

Massage Therapy for Pulmonary Function in Patients Recovering From Covid-19: A Protocol for Systematic Review and Meta-analysis

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Protocol

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Abstract

Background: Starting in December 2019 in Wuhan (Hubei province, China), a novel coronavirus, designated SARS-CoV-2, has caused an international outbreak of a respiratory illness and rapidly evolved into a pandemic. Given the rapidly growing pandemic and the overwhelmed medical system, the number of self-quarantined and recovering patients is increasing. There is an urgent need of alternative medicine to help patients relieve symptoms during self-quarantine, and possibly to help increase their chances of survival and recovery from COVID-19. Massage (tuina) therapy is one of the widely employed complementary and alternative medicine interventions in the world. Long-term clinical practices and experiences have shown that massage therapy could significantly contribute to the healing of most respiratory conditions and lung disease. This systematic review and meta-analysis will summarize the current evidence of tuina (massage) used as an intervention for pulmonary function in COVID-19 recovering patients.

Methods: We will search the following electronic databases for randomized controlled trials to evaluate the effectiveness and safety of massage therapy in improving pulmonary function of COVID-19 recovering patients: Wanfang and Pubmed Database, CNKI, CENTRAL, CINAHL, EMBASE and MEDLINE. Each database will be searched from inception to June 2020. The entire process will include study selection, data extraction, risk of bias assessment and meta-analyses.

Discussion: This proposed systematic review will evaluate the existing evidence and explore the potential role of massage therapy on the effectiveness and safety in pulmonary function of COVID-19 recovering patients. The outcomes will include the improvement of pulmonary function and adverse effect.

PROSPERO registration number: CRD42020192107

Background

Starting in December 2019 in Wuhan (Hubei province, China), a novel coronavirus, designated SARS-CoV-2, has caused an international outbreak of a respiratory illness and rapidly evolved into a pandemic [1,2]. Its widespread infectivity and strong pathogenicity has posed a huge threat to public health, seriously affecting social production and life [3,4]. The disease caused by this virus has been officially named COVID-19 (coronavirus disease 2019) by the World Health Organization (WHO) [5]. The research conducted on the COVID-19 virus has elucidated a wide variety of clinical manifestations and the epidemiological characteristics of the affected population [6]. Most cases are asymptomatic or self-limiting, but the clinical spectrum extends to severe progressive pneumonia with acute respiratory distress syndrome, a life-threatening condition requiring mechanical ventilation and intensive care support [7]. The COVID-19 virus remains a global healthcare emergency as the number of cases and fatality continue to rise. As more information is being gathered, understanding of the virus will improve better diagnosis, prevention and treatment options for patients exposed or experiencing symptoms from the disease [8].

Complementary and alternative medicine (CAM) is considered as an adjunct to treat chronic or serious diseases and to self-manage long-term health complaints [9]. Traditional Chinese medicine (TCM), a main form of complementary and alternative medicine, is an ancient and holistic approach to health and healing [10]. TCM has unique theory and a long history of clinical practice with reliable efficacy and few side effects [11]. Massage (tuina) therapy is one of the widely employed complementary and alternative medicine interventions in the world. As a useful therapy implemented on human's skin, muscles and joints, massage has unique advantages in the field of medicine [12]. It can act on the subcutaneous muscular layer, enhance the local blood circulation and tissue metabolism of the skin, thus exert its effects on diverse systems and alleviate aversive symptoms. Long-term clinical practices and experiences have shown that massage therapy could significantly contribute to the healing of most respiratory conditions and lung disease.

This systematic review and meta-analysis will summarize the current evidence of tuina (massage) used as an intervention for patients recovering from COVID-19.

Methods

This systematic review protocol has been registered on PROSPERO (ID: CRD42020192107). The protocol follows the Cochrane Handbook for Systematic Reviews of Interventions and the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocol (PRISMA-P) statement guidelines [13]. We will describe the changes in our full review if needed.

3. Inclusion criteria for study selection

3.1. Type of studies

This review will include clinical RCTs of massage therapy for pulmonary function in patients recovering from COVID-19 without any language or publication status restrictions. Non-RCTs, quasi-RCTs, case series, case reports, crossover studies, uncontrolled trials, and laboratory studies will not be included.

3.2. Type of participants

Patients diagnosed with COVID-19 of all ages and racial groups and have recovered will be included.

