



DEMOGRAPHIC AND CLINICAL PROFILE OF PATIENTS ATTENDING THE RESPIRATORY MEDICINE OPD AT MMU MULLANA SCREENED FOR OBSTRUCTIVE SLEEP APNEA

Respiratory Medicine

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ABSTRACT

Background: Obstructive Sleep Apnea (OSA) is a prevalent yet underdiagnosed sleep disorder characterized by recurrent upper airway obstruction during sleep leading to fragmented sleep and intermittent hypoxia, contributing to various comorbidities. This study aims to analyze the demographic and clinical profiles of patients attending the Respiratory Medicine Outpatient Department (OPD) at MMU Mullana who were screened for OSA. **Methods:** A cross-sectional study was conducted involving 93 patients who presented with symptoms suggestive of OSA. Data collected included demographic details, anthropometric measurements, clinical symptoms, and Epworth Sleepiness Scale (ESS) scores. Statistical analysis was performed using descriptive statistics. **Results:** The mean age of the patients was 47.3 ± 13.8 years. Females constituted 57.1% of the study population. The mean Body Mass Index (BMI) was 32.2 ± 8.29 kg/m², indicating obesity in nearly half of the participants. Snoring was reported by 71.4% of patients, while 37.1% exhibited excessive daytime sleepiness (ESS >10). Hypertension was present in 62.9% of the patients. **Conclusion:** The study highlights a substantial prevalence of OSA symptoms among patients in the respiratory medicine OPD. The findings underscore the need for routine screening, particularly in obese and hypertensive individuals, to facilitate early diagnosis and intervention.

KEYWORDS

Screening, Demographic Profile, Clinical Profile, Obesity, Body Mass Index, Epworth Sleepiness Scale, Hypertension, Snoring, Cross-Sectional Study

INTRODUCTION

Background

Obstructive Sleep Apnea (OSA) is a sleep-related breathing disorder characterized by repetitive episodes of partial or complete upper airway obstruction during sleep. These episodes lead to intermittent hypoxia and sleep fragmentation, resulting in excessive daytime sleepiness, cognitive impairment, and increased risk of cardiovascular morbidity and mortality. OSA is a global health concern, with prevalence estimates ranging from 9% to 38% in different populations.[1]

In India, the burden of OSA is on the rise due to increasing obesity rates and urbanization [2][4]. However, awareness about OSA among healthcare providers and the general population remains low, leading to significant underdiagnosis and undertreatment[3]. Early identification of patients at risk is crucial for preventing long-term complications.

Rationale

Understanding the demographic and clinical profiles of patients screened for OSA can aid in developing targeted screening strategies and improving patient outcomes. MMU Mullana, being a tertiary care center, caters to a diverse patient population, providing an opportunity to study the characteristics of patients presenting with OSA symptoms.

Objectives

Primary Objective: To assess the demographic profile of patients attending the respiratory medicine OPD at MMU Mullana who are screened for OSA.

Secondary Objectives: To evaluate clinical symptoms, anthropometric measurements, and the correlation between BMI and OSA symptoms.

MATERIALS AND METHODS

Study Design

A hospital-based cross-sectional descriptive study was conducted from 25/12/2024 to 25/12/2025.

Study Setting

The study took place in the Respiratory Medicine Outpatient Department at Maharishi Markandeshwar University (MMU), Mullana.

Study Population

Patients attending the respiratory medicine OPD who were referred for

OSA screening based on clinical suspicion were considered for inclusion.

Inclusion Criteria

- Adults aged 18 years and above.
- Patients presenting with symptoms suggestive of OSA, such as:
 - o Loud snoring.
 - o Witnessed apnea.
 - o Excessive daytime sleepiness.
 - o Unrefreshing sleep.
 - o Obesity (BMI ≥ 30 kg/m²).
 - o Hypertension or other cardiovascular comorbidities.

Exclusion Criteria

- Patients diagnosed with central sleep apnea or other primary sleep disorders.
- Patients with severe comorbid conditions that could interfere with the study.
- Pregnant women.
- Patients unwilling or unable to provide informed consent.
- Ethical Considerations
- Approval was obtained from the Institutional Ethics Committee of MMU Mullana.
- Written informed consent was obtained from all participants after explaining the study's purpose and procedures.

