CO206

Treatment Effect of PAP Therapy in Real-World Sleep Apnea Patients

Real-World Observational Study of PAP Therapy Outcomes in Czech Patients with Sleep Apnea

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INTRO

Positive airway pressure (PAP) therapy improves symptoms and quality of life in sleep apnea patients, but evidence on mortality and cardiovascular outcomes remains inconsistent, particularly in Central and Eastern Europe.

OBJECTIVE

This study evaluated the association between PAP therapy and health outcomes in Czech sleep apnea patients using national administrative claims data.

METHODS

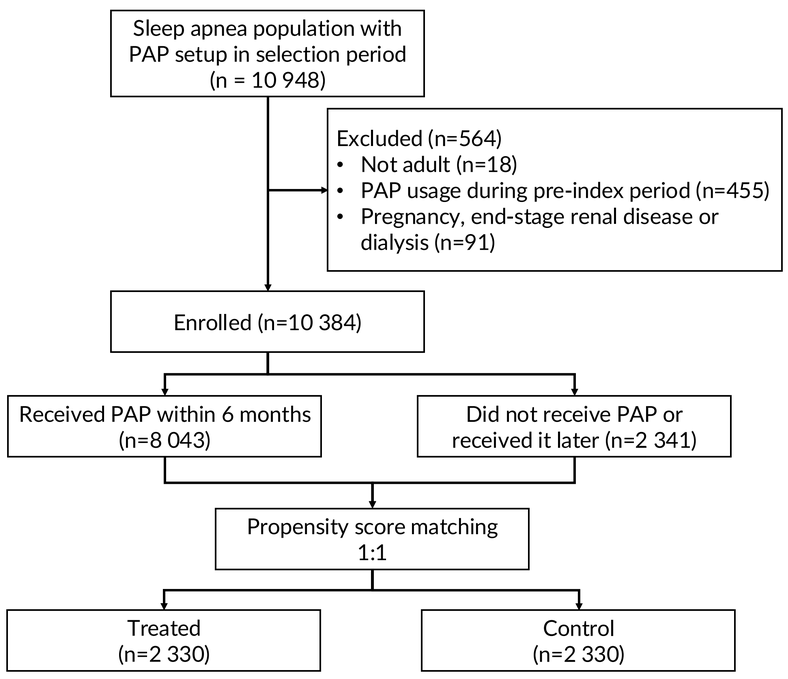
This retrospective new-user cohort study analyzed Czech national health insurance claims data between 2018 and 2021. The study included 10,384 adults diagnosed with sleep apnea who underwent a PAP device setup procedure. Patients were divided into treatment and control groups based on whether they initiated PAP therapy within 6 months of setup. Propensity score matching was used to balance baseline characteristics, resulting in 2,341 matched pairs.

The analysis employed Cox proportional hazards models with time-dependent exposure to address immortal time bias, with a median follow-up period of approximately 3 years. Sensitivity analysis using the landmark method with multiple fixed time points (30, 60, 90, 120, 150, and 180 days) was conducted to test the robustness of the results. Primary outcomes included all-cause mortality, hospitalizations, and composite cardiovascular endpoints including MACE and MACCE.

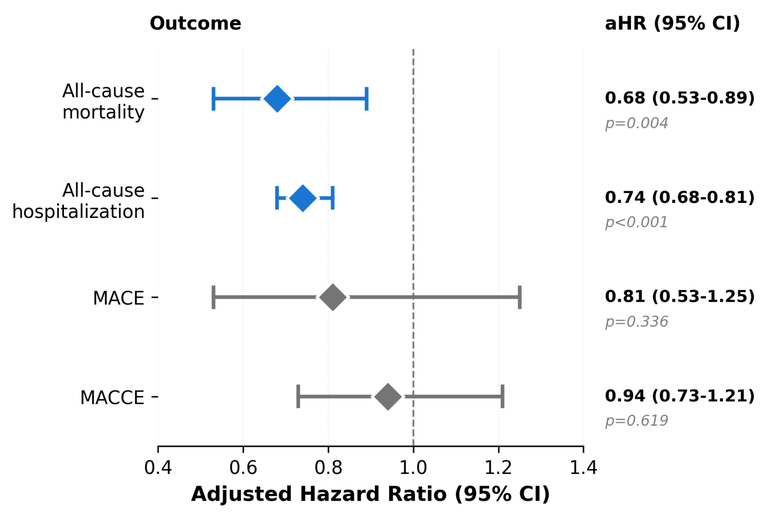
RESULTS

PAP therapy was associated with significant reductions in all-cause mortality and all-cause hospitalizations. However, no significant differences were observed for composite cardiovascular outcomes including MACE and MACCE.

