# Assess the Effects of Back Massage to Improve Sleeping Pattern of the Postoperative Cardiothoracic Patients among the Selected Hospitals

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## Abstract

**Background :** During the recovery time after cardiac surgery, some patients find that they have disturbed sleep. This is due to a combination of the effects of anesthesia, pain or discomfort in the area of the incisions, back, shoulder, and neck pain from manipulation of body during surgical procedure and the post-operative changes to daily routine and stress. Lack of sleep may cause fatigue; delay in recovery process and lead to prolonged hospitalization Therapeutic back massage has gained support as an intervention that improves the overall relaxation of the body. Patients experience back massage as a calming, stimulating and effective measure of sleep-inducing influence. **Objectives:** To assess the sleeping pattern of post operative cardiothoracic patients before giving back massage, To assess the sleeping pattern of post operative cardiothoracic patients after giving back massage, To compare the difference between before and after massage effect on sleeping pattern of post operative cardiothoracic patients, To correlate the effects of back massage with selected demographic variables and to find out association between before and after back massage effects on sleeping pattern of post operative cardiothoracic patients. **Material and Methods:** An experimental method research with a configuration which is quasi experimental (non-randomized control group). This research was carried out in selected hospitals of the Vidharbha Region on postoperative cardiothoracic patient. **Result:** Statistically significant difference was found in sleeping pattern score of postoperative cardiothoracic patients, before and after massage effect in experimental group. **Conclusion:** Massage evokes an aura of acceptance, body-respect and treatment. The intimate personal contact suggested in massage improves the bond between the nurse and the patient and this in effect provides an environment for wellbeing and healing. The present study concludes that back massage has an effect on improving the sleep pattern of postoperative cardiothoracic patients in order to cope with the problem of postoperative sleep disruption that helps to recover early after surgery.

***Key Words:*** *Assess, Back Massage, Effects Postoperative cardiothoracic patient, sleeping pattern.*

## Introduction

During the recovery time after cardiac surgery, some patients find that they have disturbed sleep. This is due to a combination of the effects of anaesthesia, pain or discomfort in the area of the incisions, back, shoulder, and neck pain from manipulation of body during surgical procedure and the post-operative changes to daily routine and stress. Lack of sleep may cause fatigue; delay in recovery process and lead to prolonged hospitalization.[1] Sleep and rest are fundamental human needs which are essential for the physical and psychological well-being of every individual. Approximately one third of our lives spent asleep. The purpose of sleep is a mystery, but health and a sense of well-being are necessary.[2]

The commonly performed cardiac surgeries are categorized into three types. They are reparative, reconstructive and substitution procedures. Cure and prolonged improvement are the goals of reparative procedures like closure of patent ductus arterious, atrial septal defect, repair of mitral stenosis and tetrology of

fallot. Coronary artery bypass grafts, reconstruction of incompetent mitral, tricuspid and aortic valves are belonging to more complex reconstructive procedures, whereas, valve replacements and cardiac transplantations are known as substitution procedures. Among these coronary artery bypass grafting is the widely performed one.[3]

Sleep can be described as a normal state of altered consciousness during which the body rests; it is characterized by reduced responsiveness to the environment, and external stimuli can excite a person from it.[4]

A person's lifelong need for rest and sleep shifts. A young adult typically requires less sleep than an older or middle-aged adult. A chronically ill patient needs more rest than a healthy person of the same age.[4]

The average daily sleep rate varies greatly between adults. Most adults in the 20 to 50 age group sleep an average of 6 to 8 1⁄2 hours. However 5 % to 10% of this age group sleeps more than 9 hours and 2% to 5% sleep less than 6 hours without difficulty.[4]

The manipulation of the soft tissues of the body to stimulate the nervous, muscular, respiratory and muscular tissue is known as therapeutic back massage. It relives the mental stress and anxiety by the therapeutic value of touch.

It reduces the pain by stimulating the release of endorphins. Back massage stimulate the level of neurotransmitters like serotonin and dopamine and hormone like oxytocin. Adequate level of serotonin produce a general sense of wellbeing.

