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A Study on Anxiety, Depression, and Sleep in Caregivers of ICU Patients

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ABSTRACT

Background: Caregivers of ICU patients often experience significant psychological distress, including anxiety, depression, and sleep disturbances, which can impair their health and caregiving capacity. This study aimed to assess these symptoms in caregivers during the early phase of an ICU admission.

Methods: This prospective study enrolled 100 caregivers (aged ≥18 years) of adult ICU patients in a tertiary care centre in Andhra Pradesh, India, over 3 months. The study protocol was approved by the Institutional Ethics Committee of the tertiary care centre (IEC Approval No. 2023/05/01). Participants were assessed with the Hamilton Anxiety Rating Scale (HAM-A), Hamilton Depression Rating Scale (HAM-D), and Pittsburgh Sleep Quality Index (PSQI) on days 1, 4, and 7 of the ICU stay. Sociodemographic data were collected via a structured questionnaire. Data were analyzed using SPSS version 25, with categorical variables summarized as frequencies and percentages. Associations were tested using the Chi-square test ($p < 0.05$ considered significant).

Results: At baseline (day 1), 38% of caregivers reported anxiety symptoms (mild: 27%, moderate: 9%, severe: 2%), rising to 52% by day 7. Depression symptoms affected 28% initially (mild: 26%, moderate: 2%), increasing to 37% by day 7. Poor sleep quality was prevalent in 71% at day 1, worsening slightly to 76% by day 7. No significant Sociodemographic associations were found with symptom changes.

Conclusion: Anxiety, depression, and poor sleep are highly prevalent among ICU caregivers and escalate over the first week. Targeted interventions are needed to support caregiver mental health.

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Introduction

Caring for a loved one admitted to the ICU often leads to significant emotional stress for family caregivers. While the link between caregiving-related psychological stress and poor physical health—including increased risk of early death—is well established in caregivers of chronically ill patients, there is comparatively limited understanding of its effects on those caring for ICU patients [1]. During an ICU stay, caregivers frequently prioritize the patient's needs over their own, which may negatively impact their health and reduce their ability to provide effective support [2].

Family members often endure intense emotions such as fear, denial, anger, and guilt when confronted with the potential loss of a loved one in the ICU setting. Research has examined both the short- and medium-term effects of ICU admissions on caregivers, consistently indicating that these individuals frequently exhibit symptoms of depression [3]. Family members often experience stress, anxiety, fatigue, and disrupted sleep quality, with these symptoms frequently continuing for several months after the patient's ICU stay [4,5]. One earlier review found that a significant percentage of family members exhibited symptoms of anxiety (70%) and depression (35%).

Following patient admission to the ICU, one of the first ways family members suffer is by losing sleep. Poor sleep has been recognized as a key contributor to both the physical and mental health challenges faced by caregivers. It can lead to altered stress responses, increased irritability, depressive symptoms, reduced focus, weakened immunity, and impaired decision-making abilities. While numerous studies have explored how ICU admission affects patients' sleep, limited research has focused on the sleep quality

of family members during their loved one's ICU stay.

Aims and Objectives

1. To assess levels of anxiety and depression in caregivers of ICU patients.
2. To evaluate sleep patterns in caregivers of ICU patients.

Methodology

Study Design and Setting

This prospective observational study was conducted over 3 months in a tertiary care center in Andhra Pradesh, India, covering medical, surgical, and cardiac ICUs. A total of 100 caregivers were enrolled. The study protocol was approved by the Institutional Ethics Committee of the tertiary care centre (IEC Approval No. 2023/05/01). All procedures adhered to the Declaration of Helsinki, and ethical standards were maintained throughout.

Participants

Inclusion Criteria:

- Caregivers of adult patients admitted to the ICU.
- Aged 18-60 years.
- Provided care for at least 48 hours during the ICU stay.
- Provided written informed consent.

Exclusion Criteria:

- Caregivers with a history of psychiatric illness at the time of admission.
- Caregivers of patients with prior ICU admissions.
- Caregivers with other significant medical illnesses.

Data Collection Tools

1. Sociodemographic Profile: A structured questionnaire captured age, gender, education, residence, family status, and religion, kinship to the patient, cohabitation, and presence of children.
2. Psychiatric Assessment: The Mini International Neuropsychiatric Interview (MINI) screened for anxiety, depressive, and sleep disorders. Severity was rated using:

o Hamilton Anxiety Rating Scale (HAM-A) for anxiety.
o Hamilton Depression Rating Scale (HAM-D) for depression.
o Pittsburgh Sleep Quality Index (PSQI) for sleep quality (score >5 indicates poor quality).

Assessments occurred on days 1, 4, and 7 post-admission.

Statistical Analysis

Data were analyzed using SPSS version 25. Categorical variables were summarized as frequencies and percentages. Changes in symptoms over time were compared using the Chi-square test. Associations between sociodemographic factors and symptom severity were assessed via Chi-square tests. A p-value < 0.05 was deemed statistically significant.

