Mental Health during the COVID-19 Pandemic: Protocol for a Living Systematic Review of Symptom Levels, and Intervention Effectiveness

Running Head: Protocol for Living Systematic Review

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ABSTRACT

Introduction: Mental health during the current coronavirus disease 2019 (COVID-19) outbreak may be negatively affected by uncertainties associated with long-term personal, social, and societal implications of the crisis and from isolation due to social distancing and movement restrictions. The objectives of our planned living systematic review are to evaluate (1) changes in mental health symptoms from prior to COVID-19 to during the pandemic and across different time points in the pandemic; and (2) the effect of interventions on mental health symptoms during COVID-19.

Methods and Analysis: Eligible studies must report proportions of participants meeting diagnostic criteria using a validated diagnostic interview or symptoms using a validated scale or set of items multivariable assessments of factors associated with symptoms, and interventions to address mental health concerns. We are searching MEDLINE (Ovid), PsycINFO (Ovid), CINAHL, EMBASE (Ovid), Web of Science, China National Knowledge Infrastructure, and Wanfang databases plus Google Scholar for preprints and clinical trial registries for ongoing trials. Searches were initially updated daily and are currently being updated weekly. Selection of included studies is being done independently by two reviewers. Synthesis will be narrative or quantitative depending on quality and heterogeneity of included studies.

Ethics and Dissemination: Results of the living systematic review will be updated and posted (https://www.depressd.ca/covid-19-mental-health) continually then submitted for peer review and journal publication.

Systematic Review Registration: CRD42020179703.

Key Words: coronavirus; COVID-19; mental health; psychological outcomes; living systematic review

INTRODUCTION

Mental health during the current coronavirus disease 2019 (COVID-19) outbreak may be negatively affected by uncertainties associated with long-term personal, social, and societal implications of the crisis and from isolation due to social distancing and movement restrictions that have been imposed.[1-4] Negative psychological outcomes may include emotional dysregulation, loneliness, depression, stress, anxiety and may include the exacerbation of pre-existing conditions or symptoms.[1-4] People with pre-existing mental health conditions, people infected with COVID-19 and who experience complications, people vulnerable because of pre-existing medical conditions, and health care workers who care for people infected with COVID-19 may be at particular risk.[2]

A "rapid review",[2] published in February 2020, identified 24 studies from previous infectious disease outbreaks that examined the psychological impact of quarantine, which is the isolation of people who have been exposed to others who have been infected. That review included research from outbreaks of severe acute respiratory syndrome (SARS) in China, Hong Kong, and Canada in 2003, equine influenza in Australia in 2007, H1N1 influenza in Australia in 2009, Ebola in West Africa in 2014, and Middle East Respiratory Syndrome (MERS) in Korea in 2015. Pre-quarantine characteristics found to be possibly associated with less favourable psychological outcomes among adults under quarantine included history of mental disorder, young age, less education, female sex, and number of children, although results were not consistent across studies. Factors during quarantine potentially associated with worse outcomes included the duration of quarantine, access to supplies and information, financial resources, fear of infection and complications, degree of social isolation, and boredom. Mental health outcomes appear to last well past the period of quarantine.[2]

There are important limitations, however, in the existing evidence from previous outbreaks:[2] (1) <15 studies used validated mental health measures; (2) only one study,[5] conducted during the 2015 Korean Middle East Respiratory Syndrome outbreak, followed

participants longitudinally, but that outbreak was much shorter and less deadly than COVID-19 is likely to be;[6] (3) no studies evaluated participants at high risk of severe complications from infection due to pre-existing vulnerabilities such as medical conditions; (4) no studies have had access to pre-outbreak mental health data, which reduces the ability to draw conclusions about changes in mental health and associated factors; and (5) no trials have tested interventions to improve mental health symptoms during quarantine.

Although risk of mortality of people infected with COVID-19 appears to be less than in other recent disease outbreaks, rapid spread has led to overall mortality and global economic impacts that far exceed any other recent disease outbreaks.[7] Given the limitations in the quantity and quality of evidence available from previous infectious disease outbreaks and the different characteristics of the COVID-19 outbreak, synthesis of new mental health evidence that is being generated during COVID-19 is urgently needed. The number of studies that are being published or are available as preprints on mental health in COVID-19 is increasing rapidly. Trials on interventions are being registered.

Living systematic reviews[8] are systematic reviews that are continually updated and provide ongoing access to results via online publication. They are logistically challenging, but would be expected to provide value beyond conventional systematic reviews in situations where (1) important decisions need to be made that merit the resources involved; (2) the certainty in existing evidence is low or very low, posing a barrier to decision-making; and (3) there is likely to be new research evidence emerging that would inform decisions.[8]

The objectives of our planned living systematic review are to evaluate (1) changes in mental health symptoms from prior to COVID-19 to during the pandemic and across different time points in the pandemic; and (2) the effect of interventions on mental health symptoms during COVID-19.

