

SR HCW Mental Health - Appendix Search strategies

This peer-reviewed search strategy was used for NIPH PubMed searches (March to May 2020). The search dates back to 1st December 2019:

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("covid-19"[nm] OR "severe acute respiratory syndrome coronavirus 2"[nm] OR "COVID-19 diagnostic testing"[nm] OR "nucleocapsid protein, Coronavirus"[nm] OR "COVID-19 vaccine"[nm] OR "membrane protein, SARS-CoV-2"[nm] OR "spike protein, SARS-CoV-2"[nm] OR "envelope protein, SARS-CoV-2"[nm] OR "spike glycoprotein, COVID-19 virus"[nm] OR "COVID-19 drug treatment"[nm] OR "COVID-19 serotherapy"[nm] OR ((Coronavirus[mh] OR "Coronavirus Infections"[mh] OR Coronaviridae[mh:noexp] OR "Coronaviridae Infections"[mh:noexp] OR "corona virus"[tw] OR "corona viruses"[tw] OR coronavir*[tw] OR coronavirus*[tw] OR betacoronavir*[tw])) AND (novel[tw] OR 2019[tw] OR Wuhan[tw] OR Huanan[tw] OR Hubei[tw])) OR "new coronavirus"[tw] OR "COVID-19"[tw] OR COVID19[tw] OR "SARS coronavirus 2"[tw] OR "severe acute respiratory syndrome coronavirus 2"[tw] OR nCoV[tw] OR 2019nCoV[tw] OR nCoV2019[tw] OR "SARS-CoV-2"[tw] OR "SARS-CoV2"[tw] OR SARSCoV2[tw] OR SARSCoV19[tw] OR SARS-CoV19[tw] OR SARS-CoV-19[tw] OR HCoV-19[tw] OR WN-CoV[tw]) AND (2019/12/01:2030/12/31[edat]))
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CDC use corresponding sensitive search strategies in 24 databases, among others PubMed (National Library of Medicine), Embase (Ovid), Cochrane Library (Wiley), Scopus (Elsevier), CINAHL (EBSCO), and Academic Search Complete (EBSCO). Search results are shared daily in citation management software format (RIS) for downloading. For a detailed description of the searches, see the section on Methodology at the bottom of the webpage [COVID-19 Research Articles Downloadable Database](#). References to publication types ongoing studies, preprints, and patents, and articles in Chinese are not forwarded to the map.

Qualitative studies (CASP checklist)

| Study | Was there a clear statement of the aims of the research? | Is a qualitative methodology appropriate? | Was the research design appropriate to address the aims of the research? | Was the recruitment strategy appropriate to the aims of the research? | Were the data collected in a way that addressed the research issue? | Has the relationship between researcher and participants been adequately considered? | Have ethical issues been taken into consideration? | Was the data analysis sufficiently rigorous? | Is there a clear statement of findings? | How valuable is the research? | Overall assessment |
|-------------------|--|---|--|---|---|--|--|--|---|-------------------------------|--------------------|
| Sun et al. | + | + | + | + | + | + | + | + | + | + | |
| Wu, Jiang, et al. | - | + | ? | ? | ? | - | ? | - | + | + | - |
| Yin and Zeng | + | + | + | + | + | ? | + | + | + | + | |

Systematic reviews (AMSTAR)

| Study | Was an "a priori" design provided? | Was there duplicate study selection and data extraction? | Was a comprehensive literature search performed? | Was the status of publication i.e., grey literature) used as an inclusion criterion? | Was a list of studies included and excluded) provided? | Were the characteristics of the included studies provided? | Was the scientific quality of the included studies assessed and documented? | Was the scientific quality of the included studies used appropriately in formulating conclusions? | Were the methods used to combine the findings of studies appropriate? | 1Was the likelihood of publication bias assessed? | Was conflict of interest reported? | Overall Score |
|------------------------|------------------------------------|--|--|--|--|--|---|---|---|---|------------------------------------|---------------|
| Gautam, Kaur, and Mahr | - | ? | + | - | - | - | - | - | - | ? | + | 2 |
| Rajkumar | - | - | + | ? | - | + | - | - | + | ? | + | 4 |

