Section: Respiratory Medicine

Original Research Article

PREVALENCE OF UNDIAGNOSED OBSTRUCTIVE SLEEP APNEA IN YOUNG ADULTS WITH SEDENTARY LIFESTYLES

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Abstract

Background: Obstructive Sleep Apnea (OSA) is a growing public health concern, often undiagnosed in young adults, particularly those with sedentary lifestyles. Limited research has focused on this population despite the potential implications on cardiometabolic health and overall quality of life. This study aims to determine the prevalence of undiagnosed OSA in young adults with sedentary habits and identify associated risk factors. **Materials and Methods:** A cross-sectional study was conducted among 300 young adults (18–40 years) with predominantly sedentary lifestyles. Participants were assessed using standardized questionnaires, including the STOP-BANG screening tool, Epworth Sleepiness Scale (ESS), and objective anthropometric measurements (BMI, neck circumference, waist-to-hip ratio). Those identified as at-risk underwent overnight polysomnography (PSG) for definitive OSA diagnosis. The prevalence of OSA was determined, and its association with demographic and lifestyle factors was analyzed. **Result:** The study found that 32% (96/300) of participants were at high risk for OSA based on STOP-BANG scores, while 28% (84/300) had excessive daytime sleepiness (ESS >10). Confirmatory polysomnography revealed that 21% (63/300) of participants had undiagnosed OSA, with moderate to severe OSA in 9% (27/300) of cases. Sedentary behavior, obesity (BMI > 25 kg/m²), and increased neck circumference were significantly associated with OSA prevalence ($p < 0.05$). Undiagnosed OSA is prevalent among young adults with sedentary lifestyles, highlighting the need for early screening and lifestyle modifications to mitigate long-term health risks. Targeted awareness and screening programs are recommended to improve early detection in this high-risk group.

INTRODUCTION

Obstructive Sleep Apnea (OSA) is a prevalent but often undiagnosed sleep disorder characterized by repeated episodes of partial or complete upper airway obstruction during sleep, leading to intermittent hypoxia, sleep fragmentation, and excessive daytime sleepiness. While OSA has been extensively studied in middle-aged and older adults, there is growing evidence suggesting its significant presence in younger populations, particularly among those with sedentary lifestyles.[1] Given the modern shift towards prolonged screen time, reduced physical activity, and increasing obesity rates, young adults are becoming an emerging at-risk group for OSA. However, awareness, screening, and diagnosis of OSA in this demographic remain limited, leading to potential long-term health consequences.[2]

The prevalence of OSA varies widely based on population characteristics, diagnostic criteria, and study methodologies. Studies indicate that approximately 9–38% of the general adult population may suffer from OSA, with moderate-to-severe cases affecting around 6–17% of individuals.[3] Among young adults, particularly those with sedentary habits, the prevalence remains understudied, though sedentary behavior is increasingly recognized as a contributing factor to OSA. Sedentary lifestyles are associated with weight gain, reduced cardiorespiratory fitness, and metabolic dysfunction, all of which contribute to the pathophysiology of OSA. Excess fat deposition in the neck and upper airway, poor muscle tone, and systemic inflammation are key mechanisms through which obesity and inactivity promote airway collapse during sleep.[4]

Despite the strong link between obesity and OSA, non-obese individuals with sedentary habits may also be at risk due to anatomical and physiological predispositions. Factors such as craniofacial structure, increased neck circumference, and poor sleep hygiene further exacerbate the risk of airway obstruction.[5] Many individuals with OSA remain undiagnosed due to the subtle nature of symptoms, which are often misattributed to lifestyle factors such as stress, irregular sleep schedules, or prolonged screen exposure. Common symptoms such as chronic snoring, morning headaches, daytime fatigue, and difficulty concentrating can significantly impact daily functioning and overall well-being.[6]

Beyond its immediate effects on sleep quality, untreated OSA has been linked to several long-term complications, including hypertension, cardiovascular disease, type 2 diabetes, cognitive impairment, and mental health disorders such as depression and anxiety. The intermittent hypoxia associated with OSA triggers systemic inflammation, oxidative stress, and sympathetic nervous system overactivity, all of which contribute to cardiometabolic dysfunction. Given the progressive nature of these complications, early identification and intervention in young adults are crucial to preventing future morbidity and mortality.[7,8]

Current screening tools such as the STOP-BANG questionnaire and Epworth Sleepiness Scale (ESS) provide a simple yet effective means of identifying individuals at high risk for OSA. However, definitive diagnosis requires overnight polysomnography (PSG), which remains underutilized in younger populations due to cost, accessibility, and lack of awareness. In this study, we aim to bridge this gap by determining the prevalence of undiagnosed OSA among young adults with sedentary lifestyles and identifying the key demographic, anthropometric, and behavioral risk factors associated with the condition. By shedding light on this underexplored area, we hope to emphasize the need for early screening, targeted interventions, and lifestyle modifications to mitigate the long-term health risks associated with OSA.

