

# BMJ Open Effect of peer support on patient anxiety during the coronary angiography or percutaneous coronary intervention perioperative period: a protocol for a systematic review and meta-analysis of randomised controlled trials

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## ABSTRACT

**Introduction** The purpose of this study is to investigate the effect of peer support on patient anxiety during the perioperative period of coronary angiography or percutaneous coronary intervention (PCI).

**Methods and analysis** We will search the following databases (PubMed, Web of Science, EMBASE, Cochrane Library, CINAHL, Clinicaltrials.gov, WHO International Clinical Trials Registry Platform, Google Scholar, Chinese National Knowledge Infrastructure, Chinese Science and Technology Periodicals Database, Chinese BioMedical Database and Wanfang Data) from the date of database inception to January 2019. Only randomised controlled trials will be included. For the data analysis, we will use RevMan V.5.3.5 software to evaluate the risk of bias, and the heterogeneity will be investigated using the Q statistic and P index. Additionally, the Grading of Recommendations Assessment, Development and Evaluation system will be used to assess the quality of evidence.

**Ethics and dissemination** No ethics approval will be required since this is a systematic review of published studies. We aim to report information regarding the effects of peer support on patient anxiety during the perioperative period of coronary angiography or PCI. This systematic review and meta-analysis will be submitted to a peer-reviewed journal for publication.

**PROSPERO registration number** CRD42019123290.

## INTRODUCTION

Cardiovascular disease (CVD) is one of the most common non-communicable diseases worldwide.<sup>1</sup> It has high morbidity and mortality.<sup>2</sup> It not only seriously threatens human health but also results in heavy social and economic burdens.<sup>3</sup> CVD-related deaths in Europe and the USA account for 10% of all deaths.<sup>4</sup> The WHO predicts that the mortality rate of coronary heart disease will reach 13% by 2030.<sup>2</sup> At present, there are approximately 11 million patients with coronary heart disease in China.<sup>5</sup> CVD ranks first among all

## Strengths and limitations of this study

- This will be the first systematic review and meta-analysis to update estimates of the ability of peer support to reduce perioperative anxiety in patients with coronary angiography or percutaneous coronary intervention.
- Two reviewers (SQ and TS) will independently review the full articles, data extraction and risk of bias assessment.
- Only randomised controlled trials will be included in this study.
- Because only English and Chinese studies will be included, language bias exists.

causes of mortality, accounting for more than 40% of residents' disease-related deaths, and the morbidity and mortality rates are continuously rising.<sup>6</sup> From 2004 to 2015, hospitalisation expenses related to acute myocardial infarction increased by 30%. The growth rate of total hospitalisation expenses was higher than that of gross domestic product.<sup>7</sup>

Percutaneous coronary intervention (PCI) is the main treatment method for coronary heart disease; an average of 800 000 patients with CVD in Europe and 1 million patients with CVD in the USA per year undergo PCI. In China, 560 000<sup>8</sup> cases of coronary heart disease have been treated by PCI, with a success rate of 91%–97%.<sup>9</sup> Among medical services, PCI has the advantages of being minimally invasive, having a short recovery cycle and causing less pain.<sup>10</sup> Coronary angiography is the gold standard for the diagnosis of coronary heart disease and is a necessary examination before PCI.<sup>5</sup> However, for patients, heart-related surgery, regardless of its minimal invasiveness, is a stressor that causes severe physical and

mental reactions. Many factors affect the emotional state of patients during the perioperative period (both before and after the procedure),<sup>5 6</sup> such as a lack of knowledge about the interventional therapy and uncertainty about safety; these factors can easily cause perioperative anxiety in patients with PCI.<sup>11</sup> Approximately 20% of patients in China have anxiety after PCI,<sup>12</sup> and anxiety is an important factor in cardiovascular events. Studies have shown that severe anxiety is associated with decreased immunity and changes in cardiovascular function,<sup>13</sup> which can cause symptoms, such as arrhythmia and vascular inflammation, and may lead to deterioration of the coronary artery condition.<sup>14-16</sup> Anxiety leads to a rapid heartbeat, high levels of hypertension, an increased possibility of arrhythmia,<sup>17</sup> delayed wound healing, an increased risk of infection, electrolyte and fluid imbalance, changes in sleep patterns, increased pain after surgery, and delayed discharge, ultimately reducing patient satisfaction with medical and nursing care.

