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Evaluation of polysomnography results of patients referred to the sleep laboratory

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Abstract

This study aimed to evaluate demographic characteristics, disease severity distribution, accompanying chronic comorbidities, and positive airway pressure (PAP) treatment practices in adult patients assessed by polysomnography for obstructive sleep apnea syndrome (OSAS). This single-center, retrospective, observational study included adult patients aged ≥18 years who underwent diagnostic polysomnography in the sleep laboratory between January 1 and December 31, 2024. Patients with technically adequate and analyzable polysomnography recordings were enrolled. OSAS diagnosis and severity were classified based on the apnea-hypopnea index (AHI). Demographic data, clinical symptoms, comorbid conditions, and PAP therapy modalities were retrospectively obtained from medical records. A total of 407 patients were included; 258 (63.4%) were male and 149 (36.6%) were female. The mean age was 51.3 ± 14.8 years, and the mean body mass index was 34.5 ± 7.2 kg/m². According to polysomnography, severe OSAS was detected in 34.4% of patients, moderate OSAS in 20.4%, and mild OSAS in 25.3%. Normal polysomnography findings were observed in 12.8% of cases, while 4.2% yielded inconclusive results. Male patients exhibited higher mean AHI values and a greater prevalence of severe OSAS. Female patients more frequently reported symptoms such as snoring, witnessed apnea, and excessive daytime sleepiness. At least one chronic comorbidity was present in 57.7% of patients, with hypertension and diabetes mellitus being the most common. PAP therapy was primarily initiated in patients with severe OSAS, with CPAP and BPAP as the most frequently used modalities. OSAS is commonly associated with obesity and cardiometabolic comorbidities in the adult population, with notable sex-related differences in disease severity and symptom presentation. PAP therapy was predominantly applied in severe cases, highlighting the importance of comprehensive clinical assessment that integrates disease severity, symptom burden, and individual risk factors in treatment planning.

Keywords: Obstructive sleep apnea syndrome, polysomnography, positive airway pressure therapy

Introduction

Obstructive sleep apnea syndrome (OSAS) is a respiratory disorder characterized by recurrent partial or complete collapse of the upper airway during sleep, leading to sleep fragmentation and a wide range of clinical consequences. Although the syndrome is defined by episodes of apnea and hypopnea occurring during sleep, its impact extends beyond nocturnal respiratory events, adversely affecting daily functioning through symptoms such as excessive daytime sleepiness and impaired attention and concentration [1].

Beyond individual symptoms, OSAS is strongly associated with long-term cardiovascular and metabolic diseases. Epidemiological data indicate that the prevalence of OSAS varies according to age and sex; it is more commonly observed in men, while its prevalence increases with advancing age in both sexes [2,3]. In middle-aged populations, the prevalence of OSAS has been reported to be approximately 20-25% in men and 5-10% in women [3]. Population-based studies have demonstrated that the prevalence of moderate-to-severe OSAS ranges between 9% and 38%, whereas reported rates from Türkiye vary between 1.9% and 14%, suggesting that a substantial proportion of affected individuals remain undiagnosed [4].

Obesity is considered the most significant risk factor for the development of OSAS. Increased fat deposition around the upper airway contributes to pharyngeal collapsibility, thereby exacerbating disease severity [3]. In addition, craniofacial anatomical characteristics, genetic predisposition, cigarette smoking, and alcohol consumption are recognized contributors

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to OSAS pathogenesis [5]. From a pathophysiological perspective, intermittent hypoxia resulting from recurrent apnea and hypopnea episodes is regarded as the central mechanism underlying the disorder. This process triggers oxidative stress, systemic inflammation, sympathetic activation, and endothelial dysfunction, ultimately leading to persistent cardiometabolic alterations [6,7].

Polysomnography is the gold standard for the diagnostic evaluation of OSAS. Through polysomnographic assessment, the apnea-hypopnea index (AHI), oxygen desaturation events, sleep stages, and respiratory patterns can be objectively evaluated, allowing both definitive diagnosis and reliable classification of disease severity [8]. Treatment strategies are individualized according to disease severity and clinical characteristics, with positive airway pressure (PAP) therapy recognized as the most effective treatment modality, particularly in patients with moderate-to-severe OSAS [2,9]. In addition, weight reduction and lifestyle modifications constitute important components of management in selected patients [9].

Although the pathophysiology and treatment options of OSAS have been well described, the clinical distribution of the disease, patient characteristics, and treatment practices may vary across centers and populations. Health-seeking behaviors, demographic factors, and lifestyle characteristics directly influence the patient populations encountered in clinical practice. Therefore, the evaluation of center-based data is essential for understanding real-world clinical practice and for supporting and contextualizing existing literature.

In this study, we aimed to evaluate the demographic characteristics, age and sex distribution, apnea-hypopnea index values, and applied treatment approaches of adult patients who underwent polysomnography in our clinic over a one-year period. By comparing our findings with the existing literature, we sought to provide insight into the clinical characteristics of the patient population referred to a sleep laboratory.