Cross-sectional studies (JBI Checklist for Prevalence Studies)

| Study | Was the sample frame appropriate to address the target population? | Were study participants recruited in an appropriate way? | Was the sample size adequate? | Were the study subjects and the setting described in detail? | Was the data analysis conducted with sufficient coverage of the identified sample? | Were valid methods used for the identification of the condition? | Was the condition measured in a standard, reliable way for all participants? | Was there appropriate statistical analysis? | Was the response rate adequate, and if not, was the low response rate managed appropriately? | Overall appraisal: |
|--|--|--|-------------------------------|--|--|--|--|---|--|--------------------|
| Ahmed et al. | + | - | + | + | ? | + | + | ? | + | + |
| Behnam et al. | + | ? | - | - | - | ? | ? | - | + | - |
| Bohlken et al. | + | + | + | - | ? | + | + | - | - | - |
| Cao et al. | + | + | ? | ? | ? | + | + | + | + | + |
| Chen, Liang, et al. | + | ? | ? | - | ? | + | + | ? | ? | - |
| Chung and Yeung | + | ? | ? | - | - | + | + | - | - | - |
| Guo et al. | + | - | + | + | ? | + | + | + | ? | + |
| Hong et al. | + | + | ? | + | + | + | + | + | + | + |
| Liu, Ren, et al. | + | + | + | - | ? | + | + | + | ? | ? |
| Louie et al. | ? | ? | N/A | ? | ? | + | + | + | - | - |
| Abdessater, Rouprêt, Misrai, Pinar, et al. | + | + | ? | + | ? | + | ? | ? | + | - |
| Mohindra et al. | + | ? | ? | - | ? | + | + | ? | ? | - |
| Naser | + | + | - | - | ? | + | + | ? | + | - |
| Shen, Zou, et al. | + | ? | ? | - | ? | + | ? | ? | ? | - |
| Shen, Cui, et al. | + | ? | ? | - | ? | + | ? | ? | ? | - |
| Simpson et al. | ? | ? | ? | ? | ? | + | + | ? | ? | - |

Cross-sectional studies (JBI Checklist for Analytical Prevalence Studies)

| Study | Were the criteria for inclusion in the sample clearly defined? | Were the study subjects and the setting described in detail? | Was the exposure measured in a valid and reliable way? | Were objective, standard criteria used for measurement of the condition? | Were confounding factors identified? | Were strategies to deal with confounding factors stated? | Were the outcomes measured in a valid and reliable way? | Was appropriate statistical analysis used? | Overall appraisal: |
|---|--|--|--|--|--------------------------------------|--|---|--|--------------------|
| Abdessater, Rouprêt, Misrai, Matillon, et al. | + | + | + | ? | + | + | + | ? | - |
| Cai, Lian, et al. | + | - | + | ? | + | ? | + | + | - |
| Cai, Tu, et al. | + | + | + | ? | ? | ? | + | + | + |
| Chen, Zhou, et al. | + | - | + | ? | ? | - | + | ? | ? |
| Chew et al. | + | + | + | ? | + | + | + | + | + |
| Davico et al. | ? | + | + | ? | + | + | + | ? | ? |
| Foley et al. | + | + | + | ? | + | + | + | + | + |
| Hu et al. | + | + | + | ? | + | + | + | + | + |
| Huang et al. | - | + | + | ? | - | ? | + | + | ? |
| Kang et al. | + | + | + | ? | + | ? | + | + | + |
| Ko et al. | ? | - | + | ? | - | ? | + | ? | - |
| Lai et al. | + | + | + | ? | + | ? | + | + | + |
| Li, Miao, et al. | + | + | + | + | - | ? | + | + | - |
| Li, Ge, et al. | ? | + | + | ? | - | ? | + | + | - |
| Liang et al. | - | - | + | ? | + | + | + | + | - |
| Liu, Han, et al. | + | + | + | ? | + | + | + | + | + |
| Liu, Shao, et al. | - | ? | + | + | - | ? | + | + | - |
| Lu et al. | + | + | + | ? | + | - | + | + | ? |
| Mo et al. | + | + | + | + | + | ? | + | ? | ? |
| Ni et al. | + | + | + | ? | + | + | + | + | + |
| Pu et al. | ? | - | + | ? | + | ? | + | ? | ? |

| | | | | | | | | | |
|---------------------|---|---|---|---|---|---|---|---|---|
| Tan et al. | + | + | + | ? | + | + | + | - | ? |
| Wu, Zhang, et al. | - | - | + | ? | ? | ? | + | ? | - |
| Xiao et al. | ? | + | + | ? | + | + | + | + | + |
| Xu et al. | - | + | + | ? | ? | ? | + | + | - |
| Yifan et al. | + | + | + | ? | - | ? | ? | + | ? |
| Zhang, Liu, et al. | - | + | + | + | ? | ? | + | ? | - |
| Zhang, Yang, et al. | + | + | + | ? | + | + | + | - | ? |
| Zhang, Wang, et al. | + | ? | + | ? | - | ? | + | - | - |
| Zhu, Sun, et al. | + | + | + | ? | + | ? | + | - | - |
| Zhu, Wu, et al. | - | + | + | ? | - | ? | + | + | - |

