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Protocol

Global Prevalence of Posttraumatic Stress Disorder (PTSD) during and after Coronavirus Pandemic: A Study Protocol for a Systematic Review and Meta-Analysis

Maryam Salmanian, Mona Salehi*, Zahra Hooshyari

Abstract

Objective: Studies conducted on severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), and COVID-19 epidemics have shown PTSD can occur during and after infectious diseases. However, more studies are needed to explore PTSD during and after COVID-19 outbreak. The objective of this study is to provide a protocol of systematic review and meta-analysis to report the global prevalence of PTSD during and after coronavirus pandemics among general population, health care workers, survivors, or patients with coronaviruses.
Method: We include all studies that reported the prevalence of PTSD during and after coronavirus pandemics and search databases, including Web of Science, PubMed, Scopus, Embase, and Google Scholar from first of November 2002 to May 18, 2020. Two authors independently use relevant checklists to quality assessment of the included studies and extract data. We use the graphical methods and fixed or random effect models to aggregate prevalence estimates. Also, we will assess heterogeneity between the included studies using the I2 heterogeneity statistic and use subgroup and sensitivity analysis to assess the sources of heterogeneity.
Discussion: We infer that PTSD is a common experience during and after infectious disease pandemics, especially COVID-19. The findings of this study can be used by health policymakers and other stakeholders and will provide a path to future studies.

Human coronaviruses cause respiratory infections from common colds to severe acute respiratory syndrome (SARS) according to the range of seriousness. Among coronaviruses, SARS, MERS, and COVID-19 have produced outbreaks of severe human respiratory diseases (1, 2). SARS was first identified in mid-November 2002 in China and outspread to more than 20 countries in a few months with the overall case-fatality rates from 7% to 17% (2, 3). MERS was first identified in 2012 in Saudi Arabia and killed 34% of patients between 2012 and 2019 (2, 4). COVID-19 is caused by a new and highly contagious coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which was first identified in December 2019 In Wuhan, China. On March 11, 2020, the director-general of the World Health Organization (WHO) described the COVID-19 outbreak as a pandemic (3).

From that time, COVID-19 has continued to spread across the world rapidly, including 213 countries that reported 6 371 677 patients and 377 552 deaths on June, 2, 2020 (5).

PTSD symptoms involve chronic severe anxiety with reexperiencing the traumatic event, flashbacks, increased arousal, nightmares, and reduced social life. Individuals with PTSD are more at-risk of suicidal ideation, suicide attempt, and deaths by suicide. We consider PTSD as a secondary effect of the coronavirus pandemics for the general population, patients, and health care workers (6). Studies conducted on SARS, MERS, and COVID-19 epidemics revealed PTSD can occur during and after the infectious diseases. However, more studies are needed to explore PTSD during and after COVID-19 outbreak (7).

Psychiatry and Psychology Research Center, Tehran University of Medical Sciences, Tehran, Iran.

***Corresponding Author:**
Address: Psychiatry and Psychology Research Center, Roozbeh Hospital, Tehran University of Medical Sciences, South Kargar Avenue, Tehran, Iran, Postal Code: 1333795914.
Tel: 98-21 55413540, Fax: 98-21 55421959, Email: monasalehi1911@gmail.com

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Several studies reported the prevalence rate of PTSD among general population, health care workers, and patients during or after coronavirus pandemics (8-20). For instance, Lau et al (2004) conducted a telephone survey with Hong Kong residents aged 18-60 years after SARS outbreak and found 13.3% of male respondents and 18.0% of female respondents reported moderate or severe posttraumatic stress symptoms (19). In another study, Lee et al (2018) examined the prevalence of PTSD among health care workers during the MERS outbreak and reported 40.3% of them were eligible for PTSD diagnosis (9). Also, Liu et al (2020) evaluated the prevalence of posttraumatic stress symptoms (PTSS) using the PTSD checklist for DSM-5 among 285 adults living in Wuhan and surrounding cities in China a month after the COVID-19 epidemic. They found 7% of participants met the criteria of PTSS, which was more prevalent among females compared to males (21).

As PTSD and related risk of suicide can be a second tsunami of COVID-19 (6), health care policies need to take into account preventive and therapeutic strategies of PTSD for general population, health care workers, and patients who were involved with COVID-19. The purpose of this study is to provide a protocol of systematic review and meta-analysis of global prevalence of PTSD during and after coronavirus pandemics among general population, health care workers, survivors, and patients with coronaviruses.

