

Prevalence of Poor Sleep Quality Among Patients with Chronic Obstructive Pulmonary Disease Admitted to a Tertiary Care Hospital in Gurugram, Haryana: A Descriptive Study

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Abstract

Background

Chronic Obstructive Pulmonary Disease (COPD) is a progressive respiratory disorder that remains one of the leading causes of morbidity and mortality worldwide. Besides respiratory impairment, patients with COPD frequently experience sleep disturbances that adversely affect their physical health, psychological well-being, treatment adherence, and quality of life. Poor sleep quality in COPD is often associated with nocturnal dyspnea, persistent cough, hypoxemia, recurrent awakenings, and medication-related effects. Although sleep disturbance is a common clinical problem among COPD patients, it often receives less attention during routine patient assessment and management. Understanding the extent of sleep impairment is essential for planning appropriate nursing interventions and improving patient outcomes.

Objective

To assess the quality of sleep among patients with chronic obstructive pulmonary disease admitted to a tertiary care hospital in Gurugram, Haryana, and to determine its association with selected sociodemographic variables.

Methods

A quantitative descriptive research design was adopted for the study. A total of **384** patients diagnosed with chronic obstructive pulmonary disease were selected through a non-probability convenience sampling technique from a tertiary care hospital in Gurugram, Haryana. Data were collected using a structured sociodemographic questionnaire and the **Pittsburgh Sleep Quality Index (PSQI)**. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to summarize the findings. Chi-square test was applied to determine the association between sleep quality and selected sociodemographic variables. Statistical significance was considered at $p < 0.05$.

Results

Among the 384 participants, **265 (69%)** demonstrated poor sleep quality, whereas **119 (31%)** reported good sleep quality. The mean PSQI score was 9.64 ± 4.27 , indicating a high burden of sleep impairment among hospitalized COPD patients. A statistically significant association was observed between sleep quality and **gender** ($p = 0.013$) as well as **alcohol consumption** ($p = 0.012$). No significant association was identified between sleep quality and age, educational status, occupation, marital status, religion, residence, smoking status, duration of illness, or frequency of hospital admission.

Conclusion

Poor sleep quality was highly prevalent among patients with chronic obstructive pulmonary disease admitted to a tertiary care hospital. The findings highlight the importance of incorporating routine sleep assessment into respiratory nursing practice. Early identification of sleep disturbances and implementation of evidence-based nursing interventions may improve clinical outcomes, patient comfort, and overall quality of life among individuals living with COPD.

Keywords

Chronic Obstructive Pulmonary Disease; Sleep Quality; Pittsburgh Sleep Quality Index; Descriptive Study; Respiratory Nursing; Hospitalized Patients; Quality of Life.

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1. Introduction

Chronic Obstructive Pulmonary Disease (COPD) is a chronic, progressive respiratory disorder characterized by persistent airflow limitation that is not fully reversible. It is a major public health concern and one of the leading causes of morbidity, disability, and mortality across the globe. The disease is primarily associated with long-term exposure to harmful particles and gases, particularly tobacco smoke, although occupational hazards, environmental pollution, and biomass fuel exposure also contribute significantly to its development. Patients with COPD commonly experience chronic cough, sputum production, wheezing, chest tightness, and progressive breathlessness, all of which substantially impair daily functioning and health-related quality of life.

The global burden of COPD continues to increase due to population ageing, ongoing tobacco use, and environmental risk factors. According to the World Health Organization, COPD is among the leading causes of death worldwide and is responsible for millions of deaths annually. In India, COPD represents a significant healthcare challenge because of high smoking prevalence, household air pollution, occupational dust exposure, and delayed diagnosis. The increasing number of hospital admissions due to acute exacerbations further contributes to the economic and social burden of the disease.

