

# Effects of music therapy on COVID-19 patients' anxiety, depression, and life quality

## A protocol for systematic review and meta-analysis

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### Abstract

**Background:** Whether music therapy improves coronavirus disease 2019 (COVID-19) patients' anxiety, depression, and life quality are still controversial. Therefore, to provide evidence-based medical evidence for clinical non-pharmacological interventions, we performed a meta-analysis of randomized controlled trials of music therapy for COVID-19 patients' anxiety, depression, and life quality.

**Methods:** Cochrane Central Register of Controlled Trials Repositories, PubMed, Embase, Web of Science and Chinese Science Citation Database, China National Knowledge Infrastructure, Chinese Biomedical Literature Database, Chinese Scientific Journal Database, and Wan-Fang database were searched to identify studies on the evaluation of the effectiveness of the music-based intervention on COVID-19 patients' anxiety, depression, and life quality from inception to May 2021. Two researchers independently carried out data extraction and literature quality evaluation of the quality and the meta-analysis on the included literature was performed with Revman5.3 software.

**Results:** The results of this meta-analysis will be submitted to a peer-reviewed journal for publication.

**Conclusion:** This study will provide reliable evidence-based evidence for the effects of music therapy on COVID-19 patients' anxiety, depression, and life quality.

**Abbreviation:** COVID-19 = coronavirus disease 2019.

**Keywords:** coronavirus disease 2019, meta-analysis, music therapy, protocol

## 1. Introduction

In December 2019, a severe acute respiratory syndrome coronavirus 2, characterized by pneumonia, broke out in Wuhan, China, known as coronavirus disease 2019 (COVID-

19)<sup>[1-3]</sup> that is transmitted from person to person through the respiratory tract and contact with infected people, and all people are generally susceptible.<sup>[4,5]</sup> The incubation period is generally from 1 to 14 days, and up to now, there exists no effective confirmed antiviral therapy.<sup>[6]</sup>

Prevention and isolation are the 2 most effective protective measures.<sup>[7,8]</sup> To prevent the wider spread of the epidemic, confirmed cases have been isolated for treatment and suspected cases have been self-quarantined for observation. Isolated people often have psychological stress reactions to various factors.<sup>[9-11]</sup> When focusing on the prevention and control of COVID-19 clinically, our attention should also be paid to psychological intervention for different groups of people.<sup>[12,13]</sup>

As an interdisciplinary subject, music therapy integrates medicine, music, and psychology together.<sup>[14,15]</sup> Meanwhile, being a non-drug intervention method, it has been increasingly applied in clinical practice by researchers.<sup>[16,17]</sup> Therefore, music therapy may be used as a non-pharmacological intervention for psychological intervention in COVID-19 patients. However, there is still insufficient clinical evidence to support it. A meta-analysis was conducted to further evaluate the effects of music therapy intervention on COVID-19 patients' anxiety, depression, and life quality.

## 2. Methods

### 2.1. Protocol

Under the guidance of the preferred reporting items for systematic reviews and meta-analysis protocols, this protocol of systematic

*Ethical approval was not required for this study. The systematic review will be published in a peer-reviewed journal, presented at conferences, and shared on social media platforms.*

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The datasets generated during and/or analyzed during the present study are available from the corresponding author on reasonable request.

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review and meta-analysis has been drafted.<sup>[18]</sup> The research framework has been registered on the open science framework (OSF) (Registration Number: DOI 10.17605/OSF.IO/VKF8X).

## 2.2. Ethics

Since this is a protocol with no patient recruitment and personal information collection, the approval of the ethics committee is not required.

## 2.3. Eligibility criteria

**2.3.1. Types of studies.** We will collect all randomized controlled trials.

**2.3.2. Participants.** COVID-19 patients.

**2.3.3. Interventions.** Patients in the control group were given routine treatment, while patients in the experimental group accepted music therapy on the basis of routine treatment.

**2.3.4. Outcome index.** Any rating scale that describes anxiety, depression, and life quality.

## 2.4. Exclusion criteria

(1) Studies without a control group. (2) Review articles, techniques, case reports, letters to the editor, and editorials are excluded.