Material and Methods

Study Design and Participants

This study was designed as a single-center, retrospective, observational investigation. Adult individuals aged 18 years and older who underwent diagnostic polysomnography (PSG) at the Sleep Laboratory of Yozgat Bozok University Research and Application Hospital between January 1, 2024, and December 31, 2024, were included in the study. Inclusion criteria comprised age ≥18 years, availability of at least one technically adequate and analyzable PSG recording obtained over a single night, and complete clinical evaluation records. Patients younger than 18 years, PSG recordings that could not be reliably analyzed due to technical insufficiency or significant signal loss, and repeated PSG measurements belonging to the same patient were excluded from the analysis. This approach was adopted to ensure a homogeneous adult patient population.

Polysomnography Recordings and Adequacy Criteria

Polysomnography recordings were performed in accordance with international standards. Multiple biophysiological signals were recorded using electroencephalography (EEG), electrooculography (EOG), electromyography (EMG), nasal pressure transducer, thoracoabdominal movement sensors, and pulse oximetry. All recordings were scored in 30-second epochs based on the 2012 criteria of the American Academy of Sleep Medicine (AASM).

Technical adequacy and analyzability of PSG recordings constituted one of the primary inclusion criteria. Accordingly, PSG studies were required to have a total sleep time of at least 4 hours, with continuous and reliable recording of EEG, EOG, EMG, airflow, thoracoabdominal movements, and oxygen saturation signals throughout the recording period. Recordings with substantial signal loss due to technical reasons, those that did not allow reliable sleep stage scoring, or those with a total sleep time of less than 4 hours were excluded from the study. This methodology is consistent with widely accepted minimum recording adequacy criteria used to obtain clinically reliable polysomnographic results.

Definition and Severity Classification of OSAS

The diagnosis and severity of obstructive sleep apnea syndrome (OSAS) were determined based on the apnea-hypopnea index (AHI). Accordingly, cases with an AHI <5 were classified as normal/simple snoring, those with an AHI of 5-14.9 as mild OSAS, those with an AHI of 15-29.9 as moderate OSAS, and those with an AHI ≥30 as severe OSAS. This classification served as the primary basis for standardizing clinical evaluation and guiding treatment algorithms.

Clinical Symptom Assessment

Clinical symptoms of the included patients were recorded during routine outpatient evaluations conducted prior to polysomnography. In this assessment, the presence of symptoms most commonly associated with OSAS—namely snoring, witnessed apnea, and excessive daytime sleepiness—was queried based on patient self-report. Symptom evaluation was not based on a standardized scale or scoring system but was conducted as part of a structured medical history routinely used in daily clinical practice. As systematic, scale-based assessments were not performed for other symptoms such as morning fatigue, headache, or cognitive complaints (e.g., attention or memory impairment), these symptoms were not included in the analysis. Consequently, symptom-related findings in this study were limited to the presence of core clinical symptoms.

PAP Therapy Indications and Device Selection

Indications for positive airway pressure (PAP) therapy were determined in accordance with the American Academy of Sleep Medicine (AASM) and current clinical practice guidelines. PAP therapy was considered the first-line treatment option in patients with an AHI ≥15, regardless of the presence of clinical symptoms. In addition, PAP therapy was also considered in patients with an AHI between 5 and 14.9 who exhibited excessive daytime sleepiness or had accompanying cardiovascular comorbidities or

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metabolic risk factors. Treatment decisions were based not solely on AHI values but also on an integrated assessment of clinical symptoms, comorbid conditions, and individual risk profiles.

Device selection for patients receiving PAP therapy was guided by clinical and physiological characteristics rather than random preference. Continuous positive airway pressure (CPAP) therapy was considered the first-line approach for OSAS; however, bilevel positive airway pressure (BPAP) therapy was preferred in selected cases. BPAP was primarily used in patients with high inspiratory pressure requirements, intolerance to CPAP therapy, coexisting obesity hypoventilation syndrome or chronic respiratory disease, or the presence of residual hypercapnia. This approach aligns with current clinical practice aimed at reducing respiratory workload, improving ventilatory comfort, and enhancing treatment adherence.

Ethical Approval

Ethical approval for the study was obtained from the Yozgat Bozok University Non-Interventional Clinical Research Ethics Committee (No: 2025-GOKAEK-253_2025.02.05_335, Date: 05 February 2025). As the study had a retrospective design, informed consent was not required. All procedures were conducted in accordance with the principles of the Declaration of Helsinki and the Turkish Personal Data Protection Law (Law No. 6698).

Statistical Analysis

Statistical analyses were performed using SPSS version 20.0 (Statistical Package for the Social Sciences). Continuous variables were expressed as mean ± standard deviation (SD), while categorical variables were presented as frequencies and percentages. Normality of data distribution was assessed using the Kolmogorov-Smirnov test. Comparisons of normally distributed variables were conducted using the independent samples t-test and analysis of variance (ANOVA), whereas non-normally distributed variables were analyzed using the Mann-Whitney U test and Kruskal-Wallis test. Categorical variables were compared using the chi-square test. A p-value of <0.05 was considered statistically significant.

