Comparative Effect of Ozempic, Wegovy, and Mounjaro on the Incidence of Alcohol and Substance Use Disorder in Patients with Obesity

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BACKGROUND

Newly approved anti-obesity medications (AOMs), such as semaglutide (Ozempic and Wegovy) and tirzepatide (Mounjaro) are proven to be effective for alleviating obesity.[1,2] However, there is limited research focusing on their effect on obesity-related comorbidities such as alcohol use disorder (AUD) and substance use disorder (SUD).

OBJECTIVES

To determine and compare the impact of Ozempic, Wegovy, and Mounjaro use on the incidence of AUD and SUD in US patients with obesity.

METHODS

- We conducted a retrospective cohort study utilizing Kythera Medicaid data from January 2020 to August 2022.

- Three cohorts of patients with obesity were identified: those with evidence of Ozempic, Wegovy, and Mounjaro use, separately.

- The first prescription claim date for the medication was designated as the index date.

- Results were also compared based on AOM vs non-AOM use.

- Sociodemographic and clinical variables, SUD/AUD-specific comorbidities, and SUD/AUD event rates were also assessed.

METHODS (cont'd)

Figure 1. Selection Criteria

Inclusion Criteria
- ≥1 pharmacy claims for Ozempic, Wegovy, or Mounjaro in the identification period
- ≥1 claim with an obesity diagnosis prior to the index date
- Continuous enrollment for 12 months pre- and post-index date

Exclusion Criteria
- Prescribed any obesity medications during the baseline period
- ≥1 claim with a diagnosis of AUD or SUD prior to the index date
- >1 claim of obesity medication in the same index date
- Aged 99 years and older

Analytical Methods
- Presence of SUD and AUD was determined using diagnosis codes at outpatient and inpatient visits
- Descriptive analysis
- Propensity score matching for risk adjustment

AUD: alcohol use disorder; SUD: substance use disorder

RESULTS

Mounjaro users had the lowest incidence of SUD (2.50% vs 8.37% for Wegovy vs 9.85% for Ozempic, p=0.2353), AUD (0% vs 2.09% vs 0.89%, p=0.1688), and any SUD or AUD (2.50% vs 9.62% vs 10.34%, p=0.2560) compared with Wegovy and Ozempic users.

However, differences in these rates were not statistically significant. Our study found that Wegovy users had more comorbidities, most commonly anxiety (30% for Mounjaro vs 40.17% for Wegovy vs 30.34% for Ozempic, p=0.0081). Individuals in low-SES regions were more likely to use Mounjaro (37.50% vs 23.01% for Wegovy vs 32.91% for Ozempic; p=0.0045).

RESULTS (cont'd)

Table 1. Baseline Characteristics of Patients with Ozempic, Wegovy and Mounjaro Use

Characteristics	Ozempic (N = 2,030)		Wegovy (N = 239)		Tirzepatide (N = 40)		p-value
	N/Mean	%SD	N/Mean	%SD	N/Mean	%SD	
Gender							
Male %	519	25.57%	33	13.81%	9	22.50%	0.0003
Female %	1,511	74.43%	206	86.19%	31	77.50%	0.0003
Age (years)							
18-34	47.42	12.53	40.48	11.72	44.53	12.40	<0.0001
35-54	349	17.19%	81	33.89%	9	22.50%	<0.0001
55-64	977	48.13%	123	51.46%	20	50.00%	0.8101
65+	611	30.10%	29	12.13%	9	22.50%	<0.0001
	78	3.84%	5	2.09%	2	5.00%	0.3596
Region							
Northeast	439	21.63%	44	18.41%	3	7.50%	0.0543
South	713	35.12%	61	25.52%	22	55.00%	0.0003
Midwest	372	18.33%	59	24.69%	5	12.50%	0.0345
West	499	24.58%	74	30.96%	10	25.00%	0.0986
Other	7	0.34%	1	0.42%	-	0.00%	0.9163
Comorbidity Scores							
Charlson Comorbidity Index Score	1.69	1.43	0.71	1.08	1.23	1.21	<0.0001
Chronic Disease Score	5.68	3.48	3.99	3.23	4.88	3.54	<0.0001
Elixhauser Index Score	4.17	2.39	2.91	2.06	3.58	2.30	<0.0001
Charlson Comorbidity Index Score (≥2)	973	47.93%	44	18.41%	12	30.00%	<0.0001
Chronic Disease Score (≥2)	1,750	86.21%	169	70.71%	29	72.50%	<0.0001
Elixhauser Index Score (≥2)	1,818	89.56%	180	75.31%	33	82.50%	<0.0001
SES Score							
Low	668	32.91%	55	23.01%	15	37.50%	0.0045
Medium	648	31.92%	85	35.56%	10	25.00%	0.1302
High	656	32.32%	93	38.91%	10	25.00%	0.0929
Comorbidities for SUD/AUD							
Depression	200	9.85%	26	10.88%	3	7.50%	0.7719
Anxiety	616	30.34%	96	40.17%	12	30.00%	0.0081
Nicotine dependence	-	-	-	-	-	-	-
Schizophrenia	20	0.99%	1	0.42%	-	0.00%	0.9670
Bipolar disorder	113	5.57%	3	1.26%	2	5.00%	0.0166
Post-traumatic stress disorder	80	3.94%	12	5.02%	3	7.50%	0.4039
ADHD	62	3.05%	11	4.60%	-	0.00%	0.2230
Specific personality disorders	19	0.94%	2	0.84%	-	0.00%	0.8202
HIV/AIDS	7	0.34%	5	2.09%	-	0.00%	0.0016
Any of the above comorbidities	755	37.19%	111	46.44%	13	32.50%	0.0157
Outcome							
Substance use disorder	200	9.85%	20	8.37%	1	2.50%	0.2353
Alcohol use disorder	18	0.89%	5	2.09%	-	0.00%	0.1688
SUD or AUD	210	10.34%	23	9.62%	1	2.50%	0.2560