## 2.5. Search strategy

Computer was used to retrieve Cochrane Central Register of Controlled Trials Repositories, PubMed, Embase, Web of Science and Chinese Science Citation Database, China National Knowledge Infrastructure, Chinese Biomedical Literature Database, Chinese Scientific Journal Database, and Wan-Fang database. The retrieval time limit was between the establishment of the database and May 2021. Taking PubMed as an example, the retrieval strategy is displayed in Table 1.

## 2.6. Data screening and extraction

The literature selection process is listed in Figure 1. Two authors independently searched and screened relevant papers. EndNote X7 software was utilized to delete the duplicates. The titles and abstracts of all searched papers were checked for eligibility. Relevant papers were selected, and then the full-text papers were subsequently assessed by the 2 authors. Finally, a panel meeting

was convened for resolving the disagreements about the inclusion of the papers.

We developed a data abstraction form to extract all useful data: (i) the characteristics of papers (authors, publish year, and country); (ii) the characteristics of participants (sample size, mean age, sex ratio, and study period); (iii) study design (random allocation, allocation concealment, masking, selection process of participants, and loss to follow-up); (iv) music therapy process (music therapy method, music therapy period, music therapy frequency, minutes per session, and the treatment measures in the control group); and (v) outcome measures (anxiety, depression, and life quality score).

## 2.7. Quality evaluation

Two authors independently assessed the risk of bias of included studies using Cochrane Collaboration's risk of the bias assessment tool, and all disagreements were resolved by discussing with a third author.

## 2.8. Statistical analysis

Rev-Man 5.3 software was applied for the meta-analysis. The pooled effects were estimated using the standardized mean differences and its 95% confidence interval (95% CI). Heterogeneity between studies was assessed by *I*-square ( $I^2$ ) and Q-statistic ( $P < .10$ ), and a high  $I^2$  ( $>50\%$ ) was recognized as heterogeneity. If  $P \geq .1$  and  $I^2 \leq 50\%$ , there was no statistical heterogeneity among the results of the studies, and a fixed-effect model (Mantel-Haenszel method) was adopted for analysis, otherwise a random-effect model was used.

**2.8.1. Dealing with missing data.** If there are insufficient or missing data in the literature, the authors will be contacted via email. If the data are still not available, only the currently available data will be analyzed and the potential impacts will be discussed.

**2.8.2. Subgroup analysis.** According to the duration of intervention and severity of illness, subgroup analysis will be carried out.

**2.8.3. Sensitivity analysis.** We also performed sensitivity analyses to test the robustness of the results by re-estimating the pooled effects with a fixed-effect or random-effect model.

**2.8.4. Publication bias.** If the number of studies included in an outcome indicator is no less than 10, a funnel chart will be used to assess publication bias.<sup>[19]</sup>

## 3. Discussion

Clinical observation revealed that COVID-19 patients had different degrees of diarrhea, nausea, decreased appetite, rash, and other adverse reactions during antiviral treatment.<sup>[20,21]</sup> At the same time, to cutoff the transmission route, the confirmed patients accepted isolation treatment and other prevention and control measures, which leads to anxiety, stress, loneliness, depression, and despair.<sup>[20]</sup> Excessively negative emotions can result in obsessive thinking, and, in severe cases, psychopathy seriously affects the treatment and recovery of COVID-19 patients. In this study, the principles and methods of evidence-based medicine were applied to evaluate the effectiveness of music therapy, so as to further clarify the effects of music therapy on

**Table 1**  
PubMed search strategy.

Number	Search terms
#1	Music Therapy [MeSH]
#2	Therapy, Music [Title/Abstract]
#3	or/1–2
#4	Corona Virus [Title/Abstract]
#5	Corona Virus Disease 2019 [Title/Abstract]
#6	COVID-19 [Title/Abstract]
#7	Novel coronavirus [Title/Abstract]
#8	Novel coronavirus pneumonia [Title/Abstract]
#9	or/4–8
#10	#3 AND #9