Data Collection

Demographic Data:

- o Age (in years).
- o Gender.

Anthropometric Measurements:

- o Height: Measured using a stadiometer to the nearest 0.1 cm.
- o Weight: Measured using a calibrated weighing scale to the nearest 0.1 kg.
- o Body Mass Index (BMI): Calculated using the formula:

$$\text{BMI} = \text{Weight (kg)} / \text{Height (m)}^2$$

Clinical Parameters:

- o Blood Pressure (BP): Measured using a sphygmomanometer after a 5-minute rest, following standard guidelines.
- o Epworth Sleepiness Scale (ESS): Participants completed the ESS questionnaire to assess daytime sleepiness. Scores range from 0 to 24, with scores >10 indicating excessive daytime sleepiness.[5]

Symptoms Assessment:

- Snoring: Self-reported snoring frequency and intensity.
- Daytime Sleepiness: Based on ESS scores and subjective reports.
- Observed Apnea: Reports of apnea episodes witnessed by bed partners.
- Arousals During Sleep: Frequency of nocturnal awakenings.
- Dreams: Presence of vivid or disturbing dreams.
- Changes in Libido: Any reported alterations in sexual drive.
- Hypertension: History of hypertension or elevated BP readings during the visit.

Data Quality Control

- Training was provided to the research team on data collection procedures.
- Calibration of instruments was performed regularly.
- Data entry was checked for accuracy and completeness.

Statistical Analysis

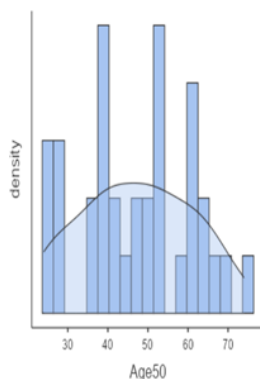
- Data were entered into Microsoft Excel and analyzed using Jamovi v2.6.19.
- Continuous variables were summarized using mean, median, standard deviation, and range.
- Categorical variables were presented as frequencies and percentages.
- Associations between variables (e.g., BMI and OSA symptoms) were evaluated using chi-square tests or Fisher's exact test where appropriate.
- A p-value <0.05 was considered statistically significant.

RESULTS**Participant Characteristics**

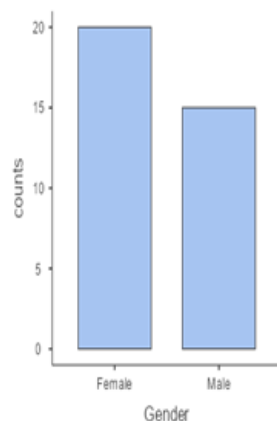
Total Participants: 93 patients.

Demographic Data**Age:**

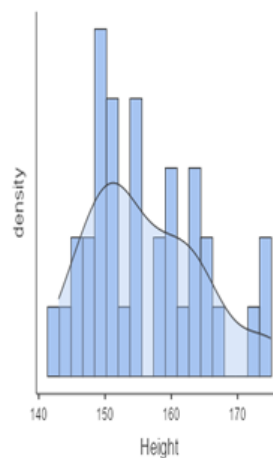
- Mean Age: 47.3 ± 13.8 years.
- Age Range: 24 to 74 years.
- Age Distribution:

**Gender:**

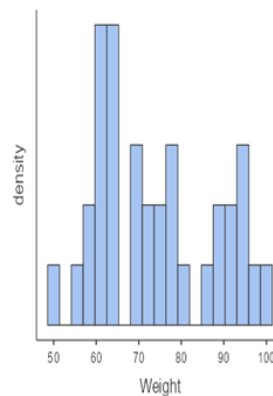
- Female: 20 patients (57.1%).
- Male: 15 patients (42.9%)

**Anthropometric Measurements****Height:**

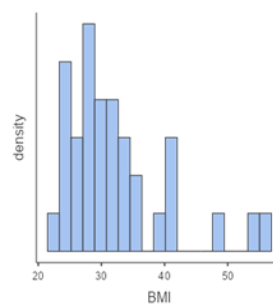
- o Mean Height: 156 ± 8.55 cm (Mode: 150, Median: 155)
- o Height Range: 143 cm to 175 cm.

**Weight:**

- o Mean Weight: 74.1 ± 13.9 kg.
- o Weight Range: 50 kg to 100 kg.

