INPLASY

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The association between obstructive sleep apnea and pulmonary hypertension: a systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202490098

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 September 2024 and was last updated on 23 September 2024.

INTRODUCTION

Review question / Objective This systematic review and meta-analysis aimed to evaluate the prevalence of pulmonary hypertension (PH) in obstructive sleep apnea (OSA), as well as the prevalence of OSA in PH in adults and discuss their potential association.

Condition being studied Obstructive sleep apnea is a syndrome characterized as collapse of upper airways and hypoventilation, manifesting as snoring during sleep and daytime sleepiness. Pulmonary hypertension, defined by a right heart catheterization of over 25mmHg, was an abnormal hemodynamic condition associated with multiple respiratory and cardiovascular diseases. Although previous studies reported the prevalence of PH in OSA or OSA in PH, these studies are limited with small sample size.

METHODS

Participant or population Patients diagnosed with OSA with or without PH, as well as those diagnosed with PH with or without OSA.

Intervention OSA patients complicated with PH.

Comparator OSA patients without PH, as well as PH patients without OSA.

Study designs to be included Observational studies including cross-sectional study, retrospective or prospective case-control study and cohort study.

Eligibility criteria
Inclusion criteria:
1. Patients were diagnosed with OSA or PH via objective measures.

2.Enroll a population of over 50.
3.Prevalence of PH in OSA, or prevalence of OSA in PH are available.
4.Study type: observational studies including cross-sectional study, retrospective or prospective case-control study and cohort study, focusing on patients with OSA or PH in adults.

Exclusion criteria:
1.Duplicated data from the same institution or database.
2.Studies based on highly selective cohorts, such as OSA or PH patients with a history of COPD.
3.Studies not published in English
4.Review, comments or meta-analysis.

Information sources Two investigators will independently search PubMed, Web of science and Scopus for eligible articles from inception to August 2024. To prevent omissions, the reference list of related reviews will also be screened and selected.

Main outcome(s) The prevalence of PH in patients with OSA, as well as the prevalence of OSA in patients with PH.

Quality assessment / Risk of bias analysis Newcastle-Ottawa Scale (NOS) will be applied for quality assessment, which composed of "selection" , "comparability" and "exposure". It will divide articles into "high quality (7-9)" "moderate quality(4-6)" and "low quality (0-3)".

Strategy of data synthesis We will extract basic information including authors, publication year, countries, continent, diagnostic criteria of OSA and PH. We will also extract number and baseline characteristics of OSA patients with or without PH, as well as PH patients with or without OSA.
After extraction, we will provide a pooled prevalence with 95% confidence intervals (CI) of PH in OSA, as well as OSA in PH, respectively. Clinical characteristics of PH-OSA overlap will be presented as odds ratio (OR) or mean difference with 95% CI, comparing with patients with single OSA or PH, respectively. I2 static were applied for heterogeneity assessments. If I2>50%, a random-effect model will be applied, otherwise a fix-effect model will be applied.

Subgroup analysis Subgroup analysis will be performed according to number of eligible articles and availability of data.

Sensitivity analysis Sensitivity analysis will be applied via "leave one out" process to explore every single article's effect on overall results.

Contributions of each author
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