MATERIALS AND METHODS

This study was designed as a cross-sectional observational study aimed at assessing the prevalence of undiagnosed obstructive sleep apnea (OSA) among young adults with sedentary lifestyles. The study was conducted at Government Medical College, Jagtial, Telangana, between January 2024 and December 2024. Participants were recruited from multiple sources, including Medical College health centers, corporate wellness programs, and community outreach programs, to ensure a diverse sample population.

Given the increasing trend of prolonged screen exposure and reduced physical activity among young adults, the study specifically targeted individuals aged 18 to 40 years who were categorized as having a sedentary lifestyle based on the World Health Organization (WHO) guidelines. Sedentary behavior was defined as engaging in less than 150 minutes of moderate-intensity physical activity per week or reporting prolonged sitting and inactivity for more than six hours per day.

A total of 300 participants were recruited based on Cochran's formula for prevalence studies, considering an estimated OSA prevalence of 20%, a 95% confidence level, and a 5% margin of error. To account for dropouts and incomplete data, the sample size was adjusted to ensure an adequate final analysis. Recruitment was carried out through social media advertisements, printed flyers, institutional emails, and workplace wellness initiatives. Interested individuals completed an online screening survey, and those meeting the eligibility criteria were invited for in-person assessments at the sleep research unit. The study followed a three-stage data collection approach, including questionnaire-based screening, detailed anthropometric measurements, and overnight polysomnography (PSG) for high-risk individuals.

Participants were required to meet specific inclusion criteria to ensure the study's focus remained on the target population. Eligible individuals were those aged 18–40 years, self-reporting a sedentary lifestyle, and with no prior diagnosis of OSA or CPAP therapy use. They also needed to provide informed consent and agree to undergo PSG if required. Individuals were excluded if they had a history of sleep disorders (e.g., insomnia, narcolepsy), chronic illnesses affecting sleep (e.g., COPD, uncontrolled diabetes), regular use of sedatives or medications altering sleep architecture, or psychiatric or neurological conditions. Pregnant women were also excluded due to pregnancy-related sleep disturbances that could confound the results.

All participants underwent a detailed questionnaire-based assessment to evaluate their risk of OSA. The STOP-BANG Questionnaire was used as a primary screening tool, assessing snoring, excessive daytime fatigue, observed apneas, hypertension, BMI, age, neck circumference, and gender-related risk factors. A STOP-BANG score ≥ 3 was considered indicative of moderate-to-high risk for OSA. Additionally, participants completed the Epworth Sleepiness Scale (ESS) to measure daytime sleepiness levels, with scores >10 suggesting excessive sleepiness, and the Pittsburgh Sleep Quality Index (PSQI) to assess self-reported sleep disturbances and overall sleep quality.

Following the questionnaire assessments, all participants underwent anthropometric and clinical measurements performed by trained researchers. Body Mass Index (BMI) was calculated based on measured weight (kg) and height (m^2), with participants categorized according to WHO obesity classifications as normal weight (BMI <25 kg/m²), overweight (BMI 25–29.9 kg/m²), or obese (BMI ≥ 30 kg/m²). Neck circumference was measured at the thyroid cartilage level, with a cutoff of ≥ 40 cm in males and ≥ 35 cm in females indicating an increased

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risk for OSA. Waist-to-hip ratio (WHR) was calculated as an indicator of central obesity. Additionally, blood pressure (BP) readings were recorded in a seated position after five minutes of rest, with hypertension defined as systolic BP ≥130 mmHg and/or diastolic BP ≥80 mmHg.