Results

Of the 407 patients included in the study, 258 (63.4%) were male and 149 (36.6%) were female. The mean age of the overall study population was 51.3 ± 14.8 years. The mean age was higher in male patients (54.0 ± 14.8 years) compared with female patients (49.8 ± 14.6 years), indicating that male patients predominantly belonged to an older age group (Table 1). The mean body mass index (BMI) of the entire cohort was 34.5 ± 7.2 kg/m². When evaluated by sex, the mean BMI was 36.3 ± 8.1 kg/m² in female patients and 33.5 ± 6.4 kg/m² in male patients.

Table 1. Patient Characteristics of the study population

Patient characteristics	Female	Male	Total
Number of patients (%)	258 (63.4)	149 (36.6)	407 (100)
Mean age (years)	49.8 ± 14.6	54.0 ± 14.8	51.3 ± 14.8
BMI (kg/m²)	36.3 ± 8.1	33.5 ± 6.4	34.5 ± 7.2

Patients were distributed across a wide range of occupational categories. Occupations requiring physical labor included manual workers (n=14, 10.1%), drivers (n=6, 4.3%), farmers (n=4, 2.9%), construction workers (n=3, 2.2%), and electricians (n=2, 1.4%). Professions within the service and education sectors included teachers (n=46, 33.3%), physicians (n=7, 5.1%), pharmacists (n=2, 1.4%), and students (n=2, 1.4%). In addition, homemakers (n=12, 8.7%) and retired individuals (n=16, 11.6%) constituted a substantial proportion of the study population. Sex-based analysis revealed that homemaking and education-healthcare professions were more prevalent among women, whereas physically demanding occupations and retirement were more common among men (Figure 1).

The mean smoking exposure in the entire cohort was 9.3 ± 18.4 pack-years. Female patients had a mean smoking exposure of 2.9 ± 8.0 pack-years, whereas male patients had a markedly higher exposure of 13.2 ± 21.7 pack-years. Overall, 143 patients (37.0%) were current smokers, while 244 patients (63.0%) reported no smoking history. Smoking prevalence was 18.2% (n=27) among women and 48.5% (n=116) among men (Figure 2).

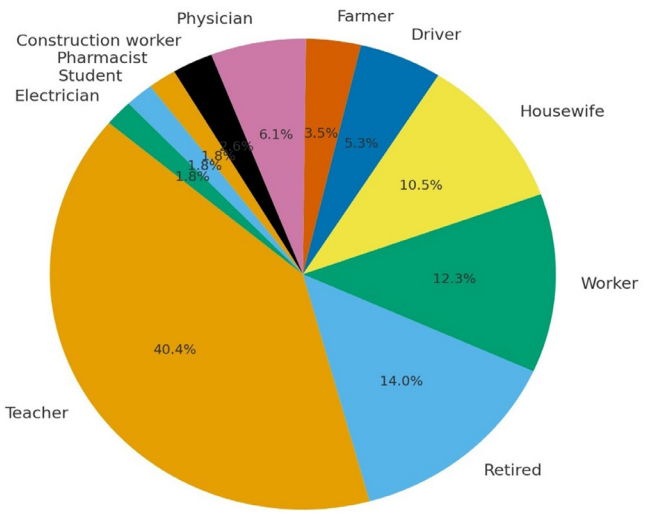

Figure 1. Distribution of patients by occupational groups

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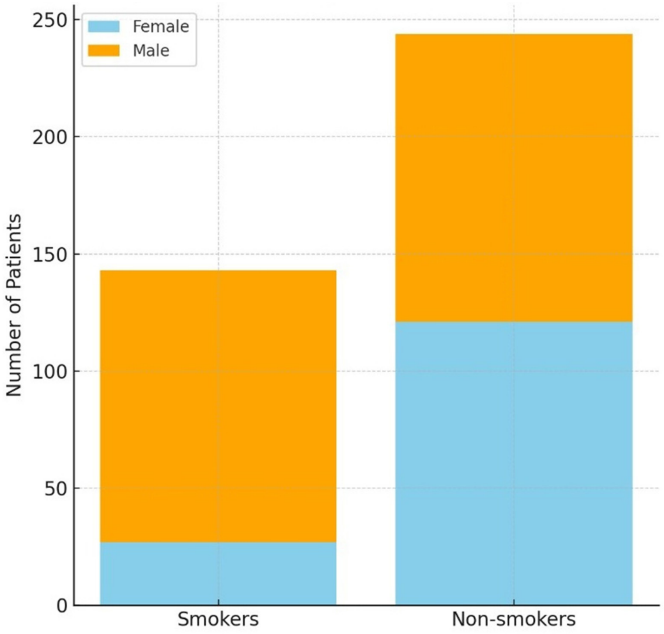

Figure 2. Smoking status of the patients

A total of 91 patients (22.4%) were evaluated in the context of driving license applications. This proportion was lower among women (10.7%, n=16) and higher among men (29.1%, n=75).