METHODS AND ANALYSIS

The protocol for the systematic review was registered in the PROSPERO prospective register of systematic reviews (CRD42020179703), and changes to the study protocol will be registered as amendments with PROSPERO. The review will be reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement.[9]

Study Eligibility

For all review questions, studies of any population affected by the COVID-19 outbreak since December 31, 2019, when China first reported to the World Health Organization,[10] will be eligible. Sub-populations of interest include (1) medical staff involved in caring for patients infected with COVID-19; (2) people infected with COVID-19 (as determined in primary studies), including those hospitalized and not hospitalized; (3) people vulnerable to poor mental health outcomes because of pre-existing mental health conditions, including those receiving treatment and those not receiving treatment at the time of the outbreak; (4) people at risk of complications if infected with COVID-19 due to pre-existing medical conditions; (5) other at-risk or marginalized groups (e.g., incarcerated, gender minority, racialized groups, socioeconomic status); and (6) the general population. Studies in any language will be included.

Changes in Mental Health Symptoms. Eligible studies must report continuous scores of symptom levels or proportions of participants meeting the threshold on a validated scale, or diagnostic criteria using a validated diagnostic interview prior to and after a delineated event related to COVID-19. Examples of events might include the announcement of the outbreak generally or in the location where the research was conducted, prior to isolation protocols and after initiation, or during isolation and following relaxation of restrictions. Mental health symptoms are defined broadly and will include, for example, symptoms or indicators of anxiety, depression, stress, loneliness, anger, grief, or other emotional disturbance. Studies with < 100 participants will be excluded.

Effects of Interventions on Mental Health Symptoms. Eligible intervention studies include randomized and non-randomized controlled trials of the effects of any intervention designed to improve any aspect of mental health during the COVID-19 pandemic. Only studies initiated after China's initial declaration to the WHO on December 31, 2019, will be eligible. Eligible trials must target mental health, and mental health must be the primary trial outcome if a primary outcome is stated. Eligible interventions must be: 1) done to improve mental health with people with COVID-19; or 2) designed to specifically target COVID-19 related mental health concerns in people not identified as having COVID-19; interventions in this group that are not described as addressing mental health symptoms from COVID-19 or that are not tailored to address COVID19 challenges will be excluded.

Eligible comparators include: (1) any inactive control condition (e.g., no treatment, waitlist control) and (2) another eligible intervention designed to mental health. Trials with < 10 participants will be excluded.

Search Strategy

A single search strategy is being used for all research questions. The MEDLINE (Ovid), PsycINFO (Ovid), CINAHL, EMBASE (Ovid), Web of Science, China National Knowledge Infrastructure, and Wanfang databases are being searched, using a search strategy designed by a health sciences librarian. The China National Knowledge Infrastructure and Wanfang databases will be searched using Chinese search terms. See Appendix 1. In addition, we are searching Google Scholar for preprint versions of articles that have not yet been published. We are supplementing these searches by manual review of references of included trials and by searching trial registries, including ClinicalTrials.gov, the World Health Organization International Clinical Trials Registry Platform (https://apps.who.int/trialsearch/), the Chinese Clinical Trial Registry (http://www.chictr.org.cn/searchprojen.aspx), and the European Union Clinical Trials Register (https://www.clinicaltrialsregister.eu/ctr-search/search?query=covid-19). We are

searching for trial registries using the terms “COVID-19” and “coronavirus” and terms to restrict to randomized or non-randomized controlled trials. We are not restricting with mental health-related terms to ensure that eligible trials are not missed.

An initial search was conducted from December 31, 2019, then automated searches were set for daily updates to facilitate continual review and update. As of December 28, 2020, the automatic daily searches were re-set to weekly updates. The period of updating may be amended as the COVID-19 situation develops.

Selection of Eligible Studies

References are being converted to compatible formats and then transferred into the systematic review software DistillerSR (Evidence Partners, Ottawa, Canada). De-duplication of English-language studies is being done in DistillerSR. Chinese-language studies are combined and entered into NoteExpress (http://www.inoteexpress.com/index.htm) for de-duplication.

A two-stage process is being used to assess the eligibility of each article. Two independent reviewers first evaluate titles and abstracts of identified articles. If either reviewer deems a study as potentially eligible based on the title and abstract, a full-text review of the article is then completed by both independent reviewers (see Appendix 2 for inclusion/exclusion coding guides). Discrepancies between reviewers are resolved through consensus, with a third investigator consulted as necessary.

Data Extraction

For each included study, one reviewer extracts data using a pre-specified standardized form in DistillerSR. A second reviewer validates the extracted data using the DistillerSR Quality Control function. Reviewers extract (1) publication characteristics (e.g., first author last name, publication year, journal, funding source), (2) population characteristics and demographics (e.g., country, study eligibility criteria, number of participants, age, sex); (3) COVID-19 related variables (e.g., health care provider, people with COVID-19, at-risk individuals, general population; severity of COVID-19 outbreak, stage of COVID-19 when data were collected, and

level of restrictions on social contact where data were collected); (4) mental health assessment characteristics or intervention components, and (5) risk of bias or quality.Risk of bias or quality is being assessed for studies of changes in symptoms using an adapted version of a tool developed by the Joanna Briggs Institute.[11] Trials of interventions will be assessed using the Cochrane Risk of Bias tool for trials.[12] Quality of trial reporting will be assessed using the TIDieR checklist.[13] Discrepancies are resolved through consensus, and a third reviewer is consulted as necessary.