Sleep is a fundamental biological process that plays a vital role in maintaining physical health, cognitive performance, emotional stability, immune function, and metabolic regulation. Adequate sleep is essential for tissue repair, restoration of energy, and overall physiological balance. However, patients with chronic respiratory diseases frequently experience disturbances in sleep architecture that negatively affect their recovery and daily functioning.

Sleep-related problems are particularly common among individuals with COPD. Nocturnal breathlessness, chronic cough, excessive mucus production, airway obstruction, oxygen desaturation during sleep, and anxiety related to respiratory symptoms frequently disrupt normal sleep patterns. Many patients experience difficulty initiating sleep, repeated awakenings during the night, early morning awakening, and excessive daytime sleepiness. These disturbances often result in persistent fatigue, impaired concentration, reduced physical activity, mood disorders, decreased treatment adherence, and deterioration in quality of life.

Several international studies have reported that between 50% and 80% of individuals with COPD experience clinically significant sleep disturbances. Previous research has demonstrated that poor sleep quality is associated with increased frequency of disease exacerbations, prolonged hospitalization, impaired pulmonary function, depression, anxiety,

and increased healthcare utilization. Despite these findings, sleep assessment is not routinely incorporated into standard respiratory care protocols, particularly in many developing countries.

Nurses play a crucial role in the comprehensive management of COPD patients. As healthcare professionals who maintain continuous contact with hospitalized patients, nurses are ideally positioned to identify sleep-related problems, provide sleep hygiene education, encourage breathing exercises, minimize environmental disturbances, and implement individualized nursing interventions aimed at improving sleep quality. Early recognition of sleep impairment may contribute to better symptom management, improved patient satisfaction, enhanced quality of life, and reduced healthcare costs.

Although several studies have investigated sleep quality among COPD patients internationally, evidence from Northern India remains limited, particularly among hospitalized individuals. Understanding the magnitude of sleep disturbances and identifying associated demographic factors may assist healthcare professionals in planning targeted interventions and developing evidence-based nursing care strategies. Therefore, the present study was undertaken to assess the quality of sleep among patients with chronic obstructive pulmonary disease admitted to a tertiary care hospital in Gurugram, Haryana, and to determine its association with selected sociodemographic variables.

2. Theoretical Framework

The conceptual framework for the present study was based on **Dorothea Orem's Self-Care Deficit Nursing Theory**. Orem's theory explains that individuals have the ability and responsibility to perform activities necessary for maintaining life, health, and well-being. When an individual's ability to meet these self-care requirements is reduced because of illness or functional limitations, a self-care deficit may develop and nursing support becomes necessary.

In the present study, this framework was applied to understand sleep quality among patients with **Chronic Obstructive Pulmonary Disease (COPD)**. COPD is associated with symptoms such as breathlessness, cough, fatigue and disturbed sleep, which may interfere with the patient's ability to maintain adequate rest and participate effectively in self-care activities. Therefore, sleep was considered an important component of the patient's self-care needs.

Application of Orem's Theory to the Present Study

2.1 Basic Conditioning Factors

Orem identifies basic conditioning factors as characteristics that can influence an individual's self-care ability. In this study, these factors included **age, gender, marital status, educational status, occupation, type of family, place of residence, religion, smoking status, alcohol consumption, duration of COPD, and frequency of hospital admission.**

These characteristics were considered because they may influence the patient's health behaviour, self-care practices and ability to maintain adequate sleep.

2.2 Self-Care Requisites

Self-care requisites represent the requirements that individuals need to fulfil to maintain health and well-being. For patients with COPD, these include maintaining adequate oxygenation, balancing activity and rest, obtaining sufficient sleep and rest, maintaining adequate nutrition, conserving energy, preventing complications, and following the prescribed treatment regimen.

Within the framework of the present study, **adequate sleep and rest were considered an important universal self-care requisite.**

2.3 Self-Care Agency

Self-care agency refers to the individual's ability to perform activities required to maintain health. In patients with COPD, symptoms such as dyspnea, fatigue, anxiety and sleep disturbance may interfere with this ability. Reduced physical capacity and persistent respiratory symptoms may make it difficult for patients to maintain appropriate rest, sleep and other health-related activities.

