

## Original research article

### A study on quality of sleep among primary caretakers of patients admitted in a tertiary care centre in south india

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#### Abstract

**Introduction:** The caregiving landscape in India involves millions providing long-term care, but many face chronic stress, impacting their sleep quality and, consequently, their overall health. Globally, poor sleep quality poses significant health risks, influencing outcomes like mental disorders, heart disease, and metabolic issues. Examining the sleep quality of caregivers in a tertiary health care center becomes crucial, given their stress levels and challenging responsibilities. Understanding their sleep patterns and difficulties becomes a vital stress assessment, considering the potential health risks associated with inadequate sleep. This study aims not only to evaluate caregivers' sleep quality but also to raise awareness about the health implications of poor sleep, paving the way for interventions to enhance sleep quality among caregivers. Ultimately, it contributes to public health by emphasizing the significance of quality sleep and advocating for better sleep practices among caregivers.

**Objectives:** The study aims to assess the quality of sleep and the factors influencing it among primary caretaker of patients admitted to a tertiary healthcare center in South India.

**Methods and Material:** Hospital-based Cross-sectional study was conducted among **398** caretakers of the patients admitted in Dr. Somervell Memorial CSI Mission Medical College, Karakonam from August 1st to October 1st 2023. Predesigned Interviewer-administered semi-structured questionnaire was used to get relevant information. Data was entered in Epidata v3.1. And analysis was carried out in SPSS v26.0.

**Results:** Most admissions ranged a day to over a month, emphasizing the diverse duration of caregiving responsibilities. Approximately 56.3% of caretakers responded that they experienced notable sleep disturbance following patient admission, with a primary contributor being a change in the hospital environment (51.8%). Majority of the caretakers (72.1%) spent both day and night caring for patients and 69.1% dedicated a full 24 hours, indicating sole family responsibility. Shift-based caregiving (20%) and altered sleep patterns were reported, as 57% felt tired upon waking, and 59.8% experienced daytime sleepiness post-admission. Despite challenges, 78.6% perceived adequate family support. Health-related insights revealed 31.7% of patients had chronic diseases, and 33.2% of caretakers reported work hour disruptions. Overall, 66.3% of caretakers had poor sleep quality as per the PSQI Scale, with statistical significance linked to chronic illness (OR 1.74) and inadequate family support (OR 3.15).

**Conclusions:** These outcomes underscore the profound impact of care giving responsibilities on the sleep patterns, daily functioning, and overall well-being of caretakers. The findings shed light on the multifaceted challenges faced by caretakers, highlighting the need for comprehensive support systems to address the physical and emotional demands associated with their vital role in patient care.

**Key words:** Bystander's fatigue, Quality of Sleep, Caretakers Fatigue

## Introduction

Sleep is a vital period of rest for both body and mind, characterized by the partial or complete suspension of consciousness and bodily functions. (1) A sleep cycle typically lasts about 90 minutes, encompassing five stages, with the initial four constituting non-rapid eye movement (NREM) sleep and the fifth stage featuring deep sleep. NREM sleep comprises 75 to 80% of total sleep time, while the remaining 20 to 25% is dedicated to rapid eye movement (REM) sleep. (2)

Ensuring healthy sleep is crucial for physical and mental well-being, enhancing productivity and overall quality of life. Poor sleep quality and quantity may be associated with various lifestyle, behavioral, environmental and psychological factors. (3) Taking care of a sick person in the family as a caretaker is a crucial role of any family member in Indian context.

The role of patient caretakers is integral to healthcare, providing crucial support to individuals undergoing medical treatment. However, the demanding nature of caregiving often exacts a toll on the caretakers' own well-being, with a specific concern being the poor quality of sleep they frequently experience. This study aims to shed light on the underexplored issue of sleep quality among patient caretakers, recognizing the potential implications for both the caretakers' health and the quality of care provided.

