Protocol

The Most Psychological Impacts of Coronavirus Epidemics: A Protocol for Systematic Review and Meta-Analysis

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Abstract

Objective: The Coronavirus disease 2019 (COVID-19) is a considerable psychological stressor that has a significant impact on every facet of people's life. Since 2002 that the first Coronavirus epidemic has emerged, many pieces of researches have indicated several psychological problems during this period. In circumstances such as COVID-19, researchers could deploy previous resources to identify the most prevalent psychological effects of Coronavirus diseases. We aim to systematically review and quantitatively assess the psychological problems during Coronavirus epidemics to identify the most prevalent psychological problems.
Method: A systematic review of the literature will be conducted on psychological problems during previous and the new Coronavirus epidemics. Electronic databases, including PubMed/MEDLINE, Web of Science, Cochrane Library, PsycINFO/ProQuest, Scopus, and Google Scholar will be systematically searched using predefined search terms to identify relevant articles published from January 1, 2002 to June 20, 2020. Two authors independently identify papers that reported the prevalence rates of the psychological problems during Coronavirus outbreaks. The outcomes will include the most prevalent psychological problems during Coronavirus outbreaks. To ensure we have gathered all the evidence, we will conduct another search on the specific psychological problems revealed in the previous search. Study selection will follow the Cochrane library guideline. Afterward, data synthesis will be performed via the meta-analysis of the prevalence rates using the random effect model.
Conclusion: The findings can allow identifying the most prevalent psychological problems since the first Coronavirus epidemic in 2002. This can help health policymakers and clinicians to be informed of the priorities of the psychological problems related to COVID-19.

Key words: *Coronavirus; COVID-19; Mental Health; Psychological Problems*

In December 2019, a highly infectious respiratory syndrome caused by a new Coronavirus (COVID-19) appeared in Wuhan, China. In March 2020, the World Health Organization (WHO) declared COVID-19 a pandemic (1). The psychological impacts of the Coronavirus disease-19 (COVID-19) pandemic are currently pervasive that could affect mental health now and in the future. Coronavirus pandemic affects mental health through developing or increasing psychological problems, such as posttraumatic stress disorder, substance use disorder, fear, stress, and other psychological problems in patients, clinicians, and the general public (2, 3). In such a situation, the impact on mental well-being can happen in instant consequences and then continue over long periods (4).

These consequences are of enough importance that instantaneous attempts focused on recognizing the mental problems are needed .
The psychological problems were shown in the previous coronavirus types, including SARS and MERS (2, 5). According to previous Coronaviruses studies, the onset of a sudden and life-threatening disease could lead to extraordinary amounts of pressure (6, 7). In COVID-19 pandemic, researchers could consider the previous resources to understand the psychological impacts of the COVID-19 pandemic to provide useful mental health services. To date, there have been some systematic reviews focused separately on specific psychological disorders during COVID-19 pandemic (8).

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However, most of these reviews do not focus comprehensively on the most psychological problems in such a situation. Apart from that, the previous reviews of psychological impacts during Coronavirus epidemics should be updated by a meta-analysis. As clinicians have tried to reduce the psychological problems during the Coronavirus epidemics, they should be aware of the scientific evidence available on the most prevalent psychological problems. Thus, a comprehensive review and meta-analysis are now needed, particularly in light of identifying and categorizing the most prevalent psychological problems during Coronavirus epidemics.

In the present research, we intend to use the outcomes of the previous research on the psychological impacts of Coronavirus epidemics since the first Coronavirus (SARS) in 2002, a 20-year period. The aim of the present review is to provide a comprehensive review and evaluation of the most psychological problems during the Coronavirus epidemics and to perform the meta-analysis of their prevalence. We also assess heterogeneity between the included studies through the I2 heterogeneity statistic.

