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A study to evaluate the effectiveness of pranayama on level of anxiety among clients with myocardial infarction in a selected hospital at Trichy

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Abstract
This study investigates the potential therapeutic effects of Pranayama, a yogic breathing practice, on anxiety levels among clients diagnosed with Myocardial Infarction (MI). Myocardial Infarction, commonly known as a heart attack, is a critical cardiovascular event often accompanied by heightened psychological distress, particularly anxiety. The study aims to explore whether the incorporation of Pranayama into the rehabilitation process can contribute to a reduction in anxiety levels and overall improvement in the well-being of individuals recovering from MI. The research employs a mixed-methods approach, combining quantitative measures such as standardized anxiety scales with qualitative insights gathered through interviews and subjective reports. A sample of MI patients undergoing cardiac rehabilitation will be randomly assigned to either a control group following standard rehabilitation protocols or an experimental group incorporating Pranayama exercises into their routine. The study duration will extend over a specified period, allowing for a comprehensive analysis of the potential impact of Pranayama on anxiety levels. The anticipated outcomes of this study may provide valuable insights into the adjunctive role of Pranayama in the holistic management of post-MI patients. Findings from this research could contribute to the development of evidence-based interventions that not only address the physical aspects of myocardial infarction but also consider the psychological well-being of the affected individuals. Ultimately, this investigation may offer a novel and integrative approach to enhance the overall recovery process for clients with Myocardial Infarction.

Keywords: Pranayama, yogic breathing, anxiety levels, myocardial infarction (MI)

Introduction
In the aftermath of a myocardial infarction (MI), individuals often grapple with not only the physical repercussions but also heightened levels of anxiety, a significant concern that can impede the recovery process. In response to this multifaceted challenge, this study seeks to evaluate the effectiveness of Pranayama, a traditional yogic breathing practice, in alleviating anxiety levels among clients recovering from MI. The selected hospital in Trichy serves as the backdrop for this investigation, aiming to contribute valuable insights into the potential role of Pranayama as an adjunctive therapy within the specific context of cardiac rehabilitation. By focusing on the tangible outcomes and experiences of individuals undergoing this intervention, the study endeavors to offer a comprehensive understanding of how Pranayama may positively impact anxiety levels, paving the way for tailored and holistic approaches to post-MI care. This research aligns with the broader discourse on integrative healthcare, emphasizing the importance of addressing not only the physical but also the psychological aspects of cardiovascular recovery. The significance of conducting a study to evaluate the effectiveness of Pranayama on anxiety levels among clients recovering from Myocardial Infarction (MI) in a selected hospital at Trichy lies in the holistic well-being of individuals post-cardiac events. Myocardial Infarction not only poses immediate threats to cardiovascular health but also gives rise to psychological challenges, particularly heightened anxiety levels, which can impede the overall recovery process. Understanding and addressing the mental health aspect of post-MI care is essential for a comprehensive approach to rehabilitation. Pranayama, as a traditional yogic breathing practice, holds potential as a non-invasive, cost-effective intervention that can be seamlessly integrated into conventional cardiac rehabilitation programs.

If found effective, Pranayama could serve as a complementary therapy, offering individuals a tool for managing anxiety and improving their mental resilience during the recovery journey. The outcomes of this study may contribute to the development of tailored interventions and further emphasize the importance of incorporating holistic approaches in cardiac care, thereby enhancing the overall quality of life for individuals recovering from Myocardial Infarction.

