Advanced Nursing & Patient Care International Journal
ISSN: 2642-0147

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Research Article *Volume 8 Issue 1*

Effect of Back Massage on Anxiety and Quality of Sleep Among Patients with Heart Failure

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Received Date: February 04, 2025; **Published Date:** April 26, 2025

Abstract

Aim: The study aimed to evaluate the effect of back massage on anxiety and quality of sleep among patients with Heart Failure.
Methods: Quasi experimental research with two group pre-test post-test design was adopted in the study. Sixty heart failure patients, 30 in experimental and 30 in control group were selected using a purposive sampling technique. Socio demographic variables and clinical profile were used to assess the sample characteristics whereas anxiety and quality of sleep was assessed using Modified Spielberger State Trait Anxiety Inventory and Modified Groningen Sleep Quality Scale respectively. Back massage was given daily for ten minutes with the techniques of effleurage, petrissage, friction and tapotement using a moisturizer to the experimental group for three consecutive days and the post test was done on the 4th day.
Results: The mean post test scores of anxiety and quality of sleep showed a significant difference in the experimental group after back massage ($t = 2.62$ and $t = 2.59$ respectively, at $p<0.05$). The study found a significant association between the pre-test scores of anxiety and quality of sleep and demographic variables such as marital status, education, ejection fraction and co morbidities at $p<0.05$ level of significance. The study concluded that back massage effectively reduced anxiety and improved sleep quality in heart failure patients.
Discussion: The present study demonstrated that back massage was effective in reducing anxiety and improving the quality of sleep among heart failure patients.
Conclusion: Further studies can investigate the effectiveness of back massage in large sample of subjects.

Keywords: Effect; Back Massage; Anxiety; Quality of Sleep; Heart Failure

Introduction

Cardiovascular disease remains the leading cause of death worldwide, responsible for 17.3 million deaths annually, a figure projected to rise to over 23.6 million by 2030 [1]. In 2024, cardiovascular diseases contribute to nearly 12% of the total global burden of disease, with a higher impact on males (14%) to females (10%) in Australia [2]. Among Cardiovascular conditions, heart failure is the one showing an increasing trend in both prevalence and incidence, particularly in North America and Europe [3]. In the United States, Chronic heart failure affects around 5 million people,

with 550,000 new diagnosis each year [4]. In India, heart failure, driven by factors such as coronary heart disease, hypertension, obesity and diabetes and rheumatic Heart disease, affects between 1.3 and 4.6 million people, with an annual incidence of 0.5 to 1.8 million [5]. As the risk of heart failure rises with age, and considering India's rapidly aging population, the burden of heart failure is expected to grow significantly. The number of people aged 60 and above in India is forecast to increase from 105 million (8.4% of the total population) in 2011 to 376 million (21.6%) by 2051 [6].

Anxiety is an unpleasant state that involves a complex combination of emotions (fear, worry, apprehension) accompanied by physical sensations (palpitations, chest pain, shortness of breath, tension headache etc). Unrelieved anxiety can produce an increase in sympathetic nervous system activity leading to an increase in cardia workload and imbalance in homeostasis that impair or impede recovery [7]. A cardiac patient is often referred to as an anxious person. The heart being a vital organ, the person might consider his/her cardiac ailment as one which endangers life [8]. A cross-sectional study was conducted on Anxiety in heart failure patients and its association with socio-demographic and clinical characteristics. The findings of this study revealed that a significant proportion (31.6%) of heart failure patients are suffering from clinically relevant anxiety [9].

Sleep is a cyclical physiological process that alternates with periods of wakefulness, and achieving optimal sleep quality is crucial for maintaining good health and aiding in recovery from illness [10]. A lack of sleep can quickly lead to irritability, grogginess, and difficulties in decision-making and cognitive function [11]. While one day of sleep deprivation is not fatal, it can significantly alter mood, physical health, and overall cognitive abilities. In patients with heart failure, sleep plays a particularly important role. The supine position, commonly used for these patients, can place excessive strain on the pulmonary system, negatively impacting sleep quality [12]. Insufficient or poor sleep can further diminish quality of life, causing fatigue, irritability, cognitive impairment, and exacerbating the symptoms of the underlying heart failure [13]. An observational study was conducted on prognostic importance of sleep quality in patients with heart failure in 2016. The study concluded that impaired sleep quality is commonly observed in patients with heart failure and has been linked to poorer cardiac event- free survival [14].