2.4 Self-Care Deficit

A self-care deficit occurs when an individual's self-care agency is insufficient to meet the required self-care requisites. In the present study, **poor sleep quality was considered an indication that the patient may be experiencing difficulty in meeting the self-care requirement of adequate sleep and rest.** Persistent sleep disturbance may subsequently contribute to fatigue, impaired daytime functioning and reduced quality of life.

2.5 Nursing Agency

According to Orem, nursing agency refers to the nurse's ability to identify self-care deficits and provide appropriate assistance. The nursing

systems described by Orem—**wholly compensatory, partly compensatory and supportive-educative systems**—provide a basis for determining the level of nursing support required by the patient.

For COPD patients experiencing sleep-related difficulties, the nurse may provide direct assistance when required, share responsibility for self-care with the patient, or provide education and guidance to strengthen the patient's ability to manage self-care independently.

2.6 Nursing Interventions

Based on the identified self-care needs, nursing interventions may include assessment of sleep quality and factors affecting sleep, sleep-hygiene education, breathing and relaxation exercises, energy-conservation strategies, appropriate medication management, and counselling regarding smoking and alcohol consumption. Emotional support and involvement of family members may also assist patients in maintaining healthy self-care practices.

2.7 Outcome

The primary outcome variable in the present study was **quality of sleep**, assessed using the standardized **Pittsburgh Sleep Quality Index (PSQI)**. Assessment of sleep quality enables nurses to identify patients experiencing sleep difficulties and recognize areas requiring additional support.

The conceptual pathway therefore proposes that the patient's conditioning factors and self-care agency influence the ability to meet self-care requisites. When the self-care agency is insufficient, a self-care deficit may occur. Appropriate nursing agency and supportive interventions can help address these deficits and promote better sleep, improved daily functioning and enhanced self-care.

3. Materials and Methods

3.1 Study Design

The present study employed a **quantitative descriptive research design** to assess the quality of sleep among patients diagnosed with chronic obstructive pulmonary disease admitted to a tertiary care hospital.

3.2 Study Setting

The research was conducted in a tertiary care hospital located in Gurugram, Haryana, India.

3.3 Study Population

The study population comprised adult patients diagnosed with chronic obstructive pulmonary

disease who were admitted to the selected tertiary care hospital during the data collection period.

3.4 Sample Size and Sampling Technique

A total of **384** participants fulfilling the eligibility criteria were included in the study. Participants were selected using a **non-probability convenience sampling technique**. The sample size was determined prior to the commencement of data collection in accordance with the objectives of the study.

3.5 Inclusion Criteria

- Patients diagnosed with chronic obstructive pulmonary disease.
- Patients admitted to the selected tertiary care hospital.
- Patients who were able to understand the study questions and provide informed consent.
- Patients willing to participate in the study.

3.6 Exclusion Criteria

- Critically ill patients unable to respond to the questionnaire.
- Patients with diagnosed psychiatric disorders or cognitive impairment affecting communication.
- Patients unwilling to participate.

3.5 Data Collection Instruments

Data were collected using two standardized tools:

Section I: Structured sociodemographic questionnaire containing variables such as age, gender, marital status, education, occupation, religion, place of residence, smoking status, alcohol consumption, duration of illness, and frequency of hospital admission.

Section II: Pittsburgh Sleep Quality Index (PSQI), a validated self-report instrument consisting of seven components that assess subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. The global PSQI score ranges from 0 to 21, with scores greater than 5 indicating poor sleep quality.

3.6 Validity and Reliability

Content validity of the research instruments was established through expert evaluation by specialists in medical-surgical nursing and research methodology. Reliability testing demonstrated acceptable internal consistency, indicating that the instrument was suitable for data collection.