At least one chronic comorbid condition was present in 235 patients (57.7%), while 172 patients (42.3%) had no documented comorbidity.

Among the 110 patients diagnosed with OSAS and initiated on PAP therapy, 77 patients (70.0%) had at least one comorbid condition, whereas 33 patients (30.0%) had none. The most frequently identified comorbidities were hypertension (n=41, 37.3%) and diabetes mellitus (n=31, 28.2%), followed by coronary artery disease (n=13, 11.8%), asthma (n=12, 10.9%), and hyperlipidemia (n=11, 10.0%). Chronic obstructive pulmonary disease, chronic kidney disease, hypothyroidism, and malignancies were observed at lower frequencies.

Evaluation of comorbidity combinations revealed that the most common dual association was hypertension and diabetes mellitus (n=20), followed by hypertension with coronary artery disease (n=6) and hypertension with asthma (n=6).

When assessed according to OSAS severity, at least one comorbidity was present in 49 of 80 patients in the severe OSAS group, 10 of 20 patients in the moderate OSAS group, and 6 of 10 patients in the mild OSAS group. No statistically significant association was observed between OSAS severity and the presence of comorbidities (χ^2 test, p=0.656).

Snoring was reported by 79.9% of participants (n=325), witnessed apnea by 58.4% (n=238), and excessive daytime sleepiness by 50.7% (n=206). The most frequent symptom combination was the concurrent presence of snoring, apnea, and excessive daytime sleepiness (n=167, 41.0%). Female patients reported higher rates of snoring (82.6%), witnessed apnea (64.2%), and excessive daytime sleepiness (57.4%) compared with male patients (Figures 3 and 4).

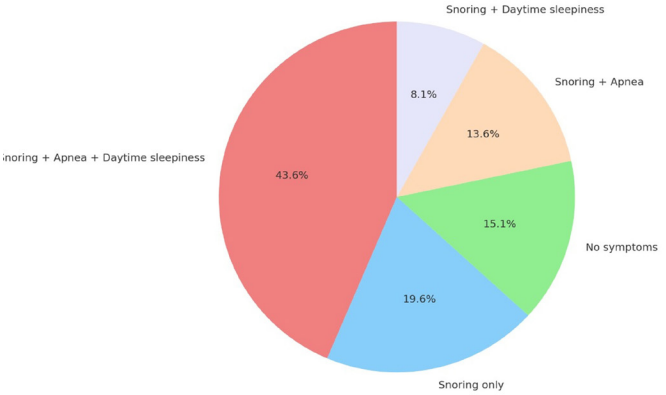

Figure 3. Distribution of symptom patterns among patients

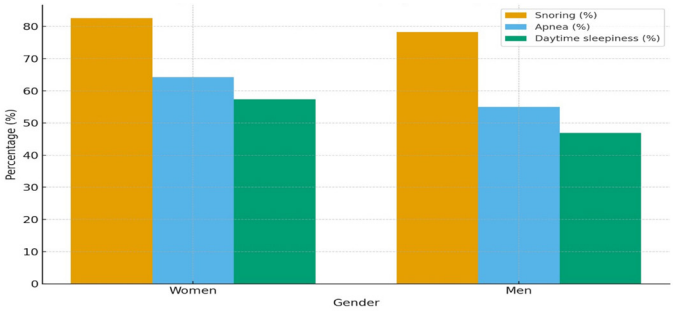

Figure 4. Distribution of symptoms by gender

The mean apnea-hypopnea index (AHI) for the entire cohort was 27.7 ± 24.6. Mean AHI values were higher in male patients (31.4 ± 25.7) than in female patients (21.3 ± 21.3).

Based on polysomnography results, 34.4% of patients (n=140) were classified as having severe OSAS, 25.3% (n=103) as mild OSAS, and 20.4% (n=83) as moderate OSAS. Polysomnography findings were within normal limits in 12.8% of cases (n=52). Inconclusive results that did not allow diagnostic classification were obtained in 4.2% of patients (n=17), despite completion of polysomnography. Additionally, 12 cases in whom polysomnography was terminated prematurely due to intolerance to PAP therapy were excluded from the analysis because reliable diagnostic data could not be obtained (Table 2).

No PAP device was prescribed for 294 patients (72.2%). Among patients who received PAP therapy, bilevel positive airway pressure (BPAP) was the most frequently used modality (n=40, 9.8%), followed by continuous positive airway pressure (CPAP; n=37, 9.1%) and auto-adjusting positive airway pressure (APAP; n=25, 6.1%). BPAP-ST therapy was applied in 11 patients (2.7%). Device utilization was significantly higher in the severe OSAS group, and this association was statistically significant (χ^2=30.62, p=0.0099) (Figures 5 and 6).