Non-pharmacological therapies are valuable interventions aimed at promoting health and treating both chronic and acute illnesses [15]. Therapeutic massage offers a natural approach to managing stress and health- related issues, benefiting both the body and mind. It enhances circulation, promotes the release of endorphins to alleviate pain, accelerates recovery from injuries or chronic conditions, and improves sleep quality. Massage techniques can range from single methods to a combination of different strokes, such as effleurage (stroking), petrissage (kneading), tapotement, and friction, all of which help relax tense muscles. The pressure applied during massage can vary from light to heavy, depending on the purpose and technique used [16]. Therapeutic massage not only fosters relaxation and eases muscle tension but also helps reduce pain, anxiety, heart rate, and respiratory rate, contributing to overall wellbeing [17].

Nursing practices that are complementary to modern technologic medicine are common in the clinical area. Massage can be used effectively in nursing to pacify and relax but at the same time can serve as an important nursing technique. Numerous research studies shows that Heart failure patients have increased anxiety and poor quality of sleep. This study was conducted to evaluate the effect of back massage on anxiety and quality of sleep among patients with heart failure. The study also examined the association between pre test scores of anxiety and quality of sleep with selected demographic variables like age, gender, marital status, education, occupation, annual income, ejection fraction according to latest echocardiography, presence of co morbidities, previous history of hospitalization and use of sedatives.

Materials and Methods

- **Setting:** The study was conducted in the cardiology wards of Caritas Heart Institute, Kottayam
- **Research Design:** Quantitative approach with Two group pretest posttest design was adopted for the study
- **Participants:** Sixty Heart failure patients (30 in experimental and 30 in control group) were selected using purposive sampling technique. Ethical clearance was obtained from the ethical committee of Caritas Hospital.

Instruments and Tools

- The study used a clinical profile tool along with socio demographic information sheet.
- Modified Spielberger State Trait Anxiety Inventory was used for assessing the anxiety among heart failure patients. The level of anxiety is categorized as; Mild: 40-80 ; Moderate: 81-120; Severe: 121-160.
- Groningen Sleep Quality Scale was used for assessing the sleep quality in heart failure patients. Quality of sleep is categorized as; Good sleep: 0-4; Average sleep: 5-9; Poor sleep: 10-14.

Data Collection Process

The data collection was started after obtaining formal permission from the Director of the Caritas hospital, Kottayam.

The consultants in the Cardiology department were informed and due permission was obtained from them as well. Informed Consent was taken from the consultant doctor, patients and their relatives and confidentiality of the response was assured. The clinical profile was filled by the researcher herself. Pretest questionnaire including socio demographic data was given initially to the experimental and control group and it took about five minute to complete it. Then Modified Spielberger State Trait Anxiety Inventory and modified Groningen sleep quality scale was given to the patients on the first day and it took about 15 minutes (10 minutes and 5 minutes respectively) to complete the scales. Back massage was given daily for ten minutes with the techniques of effleurage, petrissage, friction and tapotement using a moisturizer to the experimental group. It was given two hours after the meals during the night for three consecutive days between 8.30 pm and 9.30 pm. Post test for assessing the quality of sleep and anxiety was done on the 4th day. The patients in the control group received their normal routine care.

Data Analysis

Results

Level of anxiety among participants in pre test

The pretest anxiety scores of the participants are shown in Table 1.

Category	Experimental n1 - 30		Control n2 - 30	
	frequency	%	frequency	%
Mild	5	16.67	3	10
Moderate	21	70	22	73.33
Severe	4	13.33	5	16.67

Table 1: Frequency and percentage distribution of samples based on pretest level of anxiety.

Majority of the participants in the experimental and control group (70% and 73.33% respectively) demonstrated moderate anxiety levels.

Level of anxiety among participants during post test

Level of anxiety during post test showed that more than half (60%) of samples in the experimental group and 76.67% of samples in the control group had moderate anxiety while only 3.33% of samples in the experimental group and 6.67% of samples in the control group had severe anxiety.

Comparison of the mean difference between the pre test and post test scores of anxiety among participants with heart failure.

Comparison of the mean difference between the pre test and post test scores of anxiety among patients with heart failure in the experimental and control group is shown in Table 2.

Category	Mean of mean difference	SD	df	't' value
Experimental Group	9.8	5	58	5.206*
Control Group	3.2	4		

Table 2: Comparison of the mean difference between the pre test and post test scores of anxiety among patients with heart failure in the experimental and control group.
***Significant at 0.05 level**

There was a significant mean difference between the pretest and post test scores of participants in anxiety at p< 0.05 level between the experimental and control groups, which showed that back massage was effective in reducing anxiety among patients with heart failure.

