INPLASY PROTOCOL

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Corresponding author:
Lei Shuxin

465350663@qq.com

Author Affiliation:
The Second Affiliated Hospital Zhejiang University School of Medicine.

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Conflicts of interest:
None declared.

A systematic review and meta-analysis of home-based cardiac rehabilitation for patients with heart failure

Lei, SX[1]; Bao, QY[2]; Xie, XJ[3].

Review question / Objective: **The aim of this meta-analysis of randomized controlled trials is to evaluate the effect of home-based cardiac rehabilitation (HBCR) for patients with heart failure.**

Eligibility criteria: **①Officially published journal articles; ②The language of publication is not limited; ③The subjects included in the study are clinically confirmed patients who only participate in one trial at the same time.**

Main outcome(s): **6-minute walk distance, peak oxygen uptake, Minnesota Living with Heart Failure questionnaire score, Ejection fraction.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 11 August 2021 and was last updated on 11 August 2021 (registration number INPLASY202180041).

INTRODUCTION

Review question / Objective: **The aim of this meta-analysis of randomized controlled trials is to evaluate the effect of home-based cardiac rehabilitation (HBCR) for patients with heart failure.**

Condition being studied: **According to the "China Cardiovascular Health and Disease Report 2020", it is estimated that the number of cardiovascular disease patients is 330 million, and the number of heart failure is 8.9 million, and the mortality rate of hospitalized patients with heart failure was 4.1%. National medical financial expenditures cannot cover the**

rehabilitation problems of all patients. Therefore, most patients with cardiovascular diseases need to return to society and families after receiving short-term and necessary in-hospital rehabilitation guidance in the hospital to continue cardiac rehabilitation in a more convenient and economical way. And home-based cardiac rehabilitation is the inevitable trend of future development.With the rapid development of "Internet +" technology, Home-based Cardiac Rehabilitation (HBCR) under remote guidance has gradually been widely used as a new rehabilitation model and method. At present, the most patients undergoing cardiac rehabilitation are patients with coronary artery disease. According to data from the China Cardiopulmonary Prevention and Rehabilitation Registration Platform, patients with heart failure account for only 1.8% of patients receiving cardiac rehabilitation. Whether HBCR can bring clinical benefit to patients with heart failure remains controversial. Some studies have reported that HBCR may improve exercise capacity, heart function and quality of life for patients, but some scholars believe that HBCR has little effect on this.

METHODS

Search strategy: We will search, with no time restrictions, the following database for relevant English language literature: Pubmed, the Cochrane Central Register of Controlled Trials, Web of science, and Embase. The search term will include: home-based cardiac rehabilitation, remote cardiac rehabilitation, telerehabilitation, heart failure, cardiac failure.We will also search, with no time restrictions, the following database for relevant Chinese language literature: CNKI, WanFang Data, VIP. The search term will includ: 远程心脏康复, 家庭心脏康复, 心力衰竭.

Participant or population: People with stable heart failure (as diagnosed by a clinician, or using any recognized diagnostic criteria) will be included.

Intervention: Home-based cardiac rehabilitation was the main intervention (e.g. aerobic exercise, resistance exercise in the home).

Comparator: Usual care (following the guidelines for treatment).

Study designs to be included: Randomized controlled trials which taking home-based cardiac rehabilitation for people with heart failure Intervention.

Eligibility criteria: ①Officially published journal articles; ②The language of publication is not limited; ③The subjects included in the study are clinically confirmed patients who only participate in one trial at the same time.

Information sources: Electronic databases, contact with authors, trial registers.

Main outcome(s): 6-minute walk distance, peak oxygen uptake, Minnesota Living with Heart Failure questionnaire score, Ejection fraction.

Data management: Two authors will independently extract data. Any disagreement will be resolved by discussion until consensus is reached or by consulting a third author. The following data will be extracted: author, year of publication, country where the study was conducted, total number of people included in the study, the way of cardiac rehabilitation.

Quality assessment / Risk of bias analysis: Two reviewers will independently assesses the quality of the selected studies according to the Cochrane Collaboration's tool for randomized controlled trials. It will be evaluated in three categories: Low risk of bias, unclear bias and high risk of bias. The following characteristics will be evaluated: Random sequence generation (selection Bias), Allocation concealment (selection bias), Blinding of participants and personnel (performance bias), Incomplete outcome data (attrition bias), Selective reporting (reporting bias), Other

biases. Results from these questions will be graphed and assessed using Review Manager 5.3.

Strategy of data synthesis: RevMan 5.3 software will be used to meta-analyze the included literature. The measurement data will use WMD or SMD as the effect indicator, and each outcome will be given its point estimate and 95% confidence interval (CI). The χ2 test and I2 test will be used to evaluate the heterogeneity between studies. If P≥0.1 and I2≤50%, it means that the I2 will be performed nonimportant. Use the fixed effects model, if P<0.1, I2 >50%, indicating that there is heterogeneity between the studies, the source of the heterogeneity should be analyzed. If the cause of the heterogeneity is not found, the random effects model will be used for analysis. Results will be assessed using forest plots.

Subgroup analysis: We will consider subgroups such as follow-up method, exercise method, rehabilitation prescription.

Sensitivity analysis: A sensitivity analysis will be performed to ascertain the results of the meta-analysis by excluding each of the individual studies.

Language: There is no language limit.

Country(ies) involved: China.

Keywords: Heart failure; Home-based cardiac rehabilitation; Meta analysis.

Contributions of each author:
Author 1 - Lei Shuxin.
Author 2 - Bao Qinyi.
Author 3 - Xie xiaojie.