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Table 2. Distribution of polysomnography results by gender

PSG Outcome	Female (n=141)	Male (n=254)	Total (n=395)
Mild OSA	42	61	103
Moderate OSA	29	54	83
Severe OSA	39	101	140
Normal	25	27	52
Inconclusive	6	11	17
Total	141	254	395

A total of 407 patients were initially evaluated. Twelve patients were excluded from the final analysis because the polysomnography examination was terminated prematurely due to intolerance to positive airway pressure (PAP) therapy, preventing reliable diagnostic classification. Therefore, the table presents the gender-based distribution of polysomnography outcomes in 395 patients with complete diagnostic evaluation

Table 3. Association between OSAS severity and demographic and clinical variables

Variable	Test	Test statistic	p-value	Significance
Age	Kruskal-Wallis	22.92	<0.001	Significant
BMI	Kruskal-Wallis	50.55	<0.001	Significant
Apnea	Chi-square	14.24	0.027	Significant
Daytime sleepiness	Chi-square	13.20	0.040	Significant
Device use	Chi-square	30.62	0.0099	Significant

BMI: Body Mass Index

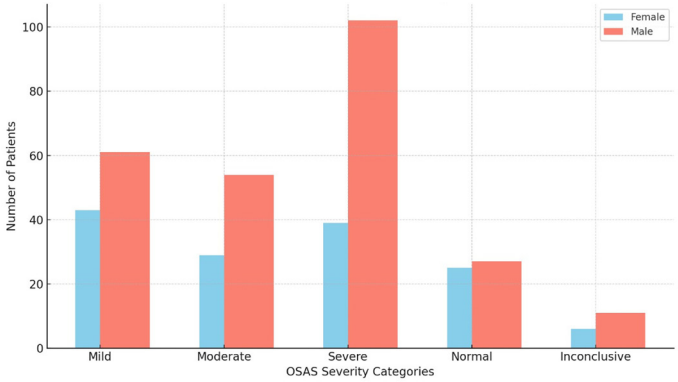

Figure 5. Distribution of OSAS results by gender

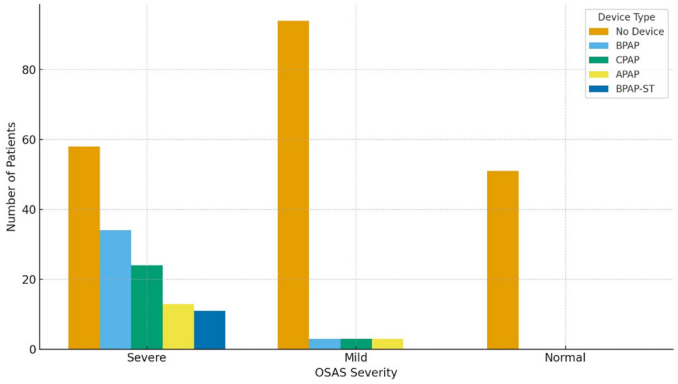

Figure 6. Distribution of device use by OSAS severity

An increase in OSAS severity was associated with a significant rise in mean age (Kruskal-Wallis=22.92, p=0.001). Similarly, BMI values increased proportionally with OSAS severity (Kruskal-Wallis=50.55, p<0.001). Statistically significant associations were also identified between OSAS severity and the presence of apnea (χ^2=14.24, p=0.027) as well as excessive daytime sleepiness (χ^2=13.20, p=0.040) (Table 3).

Discussion

The findings of this study indicate that obstructive sleep apnea syndrome (OSAS) is a heterogeneous and multifactorial condition that, in routine clinical practice, frequently coexists with obesity and cardiometabolic comorbidities. The strong association between OSAS and cardiovascular disease, as well as its broad clinical consequences, is consistent with guideline statements and scientific reports emphasizing that OSAS represents a systemic disorder extending beyond sleep-related respiratory events alone [1,3]. The recommendation of positive airway pressure (PAP) therapy as a first-line treatment option for adult OSAS also aligns with current clinical practice guidelines [2].

From a demographic perspective, the higher mean age observed among male patients suggests that OSAS risk may increase with advancing age and that clinical presentation may cluster in older age groups [1,3]. Previous studies have highlighted that the clinical manifestation of OSAS may differ between men and women, with hormonal and body composition-related factors

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influencing individual risk profiles [2]. In our study, higher mean AHI values and a greater prevalence of severe OSAS among men are consistent with reported risk patterns in recent evaluations addressing the association between OSAS and hypertension [1].

The strong relationship between obesity and OSAS was also evident in our findings, with generally elevated BMI values and a significant increase in BMI corresponding to increasing OSAS severity. Obesity has been shown to promote upper airway collapsibility and exacerbate cardiovascular burden, as discussed extensively in previous scientific reports [3]. Furthermore, the association between OSAS and metabolic syndrome or impaired glucose metabolism has been attributed to inflammatory and metabolic mechanisms [4]. When considered alongside the high comorbidity burden observed in our cohort, these findings suggest an accumulated cardiometabolic risk profile [1].