Longitudinal studies (JBI Checklist for Cohort Studies)

| Study | Were the two groups similar and recruited from the same population? | Were the exposures measured similarly to assign people to both exposed and unexposed | Were confounding factors identified? | Were strategies to deal with confounding factors stated? | Were the outcomes measured in a valid and reliable way? | Was the follow up time reported and sufficient to be long enough for outcomes to occur? | Was follow up complete, and if not, were the reasons to loss to follow up described and explored? | Were strategies to address incomplete follow up utilized? | Was appropriate statistical analysis used? | Overall appraisal |
|-------------|---|--|--------------------------------------|--|---|---|---|---|--|-------------------|
| Lv et al. | ? | ? | - | - | + | + | ? | ? | - | - |
| Yuan et al. | + | + | - | N/A | ? | + | ? | ? | + | - |

Appendix 3 Description of included studies

| Study | Country | Study design | Intervention/ exposure | Healthcare setting | Outcomes | Healthcare workers | Methodological quality |
|---|----------------|--------------|------------------------|--------------------|--|--|------------------------|
| Abdessater, Rouprêt, Misrai, Matillon, et al. | France | Survey | Non-frontline | Hospital | Changes in mental health Prevalence/ correlates | N = 275 Doctors | High risk of bias |
| Abdessater, Rouprêt, Misrai, Pinar, et al. | France | Survey | Non-frontline | Hospital | Changes in mental health Prevalence/ correlates | N = 275 Doctors | High risk of bias |
| Ahmed et al. | Not applicable | Survey | Non-frontline | Hospital Other | Prevalence/ correlates | N = 650 Other: Dentists | Low risk of bias |
| Behnam et al. | Iran | Survey | Frontline | Hospital | Changes in mental health Prevalence/ correlates | N = 12 Doctors | High risk of bias |
| Bohlken et al. | Germany | Survey | Non-frontline | Not specified | Prevalence/ correlates Strategies | N = 2072 Doctors Other: Psychologists | High risk of bias |
| Cai, Lian, et al. | China | Survey | Frontline | Not specified | Prevalence/ correlates Strategies | N = 1521 Doctors Nurses Other: Technicians, pharmacists, logistical personell, social workers described as healthcare workers | High risk of bias |
| Cai, Tu, et al. | China | Survey | Frontline | Hospital | Prevalence/ correlates Strategies | N = 534 Doctors Nurses | Low risk of bias |

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|---------------------|--------------------|------------------------------------|--|--|--|---|---------------------------------|
| | | | | | Preferences/perceived need | Other: technicians Non-specified | |
| Cao et al. | China | Survey | Frontline Intervention to prevent/help psych. distress | Hospital | Prevalence/ correlates Strategies Preferences/perceived need | N = 37 Doctors Nurses Other: technicians | Medium/ unclear risk of bias |
| Chen, Zhou, et al. | China | Survey | Frontline Non-frontline | Hospital Specialist health services | Prevalence/ correlates | N = 13 Non-specified | Medium/ unclear risk of bias |
| Chen, Liang, et al. | China | Cross-sectional, excluding surveys | Frontline Intervention to prevent/help psych. distress | Hospital | Preferences/perceived need Other | N = 105 Non-specified | High risk of bias |
| Chew et al. | India Singapore | Survey | Frontline | Not specified | Prevalence/ correlates | N = 906 Allied health care workers Clinical administration Doctors Nurses Other: technicians, maintenance workers | Low risk of bias |
| Chung and Yeung | China | Survey | Frontline Intervention to prevent/help psych. distress Non-frontline | Hospital | Prevalence/ correlates Preferences/perceived need | N = 69 Allied health care workers Clinical administration Nurses Doctors Other: Healthcare assistants Not specified | High risk of bias |

