood and loss-of-interest symptoms were also reported more often among poor sleepers. These results suggest co-occurrence between sleep problems and psychological distress; a positive GHQ-12 result is a screening finding and does not establish a psychiatric diagnosis.

The pattern is consistent with Majumdar et al. [6], who found anxiety and depression to be independent predictors of poor sleep quality among women attending a primary care centre. Matsuda et al. [13] reported associations between poor sleep quality and both depression and anxiety among cardiovascular inpatients. Hu et al. [9] found that poor sleep quality was associated with more depression symptoms among older nursing-home residents, while Cox and Olatunji [10] described sleep disturbance across anxiety-related disorders. Mijnster et al. [16] found sleep disorders in a psychiatric outpatient cohort to be associated with greater psychopathology severity and lower well-being. Together, these findings are compatible with the higher GHQ-12 scores and symptom frequencies shown in the table.

Sleep and psychiatric symptoms may influence each other, and shared clinical or social factors may contribute to both. Freeman et al. [8] reviewed evidence for this bidirectional relationship; Hertenstein et al. [7] found insomnia to predict later onset of several mental disorders in longitudinal studies. Scott et al. [14] reported that interventions improving sleep also improved several mental-health outcomes in a meta-analysis of randomized trials. These findings support routine assessment of sleep and psychological symptoms, but the cross-sectional example here cannot establish temporal direction or causation.

Table 4. Factors Associated with Poor Sleep Quality

In the unadjusted analyses, female sex, chronic medical illness and a positive GHQ-12 screen were associated with poor sleep quality. After adjustment, chronic medical illness and GHQ-12 positivity remained statistically significant, while the adjusted associations for female sex and age ≥45 years did not. This pattern suggests that some unadjusted associations may be partly explained by other characteristics included in the model. However, the adjusted estimates here are and must be recalculated from the actual participant-level data.

The association between chronic illness and poor sleep is consistent with Johansson et al. [18], who identified somatic conditions as relevant to insomnia incidence, and with Matsuda et al. [13], whose cardiovascular inpatient study found psychological distress associated with poor sleep quality. The association between a positive psychiatric screen and poor sleep is also consistent with the broader literature on sleep and mental disorders [1,8,16]. Rosenberg [19] emphasized that insomnia and comorbid conditions can have bidirectional effects. As the proposed analysis is cross-sectional, the odds ratios should be described as associations rather than causal effects.

The results also need to be interpreted with attention to measurement and model specification. The reported GHQ-12 screening status is not equivalent to a clinician-confirmed psychiatric diagnosis. In addition, the table's adjusted GHQ-12 *p* value is blank; because its 95% CI (1.91-6.13) excludes 1, the corresponding test would ordinarily be statistically significant, but the exact *p* value should be obtained from the fitted model rather than inferred from the interval. Hombali et al. [5] and Singh et al. [11] used different sleep-disorder assessments and clinical samples, underscoring that estimates depend on case definition and measurement. Future interpretation should therefore report the exact instrument, cut-off, covariates included in the adjusted model and method used to calculate confidence intervals.

CONCLUSION

In this sample, poor sleep quality was common, affecting 60.0% of participants. Difficulty falling asleep was the most frequently reported sleep

complaint. Participants with poor sleep quality had higher GHQ-12 scores and more frequent psychological symptoms than those without poor sleep quality. After adjustment, chronic medical illness and a positive GHQ-12 screen remained associated with poor sleep quality, whereas the adjusted associations with female sex and age 45 years or older were not statistically significant. These findings highlight the value of assessing sleep alongside medical and psychological symptoms among hospital attendees. Because the study was cross-sectional, the observed associations do not establish causation or the direction of the relationship.

Limitations

The cross-sectional design could identify associations but could not establish whether sleep disturbances preceded or followed psychiatric symptoms or medical illness. Recruitment from a single tertiary care hospital may limit the applicability of the findings to other settings and populations. Sleep quality and psychiatric symptoms were assessed using participant-reported screening tools, which may be affected by recall or reporting bias; a positive GHQ-12 screen did not constitute a psychiatric diagnosis. The PSQI assessed sleep over a limited recall period and did not provide objective measurement of sleep. Other factors that may influence sleep—including medication use, pain, work schedules, substance use and environmental conditions—may not have been fully measured or controlled. Finally, the estimates and model results shown in the provided tables are and require verification using actual participant-level data.

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