3.3. Type of interventions

Interventions will include any type of clinically performed massage for improvement of pulmonary function in patients recovering from COVID-19. This will include Chinese Massage, Japanese Massage, Thai Massage, Swedish Massage, Tuina, Shiatsu, Remedial Massage, General Massage, Acupressure, Reflexology, Manual Lymphatic Drainage. Studies combined with other interventions such as acupuncture, herbal medicines, qigong and yoga will be considered for exclusion.

Control: Treatments other than massage (e.g. usual or standard care, placebo, wait-list controls)

3.4. Type of outcome measures

3.4.1. Main outcome(s)

Primary outcomes:

The influence of massage on the pulmonary function and quality of life in convalescent patients. Comparison of improvement in main symptoms such as cough and chest tightness before and after treatment, changes in lung imaging, changes in serum leukocyte content; compare the differences in the scores of the World Health Organization's Quality of Life Rating Scale (WHOQOL-100) before and after treatment.

Secondary outcomes:

Accompanying symptoms (such as myalgia, expectoration, stuffiness, runny nose, pharyngalgia, anhelation, chest distress, dyspnea, crackles, headache, nausea, vomiting, anorexia, diarrhea) disappear rate, negative COVID-19 results rate on two consecutive occasions (not on the same day), CT image improvement, average hospitalization time, occurrence rate of common type to severe form, clinical cure rate, and mortality.

3.4.2. Additional outcome(s)

Safety measurements and adverse events.

4. Search methods for the identification of studies

4.1. Electronic searches

We will search the following electronic bibliographic databases for relevant trials:

CNKI (China National Knowledge Infrastructure Database, from 1979 to present);

Wanfang Database (from 1990 to present);

Pubmed Database (from 2000 to present);

CENTRAL (Cochrane Central Register of Controlled Trials, from 2000 to present);

CINAHL (Cumulative Index of Nursing and Allied Health Literature, from 1937 to present);

EMBASE (Excerpta Medica database, from 1947 to present);

Ovid MEDLINE ALL (Ovid Medical Literature Analysis and Retrieval System Online, from 1946 to present);

There will be no language restrictions.

4.2. Data collection and analysis

4.2.1. Study identification.

We will use EndNote X9 software to manage the records of searched electronic databases. The initial selection will involve scanning of the titles and abstracts of the retrieved studies. The full text of relevant studies will then be reviewed for study inclusion, in accordance with the inclusion criteria, by 2 authors (KLZ and SD). Potentially relevant articles will be reviewed independently by 2 authors to determine if they meet the prespecified criteria. Any disagreement between authors will be resolved by consensus with a third author. The study selection procedure will follow and be recorded in the PRISMA flow chart. All the evidence will be assessed by The Grading of Recommendations Assessment, Development and Evaluation (GRADE).

4.2.2. Data extraction and management.

According to the inclusion criteria, a standard data collection form will be made before data extraction. The following data will be extracted by 2 authors (KLZ and SD):

General information: Research identification, publication year, the title of the study, first author;

Study methods: study design, sample size, randomization method, allocation concealment, blinding, incomplete report or selecting report, other sources of bias;

Participants: Inclusion and exclusion criteria;

Intervention: intervention details, treatment duration, and frequency;

Control: Type of control methods, intervention details, treatment duration, and frequency;

Outcomes: Included outcome measures.

4.2.3. Risk of bias assessment.

The risk of bias in included studies will be assessed independently by 2 reviewers (KLZ and SD) using the Cochrane Risk of Bias Tool, with any disagreements resolved by consensus or by discussion with a third reviewer. All judgments will be fully described, and the conclusions will be presented in the Risk of Bias figures and will be incorporated into the interpretation of review findings, by means of sensitivity analysis. The risk of bias of each domain will be graded as adequate, unclear, or inadequate. We intend to use the concealment of allocation grading in investigation of any heterogeneity and in sensitivity analysis. Other aspects of study quality including the extent of blinding (if appropriate), losses to follow up, non-compliance, whether the outcome assessment was standardized, and whether an intention to treat analysis was undertaken, will be presented in the risk of bias table describing the included studies and will provide a context for discussing the reliability of the results.

4.2.4. Data analysis.

We will use Stata Software [Computer program] (Version 15.1) to process the meta-analysis. Weighted mean difference (WMD) will be used for continuous variable data, and the combined statistical effects of these two are combined. The X^2 test will be adopted to analyze whether there is heterogeneity in each of the included research questions. $I^2 > 50\%$ is a criterion for significant judgment. The fixed effect model is adopted if $I^2 \leq 50\%$, which is considered to have homogeneity between the studies. The random effect model is adopted if $I^2 > 50\%$, which is considered to have heterogeneity among the studies. The effect size is expressed as 95% confidence interval (CI), and $P < 0.05$ is considered to be statistically significant.