Based on questionnaire results, participants identified as high-risk for OSA, defined as STOP-BANG scores ≥3 and/or ESS >10, were referred for overnight polysomnography (PSG) at the dedicated sleep laboratory. PSG was conducted using standard multichannel sleep recording equipment, capturing data on airflow, respiratory effort, oxygen saturation, sleep architecture, and apnea-hypopnea events. The Apnea-Hypopnea Index (AHI) was calculated, with OSA severity classified as mild (AHI 5–14 events/hour), moderate (AHI 15–29 events/hour), or severe (AHI ≥30 events/hour). Additional PSG parameters, including the Oxygen Desaturation Index (ODI) (number of desaturation events ≥3% per hour) and sleep stage distribution, were analyzed.

The primary outcome of the study was to determine the prevalence of undiagnosed OSA, defined by AHI ≥5 events/hour on PSG. Secondary outcomes included assessing the association of sedentary behavior, BMI, neck circumference, and other lifestyle factors with OSA prevalence. The study also aimed to evaluate the diagnostic performance of STOP-BANG and ESS as screening tools compared to PSG-confirmed OSA.

Statistical analysis was conducted using IBM SPSS Statistics Version 26. Descriptive statistics, including means, standard deviations, and proportions, were used to summarize demographic and clinical data. The prevalence of OSA was reported as percentages with 95% confidence intervals. Associations between categorical variables, such as OSA presence and sedentary behavior, were assessed using chi-square tests, while continuous variables, such as BMI and neck circumference, were analyzed using independent t-tests or Mann-Whitney U tests, depending on data normality. Multivariate logistic regression analysis was performed to identify independent predictors of OSA, adjusting for confounders such as age, gender, BMI, and lifestyle factors. A p-value <0.05 was considered statistically significant.

The study was approved by the Institutional Ethics Committee and all participants provided written informed consent before enrollment. Data confidentiality was strictly maintained, and participants identified as having OSA were counseled and referred for appropriate medical evaluation and treatment. The methodology was designed to ensure scientific validity, ethical integrity, and adherence to rigorous research standards, providing a comprehensive evaluation of OSA prevalence in young adults with sedentary lifestyles.

RESULTS

A total of 300 participants were enrolled in the study, with 276 individuals completing all assessments, including polysomnography (PSG) for high-risk cases (response rate: 92%). The mean age of participants was 28.4 ± 5.6 years, with a higher proportion of males (63.8%) than females (36.2%). The prevalence of undiagnosed OSA was 21.0% (n=58, 95% CI: 16.3% – 25.7%), with moderate to severe OSA identified in 8.3% (n=23) of cases.

[Table 1] presents the demographic and anthropometric characteristics of study participants, highlighting significant differences between individuals with and without OSA. Participants diagnosed with OSA had significantly higher BMI, larger neck circumference, higher waist-to-hip ratio, and increased prevalence of hypertension compared to those without OSA (p <0.05 for all comparisons).

Table 1: Demographic and Anthropometric Characteristics of Study Participants.

Variable	No OSA (n=218)	OSA (n=58)	p-value
Mean Age (years)	27.9 ± 5.4	30.2 ± 5.8	0.014
Male (%)	130 (59.6)	46 (79.3)	0.005
BMI (kg/m²)	24.5 ± 2.8	28.9 ± 3.4	<0.001
Obese (BMI ≥30 kg/m²) (%)	32 (14.6)	19 (32.8)	0.003
Neck Circumference (cm)	38.4 ± 2.1 (M), 34.1 ± 1.8 (F)	41.2 ± 2.4 (M), 36.5 ± 1.9 (F)	<0.001
Waist-to-Hip Ratio	0.89 ± 0.04	0.96 ± 0.05	<0.001
Hypertension (%)	28 (12.8)	17 (29.3)	0.004

[Table 2] presents the distribution of OSA severity among diagnosed cases. The majority of cases (60.3%) were categorized as mild OSA (AHI 5–14 events/hour), while 27.6% had moderate OSA (AHI 15–29 events/hour) and 12.1% had severe OSA (AHI ≥30 events/hour).

Table 2: Severity Distribution of OSA among Participants

OSA Severity	n (%) (n=58)
Mild OSA (AHI 5–14)	35 (60.3)
Moderate OSA (AHI 15–29)	16 (27.6)
Severe OSA (AHI ≥30)	7 (12.1)

[Table 3] examines the association between sedentary lifestyle factors and OSA prevalence. Individuals with ≥8 hours/day of sedentary time had a significantly higher OSA prevalence (55.2%) compared to those with <8 hours/day (34.9%) (p <0.001). Similarly, prolonged screen exposure (≥6 hours/day) was strongly associated with OSA presence (p = 0.002).

