

INPLASY PROTOCOL

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Relationship between shift work, night work, and subsequent Parkinson's disease and dementia: a systematic evaluation and meta-analysis

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Review question / Objective: Does continuous shift work or night work increase the risk of neurodegenerative diseases such as dementia and Parkinson's? This study provides up-to-date information for shift and night work staff planning to minimize the negative effects of shift and night work for the professionals involved.

Condition being studied: Recent studies have shown that encountering conditions such as night shift work schedules can lead to lack of sleep, poor sleep quality, reduced recovery, and increased physical stress . . , and increased physical stress. With increasing longevity and population ageing, neurodegenerative diseases such as Alzheimer's disease, Parkinson's disease, Huntington's disease and frontotemporal dementia are on the rise and pose a serious threat to human health. Several longitudinal studies with longer follow-up (5-41 years) have similarly reported that people with circadian rhythm disorders (CRD) have more cognitive decline and an increased risk of developing dementia and Parkinson's disease compared to those without CRD [17-19]. Therefore, we conducted a systematic review and meta-analysis to assess the risk of shift work and night work on PD and dementia.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 18 June 2022 and was last updated on 18 June 2022 (registration number INPLASY202260079).

INTRODUCTION

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Parkinson's? This study provides up-to-date information for shift and night work staff planning to minimize the negative effects of shift and night work for the professionals involved.

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METHODS

Search strategy: The Preferred Reporting Items for Systematic Evaluations and Meta-Analyses (PRISMA) statement was followed when doing the systematic evaluation and meta-analysis . We comprehensively searched PubMed, Embase, and Web of Science for studies from the build date of each database to January 1, 2022; our search strategy was not restricted by language or year of publication. The following terms were used to construct the search strategy: "night shift work," "night work," "shift work," "shiftwork," "Parkinson," "Parkinson disease," "dementia," and "Dementias." The search method was not restricted by publication type. The search strategies are described in Supplementary Material.

Participant or population: (a) inclusion in observational case-control studies or cohort studies; (b) clear and quantifiable night shift work (any occupation); (c) studies reporting effect estimates with corresponding 95% confidence intervals (CIs) or providing relevant data to calculate crude hazard ratios (HRs) for the

association between shift work and PD and dementia.

Intervention: None.

Comparator: None.

Study designs to be included: The indicators analyzed were dichotomous variables and statistics were analyzed using relative risk ratios (HR) and 95% confidence intervals (95% CI).I2 and Q tests were used to assess heterogeneity. If I2 was $\leq 50\%$ and $P \geq 0.05$ the heterogeneity across the included literature was low, and a fixed-effects model was selected for analysis. If I2 was $> 50\%$ and $P < 0.05$, the heterogeneity across the included literature was high, and a random-effects model was used. Sensitivity analyses were conducted using a literature-by-literature.

Eligibility criteria: The studies included in the meta-analysis met all of the following criteria: (a) inclusion in observational case-control studies or cohort studies; (b) clear and quantifiable night shift work (any occupation); (c) studies reporting effect estimates with corresponding 95% confidence intervals (CIs) or providing relevant data to calculate crude hazard ratios (HRs) for the association between shift work and PD and dementia. The excluded studies met one of the following criteria : (a) conference abstracts, reviews, or letters; (b) pilot studies; (c) case report systematic reviews and meta-analyses; (d) duplicate publications; and (e) literature for which full text was not available.

Information sources: Two authors independently extracted the relevant data from the final included studies, and when differences of opinion arose, the consensus was reached through discussion. If a consensus could not be reached, the disagreement was resolved by consultation with relevant experts.

Main outcome(s): The indicators analyzed were dichotomous variables and statistics were analyzed using relative risk ratios (HR) and 95% confidence intervals (95%

CI).I2 and Q tests were used to assess heterogeneity.

Quality assessment / Risk of bias analysis:

The literature will be evaluated by two authors using the New-castle-Ottawa Scale (NOS), a standard for evaluating the quality of literature, which has two scales for cohort studies, and case-control studies. The cohort studies consisted of eight items in three areas of study population selection, comparability between groups, and measurement of outcome. The case-control studies included eight components in three areas: research population selection, group comparability, and exposure factor assessment. If the prerequisites were satisfied, a score of one out of nine was given, with a score of seven being deemed high-quality literature.

Strategy of data synthesis: Meta-analysis of effect models was performed using STATA 16.0 software. The indicators analyzed were dichotomous variables and statistics were analyzed using relative risk ratios (HR) and 95% confidence intervals (95% CI).I2 and Q tests were used to assess heterogeneity. If I2 was $\leq 50\%$ and $P \geq 0.05$ the heterogeneity across the included literature was low, and a fixed-effects model was selected for analysis. If I2 was $> 50\%$ and $P < 0.05$ indicated the absence of publication bias.

Subgroup analysis: To see if specific study characteristics influenced results, we performed subgroup analyses by country (Denmark, Sweden), occupation (nurses or other), design (cohort), working hours (45 vs. > 45 h/week), sleep length (> 6 h), years of shift (10 vs. > 10), age at baseline (50 vs. > 50 years), whether studies were adjusted for pre-existing cardiometabolic disease (yes or no), and whether patients used sleep medication (yes or no).

Sensitivity analysis: Sensitivity analysis was used to assess the steadiness of the results by deleting each study in turn.

Language: None restriction.

Country(ies) involved: China.

Keywords: shift work, night work, Parkinson's disease, dementia, systematic evaluation, meta-analysis.

Contributions of each author:

Author 1 - zhenzhi wang - developed the protocol, participated in the literature search, extracted data, and drafted the manuscript.

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