

Table 2
Main characteristics and results of studies including hypoxic burden as a measure of OSA severity.

Author (year)	Cohort and patients	Age and gender	AHI and HB values	Follow-up	Main outcomes	Main results for HB	HB vs AHI
Azarbarzin et al. (2019) ¹⁶	MrOS (n=2,743) Population-based	76.5 (5.5) 100% men	15.7 (13.9) 53.3 (47.8)	10 (3.5) yrs	CV mortality (n = 440) All-cause mortality (n = 1,270)	HR, 1.81; 95% CI: 1.25–2.62 HR, 2.73 95% CI: 1.71–4.36 (Q1 [$<20\%$ min/h] versus Q5 [$>88\%$ min/h])	Better HB Dose–response
Azarbarzin et al. (2019) ¹⁶	SHHS (n = 5,111) Population-based	63.7 (10.9) 47.2%men	17.1 (15.3) 46.6 (53.8)	10.9 (3.1) yrs	CV mortality (n = 313) All-cause mortality (n = 1,142)	HR, 1.61; 95% CI: 1–2.6.1 HR, 1.96; 95% CI: 1.11–3.43 (Q1 [$<16\%$ min/h] versus Q5 [$>71\%$ min/h])	Better HB Dose–response
Blanchard et al. (2020) ⁶⁰	Pays de la Loire Sleep Cohort (n = 3,597) Clinical-based	58 [48–67] 63% men	20 (IQR, 8–35)	5.9 (IQR, 3.5–8.4) yrs	First incident stroke (n = 83; 70 ischemic including TIA)	HR, 1.28; 95% CI: 1.05–1.57)	Better HB Dose–response
Azarbarzin et al. (2020) ⁶²	SHHS (n = 4,881) Population-based	63.6 (11.1) 45.6%men	Men: 11 (13.3) 62 (64.7) Women: 6.2 (10.1) 37 (39.4)	10.4 (3.4) yrs	Incident heart failure (n = 543)	HR, 1.05; 95% CI: 0.95–1.17	Better HB
Azarbarzin et al. (2020) ⁶²	MrOS (n = 2,653) Population-based	76.2 (5.4) 100% men	11.4 (12.8) 57.3 (53)	8.8. (2.8) yrs	Incident heart failure (n = 145)	HR, 1.22; 95% CI: 1.02–1.45	Better HB
Kim et al. (2020) ⁵⁸	Multi-Ethnic Study of Atherosclerosis (MESA) (n = 2,055) Population-based	68.4 (9.1) 46%men	14.8 (16.7) 31.2 (41.7)	Cross-sectional	% change in SBP and DBP	SBP: 0.5 (–0.3 to 1.3); p = 0.21 DBP: 1.1 (0.4–1.8); p = 0.002	NA
Jackson et al. (2021) ⁶⁴	Multi-Ethnic Study of Atherosclerosis (MESA) (n = 1,895) Population-based	68.2 (9.1) 46% w	OSA, 79.2% 56.5 (65.1)	Cross-sectional	Prevalent moderate-to-severe CKD	Prevalence rate, 1.36; 95% CI: 1.00–1.18) (Q1 [$<16.24\%$ min/h] versus Q5 [$>84.4\%$ min/h])	Better HB Dose–response
Trzepizur et al. (2021) ⁵¹	Pays de la Loire Sleep Cohort (n = 5,358) Clinical-based	60 (IQR: 51–69) 63.7% men	27 (IQR: 14–42)	78 (IQR, 52–109) months	MACE (n = 592)	HR, 1.21; 95% CI: 1.07–1.38	Better HB Dose–response

Ref. [16]. Adjusted for age, BMI, race, gender (only in SHHS), sleep duration, smoking, alcohol (only in MrO2), non-CVD medical history, AHI, ODI, MinSat, TST90 and cardio-metabolic diseases.

Ref. [60]. Adjusted for age, gender, body mass index, alcohol intake, smoking status, diabetes, hypertension, history of cardiac disease and study site and CPAP adherence.

Ref. [62]. Adjusted for age, race, sex, interaction sex*HB, BMI, COPD, smoking, TST, diabetes, HTN, CHD, stroke.

Ref. [62]. Adjusted for age, race, BMI, COPD, smoking, TST, diabetes, HTN, CHD, stroke.

Ref. [58]. Adjusted for age, sex, race/ethnicity, body mass index (kg/m²), smoking status, cigarette pack-years, alcohol use, periodic limb movement, education level, odds ratio product and duty cycle. All results reported per SD increment of natural log-transformed hypoxic burden.

Ref. [64]. Adjusted for age, BMI, eGFR, hypertension, antihypertensives, diabetes mellitus, dyslipidemia.

8. Non-adjusted results.

Ref. [51]. Adjusted for: age, gender, body mass index, smoking status, presence of prevalent disease (diabetes, COPD and hypertension), type of sleep study, study site, beta blocker/calcium channel blocker medications and CPAP treatment.

HR: hazard ratio; IQR: interquartile range; Q: quintile; CKD: chronic kidney disease; AHI: apnea-hypopnea index; HB: hypoxic burden; SBP: systolic blood pressure; DBP: diastolic blood pressure; NA: no available; SHHS: Sleep Heart Health Study; MrOS: The Outcomes of Sleep Disorders in Older Men; CV: cardiovascular; TIA: transient ischemic attack; CHD: coronary heart disease; MACE: myocardial infarction, stroke, exacerbation of congestive heart failure, revascularization procedure (percutaneous coronary intervention, coronary artery bypass graft surgery) or all-cause death; OSA: obstructive sleep apnea defined as an AHI > 5 events/h.