Results

Sociodemographic Characteristics

Table 1: summarizes the Sociodemographic profile of the 100 caregivers.

Variable	n (%)
Age (years)	
16–40	42 (42.0)
40–55	38 (38.0)
≥55	20 (20.0)
Gender	
Male	33 (33.0)
Female	67 (67.0)
Place of Residence	
Urban	54 (54.0)
Rural	46 (46.0)
Family Status	
Married/cohabited	70 (70.0)
Single	17 (17.0)
Widowed	7 (7.0)
Divorced	6 (6.0)
Education	
Primary (≤6 years)	35 (35.0)
Secondary (7–12 years)	45 (45.0)
Higher	20 (20.0)
Religion	
Hindu	56 (56.0)
Muslim	22 (22.0)
Christian	17 (17.0)
Others	5 (5.0)
Kinship to Patient	
1st-degree relative	77 (77.0)
2nd-degree relative	13 (13.0)
3rd-degree relative	10 (10.0)
Lives with Patient	
Yes	45 (45.0)
No	55 (55.0)
Has Children	
Yes	65 (65.0)
No	35 (35.0)

In this study of 100 participants, most were aged 16–40 years (42%) and female (67%). Over half (54%) resided in urban areas, and 70% were married or cohabiting. Secondary education was most common (45%), followed by primary (35%) and higher education (20%). Hindus formed the majority (56%), and most were first-degree relatives (77%). Nearly half (45%) lived with the patient, and 65% had children. Overall, participants were predominantly female, married, urban-based, and first-degree relatives with secondary education.

Psychiatric Symptoms

Anxiety, depression, and sleep quality were tracked longitudinally (Tables 2–4). No significant socio-demographic associations with symptom changes were identified (all $p > 0.05$).

Table 2: Anxiety Severity Levels (HAM-A) Over Time (n=100)

Severity	Day 1 (n=100)	Day 4 (n=100)	Day 7 (n=100)	Chi-square value	P-value
Normal	62 (62.0)	56 (56.0)	48 (48.0)	16.15	0.012
Mild	27 (27.0)	22 (22.0)	18 (18.0)		
Moderate	9 (9.0)	16 (16.0)	23 (23.0)		
Severe	2 (2.0)	6 (6.0)	11 (11.0)		
	38 (38.0)	44 (44.0)	52 (52.0)		

On Day 1, 62% of participants had normal anxiety levels, while 38% showed varying degrees of anxiety. Mild anxiety was seen in 27%, moderate in 9%, and severe in 2%. By Day 4, the proportion of normal cases declined to 56%, with mild, moderate, and severe anxiety increasing to 22%, 16%, and 6%, respectively. On Day 7, normal cases further reduced to 48%, while mild, moderate, and severe anxiety rose to 18%, 23%, and 11%, respectively. Overall, the proportion of participants exhibiting any level of anxiety increased progressively from 38% on Day 1 to 52% on Day 7, indicating a gradual rise in anxiety severity over time.

Table 3: Depression Severity Levels (HAM-D) Over Time (n=100)

Severity	Day 1 (n=100)	Day 4 (n=100)	Day 7 (n=100)	Chi-square value	P-value
Normal	72 (72.0)	67 (67.0)	63 (63.0)	8.64	0.07
Mild	26 (26.0)	24 (24.0)	19 (19.0)		
Moderate	2 (2.0)	7 (7.0)	13 (13.0)		
Severe	0 (0.0)	2 (2.0)	5 (5.0)		
	28 (28.0)	33 (33.0)	37 (37.0)		

On Day 1, 72% of participants had normal levels, while 28% exhibited symptoms ranging from mild to moderate. Mild depression was observed in 26% and moderate in 2%, with no severe cases. By Day 4, normal levels slightly declined to 67%, while mild, moderate, and severe depression increased to 24%, 7%, and 2%, respectively. On Day 7, normal cases further reduced to 63%, with mild, moderate, and severe depression at 19%, 13%, and 5%, respectively. Overall, there was a gradual increase in the proportion and severity of depressive symptoms over time, indicating a progressive rise in depression levels from Day 1 to Day 7.

Table 4: Sleep Quality (PSQI) Over Time (n=100)

Quality	Day 1 (n=100)	Day 4 (n=100)	Day 7 (n=100)	χ^2 value	P- Value
Good	29 (29.0)	25 (25.0)	24 (24.0)	0.72	0.697
Poor	71 (71.0)	75 (75.0)	76 (76.0)		

On Day 1, 29% of participants reported good sleep quality, while 71% had poor sleep. By Day 4, good sleep quality decreased to 25%, and poor sleep increased to 75%. On Day 7, only 24% continued to report good sleep, while 76% experienced poor sleep quality. Overall, there was a gradual decline in good sleep and a corresponding rise in poor sleep over the study period, indicating progressive deterioration in sleep quality from Day 1 to Day 7.

