International Journal of Science and Healthcare Research
[Indexed, Peer-Reviewed Journal]
Vol. 11; Issue: 3; July-Sept. 2026
Website: ijshr.com
Original Research Article *ISSN: 2455-7587*

A Study on Sleep Quality amongst Primary Caregivers of Patients with Schizophrenia

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DOI: https://doi.org/10.52403/ijshr.20260322

Received: 28/05/2026; Revised: 21/07/2026; Accepted: 10/08/2026

ABSTRACT

Background: Family caregivers of individuals with schizophrenia experience substantial caregiving demands that may adversely affect their physical and psychological well-being, including sleep. However, evidence regarding sleep quality among primary caregivers of patients with schizophrenia, particularly in the Indian context, remains limited. This study aimed to assess sleep quality among primary caregivers of patients with schizophrenia and examine its association with selected sociodemographic, caregiving, and clinical factors.

Methods: A cross-sectional observational study was conducted in the Psychiatry Outpatient Department of a tertiary care centre following approval from the Institutional Ethics Committee. A total of 112 primary caregivers of patients diagnosed with schizophrenia according to DSM-5 criteria were recruited using convenience sampling. Caregivers aged 18–65 years who had resided with and provided care for the patient for at least six months were included. Sociodemographic, caregiving, and relevant clinical information was collected using a semi-structured proforma. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI), with a global score >5 indicating poor sleep quality. Data were analysed using IBM SPSS Statistics, with a two-tailed p-value <0.05 considered statistically significant.

Results: Of the 112 caregivers, 71 (63.4%) were female. The mean global PSQI score was 11.88 ± 3.25, indicating poor sleep quality. Overall, 110 (98.2%) caregivers had a PSQI score >5. No significant differences in mean PSQI scores were observed according to caregiver gender (11.94 ± 3.09 vs. 11.76 ± 3.53; p=0.77), employment status (12.08 ± 2.81 vs. 11.77 ± 3.46; p=0.64), or sleeping in the same room as the patient (12.08 ± 3.16 vs. 11.60 ± 3.38; p=0.44). Caregivers of symptomatic patients had significantly higher mean PSQI scores than caregivers of asymptomatic patients (12.21 ± 3.10 vs. 10.72 ± 3.53; p=0.04).

Conclusion: Poor sleep quality was highly prevalent among primary caregivers of patients with schizophrenia. Caregivers of patients with current symptoms reported significantly poorer sleep quality than those caring for asymptomatic patients. These findings highlight the importance of considering caregiver sleep as part of comprehensive schizophrenia care. Further

multicentre studies using larger samples and assessing psychological and caregiving-related factors are warranted.

Keywords: Schizophrenia; Caregivers; Sleep; Sleep Quality; Mental Disorders; Pittsburgh Sleep Quality Index

INTRODUCTION

Schizophrenia is a debilitating psychiatric disorder characterized by distorted perception, thinking, emotions, and behaviour. It is associated with a distinct cluster of symptoms classified into positive, negative, cognitive, and affective domains. The disorder impairs an individual's ability to accurately perceive reality and adversely affects language, emotional regulation, and social functioning. These symptoms result in marked functional impairment, limiting occupational performance and reducing the ability to establish and maintain interpersonal relationships. The lifetime prevalence of schizophrenia is approximately 0.62%. [1] Schizophrenia is associated with substantial and long-term financial, social, and health-related costs, affecting not only patients but also their families, caregivers, and society as a whole. A primary caregiver often devotes considerable time and effort to caring for a family member with schizophrenia, frequently at the expense of their own personal, social, and occupational life. [2]

Despite the availability of inpatient psychiatric services, many family caregivers continue to provide long-term care for individuals with schizophrenia. [3] Insufficient support and guidance may leave caregivers feeling inadequately prepared for their caregiving responsibilities, [4,5] thereby increasing caregiver burden and disrupting their daily functioning. [6] Caregiver burden encompasses the physical, psychological, social, and financial demands associated with providing care. [7] Caregiver burden has been associated with several patient- and illness-related factors, including greater psychopathology, illness-related disability, and other indicators of greater caregiving demands. [8–11]

Caregiving is a multidimensional and complex process that extends beyond the patient's diagnosis. The severity of symptoms and associated functional impairment often influence caregiver well-being more profoundly than the diagnosis itself. [12] The psychological functioning of caregivers, defined as their ability to pursue personal goals while adapting to environmental demands, may be significantly compromised. [12,13] Consequently, caregivers frequently experience anxiety, depression, psychological distress, and reduced overall well-being. [12,15] The substantial responsibilities associated with caregiving, including prolonged hours of care and multiple competing demands, may also contribute to job loss, reduced social interactions, and restrictions in leisure activities. [5,14]