Regarding smoking exposure, the higher pack-year burden observed in male patients is consistent with literature indicating increased risk through airway inflammation and associated respiratory conditions in OSAS. Classical studies describing the coexistence of chronic obstructive pulmonary disease (COPD) and OSAS have similarly reported that respiratory comorbidities may aggravate the clinical course [5]. Prospective evidence demonstrating the relationship between sleep-disordered breathing and hypertension further underscores the clinical importance of cardiovascular risk in OSAS [6]. Recent reviews addressing the effects of PAP therapy on pathophysiological mechanisms and comorbidity burden emphasize that access to treatment and long-term adherence are key determinants of clinical outcomes [7]. In addition, data suggesting increased symptom and comorbidity burden among hypertensive OSAS patients support the need for careful evaluation of cardiometabolic comorbidities in clinical practice [8].

In terms of symptom profile, snoring, witnessed apnea, and excessive daytime sleepiness were frequently reported in our study population. This finding is consistent with clinical guidelines that emphasize the importance of medical history and core symptoms in the evaluation and management of adult OSAS [9]. However, because standardized scales such as the Epworth Sleepiness Scale were not used, discussion of symptoms is more appropriately framed in terms of symptom frequency rather than symptom burden severity [9]. In the context of OSAS phenotyping and personalized approaches, symptom clusters have also been discussed as potentially useful in guiding clinical decision-making [10].

The prominent comorbidity burden observed in our cohort highlights the central role of systemic effects in the clinical management of OSAS. Inflammation has been emphasized as a potential mediator linking OSAS with cardiometabolic diseases in recent molecular-level evaluations [11]. Lifestyle interventions and weight reduction have been shown to favorably influence cardiovascular risk factors, particularly in studies focusing on mild OSAS [12]. Population-based data further suggest that OSAS severity may increase in parallel with age-related comorbidities, supporting our findings regarding the association between age, BMI, and disease severity [13]. A broad spectrum of comorbid conditions accompanying OSAS has also been reported in otorhinolaryngology-based evaluations and comorbidity-focused studies [14]. Evidence indicating that the prevalence of somatic diseases may vary according to OSAS severity suggests that comorbidity burden may be reshaped along the severity axis [15]. Public health-oriented studies emphasizing the obesity-OSAS relationship highlight elevated BMI as a shared risk factor for both OSAS and cardiometabolic comorbidities [16]. Recent reviews addressing OSAS-related hypertension further demonstrate that cardiovascular risk profiles may be particularly pronounced in specific patient subgroups [17]. Contemporary clinical frameworks summarizing the approach to OSAS management in the context of obesity recommend integrated assessment of disease severity, risk profile, and comorbid conditions during treatment planning [18].

Reviews emphasizing the bidirectional relationship between OSAS and comorbidities indicate that OSAS may both exacerbate existing comorbid conditions and be aggravated by increased comorbidity burden [19]. A comprehensive review addressing obesity and OSAS from epidemiological and therapeutic perspectives further supports the role of weight management in OSAS control [20]. Findings demonstrating correlations between dyslipidemia, inflammation, and OSAS severity are consistent with the clustering of cardiometabolic comorbidities observed in our study [21]. In particular, OSAS has been shown to act as a risk determinant for cardiovascular and microvascular outcomes in patients with type 2 diabetes mellitus [22]. Regional studies adopting a "comorbidome" approach to map OSAS-associated conditions suggest that similar risk clustering patterns may be observed across different populations [23]. The central role of cardiometabolic comorbidities in OSAS management has also been emphasized in respiratory research [24].

With respect to treatment, the relatively low rate of PAP prescription observed in our study is related to practical steps within the clinical care pathway. At our center, some patients diagnosed with OSAS were still undergoing titration procedures, some did not return for follow-up visits to receive PSG results or complete treatment planning, and others reported financial constraints preventing device acquisition, thereby precluding completion of the prescription process. These observations illustrate the gap between guideline-defined indications and real-world treatment access and follow-up, which may be influenced by patient- and system-level barriers [2,25]. Current clinical resources on sleep apnea emphasize that treatment success is not determined solely by indication but also by follow-up, adherence, and accessibility [26]. Although pediatric OSAS literature addresses a different population, it similarly highlights treatment adherence and care pathway management as critical determinants of clinical success [27]. The high prevalence of OSAS in elderly populations suggests that challenges related

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to treatment access and adherence may become increasingly important in the coming years [28]. Population-based evaluations have reported that a substantial proportion of individuals with OSAS remain undiagnosed, representing an unmet healthcare need and underscoring the necessity of addressing treatment access at both clinical and system levels [29].

Studies examining sex-based differences in OSAS prevalence and comorbidity patterns demonstrate that clinically significant OSAS can be observed in both men and women in middle-aged populations [30]. Meta-analyses evaluating the effectiveness of CPAP therapy in elderly patients indicate that treatment benefits can be sustained in appropriately selected individuals and that adherence remains a key determinant of clinical outcomes [31]. Accordingly, the challenges observed in PAP access and follow-up in our study highlight the need to strengthen systematic monitoring mechanisms in OSAS management [2,31]. From a public health perspective, recent evaluations emphasize that OSAS deserves greater prioritization and visibility [32]. Additionally, studies suggesting that environmental factors may contribute to increasing OSAS burden highlight the importance of future-oriented planning [33]. Primary care-based screening and referral strategies may represent effective approaches to improving early diagnosis and access to treatment, particularly in populations with a high prevalence of risk factors [34].