**Body Mass Index (BMI):**

- o Mean BMI: 32.2 ± 8.29 kg/m².
- o BMI Range: 22.2 kg/m² to 55.8 kg/m².

**BMI Classification:**

- Overweight: BMI greater than or equal to 25
- Obesity: BMI greater than or equal to 30
- Severe obesity: BMI ≥ 35
- Morbid obesity: BMI ≥ 40
- Extreme obesity: BMI ≥ 50

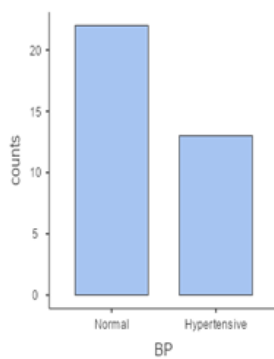
Clinical Parameters**Blood Pressure (BP):**

- Hypertensive: 13 patients (62.9%).
- Normotensive: 22 patients (37.1%).

Epworth Sleepiness Scale (ESS) Scores:

- o Mean ESS Score: 4.86 ± 4.41 .
- o ESS Score Range: 0 to 17.

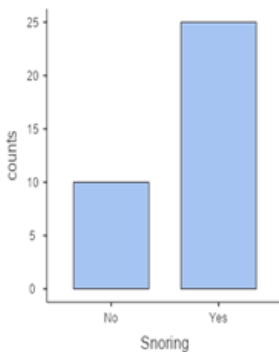
o Excessive Daytime Sleepiness (ESS>10): 4 patients (11.6%).



Symptom Prevalence

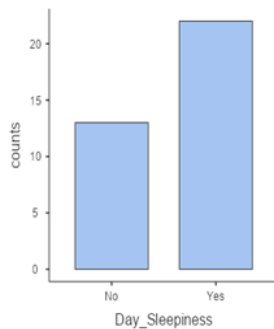
Snoring:

- o Presence of Snoring: 25 patients (71.4%).
- o No Snoring: 10 patients (28.6%).



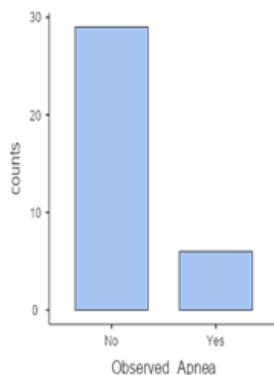
Daytime Sleepiness:

- o Reported Daytime Sleepiness: 22 patients (37.1%).
- o No Daytime Sleepiness: 13 Patients (62.9%).



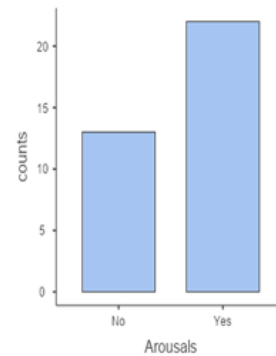
Observed Apnea:

- o Yes: 6 patients (17.1%).
- o No: 29 patients (82.9%).



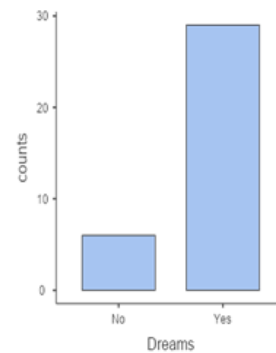
Arousals During Sleep:

- o Yes: 22 patients (62.9%).
- o No: 13 patients (37.1%).



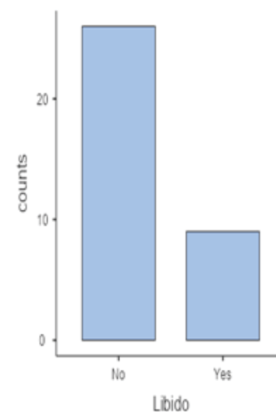
Dreams:

- o Experienced Vivid Dreams: 29 patients (82.9%).
- o No Significant Dreams: 6 patients (17.1%).



Changes In Libido:

- o Reported Changes: 9 patients (25.7%).
- o No Changes: 26 patients (74.3%).



DISCUSSION

Prevalence of OSA Symptoms

The study reveals a high prevalence of OSA-related symptoms among patients attending the respiratory medicine OPD. Vivid dream was the most commonly reported symptom (82.9%), followed by snoring (71.4%).