Materials and Methods

Search Strategy
This protocol is registered in PROSPERO and is available online (registration number: CRD42020192708). The systematic review of the psychological impacts of Coronavirus epidemics will be conducted according to Cochrane library protocols (9). Our search strategy will be developed and performed prior to study selection. We will undertake a review of evidence on the psychological impacts of Coronavirus epidemics to identify the most psychological problems in these situations. We will retrieve the studies by using the following electronic databases: PubMed/MEDLINE, Web of Science, Cochrane Library, PsycINFO/ProQuest, Scopus, and Google Scholar. The articles will be reviewed from January 1, 2002 to Jun 20, 2020. Moreover, for further relevant articles, we will search grey literature, conduct hand searching, scrutinize the reference section in the studies retrieved, and contact with corresponding authors of studies that have unclear data. The results will include the most prevalent psychological problems during Coronavirus epidemics. We will also conduct another search using the same approach on just the specific psychological problems revealed in the previous search. Also, 2 authors will implement the search strategy independently. We will also use the EndNote software to store and organize the references and to ensure a systematic and comprehensive search. Study selection will follow the Cochrane library guideline. The search terms will be as follows: Mental health, mental disorders, psychology, psychological, Coronavirus, SARS-COV2, SARS, severe acute respiratory syndrome, Middle East respiratory syndrome Coronavirus, MERS, and COVID-19. We will create the search syntax based on PubMed's MeSH terms. Then, it will be customized to the other databases that can be seen in detail in Table 1.

Study Selection Criteria
Inclusion criteria: All the original peer-reviewed researches and grey literature reporting the prevalence of the psychological problems in Coronavirus epidemics since 2002 will be included in our study. Studies of the general population and medical staff in Coronavirus epidemics situation, and patients with coronavirus diseases, all ages, females, and males will be eligible for inclusion in the review. There is a language limitation; only articles written in English will be included in our study. Moreover, just Coronavirus epidemics will be reviewed in this study, including COVID-19, MERS, and SARS .

Exclusion criteria: Studies of interventions, case reports, reviews, editorials, protocols, and clinical guidelines, and also studies having poor quality and/or high risk of bias (based on STROBE) will not be eligible to be included in the current review. Moreover, the studies on persons with medical diseases like diabetes, cardiovascular disease, chronic respiratory disease, and cancer will be excluded from the review. The studies conducted in the nonepidemic Coronaviruses situations, such as Coronavirus 229E, Coronavirus NL63, etc. will not be included .

Screening and Data Extraction
The initial screening of studies will be based on the title and abstract by 2 independent authors. If the authors disagree on an article, it will be again evaluated. If there is still no agreement, a third expert will play a decisive role. The same independent authors will conduct full-text screening .

Data will be extracted as follow: identification of the research, including article title, journal title, publication year, authors, language, country; methodological attributes, such as study design, objective, population (public, patients, medical staff, etc.), sample characteristics (sample size, gender, and age), measures; main findings; and conclusion. If the main data of an article is not obvious, we will contact with its corresponding author via email for clarification .

Quality Assessment
The methodological quality of the retrieved studies will be evaluated by using the "Strengthening the Reporting of Observational Studies in Epidemiology" (STROBE) statement. Quality assessment criteria will be as follow: the methods and results in each study will be scored by the STROBE critical appraisal tool. Then, the sum score for each study will be categorized to low quality, medium quality, and high quality based on tertile of scores. According to the Cochrane guidelines (9), studies having a poor quality may be seriously misleading in meta-analyses. Hence, we will not include the low-quality studies in the meta-analysis to avoid compound bias. Later in the meta-analysis, we will subgroup the results based on medium and high-quality studies to find

a possible source of heterogeneity. Furthermore, to assess the risk of bias in the meta-analysis stage, we will use the funnel plot and Egger test to assess publication and language biases.

Data Synthesis and Meta-Analysis

The gathered data will enter in excel sheet and then will enter into the STATA 11 software. 1-P and SEP will be calculated by sample size and prevalence (P) by this formula: $SEp = \sqrt{(P*(1-P)/N)}$. The meta-analysis of prevalence rates would be performed using the metan command (metan p se), first with fixed effects and then random effects. To assess sources of heterogeneity, subgroup analyses will be performed based on the outcome of the studies, study population, and article quality. The results of the analyses will be presented as forest plots. Measures of consistency (I2) will be presented for the meta-analysis. According to one study, studies with the prevalence close to 0 or 1 affect variance which may result in a large weight of the study in the meta-analysis. Therefore, the proportions will be transformed by using the double arcsine method and then will be back-transformed for ease of interpretation.