Quality of sleep among participants in pretest

The pretest scores of Quality of Sleep are shown in Table 3.

Category	Experimental n1 - 30		Control n2 - 30	
	frequency	%	frequency	%
Good	0	0	0	0
Average	20	6.67	6	53.3
Poor	10	33.3	14	46.7

Table 3: Frequency and percentage distribution of samples based on pretest level of quality of sleep.

Majority of the participants in the experimental and control group (33.3% and 53.3.5% respectively) demonstrated poor and average quality of sleep respectively.

Quality of sleep among participants in the post test

The study shows that majority (66.67%) of participants in the experimental group and 63.33% of samples in the control group had average sleep while only 3.33% of participants in the experimental group and 23.33% of samples in the control group had poor sleep.

Comparison of the mean difference between the pre test and post test scores of quality of sleep among patients with heart failure.

Comparison of the mean difference between the pre test and post test scores of quality of sleep among patients with heart failure in the experimental and control group is shown in Table 4.

Category	Mean of mean difference	SD	df	't' value
Experimental Group	2.33	2	58	3.68*
Control Group	0.86	2		

Table 4: Comparison of the mean difference between the pre test and post test scores of quality of sleep among patients with heart failure.

***Significant at 0.05 level.**

There was a significant mean difference between the pre and post test scores of participants in quality of sleep at $p<0.05$ level between experimental and control groups, which showed back massage was effective in improving the quality of sleep among patients with heart failure.

Association between the pretest scores of level of anxiety and quality of sleep of heart failure patients with their selected demographic variables

Chi-square test was used to find out the association between pre test scores of anxiety and quality of sleep with selected demographic variables. The present study revealed that there was a significant association between pre test scores of anxiety with marital status of the patient ($x^2 = 7.18$, $p<0.05$) and education ($x^2 = 8.95$, $p<0.05$).

It also showed that there was no significant association between pre test scores of anxiety with the selected demographic variables like age, gender, annual income. ejection fraction, co-morbidities, history of hospitalization, use of sedatives. The present study also showed that there was a significant association between pre test scores of quality of sleep with education ($\chi^2 = 9.26$, $p< 0.05$), ejection fraction($\chi^2 = 6.73$,$p< 0.05$) and co-morbidities($\chi^2 = 5.21$,$p<0.05$). It also revealed that there was no significant association between pre test scores of quality of sleep with the selected demographic variables like age, gender, annual income, history of hospitalization and use of sedatives.

Discussion

In the present study, less than half of the samples were in the age group of 71-80 years. The results of the research studies [18-21] was consistent with this finding which showed that majority of the samples with heart failure were in the age group of more than 70 years. These findings were contradictory to the findings of other research studies [22-25] where they reported that most of the samples with heart failure belong to the age group of less than 70 years. The results of the present study revealed that more than half (55%) of the samples were females. The findings of the study were supported by the studies [24,26,27] which showed that most of the samples with heart failure were females. These findings were contradictory to the findings of other research studies [18,19,28] which revealed that majority of the samples with heart failure were males. The present study was comparable to the studies[24,27-29] add more which proved that back massage was effective in reducing anxiety in patients with heart failure. The findings of the present study were consistent with the findings of other research studies [25,27,28] which revealed that back massage was effective in improving the quality of sleep among patients with heart failure. The data in the present study is comparable to the quasi experimental study [29] conducted in Egypt in 2019, which assessed the effect of back massage on anxiety and physiological responses among patients with heart failure. The study revealed that back massage was effective in reducing anxiety and improving the physiological responses in patients. However, the study found no significant relationship between the total mean score of anxiety and factors such as age, marital status or education level post intervention.

Conclusion

The present study was done to assess the effect of back massage on anxiety and quality of sleep among patients with heart failure. The study findings revealed that back massage can reduce anxiety and improve the sleep quality and they can be effectively used as a safe and cost effective nursing intervention in heart failure patients. Further studies can investigate the effectiveness of gender-wise difference in back massage for heart failure patients and also the effectiveness in accordance to the time of back massage given.

Limitations

One of the major limitations of the study was it was conducted in only one setting. The study had also used small sample size due to time constraints. The sedatives prescribed to the patients, which could have influenced their sleep quality, were also a factor that could not be controlled in the study. Despite these limitations, the study provides valuable insights into the effectiveness of a routine nursing procedure in benefiting heart failure patients.

Acknowledgement

Investigators express a deep sense of gratitude to the management, staff and participants of the respective institution for the successful completion of this study.

Conflict of interest

None

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