In the theory of social learning theory, peer support refers to a type of education that can offer greater empathy through the sharing of knowledge and experience within specific groups by using the influence of peers and conveying positive attitudes and ideas with one another (thereby reducing heart attacks and anxiety and diminishing the possibility of readmission).<sup>18 19</sup> Patients learn how to cope with disease through their peers' experiences. Peer support was first used in the fields of AIDS and reproductive health.<sup>20 21</sup> Recent studies have confirmed that in terms of emotions and information, peer support plays a very important role in life behaviour changes and the health of patients undergoing coronary artery bypass grafting.<sup>19</sup>

Important aspects of nursing are comprehensively evaluating patients' physical and mental statuses during the perioperative period, effectively reducing patients' stress responses and alleviating patients' anxiety. Current studies suggest that the main measures for alleviating perioperative anxiety associated with PCI are psychological nursing, evidence-based nursing and music therapy.<sup>22-26</sup> The main source of these interventions is medical staff, which presents a serious challenge given the current situation of medical resources in China. Bandura's self-efficacy theory suggests that peer support can enhance individual self-efficacy; patients with higher levels of self-efficacy are relatively more confident in participating in decision-making and regulating their emotional state.

In the current study, we will retrieve previously published studies on peer support interventions designed to cope with perioperative anxiety in patients with heart procedures and analyse them with RevMan V.5.3.5 to draw a relatively reliable conclusion.

## METHODS AND ANALYSIS

This article will be based on the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) protocols 2015 statement.

## Eligibility criteria

### Study design

Randomised controlled trials (RCTs) will be enrolled regardless of the length of the peer support intervention.

### Participants

Participants in the enrolled articles should be in hospital with the following characteristics: (1) older than 18 years of age; (2) a clear description of the diagnosis; (3) a description of having provided informed consent; and (4) a clear description of the procedures involved. Those (1) undergoing emergency coronary angiography or PCI or (2) with other critical illnesses will be excluded.

### Interventions

The control group subjects will have received routine treatment, which refers to interactions between nurses and patients without intentionally connecting patients with their peers. The intervention groups will have been intentionally connected with their peers or/and enrolled in peer support training.

## Outcomes

Primary outcomes:

- ▶ Scores on an anxiety scale (Self-Rating Anxiety Scale (SAS)<sup>27</sup> or Hamilton Anxiety Scale).<sup>28</sup>

Secondary outcomes:

- ▶ Heart rate.
- ▶ Blood pressure.

## Search strategy and identification of studies

### Electronic searches

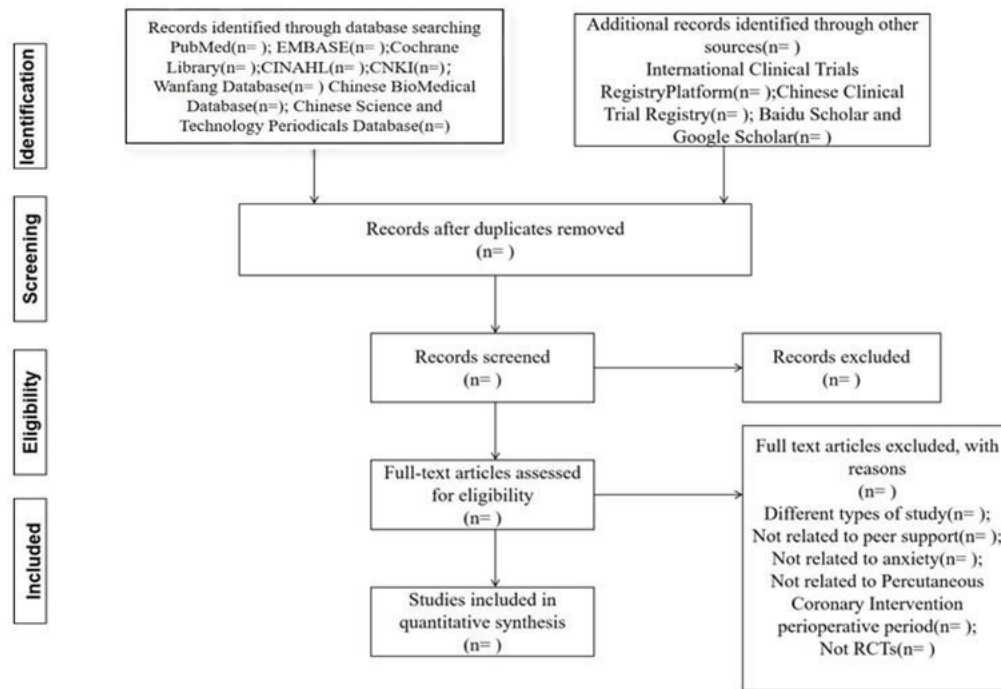
We will search for articles in these databases: PubMed, EMBASE, Cochrane Library, CINAHL, Chinese National Knowledge Infrastructure, Wanfang Data, Chinese BioMedical Database and Chinese Science and Technology Periodicals Database. The search period will be from the date of database inception to January 2019. The key terms for the PubMed search are shown in figure 1.