Materials and Methods

Inclusion Criteria

The present study will include all studies that reported the prevalence of PTSD during and after coronavirus pandemics, including severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), and COVID-19 with any type of random or nonrandom sampling in the general population, health care workers, and patients with coronaviruses for both genders or at least 1 gender in all age groups from all ethnicities, socioeconomic and educational backgrounds, residing in all countries of the world .

For the purpose of this review, the diagnosis of PTSD must be determined by the diagnostic and statistical manual of mental disorders (DSM III, III-R, IV, IV-TR or V), and coronaviruses must be diagnosed by the standard diagnostic tests, such as polymerase chain reaction (PCR) and enzyme-linked immunosorbent assay (ELISA).

Exclusion Criteria

This research exclude studies conducted on high-risk groups or specific populations with a particular ethnicity, socioeconomic and educational background. Also, studies that evaluated the validity and reliability of the questionnaires are excluded.

Search Strategy to Identify Relevant Studies

We systematically searched databases, including Web of Science, PubMed, Scopus, Embase, and Google Scholar. We also search grey literature, including conference proceedings. Moreover, we perform hand searching of key journals and reference lists of the included studies. We search all studies conducted from November 1, 2002 until May 18, 2020 .

Using the PubMed/ MeSh terms, the search syntax will be as follows: ("PTSD" OR Post-Traumatic Stress Posttraumatic Stress OR Post Traumatic Stress) AND (coronavirus OR COVID-19 OR COVID19OR "SARS-CoV-2" OR "2019-nCoV" OR "Wuhan coronavirus" OR "SARS2" OR "severe acute respiratory syndrome coronavirus 2" OR "MERS" OR "SARS" OR "Middle east respiratory syndrome" OR "severe acute respiratory syndrome" OR "SARS-COV" OR "MERS-COV"). We customize the PubMed search syntax in other databases.

We enter studies in Endnote (Microsoft, Redmond, Washington, USA), and exclude duplicates by the Endnote function"remove duplicates". Two authors independently investigated all the titles, abstracts, and full-texts, respectively, and selected the relevant studies according to inclusion and exclusion criteria. Disagreements between authors will be resolved by consensus and, if needed, disagreements are resolved by a third author .

Data collection and analysis

Quality Appraisal of Included Studies

We used the relevant checklists for quality assessment of the included studies, such as STROBE checklist. Using the assessment tools, we evaluate the method and result sections of the included studies. Two authors independently assess the quality of included studies. Any disagreements in the quality assessment were settled by consensus between the 2 authors, and if needed, disagreements will be resolved by a third author. We do not remove any study for poor quality score and performed subgroup analysis of the included studies by the quality score .

Data Extraction

Following the quality assessment of the included studies, two authors collected data from each eligible publication and enter them into a standardized form independently; inconsistencies of the extracted data were resolved by consensus or arbitration of a third author. We contact the corresponding authors for missing data or unclear eligibility criteria. We record study characteristics, including the first author, year of publication, study population, country and city where the study was conducted, sample size, type of study design, response rate, gender, age, type of sampling, sample population (general/health care worker/patients), hospitalization status (inpatient/outpatient/ICU admission), instruments measured PTSD, diagnostic tests for coronaviruses diagnosis, and outcomes measured.

Statistical Analysis and Data Synthesis

We performed meta-analysis of the global prevalence of conduct disorder using STATA 12 and used the graphical methods and fixed or random effect models to aggregate prevalence estimates. We will assess

heterogeneity between the included studies using the I2 heterogeneity statistic and use subgroup and sensitivity analysis to assess the sources of heterogeneity. Also, publication bias will be assessed using graphical methods and statistical tests such as Begg's funnel plot. We will report this systematic review based on the PRISMA 2009 guidelines.

Discussion

The purpose of this study is to provide a protocol of systematic review and meta-analysis of global prevalence of PTSD during and after coronavirus pandemics among general population, health care workers, survivors, or patients with coronaviruses .

While infectious disease pandemics can be highly stressful for all people, the previous studies on infectious disease outbreaks, such as SARS and MERS, provide insights into probable increasing prevalence rate of PTSD during and after COVID-19, which will be more prevalent and may be more profound than those of the SARS and MERS epidemics (3).

Limitation

We will search English studies, which may decrease the reliability of the results, and increase the publication bias.

Conclusion

According to the previous studies, we infer that PTSD is a common experience during and after infectious disease pandemics, especially COVID-19 .

The findings of this study can be used by health policymakers and other stakeholders, and it will provide a path to future studies.

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