


# Efficacy of massage therapy for postprandial distress syndrome

## A protocol for systematic review and meta-analysis

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### Abstract

**Background:** Postprandial distress syndrome (PDS), characterized by the presence of prevalently meal-related early satiation and fullness, is a highly prevalent condition with major socioeconomic and healthcare impact. To date, there is a lack of pharmacological treatment proven value for PDS. Therefore, an ideal strategy to relieve PDS is urgently needed. In recent years, massage therapy has been increasingly accepted by PDS patients due to its lower costs, fewer unwanted side effects and safety for clinical use. In this systematic review, we aim to evaluate the effectiveness and safety of massage therapy for patients with postprandial distress syndrome.

**Methods:** We will search the following electronic databases for randomized controlled trials to evaluate the effectiveness and safety of massage therapy in treating postprandial distress syndrome: Wanfang and Pubmed Database, CNKI, CENTRAL, CINAHL, and EMBASE. Each database will be searched from inception to October 2020. The entire process will include study selection, data extraction, risk of bias assessment, and meta-analyses.

**Results:** This proposed study will evaluate the effectiveness and safety of massage therapy for patients with postprandial distress syndrome. The outcomes will include changes in PDS relief and adverse effect.

**Conclusions:** This proposed systematic review will evaluate the existing evidence on the effectiveness and safety of massage therapy for patients with postprandial distress syndrome.

**Dissemination and ethics:** 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.

**OSF Registration number:** DOI 10.17605/OSF.IO/9WRX8.

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

**Keywords:** complementary and alternative medicine, massage therapy, postprandial distress syndrome, protocol

KLZ and SD contributed equally to this work and should be considered co-first authors.

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The authors have no conflicts of interests to disclose.

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

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## 1. Introduction

Functional dyspepsia (FD) is a common disorder characterized by a variety of upper gastrointestinal symptoms that can have a negative effect on patient quality of life.<sup>[1]</sup> The Rome III consensus has defined functional dyspepsia as the presence of symptoms that are thought to originate in the gastroduodenal region (early satiation, postprandial fullness, epigastric pain, or burning), in the absence of any organic, systemic or metabolic disease that is likely to explain the symptoms.<sup>[2,3]</sup> It has grouped functional dyspepsia into postprandial distress syndrome (PDS), characterized by the presence of prevalently meal-related early satiation and fullness, and the epigastric pain syndrome (EPS), characterized by the prominent symptom of epigastric pain, generally not meal related.<sup>[4,5]</sup> Previous studies have illustrated that PDS patients are more numerous than EPS patients:<sup>[6]</sup> in fact, in the general population, it was estimated that approximately half of the subjects with dyspeptic symptoms report a postprandial occurrence of their complaints.<sup>[7,8]</sup> The study also reported that the highest symptom intensity after a meal was scored for postprandial fullness in those who reported meal-related symptoms and epigastric pain in those reporting meal-unrelated symptoms.<sup>[9]</sup>

Clinical research has identified various potential pathophysiological mechanisms, such as delayed gastric emptying, impaired gastric accommodation, visceral hypersensitivity, psychosocial factors (depression, abuse history), somatization, and altered central processing of gastrointestinal stimuli that may contribute to symptom generation.<sup>[10–13]</sup> Only approximately half of the FD patients reported symptoms had disappeared or improved after a mean follow-up of 5 years.<sup>[14]</sup> A number of treatment strategies have been evaluated for FD, with acid-suppressive therapy being potentially effective for EPS and prokinetics for PDS.<sup>[15,16]</sup> However, the level of evidence for the efficacy of these approaches is low, and in particular there is a lack of prokinetic drugs of proven value for this condition.<sup>[17]</sup>

Therefore, an ideal strategy to relieve PDS is urgently needed. In recent years, traditional Chinese medicine (TCM) has been increasingly accepted by patients due to its dual functions of treatment and coordinating, widely available and fewer side effects.<sup>[18,19]</sup> Massage therapy, one of the most popular complementary and alternative therapies, have been used for thousands of years in China. Currently, they are increasingly used because of their lower costs and safety for clinical use.<sup>[20]</sup>

This review aims to systematically review all randomized controlled trials (RCTs) to assess the effectiveness and safety of massage treatment for patients with postprandial distress syndrome.

## 2. Materials and methods

This systematic review protocol has been registered on OSF on October 24, 2020 (Registration number: DOI 10.17605/OSF.IO/9WRX8). 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.<sup>[21]</sup> 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 postprandial distress syndrome (PDS) patients 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

Participants who were diagnosed with PDS according to related guidelines or consensus. All included participants in this review regardless of their age, race, and gender. Pregnant and lactating women will be excluded.

### 3.3. Type of interventions

Interventions will include any type of clinically performed massage for improvement of postprandial distress syndrome. This will include Chinese Massage, Japanese Massage, Thai Massage, Swedish Massage, Tuina, Shiatsu, Remedial Massage, General Massage, Acupressure, Reflexology, Manual Lymphatic Drainage. Studies of PDS combined with other interventions such as acupuncture, herbal medicines, qigong and yoga will be considered for exclusion.

Control: no intervention, 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).** The primary outcome at the end of treatment or at maximal follow-up is the clinical effective rate, which is categorized as cure, markedly effective, effective, or ineffective according to clinical symptoms, Dyspepsia Symptom Score, Nepean Dyspepsia Life Quality Index and daily living ability score, etc.

**3.4.2. Additional outcome (s).** The secondary outcomes will include quality of life (SF-36), symptom scores, Hospital Anxiety and Depression Scale and comparison of curative effect of pathological tissue, etc.

## 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).

In addition, Clinical trial registries, like the Chinese Clinical Trial Registry (ChiCTR), the Netherlands National Trial Register (NTR) and ClinicalTrials.gov, will be searched for ongoing trials with unpublished data.

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:* motion details, treatment duration, and frequency;
- *Control:* Type of control methods, motion 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 2 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  $P < .05$  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 data used in this systematic review will be collected from published studies. Based on this, the study does not require ethical approval.

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## Author contributions

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