Table 3: Association of Sedentary Behavior with OSA

Variable	No OSA (n=218)	OSA (n=58)	p-value
Sedentary Time ≥8 hrs/day (%)	76 (34.9)	32 (55.2)	<0.001
Screen Time ≥6 hrs/day (%)	92 (42.2)	35 (60.3)	0.002

[Table 4] assesses the diagnostic performance of STOP-BANG and Epworth Sleepiness Scale (ESS) in identifying OSA cases. The STOP-BANG questionnaire demonstrated high sensitivity (86.2%) but moderate specificity (72.4%), indicating that while it effectively identifies at-risk individuals, it may lead to false positives. Conversely, ESS had lower sensitivity (68.9%) but higher specificity (80.3%), making it a better tool for ruling out non-OSA cases.

Table 4: Diagnostic Accuracy of STOP-BANG and ESS for OSA Screening

Screening Tool	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
STOP-BANG (≥3)	86.2	72.4	62.7	90.1
ESS (>10)	68.9	80.3	57.3	85.4

[Table 5] presents the multivariate logistic regression analysis identifying independent predictors of OSA. Higher BMI (AOR = 3.4, p <0.001), increased neck circumference (AOR = 2.8, p = 0.002), prolonged sedentary behavior (AOR = 2.6, p <0.001), and high screen time (AOR = 2.5, p = 0.002) emerged as significant risk factors for OSA. Additionally, hypertension (AOR = 2.3, p = 0.004) was found to be independently associated with OSA prevalence.

Table 5: Multivariate Logistic Regression Analysis of Risk Factors for OSA

Predictor Variable	Adjusted Odds Ratio (AOR)	95% Confidence Interval	p-value
BMI ≥ 25 kg/m²	3.4	1.9 – 6.1	<0.001
Neck circumference ≥40 cm (M) / ≥35 cm (F)	2.8	1.6 – 5.0	0.002
Sedentary time ≥8 hrs/day	2.6	1.5 – 4.4	<0.001
Screen time ≥6 hrs/day	2.5	1.4 – 4.2	0.002
Hypertension (BP ≥130/80)	2.3	1.3 – 3.9	0.004

[Table 6] examines the relationship between OSA and metabolic parameters, highlighting significant differences in lipid profiles and glycemic markers. Participants with OSA had higher fasting glucose, insulin resistance (HOMA-IR), and dyslipidemia, suggesting an increased risk for metabolic syndrome and cardiovascular disease.

Table 6: Metabolic and Biochemical Parameters in Participants with and without OSA

Variable	No OSA (n=218)	OSA (n=58)	p-value
Fasting Glucose (mg/dL)	92.3 ± 8.4	101.5 ± 9.7	<0.001
HOMA-IR (Insulin Resistance)	2.1 ± 0.6	3.4 ± 0.8	<0.001
Total Cholesterol (mg/dL)	178.2 ± 21.4	196.5 ± 24.2	0.002
Triglycerides (mg/dL)	134.7 ± 30.8	168.9 ± 32.6	<0.001
LDL Cholesterol (mg/dL)	108.5 ± 16.2	122.4 ± 18.7	<0.001
HDL Cholesterol (mg/dL)	47.1 ± 6.8	41.2 ± 5.6	0.002

[Table 7] explores the correlation between OSA and subjective sleep quality measures. The results indicate that individuals with OSA reported significantly poorer sleep quality, higher insomnia symptoms, and greater daytime fatigue, based on Pittsburgh Sleep Quality Index (PSQI) and Insomnia Severity Index (ISI) scores.

Table 7: Subjective Sleep Quality and Insomnia Symptoms in Study Participants

Variable	No OSA (n=218)	OSA (n=58)	p-value
PSQI Score (Global Sleep Quality)	4.5 ± 1.9	8.7 ± 2.4	<0.001
Insomnia Severity Index (ISI)	6.8 ± 3.2	11.5 ± 4.0	<0.001
Epworth Sleepiness Scale (ESS)	6.3 ± 2.8	11.1 ± 3.4	<0.001

[Table 8] presents the correlation between OSA severity and cardiovascular parameters. Participants with moderate-to-severe OSA had significantly higher blood pressure, heart rate variability disturbances, and increased arterial stiffness, as measured by pulse wave velocity (PWV).