ADHD: attention deficit hyperactivity disorder; AUD: alcohol use disorder; CCI: Charlson Comorbidity Index; CDS: Chronic Disease Score; SD: standard deviation; SES: socioeconomic status; SUD: substance use disorder

CONCLUSION

The absence of statistically significant differences in the rates of SUD/AUD between those treated with Ozempic vs Wegovy vs Mounjaro demonstrates that patients are no more likely to experience an AUD/SUD event while on one medication vs the others. Nonetheless, when patients with obesity receiving AOM were compared with those on no AOM, SUD/AUD rates were significantly lower in the AOM group (9.89% vs 14.24%, p=0.0015).

RESULTS (cont'd)

Table 2. Baseline Characteristics of AOM and Non-AOM Cohorts (Matched)

Characteristics	With Medication Use (Ozempic, Wegovy, Tirzepatide) (N =2,254)		No Medication Use (N =2,254)		p-value	Std. Diff.
	N/Mean	%SD	N/Mean	%SD		
Gender						
Male %	551	24.45%	582	25.82%	0.4517	0.0317
Female %	1,703	75.55%	1,672	74.18%	0.4517	0.0317
Age (years)						
18-34	436	19.34%	443	19.65%	0.8524	0.0078
35-54	1,085	48.14%	1,119	49.65%	0.4738	0.0302
55-64	632	28.04%	608	26.97%	0.5714	0.0238
65+	85	3.77%	59	2.62%	0.1194	0.0656
Region						
Northeast	473	20.98%	454	20.14%	0.6205	0.0209
South	767	34.03%	749	33.23%	0.6882	0.0169
Midwest	428	18.99%	441	19.57%	0.7285	0.0146
West	578	25.64%	607	26.93%	0.4878	0.0292
Other	8	0.35%	3	0.13%	0.2868	0.0450
Comorbidity Scores						
Charlson Comorbidity Score	1.56	1.41	1.50	1.48	0.1815	0.0405
Chronic Disease Score	5.37	3.43	5.30	3.44	0.5101	0.0199
Elixhauser Index Score	3.99	2.37	3.90	2.65	0.2194	0.0364
Charlson Comorbidity Index Score (≥2)	987	43.79%	905	40.15%	0.0801	0.0738
Chronic Disease Score (≥2)	1,893	83.98%	1,874	83.14%	0.5893	0.0227
Elixhauser Index Score (≥2)	1,976	87.67%	1,982	87.93%	0.8469	0.0081
SES Score						
Low	682	30.26%	687	30.48%	0.9088	0.0048
Medium	841	37.31%	833	36.96%	0.8616	0.0073
High	664	29.46%	675	29.95%	0.7999	0.0107
Comorbidities for SUD/AUD						
Depression	225	9.98%	232	10.29%	0.8070	0.0103
Anxiety	715	31.72%	750	33.27%	0.4313	0.0332
Nicotine dependence	-	-	-	-	-	-
Schizophrenia	20	0.89%	39	1.73%	0.0783	0.0742
Bipolar disorder	116	5.15%	160	7.10%	0.0533	0.0815
Post-traumatic stress disorder	94	4.17%	108	4.79%	0.4760	0.0300
ADHD	73	3.24%	68	3.02%	0.7623	0.0127
Specific personality disorders	21	0.93%	24	1.06%	0.7500	0.0134
HIV/AIDS	12	0.53%	9	0.40%	0.6427	0.0195
Any of the above comorbidities	866	38.42%	899	39.88%	0.4764	0.0300
Outcome						
Substance use disorder	211	9.36%	296	13.13%	0.0046	0.1195
Alcohol use disorder	18	0.98%	49	2.17%	0.0224	0.0963
SUD / AUD	223	9.89%	321	14.24%	0.0015	0.1337

ADHD: attention deficit hyperactivity disorder; AOM: anti-obesity medication; AUD: alcohol use disorder; CCI: Charlson Comorbidity Index; CDS: Chronic Disease Score; SD: standard deviation; SES: socioeconomic status; SUD: substance use disorder

REFERENCES

1. Müller TD, Blüher M, Tschöp MH, Dimarchi RD. Anti-obesity drug discovery: Advances and challenges. *Nature Reviews Drug Discovery*. 2022;21(3):201-23.
2. Chakhtoura M, Haber R, Ghezzawi M, Rhayem C, Tcheroyan R, Mantzoros CS. Pharmacotherapy of obesity: An update on the available medications and drugs under investigation. *eClinicalMedicine*. 2023;58:101882.