

## Review Article

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## Impact of massage therapy on post-operative outcomes after cardiac surgery: Narrative review

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### ABSTRACT

#### Introduction

The incidence of Coronary artery Disease (CAD) has doubled in India over the last 3 decades, whereas CAD rates have dropped by 50% during the same period in most developed countries. Number of percutaneous coronary interventions and coronary artery bypass surgery are increasing steadily every year in India due to higher prevalence of CAD.

#### Objective

The objective of this narrative review is to examine the efficacy of massage therapy on various post-operative outcomes in patients following cardiac surgery

#### Methods

A comprehensive literature search was made in following databases for retrieving the related studies, PubMed- Medline, CINAHL, Science Direct, INDMED and Google Scholar. In the included studies, data were extracted and evaluated according to the objective and narrative analysis were adopted to write this review.

#### Results

Out of total seven reviewed studies, 6 studies have concluded that use of massage therapy is beneficial after cardiac surgery. Only one study reported that massage is feasible in this patient population, but does not yield any therapeutic benefits. Use of massage therapy has a positive impact on post-operative outcomes among patients following cardiac surgery. None of the studies reviewed reported any harmful effects of massage therapy.

#### Conclusion

Massage therapy has demonstrated to decrease the perceived symptom of anxiety, fatigue, pain and tension among patients receiving postoperative care after the cardiac surgery. There is a necessity for further strong methodological qualities of randomized controlled trials to prove its efficiency and add more scientific evidence on massage therapy in this field.

**Key words:-**Massage therapy, Postoperative outcomes, Cardiac surgery, Narrative review

### INTRODUCTION

The incidence and prevalence of cardiovascular diseases (CVD) are increasing rapidly, predominantly in the developing countries and also it has become the global health burden due to its sharp rise. India, a developing country is facing the same issue now and having the epidemic of coronary artery disease (CAD). The incidence of CAD has doubled in India over the last 3 decades, whereas CAD rates have dropped by 50% during the same period in most developed countries. In India the prevalence of most of the risk factors for cardiovascular diseases including diabetes mellitus,

hypertension, dyslipidemia etc. has increased prominently during the past 30 years. Number of percutaneous coronary interventions and coronary artery bypass surgery are increasing steadily every year in India due to higher prevalence of Coronary artery disease<sup>1</sup>.

The primary cause of the death and the reason for higher death rates in the world until 2020 will be due to cardiovascular diseases. Cardiovascular diseases are the main cause of higher death rates in human society, among these diseases one of the most important

causes is coronary artery disease<sup>2</sup>. The majority of the patients with CAD who do not respond to routine medical treatment have to undergo coronary artery bypass surgery (CABG). Postoperative outcomes, pain, fatigue, sleep problems and psychological issues such as anxiety, fear, distress, and tension are extremely associated with the recovery of the patients from this CABG surgery.

### **Massage as complementary therapy**

Complementary therapies are used as adjuvant therapy alongside the conventional medical management to enhance overall health and wellbeing the patients. Example include yoga, massage therapy, progressive muscle relaxation, acupuncture, acupressure, reflexology, aromatherapy, music therapy, guided imagery and meditation<sup>3</sup>. Using massage therapy as a method of complementary therapy have been increased in treatment units in recent years that cause relaxation, pain relief and anxiety decrease. Massage therapy is often considered as part of alternative and complementary medicine (CAM) although it does have some conventional uses it helps relieve muscle tension, reduce stress, decrease anxiety and evoke feelings of calmness.

Massage therapy is defined as the systematic and manual manipulation of the body's soft tissue for therapeutic purposes of enhancing overall health and well-being<sup>4</sup>. Massage therapy brings tissues metabolic balance by manipulating soft tissues. Still there is no clear scientific consensus regarding mechanism of action of these methods<sup>5</sup>. Massage therapy can act as a useful complementary and adjuvant therapy to the patients during post-operative period in reducing the pain, anxiety and muscular tension comparing to standard care<sup>6</sup>.

### **Scientific consensus of massage therapy**

Worldwide, there are empirically several references to massage therapy leading to the release of endorphins on different web sites. But, evidence is rigorously lacking when it comes to reliable, valid, double blinded research studies. Regardless of the minimal research, the constructive benefits of endorphins on health are indubitable. Many research scientists discovered endorphins ("endogenous morphine") and identified that these endogenous chemicals in the brain have pain minimizing properties similar to morphine in the mid-seventies.

