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Letter to the Editor

Prevalence of posttraumatic and general psychological stress during COVID-19: A rapid review and meta-analysis

1. Introduction

On March 11th, 2020, the novel coronavirus disease (COVID-19) was declared a global pandemic, instantiating physical distancing and quarantine orders to mitigate its rapid transmission. Past studies have documented the effects of infectious outbreaks and subsequent quarantine orders, on both posttraumatic stress disturbance (Hawryluck et al., 2004) and psychological stress (Brooks et al., 2020; Lau et al., 2005) experienced in the general population. In addition to psychosocial stressors, such as financial strain and isolation (Tan et al., 2020), COVID-19 may also increase stress due to fear of infection to oneself or loved ones (Khan et al., 2020). Altogether, the uncontrollable and unpredictable nature of COVID-19 has likely led to extraordinary stress in the general population.

Emerging evidence suggests rates of posttraumatic stress and psychological stress in the general population are elevated due to COVID-19. However, a meta-analysis is needed to attain more precise prevalence estimates due to between-study variability. Thus, we performed a rapid review and meta-analysis of posttraumatic stress and general psychological stress symptoms during COVID-19. Electronic searches were conducted up to May 26th, 2020 using key terms: mental illness and COVID-19. A total of k = 14 non-overlapping studies were identified for inclusion. Random effects meta-analyses indicated that the pooled prevalence of posttraumatic stress symptoms and psychological stress in the general population was 23.88% and 24.84%, respectively. In both meta-analyses, the prevalence of stress symptoms was higher in unpublished compared to peer-reviewed studies. Overall, nearly one-in-four adults experienced significant stress due to the COVID-19 pandemic. Psychological resources and services must be allocated to help address the mental health burden of COVID-19. High quality, longitudinal research on the long-term mental health effects of the pandemic is greatly needed.

2. Method

PRISMA guidelines were followed. Electronic searches developed by a health sciences librarian were conducted in PsycINFO, Cochrane Central Register of Controlled Trials, Embase, and MEDLINE up to May 26th, 2020 (see PROSPERO [CRD42020184903]). Unpublished preprints were searched for in PsycArXiv. Key search terms included COVID-19 and mental health. Inclusion criteria were: (1) empirical study; (2) written in English; (3) collected during COVID-19; (4) sample ≥ 18 years; and (5) drawn from general population.

In total, 3,405 non-duplicated abstracts were identified, 175 full-text articles were reviewed, and k = 14 non-overlapping studies (N = 21,744 participants) were identified for inclusion. No extreme cases were found. On average, participants were 29.47 years of age and 54.39% were female. All studies were cross-sectional and used self-reports of stress symptoms. The mean study quality was 3.07/6.0
The pooled prevalence of posttraumatic stress symptoms ($k = 8$) was 23.88% (95% CI: 14.01, 33.76). Significant heterogeneity was identified ($Q = 118,330.05; I^2 = 99.99$). Moderators were explored (see Supplementary Table 1) and unpublished studies had significantly higher prevalence estimates ($k = 3$; prevalence = 34.71%; CI: 23.25, 46.19) compared to published studies ($k = 5$; prevalence = 17.38; CI: 6.02, 28.75). Age and sex were not significant moderators.

The pooled prevalence of psychological stress ($k = 8$) was 24.84% (95% CI: 11.75, 37.92). Heterogeneity was significant ($Q = 265,346.12; I^2 = 99.99$). Moderators were explored (see Supplementary Table 1) and unpublished studies had significantly higher prevalence estimates ($k = 4$; prevalence = 37.07%; CI: 23.02, 51.11) compared to published studies ($k = 4$; prevalence = 12.61; CI: 1.72, 23.49). Age and sex were not significant moderators. No publication bias or additional moderators were detected in the meta-analyses.

4. Discussion

Results from the current meta-analysis document high levels of both posttraumatic (26.2%) and psychological (23.1%) stress associated with COVID-19. Although prevalence estimates were lower in peer-reviewed compared to unpublished studies, findings suggest approximately one-in-four adults require mental health services during the ongoing pandemic. While elevations in stress during a global pandemic are to be expected, the long-term implications of these elevations are cause for concern. Specifically, decades of research suggest elevations in overall stress are risk factors or precipitants for the onset of comorbid mental health difficulties such as anxiety, depression, or substance use (Conde et al., 2019). Exposure to stress over time can also lead to accelerated disease processes and the exacerbation of chronic health conditions, further inflating healthcare costs (McEwen, 2000). All told, the broader implications of large increases in stress during COVID-19 at a population level are significant and will require government and policy changes to help reduce stress, such as income supplements, childcare, and development of broadly available prevention and intervention programs that promote stress-reduction strategies such as healthy eating, physical activity, and good sleep habits.

Due to the rapidly evolving nature of COVID-19, the research presented in this rapid review is preliminary in nature and represents a snapshot of stress levels in the months immediately following the pandemic. Most studies to date have reported on cross-sectional data and without representative samples. Publication status moderated effect sizes. Methodological rigor is critical to adequately inform policy, practice, and public dialog. Longitudinal studies are necessary to determine whether these elevations in stress are sustained, reduced, or exacerbated over time (Pierce et al., 2020). Furthermore, studies from different geographic areas with varying severity of exposure to the disease, as well as differences in mitigative strategies (e.g., lockdown, school closures), are needed.

Author contributions

MR and SM designed the search strategy with input from JC and RE. SM, NR, JC, and RE completed the literature search and screening. JC, RE, and NR performed data extraction. SM conducted the analyses. JC, RE, NR, and SM contributed to writing the manuscript, reviewing the manuscript with content expertise, and providing critical feedback.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.psychres.2020.113347.

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