Cohort selection



Time-Dependent Exposure Cox Results



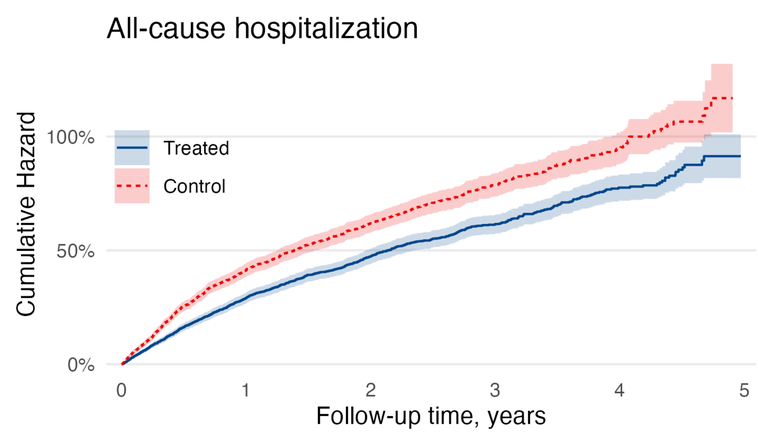
Baseline characteristics

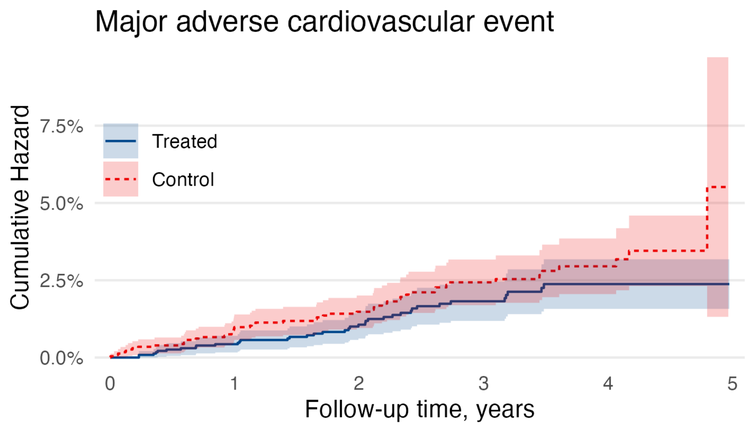
Characteristic	Treated N = 2,330	Control N = 2,330	SMD
Age	57 (12)	57 (12)	0.01
Sex			0.00
Male	1,631 (70%)	1,632 (70%)	
Female	699 (30%)	698 (30%)	
Comorbidities			
Heart failure	171 (7.3%)	170 (7.3%)	0.00
Coronary heart disease	206 (8.8%)	202 (8.7%)	0.01
Chronic obstructive pulmonary disease	173 (7.4%)	179 (7.7%)	-0.01
Asthma	244 (10%)	244 (10%)	0.00
Cancer	47 (2.0%)	47 (2.0%)	0.00
Hypertension	741 (32%)	739 (32%)	0.00
Diabetes	494 (21%)	502 (22%)	-0.01
Anticoagulant Therapy	706 (30%)	716 (31%)	-0.01
Myocardial infarction or stroke	11 (0.5%)	12 (0.5%)	-0.01
HCRU			
Inpatient costs (CZK)	19,466 (73,278)	20,494 (60,169)	-0.02
Hospitalization count	0.84 (0.96)	0.85 (1.06)	-0.01
Prescribed medication costs (CZK)	10,881 (15,980)	11,078 (16,200)	-0.01
Not medication outpatient costs (CZK)	24,645 (32,205)	26,766 (45,815)	-0.05
Outpatient visits	28 (18)	28 (21)	-0.01

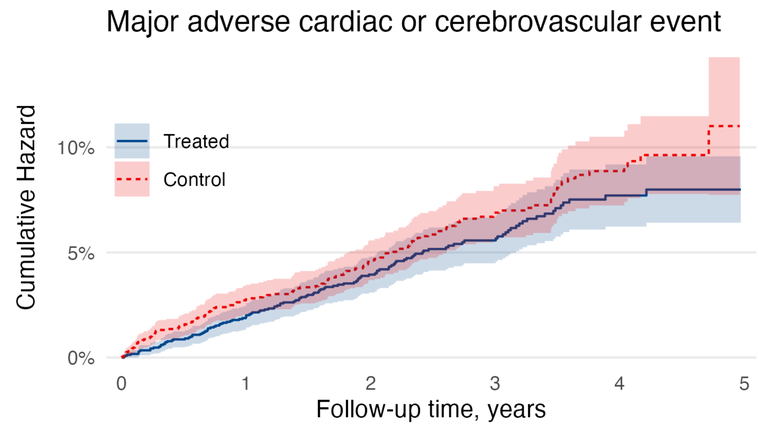
Sensitivity analysis

Landmark	All-cause mortality	All-cause hospitalization	MACE	MACCE
30 days	0.72	0.76***	1.38	1.10
60 days	0.70*	0.78***	0.91	1.06
90 days	0.74*	0.76***	0.79	1.08
120 days	0.74*	0.83***	0.82	1.02
150 days	0.74*	0.84***	0.80	0.96
180 days	0.75*	0.84**	0.79	1.00

Adjusted hazard ratios, *p<0.05; **p<0.01; ***p<0.001







CONCLUSION

The results emphasize the value of PAP therapy for improving patient outcomes and reducing healthcare resource utilization, though further research is needed to explore strategies for improving treatment adherence and evaluating long-term cardiovascular outcomes.

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