Table 1. Search Syntax of Psychological Impacts of Coronaviruses Epidemics in Electronic Databases

Data base	Syntax
PubMed/MEDLINE	("Mental Health"[Mesh] OR "Mental Disorders"[Mesh] OR "psychology" [Subheading]) AND ("Coronavirus"[Mesh] OR "severe acute respiratory syndrome coronavirus 2" [Supplementary Concept] OR "SARS Virus"[Mesh] OR "Middle East Respiratory Syndrome Coronavirus"[Mesh] OR "COVID-19" [Supplementary Concept])
Web of Science	TOPIC: (("Mental health" OR "mental disorders" OR psychology OR psychological)) AND TOPIC: ((coronavirus OR "SARS-CoV-2" OR SARS OR "Severe acute respiratory syndrome" OR "middle east respiratory syndrome" "MERS" OR "COVID-19"))
Cochrane Library	(coronavirus OR "SARS-CoV-2" OR SARS OR "Severe acute respiratory syndrome" OR "middle east respiratory syndrome" OR MERS OR "COVID-19") in Title Abstract Keyword AND ("Mental health" OR "mental disorders" OR psychology OR psychological) in Title Abstract Keyword - (Word variations have been searched)
PsycINFO/ProQuest	ab((coronavirus OR "SARS-CoV-2" OR SARS OR "Severe acute respiratory syndrome" OR "middle east respiratory syndrome" OR MERS OR "COVID-19")) AND ab(("Mental health" OR "mental disorders" OR psychology OR psychological))
Scopus	(TITLE-ABS-KEY ("Mental health") OR TITLE-ABS-KEY ("mental disorders") OR TITLE-ABS-KEY (psychology) OR TITLE-ABS-KEY (psychological) AND TITLE-ABS-KEY (coronavirus) OR TITLE-ABS-KEY ("SARS-CoV-2") OR TITLE-ABS-KEY (SARS) OR TITLE-ABS-KEY ("severe acute respiratory syndrome") OR TITLE-ABS-KEY ("middle east respiratory syndrome coronavirus") OR TITLE-ABS-KEY (MERS) OR TITLE-ABS-KEY ("COVID-19"))
Google Scholar	(coronavirus OR "SARS-CoV-2" OR SARS OR "Severe acute respiratory syndrome" OR "middle east respiratory syndrome" OR MERS OR "COVID-19") AND ("Mental health" OR "mental disorders" OR psychology OR psychological)

Discussion

This planned review and meta-analysis will systematically explore the studies available on the most psychological problems in Coronavirus epidemics. In fact, we will focus comprehensively on the most prevalent psychological problems with which persons have been engaged in Coronavirus epidemics. Publishing this research protocol, we reinforce the clarity of the methodology and keep down the risk of bias called selective outcome reporting (9). By collecting and summarizing information about the study subject, the outcomes will provide directions for future research and provide clinicians and health care executives with an understanding of the most prevalent psychological problems in Coronavirus epidemics situations. More importantly, the findings will give a clear outlook on the priorities of psychological problems in the critical Coronavirus epidemic. This knowledge will provide rewarding information to inform and support the policymakers in this critical situation.

Limitation

The potential limitations of this study include the heterogeneity of study measures and results. To confront this limitation, we will subgroup the results to find the sources of heterogeneity based on the study population, different psychological problems, gender, etc. Another limitation can be related to the language; we just consider the papers written in the English language.

Conclusion

Overall, this review suggests that the psychological impacts of Coronaviruses diseases can be widespread and substantial. The results of the study can find the most prevalent psychological impacts since the first Coronavirus epidemic in 2002. This can provide help to clinicians and health executives towards the priorities of the psychological problems related to COVID-19.

Conflict of Interest

The authors declare no potential conflicts of interest.

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