Literature Review

Wooler., (2008) [15] reported positive effects that were observed in mood, stress, anxiety, sleep quality, and overall quality of life, as well as functional and psychological measures after practicing Pranayama. Trehan, T. (2007) [16] estimated that cardio vascular disease may increase from 2.9 crore in 2000 to as many as 6.4 crore in 2015. In that, most of the increase will occur on account of coronary heart disease- acute myocardial infarction, angina, congestive heart failure and inflammatory heart disease in India. Anxiety is the common reason to death in Myocardial Infarction. Thus to reduce the anxiety, Pranayama helps the clients with Myocardial Infarction is more effective and capable in reducing the death rate. Taneja, V. (2022) [12] conducted a study with the primary objective of assessing the effectiveness of Pranayama in reducing anxiety levels among individuals diagnosed with Myocardial Infarction (MI). The research employed a quasi-experimental pre and post-test design with a control group. A nonprobability purposive sampling technique was utilized, resulting in a sample size of 60 participants. The experimental group (30 participants) received 10 minutes of daily Pranayama for five consecutive days, while the control group received routine nursing care. Panjeta, E. (2021) [7] explores the impact of yoga and mindfulness on blood circulation, aiming to reduce factors contributing to hypertension, heart attacks, and strokes. The focus is on the role of complete yoga breathing in oxygenating the blood, facilitating the delivery of fresh nutrients to peripheral vessels and capillaries. The study suggests that yoga plays a preventive role in circulatory ailments such as high blood pressure, shallow breathing, muscle tension, and coronary heart disease. Alaguveni's, T. (2021) [1] study delves into the comprehensive impact of breathing on various aspects of wellbeing, including respiratory, cardiovascular, neurological, gastrointestinal, muscular, and psychological dimensions. The review emphasizes breathing's general effects on sleep, memory, concentration, and energy levels. With a specific focus on deep breathing exercises, known as Pranayama, the study aims to explore their influence on heart rate variability (HRV) across different age groups. Russo, M (2021) [9] The widespread adoption of slow breathing practices globally has prompted significant interest from researchers and clinicians. This review aims to provide a comprehensive exploration of the documented health benefits of slow breathing techniques, shedding light on their physiological and psychological effects. The article delves into normal respiratory physiology and focuses on research findings related to healthy humans Zarneshan's, A. (2020) [14] study addresses the common occurrence of anxiety in patients undergoing coronary artery bypass grafting (CABG), recognizing its close connection to patient recovery. The primary objective is to investigate the impact of stretching combined with a slow deep breathing exercise (S+SDBE) on post-CABG patient anxiety. Sharma's, K. N. (2020) [11] The focus is on coronary artery disease (CAD), a rising noncommunicable ailment exacerbated by contemporary lifestyles. The research investigates the efficacy of an integrated approach to yoga therapy (IAYT) in a cardiac rehabilitation center in India. The study aims to understand the impact of IAYT on cardiac function and risk factors in acute myocardial infarction patients with left ventricular dysfunction. Prasads, A. (2020) [8] study addresses the escalating prevalence of coronary artery disease (CAD) in India, a significant contributor to global morbidity and mortality. The research explores diverse strategies to mitigate the impact of CAD, emphasizing both interventional (e.g., revascularization with PCI and stenting) and pharmacologic (e.g., thrombolytic and anticoagulant therapies) approaches. Focusing on the psychological responses to myocardial infarction (MI), such as anxiety, depression, and other emotional reactions, the study investigates the potential benefits of incorporating yoga as a complementary intervention. Chandrababus, R. (2023) [3] review centers on coronary artery bypass grafting (CABG), the common surgical method for managing coronary artery disease. Stress, anxiety, and pain post-surgery are critical factors affecting patient recovery. The review systematically investigates the impact of yoga interventions on anxiety, pain, inflammatory markers, and stress biomarkers in CABG patients. Jayawardenas, R. (2020) [6] The focus is on Pranayama (yogic breathing) and its demonstrated health benefits. The review addresses the absence of systematic evaluations specifically exploring the health effects of Pranayama as a standalone practice. The primary objective is to conduct a systematic review to understand and consolidate the beneficial health effects associated with Pranayama. Bidgoli's, M. (2020) [2] study focuses on addressing anxiety, a prevalent issue among coronary angiography (CA) candidates, and explores the effects of pranayama exercise in managing this anxiety. This double-blind randomized controlled trial conducted in 2015 involved 80 eligible patients randomly assigned to either a control or an experimental group.

Statement of the Problem: The statement of the problem is as under

A Study to Evaluate the Effectiveness of Pranayama on Level of Anxiety among Clients with Myocardial Infarction in a Selected Hospital at Trichy.

Objectives: The objectives of the study are as under

1. To assess the pre and post-test level of anxiety among clients with Myocardial Infarction in experimental and control group.
2. To evaluate the effectiveness of Pranayama on level of anxiety among clients with Myocardial Infarction in experimental group.
3. To determine the association between the level of anxiety among clients with Myocardial Infarction with their selected demographic variables in experimental and control group.

Hypothesis

H_1: There is a significant difference between the pre and post- test level of anxiety among clients with myocardial infarction in experimental group.

H_2: There is a significant difference between the post- test level of anxiety among clients with Myocardial infarction between experimental and control group.

H_3: There is a significant association between the level of anxiety among clients with Myocardial Infarction and selected demographic variables in experimental and control group.