Caretakers, facing the challenges of prolonged vigilance, erratic schedules and emotional strain are susceptible to sleep disturbances that can adversely affect their overall health. Understanding the factors contributing to poor sleep quality among this population is essential for devising targeted interventions to enhance their well-being. Furthermore, the repercussions of caretakers' sleep deficits on patient care and caregiver-patient dynamics warrant careful examination.

By delving into the intricacies of sleep patterns, stressors, and coping mechanisms among patient caretakers, this study seeks to contribute valuable insights to the broader discourse on caregiver health. Ultimately, addressing the issue of poor sleep quality among caretakers holds the potential to improve the overall caregiving experience,

fostering a more sustainable and supportive healthcare ecosystem.

## Objectives

Primary objective:

- To assess the quality of sleep among primary care taker of patients admitted to a tertiary healthcare centre in South India

Secondary objective:

- To determine the factors influencing sleep quality among the subjects in a tertiary healthcare centre in South India.

## Material and methods

This hospital based cross-sectional study was conducted in the tertiary care teaching hospital of Dr Somervell Memorial CSI Medical College, Karakonam. The primary caretakers of patients admitted for inpatient care in various departments such as Surgery, Medicine Pediatrics Obstetrics and Gynecology, ENT and Ophthalmology were taken as the study population.

Sample size was calculated as 320 with Prevalence of poor quality of sleep as 72.5% from reference study with 5% absolute precision. (11) Universal sampling was done with the list of all the Patients with at least 24hours stay in the ward admitted during the month of August 2023 was noted down from the patient management system of the institution. As soon as their discharge billing was marked, the primary caretaker was approached on the day of planned discharge and the details about the study was explained using the participant information sheet and willingness was sought. This process was repeated continuously till the desired sample size was achieved. Patients in the wards for observation or daycare procedures along with patients getting discharged against medical advice were excluded. Informed written consent was taken and one-to-one interview using a semi-structured questionnaire was done.

The questionnaire included questions on Socio-demographic variables of the study

participant, Nature of occupation, Sleep related details, Health related details, Questions from Pittsburgh Sleep Quality Index (PSQI). The global PSQI score, ranges from 0 to 21, with higher scores indicating poorer sleep quality. A score of 5 or higher is considered a significant sleep disturbance. Data was entered in Epidata v3.1. Analysis was carried out in SPSS trial version 26.

## Results

Following the analysis of data collected from 398 study participants, the findings are presented in the subsequent sections. The predominant age group among participants was 41-50 years, followed by

those aged 31-40 years. The mean age for the entire group is 43.12, with a standard deviation of 13.369.

Demographically, the majority of participants are female (73.4%), affiliated with the Christian community (60.3%), and reside in rural areas (82.7%). Additionally, the prevalent family structure is nuclear (73.1%), with a significant portion holding high school certificates (33.2%). A considerable proportion of participants are unemployed (40.2%). The monthly income for the majority ranges from Rs7008 and above. Furthermore, a significant portion of participants (45%) reported having four members in their family (Table No 1).

**Table 1:** Distribution of sociodemographic characteristics

Sociodemographic characteristics		Frequency (n=398)	Percentage (%)
Age group	Less than 30	83	20.9
	31-40	99	24.9
	41-50	103	25.9
	51-60	62	15.6
	61-70	46	11.6
	more than 70	5	1.3
Gender	Male	106	26.6
	Female	292	73.4
Religion	Hindu	134	33.7
	Christian	240	60.3
	Muslim	24	6.0
Residence	Rural	329	82.7
	Urban	69	17.3
Type of family	Nuclear	291	73.1
	Joint	91	22.9
	Extended	16	4.0
Educational qualification	Professional/honors	26	6.5
	Graduate/Post graduate	77	19.3
	Intermediate/Post high-school diploma	75	18.8
	High school certificate	132	33.2
	Middle school certificate	54	13.6