Caregivers of adults with severe mental disorders often experience a substantial caregiving burden, which may adversely affect their sleep quality. [15] Older caregivers and those who are unmarried are particularly vulnerable to caregiver distress. In psychosis, caregivers frequently experience sleep disturbances, which are associated with higher levels of psychological distress and more negative perceptions of the caregiving role. [16] Gnanapragasam et al. (2019) reported that female caregivers, caregivers sharing the same room with the patient, and caregivers of patients with longer illness duration and greater symptom severity experienced poorer sleep quality.[17] Similarly, an observational study found that poor sleep quality among caregivers was significantly associated with female gender, lower educational attainment, lower socioeconomic status, presence of lifestyle-related illnesses, and living in nuclear families. [18] The study further demonstrated that sleep quality differed according to the caregiver–patient relationship, with parents and spouses reporting greater sleep disturbances than other caregivers.

Moreover, poorer sleep quality was significantly associated with lower psychological well-being. [18]

Despite the growing recognition of caregiver burden, studies examining sleep quality among caregivers of patients with schizophrenia remain limited, particularly in the Indian context. Moreover, the association of sleep quality with caregiver- and patient-related factors, including caregiver–patient relationship, lifestyle-related illnesses, sleeping arrangements, current symptomatic status of the patient, and treatment adherence, has not been adequately investigated. Therefore, the present study aimed to assess sleep quality among primary caregivers of patients with schizophrenia and examine its association with these socio-demographic and clinical variables.

MATERIALS AND METHODS

This cross-sectional observational study was conducted in the Psychiatry Outpatient Department of a tertiary care centre after obtaining approval from the Institutional Ethics Committee of Masina Hospital Trust (IEC/2024/121 dated 11th March 2024). A convenience sampling technique was employed, and data were collected from 112 primary caregivers of patients diagnosed with schizophrenia as per DSM 5 criteria. [19]

Participants included male and female caregivers aged 18–65 years who had been residing with and providing care for a patient with schizophrenia for at least six months. Caregivers who were able to comprehend and communicate in Marathi, Hindi, or English and were willing to provide written informed consent were included. Caregivers with a diagnosed psychiatric disorder, comorbid organic brain conditions (e.g., delirium or dementia), substance use disorders other than nicotine dependence, severe intellectual disability, or significant communication difficulties that could interfere with completion of the assessments were excluded.

Written informed consent was obtained from all participants after explaining the objectives and procedures of the study and assuring them of the confidentiality of the information provided. Sociodemographic and clinical data were collected using a semi-structured proforma. The information collected included caregiver characteristics such as age, gender, marital status, educational qualification, occupation, monthly family income, relationship with the patient, duration of caregiving, and relevant clinical details pertaining to the patient. Those patients who clinically had any symptoms of schizophrenia as per DSM 5 criteria present during the study period were categorized as Symptomatic and those who were on maintenance treatment and not displaying any active symptoms were categorized as Asymptomatic.

The study used the standard 19-item Pittsburgh Sleep Quality Index (PSQI) developed by Buysse et al. [20] The PSQI assesses subjective sleep quality and sleep disturbances over the preceding one-month period. The questionnaire comprises seven component scores: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. The validated Hindi version of PSQI [21] was administered in participants understanding Hindi and English version for those understanding English. Each of the seven components is scored from 0 to 3, with higher scores indicating poorer sleep quality. The component scores are summed to obtain a global PSQI score ranging from 0 to 21. A global score >5 was considered indicative of poor sleep quality, consistent with the established scoring criteria of the original PSQI.

The sample size was calculated using the following formula:

$n = (Z_{1-\alpha/2} \times \sigma / d)^2$

where $\alpha = 0.05$, $Z_{1-\alpha/2} = 1.96$ for a 95% confidence level, $\sigma = 4.64$ (estimated standard deviation), and $d = 0.86$ (desired precision/margin of error).

Substituting these values: $n = (1.96 \times 4.64 / 0.86)^2 = 111.83$

Thus, the required sample size was 112 participants, assuming a population standard

deviation of 4.64 and a desired precision of 0.86 at a 95% confidence level.

