

# Impact of Obstructive Sleep Apnea on Daily Life by Disease Severity Level: Analysis from the SHINE Survey

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## INTRODUCTION

- Obstructive sleep apnea (OSA) is a serious, chronic sleep-related breathing disease in which the airway is obstructed during sleep causing disrupted breathing, sleep fragmentation, and reduced oxygenation.<sup>1</sup>
- The Apnea-Hypopnea Index (AHI) is a key metric used to diagnose and assess the severity of OSA: Mild (AHI 5 to <15 events/hr), Moderate (AHI 15 to <30 events/hr), Severe (AHI ≥30 events/hr).<sup>2</sup>
- Despite its high prevalence, OSA often remains underdiagnosed, particularly in mild disease. This underdiagnosis persists despite substantial evidence indicating that even mild cases can significantly disrupt daily functioning, adversely impacting productivity, cognitive performance, emotional well-being, and overall quality of life.<sup>3</sup>
- Recognizing and addressing OSA severity is essential, as early identification and management may prevent disease progression, reduce associated health risks, and significantly enhance patient outcomes.
- The objective of this analysis was to evaluate the impact of OSA on daily life of people living with OSA, based on self-reported OSA severity levels.

## METHODS

The SHINE (Sleep Health Inquiries on Needs and Emotions) online patient survey, developed in partnership with the Alliance of Sleep Apnea Partners (ASAP), Project Sleep and OSA experts, was administered to 1,500 OSA patients in the U.S. This de-identified survey dataset includes demographic information, clinical characteristics, symptoms, and self-reported data on work impact for people living with OSA.



Descriptive and adjusted analysis were used to achieve the objective.

- Descriptive comparison was performed across OSA severity levels using ANOVA/Kruskal-Wallis test for continuous variables, and Chi-square test for categorical variables.
- Adjusted analyses were assessed via Generalized Linear Models (GLM) with binomial distribution and logit link function on binary outcomes, adjusted for age group, BMI category, race, region, income level, comorbidities, and time since diagnosis.

Outcomes of interest are listed as follows:

- Whether OSA limited patients' ability to engage in regular, non-work activities (rated 3, 4 or 5 on a 5-point scale),
- Whether OSA affected work productivity (rated 3, 4 or 5 on a 5-point scale), and
- Whether patients experienced ≥2 negative OSA symptoms in the past 30 days.

## RESULTS

Patients across all OSA severity levels reported notable disruptions in both their work-related and daily non-work-related activities.

Table 1. Demographic and Clinical Characteristics of SHINE Participants by OSA Severity.

	Total	Mild	Moderate	Severe	p-value
N (%)	1500 (100%)	192 (12.8%)	807 (53.8%)	450 (30.0%)	
Age, Mean (SD)	46.0 (15.2)	44.2 (15.9)	44.2 (14.9)	48.8 (14.0)	<0.001
BMI, Mean (SD)	30.3 (11.2)	29.0 (9.9)	29.4 (10.8)	32.1 (12.1)	0.004
Gender, N (%)					
Male	755 (50.3%)	83 (43.2%)	360 (44.6%)	280 (62.2%)	0.001
Female	745 (49.7%)	108 (56.3%)	443 (54.9%)	168 (37.3%)	
Race*, N (%)					
White	1132 (75.5%)	155 (80.7%)	615 (76.2%)	316 (70.2%)	0.024
Black/African American	278 (18.5%)	26 (13.5%)	163 (20.2%)	85 (18.9%)	0.214
Alaska Native	26 (1.7%)	0 (0%)	0 (0%)	26 (5.8%)	0.001
Asian	37 (2.5%)	6 (3.1%)	23 (2.9%)	8 (1.8%)	0.654
Region, N (%)					
Northeast	255 (17.0%)	33 (17.2%)	139 (17.2%)	71 (15.8%)	0.961
Midwest	311 (20.7%)	40 (20.8%)	166 (20.6%)	87 (19.3%)	
South	676 (45.1%)	83 (43.2%)	372 (46.1%)	204 (45.3%)	
West	258 (17.2%)	36 (18.8%)	130 (16.1%)	88 (19.6%)	
Comorbidities*, N (%)					
Diabetes (Type I or II)	504 (33.6%)	37 (19.3%)	282 (34.9%)	164 (36.4%)	0.000
ADHD or ADD	352 (23.5%)	53 (27.6%)	215 (26.6%)	75 (16.7%)	0.001
Depression	725 (48.3%)	89 (46.4%)	420 (52.0%)	193 (42.9%)	0.018
Heart failure / CHF or Afib	182 (12.1%)	20 (10.4%)	87 (10.8%)	68 (15.1%)	0.128
Hypertension / high blood pressure	655 (43.7%)	70 (36.5%)	342 (42.4%)	217 (48.2%)	0.039
No comorbidities besides OSA	162 (10.8%)	21 (10.9%)	75 (9.3%)	60 (13.3%)	0.178
Time since Diagnosis, N (%)					
Less than 1 year ago	236 (15.7%)	60 (31.3%)	115 (14.3%)	56 (12.4%)	<0.001
1-5 years ago	765 (51.0%)	92 (47.9%)	484 (60.0%)	175 (38.9%)	
6-10 years ago	261 (17.4%)	22 (11.5%)	123 (15.2%)	107 (23.8%)	
More than 10 years ago	238 (15.9%)	18 (9.4%)	85 (10.5%)	112 (24.9%)	