The notable use of BPAP in device selection is consistent with the general scientific framework suggesting that bilevel pressure support may be more appropriate in patients with high pressure requirements, CPAP intolerance, or a tendency toward hypoventilation [2,25]. Clinical examples demonstrating impaired respiratory function in obese patients with sleep-related breathing disorders, as well as reports addressing obesity-related respiratory complications, support the preference for BPAP in selected cases to improve ventilatory comfort and pressure tolerance [35,36]. Recent studies examining OSAS pathophysiology and therapeutic targets at the mechanistic level emphasize the importance of phenotype-based personalization of treatment [37]. Evaluations of upper airway anatomy and collapse dynamics further indicate that device selection and pressure strategies may vary according to individual anatomical and physiological differences [38]. The concepts of phenotyping and personalized treatment provide a useful framework for interpreting the clinical heterogeneity of OSAS [39]. Contemporary reviews of underlying mechanisms support the notion that OSAS does not follow a single pathophysiological pathway but rather involves multiple interacting mechanisms [40].

The main limitations of this study include its single-center, retrospective design; the absence of quantitative symptom assessment using standardized scales (e.g., the Epworth Sleepiness Scale); the inability to systematically monitor device acquisition and adherence in all patients with PAP indications; and the lack of detailed, data-driven characterization of patient- and system-level barriers (such as titration processes, loss to follow-up, and financial constraints) affecting prescription rates. Nevertheless, the real-world data derived from a large clinical population provide valuable insight into OSAS severity, comorbidity patterns, and treatment access, thereby contributing to clinical practice and healthcare system planning [1,2].

Conclusion

In this study, the demographic characteristics, disease severity, accompanying chronic conditions, and positive airway pressure (PAP) treatment practices of adult patients evaluated by polysomnography were examined. The findings demonstrated that higher apnea-hypopnea index values and a greater prevalence of severe OSAS were more frequently observed in male patients, whereas classical symptoms such as snoring, witnessed apnea, and excessive daytime sleepiness were reported at higher rates among female patients. A substantial proportion of the study population had at least one coexisting chronic disease, with the comorbidity burden predominantly clustering around cardiometabolic conditions. Positive airway pressure therapy was applied mainly in patients with severe OSAS; however, initiation rates varied depending on clinical processes and patient-related factors. Overall, these results underscore the importance of integrating disease severity, symptom profile, and individual risk factors in the clinical evaluation and management of OSAS.

Ethical Approval
Approved by the Yozgat Bozok University Non-Interventional Clinical Research Ethics Committee (No: 2025-GOKAEK-253_2025.02.05_335, Date: 05 February 2025).

Patient Consent
Informed consent was waived due to the retrospective design.

Conflict of Interest
The authors declare no conflict of interest.

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References

1. Yeghiazarians Y, Jneid H, Tietjens JR, et al. Obstructive sleep apnea and cardiovascular disease: A scientific statement from the American Heart Association. Circulation. 2021;144:e56-e67.
2. Patil SP, Ayappa IA, Caples SM, et al. Treatment of adult obstructive sleep apnea with positive airway pressure: An American Academy of Sleep Medicine clinical practice guideline. J Clin Sleep Med. 2019;15:335-43.
3. Somers VK, White DP, Amin R, et al. Sleep apnea and cardiovascular disease: An American Heart Association/American College of Cardiology Foundation scientific statement. J Am Coll Cardiol. 2008;52:686-717.
4. Tasali E, Ip MS. Obstructive sleep apnea and metabolic syndrome: Alterations in glucose metabolism and inflammation. Proc Am Thorac Soc. 2008;5:207-17.
5. Chaouat A, Weitzenblum E, Krieger J, et al. Association of chronic obstructive pulmonary disease and sleep apnea syndrome. Am J Respir Crit Care Med. 1995;151:82-6.
6. Peppard PE, Young T, Palta M, Skatrud J. Prospective study of the association between sleep-disordered breathing and hypertension. N Engl J Med. 2000;342:1378-84.