Statistical Analysis

Data were entered into Microsoft Excel and analysed using IBM SPSS Statistics. Continuous variables were summarized as mean ± standard deviation (SD), while categorical variables were presented as frequencies and percentages. The global Pittsburgh Sleep Quality Index (PSQI) score was treated as the primary outcome measure. Differences in mean PSQI scores between two independent groups were assessed using the independent-samples *t* test. The analyses included comparisons of PSQI scores according to caregiver gender, employment status, sleeping in the same room as the patient, and the current symptomatic status of the patient. A two-tailed *p* value of <0.05 was considered statistically significant.

RESULTS

In the current study, the majority of the participants were female (63.39%), remaining were male (36.60%). Most participants were graduates (41.96%), followed by equal proportion who had completed 10th and 12th grade qualified (25.89% each), while few completed primary schooling (6.25%). Most participants belonged to the Hindu religion (69.64%), whereas remaining belonged to other religions (30.35%). The majority of participants were married (73.21%), followed by unmarried (24.10%) and few divorced (2.67%) [Table 1].

Table 2 indicates that most caregivers spent on an average 2.56 hours daily in caregiving. Most caregivers did not have any medical illness (83.03%), while a few of them had diabetes mellitus and hypertension (6.25%), or diabetes mellitus alone (1.78%). The mean PSQI score was 11.88. Most caregivers (57.14%) slept in same room as the patient.

Figure 1 suggests that husbands constituted the largest majority of caregivers (29%), followed by wives (22%), sons (13%), sisters (11%), brothers (10%) and lastly fathers, mothers and daughters (5% each).

In our study all participants except 2 of them had PSQI score of more than 5 suggestive that all of them had poor quality of sleep. Table 3 indicates that there was no statistically significant difference in mean PSQI scores based on gender of the caregiver (male: 11.76 ± 3.53; female: 11.94 ± 3.09; t = 0.29, p = 0.77), employment status (employed: 11.77 ± 3.46; unemployed: 12.08 ± 2.81; t = 0.47, p = 0.64), or whether the caregiver slept in the same room as the patient (yes: 12.08 ± 3.16; no: 11.60 ± 3.38; t = 0.76, p = 0.44). However, caregivers of patients who were currently symptomatic had significantly higher mean PSQI scores (12.21 ± 3.10) than caregivers of asymptomatic patients (10.72 ± 3.53), indicating poorer sleep quality among the former (t = 2.04, p = 0.04).

Table 1: Demographic details of study population

Parameter (N = 112)		**Mean ± S.D./ Frequency (%)**
Age in Years		38.13 ± 10.22 (18 - 59)
Gender	Male	41 (36.60%)
	Female	71 (63.39%)
Education	Primary Schooling	7 (6.25%)
	10th Standard	29 (25.89%)
	12th Standard	29 (25.89%)
	Graduate and above	47 (41.96%)
Religion	Hindu	78 (69.64%)
	Non-Hindu	34 (30.35%)
Marital Status	Married	82 (73.21%)
	Unmarried	27 (24.10%)
	Divorced	3 (2.67%)

Table 2: Phenomenological details of study population

Parameter (N = 112)		**Mean ± S.D. / Frequency (%)**
Time spent in caregiving daily (in hours)		2.56 ± 1.51 (0.5 – 7.5)
Medical Illness in caregivers	None	93 (83.03%)
	Hypertension	10 (8.92%)
	Diabetes Mellitus & Hypertension	7 (6.25%)
	Diabetes Mellitus	2 (1.78%)
Current Status of Mental Illness of Patient	Asymptomatic	25 (22.32%)
	Symptomatic	87 (77.67%)
PSQI Score		11.88 ± 3.25 (4 – 20)
Caregivers sleeping in same room with patient		64 (57.14%)

