

## REVIEW ARTICLE

# Gender-specific estimates of sleep problems during the COVID-19 pandemic: Systematic review and meta-analysis

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## Summary

The outbreak of the novel coronavirus disease 2019 (COVID-19) changed lifestyles worldwide and subsequently induced individuals' sleep problems. Sleep problems have been demonstrated by scattered evidence among the current literature on COVID-19; however, little is known regarding the synthesised prevalence of sleep problems (i.e. insomnia symptoms and poor sleep quality) for males and females separately. The present systematic review and meta-analysis aimed to answer the important question regarding prevalence of sleep problems during the COVID-19 outbreak period between genders. Using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guideline and Newcastle–Ottawa Scale checklist, relevant studies with satisfactory methodological quality searched for in five academic databases (Scopus, PubMed Central, ProQuest, Web of Science, and EMBASE) were included and analysed. The protocol of the project was registered in the International Prospective Register of Systematic Reviews (PROSPERO; identification code CRD42020181644). A total of 54 papers ( $N = 67,722$ ) in the female subgroup and 45 papers ( $N = 45,718$ ) in the male subgroup were pooled in the meta-analysis. The corrected pooled estimated prevalence of sleep problems was 24% (95% confidence interval [CI] 19%–29%) for female participants and 27% (95% CI 24%–30%) for male participants. Although in both gender subgroups, patients with COVID-19, health professionals and general population showed the highest prevalence of sleep problems, it did not reach statistical significance. Based on multivariable meta-regression, both gender groups had higher prevalence of sleep problems during the lockdown period. Therefore, healthcare providers should pay attention to the sleep problems and take appropriate preventive action.

## KEYWORDS

COVID-19, gender, insomnia, prevalence, sleep

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