Preliminary Data Analysis Plan

Data will initially be synthesized narratively as evidence is identified and included in the review. If enough evidence is identified of sufficiently adequate quality and sufficiently low heterogeneity to synthesize quantitatively, we will conduct meta-analyses of changes in symptoms and intervention effects. Pooled differences in symptom levels or proportions above a cut-off with 95% confidence intervals would be calculated using R[14] and random effects models. For trials of interventions, random effects models will be used to pool standardized mean differences (Hedges' g) between intervention and control groups. Heterogeneity of included studies and trials will be assessed using the I^2 statistic.

DISSEMINATION

We will post initial results via a website (https://www.depressd.ca/covid-19-mental-health) and then publish results via peer-reviewed journal publication.

PROTOCOL AMENDMENTS

There have been several amendments. First, the initial reviews were initiated quickly with limited funding, and the initial protocol[15], included a third research question, "Factors Associated with Levels or Changes in Symptoms". As of September 12th, 2020, the team stopped reviewing new references for this research question. The very high volume of low-quality studies eligible

for the question posed a challenge to the team's ability to keep evidence current. Resources required to assess these studies for possible eligibility and to extract data were substantial. Benefits, however, were limited. Since these studies are cross-sectional, even in well-conducted studies, it is impossible to ascertain the degree to which risk factors identified reflect COVID-19specific factors or replicate associations present prior to the pandemic. Additionally, since model-based studies are highly dependent on completeness and design of the models, many eligible studies were at high risk of bias. This negatively impacted our ability to highlight trends and report useful conclusions. To better allocate our team's limited resources and ensure our ability to rigorously address the other research questions, we discontinued the review of cross-sectional studies on factors associated with mental health symptoms during COVID-19. Second, we added the TIDieR[15] checklist to our coding protocol to assess reporting of characteristics of interventions in trials. Third, we clarified the inclusion criteria to only include trials which begin after the first COVID-19 announcement to the WHO on December 31, 2019 and to further clarify that eligible trials have to clearly be addressing mental health symptoms related to the COVID19 pandemic or test interventions with components designed to address challenges in COVID19. General mental health trials unrelated to COVID-19 are not eligible. Fourth, we changed the automatic daily reference searches to a weekly update schedule, as of December 28, 2020, to facilitate more efficient reference processing. Fifth, we amended the search strategies in English-language databases to incorporate new subject headings created to respond to the Covid-19 pandemic on January 27, 2021. Sixth, we made several amendments to the Chinese language search strategies to facilitate processing (see Appendix 1). Seventh, we added an inclusion criterion for longitudinal studies with multiple waves during COVID on October 28th, 2022. Eligible longitudinal studies with multiple waves across COVID-19 must have their first during-COVID data collection timepoint in 2020 so that our team's limited resources can be better allocated to studies focusing on the mental health symptom changes marked from close to the start of the pandemic.

AUTHORS CONTRIBUTIONS

BDT, OB, DBR, JTB, MA, CH, SM, YS, YW, AK, AB, IT-V, YW, DJ, KL, TDS, AT, and AY contributed to the development of the protocol or to updates of the protocol. BDT drafted the manuscript. All authors provided a critical review and approved the final manuscript. BDT is the guarantor.

COMPETING INTERESTS STATEMENT

All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare that they have no competing interests.

FUNDING STATEMENT

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(FRQ-S) postdoctoral training fellowship, and Dr. Benedetti by a FRQ-S researcher salary award.

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Appendix 1. Search Strategies

†New subject headings added on January 27, 2020

Ovid MEDLINE All

1. Quarantine/
2. social isolation/ or loneliness/ or physical distancing/†
3. psychology.fs. or psychology/
4. Mental Health/
5. mental disorders/
6. social stigma/
7. Fear/
8. Anxiety/
9. Depression/
10. Stress, Physiological/ or Stress, Psychological/
11. Anger/
12. Irritable Mood/
13. Grief/
14. burnout, psychological/ or burnout, professional/
15. or/1-14
16. (Quarantine* or Self-isolation or isolation or social distanc* or shelter*-in-place or psych* or mental health or mental illness* or mental disorder* or stigma or fear* or anxiety or anxious or depression or depressive or loneliness or stress* or trauma* or post-traumatic or posttraumatic or anger or mood* or irritability or irritable or emotional disturbance* or grief or burned out or burnout).tw,kf.
17. ((exp coronavirus/ or exp coronavirus infections/ or (betacoronavirus* or beta coronavirus* or coronavirus* or corona virus*).mp.) and (exp china/ or (china or chinese or hubei or wuhan).af.)) or (coronavirus* or corona virus* or betacoronavirus* or beta coronavirus*).mp.
18. (severe acute respiratory syndrome coronavirus 2 or "SARS CoV-2" or "SARSCoV 2" or SARSCoV2 or cov2 or "sars 2" or COVID or "coronavirus 2" or covid19 or nCov or ((new or Novel) adj3 coronavirus*) or ncp).mp. or ((exp pneumonia/ or pneumonia.mp.) and wuhan.af.)
19. 17 or 18
20. 15 or 16
21. 19 and 20
22. ("20191231" or 2020* or 2021*).dt,ez,da.
23. 21 and 22