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|---------------------------|-----------------------------|------------------------|---|---------------------------|--|---|------------------------------------|
| Davico et al. | Italy | Survey | Frontline Non-frontline | Hospital Not specified | Prevalence/ corre- lates | N = 380 Nurses Doctors | Medium/ unclear risk of bias |
| Foley et al. | Australia New Zealand | Survey | Non-frontline | Hospital | Prevalence/ corre- lates Other | N = 468 Doctors | Low risk of bias |
| Gautam, Kaur, and Mahr | Not ap- plicable | Systematic re- view | Frontline Non-frontline | Not specified | Prevalence/ corre- lates | Not applicable | Low meth- odological quality |
| Guo et al. | China | Survey | Frontline Non-frontline | Hospital | Prevalence/ corre- lates Preferences/per- ceived need | N = 11,118 Clinical administration Doctors Medical students Nurses Other: Medical assistants | Medium/ unclear risk of bias |
| Hong et al | China | Survey | Frontline Intervention to prevent/help psych. distress | Hospital | Prevalence/ corre- lates | N = 102 Doctors Nurses Other: technicians | Low risk of bias |
| Hu et al. | China | Survey | Frontline | Hospital | Prevalence/ correlates | N = 643 Clinical administration Doctors Emergency staff Non-specified Nurses Other: technicians | Low risk of bias |
| Huang et al. | China | Survey | Frontline | Not specified | Prevalence/ correlates | N = 246 Doctors Nurses | Medium/ unclear risk of bias |

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|-------------------|--------|--------|---|----------------------------------|---|---|----------------------|
| Jiang et al. | China | Other | Frontline Intervention to prevent/help psych. distress | Hospital | Other | N = Not reported Non-specified | Not as- sessed |
| Kang et al. | China | Survey | Frontline Non-frontline | Hospital | Prevalence/ corre- lates Strategies Preferences/per- ceived need | N = 994 Doctors Nurses | Low risk of bias |
| Ko et al. | Taiwan | Survey | Not specified | Not pecified | Prevalence/ corre- lates | N = 1904 non-specified HCW and non-HCW, no other amounts reported | High risk of bias |
| Lai et al. | China | Survey | Frontline Non-frontline | Hospital | Prevalence/ correlates | N = 1257 Doctors Nurses | Low risk of bias |
| Li, Miao, et al. | China | Survey | Frontline | Hospital | Prevalence/ correlates | N = 4369 Doctors Nurses Other: technicians | High risk of bias |
| Li, Ge, et al. | China | Survey | Frontline Non-frontline | Hospital Other (in- fobox) | Prevalence/ correlates | N = 526 Nurses | High risk of bias |
| Liang et al. | China | Survey | Frontline Non-frontline | Hospital | Prevalence/ correlates | N = 49 Doctors Nurses | High risk of bias |
| Liu, Shao, et al. | China | Survey | Frontline Non-frontline | Not specified | Prevalence/ correlates | N = 506 Non-specified | High risk of bias |

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|-------------------|---------------------|--|----------------------------|---------------------------|--|--|------------------------------------|
| Liu, Han, et al. | China | Survey | Frontline Non-frontline | Hospital | Prevalence/correlate Strategies | N = 4679 Doctors Nurses | Low risk of bias |
| Liu, Yang, et al. | China | Other: review of online surveys | Not specified | Not specified | Prevalence/correlate Strategies | N = Not applicable Non-specified | Medium/ unclear risk of bias |
| Liu, Ren, et al. | China | Survey | Non-frontline | Not specified | Prevalence/ corre- lates | N = 1889 Non-specified | High risk of bias |
| Louie et al. | Not ap- plicable | Survey | Non-frontline | Not specified | Prevalence/correlate Strategies | N = 902 Doctors | High risk of bias |
| Lu et al. | China | Survey | Frontline Non-frontline | Hospital | Prevalence/ corre- lates | N = 2299 Clinical administration Doctors Nurses | Medium/ unclear risk of bias |
| Lv et al. | China | Cohort/longitudi- nal | Frontline Not specified | Not specified | Changes in mental health Prevalence/ corre- lates | N = 8028 Doctors Nurses | Low risk of bias |
| Martin | USA | Other: case studies | Non-frontline | Hospital | Other | N = 3 Doctors Nurses Other: hospital custodian | Not as- sessed |
| Mo et al. | China | Survey | Frontline | Not specified | Prevalence/ corre- lates | N = 180 Nurses | Medium/ unclear risk of bias |
| Mohindra et al. | India | Cross-sectional, excluding sur- veys | Not specified | Hospital Not specified | Strategies Preferences/per- ceived need Experiences and un- derstandings | N = Not reported Non-specified | Poor |