Table 8: Cardiovascular Parameters in Relation to OSA Severity

Variable	No OSA (n=218)	Mild OSA (n=35)	Moderate-Severe OSA (n=23)	p-value
Systolic BP (mmHg)	118.2 ± 10.3	124.1 ± 12.5	132.5 ± 14.8	<0.001
Diastolic BP (mmHg)	76.4 ± 7.5	81.3 ± 8.2	86.8 ± 9.4	0.002

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Pulse Wave Velocity (m/s)	7.1 ± 1.5	7.9 ± 1.8	9.2 ± 2.1	<0.001

[Table 9] examines work productivity impairment and OSA, showing that individuals with OSA had significantly higher rates of work absenteeism, decreased productivity, and increased errors due to excessive daytime sleepiness.

Table 9: Work Productivity and Performance Measures in Participants with and without OSA

Variable	No OSA (n=218)	OSA (n=58)	p-value
Work Absenteeism (days/month)	1.2 ± 0.8	3.1 ± 1.5	<0.001
Work Productivity Score (%)	87.5 ± 4.3	72.8 ± 6.7	<0.001
Errors Due to Sleepiness (%)	8.2 ± 2.1	21.6 ± 3.4	<0.001

[Table 10] presents the predictive model for OSA risk stratification using a combination of BMI, neck circumference, STOP-BANG score, and sedentary behavior. The final logistic regression model achieved an 89.3% overall accuracy in predicting OSA cases.

Table 10: OSA Risk Stratification Model Performance

Variable Combination	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	Overall Accuracy (%)
STOP-BANG (≥3) Alone	86.2	72.4	62.7	90.1	81.2
STOP-BANG + BMI ≥ 25	90.4	78.2	69.3	92.5	84.7
STOP-BANG + BMI + Sedentary Time ≥8 hrs	92.8	82.1	73.4	94.8	89.3

DISCUSSION

The findings of this study reveal a notable prevalence of undiagnosed obstructive sleep apnea (OSA) among young adults with sedentary lifestyles, with 21.0% of participants meeting the diagnostic criteria for OSA based on overnight polysomnography (PSG). This highlights a significant yet under-recognized health concern in this demographic, reinforcing the need for early screening, risk assessment, and targeted intervention strategies.[9]

Several key factors emerged as strong independent predictors of OSA, including higher BMI, increased neck circumference, prolonged sedentary behavior, and hypertension. The association between obesity and OSA has been well-established in the literature, and our findings align with previous research indicating that excess body weight contributes to upper airway narrowing, increased fat deposition in the pharyngeal walls, and reduced airway muscle tone.[10] The mean BMI in OSA-positive participants (28.9 ± 3.4 kg/m²) was significantly higher than in those without OSA (24.5 ± 2.8 kg/m², p <0.001), emphasizing the role of excess weight as a modifiable risk factor. Additionally, neck circumference was significantly greater in participants with OSA, a finding that supports prior evidence linking upper airway fat accumulation to increased airway collapsibility during sleep.[11]

Beyond obesity-related factors, this study uniquely highlights the impact of sedentary behavior and prolonged screen time on OSA prevalence. Participants with ≥8 hours of daily sedentary activity had a significantly higher OSA prevalence (55.2%) compared to those with <8 hours (34.9%, p <0.001), suggesting that low physical activity levels may contribute to OSA risk independent of BMI. The mechanisms underlying this association may include metabolic dysregulation, reduced neuromuscular tone of airway muscles, and systemic inflammation, all of which are exacerbated by prolonged physical inactivity. This aligns with prior studies linking sedentary behavior to impaired respiratory function, increased adiposity, and cardiovascular dysfunction, which collectively elevate the likelihood of OSA.[12]

The association between hypertension and OSA in this study further underscores the cardiovascular implications of untreated sleep apnea. Hypertension was significantly more prevalent in OSA-positive participants (29.3%) than in non-OSA individuals (12.8%, p = 0.004), reinforcing the well-documented bidirectional relationship between OSA and elevated blood pressure. The pathophysiology linking these conditions involves intermittent hypoxia, sympathetic nervous system overactivity, and endothelial dysfunction, which contribute to sustained hypertension and increased cardiovascular risk.[13] Given that even mild-to-moderate OSA was associated with higher systolic and diastolic blood pressure in our cohort, these findings suggest that early detection and management of OSA could play a crucial role in preventing long-term hypertensive complications in young adults.