Embase (Ovid)

1. exp coronavirinae/
2. exp Coronavirus infection/
3. (betacoronavirus* or beta coronavirus* or coronavirus* or corona virus*).mp.
4. 1 or 2 or 3
5. exp China/

6. (china or chinese or hubei or wuhan).af.
7. 5 or 6
8. 8. 4 and 7
9. (betacoronavirus* or beta coronavirus* or coronavirus* or corona virus*).mp.
10. (severe acute respiratory syndrome coronavirus 2 or "SARS CoV-2" or "SARSCoV 2" or SARSCoV2 or cov2 or "sars 2" or COVID or "coronavirus 2" or covid19 or nCov or ((new or Novel) adj3 coronavirus*) or ncp).mp.
11. (exp pneumonia/ or pneumonia.mp.) and wuhan.af.
12. 8 or 9 or 10 or 11
13. quarantine/
14. social isolation/ or isolation/ or patient isolation/
15. loneliness/
16. 16. psychology/
17. mental health/
18. mental disease/
19. social stigma/
20. fear/
21. anxiety/
22. depression/
23. physiological stress/ or mental stress/
24. anger/
25. irritability/
26. exp grief/
27. exp burnout/
28. (mental disorder* or Quarantine* or Self-isolation or isolation or social distanc* or shelter*-inplace or psych* or mental health or mental illness* or stigma or fear* or anxiety or anxious or depression or depressive or loneliness or stress* or trauma* or post-traumatic or posttraumatic or anger or mood* or irritability or irritable or emotional disturbance* or grief or burned out or burnout).tw,kw.
29. 29. or/13-27
30. 30. 12 and 29
31. ("20191231" or 2020* or 2021*).dc.
32. 30 and 31

PsycINFO (Ovid)

1. (coronavirus* or corona virus* or betacoronavirus* or beta coronavirus*).mp.
2. (severe acute respiratory syndrome coronavirus 2 or "SARS CoV-2" or "SARSCoV 2" or SARSCoV2 or cov2 or "sars 2" or COVID or "coronavirus 2" or covid19 or nCov or ((new or Novel) adj3 coronavirus*) or ncp).mp. or ((exp pneumonia/ or pneumonia.mp.) and wuhan.af.)
3. 1 or 2
4. ("20191231" or 2020* or 2021*).up.
5. 3 and 4

CINAHL

Search ID#	Search Terms
S26	S11 AND S25
S25	S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24
S24	TI ((mental disorder* or Quarantine* or Self-isolation or isolation or social distanc* or shelter*-in-place or psych* or mental health or mental illness* or stigma or fear* or anxiety or anxious or depression or depressive or loneliness or stress* or trauma* or posttraumatic or posttraumatic or anger or mood* or irritability or irritable or emotional disturbance* or grief or burned out or burnout)) OR AB ((mental disorder* or Quarantine* or Self-isolation or isolation or social distanc* or shelter*-in-place or psych* or mental health or mental illness* or stigma or fear* or anxiety or anxious or depression or depressive or loneliness or stress* or trauma* or post-traumatic or posttraumatic or anger or mood* or irritability or irritable or emotional disturbance* or grief or burned out or burnout))
S23	(MH "Burnout, Professional")
S22	(MH "Grief+")
S21	(MH "Anger")
S20	(MH "Stress, Physiological") OR (MH "Stress, Psychological")
S19	(MH "Depression")
S18	(MH "Anxiety")
S17	(MH "Fear")
S16	(MH "Stigma")
S15	(MH "Mental Health") or (MH "Mental Disorders")
S14	(MH "Psychology")
S13	(MH "Social Isolation") OR (MH "Loneliness") or (MH “Social Distancing”) or (MH “Stay at Home Orders”) †
S12	(MH "Quarantine")
S11	S7 OR S8 OR S9 OR S10
S10	((MH "Pneumonia+") or TI (pneumonia) OR AB (pneumonia)) AND (TI (wuhan) OR AB (wuhan) OR AF (wuhan))

S9	TI ((severe acute respiratory syndrome coronavirus 2 or "SARS CoV-2" or "SARSCoV 2" or SARSCoV2 or cov2 or "sars 2" or COVID or "coronavirus 2" or covid19 or nCov or ((new or Novel) N3 coronavirus*)) OR AB ((severe acute respiratory syndrome coronavirus 2 or "SARS CoV-2" or "SARSCoV 2" or SARSCoV2 or cov2 or "sars 2" or COVID or "coronavirus 2" or covid19 or nCov or ((new or Novel) N3 coronavirus*)) or (MH “Covid 19”) †
S8	TI ((betacoronavirus* or beta coronavirus* or coronavirus* or corona virus*)) OR AB ((betacoronavirus* or beta coronavirus* or coronavirus* or corona virus*))
S7	S5 AND S6
S6	S1 OR S2
S5	S3 OR S4
S4	TI ((china or chinese or hubei or wuhan)) OR AB ((china or chinese or hubei or wuhan)) OR AF ((china or chinese or hubei or wuhan)) OR SO ((china or chinese or hubei or wuhan))
S3	(MH "China+")
S2	TI ((betacoronavirus* or beta coronavirus* or coronavirus* or corona virus*)) OR AB ((betacoronavirus* or beta coronavirus* or coronavirus* or corona virus*))
S1	(MH "Coronavirus+") OR (MH "Coronavirus Infections+")

