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Prevalence of poor sleep quality among individuals with Parkinson's disease: a meta-analysis and systematic review

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ADMINISTRATIVE INFORMATION

Support - NR.

Review Stage at time of this submission - Data analysis.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2023100022

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 06 October 2023 and was last updated on 06 October 2023.

INTRODUCTION

Review question / Objective The inclusion criteria are summarized by the PICOS acronym: Participants (P): patients with PD according to study-defined diagnostic criteria, such as the UK PD Society Brain Bank criteria and the Movement Disorder Society (MDS) clinical diagnostic criteria for PD; Intervention (I): not applicable; Comparison (C): healthy controls; Outcome (O): prevalence of poor sleep quality or pertinent information that could produce an estimation of that prevalence. Standard tools, such as the PSQI, were used to measure the quality of the sleep; Study design (S): cross-sectional and comparative studies, such as case-control or cohort studies (baseline data were analyzed in cohort studies) with accessible data published in English or Chinese journal. When a study did not

specify a study design, the authors were contacted for information.

Condition being studied patients with parkinson's disease according to study-defined diagnostic criteria, such as the UK parkinson's disease Society Brain Bank criteria and the Movement Disorder Society (MDS) clinical diagnostic criteria for parkinson's disease.

METHODS

Search strategy The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed for conducting this meta-analysis (Page et al., 2021). Three investigators (TLS, YYW and JXL) systematically and independently searched literature in the PubMed, EMBASE, PsycINFO, Web of Science and CNKI

AND Wangfang databases from their inception date until January 31, 2023, using the following search items: “healthcare workers” OR “physician*” and “Parkinson disease” and “Sleep Quality” OR “Qualities, Sleep” OR “Quality, Sleep” OR “Sleep Qualities” OR “quality of sleeping” OR “sleeping quality” and “Pittsburgh sleep quality index” OR “PSQI” and “prevalence” OR “epidemiology” OR “rate”.

Participant or population Patients with parkinson's disease according to study-defined diagnostic criteria.

Intervention Not applicable.

Comparator Not applicable.

Study designs to be included Cross-sectional and comparative studies, such as case-control or cohort studies (baseline data were analyzed in cohort studies) with accessible data published in English or Chinese journal. When a study did not specify a study design, the authors were contacted for information.

Eligibility criteria The inclusion criteria are summarized by the PICOS acronym: Participants (P): patients with PD according to study-defined diagnostic criteria, such as the UK PD Society Brain Bank criteria and the Movement Disorder Society (MDS) clinical diagnostic criteria for PD; Intervention (I): not applicable; Comparison (C): healthy controls; Outcome (O): prevalence of poor sleep quality or pertinent information that could produce an estimation of that prevalence. Standard tools, such as the PSQI, were used to measure the quality of the sleep; Study design (S): cross-sectional and comparative studies, such as case-control or cohort studies (baseline data were analyzed in cohort studies) with accessible data published in English or Chinese journal. When a study did not specify a study design, the authors were contacted for information. Exclusion criteria were as follows 1) no cut-off values for poor sleep quality were reported; 2) studies involving reviews, systematic reviews, meta-analyses, case studies, and commentaries; and 3) studies on samples with sleep-related disorders (e.g., insomnia and obstructive sleep apnea) were excluded based on recommendations of previous meta-analyses in order to avoid significant selection bias and overestimation of the proportion of poor sleep quality (Bai et al., 2023; Yang et al., 2020).

Information sources Searched literature in the PubMed, EMBASE, PsycINFO, Web of Science and CNKI AND Wangfang databases.

Main outcome(s) Prevalence of poor sleep quality or pertinent information that could produce an estimation of that prevalence.

Quality assessment / Risk of bias analysis Study quality was assessed using a standardized instrument for epidemiological studies (Boyle, 1998; Loney et al., 1998) with the following eight items: (1) target population was defined clearly; (2) probability sampling or entire population surveyed; (3) response rate was $\geq 80\%$; (4) non-responders were clearly described; (5) sample was representative of the target population; (6) data collection methods were standardized; (7) validated criteria were used to diagnose MDD; and (8) prevalence estimates were given with confidence intervals (CIs) and detailed by subgroups. The total score ranges from 0 to 8. Studies with a total score of “7–8” were considered as “high quality,” “4–6” as “moderate quality,” and “0–3” as “low quality”. Study quality of the comparative studies were independently assessed by the same two researchers using the Newcastle-Ottawa Scale (NOS) in three domains: selection, comparability and exposure (Stang, 2010; Wells et al., 2000). The NOS total score was calculated by summing up all item scores.

Strategy of data synthesis All the statistical analyses were conducted using R program (R Core Team, 2013). The random-effects model was used to synthesis the pooled prevalence of poor sleep quality and its 95% confidence intervals (95% CI) (Harris et al., 2008). I² statistics were used to determine the degree of study heterogeneity, high heterogeneity was characterized as the I² statistic being $> 50\%$ (Higgins et al., 2003).

Subgroup analysis Subgroup analyses for categorical variables (study regions, countries by economic status according to the World Bank's criteria (The World Bank Group, 2023), study design, cut-off value signifying poor sleep quality, and survey year) and meta-regression analysis for continuous variables (mean age, male proportion, and quality assessment score) were used to explore the sources of potential heterogeneity.

Sensitivity analysis Sensitivity analysis were carried out to assess the stability of results by individually eliminating each study.

Language restriction Only published in English or Chinese journal will be including in this meta analysis.

Country(ies) involved Macao S.A.R.

Keywords Parkinson's disease; Prevalence; poor sleep quality; meta-analysis.

Contributions of each author

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