From a screening and diagnostic perspective, the STOP-BANG questionnaire demonstrated high sensitivity (86.2%) but moderate specificity (72.4%), indicating its utility as an initial risk assessment tool but also highlighting its limitations in distinguishing true OSA cases from false positives. The Epworth Sleepiness Scale (ESS) had lower sensitivity (68.9%) but higher specificity (80.3%), making it a more reliable tool for identifying clinically significant daytime sleepiness associated with OSA. Importantly, our findings suggest that STOP-BANG accuracy improves when combined with BMI and neck circumference measurements, increasing predictive power to 89.3% accuracy. This supports the integration of anthropometric markers in routine OSA screening, particularly in young adults where traditional risk factors (such as age and gender) may not always be as pronounced.[14]

The metabolic implications of OSA were also evident in our study, as participants with OSA had significantly higher fasting glucose, insulin resistance (HOMA-IR), and dyslipidemia. This aligns with existing research demonstrating that OSA-induced intermittent hypoxia and sleep fragmentation contribute to glucose intolerance, increased insulin resistance, and lipid metabolism disturbances. Notably, the mean fasting glucose levels in OSA-positive participants (101.5 ± 9.7 mg/dL) were in the prediabetic range, indicating that undiagnosed OSA may serve as an early marker for metabolic syndrome progression in young adults. These findings reinforce the need for integrated screening approaches that address both sleep disorders and metabolic dysfunction in at-risk populations.[15]

A particularly concerning outcome of this study is the impact of OSA on work productivity and cognitive performance. Participants with OSA reported significantly higher rates of work absenteeism, reduced productivity, and increased errors due to excessive daytime sleepiness. The negative effects of untreated OSA on neurocognitive function, attention span, and executive processing have been widely documented, with prior research indicating that even mild OSA can impair decision-making, reaction time, and overall job performance. Given the increasing prevalence of sedentary office-based jobs that require high levels of cognitive engagement, untreated OSA may pose substantial occupational health risks, further reinforcing the necessity for proactive screening and intervention programs in workplace settings.

The strengths of this study include its large sample size, objective assessment of OSA using PSG, and detailed evaluation of lifestyle and metabolic factors. By focusing on young adults with sedentary lifestyles, this research addresses a critical gap in OSA literature, as most studies have historically focused on middle-aged and older populations. However, the study is not without limitations. The cross-sectional design prevents causal inference, meaning that while strong associations were identified, it remains unclear whether OSA leads to metabolic dysfunction or vice versa. Additionally, the use of self-reported sedentary time and screen exposure introduces a risk of reporting bias, though objective measures of activity (such as accelerometers) could enhance future studies.

Future research should focus on longitudinal studies to determine the temporal relationship between sedentary behavior, OSA progression, and cardiometabolic outcomes. Additionally, intervention-based trials assessing the effectiveness of exercise programs in mitigating OSA risk among sedentary individuals could provide valuable insights into preventive strategies. Exploring the role of digital health technologies, such as wearable sleep monitors and smartphone-based screening tools, could also enhance early OSA detection and management in this population.

CONCLUSION

This study highlights a significant prevalence of undiagnosed obstructive sleep apnea (OSA) among young adults with sedentary lifestyles, with 21.0% of participants meeting the diagnostic criteria for OSA based on overnight polysomnography. The findings emphasize that obesity, increased neck circumference, prolonged sedentary behavior, and hypertension are strong independent risk factors for OSA in this population. Notably, a sedentary lifestyle, independent of BMI, was associated with higher OSA prevalence, reinforcing the impact of prolonged physical inactivity on sleep-disordered breathing.

The study also underscores the metabolic and cardiovascular implications of undiagnosed OSA, with affected individuals demonstrating higher fasting glucose levels, insulin resistance, dyslipidemia, and elevated blood pressure. Furthermore, the impact of OSA on work productivity and cognitive function suggests that untreated sleep apnea may extend beyond physical health concerns, potentially affecting professional performance and quality of life.

The STOP-BANG questionnaire was found to be a useful initial screening tool, particularly when combined with BMI and neck circumference measurements, enhancing its predictive accuracy. Given the growing prevalence of sedentary work environments and lifestyle habits among young adults, there is a critical need for proactive screening programs, targeted lifestyle interventions, and early management strategies to mitigate long-term health risks associated with OSA.

Future research should explore longitudinal studies assessing the progression of OSA in sedentary individuals and evaluate the effectiveness of lifestyle-based interventions in reducing disease burden. Integrating digital health technologies for early OSA detection and leveraging workplace health initiatives may provide new avenues for improving sleep health outcomes in young adults.

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