Dopamine helps the human body sleep, concentration and mood. Oxytocin, also known as "hugging hormone," induces a sense of peace and happiness.[5]

In post-operative heart surgery patients, nursing professionals can no longer disregard the sleep disturbance. Appropriate therapeutic regimens and experiments need to be investigated. Studies have shown that therapeutic back massage is one of the most important means of mental recovery, pain relief and is very useful in sleep promotion.[6]

The most important effects of therapeutic massage are relieving the muscle tension, increased circulation of the blood and relaxation response initiation. The release of muscle tension will enhance balance and coordination, leading to more restful sleep and less pain medication need. The improved circulation increases the nutrition of the tissues and eliminates waste products from the tissues, decreases inflammation, increases skin tone, relieves dryness and itching, and facilitates rapid healing etc.[6]

The research was performed with 30 hospice clients to explore a non-pharmacological means of relief. The aim was to investigate the effects on systolic and diastolic blood pressure, sleep, heart rate, and skin temperature of slow stroke back massage (SSBM). Slow Stroke Back Massage was associated with decreased blood pressure, diastolic blood pressure and heart rate, increased skin temperature, enhanced sleep and relaxation. It has been shown that Slow Stroke Back Massage produces modest clinical, but statistically significant changes in vital signs which indicate relaxation. This is a cost effective service that adds to the comfort of hospice customers.[7]

Some patients find they have interrupted sleep during the recovery period following cardiac surgery. This is due to a combination of the effects of anaesthesia, pain or irritation in the area of incisions, back, shoulder and neck pain arising from body pressure during surgery and post-operative changes in daily life and stress. Sleep deficiency can lead to fatigue; delay in recovery phase and prolonged hospitalization.[1] Massage is one of the most common methods of healing. The tissues of the body are engineered to reduce muscle spasm, promote relaxation, enhance blood flow and increase venous drainage. It is the systematic manipulation of body tissue[9], back massage is an alternative or complement to pharmacological care, it is a clinically successful nursing technique for sleep promotion.[10]

The investigator herself during her working period came across with post cardiac surgery patients; who were experienced pain, anxiety and sleep disturbance. The personal experience of the student researcher and the above mentioned factors regarding the importance of sleep in post-operative cardiac patients and the significant effect of massage therapy on sleep inspired the student investigator to help the postoperative cardiothoracic

patients with sleep disturbance to improve sleeping pattern through the application of back massage for early postoperative recovery and leading a healthy life

## Aims and Objectives

1) To assess the sleeping pattern of post-operative cardiothoracic patients before giving back massage.

2) To assess the sleeping pattern of post-operative cardiothoracic patients after giving back massage.

3) To compare the difference between before and after massage effect on sleeping pattern of post-operative cardiothoracic patients.

## Material and Method

**Research Approach**-Experimental research with quasi experimental (**nonrandomized control group**) design.

**Population** – postoperative cardiothoracic patients admitted in selected hospitals of Vidharbha region.

**The inclusion criteria-** Postoperative cardiothoracic patients, who have undergone cardiothoracic surgery via sternotomy, who gave consent and medically fit to participate in back massage, patients from the postoperative day 2-10.

**Exclusion criteria** - Patient with chronic pain syndrome. Patient with significant history of psychiatric disorder, patient with postoperative complications.

The content validity of the tool was done by 11 various experts from different fields. Suggestions proposed were incorporated in tool and appropriate changes were made. **Reliability** analysis was done by Intra class Correlation.

The **pilot study** was conducted at Awanti Heart Institute Nagpur and shrikrishana hridayalaya and critical care , Nagpur, from 12$^{th}$ August to 17$^{th}$ August 2013 as per the criteria laid down and

Sample was selected by non-probability convenience sampling technique.

The process of data gathering was from 2$^{nd}$Sept. to 22$^{nd}$ Sept. 2013. Prior to initiation of the research, ethical approval was obtained from the Datta Meghe Institute of Medical Sciences Institutional Ethics Committee, considered to be university, Sawangi (Meghe) Wardha. The details of the procedure were explained to the participants in their vernacular language and an informed written consent was obtained from them. Data on Name, age, sex, occupation, and personal habits of the subjects was recorded using questionnaires. The researcher visited the selected hospitals in the Vidharbha region prior to data collection and obtained the necessary permission from the concerned authorities. The data were analyzed using different statistical tests based on the objectives and hypothesis.

## Statistical Analysis

Collected data were organized in tabular form for analysis. The collected data was coded, tabulated and analyzed by using descriptive statistics (mean, percentage and standard deviation) and inferential statistics. The analyzed data was presented in graphs and tables. Significance difference between the experimental and control group were tested using students paired and unpaired "t" test, association was made with the help of paired and unpaired "t''test. The data was presented in the form of tables and graphs.

