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Network models of sleep health: a systematic review and statistical evaluation

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - The review has not yet started.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 1 June 2025 and was last updated on 1 June 2025.

INTRODUCTION

Review question / Objective Participants (P): clinical and/or community-based samples; Intervention (I): NA; Control (C): NA; Outcomes (O): any symptoms about sleep; Study design (S): network analysis about and only about sleep based on cross-sectional assessments within varied research designs (e.g., cross-sectional studies or baseline assessments and each follow-up assessment from longitudinal studies).

Condition being studied This systematic review is based on all network analyses about sleep. These included network analyses can use any scale related to sleep and the subjects can be any group of people. Including clinical and/or community-based samples.

METHODS

Search strategy Database: PubMed, PsycINFO, Web of Science, and EMBASE
Search term: ((network analysis OR network perspective OR network approach OR network structure OR network model OR network modeling OR network theory) AND (sleep [MeSH] OR insomnia [MeSH])).

Participant or population This systematic review is based on all network analyses about sleep. These included network analyses can use any scale related to sleep and the subjects can be any group of people. Including clinical and/or community-based samples.

Intervention Not applicable.

Comparator Not applicable.

Study designs to be included Network analysis about and only about sleep based on cross-sectional assessments within varied research designs (e.g., cross-sectional studies or baseline assessments and each follow-up assessment from longitudinal studies).

Eligibility criteria 1. If a network analysis included items other than sleep-related symptoms (such as depression, cognition), it would not be included in the systematic review.
2. If more than one paper was published based on the same dataset, only the one with the largest sample size was included in analyses.

Information sources Publications from PubMed, PsycINFO, Web of Science, and EMBASE.

Main outcome(s) Based on specific sleep-related symptoms, summarize and generalize all the network analyses in this field, and explore the most important symptom for a certain sleep-related syndrome (e.g., insomnia) across people from different regions and cultural backgrounds.

Quality assessment / Risk of bias analysis Generally, we can use regression analysis to assist in testing the results of primary studies if the number of included network analyses of the same type is greater than or equal to 20.

Strategy of data synthesis Centrality ranking data (i.e., most to least important symptoms in the network) for symptoms were aggregated in frequency tables from each study. As certain symptoms were not included in all studies, rankings were min-max normalized and ordered based on their median centrality ranking. Furthermore, an edge was included for robust edges if it was positive, unique and emerged as significantly different from at least two-thirds of the total edges within the same estimated network model.

Subgroup analysis Not applicable.

Sensitivity analysis Not applicable.

Language restriction English.

Country(ies) involved China.

Keywords sleep, network analysis.

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