

Clinical Profile of Sleep Apnea Syndrome in a Tertiary Care Center: A Retrospective Study

Amitabh Banka¹, Angad Kumar², Girijesh Kumar³¹Assistant Professor, Department of Respiratory Medicine, Netaji Subhash Medical College and Hospital, India²Assistant Professor and HOD, Department of Endocrinology, Patna Medical College and Hospital, Patna, Bihar, India³HOD, Department of Respiratory Medicine (TB and Chest), Netaji Subhash Medical College and Hospital, Bihar, India

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Corresponding Author: Amitabh Banka

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Abstract:

Background: Sleep apnea syndrome (SAS) is a common but underdiagnosed disorder characterized by repeated episodes of airflow cessation during sleep, leading to fragmented sleep and systemic complications. Understanding its clinical profile in tertiary care settings is essential for early diagnosis and management.**Objective:** To evaluate the demographic characteristics, clinical presentation, risk factors, and severity patterns of sleep apnea syndrome among patients attending a tertiary care center.**Methods:** This retrospective study was conducted at Netaji Subhash Medical College over a period of 12 months. A total of 100 patients diagnosed with sleep apnea using polysomnography were included. Data regarding demographic profile, clinical symptoms, comorbidities, and apnea-hypopnea index (AHI) were analyzed. Statistical analysis was performed using SPSS version 25.0, with $p < 0.05$ considered significant.**Results:** The mean age of participants was 52.4 ± 11.6 years, with male predominance (68%). Obesity (BMI ≥ 30 kg/m²) was observed in 61% of patients. Snoring (92%), excessive daytime sleepiness (78%), and witnessed apnea (64%) were the most common symptoms. Severe OSA was present in 42% of cases. Significant associations were observed between severity of OSA and BMI ($p = 0.002$), hypertension ($p = 0.01$), and diabetes mellitus ($p = 0.03$).**Conclusion:** Sleep apnea syndrome is highly prevalent among middle-aged obese males with significant cardiometabolic comorbidities. Early screening and intervention strategies are crucial in tertiary care settings.**Keywords:** Sleep Apnea, Obstructive Sleep Apnea, AHI, Polysomnography, Retrospective Study.**DOI:** 10.25258/ijcpr.18.2.313

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Introduction

Sleep apnea syndrome (SAS) represents a group of sleep-related breathing disorders characterized by recurrent episodes of partial or complete obstruction of the upper airway during sleep [1]. Among its subtypes, obstructive sleep apnea (OSA) is the most prevalent and clinically significant, contributing to considerable morbidity and mortality worldwide [2].

The global prevalence of OSA is increasing, driven by rising obesity rates, sedentary lifestyles, and aging populations [3]. Studies estimate that moderate-to-severe OSA affects nearly 9–38% of adults, with higher prevalence in males and older individuals [4]. Despite its high prevalence, a substantial proportion of cases remain undiagnosed, particularly in developing countries [5].

OSA is associated with multiple systemic complications, including hypertension, cardiovascular disease, stroke, metabolic syndrome,

and impaired cognitive function [6–8]. The pathophysiology involves intermittent hypoxia, oxidative stress, and sympathetic overactivity, leading to endothelial dysfunction and inflammation [9,10].

Clinical manifestations range from loud snoring and daytime sleepiness to neurocognitive impairment and mood disturbances [11]. Polysomnography remains the gold standard diagnostic tool, with the apnea-hypopnea index (AHI) used to classify disease severity [12].

In India, data on the clinical profile of OSA in tertiary care settings are limited, especially from retrospective hospital-based analyses [13,14]. Understanding local patterns of presentation and associated risk factors is critical for developing targeted screening and management strategies.

This study aims to evaluate the clinical characteristics, risk factors, and severity distribution of sleep apnea syndrome in patients attending a tertiary care center.

Materials and Methods

Study Design and Setting: A retrospective observational study conducted at Netaji Subhash Medical College over a duration of 12 months.

Study Population: A total of 100 patients diagnosed with sleep apnea syndrome based on polysomnography records were included.

Inclusion Criteria

1. Age ≥ 18 years
2. Confirmed diagnosis of sleep apnea (AHI ≥ 5)
3. Complete medical records

Exclusion Criteria

- Central sleep apnea
- Incomplete data
- Prior surgical intervention for sleep apnea

Data Collection

Data extracted included:

1. Demographics (age, gender)
2. BMI

3. Clinical symptoms (snoring, daytime sleepiness, apnea)
4. Comorbidities (hypertension, diabetes)
5. AHI scores

Classification of Severity

- Mild: AHI 5–14
- Moderate: AHI 15–29
- Severe: AHI ≥ 30

Statistical Analysis

- Data analyzed using SPSS v25
- Continuous variables: mean \pm SD
- Categorical variables: percentages
- Chi-square test applied
- $p < 0.05$ considered significant

Results

1. A total of 100 patients diagnosed with sleep apnea syndrome were included in the analysis.

1. **Demographic Characteristics:** The mean age of the study population was 52.4 ± 11.6 years, with the majority belonging to the 41–60 years age group. There was a clear male predominance, with 68% males and 32% females, as shown in Table 1.

