The Safety and Effectiveness of Drug-Induced Sleep Endoscopy in Obstructive Sleep Apnea : A Systematic Review and Meta-Analysis

HTA331

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Background & Objective

Drug-induced sleep endoscopy (DISE) provides dynamic assessment of upper airway collapse under sedated conditions comparable to natural sleep. Despite its growing clinical use for obstructive sleep apnea (OSA), evidence comparing its safety and effectiveness with conventional awake assessments is limited. This study aims to evaluate the clinical safety and effectiveness of DISE in patients with OSA.

Methods

A systematic search was conducted across six databases (Ovid-MEDLINE, Ovid-EMBASE, Cochrane, KoreaMed, KMbase, and RISS) through April 2024. Comparative studies were included if DISE was performed in addition to standard awake evaluation in the intervention group, while the control group received only the awake evaluation. Two reviewers independently selected studies, assessed the risk of bias using the Cochrane RoB tool for randomized controlled trials and RoBANS 2.0 for nonrandomized studies, and extracted data. We extracted safety outcomes (complications, adverse events) and effectiveness outcomes (apnea indices, treatment success). Meta-analyses were conducted where feasible.

Results

A total of 14 studies were included in this systematic review, comprising three randomized controlled trials (RCTs) and eleven non-randomized studies (NRSs).

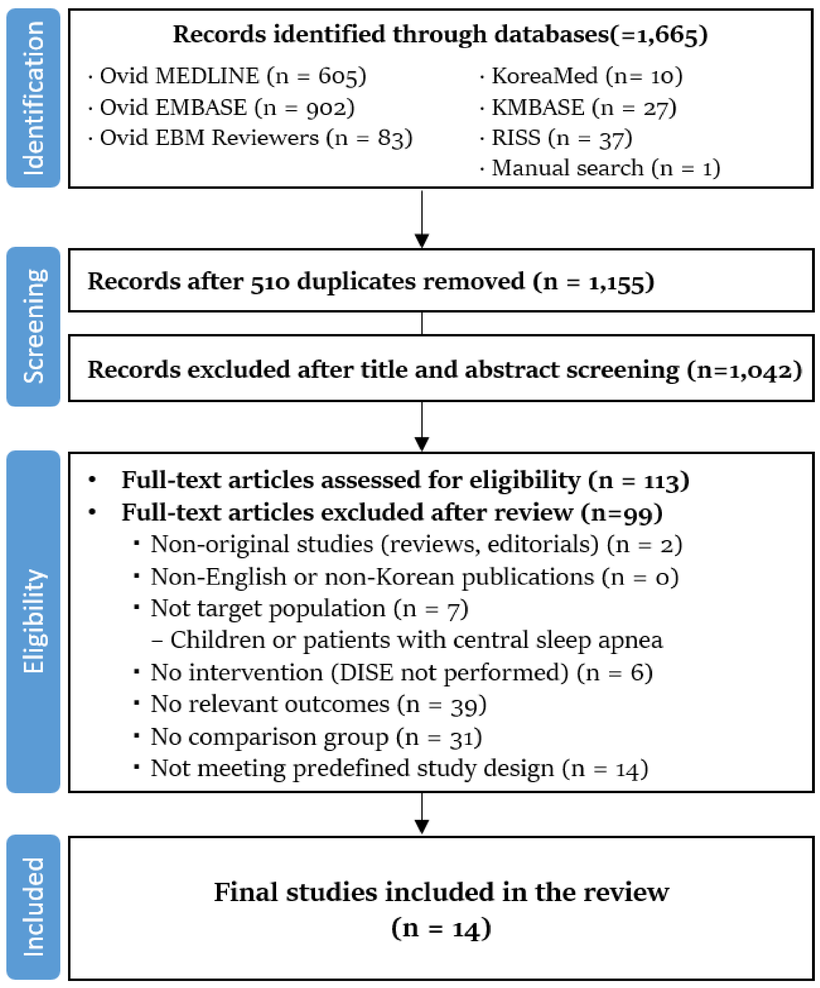
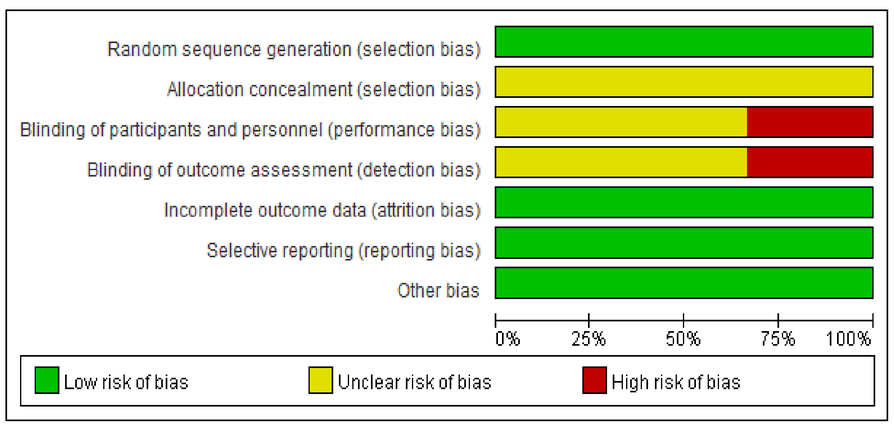


