Supplementary Table 2. Methodological appraisal of included cross-sectional studies

Study	Population and sampling clearly described	STOP-Bang exposure definition clear	Outcome definition clear	Confounders identified and adjusted	Complex survey/ appropriate statistical analysis	Main methodological concern	Overall appraisal
Kang et al. [4], 2024	Yes	Yes; STOP-Bang low 0–2, intermediate 3–4, high ≥5	Yes; cardiovascular morbidity defined as stroke, myocardial infarction, or angina	Yes; adjusted for cardiovascular risk-related covariates including age, sex, BMI, smoking, diabetes, and dyslipidemia	Yes	Structural overlap between STOP-Bang items and cardiometabolic outcomes; overlapping KNHANES dataset	Acceptable for descriptive synthesis; moderate interpretive concern
Lee and Kim [7], 2025	Yes	Yes; STOP-Bang-based OSA classification included score ≥5 or STOP ≥2 plus one BANG criterion, and self-reported physician-diagnosed OSA	Yes; uncontrolled hypertension despite antihypertensive medication use	Yes; adjusted for age, sex, diabetes, BMI, and other confounders in antihypertensive medication users	Yes	Strong structural overlap because hypertension is both a STOP-Bang item and the outcome domain	Acceptable, but BP findings should be down-weighted as confounded by design
Kim et al. [17], 2023	Yes	Partly; high-risk OSA defined as ≥3 positive STOP-Bang items in older adults	Yes; older-adult metabolic and clinical profile	No adjusted regression model; descriptive comparisons by sex and age group	Partly; descriptive comparisons reported	Different high-risk threshold and no adjusted effect estimate	Descriptive only; not used for pooled or primary effect interpretation
Yu et al. [15], 2026	Yes	Yes; high OSA risk defined as STOP-Bang score ≥5	Yes; albuminuria defined using UACR ≥30 mg/g and severity categories	Yes; fully adjusted estimates extracted	Yes	Cross-sectional design; bidirectional model directions should not be interpreted causally	Acceptable for descriptive synthesis; moderate interpretive concern
Jung and Lee [1], 2023	Yes	Yes; low 0–2, intermediate 3–4, high 5–8; alternative high-risk rule also applied	Yes; albuminuria and CKD defined using renal markers	Yes; fully adjusted model and subgroup analyses by sex and working hours	Yes	Sex-specific findings may be limited by screening performance and subgroup size	Acceptable for descriptive synthesis; moderate interpretive concern
Zoh and Yun [16], 2025	Yes	Yes; STOP-Bang score analyzed as continuous OSA-risk burden	Yes; glaucoma prevalence and IOP	Yes; adjusted for age, sex, diabetes, and smoking	Yes	Glaucoma estimate borderline and IOP effect size small; cross-sectional design	Acceptable, but ophthalmologic interpretation should be conservative
Chung and Kim [14], 2024	Yes	Yes; STOP-Bang high-risk ≥5	Yes; health-related behavioral correlates	Yes; adjusted for general and metabolic characteristics	Yes	Former smoking association may reflect reverse causation or illness-driven cessation	Acceptable for descriptive synthesis; moderate interpretive concern

"Overall appraisal" reflects suitability for descriptive synthesis rather than risk of bias for causal inference. All included studies were cross-sectional and used screening-defined OSA risk rather than PSG-confirmed OSA.

BMI, body mass index; CKD, chronic kidney disease; IOP, intraocular pressure; OSA, obstructive sleep apnea; STOP-Bang, snoring, tiredness, observed apnea, pressure, body mass index, age, neck circumference, and sex; UACR, urine albumin-to-creatinine ratio; KNHANES, Korea National Health and Nutrition Examination Survey; BP, blood pressure.