Web of Science

TOPIC: (Quarantine* or "Self-isolation" or isolation or "social distanc*" or "shelter*-in-place" or psych* or "mental health" or "mental illness*" or "mental disorder*" or stigma or fear* or anxiety or anxious or depression or depressive or loneliness or stress* or trauma* or "post-traumatic" or posttraumatic or anger or mood* or irritability or irritable or "emotional disturbance*" or grief or "burned out" or burnout) AND TOPIC: ((coronavirus* or "corona virus*" or betacoronavirus* or "beta coronavirus*" or "severe acute respiratory syndrome coronavirus 2" or "SARS CoV-2" or "SARSCoV 2" or SARSCoV2 or cov2 or "sars 2" or COVID or "coronavirus 2" or covid19 or nCov or "Novel coronavirus*" or "new coronavirus*"))
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCREXPANDED, IC Timespan=Year to date

China National Knowledge Infrastructure

Restricted to disciplines: Medical and Public Health & Social science

TI=(隔离+封城+社交距离+方舱+心理+心理健康+精神卫生+精神疾病+心理疾病+污名+耻辱+羞辱+恐惧+焦虑+抑郁+孤独+压力+应激+创伤+创伤后+愤怒+情绪+心情+易怒+情绪障碍+心理障碍+哀伤+悲伤+悲痛+悲哀+忧郁+倦怠)*(新冠+新型冠状) OR AB=(隔离+封城+社交距离+方舱+心理+心理健康+精神卫生+精神疾病+心理疾病+污名+耻辱+羞辱+恐惧+焦虑+抑郁+孤独+压力+应激+创伤+ 创

伤后+愤怒+情绪+心情+易怒+情绪障碍+心理障碍+哀伤+悲伤+悲痛+悲哀+忧郁+倦怠)*(新冠+新型冠状)

Wanfang

题名:("隔离"+封城+"社交距离"+方舱+心理+"心理健康"+"精神卫生"+"精神疾病"+"心理疾病"+污名+耻辱+羞辱+恐惧+焦虑+抑郁+孤独+压力+应激+创伤+"创伤后"+愤怒+情绪+心情+易怒+"情绪障碍"+"心理障碍"+哀伤+悲伤+悲痛+悲哀+忧郁+倦怠)*("新冠"+"新型冠状")+摘要:("隔离"+封城+"社交距离"+方舱+心理+"心理健康"+"精神卫生"+"精神疾病"+"心理疾病"+污名+耻辱+羞辱+恐惧+焦虑+抑郁+孤独+压力+应激+创伤+"创伤后"+愤怒+情绪+心情+易怒+"情绪障碍"+"心理障碍"+哀伤+悲伤+悲痛+悲哀+忧郁+倦怠)*("新冠"+"新型冠状")

We made several amendments to the original search strategies. Since Wanfang database cannot export more than 5000 references at once, we broke the search strategies into two or more smaller search strings to get all the references. The four changes on September 1, 2020, September 28, 2020, October 15, 2020 and October 18, 2020 are all for this purpose. To make this process more efficient, the disciplines of the China National Knowledge Infrastructure database were restricted to Medical and Public Health AND Social science subgroup 2 and those of Wanfang database were restricted to Medicine and Health AND Culture, Science, Education and PE disciplines on October 23, 2020.

September 1, 2020
Wanfang

题名:("隔离"+封城+"社交距离"+方舱+心理+"心理健康"+"精神卫生"+"精神疾病"+"心理疾病"+污名+耻辱+羞辱+恐惧+焦虑)*("新冠"+"新型冠状")+摘要:("隔离"+封城+"社交距离"+方舱+心理+"心理健康"+"精神卫生"+"精神疾病"+"心理疾病"+污名+耻辱+羞辱+恐惧+焦虑)*("新冠"+"新型冠状") 题名:("隔离"+封城+"社交距离"+方舱+抑郁+孤独+压力+应激+创伤+"创伤后"+愤怒+情绪+心情+易怒 +"情绪障碍"+"心理障碍"+哀伤+悲伤+悲痛+悲哀+忧郁+倦怠)*("新冠"+"新型冠状")+摘要:("隔离"+封城+"社交距离"+方舱+抑郁+孤独+压力+应激+创伤+"创伤后"+愤怒+情绪+心情+易怒+"情绪障碍"+"心理障碍"+哀伤+悲伤+悲痛+悲哀+忧郁+倦怠)*("新冠"+"新型冠状")