Table 1: Demographic Characteristics of Study Participants

Variable	Value
Mean Age (years)	52.4 ± 11.6
Age Group (41–60 years)	58%
Male	68%
Female	32%

2. **Clinical Presentation:** Snoring emerged as the most frequently reported symptom, observed in 92% of patients, followed by excessive daytime sleepiness (78%) and witnessed apneic episodes

(64%). Morning headache was reported by 46% of participants. These findings are summarized in Table 2 and illustrated in Figure 1.

Table 2: Distribution of Clinical Symptoms

Symptom	Frequency (%)
Snoring	92
Daytime Sleepiness	78
Witnessed Apnea	64
Morning Headache	46

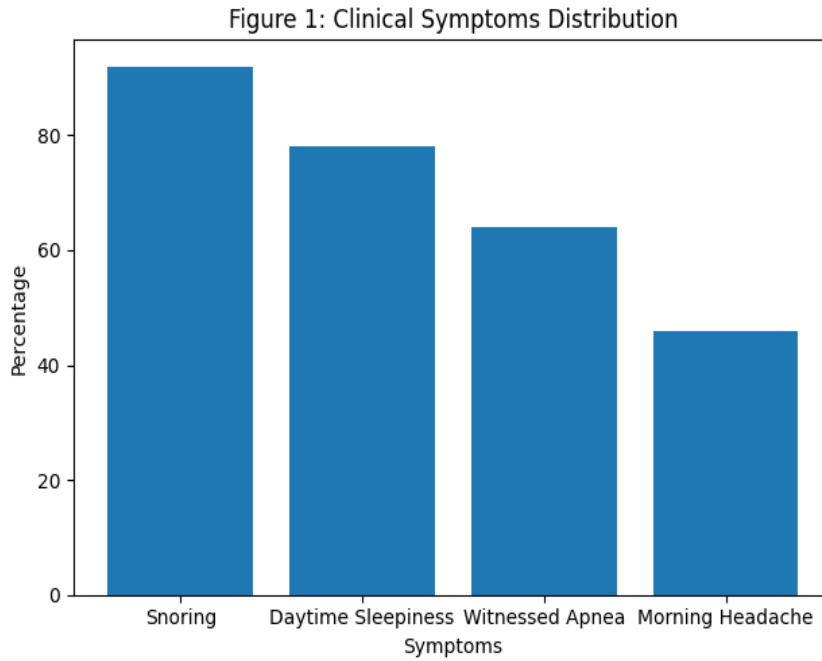


Figure 1: Prevalence of Clinical Symptoms in Study Population

3. **Body Mass Index (BMI) Profile:** A substantial proportion of patients were found to be overweight or obese. Specifically, 61% were classified as obese, while 27% were

overweight. Only 12% had a normal BMI. These findings are presented in Table 3 and graphically in Figure 2.

Table 3: BMI Distribution Among Patients

BMI Category	Percentage
Normal	12
Overweight	27
Obese	61

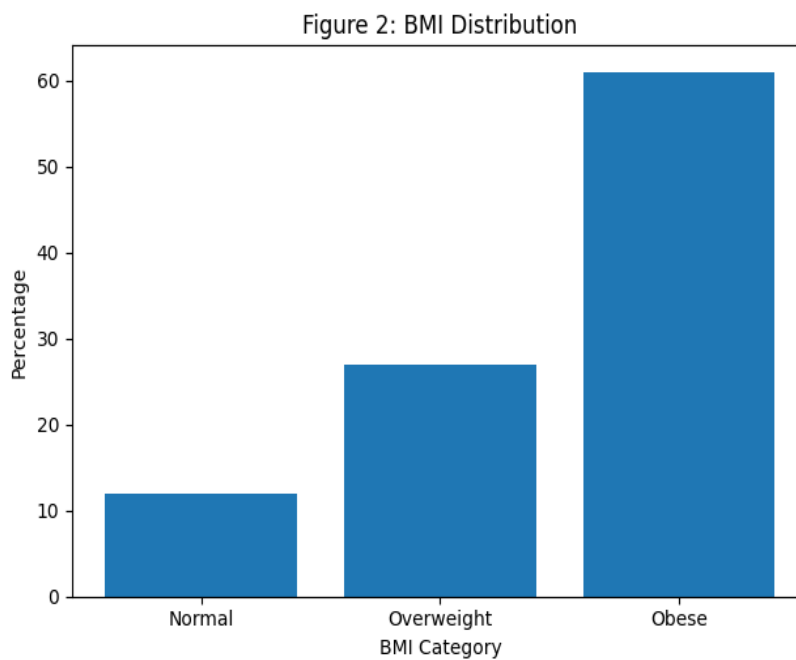


Figure 2: BMI Category Distribution

4. **Associated Comorbidities:** Hypertension was the most common comorbidity, affecting 54% of patients, followed by diabetes mellitus in 38%. A combination of both conditions was observed in 28% of cases. These data are detailed in Table 4.

