

INPLASY PROTOCOL

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None declared.

Prevalence and Clinical Characteristics of sleep disorder in Chronic Obstructive Pulmonary Disease: A Systematic review and Meta-analysis

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Review question / Objective: Our meta-analysis aims to investigate the prevalence of sleep-disordered breathing (SDB) in patients suffered from chronic obstructive pulmonary disease (COPD) and analyze the particular characteristics of SDB-positive COPD patients. Our work may shed light on management of SDB in COPD patients.

Condition being studied: Chronic obstructive pulmonary disease (COPD) is a heterogeneous disease characterized by irreversible and persistent airflow obstruction due to airways and alveoli dysfunction. Sleep disorder such as obstructive sleep apnea (OSA), insomnia and restless leg syndrome (RLS) is observed to have a high prevalence in COPD patients. We aim to investigate the prevalence of sleep disorder in COPD and summarize their clinical characteristics.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 March 2023 and was last updated on 02 June 2023 (registration number INPLASY202330057).

INTRODUCTION

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COPD patients. We aim to investigate the prevalence of sleep disorder in COPD and summarize their clinical characteristics.

METHODS

Search strategy: We will search PubMed, Web of science, Scopus and cochrane library for eligible articles, and we will use chronic obstructive pulmonary disease, COPD, obstructive sleep apnea, insomnia and restless leg syndrome.

Participant or population: Patients diagnosed with chronic obstructive pulmonary disease.

Intervention: COPD patients diagnosed with sleep disorder, which include OSA, insomnia and RLS.

Comparator: COPD patients with or without sleep disorder.

Study designs to be included: We will include observational studies such as cross-sectional study, case-control study and cohort study, either retrospective or prospective.

Eligibility criteria: Inclusion criteria:

- 1.Studies enrolling population with a diagnosis of COPD
- 2.Studies with a sample size of over 50
- 3.Documented the number of patients with RLS
- 4.Study type limitation: Observational studies like cross-sectional, cohort and case-control study

Exclusion criteria:

- 1.Duplicated data published by a same author or the same institution.
- 2.Studies not published in English
3. Letter, abstract, review article.
- 4.Studies with obvious selection bias of COPD patients (like only include COPD patients in acute exacerbation period).

Information sources: We will extract author, publication year, country, study type, study location (hospital or community), diagnostic criteria of COPD and sleep disorder, number and baseline data of COPD patients with and without sleep

disorder, and characteristics of sleep disorder positive group.

Main outcome(s): The prevalence of sleep disorder in patients with COPD.

Data management: We will extract author, publication year, country, study type, study location (hospital or community), diagnostic criteria of COPD and RLS, number and baseline data of COPD patients with and without RLS, and characteristics of RLS positive group compared to RLS negative group. We also develop an Excel form to record all data we extract.

Quality assessment / Risk of bias analysis: We will apply Newcastle-Ottawa Scale (NOS), which is composed of "selection", "comparability" and "exposure". The total scores is divided into "high quality (7-9)" "moderate quality(4-6)" and "low quality (0-3)".

Strategy of data synthesis: After extraction we will calculate the pooled prevalence with 95% confidence intervals (CIs) to access the proportion of sleep disorder positive COPD patients. Heterogeneity will be measured via Q test and I square (I²) statistic. If significant heterogeneity (p50%) is obtained, we will apply random effect model; otherwise, a fixed effect model will be performed instead. Sensitivity analysis and meta-regression will also be conducted to investigate the source of heterogeneity. All analysis will be performed using Stata (version 16.0), and a p value <0.05 is considered as statistically significant.

Subgroup analysis: We will conduct subgroup analysis if enough data are available.

Sensitivity analysis: Sensitivity analysis will be performed via "leave one out " method consecutively to explore every single article's influence on the overall heterogeneity.

Language restriction: In English.

Country(ies) involved: China.

Keywords: chronic obstructive pulmonary disease, sleep disorder, obstructive sleep apnea, restless leg syndrome and insomnia.

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