### Searching other resources

We will search Clinical trials.gov and the WHO International Clinical Trials Registry Platform Search Portal to

Search	Query
1	peer support
2	peer education
3	peer counselling
4	peer-led exercise intervention
5	peer counsellors
6	OR 1-5
7	hypervigilance
8	nervousness
9	social anxiety
10	anxieties, social
11	anxiety, social
12	social anxieties
13	OR 7-12
14	percutaneous coronary intervention
15	coronary artery bypass graft
16	period, perioperative
17	periods, perioperative
18	perioperative periods
19	OR 14-18
20	randomized controlled trial
21	randomized
22	OR 20-21
23	6 AND 13 AND 19 AND 22

**Figure 1** Key terms for the PubMed search.



**Figure 2** Flow diagram of the study selection process. RCTs, randomised controlled trials.

find ongoing studies. The grey literature will be searched through Baidu Scholar and Google Scholar. We will use Chinese translations of these key words for the Chinese databases. We will contact the authors to obtain further information, if necessary. Study selection will be based on the PRISMA flow chart (<http://www.prisma-statement.org>) (figure 2).

### Data management

NoteExpress software will be used to manage all the initially identified literature and remove duplications. Two reviewers (SQ and TS) will independently review the full texts of the selected articles and use a researcher-developed form to extract information about the research population, interventions and outcomes. The form will include the following items: general information, test characteristics, participants, interventions and outcomes. If necessary, differences of opinion will be discussed with the third author (YG).

### Addressing missing data or unclear measurement scales

If necessary, to process missing data or unclear measurement scales, we will contact the author of the article via email or telephone. If this is not possible, we will analyse the effectiveness using the available information.

### Risk of bias in included studies

Two independent reviewers (SQ and TS) will use the Cochrane Handbook for Systematic Reviews of Interventions to evaluate the risk of bias of the included articles. The following six domains will be assessed: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting

and other bias. We will classify the included studies into three categories (low risk of bias, high risk of bias and unclear risk of bias). If an agreement cannot be reached, the third investigator (YG) will provide a suggestion.

### Data synthesis

RevMan V.5.3.5 software will be used for the analyses.

### Treatment effect measure

Dichotomous outcomes (mortality, hospital readmission and so on) will be assessed using risk ratios with 95% CIs, and continuous outcomes (Self-Rating Depression Scale and so on) will be described with the weighted mean difference or standardised mean difference with 95% CIs. For the assessment of heterogeneity, the Q and  $I^2$  statistics will be used. If the included studies have  $p < 0.05$ , the difference will be considered significant. In addition,  $I^2 < 25\%$  will indicate low significant heterogeneity,  $25\% < I^2 < 50\%$  will indicate moderate heterogeneity, and  $I^2 > 50\%$  will indicate strong heterogeneity. The fixed-effects model will be used to assess studies that are not heterogeneous, and the random-effects model will be used to assess heterogeneous studies.