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|--------------------------------|----------------|--|---|----------------------------|--|-------------------------------------|---------------------------------|
| Naser | Iran | Survey | Non-frontline | Specialist health services | Prevalence/ correlates | N = 14 Doctors | High risk of bias |
| Nemati, Ebrahimi, and Nemati | Iran | Survey | Frontline | Hospital | Prevalence/ correlates | N = 85 Nurses | High risk of bias |
| Ni et al. | China | Survey | Not specified | Not specified | Prevalence/ correlates | N = 1577 Non-specified | Low risk of bias |
| Pu et al. | China | Survey | Other | Hospital | Prevalence/ correlates | N = 867 Nurses | Medium/ unclear risk of bias |
| Rajkumar | Not applicable | Systematic review | Not specified | Hospital Not specified | Preferences/perceived need | N = Not applicable Not specified | Low methodological quality |
| Schulte, Bernstein, and Cabana | USA | Other: Described uptake of an intervention | Frontline Intervention to prevent/help psych. distress | Hospital | Preferences/perceived need Other | N = Not reported Doctors | Not assessed |
| Shen, Zou, et al. | China | Survey | Frontline | Hospital | Prevalence/ correlates | N = 85 Nurses | High risk of bias |
| Shen, Cui, et al. | China | Survey | Frontline | Hospital | Prevalence/ correlates | N = Not reported Non-specified | High risk of bias |
| Simpson et al. | USA | Survey | Non-frontline | Not specified | Prevalence/ correlates | N = 101 Doctors | High risk of bias |
| Sun et al. | China | Qualitative | Frontline | Hospital | Strategies Experiences and understandings | N = 20 Nurses | Valuable |

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|--------------------|-----------|---------------------|----------------------------|---------------------------|--------------------------------|---|---------------------------------|
| Tan et al. | Singapore | Survey | Frontline Non-frontline | Hospital | Prevalence/ correlates | N = 460 Allied health care workers Clinical administration Doctors Nurses Other: pharmacists, technicians, maintenance workers | Medium/ unclear risk of bias |
| Wu, Zhang, et al. | China | Survey | Frontline Not specified | Hospital Not specified | Prevalence/ correlates | N = 2110 Non-specified | High risk of bias |
| Wu, Jiang, et al. | China | Qualitative | Frontline Non-frontline | Hospital | Experiences and understandings | N = 18 Nurses | Valuable |
| Xiao et al. | China | Survey | Frontline | Hospital | Prevalence/ correlates | N = 180 Doctors Nurses | Low risk of bias |
| Xu et al. | China | Survey | Not specified | Hospital | Prevalence/ correlates | N = 120 Doctors | Low risk of bias |
| Yifan et al. | China | Survey | Frontline | Hospital | Prevalence/ correlates | N = 140 | Medium/ unclear risk of bias |
| Yin and Zeng | China | Qualitative | Frontline | Hospital | Experiences and understandings | N = 10 Nurses | Valuable |
| Yuan et al. | China | Cohort/longitudinal | Not specified | Not specified | Changes in mental health | N = 249 Non-specified | High risk of bias |
| Zhang, Liu, et al. | Iran | Survey | Not specified | Hospital | Prevalence/ correlates | N = 304 Non-specified | High risk of bias |

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|---------------------|-------|--------|----------------------------|---------------------------|--------------------------------------|---|------------------------------------|
| Zhang, Wang, et al. | China | Survey | Frontline Non-frontline | Not specified | Prevalence/ correlates | N = 2182 Clinical administration Doctors Nurses | High risk of bias |
| Zhang, Yang, et al. | China | Survey | Frontline Non-frontline | Hospital | Prevalence/ correlates Strategies | N = 1946 Clinical administration Doctors Non-specified Nurses | Medium/ unclear risk of bias |
| Zhu, Wu, et al. | China | Survey | Frontline Other | Hospital | Prevalence/ correlates | N = 320 Non-specified | High risk of bias |
| Zhu, Sun, et al. | China | Survey | Frontline | Hospital Not specified | Prevalence/ correlates | N = 165 Doctors Nurses | High risk of bias |