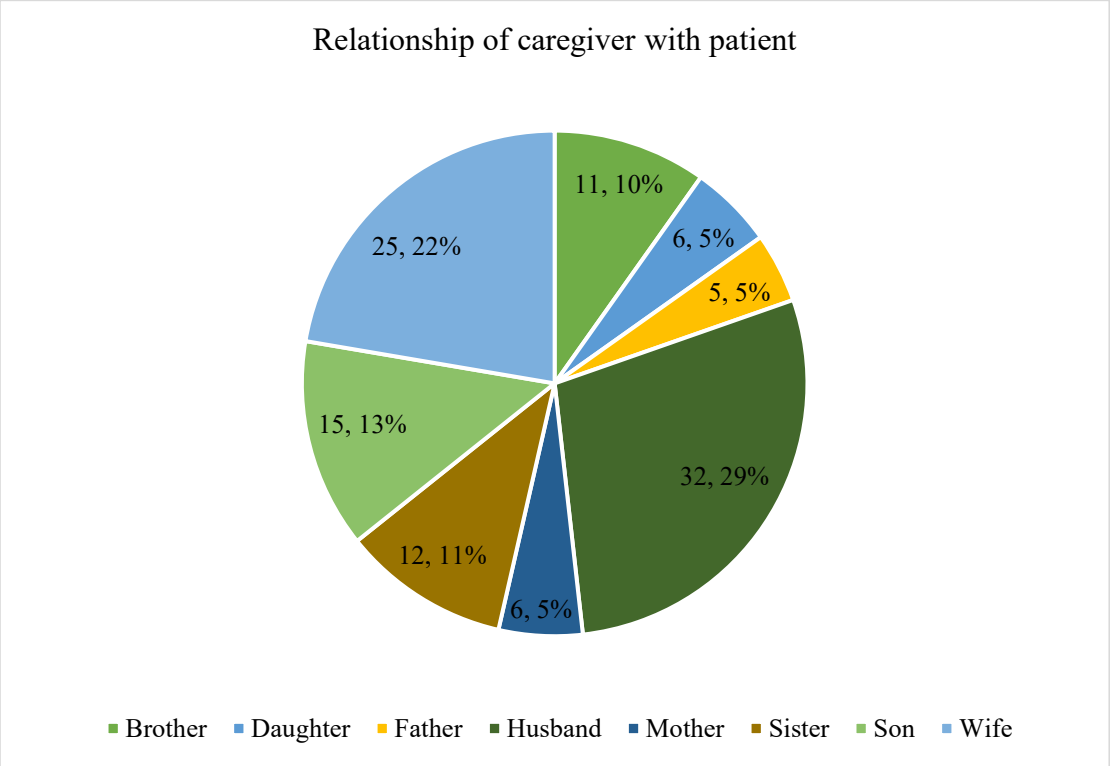

Figure 1: Relationship of caregivers with the patient:

Table 3: Comparing means of PSQI scores with various demographic and phenomenological factors

Parameter (N=112)		**PSQI (Mean ± S.D.)**	**t value, p value**
Gender of caregiver	Male (N=41)	11.76 ± 3.53	0.29, 0.77
	Female (N=71)	11.94 ± 3.09	
Caregiver sleeping in same room with patient	Yes (N=64)	12.08 ± 3.16	0.76, 0.44
	No (N=48)	11.60 ± 3.38	
Current status of mental illness	Asymptomatic (N=25)	10.72 ± 3.53	2.04, 0.04*
	Symptomatic (N=87)	12.21 ± 3.10	
Employment Status of Caregivers	Employed (N=74)	11.77 ± 3.46	0.47, 0.64
	Unemployed (N=38)	12.08 ± 2.81	

DISCUSSION

The present study examined sleep quality among primary caregivers of patients with schizophrenia and its association with sociodemographic, clinical, and caregiving-related variables. Overall, caregivers demonstrated poor sleep quality, with a mean global PSQI score of 11.88. This finding is

consistent with previous research demonstrating impaired sleep quality among caregivers of individuals with schizophrenia-spectrum and other severe mental disorders. [15-18] Fekih-Romdhane et al. reported significantly poorer overall sleep quality and poorer sleep duration and efficiency among caregivers of older patients with schizophrenia-spectrum and bipolar disorders compared with non-caregiving controls. [15] Similarly, Smith et al. found that poor sleep was associated with greater distress among caregivers of individuals experiencing early psychosis. [16] Gnanapragasam et al. also reported poor sleep quality among primary caregivers of patients with schizophrenia. [17] Taken together, these findings suggest that sleep disturbance may represent an important and potentially under-recognised aspect of the burden experienced by family caregivers.

Several factors may contribute to poor sleep among caregivers. Continuous caregiving responsibilities, uncertainty regarding the course of illness, concerns about relapse, and disruption of usual daily routines may interfere with restorative sleep. Previous literature has documented substantial caregiver burden and psychological difficulties among family caregivers of patients with schizophrenia. [9,12,14] Such psychological and caregiving demands may interact with sleep-related difficulties, although the cross-sectional nature of the present study prevents determination of the direction or causality of these associations.