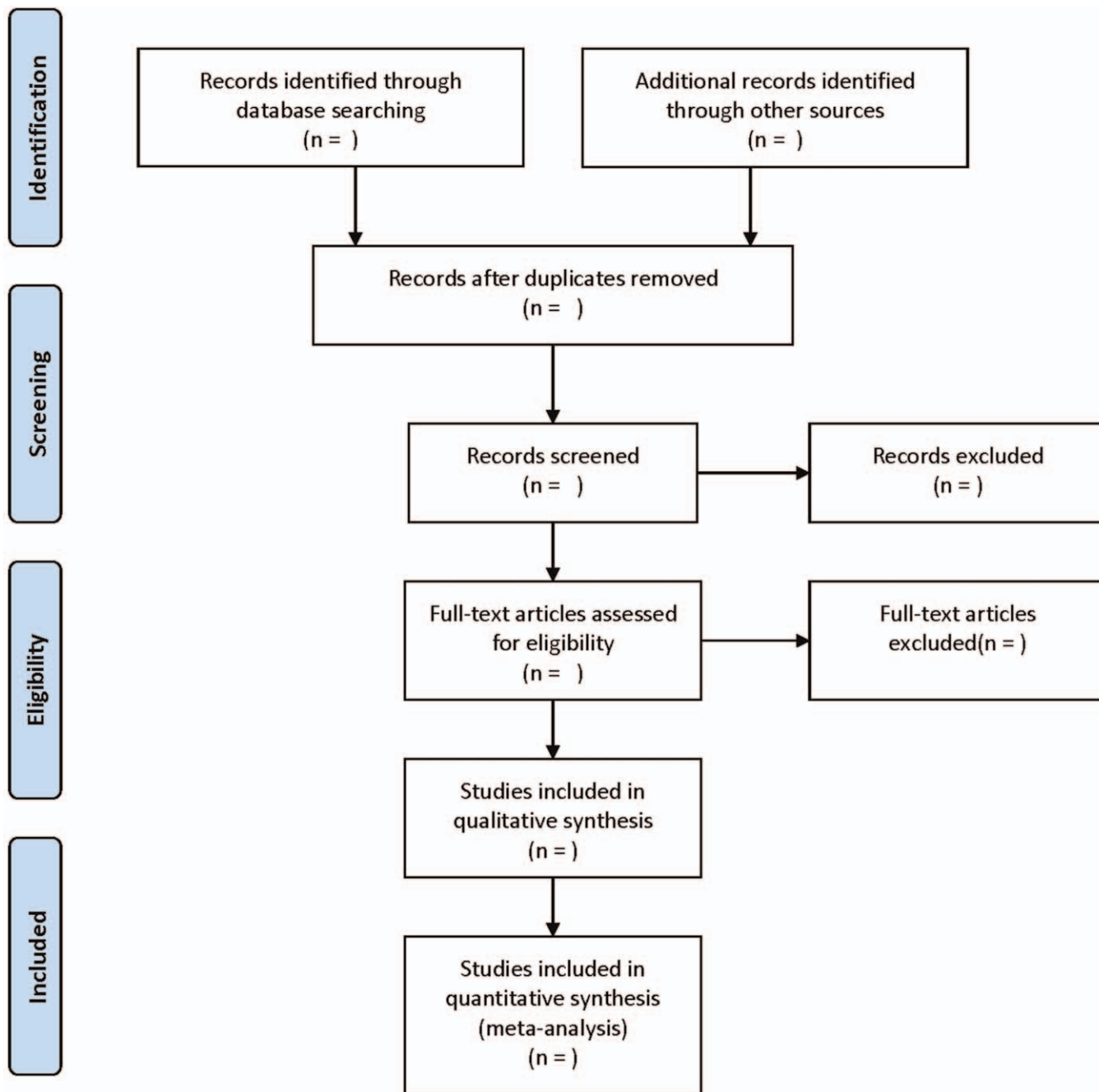


Figure 1. Flow diagram of the literature retrieval.

COVID-19 patients’ anxiety, depression, and life quality to provide a basis for clinical application.