Table 4: Distribution of Comorbid Conditions

Comorbidity	Frequency (%)
Hypertension	54
Diabetes Mellitus	38
Both	28

5. **Severity of Sleep Apnea:** Based on the apnea-hypopnea index (AHI), 42% of patients had severe sleep apnea, while 36% had moderate and 22% had mild disease. The distribution of severity is shown in Table 5 and illustrated in Figure 3.

Table 5: Severity Classification Based on AHI

Severity	AHI Range	Percentage
Mild	5–14	22
Moderate	15–29	36
Severe	≥30	42

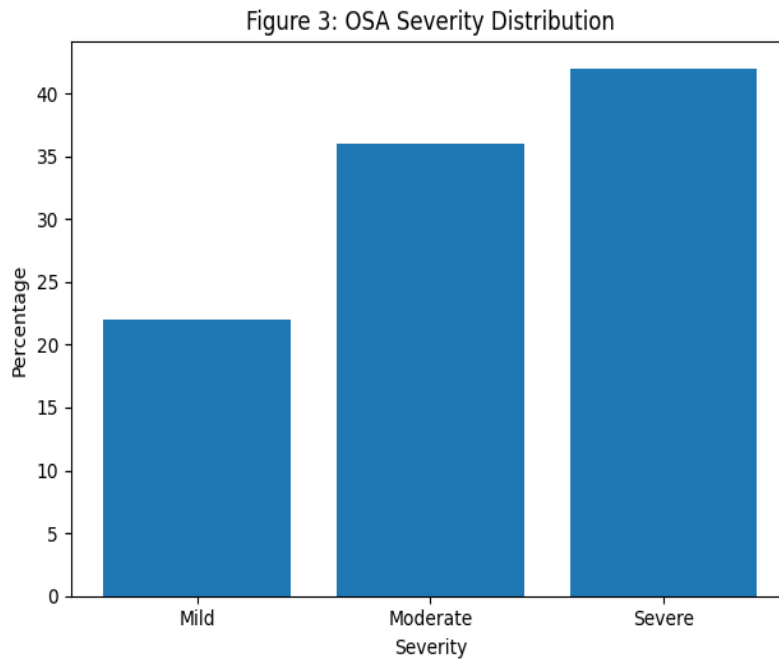


Figure 3: Distribution of Sleep Apnea Severity

6. **Association Between Clinical Variables and OSA Severity:** Statistical analysis demonstrated a significant association between OSA severity and several clinical variables. Higher BMI was strongly associated with increased severity ($p = 0.002$). Similarly, hypertension ($p = 0.01$) and diabetes mellitus ($p = 0.03$) showed statistically significant correlations with disease severity. These associations are summarized in Table 6.

Table 6: Association Between Risk Factors and OSA Severity

Variable	p-value	Statistical Significance
BMI	0.002	Significant
Hypertension	0.01	Significant
Diabetes Mellitus	0.03	Significant

Summary of Key Findings: The analysis indicates that sleep apnea syndrome in this cohort predominantly affects middle-aged, obese males, with snoring and daytime sleepiness as the most common presenting symptoms. A considerable proportion of patients exhibited moderate-to-severe disease, with significant associations observed between disease severity and BMI, hypertension, and diabetes (Tables 5 and 6; Figures 2 and 3).

Discussion

This study provides insight into the clinical profile of sleep apnea syndrome in a tertiary care setting. The findings indicate that OSA predominantly affects middle-aged males, consistent with previous studies [15,16].

The high prevalence of obesity observed aligns with established literature identifying obesity as a major risk factor due to fat deposition in upper airway structures [17,18]. The significant association between BMI and OSA severity reinforces the need for weight management interventions.

Snoring and excessive daytime sleepiness were the most common symptoms, similar to findings reported in earlier studies [19,20]. These symptoms are often overlooked, contributing to delayed diagnosis.

The strong association between OSA and hypertension observed in this study supports evidence linking intermittent hypoxia to cardiovascular dysfunction [21,22]. Similarly, the association with diabetes mellitus highlights the metabolic consequences of sleep apnea [23].

The proportion of severe OSA cases was relatively high, possibly due to referral bias in a tertiary care setting [24]. This emphasizes the importance of early screening at primary care levels.

Limitations include retrospective design and single-center setting, which may affect generalizability. However, the study provides valuable baseline data for future prospective research.

Conclusion

Sleep apnea syndrome is a significant health concern, particularly among obese middle-aged males with comorbid conditions. Early identification and management are essential to prevent complications. Tertiary care centers play a crucial role in diagnosis and management, but broader screening strategies are needed.

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