3.7 Ethical Considerations

Ethical approval was obtained from the Institutional Ethics Committee before initiation of the study. Administrative permission was secured from the hospital authorities. Written informed consent was obtained from every participant prior to data collection. Confidentiality, anonymity, and privacy of participants were maintained throughout the research process.

3.8 Statistical Analysis

The collected data were coded and analyzed using appropriate statistical software. Descriptive statistics, including frequencies, percentages, means, standard deviations, medians, and ranges, were used to summarize participant characteristics and sleep quality scores. Inferential statistics using the Chi-square test were applied to examine the association between sleep quality and selected sociodemographic variables. A **p-value < 0.05** was considered statistically significant.

4. Results

A total of **384 patients** diagnosed with Chronic Obstructive Pulmonary Disease (COPD) participated in the present study. The collected data were analyzed according to the objectives of the study using descriptive and inferential statistics. The findings are presented under the following sections.

4.1 Sociodemographic Characteristics of Participants

The study population primarily consisted of older adults. More than two-thirds of the participants (69.27%) were above 50 years of age, indicating that COPD was predominantly observed among the elderly population. Male participants constituted the overwhelming majority (96.09%), whereas females accounted for only 3.91%, reflecting the higher prevalence of COPD among males in the study setting.

Regarding marital status, most participants were married (75.52%), while the remaining participants were unmarried, widowed, or divorced. Educational status revealed that a considerable proportion of participants had only primary or secondary education, whereas relatively few had attained higher education. Most participants belonged to rural areas (74.74%), emphasizing the burden of COPD in rural communities where exposure to biomass fuel, tobacco smoking, and occupational dust is comparatively higher.

With respect to lifestyle-related variables, **91.15%** of participants reported a history of smoking, while **92.45%** reported alcohol consumption. Nearly half of the participants (45.57%) had been living with COPD for approximately four years, and three-fourths (75.52%) had experienced repeated hospital admissions because of disease exacerbations.

These findings suggest that COPD in the present study was predominantly observed among older rural males with a history of smoking and repeated hospitalizations.

Objective 1: Assessment of Sleep Quality Among COPD Patients

Sleep quality was assessed using the **Pittsburgh Sleep Quality Index (PSQI)**.

Table 1. Distribution of Participants According to Sleep Quality (N = 384)

Sleep Quality	Frequency (n)	Percentage (%)
Good sleep quality (PSQI <5)	119	31.0
Poor sleep quality (PSQI ≥5)	265	69.0

The findings demonstrated that **265 participants (69%)** had poor sleep quality, whereas only **119 participants (31%)** reported good sleep quality. These findings clearly indicate that sleep disturbances were highly prevalent among hospitalized COPD patients.

Table 2. Descriptive Statistics of PSQI Scores (N = 384)

Variable	Mean	SD	Median	Minimum	Maximum	Range
PSQI Score	9.64	4.27	12	3	17	14

The mean PSQI score was **9.64 ± 4.27**, with a median score of **12**. Scores ranged from **3 to 17**, indicating wide variation in sleep quality among the participants. Overall, the findings suggest that the study population experienced clinically significant sleep impairment.

Objective 2: Association Between Sleep Quality and Selected Sociodemographic Variables

The association between sleep quality and selected sociodemographic variables was examined using the Chi-square test.

A statistically significant association was observed between **gender** and sleep quality ($\chi^2 = 6.14, p = 0.013$), indicating that sleep quality differed significantly between male and female participants. Similarly, a significant association was found between **alcohol consumption** and sleep quality ($\chi^2 = 6.30, p = 0.012$), suggesting that alcohol intake may have influenced sleep quality among patients with COPD.

However, no statistically significant association was identified between sleep quality and age, marital status, educational level, occupation, religion, place of residence, smoking status, duration of illness, or frequency of hospital admission ($p > 0.05$).

These findings indicate that although poor sleep quality was highly prevalent among COPD patients, only gender and alcohol consumption demonstrated statistically significant relationships with sleep quality in the present study.