September 28, 2020
Wanfang

题名:("隔离"+封城+"社交距离"+方舱+心理+"心理健康"+"精神卫生"+"精神疾病"+"心理疾病"+污名+耻辱+羞辱+恐惧+焦虑)*("新冠"+"新型冠状")+摘要:("隔离"+封城+"社交距离"+方舱+心理+"心理健康"+"精神卫生"+"精神疾病"+"心理疾病"+污名+耻辱+羞辱+恐惧+焦虑)*("新冠"+"新型冠状") 题名:("隔离"+封城+"社交距离"+方舱+抑郁+孤独+压力+应激+创伤+"创伤后")*("新冠"+"新型冠状")+ 摘要:("隔离"+封城+"社交距离"+方舱+抑郁+孤独+压力+应激+创伤+"创伤后")*("新冠"+"新型冠状") 题名:("隔离"+封城+"社交距离"+方舱+愤怒+情绪+心情+易怒+"情绪障碍"+"心理障碍"+哀伤+悲伤+悲痛+悲哀+

忧郁+倦怠)*("新冠"+"新型冠状")+摘要:("隔离"+封城+"社交距离"+方舱+愤怒+情绪+心情+易怒+"情绪障碍"+"心理障碍"+哀伤+悲伤+悲痛+悲哀+忧郁+倦怠)*("新冠"+"新型冠状")

October 15, 2020
Wanfang

题名:("隔离"+封城+"社交距离"+方舱+心理+"心理健康"+"精神卫生"+"精神疾病"+"心理疾病")*("新冠"+"新型冠状")+摘要:("隔离"+封城+"社交距离"+方舱+心理+"心理健康"+"精神卫生"+"精神疾病"+"心理疾病")*("新冠"+"新型冠状")
题名:("隔离"+封城+"社交距离"+方舱+污名+耻辱+羞辱+恐惧+焦虑+抑郁+孤独+压力)*("新冠"+"新型冠状")+摘要:("隔离"+封城+"社交距离"+方舱+污名+耻辱+羞辱+恐惧+焦虑+抑郁+孤独+压力)*("新冠"+"新型冠状")
题名:("隔离"+封城+"社交距离"+方舱+应激+创伤+"创伤后"+愤怒+情绪+心情+易怒+"情绪障碍"+"心理障碍"+哀伤+悲伤+悲痛+悲哀+忧郁+倦怠)*("新冠"+"新型冠状")+摘要:("隔离"+封城+"社交距离"+方舱+应激+创伤+"创伤后"+愤怒+情绪+心情+易怒+"情绪障碍"+"心理障碍"+哀伤+悲伤+悲痛+悲哀+忧郁+倦怠)*("新冠"+"新型冠状")

October 18, 2020
Wanfang 题名:("隔离"+封城+"社交距离"+方舱+心理+"心理健康"+"精神卫生"+"精神疾病"+"心理疾病")*("新冠"+"新型冠状")+摘要:("隔离"+封城+"社交距离"+方舱+心理+"心理健康"+"精神卫生"+"精神疾病
"+"心理疾病")*("新冠"+"新型冠状")

题名:("隔离"+封城+"社交距离"+方舱+污名+耻辱+羞辱+恐惧+焦虑+抑郁)*("新冠"+"新型冠状")+摘要:("隔离"+封城+"社交距离"+方舱+污名+耻辱+羞辱+恐惧+焦虑+抑郁)*("新冠"+"新型冠状")

题名:("隔离"+封城+"社交距离"+方舱+孤独+压力)*("新冠"+"新型冠状")+摘要:("隔离"+封城+"社交距离"+方舱+孤独+压力)*("新冠"+"新型冠状")

题名:("隔离"+封城+"社交距离"+方舱+应激+创伤+"创伤后"+愤怒+情绪+心情+易怒+"情绪障碍"+"心理障碍"+哀伤+悲伤+悲痛+悲哀+忧郁+倦怠)*("新冠"+"新型冠状")+摘要:("隔离"+封城+"社交距离"+方舱+应激+创伤+"创伤后"+愤怒+情绪+心情+易怒+"情绪障碍"+"心理障碍"+哀伤+悲伤+悲痛+悲哀+忧郁+倦怠)*("新冠"+"新型冠状")

October 23, 2020
China National Knowledge Infrastructure
Restricted to disciplines: Medical and Public Health & Social science subgroup 2

TI=(隔离+封城+社交距离+方舱+心理+心理健康+精神卫生+精神疾病+心理疾病+污名+耻辱+羞辱+恐惧+焦虑+抑郁+孤独+压力+应激+创伤+创伤后+愤怒+情绪+心情+易怒+情绪障碍+心理障碍+哀伤+悲伤+悲痛+悲哀+忧郁+倦怠)*(新冠+新型冠状) OR AB=(隔离+封城+社交距离+方舱+心理+心理健康+精神卫生+精神疾病+心理疾病+污名+耻辱+羞辱+恐惧+焦虑+抑郁+孤独+压力+应激+创伤+ 创伤后+愤怒+情绪+心情+易怒+情绪障碍+心理障碍+哀伤+悲伤+悲痛+悲哀+忧郁+倦怠)*(新冠+新型冠状)

Wanfang

Restricted to disciplines: Medicine and Health & Culture, Science, Education and PE

