



Review Article

Massage therapy reduces pain and anxiety after cardiac surgery: A systematic review and meta-analysis of randomized clinical trials☆☆☆

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ABSTRACT

Background: Cardiac surgery is one of the most frequently performed surgeries worldwide and its postoperative period is associated with complications. Studies show that massage therapy alone or accompanied by other complementary treatments is beneficial in reducing pain and psychological symptoms.

Objective: The aim of this study was to review the effects of treatment with massage therapy on the symptoms of pain and anxiety reported by patients who underwent heart surgery.

Methods: The electronic databases searched were (from inception to March 2016): MEDLINE, PEDro, Cochrane CENTRAL and EMBASE. In addition, a manual search of the references on the published papers used in the study was performed. These included randomized clinical trials with patients who underwent heart surgery, comparing the postoperative treatment with massage and the usual treatment. Studies that did not provide necessary information were excluded from the meta-analysis. The primary outcome extracted was pain measured by the visual analog scale. The other outcome was anxiety.

Results: A number of 962 records was identified in the database search; 10 randomized clinical trials were included in the systematic review, providing data on 888 individuals. Massage therapy was associated with decreased pain (-1.52 [95% CI, $-2.2, -0.84$; I2 91%], $p < 0.0001$) and with lower anxiety in the postoperative period when compared to the control group (-1.48 [95% CI, $-1.93, -1.04$; I2 0%], $p < 0.0001$).

Conclusion: Massage therapy might be a useful method to reduce pain and anxiety in patients undergoing cardiac surgery.

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1. Introduction

Cardiovascular diseases are still a major public health problem worldwide, what makes them a leading cause of morbidity and mortality in industrialized countries and keeps annual cardiovascular mortality rates around 0.8% [1]. In Brazil these diseases are the main reasons for death and hospitalization [2]. Cardiac surgery is one of the most common surgeries performed around the world, and between the years of 1998 and 2005 more than 5.5 million Americans had coronary artery bypass grafting (CABG) performed [3].

The postoperative period (PO) of cardiac surgery is associated with complications, and the deleterious effects of the procedure lead these patients to pain experiences and psychological symptoms such as anxiety and depression [4]. Postoperative pain is intense or moderate in 40 to 60% of cases, prevailing after extensive surgery. In the case of cardiac surgery, studies have shown that 47–75% of patients reported some type of pain in the PO [5]. Moreover, the state of anxiety and depression typically found in these patients in the PO is associated with an increased risk of rehospitalization after CABG [6]. Costs associated with inadequate management of these symptoms can be high and include productivity loss, need for postoperative physical therapy, and prolonged recovery period [7].

Recent clinical guidelines of the Intensive Care Society suggest that the use of non-pharmacological interventions for pain management, such as music therapy and relaxation techniques, may be opioid-sparing and analgesia-enhancing; they are low cost, easy to provide, and safe for pain management in critical adult patients [8]. Studies have demonstrated the numerous effects of massage therapy, e.g. improved sleep, decreased muscle tension, and systolic and diastolic blood pressure [9,10]. Studies also demonstrate that massage therapy alone or following other additional treatment is beneficial in reducing pain and psychological symptoms as stress and depression, which are the main causes of anxiety in patients admitted in the intensive care unit [11,12].

Randomized Clinical Trials (RCTs) have demonstrated the effects of massage on pain and anxiety, which contributes to improved quality of life and emotional well-being of patients undergoing cardiac surgery [13–22]. However, the sample size of studies comparing these benefits to those obtained in a control group with these patients has been small. A systematic review and meta-analysis of RCTs would be able to provide more reliable estimates of treatment efficacy than individual tests as it has more statistical power and can elucidate the estimated effect on important and common parameters evaluated in clinical practice. Therefore, we conducted a meta-analysis of RCTs comparing massage and control groups in the post-cardiac surgery period. The objective of the study was to review the effects of treatment with massage therapy on the symptoms of pain and anxiety reported by patients who underwent cardiac surgery.

2. Methods

2.1. Protocol and registration

This study follows the recommendations proposed by the Cochrane Collaboration [23] and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement [24]. The study

protocol was registered in the International Register Prospective Of Systematic Reviews, PROSPERO, under identification CRD42015025701, and can be fully appreciated online: http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42015025701.

2.2. Eligibility criteria

RCTs included patients who underwent cardiac surgery (CABG and/or valve replacement) and were treated postoperatively with massage and usual care compared to usual care only. The usual treatment consists of analgesia through medication, such as opioids, and care by the nursing staff. Studies conducted with the massage of painful body areas were included regardless of the session length. Exclusion criteria were unreliable description of the type of heart surgery and studies that did not have a comparison group.

2.3. Search strategy

The following electronic databases were searched: MEDLINE (accessed via PubMed), Physiotherapy Evidence Database (PEDro), Register of Controlled Trials (Cochrane CENTRAL), EMBASE and manual search. In addition, a manual search of the references on studies already published on the subject was held. The search was conducted in August 2015 and March 2016 and included the following terms in English: 'Myocardial Revascularization', 'Heart Diseases', and 'Massage', associated with a sensitive list of terms to search RCTs prepared by Robinson & Dickersin [25]. To increase the sensitivity of the search, words related to the outcomes of interest were not included. The full search strategy used for PubMed can be seen in Table 1. The strategies for other databases are available upon request. There was no language restriction in the search.

2.4. Study selection and data extraction

The titles and abstracts of all articles identified by the search strategy were assessed by two reviewers (A. P. M. and C. B.) independently through a checklist containing the criteria for inclusion and exclusion in the study. The abstract of all articles was read in full by the two reviewers. Those who did not meet the checklist criteria or did not provide sufficient information were excluded. Articles that fulfilled these criteria were selected for full-text evaluation. The same independent reviewers assessed and selected these articles according to pre-specified eligibility criteria. Disagreements between reviewers were solved by a third reviewer (C.S.). The primary outcome extracted from the studies was pain, which should have been assessed by the visual analog scale (VAS), and the secondary outcome was anxiety. When the studies did not have the necessary data for the meta-analysis, the corresponding author was contacted in order to request the missing data; if the data were not available, the article was excluded from the study.

2.5. Assessment of risk of bias

Two review authors (A. P. M. and C. B.) independently assessed the risk of bias of the included studies by considering the items established in the Cochrane Collaboration's [23] tool for assessing risk of bias within and across randomized trials: adequate sequence generation, allocation

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