Gender Distribution

Contrary to the traditional understanding that OSA is more prevalent in males, this study found a higher proportion of females (57.1%).

Possible explanations include:

- Healthcare Utilization: Females may be more likely to seek medical attention for sleep-related issues.
- Hormonal Factors: Postmenopausal hormonal changes can increase OSA risk in females.
- Cultural Factors: In some regions, men may underreport symptoms due to stigma or cultural norms.

Further research is needed to understand gender disparities in OSA prevalence in this population.

Age Factor

The mean age of participants was 47.3 years, with a significant number of patients in the 30–49 age group. OSA prevalence generally increases with age due to anatomical and physiological changes that affect airway patency. Early onset in younger adults highlights the need for awareness across all age groups.

Obesity And BMI

Obesity is a well-established risk factor for OSA[4]. The mean BMI was 32.2 kg/m². The strong correlation between higher BMI and OSA symptoms underscores the impact of excess body weight on airway obstruction:

- **Fat Deposition:** Accumulation of fat tissues around the neck narrows the airway.
- **Reduced Muscle Tone:** Obesity can reduce upper airway muscle tone, increasing collapsibility during sleep.

Daytime Sleepiness And ESS Scores

Excessive daytime sleepiness affects a significant portion of patients (62.9%), impairing cognitive function, mood, and quality of life. Elevated ESS scores are associated with increased risk of accidents and decreased work productivity.

Hypertension and Cardiovascular Risks

Hypertension was prevalent in 37.1% of patients. The intermittent hypoxia from OSA activates sympathetic nervous activity, contributing to systemic hypertension[6]. The relationship between OSA and cardiovascular morbidity necessitates integrated management approaches.

Symptoms Impacting Quality of Life

- **Arousals and Sleep Fragmentation:** Frequent awakenings disrupt sleep architecture, leading to non-restorative sleep.
- **Dreams and Sleep Stages:** The high incidence of vivid dreams may reflect altered REM sleep patterns.
- **Changes in Libido:** OSA can lead to hormonal imbalances, affecting sexual health and relationships.

Clinical Implications

- **Screening and Diagnosis:** Incorporating OSA screening tools like ESS and STOP-BANG questionnaire in routine evaluations, especially for high-risk individuals.
- **Multidisciplinary Approach:** Collaboration among respiratory physicians, cardiologists, endocrinologists, and sleep specialists.
- **Lifestyle Interventions:** Emphasizing weight management, dietary modifications, and physical activity.
- **Patient Education:** Raising awareness about OSA symptoms and encouraging self-reporting.

Limitations Of The Study

- **Sample Size and Selection Bias:** The study's relatively small sample from a single center may limit generalizability.
- **Data Accuracy:** Initial discrepancies in height measurements highlight the need for meticulous data collection.
- **Lack of Polysomnography Confirmation:** Definitive OSA diagnosis requires sleep studies, which were not performed.

CONCLUSION

The study demonstrates a significant prevalence of OSA symptoms among patients attending the respiratory medicine OPD at MMU Mullana. The association between higher BMI, hypertension, and OSA symptoms emphasizes the need for heightened clinical vigilance. Early identification and management of OSA can mitigate adverse health outcomes. Integrating OSA screening into routine clinical practice and promoting multidisciplinary care approaches are vital steps toward improving patient health and reducing the burden of sleep apnea.

Recommendations

1. **Implementation of Routine Screening:**
 - o Utilize validated screening tools (e.g., ESS, STOP-BANG) for patients with risk factors.
2. **Enhance Awareness and Education:**
 - o Conduct educational programs for healthcare providers and patients about OSA's risks and symptoms.
3. **Facilitate Access to Diagnostic Services:**
 - o Improve availability of polysomnography and other diagnostic modalities.

4. Promote Lifestyle Interventions:

- o Encourage weight reduction strategies through diet and exercise programs.

5. Research Expansion:

- o Conduct longitudinal studies with larger populations and inclusion of sleep study data to confirm OSA diagnosis.

Appendices

Appendix A: Epworth Sleepiness Scale (ESS)

Participants rated their likelihood of dozing off in various situations on a scale of 0–3:

0: Would never doze.

1: Slight chance of dozing.

2: Moderate chance of dozing.

3: High chance of dozing.

Total scores calculated to assess daytime sleepiness.

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