	Primary school certificate	28	7.0
	Illiterate	6	1.5
Occupation	Professional	33	8.3
	Semi-professional	51	12.8
	Clerical/Shop owner/Farmer	32	8.0
	Semi-skilled worker	49	12.3
	Unskilled worker	73	18.3
	Unemployed	160	40.2
	Per capita monthly income (modified BG prasad)	7008 and above (Class I)	177
3504-7007 (Class II)		68	17.1
2102-3503 (Class III)		52	13.1
1051-2101 (Class IV)		62	15.6
below 1050 (Class V)		39	9.8
Name of the department admitted in	Surgery	90	22.6
	ENT	10	2.5
	Medicine	203	51.0
	Ophthalmology	23	5.8
	Pediatrics	68	17.1
	Gynecology	4	1.0

Figure 1 No of days of admission

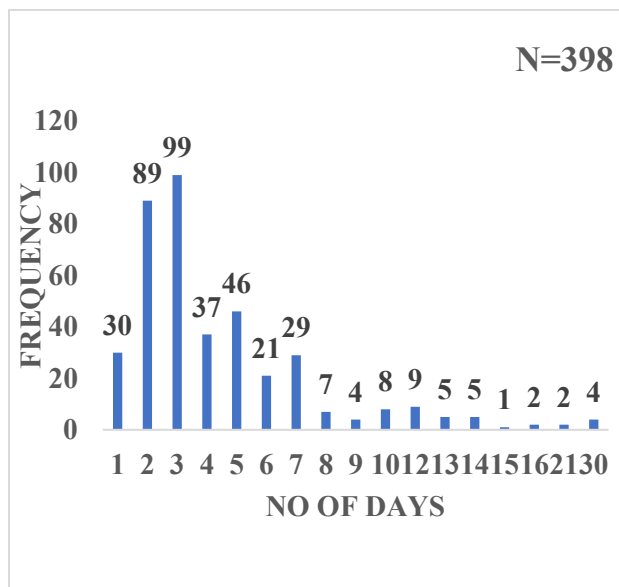
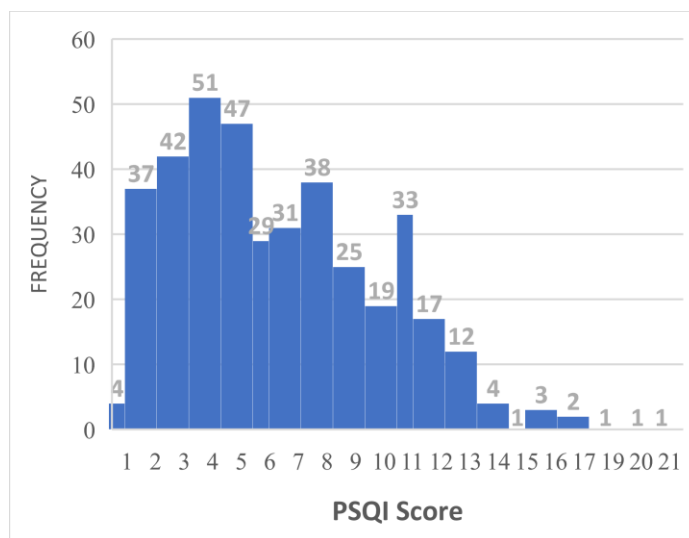


Figure 2: the Pittsburgh Sleep Quality Index score of the study participants (N=398)



It was observed that 66.3% of the patient caretakers had poor quality of sleep (95% CI 61.4% to 70.9%).

Most of the admissions lasted for 3 days and there were patients who were admitted in upwards up to a month (Figure 1).

A significant portion of caretakers, approximately 56.3%, reported experiencing notable sleep disturbance following the hospital admission of the patients they were caring for. The primary factor contributing to disrupted sleep was identified as a change in the environment, affecting 51.8% of the study participants. A considerable majority, accounting for 72.1% of caretakers, spent both day and night with the patients they were caring for, and 69.1% dedicated a full 24 hours to the patient's care during hospitalization, signifying that they were the sole family members providing care.