A major finding of the present study was that caregivers of patients who were currently symptomatic had significantly poorer sleep quality than caregivers of asymptomatic patients. This finding is consistent with literature demonstrating an association between greater psychiatric symptom burden and increased caregiver burden and psychological difficulties. [9,12] Patients experiencing active symptoms may require closer supervision and greater assistance with daily activities and may have behavioural disturbances, agitation, or impaired judgement. These circumstances may increase caregiver vigilance and psychological distress and may disrupt nighttime routines. Thus, greater patient symptomatology may place additional demands on caregivers and potentially contribute to poorer sleep. However, this association should be interpreted cautiously because of the cross-sectional design of the study. Nevertheless, the finding highlights the importance of effective symptom management, which may have benefits extending beyond the patient to the well-being of family caregivers.

No statistically significant association was observed between caregiver gender and sleep quality, although female caregivers had slightly higher mean PSQI scores than male caregivers. This finding differs from some literature suggesting that female caregivers may experience greater caregiving and psychological burden. [19] Caqueo-Urízar et al. highlighted the substantial impact of caregiving on quality of life among family members of patients with schizophrenia, with caregiving responsibilities representing an important source of psychosocial burden. [22] However, evidence specifically demonstrating a consistent gender difference in caregiver sleep quality appears less conclusive. The lack of a statistically significant association in the present study may reflect the relatively modest sample size, differences in caregiving roles, or sociocultural characteristics of the study population. Larger studies examining gender together with caregiving intensity and psychological variables may provide greater clarity.

Similarly, no significant association was found between sleep quality and whether the caregiver shared the same room with the patient. Caregivers who slept in the same room had slightly higher PSQI scores than those who did not, although the difference did not reach statistical significance. Greater proximity to a patient could theoretically increase exposure to nighttime disturbances or the need for vigilance, particularly when patients have active psychiatric symptoms. However, room-sharing alone may not

adequately capture the complexity of caregiving-related sleep disruption. Factors such as symptom severity, frequency of nighttime disturbances, duration of caregiving, caregiver burden, and the nature of the patient's behavioural symptoms may be more important determinants of sleep quality. The absence of a significant association in the present study therefore warrants cautious interpretation rather than suggesting that sleeping arrangements have no influence on caregiver sleep.

Employment status was also not significantly associated with sleep quality, although unemployed caregivers had slightly higher PSQI scores. This finding may reflect the potentially contrasting effects of employment on caregiver well-being. Employment may provide financial resources, social interaction, and opportunities to engage in activities outside the caregiving role, but may also introduce work–family conflict and additional role demands. Conversely, unemployed caregivers may have greater involvement in direct caregiving and fewer opportunities for respite, while potentially experiencing greater financial dependence or stress. These competing influences may partly explain the absence of a statistically significant association between employment status and sleep quality.

The findings have important clinical implications. Caregivers constitute an integral component of the long-term management of schizophrenia, and their own health and well-being may influence their ability to sustain caregiving responsibilities. Previous research has emphasised the substantial burden and psychological difficulties experienced by family caregivers of individuals with schizophrenia. [9,12,14]

Routine assessment of caregiver sleep quality and psychological distress during psychiatric consultations may facilitate early identification of caregivers who require additional support. Psychoeducation, caregiver-support programmes, stress-management interventions, counselling, and family-centred psychosocial interventions may be incorporated into comprehensive schizophrenia care. Particular attention may be warranted for caregivers of patients with active symptoms, given the significantly poorer sleep quality observed in this subgroup in the present study.

Overall, the present study indicates that poor sleep quality is common among primary caregivers of patients with schizophrenia and that caregiver sleep quality is significantly associated with the patient's current symptomatic status. These findings support a holistic approach to schizophrenia care that considers not only the clinical needs of the patient but also the sleep, psychological well-being, and broader needs of family caregivers.

Limitations

The present study has several limitations. First, it was conducted at a single tertiary care centre, which may limit the generalisability of the findings. Second, sleep quality was assessed using a self-report instrument, which may be subject to recall and reporting bias. Third, important psychosocial variables such as caregiver burden, anxiety, depression, social support, and coping strategies were not evaluated. Finally, the cross-sectional design precludes conclusions regarding causality. Future studies should consider multicentre designs with larger sample sizes, longitudinal follow-up, objective measures of sleep (e.g., actigraphy or polysomnography), and comprehensive assessment of caregiver burden, psychological distress, coping, and social support.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: None

Source of Funding: No funding received

Conflicts of Interest: Authors declare no conflict of interest

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How to cite this article: Gadgile P, Balakrishnan M, Prajapati N, Sengupta A, Mahajan P, Karia S. A study on sleep quality amongst primary caregivers of patients with schizophrenia. *Int. J. Sci. Healthc. Res.* 2026; 11(3): 189-197. DOI: *https://doi.org/10.52403/ijshr.20260322*

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