The severity of pain in the human body is reduced when opiate receptor neurons attached to endorphins, there is a natural block in the pain signals produced by the central nervous system. Current research studies advocates that endorphins minimize the pain level, decrease stress, augment the immune system and impede the process of aging. Researchers have also identified that beta endorphins can trigger human natural killer cells and enhance the immune systems kill cancer cells and against diseases. The release of endorphin leads to physiological changes that includes deep relaxation, slows down respiration, decreased

heart rate, eyes dilates, enhances digestion and increased venous flow to the internal body organs. Improved excretion of toxins and waste products from the body through lymphatic channels<sup>7</sup>.

Massage also increases the level of serotonin and endorphin contributes to higher levels of growth hormone<sup>8</sup>. Endorphins are natural neurotransmitters in the brain similar to morphine that have pain relieving properties. It is also considered to be associated to physiological process, including releasing of sex hormones, euphoria and appetite modulation. Research suggests that endorphin forms link between a healthy immune system and emotions. Large amounts of endorphins are released during massage, into the bloodstream, Massage regulate and stimulate our natural brain chemicals, the ones that are made to act at exactly the correct intervals in precisely the right quantities to enhance our feelings of health and wellbeing<sup>9</sup>.

### **Significance of this review**

Cardiac surgery offers a life-enhancing and life-saving opportunity for numerous patients every year worldwide. But, several patients face important challenges during the postoperative period, including anxiety, pain fatigue and tension. Emerging evidence proves that such challenges can harm the immune system and delay wound healing, also causing sufferings to patients. Massage therapy can be a vital part of a treatment strategy for various health conditions. Adding massage therapy as part of an integrated health care model will help and assure patients that they get proper care to manage both the symptoms of poor health and relevant causes with the aim of improving positive outcomes. Massage therapy may be specifically supportive for patients recuperating from major cardiac surgery who may suffer from anxiety, back pain, fatigue and stress<sup>10</sup>.

A growing research evidence shows that massage as complementary therapy may be effective and positively influence different health conditions. In recent years massage therapy is promptly recognized as an essential part of health and wellbeing. These therapies are commonly used for relaxation, reduction of pain and anxiety, it can also be an important therapy for promotion of psychological and psychosocial wellbeing. Hence, considering the above mentioned scientific consensus of massage therapy and availability of sufficient literature we decided to write this narrative review of efficacy of massage therapy on various post-operative outcomes in patients following cardiac surgery.

### **Methods**

A comprehensive literature search was made in following databases for retrieving the related studies, PubMed- Medline, CINAHL, Science Direct, INDMED and Google Scholar from 2001 to 2014. In addition, Google search was made and studies were selected for the review. In the included studies, data were extracted and evaluated according to the aim and

narrative analysis were adopted to write this review. Search terms included to retrieve the studies were massage therapy, cardiac surgery, pain, anxiety, fatigue and post-operative outcomes

## Results

There were very limited studies published on effect of massage therapy on various post-operative outcomes among patients undergoing cardiac surgery. Totally seven studies were identified and study details are described in Table 1. All the studies retrieved on the

efficacy of massage therapy after cardiac surgery were randomized controlled trial (RCT). Postoperative outcomes assessed as outcome variables in the reviewed studies were anxiety, pain, fatigue, muscular tension, relaxation, satisfaction, quality of sleep, heart rate, pulse rate, respiration rate, blood pressure, sleep quality and use of sedative drugs. Out of total seven reviewed studies, 6 studies have concluded that use of massage therapy is beneficial after cardiac surgery.