\* Due to space limitation, not all comorbidities are shown in this table.

Figure 1. OSA Symptoms by OSA Severity.

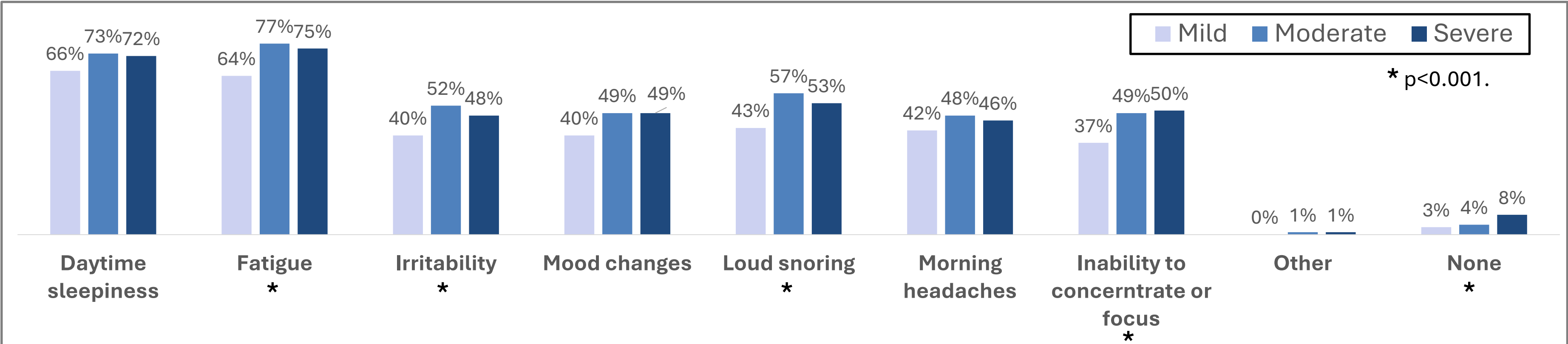


Figure 2. Work and Daily Non-Work Activities - % of Patients Agreeing by OSA Severity.