5. Discussion

The present study was undertaken to assess sleep quality among patients with chronic obstructive pulmonary disease admitted to a tertiary care hospital in Gurugram, Haryana. The findings demonstrated that poor sleep quality was highly prevalent among the study participants, with **69%** reporting poor sleep quality according to the

Pittsburgh Sleep Quality Index. The mean PSQI score of **9.64 ± 4.27** further confirms that sleep impairment was a common clinical problem in this population.

The high prevalence of poor sleep quality observed in the present study is consistent with previous research conducted in different countries. Budhiraja et al. reported that sleep disturbances are frequently encountered in patients with COPD because of nocturnal hypoxemia, airflow limitation, and persistent respiratory symptoms. Similarly, Chang et al. identified nocturnal dyspnea, chronic cough, anxiety, and reduced pulmonary function as important contributors to impaired sleep quality among COPD patients.

The findings are also comparable with those reported by Clímaco et al., who observed that patients with COPD having higher PSQI scores experienced poorer health status and greater disease severity. Likewise, Nunes et al. demonstrated that poor sleep quality was associated with reduced quality of life and impaired daytime functioning among individuals living with COPD.

Several physiological mechanisms may explain the high prevalence of sleep disturbance observed in the present study. During sleep, especially rapid eye movement (REM) sleep, respiratory muscle activity decreases, resulting in reduced ventilation and oxygen desaturation. In COPD patients, these physiological changes are further aggravated by chronic airflow obstruction, leading to frequent nocturnal awakenings, fragmented sleep, and reduced sleep efficiency. Persistent cough, excessive sputum production, wheezing, and nocturnal breathlessness further contribute to disturbed sleep architecture.

Hospitalization itself may also influence sleep quality. Environmental noise, continuous monitoring, frequent nursing interventions during the night, unfamiliar surroundings, and anxiety regarding illness may collectively reduce sleep duration and sleep efficiency. Consequently, hospitalized COPD patients are particularly vulnerable to poor sleep quality.

The present study identified significant associations between sleep quality and **gender** as well as **alcohol consumption**. These findings suggest that biological differences, behavioural factors, and lifestyle habits may influence sleep quality among COPD patients. Alcohol consumption may initially promote sleep onset but subsequently disrupt sleep architecture, increase nighttime awakenings, and reduce overall sleep quality. Therefore, counselling regarding alcohol use should be incorporated into routine nursing care for COPD patients.

No significant association was observed between sleep quality and age, educational status, marital status, occupation, religion, residence, smoking status, duration of illness, or frequency of hospital admission. Although these variables have been

associated with sleep quality in certain previous studies, differences in study populations, healthcare settings, cultural characteristics, and sample composition may explain the variation in findings. Overall, the findings of the present study reinforce the importance of integrating routine sleep assessment into the comprehensive management of COPD. Nurses should consider sleep quality as an essential clinical outcome rather than merely a secondary symptom. Early identification of sleep disturbances through standardized assessment tools such as the Pittsburgh Sleep Quality Index can facilitate timely interventions, improve symptom control, enhance patient satisfaction, and ultimately improve quality of life among individuals with COPD.

6. IMPLICATIONS FOR NURSING PRACTICE

The findings of the present study emphasize the importance of incorporating sleep assessment into the routine care of patients with Chronic Obstructive Pulmonary Disease (COPD). Since a considerable proportion of hospitalized patients experienced poor sleep quality, nurses should recognize sleep disturbances as an important clinical concern rather than a secondary symptom of respiratory illness. Routine assessment of sleep quality using validated instruments such as the Pittsburgh Sleep Quality Index (PSQI) can facilitate early identification of patients at risk of poor sleep. Early detection enables healthcare professionals to implement timely interventions aimed at improving sleep quality and overall health outcomes.