Figure 1. Flow diagram of study selection

In the RCTs, the risk of bias was generally low, although some domains related to allocation concealment and blinding were rated as unclear. In the NRSs, the overall risk of bias was also low, with uncertainty mainly observed in the domains of confounding factors and rater blinding.



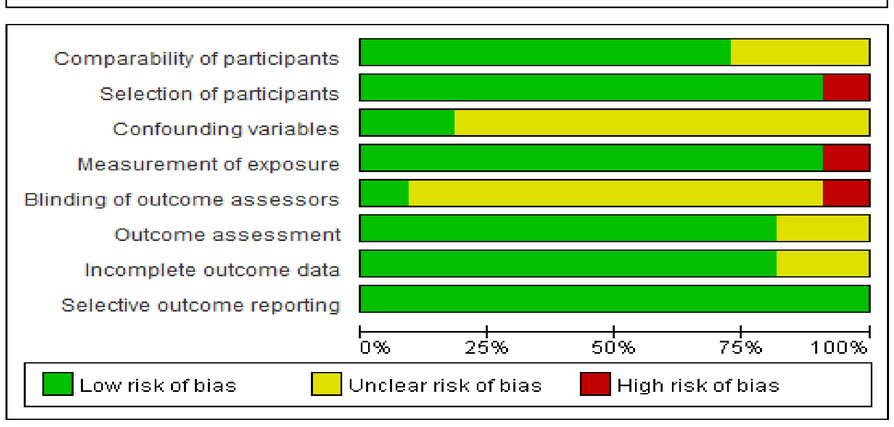


Figure 2. Risk of bias assessment for RCTs and NRSs

Results- Safety

Two studies evaluated the safety of DISE and reported no adverse events or procedure-related complications in patients with OSA. DISE was considered clinically safe, with a safety profile comparable to conventional endoscopic procedures under sedation. As patients are prone to apnea during sleep, the procedure should be performed under adequate monitoring in a properly equipped medical setting.

Results- Effectiveness

Fourteen studies, including three RCTs and eleven NRSs, evaluated the effectiveness of DISE compared with standard awake evaluation. Meta-analyses showed no significant differences in post-treatment apnea indices or treatment success rates, although the DISE group tended to show better respiratory outcomes. Subgroup analyses indicated potential improvements in respiratory indices when DISE was combined with physical examination, especially in supine assessments and among patients using intraoral devices. The overall certainty of evidence was rated as low.

Conclusion

Based on the current evidence, DISE appears to be a safe and clinically useful adjunctive method for evaluating patients with OSA. DISE may help guide treatment planning, particularly among patients who do not tolerate or respond adequately to positive airway pressure (PAP) therapy. Further studies are required to confirm its clinical value and cost-effectiveness.

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