Discussion

The present study titled "A Study on Anxiety, Depression, and Sleep Patterns in Caregivers of ICU Patients" aimed to evaluate the psychological burden and sleep quality among caregivers of critically ill patients in intensive care units.

Sociodemographic Characteristics

In the current study, the majority of caregivers were aged between 16–40 years (42%) and were predominantly female (67%). Most participants were married or cohabiting (70%), resided in urban areas (54%), and had secondary education (45%). Hindus formed the majority (56%), and most caregivers were first-degree relatives (77%), with nearly half (45%) living with the patient and 65% having children. These findings indicate that caregiving responsibilities were largely shouldered by women in their productive and family-centered years — a trend consistent with Indian sociocultural dynamics, where women often assume primary caregiving roles.

Similar demographic patterns were noted in the study by Bolosi et al.6, where females constituted 61.1% of caregivers and the majority were married (79.6%) with secondary education (50.9%). Most participants were between 40 and 64 years old, reflecting the middle-aged group as a major caregiving population. Likewise, Alex Day et al.5 observed that among 94 caregivers, the mean age was 49.1 ± 12.9 years, with a slight male predominance (52.7%). The majority were children (43.6%) or spouses (21.3%) of the patients, further underscoring that caregiving is often a close family responsibility.

Psychological Symptoms

In the current study, caregivers exhibited a progressive increase in anxiety and depressive symptoms over time, accompanied by a steady decline in sleep quality. Anxiety levels showed a significant rise, with normal cases decreasing from 62% on Day 1 to 48% on Day 7 ($p = 0.012$). Depression levels also worsened, as the proportion of normal cases declined from 72% to 63% ($p = 0.07$). Sleep quality deteriorated correspondingly, with the percentage of participants reporting good sleep dropping from 29% on Day 1 to 24% on Day 7 ($p = 0.697$). These findings indicate that as ICU stay lengthens, caregivers experience increasing psychological distress and sleep disruption, likely due to ongoing emotional strain, uncertainty about patient prognosis, and fatigue from prolonged vigilance.

Comparable observations were reported by Alex Day et al.5, where the mean Global Sleep Disturbance Scale (GSDS) score was 38.2 ± 19.3, with 41.9% showing mild and 41.9% moderate impairment, and 16.1% severe impairment. The mean Beck Anxiety Inventory (BAI) score was 12.3 ± 10.2, with most participants experiencing mild anxiety (79.4%) and few with severe symptoms (2.2%). Similarly, Bolosi et al. demonstrated that anxiety and depression scores increased gradually during hospitalization, with mean HAM-A scores rising from 16.03 ± 9.55 on Day 1 to 16.37 ± 8.36 on Day 7, while mean Beck Depression Scale II scores increased from 15.24 ± 4.65 to 17.19 ± 5.20 ($p = 0.000$) [6]. Together, these studies reinforce that ICU caregiving is a major psychosocial stressor, capable of precipitating or exacerbating anxiety, depression, and sleep disturbances.

The emotional toll experienced by caregivers can be attributed to several factors, including continuous exposure to critically ill patients, unpredictable prognoses, financial concerns, sleep deprivation, and the burden of decision-making. The cumulative impact of these stressors not only compromises caregivers' mental health but may also affect their capacity to provide effective support to patients, emphasizing the need for early psychological screening and intervention [7,8].

Conclusion

The present study highlights a significant and progressive increase in anxiety and depression levels among ICU caregivers, along with deteriorating sleep quality over time. These findings underscore the profound psychological burden faced by caregivers during the critical care period. Identifying such distress early and implementing structured psychosocial support and counseling interventions could help mitigate emotional exhaustion and improve caregivers' well-being, which in turn may positively influence patient outcomes.

Limitations

The study has several limitations, including its single-center design, which may limit generalizability, a short seven-day observation period that may not capture long-term psychological effects, reliance on self-reported measures prone to response bias, exclusion of pediatric ICU caregivers, and limited exploration of sociocultural and socioeconomic factors influencing stress.

Recommendations

Based on these findings, it is recommended that ICU caregivers undergo early psychological screening for anxiety, depression, and sleep disturbances, with hospitals providing structured support programs such as counseling, stress management workshops, and peer-support groups. Interventions to improve sleep hygiene, along with a multidisciplinary approach involving intensivists, nurses, psychiatrists, and social workers, are essential. Future research should include extended follow-up periods and consider sociocultural and financial factors to inform context-specific and sustained caregiver support strategies.

Additional Information

Disclosures

Conflicts of interest: In compliance with the ICMJE uniform disclosure form, all authors declare the following:

Financial relationships: All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work.

Other relationships: All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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