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**References**

[1] Monroy-Fraustro D, Maldonado-Castellanos I, Aboites-Molina M, et al. Bibliotherapy as a non-pharmaceutical intervention to enhance mental

- health in response to the COVID-19 pandemic: a mixed-methods systematic review and bioethical meta-analysis. *Front Public Health* 2021;9:629872–1629872.
- [2] Zhao YH, Zhao L, Yang XC, Wang P. Cardiovascular complications of SARS-CoV-2 infection (COVID-19): a systematic review and meta-analysis. *Rev Cardiovasc Med* 2021;22:159–65.
- [3] Zhang X, Lewis AM, Moley JR, Brestoff JR. A systematic review and meta-analysis of obesity and COVID-19 outcomes. *Sci Rep* 2021; 11:7193.
- [4] Papoutsi E, Giannakoulis VG, Xourgia E, Routsis C, Kotanidou A, Siempos II. Effect of timing of intubation on clinical outcomes of critically ill patients with COVID-19: a systematic review and meta-analysis of non-randomized cohort studies. *Crit Care (London, England)* 2021; 25:121.
- [5] Hayashi Y, Wagatsuma K, Nojima M, et al. The characteristics of gastrointestinal symptoms in patients with severe COVID-19: a systematic review and meta-analysis. *J Gastroenterol* 2021;56: 409–20.
- [6] Song LG, Xie QX, Lao HL, Lv ZY. Human coronaviruses and therapeutic drug discovery. *Infect Dis Poverty* 2021;10:28.
- [7] Mojtavavi H, Javidi N, Naviaux AF, et al. Exploration of the epidemiological and emotional impact of quarantine and isolation during the COVID-19 pandemic. *Adv Exp Med Biol* 2021;1318:687–703.
- [8] Nussbaumer-Streit B, Mayr V, Dobrescu AI, et al. Quarantine alone or in combination with other public health measures to control COVID-19: a rapid review. *Cochrane Database Syst Rev* 2020;9: Cd013574.
- [9] Sun P, Fan DJ, Li HZ, et al. The impact of age on anxiety in Covid-19 patients in quarantine wards. *Psychol Health Med* 2021;1–6.
- [10] El Keshky MES, Alsabban AM, Basyouni SS. The psychological and social impacts on personal stress for residents quarantined for COVID-19 in Saudi Arabia. *Arch Psychiatr Nurs* 2021;35:311–6.
- [11] Zhu K, Niu Z, Freudenheim JL, et al. COVID-19 related symptoms of anxiety, depression, and PTSD among US adults. *Psychiatry Res* 2021;301:113959.
- [12] Shaygan M, Yazdani Z, Valibeygi A. The effect of online multimedia psychoeducational interventions on the resilience and perceived stress of hospitalized patients with COVID-19: a pilot cluster randomized parallel-controlled trial. *BMC Psychiatry* 2021;21:93.
- [13] Liu ML, Liu M, Zhong H, et al. [Significance and operation mode of mobixustion intervention for the group under quarantine after close contact with COVID-19]. *Zhongguo Zhen Jiu* 2020;40:457–61.
- [14] Tang Q, Huang Z, Zhou H, Ye P. Effects of music therapy on depression: a meta-analysis of randomized controlled trials. *PloS One* 2020;15: e0240862.
- [15] Huang J, Yuan X, Zhang N, Qiu H, Chen X. Music therapy in adults with COPD. *Respir Care* 2021;66:501–9.
- [16] Santiváñez-Acosta R, Tapia-López ELN, Santero M. Music therapy in pain and anxiety management during labor: a systematic review and meta-analysis. *Medicina (Kaunas)* 2020;56:
- [17] Li Y, Xing X, Shi X, et al. The effectiveness of music therapy for patients with cancer: a systematic review and meta-analysis. *J Adv Nurs* 2020;76:1111–23.
- [18] Shamseer L, Moher D, Clarke M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. *BMJ* 2015;350:g7647.
- [19] Duval S, Tweedie R. Trim and fill: a simple funnel-plot-based method of testing and adjusting for publication bias in meta-analysis. *Biometrics* 2000;56:455–63.
- [20] Zhong Z, Li H, Zhu J, et al. Clinical characteristics of 2,459 severe or critically ill COVID-19 patients: a meta-analysis. *Medicine* 2021;100: e23781.
- [21] He X, Cheng X, Feng X, Wan H, Chen S, Xiong M. Clinical symptom differences between mild and severe COVID-19 patients in China: a meta-analysis. *Front Public Health* 2020;8:561264.