**Table No I-: Plan for data analysis**

| S. No | Data Analysis | Method | Remark |
|---|---|---|---|
| 1. | Descriptive statistics | Frequency, Percentage | Assess the sleeping pattern of postoperative cardiothoracic patients. |
| 2. | Inferential statistics | Mean, standard deviation, Students paired 't' test, Students unpaired 't' test. | Compare the effects of back massage on sleeping pattern of postoperative cardiothoracic patients |

**Table No. II Scoring Of Sleeping Pattern**

| Level of sleeping pattern disturbance score | Percentage on Groningen sleep pattern assessment scale |
|---|---|
| Mild | 1-25% |
| Moderate | 26-50% |
| Severe | 51-75% |
| Very severe | 76-100% |

## Results

**Table III: Assessment with sleeping pattern disturbance score before giving back massage**

| Level of sleeping pattern disturbance score | Percentage score | Sleeping Pattern Score | |
|---|---|---|---|
| | | Control Group | Experimental Group |
| Mild | 1-25% | 2(6.67%) | 0(0%) |
| Moderate | 26-50% | 1(3.33%) | 1(3.33%) |
| Severe | 51-75% | 18(60%) | 27(90%) |
| Very Severe | 76-100% | 9(30%) | 2(6.67%) |
| Minimum score | | 3 | 6 |
| Maximum score | | 13 | 12 |
| Mean score | | 10.06 ± 2.58 | 10.06±1.22 |
| Mean Percentage | | 67.11±17.23 | 67.11±8.19 |

The table No III shows that 6.67% of the patients of control group had mild level of sleeping pattern disturbance score, 3.33% in each control and experimental group had moderate level of sleeping pattern disturbance score, 60% in control and 90% in experimental group had severe level of sleeping pattern score and 30% in control and 6.67% in experimental group had very severe level of sleeping pattern disturbance score. Minimum sleeping pattern score of the patients of control was 3 and maximum sleeping pattern was 13, mean score was 10.06 ± 2.58

Whereas in experimental group minimum sleeping score was 6 and maximum score was 12 with mean percentage score of 10.06±1.22

**Table IV: Assessment with sleeping pattern score**

| Level of sleeping pattern disturbance score | Percentage score | Sleeping Pattern Score | |
|---|---|---|---|
| | | Control Group | Experimental Group |
| Mild | 1-25% | 5(16.67%) | 14(46.67%) |
| Moderate | 26-50% | 6(20%) | 12(40%) |
| Severe | 51-75% | 14(46.67%) | 3(10%) |
| Very Severe | 76-100% | 5(16.67%) | 1(3.33%) |
| Minimum score | | 3 | 0 |
| Maximum score | | 12 | 12 |
| Mean score | | 8.10±2.86 | 4.30±3.13 |
| Mean Percentage | | 54±19.12 | 28.66±20.87 |

The above table No.IV shows that 16.67% of the patients of control group and 46.67% in experimental group had mild level of sleeping pattern disturbance score, 20% in control and 40% in experimental group had moderate level of sleeping pattern disturbance score, 46.67% in control and 10% in experimental group had severe level of sleeping pattern disturbance score and 16.67% in control group and 3.33% in experimental group had very severe level of sleeping pattern disturbance score. Minimum sleeping pattern score of the patients of control was 3 and maximum sleeping pattern was 12, mean score was 8.10±2.86 whereas in experimental group minimum sleeping pattern score was 0 and maximum score was 12 with mean percentage score of 4.30±3.13

**Table V: Significant difference between before and after massage effect on sleeping pattern of post-operative cardiothoracic patients.**

| | | Mean | N | Std. Deviation | Std. Error Mean | t-value | p-value |
|---|---|---|---|---|---|---|---|
| Control Group | Before t/t | 10.06 | 30 | 2.58 | 0.47 | 3.30 | 0.003 S,p<0.05 |
| | After t/t | 8.10 | 30 | 2.86 | 0.52 | | |
| Experimental Group | Before t/t | 10.06 | 30 | 1.22 | 0.22 | 8.71 | 0.000 S,p<0.05 |
| | After t/t | 4.30 | 30 | 3.13 | 0.57 | | |

Table No. V the mean sleeping pattern disturbance score in control group before massage effect was 10.06±2.58 and at after t/t it was 8.10±2.86. Statistically significant difference was found in sleeping pattern disturbance score (t=3.30, p-value = 0.003) before and after massage effect whereas in experimental group in before massage effect it was 10.06±1.22 whereas in experimental group after t/t it was 4.30±3.13. Which shows that sleeping pattern is improved by decreasing the sleeping pattern disturbance score. Statistically significant difference was found in sleeping pattern

score (t=8.71,p-value=0.000)

## Discussion

The assessment of sleeping pattern of post-operative cardiothoracic patients before giving back massage was assessed by the level of sleeping pattern disturbance divided under following heading mild, moderate, severe, and very severe , 60% in control and 90% in experimental group had severe level of sleeping pattern disturbance score. Statistically significant difference between the pretest and posttest sleeping pattern scores of experimental group found in the pretest of experimental group postoperative cardiothoracic,90% had severe, 6.67% had very severe level of sleeping pattern disturbance score, with mean percentage score of 10.06and standard deviation 1.22.whereas the post test score after the back massage in the experimental group shows that only, 10% postoperative cardiothoracic patients having severe, 3.33% very severe level of sleeping pattern disturbance score, with mean percentage score of 4.30 and standard deviation 3.13,Shows the level of sleep disturbance is decreased. Statistically there is a significant difference between the pretest and posttest sleeping pattern scores of experimental group. Hence research hypothesis $H_1$is accepted.