For the study, the literature reviews are divided into following sessions

- Studies related to prevalence of anxiety among clients with Myocardial Infarction.
- Studies related to Pranayama on anxiety.
- Studies related to effectiveness of Pranayama on anxiety among clients with Myocardial Infarction.

Research Approach

A quantitative, evaluative approach was used to determine the effectiveness of Pranayama in reducing the level of anxiety among clients with Myocardial Infarction.

Research design

A Quasi experimental pre and post test with control group design was chosen for this study.

Setting of the Study: This main study was conducted at Deshbhagat Hospital, Punjab. It is a cardiac hospital. The total number of beds in the hospital is 100 beds. The average cardiac inpatient is minimum 13 patients per week and 3 patients per day. During the study period, there were minimum 72 subjects got admitted per month. Approximately there were 60 patients per day visiting outpatient department and inpatient censes was on an average 90% per month.

Population: The target population was clients with Myocardial Infarction. The accessible population for this study was clients who had Myocardial Infarction with mild to moderate level of anxiety and admitted at selected hospital.

Sample: Clients who had Myocardial Infarction with mild and moderate level of anxiety those who fulfilled the inclusion criteria were the sample.

Sample Size: The sample size for the study was 60 (30 in the experimental group and 30 in the control group).

Sampling Technique: Non-probability purposive sampling technique was used for the study.

Criteria for Sample Selection

Inclusion Criteria

- Clients who were conscious and stable.
- Clients who stayed in hospital for a minimum of 7 days.
- Clients with mild to moderate level of anxiety.

Exclusion Criteria

- Clients who are on anxiolytics and antidepressants.
- Clients with respiratory problems such as asthma etc.,
- Clients with nasal problems such as rhinitis, injury to the nose etc.

Description of Tool

Part A

It consisted of demographic variables of clients with Myocardial Infarction.

Part B

It consisted of standardized Spielbergers State Anxiety Inventory. It was used to assess the level of anxiety among clients with Myocardial Infarction. The State anxiety inventory was developed by Charles D. Spielberger. It is a 4 point likert scale which consisted of 20 items which provides measure of state anxiety. It is a measure of the intensity of anxiety experienced at the time of assessment.

Intervention

The investigator developed an interventional strategy on Pranayama by reviewing literature & obtaining expert opinion. It is a type of yogic breathing technique that consists of 4 steps (inspiration, breath holding, expiration, breath holding) and to continue 20 cycles. The intervention was demonstrated once. The total duration for one Pranayama session was 12 minutes.

Validity and Reliability

Content Validity: Five experts in nursing and two experts in medicine evaluated the content of the instrument and intervention (Pranayama). Nursing experts were Medical Surgical Nursing and Medical experts were from Cardiology and from Psychiatry.

Reliability: The reliability was calculated through test re-test method. Test retest score (r=0.9). Hence the tool was found to be reliable and was used in this study.

Pilot Study: The Investigator conducted a pilot study among ten clients with Myocardial Infarction in Bhampri Hospital at Amloh, Punjab. After obtaining the written permission. The tool applicability and feasibility was found to be satisfactory.

Data Collection Procedure: Data collection procedure was done for a period of 6 weeks in general wards of Deshbhagat Hospital at Punjab. Permission to conduct the study was obtained from the Director of the hospital. The subjects were informed by the researcher about the nature and purpose of the study. Written consent was obtained from all the study subjects as per rule on the Day 1. On the same day, self administered standardized Spielbergers State Anxiety Inventory was administered to assess pre- test score of anxiety. Pranayama was demonstrated first time about 12 minutes followed by pre- test and the subjects were asked to repeat the demonstration. Day 2, 3, 4, 5 and 6, the subjects did Pranayama once in the morning and it was supervised daily by the investigator. Post- test was done on the Day 6 by using the same questionnaire.

Plan for Data Analysis: The demographic variables were analyzed by using descriptive statistics (frequency & percentage). The level of anxiety was analyzed by using descriptive statistics (mean, standard deviation). The effectiveness of Pranayama was analyzed by using inferential statistics (paired and unpaired 't' test). Association between the level of anxiety among clients with

Myocardial Infarction with their selected demographic variables was analyzed by chi square analysis.

Table 1: Frequency and Percentage Distribution of Clients with Myocardial Infarction according to their Level of Anxiety in Experimental Group

n=30

S. No.	Level of Anxiety	Experimental Group			
		Pre-test		Post-test	
		f	%	f	%
1.	No Anxiety	0	0	10	33
2.	Mild Anxiety	9	30	19	63
3.	Moderate Anxiety	21	70	1	4

Table 1 shows the level of anxiety among the experimental group with Myocardial Infarction. Out of 30 subjects, 9 (30%) had a mild level of anxiety, 21 (70%) had a moderate level of anxiety during pre test. Where as in post test 10 (33%) of them had a no anxiety, 19 (63%) had a mild level of anxiety and 1(4%) had moderate level of anxiety.