Nurses should educate patients and their caregivers regarding sleep hygiene practices, including maintaining a regular sleep schedule, avoiding caffeine and alcohol before bedtime, practicing breathing and relaxation exercises, and creating a comfortable sleep environment. These simple interventions may improve sleep quality and reduce daytime fatigue.

Furthermore, nursing professionals should minimize avoidable nighttime disturbances in hospital wards whenever possible. Reducing unnecessary noise, ensuring patient comfort, scheduling nursing procedures appropriately, and optimizing medication timing may contribute to improved sleep quality during hospitalization.

The findings also highlight the importance of multidisciplinary collaboration. Nurses should work closely with pulmonologists, physiotherapists, respiratory therapists, psychologists, and dietitians to develop comprehensive care plans that address both respiratory symptoms and sleep-related problems. Such collaborative management may improve quality of life, treatment adherence, and overall patient satisfaction.

7. STRENGTHS OF THE STUDY

The present study possesses several strengths. A relatively large sample of **384 participants**

enhanced the reliability of the findings and provided adequate representation of hospitalized COPD patients within the selected setting. The use of the **Pittsburgh Sleep Quality Index (PSQI)**, a widely recognized and validated assessment tool, ensured standardized evaluation of sleep quality. The study also explored the relationship between sleep quality and multiple sociodemographic variables, contributing valuable regional evidence regarding sleep disturbances among patients with COPD in Northern India. The findings may serve as baseline data for future nursing research and evidence-based clinical practice.

8. LIMITATIONS OF THE STUDY

Despite its strengths, the study has certain limitations. The research was conducted in a single tertiary care hospital, which may limit the generalizability of the findings to other healthcare settings. The use of a non-probability convenience sampling technique may have introduced selection bias. Sleep quality was assessed through a self-reported questionnaire, making the findings susceptible to recall and reporting bias. In addition, clinical variables such as COPD severity, pulmonary function parameters, body mass index, psychological status, and comorbid sleep disorders were not evaluated, which may also influence sleep quality.

9. RECOMMENDATIONS

Based on the findings of the present study, the following recommendations are proposed:

1. Similar studies may be conducted in multiple healthcare institutions using probability sampling techniques to improve generalizability.
2. Future research should include larger and more diverse study populations from different geographical regions.
3. Longitudinal studies are recommended to evaluate changes in sleep quality during disease progression and after implementation of therapeutic interventions.
4. Interventional studies assessing the effectiveness of nursing-led sleep promotion programmes, pulmonary rehabilitation, breathing exercises, relaxation therapy, and patient education should be undertaken.
5. Future research should investigate the relationship between sleep quality, disease severity, pulmonary function, anxiety, depression, and quality of life among patients with COPD.

10. CONCLUSION

The present study demonstrated that poor sleep quality is highly prevalent among patients with

Chronic Obstructive Pulmonary Disease admitted to a tertiary care hospital. More than two-thirds of the participants experienced poor sleep quality, indicating that sleep disturbance is a significant yet often overlooked clinical problem among hospitalized COPD patients.

The study further identified significant associations between sleep quality, gender, and alcohol consumption, whereas other selected sociodemographic variables were not significantly associated with sleep quality. These findings emphasize the need for routine assessment of sleep quality as an integral component of comprehensive COPD management.

Early identification of sleep disturbances and implementation of evidence-based nursing interventions may improve symptom management, treatment adherence, functional capacity, and overall quality of life among patients with COPD. Incorporating sleep assessment into routine nursing practice may contribute to holistic patient care and improved clinical outcomes.

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13. CONFLICT OF INTEREST

The author declares that there is no conflict of interest regarding the publication of this manuscript.

14. AUTHOR CONTRIBUTIONS

The author conceptualized the study, conducted data collection, performed data analysis, interpreted the findings, and prepared the manuscript. The research supervisor provided academic guidance, critical review, and overall supervision throughout the study.

15. DATA AVAILABILITY STATEMENT

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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