7. Sircu V, Colesnic SI, Covantsev S, et al. The burden of comorbidities in obstructive sleep apnea and the pathophysiologic mechanisms and effects of CPAP. Clocks Sleep. 2023;5:333-49.
8. Tao M, Dong X, Tu J, et al. Symptom and comorbidity burden in hypertensive patients with obstructive sleep apnea. Front Endocrinol (Lausanne). 2024;15:1361466.
9. Adult Obstructive Sleep Apnea Task Force of the American Academy of Sleep Medicine. Clinical guideline for the evaluation, management and long-term care of obstructive sleep apnea in adults. J Clin Sleep Med. 2009;5:263-76.
10. Bonsignore MR, Giron MCS, Marrone O, et al. Personalised medicine in sleep respiratory disorders: focus on obstructive sleep apnoea diagnosis and treatment. Eur Respir Rev. 2017;26:170069.
11. Alterki A, Abu-Farha M, Al Shawaf E, et al. Investigating the relationship between obstructive sleep apnoea, inflammation and cardio-metabolic diseases. Int J Mol Sci. 2023;24:6807.
12. Blomster H. Cardiovascular risk factors in mild obstructive sleep apnea: Outcome of lifestyle intervention with weight reduction. Dissertation. Univ East Finland. 2015.
13. Silva MDS, Poyares D, Silva LO, et al. Associations of the severity of obstructive sleep apnea with age-related comorbidities: A population-based study. Front Neurol. 2022;13:802554.
14. Pinto JA, Ribeiro DK, da Silva Cavallini AF, et al. Comorbidities associated with obstructive sleep apnea. Int Arch Otorhinolaryngol. 2016;20:145-50.
15. Tveit RL, Lehmann S, Bjorvatn B. Prevalence of several somatic diseases depends on the presence and severity of obstructive sleep apnea. PLoS One. 2018;13:e0192671.
16. Jehan S, Zizi F, Pandi-Perumal SR, et al. Obstructive sleep apnea and obesity: Implications for public health. Sleep Med Disord Int J. 2017;1:00019.
17. Shiina K. Obstructive sleep apnea-related hypertension: A review. Hypertens Res. 2024;47:3085-98.
18. Meyer EJ, Wittert GA. Approach the patient with obstructive sleep apnea and obesity. J Clin Endocrinol Metab. 2024;109:e1267-79.
19. Gleeson M, McNicholas WT. Bidirectional relationships of comorbidity with obstructive sleep apnoea. Eur Respir Rev. 2022;31.
20. Messineo L, Bakker JP, Cronin J, et al. Obstructive sleep apnea and obesity: Epidemiology, pathophysiology and weight-loss treatments. Sleep Med Rev. 2024;78:101996.
21. Popadic V, Brajkovic M, Klasnja S, et al. Correlation of dyslipidemia and inflammation with OSA severity. Front Pharmacol. 2022;13:897279.
22. Adderley NJ, Subramanian A, Toulis K, et al. OSA as a risk factor for cardiovascular and microvascular disease in type 2 diabetes. Diabetes Care. 2020;43:1868-77.
23. Rincón-Hernández J, Tuta-Quintero E, Faizal-Gómez K, et al. Mapping the comorbidome: OSA and its comorbidities in Colombia. Sci Prog. 2025;108.
24. André S, Andreozzi F, Van Overstraeten C, et al. Cardiometabolic comorbidities in OSA patients. Respir Res. 2020;21:35.
25. Slowik JM, Sankari A, Collen JF. Obstructive sleep apnea. StatPearls Publishing. 2024.
26. Juginović A. Sleep apnea. In: Sleep Science Made Simple. Springer. 2025:125-36.
27. Shakkottai A, Firdaus M. Obstructive sleep apnea. In: Sleep Disorders in Children. Springer. 2025.
28. Ghavami T, Kazeminia M, Ahmadi N, et al. Global prevalence of OSA in elderly: A systematic review and meta-analysis. J Perianesth Nurs. 2023;38:865-75.
29. Watson N, Yu K, Campbell D, et al. Prevalence and unmet need of OSA in the US. Sleep. 2025;48:A278.
30. Cunningham J, Hunter M, Budgeon C, et al. Prevalence and comorbidities of OSA in middle-aged men and women. J Clin Sleep Med. 2021;17:2029-39.
31. Soltaninejad F, Golastaneh R, Ghahfarokhi PI, et al. CPAP treatment for sleep apnea in elderly: A systematic review and meta-analysis. Sleep Breath. 2025;29:210.
32. Kendzerska T, Keys E, Johnson DA. Why sleep apnea deserves priority in public health. Eur J Public Health. 2025;35:596-7.
33. Lechat B, Manners J, Pinilla L, et al. Global warming may increase OSA burden. Nat Commun. 2025;16:5100.
34. Sarısaltık A, Topuzoğlu A. Screening for sleep disorders in primary care. ESTÜDAM Halk Sağlığı Derg. 2019;4:232-43.
35. Gifford AH, Leiter JC, Manning HL. Respiratory function in an obese patient with sleep-disordered breathing. Chest. 2010;138:704-15.
36. Jubber AS. Respiratory complications of obesity. Int J Clin Pract. 2004;58:573-80.
37. Lv R, Liu X, Zhang Y, et al. Pathophysiological mechanisms and therapy in OSA. Signal Transduct Target Ther. 2023;8:218.
38. Chang A. Upper airway anatomy and collapse in OSA. Medscape. 2022.
39. McNicholas WT, Korkalainen H. OSA phenotypes and personalized treatment. Front Neurol. 2023;14:1239016.
40. Kang YJ, Park CS. Underlying mechanisms of OSA: A review. Clin Exp Otorhinolaryngol. 2025.