题名:("隔离" or 封城 or "社交距离" or 方舱 or 心理 or "心理健康" or "精神卫生" or "精神疾病" or "心理疾病" or 污名 or 耻辱 or 羞辱 or 恐惧 or 焦虑 or 抑郁 or 孤独 or 压力 or 应激 or 创伤 or "创伤后" or 愤怒 or 情绪 or 心情 or 易怒 or "情绪障碍" or "心理障碍" or 哀伤 or 悲伤 or 悲痛 or 悲哀 or 忧郁 or 倦怠) and ("新冠" or "新型冠状") or 摘要:("隔离" or 封城 or "社交距离" or 方舱 or 心理 or "心理健康" or "精神卫生" or "精神疾病" or "心理疾病" or 污名 or 耻辱 or 羞辱 or 恐惧 or 焦虑 or 抑郁 or 孤独 or 压力 or 应激 or 创伤 or "创伤后" or 愤怒 or 情绪 or 心情 or 易怒 or "情绪障碍" or "心理障碍" or 哀伤 or 悲伤 or 悲痛 or 悲哀 or 忧郁 or 倦怠) and ("新冠" or "新型冠状")

MedRxiv (pre-prints)

Search 1: (isolation OR “mental health” OR “mental illness” OR “mental disorder”) AND (COVID OR covid19)

Search 2: (psychology OR psychological OR psychosocial OR anxiety OR depression OR stress or trauma) AND (COVID OR covid19)

Open Science Framework (pre-prints)

(isolation OR psychology OR psychological OR psychosocial OR “mental health” OR “mental illness” OR “mental disorder” OR anxiety OR depression OR stress or trauma) AND (coronavirus OR COVID OR covid19)

Clinical Trial Registries (as of May 5, 2020, restricted to “Interventional Studies”)

(Quarantine OR isolation OR Psychology OR psychosocial OR “mental health” OR “mental illness” OR “mental disorder” OR anxiety OR depression OR stress OR trauma) AND (coronavirus OR "corona virus" OR COVID OR covid19)

Appendix 2. Title and Abstract and Full-text Review Inclusion and Exclusion Criteria Coding Guides

Title and Abstract Coding Criteria

MENTAL HEALTH SYMPTOM CHANGES CODING CRITERIA:	**EFFECTS OF INTERVENTIONS CODING CRITERIA:**
No: not original human data or a case study or case series. If it is clear from the title and abstract that the article is not an original report of primary data, but, for example, a letter, editorial, systematic review or meta-analysis, or it is a single case study or case series, then it is excluded. Studies reporting only on animal, cellular, or genetic data are also excluded. Conference abstracts are included.	**No: not original human data or a case study or case series.** If it is clear from the title and abstract that the article is not an original report of primary data, but, for example, a letter, editorial, systematic review or meta-analysis, or it is a single case study or case series, then it is excluded. Studies reporting only on animal, cellular, or genetic data are also excluded. Conference abstracts are included.
No: not a study of any population affected by the COVID-19 outbreak. If it is clear from the title or abstract that the study is not about any population affected by the COVID-19 outbreak, it is excluded. Studies that include fewer than 100 participants, are excluded. If a longitudinal study has baseline sample size with at least 100 participants, but no follow-up with at least 100 participants, then we exclude the study (and document); if its baseline and at least one follow-up have more than 100 participants, we include the study.	**No: not a study of any population affected by the COVID-19 outbreak.** Eligible studies must be initiated after China's first announcement to the WHO on December 31, 2019. If it is clear from the title or abstract that the study is not about any population affected by the COVID-19 outbreak, it is excluded. Eligible interventions must be 1) done to improve mental health with people with COVID-19; or 2) designed to specifically target COVID-19 related mental health concerns in people not identified as having COVID19; interventions in this group that are not described as addressing mental health symptoms from COVID-19 or that are not tailored to address COVID-19 challenges will be excluded. Studies that include fewer than 10 subjects, are excluded.
No: not a study which reports mental health symptom changes longitudinally pre-COVID-19 to COVID-19 or during COVID-19. If it is clear from the title or abstract that the study does not report continuous scores of symptom levels or proportions of participants meeting the threshold on a validated scale, or diagnostic criteria using a validated diagnostic interview prior to and after the start of COVID-19, or longitudinally during COVID-19, then it will be excluded.	**No: intervention does not target mental health.** If it is clear from the title or abstract that the study is not about an intervention or is an intervention, but the intervention does not primarily target mental health, then it will be excluded. Mental health must be the primary trial outcome if a primary outcome or outcomes are stated.
For pre-COVID versus during-COVID studies, pre- and during- samples must include the same cohort, not different representative samples. Pre- and during-samples should have less than 10% difference in the participants in the sample* or should statistically account for missing data, i.e., if N between the samples differs by more than 10%, modelling or imputation is needed to evaluate results for all participants. Pre-COVID data needs to be collected prior to 2020 (or at least 80% of the	**No: not a randomized controlled trial (RCT) or non-randomized controlled study with eligible comparators:** If it is clear from the title or abstract that the study is not an RCT or non-randomized controlled trial that compares an intervention designed to improve any aspect of mental health during the COVID-19 pandemic to (1) any inactive control condition (e.g., no treatment, waitlist control) or to (2) another eligible intervention designed to mental health, then it will be excluded.

