

SUPPLEMENTAL DATA**Prognostic impact of sleep-disordered breathing on
mortality and cardiovascular events in renal dialysis: A
meta-analysis****Tingting Hao¹, Yingjiao Shen², Xiaofeng Lu^{3*}**¹Hemodialysis Unit, Shangluo Central Hospital, Shangluo, China;²Department of Nephrology, Changzhi People's Hospital, Changzhi, China;³Department of Nephrology, Tongxiang First People's Hospital, Tongxiang, China.*Correspondence to Xiaofeng Lu: xflutxfph_2023@hotmail.com**Full article is available at the following link: [Prognostic impact of sleep-disordered breathing on mortality and cardiovascular events in renal dialysis: A meta-analysis](#)**

Supplemental File 1. Detailed search strategy for each database

PubMed

1. "Sleep Apnea Syndromes"[Mesh] OR "Sleep Apnea"[tw] OR "Obstructive Sleep Apnea"[tw] OR "Obstructive Sleep Apnea, Adult"[Mesh] OR "Sleep Disordered Breathing"[tw]
2. "Hemodialysis"[Mesh] OR "Peritoneal Dialysis"[Mesh] OR dialysis[tw] OR hemodialysis[tw] OR PD[tw]
3. "Mortality"[Mesh] OR mortality[tw] OR death[tw] OR survival[tw] OR prognosis[tw] OR "Survival Rate"[Mesh] OR "Cardiovascular Diseases"[Mesh] OR "Cardiovascular"[tw] OR "Adverse Events"[tw]
4. #1 AND #2 AND #3

Filters: Humans; English; Publication dates from inception to May 29, 2025

Embase

1. 'sleep apnea'/exp OR 'sleep disordered breathing'/exp OR 'obstructive sleep apnea'/exp OR 'sleep breathing disorder'/exp OR 'OSAHS'/exp OR 'sleep apnea':ti,ab OR 'sleep disordered breathing':ti,ab OR 'obstructive sleep apnea':ti,ab OR 'OSAHS':ti,ab OR 'OSAS':ti,ab
2. 'dialysis'/exp OR 'hemodialysis'/exp OR 'peritoneal dialysis'/exp OR dialysis:ti,ab OR hemodialysis:ti,ab
3. 'mortality'/exp OR 'death'/exp OR 'prognosis'/exp OR 'survival'/exp OR 'cardiovascular event'/exp OR 'adverse event'/exp OR mortality:ti,ab OR death:ti,ab OR survival:ti,ab OR prognosis:ti,ab OR cardiovascular:ti,ab OR 'adverse events':ti,ab
4. #1 AND #2 AND #3

Limits: Human; English; from database inception to 2025-05-29

Web of Science

TS = ("sleep disordered breathing" OR "sleep breathing disorders" OR "sleep apnea syndrome" OR "obstructive sleep apnea" OR "OSAHS" OR "OSAS")

AND TS = (dialysis OR hemodialysis)