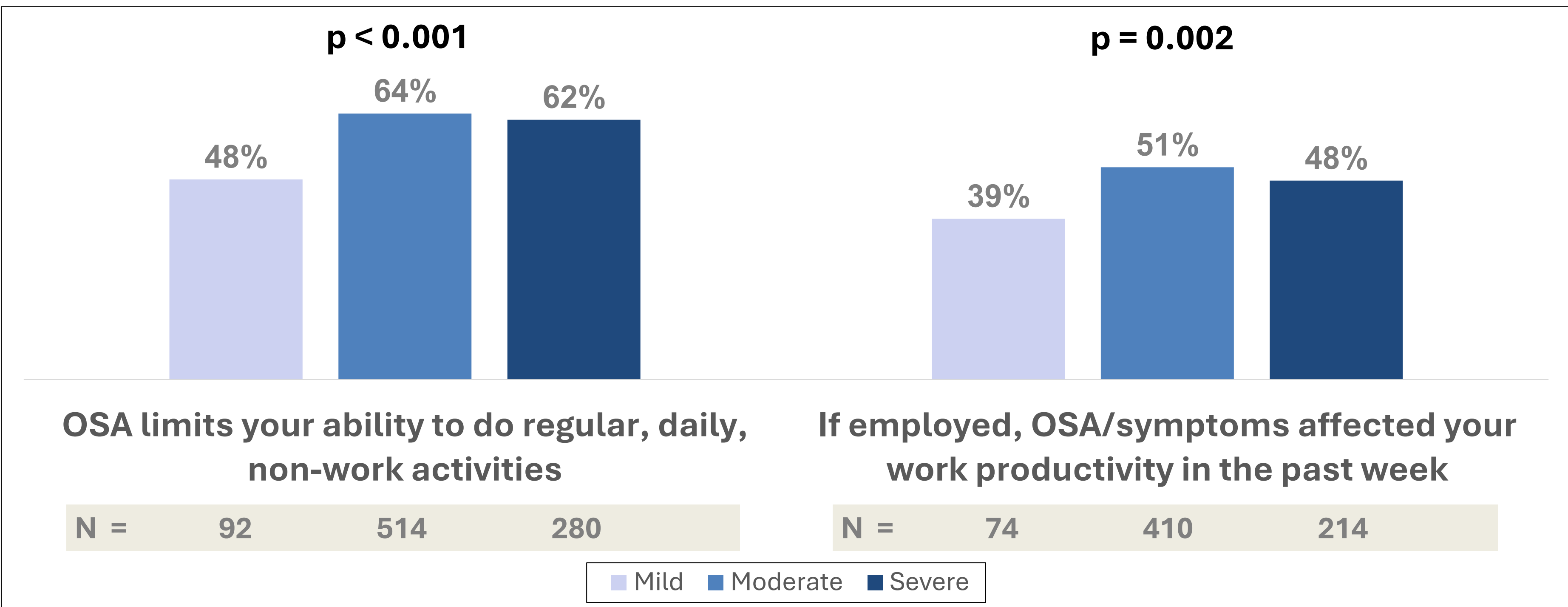


Table 2. Adjusted Analysis for Outcomes of Interest.

OSA Severity	Reported OSA Affected Daily Non-Work Activities		Reported OSA Affected Work Productivity		Reported ≥2 Symptoms of OSA	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Mild	Ref	Ref	Ref	Ref	Ref	Ref
Moderate	2.22 (1.52 - 3.24)	<0.001	2.38 (1.46 - 3.87)	<0.001	2.02 (1.19 - 3.40)	0.009
Severe	2.84 (1.84 - 4.38)	<0.001	4.05 (2.26 - 7.25)	<0.001	1.36 (0.79 - 2.37)	0.268

Adjusted for Baseline Characteristics Including:  
Age, gender, BMI, race, region, income, comorbidities, and time since OSA diagnosis.

## CONCLUSIONS

- Patients with OSA across the entire severity spectrum experienced significant daily life challenges, with greater severity generally associated with more substantial impacts on daily functioning.
- Interestingly, even patients diagnosed with mild OSA reported notable disruptions in both their work-related and daily non-work-related activities, highlighting the importance of not underestimating the impact of mild OSA.
- Evidence highlights the need for proactive early screening, accurate diagnosis, and timely intervention.
- Healthcare providers and policymakers should prioritize raising awareness and ensuring accessibility to effective management strategies from the earliest stages of OSA.

### LIMITATIONS

- Because the survey relies on self-reported data, findings may be influenced by recall or social desirability biases.
- Given the cross-sectional design, causal relationships cannot be established.
- Unmeasured confounders not captured by the survey may influence the findings.

### REFERENCES

- Stowik JM, et al. Obstructive Sleep Apnea. In StatPearls. Treasure Island (FL): StatPearls Publishing; Mar 4, 2025.
- Goyal M, Johnson J. *Mo Med*. 2017;114(2):120-124.
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### ABBREVIATIONS

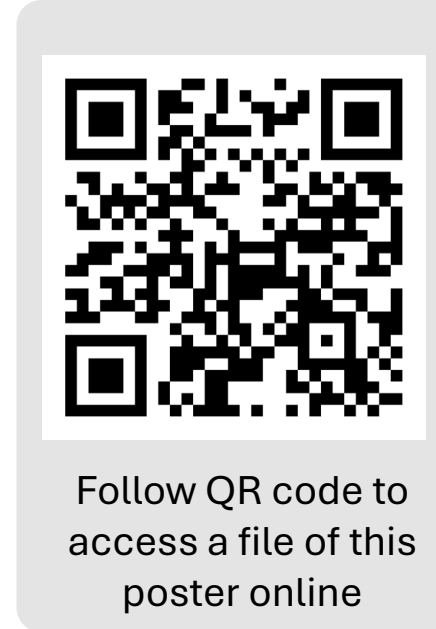
ADD - Attention-deficit disorder; ADHD - Attention-deficit/hyperactivity disorder; Afib - Atrial Fibrillation; ANOVA - Analysis of Variance; BMI - Body Mass Index; CHF - Congestive Heart Failure; GLM - Generalized Linear Model; hr - hour; OSA - Obstructive Sleep Apnea; p-value - probability value; Ref - Reference group; SHINE - Sleep Health Inquiries on Needs and Emotions; U.S. - United States.

### DISCLOSURES

MM is an employee of the Alliance of Sleep Apnea Partners. AM, JY, KSY are employees of Apnimed, Inc. EC is an employee of Project Sleep, consultant for Apnimed, Inc. and advisor for React Health. EB, LB, and RW are employees at Curta, Inc.

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