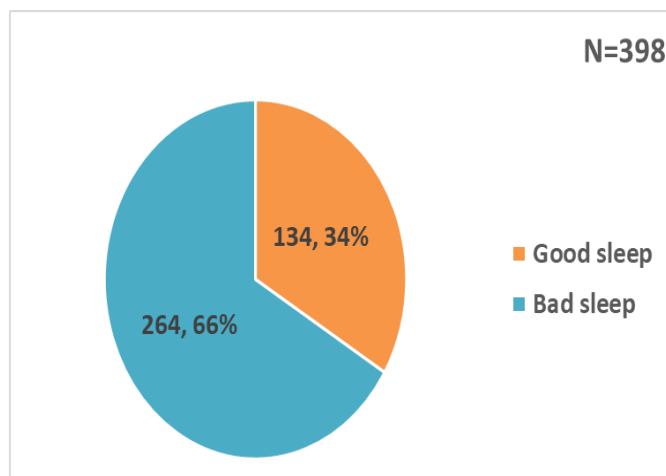
Approximately 20% of caretakers adopted a shift-based caregiving approach, sharing responsibilities with other family members during both day and night. Prior to the patient's hospital admission, a majority of study participants, 68.8%, reported sleeping for 6 to 8 hours. However, after the admission, 57% of participants indicated feeling tired upon waking, and a substantial 59.8% experienced daytime sleepiness.

Furthermore, findings indicated that a majority of caretakers, constituting 78.6%,

perceived having adequate family support in caring for the patient during their absence. Health-related observations revealed that 31.7% of patients had some form of chronic disease. Additionally, 33.2% of caretakers reported that their working hours were affected due to their responsibilities in caring for the patient.

On doing a bivariate analysis, presence of any chronic illness in the care taker (OR 1.74; 95% CI 1.1 to 2.8) and inadequate family support (OR 3.15; 95% CI 1.7 to 5.8) were found to have statistically significant influence on the quality of sleep among the study participants Table no 2). In addition, change in the environment had the maximum statistically significant influence on the quality of sleep (OR 3.25; 95% CI 2.1 to 5).

**Figure 3: the overall rate of the sleep quality of the study participants.**



**TABLE 2: Bivariate analysis for factors associated with poor quality of sleep in patient caretakers (N=398)**

FACTORS		GOOD SLEEP	POOR SLEEP	ODDS RATIO (95% CI)	P VALUE
Age	Upto 50 years	101 (35.4%)	184 (64.6%)	1.331 (0.830-0.135)	0.235
	More than 50 years	33 (29.2%)	80 (70.8%)		
Gender	Male	36 (34.0%)	70 (66.0%)	1.018 (0.637-1.628)	0.940
	Female	98 (33.6%)	194 (66.4%)		

Education	Any graduate or diploma degree	66 (37.1%)	112 (62.9%)	1.317 (0.868-2.000)	0.195
	Up to high school	68 (30.9%)	152 (69.1%)		
SES	Upper class	88 (35.9%)	157 (64.1%)	1.304 (0.846-2.010)	0.229
	Middle or lower class	46 (30.1%)	107 (69.9%)		
Family size	More than 5	29 (39.2%)	45 (60.8%)	1.344 (0.798-2.264)	0.265
	Up to 5	105 (32.4%)	219 (67.6%)		
Change in environment affecting sleep?	Yes	90 (46.9%)	102 ( <b>53.1%</b> )	<b>3.249</b> (2.098-5.031)	<b>0.001</b>
	No	44 (21.4%)	162 ( <b>78.6%</b> )		
Timings of taking care	Only day	26 (40.0%)	39 (60.0%)	1.389 (0.804-2.399)	0.238
	Night or both day and night	108 (32.4%)	225 (67.6%)		
Chronic illness	Absent	102 (37.5%)	170 ( <b>62.5%</b> )	<b>1.763</b> (1.101-2.821)	<b>0.017</b>
	Present	32 (25.4%)	94 ( <b>74.6%</b> )		
Care taker is Employed?	Yes	69 (34.0%)	134 (66.0%)	1.030 (0.679-1.561)	0.890
	No	65 (33.3%)	130 (66.7%)		
Adequate family support?	Yes	120 (38.3%)	193 ( <b>61.7%</b> )	<b>3.153</b> (1.702-5.843)	<b>0.001</b>
	No	14 (16.5%)	71 ( <b>83.5%</b> )		