Sensitivity analyses: heterogeneity may be due to the presence of 1 or more outlier studies with results that conflict with the rest of the studies. We will perform sensitivity analyses excluding outlier studies. In addition, we plan to perform sensitivity analysis to explore the influence of trial quality on effect estimates. The quality components of methodology include adequacy of generation of allocation sequence, concealment of allocation, and the use of intention-to-treat analysis.

Meta-regression analyses: if data permits, we will perform the meta-regression analyses.

4.2.5. Publication bias.

If sufficient number of trials (more than 10 trials) are found, we will generate funnel plots (effect size against standard error) to investigate publication bias.

4.2.6. Ethics and dissemination.

The results of this review will be disseminated through peer-reviewed publication. Because all of the data used in this systematic review and meta-analysis has been published, this review does not require ethical approval. Furthermore, all data will be analyzed anonymously during the review process.

Discussion

The novel coronavirus disease 2019 (COVID-19) has grown to be a global public health emergency since patients were first detected in Wuhan, China [14]. Accumulating evidence revealed that COVID-19 causes a broad spectrum of diseases that affects multiple organs including the lung, heart and kidney with reported cardiomyopathy and kidney injury [15-16]. The COVID-19-related disease can lead to pneumonia, acute respiratory distress syndrome (ARDS) and congestive heart failure [17]. Detection of viral genomic materials is the gold standard for diagnosis. Until now, there is no available specific drugs or vaccines can cure the patients with COVID-19 infection [18]. Current treatment for patients with lung injuries is supportive, but with a high case fatality rate of 22% to as high as 88% for ICU patients [19-21]. Most of the prescribed alternative medicines are, however, neither specific nor highly effective for COVID-19 treatment. Given the rapidly growing pandemic and the overwhelmed medical system, the number of self-quarantined and recovering patients is increasing. There is an urgent need of alternative

medicine to help patients relieve symptoms during self-quarantine, and possibly to help increase their chances of survival and recovery from COVID-19.

During the SARS epidemics, traditional Chinese medicine (TCM) treatments were confirmed to have evident effects in successfully preventing and treating SARS [22–24]. Furthermore, TCM combined with western medicine treatment can reduce adverse events and other complications induced by glucocorticoid, antibiotic, and antiviral treatments [25, 26]. Evidence clearly indicated that TCM combined with western medicine can significantly alleviate symptoms of SARS, including decreasing body temperature, cough and breathing difficulties, improving absorption of pulmonary infiltration, and quality of life [27]. Based on previous experience, we suggest that massage therapy, with unique advantages and few reported side effects, may be a promising candidate as an alternative medicine to help relieve severe symptoms of COVID-19 during self-quarantine and recovery.

In conclusion, this is the first systematic review to examine empirical evidence of massage therapy for pulmonary function recovery in COVID-19. It will provide an overview of the application of massage therapy for COVID-19 convalescent patients and assess the strengths and limitations of current evidence. This review will bring massage therapy to the table for discussion about its potential as an alternative medicine to attenuate pulmonary function in patients recovering from COVID-19.

Abbreviations

CAM= Complementary and alternative medicine, RCTs = randomized controlled trials, PRISMA-P = Preferred Reporting Items for Systematic Reviews and Meta-analysis Protocol, CNKI = China National Knowledge Infrastructure Database, CENTRAL = Cochrane Central Register of Controlled Trials, CINAHL = Cumulative Index of Nursing and Allied Health Literature, EMBASE = Excerpta Medica database, GRADE = Grading of Recommendations Assessment, Development and Evaluation, WMD= Weighted mean difference, CI= confidence interval.

Declarations

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Author Contributions

KLZ, SD contributed on methodology and are the guarantors of the review.

KLZ, SD, and SG contributed on data search, analysis, and statistics.

Methodology: Ke-Lin Zhou, Shuo Dong.

Resources: Shu-Sheng Cui, Sheng Guo.

Data curation: Ke-Lin Zhou, Shuo Dong.

Funding acquisition: Sheng Guo.

Project administration: Shuo Dong.

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Availability of data and materials

Not applicable since all data that are referred to in this article will have been obtained through reading original studies or contacting the authors of cited studies.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Competing interests

None declared.

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