Author & Year	Research Design	Objective of the study	Sample & sample size	Outcomes measures	Study findings
Lesley A. Braun et al <sup>6</sup> 2012 Australia	Randomized Control Trial (RCT)	To assess the effect of massage on anxiety, pain, and muscular tension	152 Patients following CABG,	Pain, Anxiety, Muscular tension, Relaxation, Satisfaction	There was significant reduction in anxiety, pain and muscular tension and increases satisfaction and relaxation
Bauer BA et al <sup>11</sup> 2010 Australia	Randomized Control Trial	To evaluate the efficacy of massage on anxiety, pain and tension	113 Patients following CABG, valve surgery or both	Anxiety, Pain and tension	Massage therapy is a useful technique for decreasing anxiety, pain, and tension in patients recovering from cardiac surgery
Susanne M et al <sup>12</sup> 2010 USA	Randomized Control Trial	To assess the effect of massage therapy in postoperative period after the cardiac surgery	58 Patients undergoing cardio vascular surgical procedures	Anxiety, Pain, Tension, and Satisfaction scores	clinically and Statistically significant reduction in anxiety, pain and tension scores
Nancy M. Albert et al <sup>13</sup> 2009 USA	Randomized Control Trial	To assess the efficacy of massage therapy on postoperative mood, anxiety, pain	252 Patients following CABG or valve surgery	Anxiety, Pain, Heart rate, Pulse rate, Respiration rate	Massage is feasible among patients following cardiac surgery still, it does not produce positive results
Nerbass et al <sup>14</sup> 2011 Brazil	Randomized Control Trial	To evaluate the effect of massage on sleep quality	57 Patients following CABG	Pain, Fatigue, Sleep	Massage therapy is an useful intervention in pain, fatigue and for improving sleep, recovery among patient following CABG surgery
Sied Saeed et al <sup>15</sup> Iran 2014	Randomized Control Trial	To determine the efficacy of massage therapy on pain	70 Patients following CABG	Pain, Satisfaction	Massage therapy was an effective intervention for management of pain in post CABG patients
Asadizaker et al <sup>16</sup> 2011 Iran	Randomized Control Trial	To determine the effect of massage on postoperative pain and sedative drug use	65 Patients following CABG or halve surgery	Pain, Use of sedative drug	There was statistically significant difference on the pain intensity and type and amount of sedative drug used between the two groups

**Table 1: Studies on efficacy of massage therapy on post-operative outcomes after cardiac surgery**

## Discussion

Efficacy of massage therapy on pain was evaluated in all the studies, 6 of the seven reviewed studies concluded that massage therapy significantly decreased level of pain after the cardiac surgery. Efficacy of massage on anxiety was assessed in four studies and three studies reported that there was significant reduction in anxiety scores. Studies reported that there was significant improvement in relaxation and satisfaction among patients post operatively. Clinically significant reduction was noted in muscular tensions, pulse rate, blood pressure, respiration rate and improvement in quality of sleep among patients after the cardiac surgery. None of the reviewed studies reviewed reported any harmful effects of massage therapy

A small but growing number of well-designed randomized controlled trials on post-operative outcomes after the cardiac surgery support the clinical effectiveness underlying massage therapy for the patients following major heart surgery. Overall,

current findings increasingly support massage as promising complementary therapies for the patients undergoing cardiac surgery. Summing up, the majority of the studies supported that use of massage therapy has a positive impact on post-operative outcomes among patients following cardiac surgery and only one study concluded that massage does not yield therapeutic benefits but feasible in heart surgery patients.

## Implications for clinical practice

It is essential to deliver information on evidence based nursing interventions for the management of postoperative pain and anxiety to nurses and clinicians. It is also vital to fulfil the needs of the patients by implementing massage therapy techniques to decrease the patient's discomfort, anxiety, pain and improve speedy recovery from the cardiac surgery. Different types of massage therapies may be a beneficial intervention to minimize the patients suffering and promote relaxation. Use of massage therapies as complementary therapy in the surgical

setting will be a promising intervention to minimize anxiety, promote relaxation, and reduce the duration of hospital stay.

#### Directions for future research

There is a necessity for further, higher and strong methodological qualities of randomized controlled trials that includes bio markers to prove its efficiency and add more scientific evidence on massage therapy in this field. Because very few studies have been conducted on effect of massage therapy on post-operative outcomes, more rigorous are required to prove the proficiency of massage therapy. Additional research is also needed to understand better what types of massage based interventions on various post-operative outcomes in order to be able to create more evidence for clinical nursing practice. As scientific reason behind massage is not clearly understood future research are required with selected biomarkers like endorphin to synthesize more evidence. Furthermore, uniform research designs, interventions, instruments, and outcome measurements should be used for accumulating the results to allow comparison.

#### Conclusion

Massage therapy has proven to reduce the subjectively perceived symptom of anxiety, fatigue, pain, stress and tension in patients receiving postoperative care after the cardiac surgery. The movement toward the new models in holistic approach of health care embodies an opportunity to more commendably incorporate massage therapy into the health care practices. Physicians, Nurses, hospitals, and other health care providers should make use of this opportunity to improve the patient care, should obtain practical solutions to include massage therapy in their care models, specifically because of the wide range of patient types and different disease conditions for which massage therapy is an essential care. To conclude, it can be stated that massage is to be considered a noninvasive, cost effective intervention, cost-effective, positively influencing therapy and contributing to the reduction of anxiety, fatigue, pain, and tension in patients following cardiac surgery

#### Conflicts of Interests

There was no conflict of interest in this article

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