## Discussion

The findings of our study highlight the significant sleep disturbances experienced by caretakers of patients admitted to tertiary care centers in India. The complex interplay of caregiving responsibilities, environmental changes, and the impact on sleep quality necessitates a thorough examination of the factors contributing to this issue. One notable aspect of our study was the varying duration of patient admissions, ranging from 3 days to over a month. This variability

emphasizes the dynamic nature of caregiving responsibilities, with caretakers facing different challenges depending on the length of the hospital stay. A majority of caretakers dedicated a substantial amount of time, with 72.1% providing round-the-clock care and 69.1% being the sole family members involved. The intensity of caregiving, coupled with the prolonged admissions, can significantly impact the caretakers' sleep patterns and overall well-being.



Approximately One third of caretakers adopted a shift-based caregiving approach, potentially reflecting a coping strategy to distribute the burden among family members. Despite this, the majority reported a significant decline in sleep duration after the patient's admission. The shift-based approach might alleviate the sleep burden to some extent, but the overall impact on sleep quality remains a concern.

A striking revelation was that 51.8% of caretakers attributed their sleep disturbance to changes in the hospital environment. This underscores the need for interventions that address the psychological impact of a new and unfamiliar setting on caretakers. Hospital policies promoting a more supportive environment for caretakers, such as comfortable resting areas or psychological support services, could potentially mitigate the negative effects on sleep.

The prevalence of poor quality of sleep being 66.3% in our study is comparable to other study results even in other countries. For instance, the prevalence of poor sleepers was 72.5% in the study done by Albinsela et al. (11)

Our bivariate analysis revealed that the presence of chronic illness in caretakers and inadequate family support significantly influenced sleep quality. This findings were in line with the findings of the study by Peurte et al. (12) Chronic illness adds an additional layer of stress, both physically and emotionally, impacting sleep. The pivotal role of family support cannot be overstated, emphasizing the importance of holistic family-centered care. Interventions targeting family dynamics and providing support mechanisms may prove instrumental in enhancing the sleep quality of caretakers. (13)

This study was designed to include all the patients admitted for more than 24hours irrespective of their duration of admission in the hospital which might affect the results.

The study findings suggest the need for tailored interventions to address the multifaceted challenges faced by caretakers. Hospital policies should integrate comprehensive family support programs, recognizing the integral role caretakers play in the patient's recovery. Initiatives such as respite care, counseling services, and dedicated resting areas for caretakers could be considered. Additionally, healthcare providers should be

sensitized to recognize signs of sleep disturbances in caretakers and offer appropriate support. (14,15)

While our study provides valuable insights, certain limitations need consideration. The cross-sectional design restricts causal inferences, and the study is confined to a specific tertiary care center. Future research could explore the effectiveness of targeted interventions and longitudinal studies to assess the long-term impact on sleep quality among caretakers.

## Conclusions

This study has identified poor family support, change in environment with lack of facilities for rest and chronic illness as significant risk factor for poor quality of sleep among the patient caretakers. 66.3% of the patient caretakers having poor quality of sleep is an indicator that a holistic approach encompassing family support, environmental considerations, and targeted interventions is urgently required. By acknowledging and addressing the unique needs of caretakers, healthcare systems can foster an environment that promotes the well-being of both patients and their dedicated caretakers.

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**Conflicts of Interest:** Nil

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