Likelihood of Obstructive Sleep Apnea Among Patients with Obesity and Anti-Obesity Medication Use

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BACKGROUND

Obesity has risen sharply since 1990[1], leading to significant health issues, including obstructive sleep apnea (OSA), which affects nearly 1 billion people globally.[2,3] Obesity is the leading risk factor for OSA, and weight loss can improve both sleep quality and overall health.[4] New medications including semaglutide and tirzepatide offer promising options for managing obesity and OSA[5], but direct comparisons of their effectiveness are needed.

OBJECTIVES

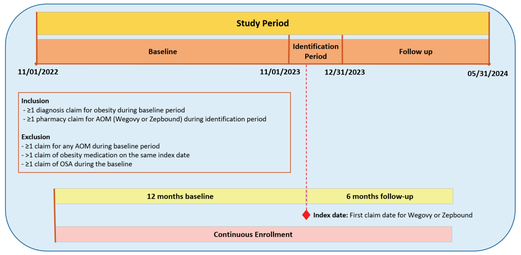
This study assessed the impact of newly approved anti-obesity medications (AOMs) on OSA risk among patients with obesity in the United States.

METHODS

Setting

A retrospective cohort study assessing the Kythera data population (2022-2024) with an identification period from November 1 to December 31, 2023 (**Figure 1**).

Figure 1. Study design



AOM: anti-obesity medication; OSA: obstructive sleep apnea

METHODS (cont'd)

Sample

Patients with obesity were classified into 2 cohorts:

- **AOM cohort**: Received tirzepatide (Zepbound) or semaglutide (Wegovy) during the identification period (index date = first AOM claim).
- **Non-AOM cohort**: No evidence of AOM use during the study period; random index dates were selected within the AOM cohort's range; a 1% random sample of eligible patients was included.

Outcomes

OSA risk assessed during a 6-month follow-up period

Analysis

- Descriptive analysis of baseline characteristics and OSA incidence
- Cox regression was used to compare OSA risk between patients with and without AOM use and with tirzepatide vs semaglutide use, adjusting for comorbidities and sociodemographic characteristics.

RESULTS

The study included 20,384 patients with obesity and AOM use (17,859 semaglutide; 2,525 tirzepatide) and 85,018 patients with obesity without AOM use.

Patients in the AOM cohort were younger, more likely to be female, and had a significantly higher percentage of patients with Chronic Disease Scores (CDS) ≥2 than the non-AOM cohort.

Unadjusted OSA incidence measured in the follow-up period was significantly lower in the AOM cohort than in the non-AOM cohort. Subgroup analysis of the AOM cohort showed that tirzepatide users had a slightly lower OSA incidence than semaglutide users (2.65% vs 3.18%) (p=0.0303).

After adjusting for sociodemographic and clinical characteristics, the AOM cohort showed a 40% lower likelihood of OSA than the non-AOM cohort (**Table 2**). However, there was no statistically significant difference in the risk of OSA between tirzepatide and semaglutide users (p=0.1664).

RESULTS (cont'd)