### Additional analysis

We will conduct an analysis based on the different research characteristics. If data extraction is insufficient, we will perform a qualitative synthesis.

### Assessment of reporting bias

A funnel plot will be developed to assess reporting bias. We will use Begg's and Egger's tests to evaluate the symmetry of the funnel graph, and numerical values of  $p < 0.1$  will indicate statistical significance.

### Patient and public involvement statement

We have invited a number of physicians who specialise in cardiovascular medicine to help us refining our research issues and primary and secondary outcomes. However, they were not involved in the design of any other aspects of the study or in the drafting of the protocol. Due to the nature of the study design that we propose, neither patients nor the public will be involved in the design or implementation of the study.

### ETHICS AND DISSEMINATION

No ethics approval will be required because this is a systematic review of published studies. The current study includes results from articles that have been published previously. The results of this study will be published in an open access journal without any profit for the authors.

### DISCUSSION

The anxiety level of patients before coronary angiography or PCI is higher than that of healthy people not undergoing these procedures (14%).<sup>1</sup> The SAS and Hamilton's Anxiety Scale (HAMA) have been used to evaluate perioperative anxiety in many studies.<sup>9 11 13–16</sup> (1) The SAS was developed by William W K Zung and is one of the most commonly used psychological measurement tools.<sup>27</sup> A standard score >50 indicates the presence of anxiety symptoms. (2) HAMA is the other anxiety rating scale, which was generated by Hamilton in 1959. HAMA is a commonly used scale in psychiatric clinics.<sup>28</sup> A score ≥29 indicates severe anxiety; a score ≥21 indicates moderate anxiety; a score ≥14 indicates mild anxiety; a score ≥7 indicates possible anxiety; and a score <7 indicates no anxiety. Seventy per cent of patients with PCI are diagnosed with anxiety,<sup>9</sup> which directly leads to the occurrence of cardiovascular events. Drug and non-drug methods can be used to alleviate anxiety. Compared with drugs, non-drug methods have fewer side effects and lesser risk and are more easily implemented; non-drug methods are relatively safer and non-invasive. Helping patients understand coronary heart disease, and the details of surgery can alleviate their anxiety and enhance their compliance. In recent years, some studies have introduced the peer support model into the field of psychological nursing for patients with coronary heart disease during the PCI perioperative period. The incidence of coronary heart disease is related to poor living habits and poor treatment compliance. Esmaili *et al*<sup>29</sup> believe that one appropriate non-drug method for reducing anxiety levels is the provision of adequate information on disease control and care and follow-up plans by knowledgeable people with experience with the same disease. Some foreign scholars have applied the non-drug psychological intervention nursing method to relieve anxiety after cardiac surgery. Lai *et al*<sup>30</sup> suggested that patients and their families are unfamiliar with cardiac surgery and its complications, which leads to postoperative anxiety. Providing postoperative

nursing information to patients and their families could effectively reduce anxiety. Beibei *et al*<sup>31</sup> proposed that peer education can significantly improve the self-management efficiency of patients after PCI, reduce medical costs, and reduce the associated social burden. It is an effective form of health education. Wu *et al*<sup>32</sup> conducted an RCT of 68 patients and found that peer support can significantly improve patient compliance and reduce negative emotions. Varaei *et al*<sup>19</sup> noted that peer support improved the self-efficacy of the subjects and reduced the rehospitalisation rate within 8 months after discharge. The sharing of experiences of positive coping with disease among patients helps increasing patients' confidence in their self-management skills and promotes their compliance with disease treatment. Because peer communication is convenient and accessible, there is hope that it can effectively improve patients' confidence in their health management abilities; however, there is still a need for a sufficient sample size to illustrate whether peer support can reduce perioperative anxiety in patients with PCI. This study will provide strong evidence by means of a meta-analysis and systematic review regarding the ability of peer support to reduce perioperative anxiety in patients scheduled to undergo coronary angiography or PCI.

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**Contributors** SQ formulated the literature retrieval strategy and data analysis strategies and wrote the article; TS participated in the formulation of the literature retrieval strategy; YG improved and revised the article.

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**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not required.

**Provenance and peer review** Not commissioned; externally peer reviewed.

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