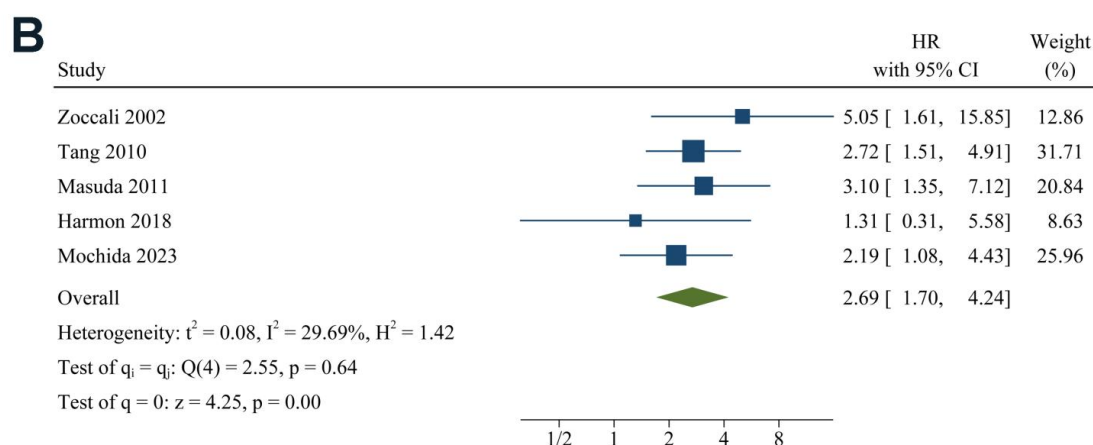
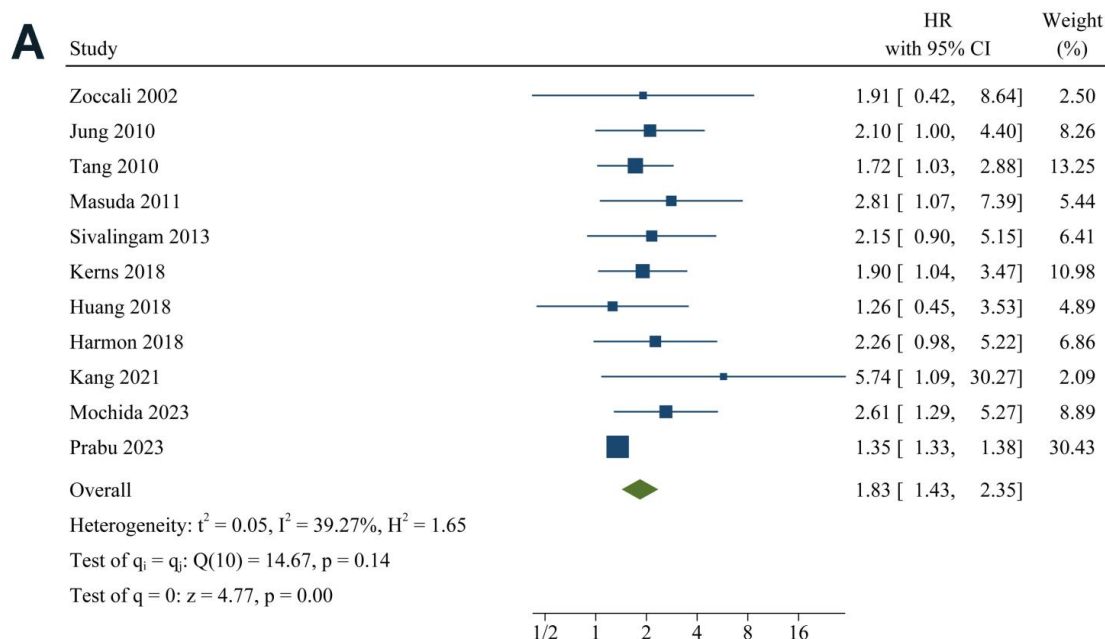
AND TS = (mortality OR death OR prognosis OR survival OR "adverse events" OR cardiovascular)

Refine: Document type = Article OR Review; Language = English; Timespan = All years up to 2025

Supplemental table 1. Definition of MACEs in each study

Study	Definition of MACEs
Zoccali 2002	Fatal and nonfatal CV events, including: angina and MI (ECG-documented), HF, symptomatic arrhythmia requiring hospitalization, TIA and stroke, PAD, major arterial/venous thrombosis (excluding AVF thrombosis).
Tang 2010	Fatal and nonfatal CV events, including: ischemic heart disease, HF or fluid overload, arrhythmia, hypertensive crisis requiring hospitalization, cerebrovascular event (stroke/TIA), PAD.
Masuda 2011	Fatal and nonfatal CV events, including: angina or MI, HF, symptomatic arrhythmia requiring hospitalization, TIA, stroke, PAD, major arterial/venous thrombosis, sudden death.
Harmon 2018	CV events including: sudden death, unstable angina, MI, stroke, PAD events requiring intervention.
Mochida 2023	Cardiac events: HF requiring hospitalization, ischemic heart disease (angina, MI), symptomatic aortic stenosis, sudden death. Cerebrovascular events: stroke (ischemic or hemorrhagic), TIA. PAD events: critical limb ischemia, PTA evidence of femoral/lower-limb artery stenosis. CV death: death related to heart disease, stroke, or PAD (including sepsis/ulcers from critical limb ischemia).

Abbreviations: CV: Cardiovascular; MI: Myocardial infarction; HF: Heart failure; TIA: Transient ischemic attack; PAD: Peripheral artery disease; AVF: Arteriovenous fistula; PTA: Percutaneous transluminal angioplasty; MACEs: Major adverse cardiovascular events.



Supplemental figure 1. Forest plots for the meta-analyses of the association between SDB and all-cause mortality and MACEs of patients on renal dialysis using the HKSJ random-effects model. (A) Forest plots for the meta-analysis of the association between SDB and all-cause mortality; (B) Forest plots for the meta-analysis of the association between SDB and MACEs. Abbreviations: SDB: Sleep-disordered breathing; MACEs: Major adverse cardiovascular events; HR: Hazard ratio; CI: Confidence interval; HKSJ: Hartung–Knapp–Sidik–Jonkman.