Table 1. Baseline characteristics of the study and comparison cohorts

Characteristics	AOM Cohort (Wegovy or Zepbound) (N = 20,384)	Non-AOM Cohort (N = 85,018)	*P*-value	SMD
Age (years), mean (SD)	45.49 (12.45)	51.14 (18.39)	<0.0001	0.3247
Age Group, n (%)				
18-40 years	7016 (34.42)	18 948 (22.29)	<0.0001	0.2833
41-60 years	10 821 (53.09)	32 176 (37.85)	<0.0001	0.3124
61-80 years	2 349 (11.52)	26 190 (30.81)	<0.0001	0.4404
80+ years	35 (0.17)	3 663 (4.31)	<0.0001	0.2257
Sex, n (%)				
Male	3 562 (17.47)	35 082 (41.26)	<0.0001	0.5033
Female	16 822 (82.53)	49 935 (58.73)	<0.0001	0.5034
Comorbidity Scores, n (%)				
CCI Score ≥2	1 368 (6.71)	4 446 (5.23)	<0.0001	0.0649
CDS ≥2	10 651 (52.25)	7 174 (8.44)	<0.0001	1.3176
Elixhauser Index Score ≥2	12 625 (61.94)	13 441 (15.81)	<0.0001	1.1794
SES, n (%)				
Low	5 736 (28.14)	28 412 (33.42)	<0.0001	0.1129
Medium	6 599 (32.37)	27 438 (32.27)	0.7834	0.0021
High	7 667 (37.61)	27 452 (32.29)	<0.0001	0.1130
Baseline CVD-related Comorbidities, n (%)				
Hypertension	6 898 (33.84)	10 619 (12.49)	<0.0001	0.5888
Hyperlipidemia	3 831 (18.79)	5 308 (6.24)	<0.0001	0.4531
Type 2 diabetes	981 (4.81)	5 594 (6.58)	<0.0001	0.0731
Cardiovascular diseases	1 481 (7.27)	3 635 (4.28)	<0.0001	0.1393
COPD	2 404 (11.79)	2 884 (3.39)	<0.0001	0.3894
Depression	4 412 (21.64)	3 282 (3.86)	<0.0001	0.7100
GERD	3 379 (16.58)	2 979 (3.50)	<0.0001	0.5625
Metabolic disorders	789 (3.87)	259 (0.30)	<0.0001	0.3631
Somnolence	79 (0.39)	32 (0.04)	<0.0001	0.1080
Stroke	71 (0.35)	175 (0.21)	0.0002	0.0295
Follow-up incidence				
Sleep apnea	635 (3.12)	10 682 (12.56)	0.0001	0.3075

AOM: anti-obesity medication; CCI: Charlson comorbidity index; CDS: chronic disease score; COPD: chronic obstructive pulmonary disease; CVD: cardiovascular disease; GERD: gastroesophageal reflux disease; SES: socioeconomic status; SD: standard deviation; SMD: standardized mean difference

Table 2. Cox regression results of AOM vs. no-AOM cohort for time to sleep apnea

Characteristics	HR	Confidence interval		*P*-value
		Lower	Upper	
Treatment	0.60	0.55	0.66	<0.0001
No treatment	1.00	1.00	1.00	
Age group, y				
18-40	0.87	0.78	0.97	0.0107
41-60	2.29	2.08	2.51	<0.0001
61-80	3.26	2.97	3.58	<0.0001
80+	1.00	1.00	1.00	
Sex				
Female	0.59	0.57	0.61	<0.0001
Male	1.00	1.00	1.00	
Comorbidity scores				
CCI Score ≥2	1.29	1.15	1.46	<0.0001
Chronic Disease Score ≥2	0.56	0.52	0.59	<0.0001
Elixhauser Index Score ≥2	0.55	0.51	0.60	<0.0001
SES				
Low	0.96	0.92	1.01	0.1138
Medium	1.07	1.02	1.12	0.0043
High	1.00	1.00	1.00	
Comorbidities				
Hypertension	0.63	0.58	0.68	<0.0001
Hyperlipidemia	0.60	0.55	0.66	<0.0001
Diabetes	0.68	0.61	0.75	<0.0001
Cardiovascular diseases	1.19	1.07	1.32	0.0010
COPD	0.96	0.86	1.07	0.4543
Depression	1.05	0.95	1.16	0.3216
GERD	0.80	0.72	0.88	<0.0001
Metabolic disorders	0.79	0.59	1.07	0.1307
Somnolence	3.31	2.06	5.34	<0.0001
Stroke	0.66	0.40	1.06	0.0871

AOM: anti-obesity medication; CCI: Charlson comorbidity index; CDS: chronic disease score; COPD: chronic obstructive pulmonary disease; GERD: gastroesophageal reflux disease; HR: hazard ratio; SES: socioeconomic status

CONCLUSION

This study found that AOM use reduced the risk of OSA by 40% among patients with obesity vs those without AOM use. No significant differences were found between tirzepatide and semaglutide users. These results suggest that AOM use may help lower OSA risk, especially among patients with higher comorbidities.

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