The comparative difference between before and after massage effect on sleeping pattern of post operative cardiothoracic patients was found Mean sleeping pattern score in control group before massage effect was 10.06±2.58 and at after t/t it was 8.10±2.86. Statistically significant difference was found in sleeping pattern score(t=3.30, p-value=0.003) before and after massage effect whereas in experimental group in before massage effect it was 10.06±1.22 whereas at after t/t it was 4.30±3.13, which shows that, the sleeping pattern is improved by decreasing the level of sleep disturbance. whereas the in the post test assessment the level of sleeping pattern disturbance of the control group was 8.10 and standard deviation 2.86comparing with the pretest value 10.06 and standard deviation 2.58. Whereas the post test score of the experimental group shows that the level of sleep disturbance was 4.30and standard deviation 3.13 comparing with pretest score 10.6 and standard deviation 1.22.Statistically significant difference was found in sleeping pattern scores(t=8.71,p-value=0.000) of experimental and control group, Hence the research hypothesis $\mathbf{H_2}$ was accepted.

The following literature supports the above findings of the research.

An experimental study was done in Arizona to assess the effects of the use of back massage therapy on inpatient pain levels in a Medical Center among 53 hospital inpatients. The samples are cardiac surgery patients selected by convenient sampling. The pain levels before and after massage therapy were recorded using a 0-10 visual analogue scale. In this study the patients received one or more massage therapy sessions averaging 30 minutes each.

Results of this study showed that the mean pain level prior to treatment was 5.18 (S.D:2.01). The mean amount of pain following relaxation was 2.33 (S.D:2.10). The pain relief observed has been statistically significant: paired samples t 52 = 12.43. R=.67, d=1.38, and p<.001. They concluded that massage therapy has major effects on the overall level of discomfort, mental well-being, relaxation and sleeping capacity. The study showed not only a substantial reduction in pain rates, but also the interrelationship between pain, relaxation, sleep, emotions, rehabilitation and, ultimately, the hospital stay healing process.[14]

A randomized study was conducted to test the effect of massage therapy for the alleviation of pain, tension and anxiety in the post-operative cardiovascular patients.

The sample size was 113 and divided into massage group (n=62) and control group (n=51). Tools used were visual analogue scale and Beckon anxiety scale. Research results indicated that patients receiving massage therapy had substantially decreased discomfort, anxiety and stress compared with control group. Patients were extremely pleased with the care and no significant obstacles were found for implementing massage therapy. This research concluded that after cardio-vascular surgery massage therapy can be incorporated as an essential component of the recovery process for patients.[6]

In 2010 Brazil-based research focused on the effectiveness of massage to improve sleep in patients following cardiopulmonary bypass artery graft surgery.13 Poor sleep and exhaustion are normal after thoracic surgery and may hinder treatment and recovery.

Poor post-operative sleep quality may be attributed to many factors including discomfort from surgical incision, presence of thoracic drain, discomfort from extended bedtime, and high rates of anxiety. However, muscle pain, particularly in the neck, shoulders and back, can make breathing, cough, movement and sleep difficult for patients.[7]

A research was undertaken to assess the impact of relaxation and visualization on adults suffering from serious illness. The research was a randomized clinical trial with two groups being selected at random. Research made use of repeated ANOVA steps. Thirty-six adults (17 males and 19 females) in three critical care units in two large metropolitan hospitals with a variety of physical diagnoses were studied. The outcome tests were scores calculated on three mornings on a visual analog sleep scale. The therapy was a blend of relaxation and creativity that was given on two days. Over time the sleep of all the subjects changed. There were major interaction effects between intervention, gender and time, with the scores of males rapidly improving and the scores of females falling first, and then rapidly improving. A combination of relaxation and visualization is successful in improving the sleep of critically ill people, with men instantly responding to relaxation and imagery with better sleep, and women taking more time to respond to the intervention.[3]

Pinto (2001) at KEM Hospital, Mumbai, examined the effect of selected nursing strategies in sleep promotion of patients with congestive heart failure. The data was collected using a semi-structured schedule of interviews and an analytical checklist of 40 subjects who met the necessary criteria. The research employed a concise assessment approach. The intervention group provided 10-minute back massage and 6-minute deep breathing exercise, and the test results revealed that 80 percent of the sample in the research group slept well and that their standard of sleep in the control group only slept well at 50 percent. In the control group, sleep quality was 45 percent lower than in the study group.[4]

## Conclusion

So the present study concludes that back massage has effects on improving the sleeping pattern of the postoperative cardiothoracic patients to cope up with the problem of postoperative sleep disturbance.

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