

LETTERS TO THE EDITOR

Insomnia and psychological reactions during the COVID-19 outbreak in China

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The 2019 coronavirus disease (COVID-19) started in China in December 2019, and it rapidly spread throughout China and has become a global pandemic. As COVID-19 has rapidly spread, it has caused deaths, disrupted millions of lives and commerce, and produced sleep and psychological problems.¹

To assess changes in sleep and psychological reactions in people free of COVID-19 infection during the COVID-19 outbreak, we conducted an online survey between February 5 and 19, 2020. A total of 3,637 participants with a mean age of 34.46 ± 9.62 years (range, 18–76 years) and 63% women from all 31 provinces in mainland China were included. All included participants finished a retrospective survey for assessing insomnia, anxiety, and depressive symptoms before the COVID-19 outbreak (January 6–20, 2020) using the Insomnia Severity Index, Generalized Anxiety Disorder-7, and Patient Health Questionnaire-9. The same questionnaires were used to assess corresponding symptoms during the COVID-19 outbreak (after January 21, 2020). Self-reported time in bed, total sleep time, bedtime, and wakeup time were also assessed. COVID-19 outbreak-related stress was assessed using the Impact of Event Scale-Revised questionnaire. We chose January 21, 2020 as the cutoff because person-to-person transmission of COVID-19 was confirmed, and cities were gradually shutdown after that date.

During the COVID-19 outbreak, we found the prevalence of insomnia increased significantly (Insomnia Severity Index > 7 , 26.2% vs 33.7%, $P < .001$); 13.6% and 12.5% of participants developed new-onset insomnia and worsened insomnia symptoms based on Insomnia Severity Index, respectively. Furthermore, lengths of time in bed (485.5 ± 72.6 vs 531.5 ± 94.2 minutes) and total sleep time (432.8 ± 65.6 vs 466.9 ± 95.6 minutes) increased significantly, and SE (88.5% vs 86.8%) decreased significantly. Delayed bedtime (25.6 ± 66.3 minutes) and wakeup time (71.7 ± 89.5 minutes) were also observed. Moreover, 17.6% of participants reported COVID-19-related stress (Impact of Event Scale-Revised ≥ 24), and the prevalence of anxiety (Generalized Anxiety Disorder-7 > 4 , 16.1% vs 27.5%) and depression (Patient Health Questionnaire-9 > 4 , 22.7% vs 31.2%) increased significantly (all $P < .001$). Findings of a multivariate logistic regression model suggested that worsened insomnia during the COVID-19 outbreak was significantly associated with women (odds ratio [OR] = 1.52),

mental illness (OR = 1.63), COVID-19-related stress (OR = 1.40), increased severity of anxiety (OR = 1.15), and depressive (OR = 1.28) symptoms and prolonged time in bed (> 60 minutes, OR = 1.30) during the outbreak (all $P < .05$).

Our findings suggest that insomnia is highly prevalent and associated with COVID-19 outbreak-related psychological reactions and poor sleep hygiene in individuals who are free of COVID-19 infection. The marked anxiety and depressive symptoms during the outbreak could be associated with fear of getting infected and the rapidly increasing number of cases.^{2,3} In addition, it also could be associated with economic-related stress, social distance restrictions, travel restrictions, changes in daily life, mental illness, and female sex.

Our data demonstrate that, in addition to efforts focused on the prevention and treatment of COVID-19, the widespread psychological and insomnia problems in the general population also need to be addressed at the early phase of outbreak.^{1,4} This may be at least partially achieved by establishing a nationwide online psychological and sleep management and intervention system to prevent and mitigate the immediate and long-term effects of significant traumatic events on psychological health and sleep.

CITATION

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