participants' data need be collected prior to 2020 if collection spans from 2019 to 2020) and after 2018 (or at least 80% of the participants' data need to be collected after 2018 if collection spans from pre-2018 to 2018). For studies with multiple waves across COVID, if there are pre-pandemic time points, the most recent pre-pandemic wave needs to be in 2018 or later; if the most recent pre-pandemic wave spans from pre-2018 to 2018, at least 80% of the data need to be collected in 2018. Studies with multiple waves across COVID-19 must have at least two time points that have less than 10% difference in the participants in the sample*, or should statistically account for missing data, regardless of whether or not the study has pre-COVID assessments. For studies with multiple waves across COVID, the first wave of data collection needs to be in 2020. If outcomes from the study are only shown graphically without eligible numerical values, exclude the study. * At least 90% of participants in assessments from two time points need to be the same participants. In a three-wave survey, if N-T1 = 1000, N – T2 = 500, and N – T3 = 500, T2 and T3 would only be eligible if at least 90% of the participants at each time point were the same. It is not enough to just have a total N within 10%.	**Yes: study eligible to be included in full-text review.**

Yes: study eligible for inclusion in full-text review.	

Full Text Coding Criteria

MENTAL HEALTH SYMPTOM CHANGES CODING CRITERIA:	**EFFECTS OF INTERVENTIONS CODING CRITERIA:**
No: not original human data or a case study or case series. If it is clear from the full text that the article is not an original report of primary data, but, for example, a letter, editorial, systematic review or meta-analysis, or it is a single case study or case series, then it is excluded. Studies reporting only on animal, cellular, or genetic data are also excluded. Conference abstracts are included. **No: not a study of any population affected by the COVID-19 outbreak.** If it is clear from the full text that the study is not about any population affected by the COVID-19 outbreak, it is excluded. Studies that include fewer than 100 participants, are excluded. If a longitudinal study has baseline sample size with at least 100 participants, but no follow-up with at least 100 participants, then we exclude the study (and document); if its baseline and at least one follow-up have more than 100 participants, we include the study. **No: not a study which reports mental health symptom changes longitudinally pre-COVID-19 to COVID-19 or during COVID-19.** If it is clear from the title or abstract that the study does not report continuous scores of symptom levels or proportions of participants meeting the threshold on a validated scale, or diagnostic criteria using a validated diagnostic interview prior to and after the start of COVID-19, or longitudinally during COVID-19, then it will be excluded. For pre-COVID versus during-COVID studies, pre- and during- samples must include the same cohort, not different representative samples. Pre- and during-samples should have less than 10% difference in the participants in the sample* or should statistically account for missing data, i.e., if N between the samples differs by	**No: not original human data or a case study or case series.** If the article is not an original report of primary data, but, for example, a letter, editorial, systematic review or meta-analysis, or it is a single case study or case series, then it is excluded. Studies reporting only on animal, cellular, or genetic data are also excluded. Conference abstracts are included. **No: not a study of any population affected by the COVID-19 outbreak.** Eligible studies must be initiated after China's first announcement to the WHO on December 31, 2019. If the study is not about any population affected by the COVID-19 outbreak, it is excluded. Eligible interventions must be 1) done to improve mental health with people with COVID-19; or 2) designed to specifically target COVID-19 related mental health concerns in people not identified as having COVID-19; interventions in this group that are not described as addressing mental health symptoms from COVID-19 or that are not tailored to address COVID-19 challenges will be excluded. Studies that include fewer than 10 subjects, are excluded. **No: intervention does not target mental health.** If the study is not about an intervention or is an intervention, but the intervention does not primarily target mental health, then it will be excluded. Mental health must be the primary trial outcome if a primary outcome or outcomes are stated. **No: not a randomized controlled trial (RCT) or nonrandomized controlled study with eligible comparators:** If the study is not an RCT or non-randomized controlled trial that compares an intervention designed to improve any aspect of mental health during the COVID19 pandemic to (1) any inactive control condition (e.g., no treatment, waitlist control) or to (2) another eligible intervention designed to mental health, then it will be excluded. **Yes: study eligible for inclusion in systematic review.**

more than 10%, modelling or imputation is needed to evaluate results for all participants. Pre-COVID data needs to be collected prior to 2020 (or at least 80% of the participants' data need be collected prior to 2020 if collection spans from 2019 to 2020) and after 2018 (or at least 80% of the participants' data need to be collected after 2018 if collection spans from pre-2018 to 2018). For studies with multiple waves across COVID, if there are pre-pandemic time points, the most recent pre-pandemic wave needs to be in 2018 or later; if the most recent pre-pandemic wave spans from pre-2018 to 2018, at least 80% of the data need to be collected in 2018. Studies with multiple waves across COVID-19 must have at least two time points that have less than 10% difference in the participants in the sample*, or should statistically account for missing data, regardless of whether or not the study has pre-COVID assessments. For studies with multiple waves across COVID, the first wave of data collection needs to be in 2020. If outcomes from the study are only shown graphically without eligible numerical values, exclude the study. **Yes: study eligible for inclusion in systematic review.** * At least 90% of participants in assessments from two time points need to be the same participants. In a three-wave survey, if N-T1 = 1000, N – T2 = 500, and N – T3 = 500, T2 and T3 would only be eligible if at least 90% of the participants at each time point were the same. It is not enough to just have a total N within 10%.	