Effect of advanced nursing care on psychological disorder in patients with COVID-19
A protocol of systematic review

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Abstract
Background: This study will explore the effect of advanced nursing care (ANC) on psychological disorder (PD) in patients with Coronavirus Disease 2019 (COVID-19).
Methods: This study will search the following electronic databases up to June 30, 2020: Cochrane Library, PUBMED, EMBASE, PsycINFO, Web of Science, OpenGrey, Cumulative Index to Nursing and Allied Health Literature, CNKI, and WANGFANG. We will not impose any language limitations. Two authors will independently identify titles/abstracts and full-text of all potential studies, and will collect data from eligible studies. Additionally, study quality will be assessed by Cochrane risk of bias. If necessary, we will conduct meta-analysis if sufficient trials are included.
Results: This study will explore the effect of ANC on PD in patients with COVID-19 through outcome indicators.
Conclusion: The findings of this study may supply summarized evidence of ANC for the management of PD in COVID-19.
PROSPERO registration number: PROSPERO CRD42020187610.
Abbreviations: ANC = advanced nursing care, CIs = confidence intervals, COVID-19 = Coronavirus Disease 2019, PD = psychological disorder, RCTs = randomized controlled trials.

Keywords: advanced nursing care, COVID-19, effect, psychological disorder, safety

1. Introduction
Coronavirus Disease 2019 (COVID-19) is a rapid, global spread virus,[1–4] which attacks people in almost all countries worldwide.[5–8] So far, only its transmission in China has been controlled.[9,10] The rate of its infections outside China is still rapidly increasing, especially in the United States, which accounts for almost one-third of all patients with COVID-19 globally.[11,12] Till May 25, 2020, about 5,586,715 cases of COVID-19 and 347,852 deaths have been reported.[12] A variety of studies reported that patients who received or even cured with this condition often experience psychological disorder (PD), including depression, and anxiety.[13–24] So the effective prevention and treatment of PD in patients with COVID-19 are very essential task. Studies suggested that advanced nursing care (ANC) may benefit PD in patients with COVID-19.[25–28] However, no systematic review has investigated this issue. Therefore, this study will aim to assess the effect of ANC on managing PD in patients with COVID-19.

2. Methods
2.1. Study registration
This study was registered through PROSPERO (CRD42020187610). It is reported in accordance with the guidelines of Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocol statement.

2.2. Eligibility criteria
2.2.1. Study types. The present study will include randomized controlled trials (RCTs) on investigating the effect of ANC on PD in patients with COVID-19, irrespective language, and publication status.

2.2.2. Intervention types. In the experimental group, all patients received ANC on PD in patients with COVID-19. In the control group, no restrictions related to the comparators are applied. However, we will not consider any controls involved in ANC.

2.2.3. Participant types. This study will include patients with COVID-19, who were diagnosed as PD, regardless sex, race, age, and severity of PD.
2.4. **Outcome measurements.** Primary outcomes are depression and anxiety, as measured by any related scales reported in the primary trials. Secondary outcomes are pressure, panic disorder, quality of life, and expected and unexpected adverse events.

2.3. **Search strategy**

We will search following electronic databases (Cochrane Library, PUBMED, EMBASE, PsycINFO, Web of Science, OpenGrey, Cumulative Index to Nursing and Allied Health Literature, CNKI and WANGFANG) up to June 30, 2020 without language and publication status restrictions. In addition, gray literatures will also be searched, including conference proceedings, reference lists of included studies, and websites of clinical trial registry. All potential RCTs of ANC on PD in patients with COVID-19 will be considered. The specifics of Cochrane Library are presented in Table 1. We will modify similar search strategies to the other electronic databases.

| Table 1 |
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| **Search strategy for Cochrane Library.** |
| Number | Search terms |
| --- | --- |
| 1 | Mesh descriptor: (coronavirus) explode all trees |
| 2 | ((coronavirus∗) or (2019-nCoV) or (COVID-19) or (SARS-CoV-2)):ti, ab, kw |
| 3 | Or 1-2 |
| 4 | MeSH descriptor: (depression) explode all trees |
| 5 | MeSH descriptor: (anxiety) explode all trees |
| 6 | (psychological∗) or (depressive symptom) or (depression∗) or (anxiety∗) or (mood disorder*) or (stress)):ti, ab, kw |
| 7 | Or 4-6 |
| 8 | (advanced nursing care) explode all trees |
| 9 | (care∗) or (nursing) or (nursing care) or (advanced care∗) or (standard care) or (standard care∗)):ti, ab, kw |
| 10 | Or 8-9 |
| 11 | MeSH descriptor: (randomized controlled trial) explode all trees |
| 12 | ((controlled trial) or (clinical trial) or (placebo) or (randomly) or (random) or (control) or (comparator)):ti, ab, kw |
| 13 | Or 11-12 |
| 14 | 3 and 7 and 10 and 13 |

We will use RevMan 5.3 software to perform statistical analysis. All continuous data will be estimated as standardized mean difference and 95% confidence intervals (CIs), and all dichotomous data will be expressed as risk ratio and 95% CIs. All statistical heterogeneity is appraised by $I^2$ test. $I^2 \leq 50\%$ indicates minor heterogeneity, and a fixed-effect model will be applied. If sufficient data are collected with minor heterogeneity, we will plan to conduct meta-analysis. If remarkable heterogeneity is detected, we will carry out subgroup analysis to test its heterogeneity sources. If necessary, we will report study results by narrative description.

2.2.4. **Outcome measurements**. Minor heterogeneity, and a statistical heterogeneity is appraised by $I^2$ test. $I^2 \leq 50\%$ indicates obvious heterogeneity, and a random-effect model will be placed. If sufficient data are collected with minor heterogeneity, we will plan to conduct meta-analysis. If remarkable heterogeneity is detected, we will carry out subgroup analysis to test its heterogeneity sources. If necessary, we will report study results by narrative description.

2.9. **Subgroup analysis**

We will perform subgroup analysis according to the different details of interventions, study quality and outcome indicators.

2.10. **Sensitivity analysis**

We will undertake sensitivity analysis to examine the robustness and stability of synthesized results by eliminating low-quality studies.

2.11. **Reporting bias**

We will detect reporting bias using Funnel plot and Egger regression test if $>10$ eligible studies are included.

2.12. **Ethics and dissemination**

No ethics approval is required, since no individual patient data will be collected in this study. We will publish this study at a peer-reviewed journal.

3. **Discussion**

COVID-19 is a globally spread disease, which attacks almost all countries. Studies reported that patients who experience or cured with COVID-19 often have PD. Thus, it is very important to manage such condition. Several studies reported that ANC can help patients with this disorder. However, no systematic review assessed its effects. Thus, this study is the first one to systematically and comprehensively appraise the effects of ANC on PD in patients with COVID-19. The results of this study may provide evidence to determine whether ANC is effective for the treatment of PD following COVID-19.
Author contributions

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