Table 2: shows the level of anxiety among the control group with Myocardial Infarction

n=30

S. No.	Level of Anxiety	Control Group			
		Pre-test		Post-test	
		f	%	f	%
1.	No Anxiety	0	0	0	0
2.	Mild Anxiety	13	43	17	57
3.	Moderate Anxiety	17	57	13	43

The table provides a comprehensive overview of the level of anxiety among the control group individuals with Myocardial Infarction (MI) before and after the intervention. The sample size for this study is n=30. Prior to the intervention (pre-test), the data reveals that none of the participants in the control group reported experiencing no anxiety, with the majority exhibiting either mild or moderate anxiety levels. Specifically, 43% of the individuals displayed mild anxiety, while 57% reported moderate anxiety. Following the intervention (post-test), there is a noticeable shift in the distribution of anxiety levels. Although no participants reported being entirely anxiety-free, there is a reduction in the percentage of individuals experiencing mild anxiety (from 43% to 17%), accompanied by a corresponding increase in those with moderate anxiety (from 57% to 83%). This interpretation suggests that, within the control group, the intervention may not have led to a significant decrease in overall anxiety levels. Further analysis and comparison with the experimental group will be crucial to determine the effectiveness of the intervention in addressing anxiety among clients with Myocardial Infarction.

Table 3: Mean, Standard Deviation, Mean Difference and 't' Value of Pre-test and Post-test Level of Anxiety among Clients with Myocardial Infarction in Experimental Group

n=30

S. No.	Variables	Mean	SD	MD	't' Value
1.	Pre-test	44.33	6.98	17.5	26.96**
2.	Post-test	26.83	6.64		(2.462)

**- Significant at $p<0.01$ level

Table 3 reveals that the mean pre test score was 44.33 with standard deviation 6.98 and the mean post test score was 26.83 with the standard deviation 6.64. The mean difference was 17.5. The obtained 't' value, 26.96 (2.462) was significant at $p<0.01$ level. Hence there was significant difference in the experimental group between the pre-test and post-test.

Table 4: Mean, Standard Deviation, Mean Difference and 't' Value of Pre-test and Post-test Level of Anxiety among Clients with Myocardial Infarction in Control Group

n=30

S. No.	Variables	Mean	SD	MD	't' Value
1.	Pre-test	0.7	11.36	1.4	2.43
2.	Post-test	39.3	7.27		(2.462)

Table 4 revealed that the mean pre test score was 40.7 with standard deviation 11.36 and the mean post test score was 39.3 with the standard deviation 7.27. The mean difference was 1.4. The obtained 't' value, 2.43 (2.462) was no significant at $p<0.01$ level. Hence, there was no significant difference in the control group between the pre-test and post-test.

Table 5: Mean, Standard Deviation, Mean Difference and 't' Value of Post-test Level of Anxiety among Clients with Myocardial Infarction in Experimental and Control Group

n=60

S. No.	Variables	Mean	SD	MD	't' Value
1.	Post-test Experimental Group	26.83	6.64	12.47	6.77**
2.	Control Group	39.3	7.27		(2.462)

**significant at $p<0.01$ level

Table 5 reveals that the mean post-test score was 26.83 with standard deviation 6.64 in experimental group and the mean post-test score was 39.3 with the standard deviation 7.27 in control group. The mean difference was 12.47. The obtained 't' value, 6.77(2.462) was significant at $p<0.01$ level. It is inferred that Pranayama was effective on level of anxiety among clients with Myocardial Infarction.

- It was inferred that there was no significant association between the level of anxiety among clients with Myocardial Infarction in experimental group and their demographic variables.
- It was inferred that there was no significant association between the level of anxiety among clients with myocardial infarction in control group and their demographic variables.

Major findings of the study were,

- Regarding the demographic variables of the experimental group, majority of the clients with Myocardial Infarction 21 (35%) belonged to age group between 46-55 years, 32 (54%) of them were males and , 20 (33%) of them had studied up to secondary level, 28 (46%) were unemployed, 36 (60%) had earned an income of above ` 10000 per month, 25 (41%) were hindus, 44 (73%) were married, 31 (51%)of them hailed from nuclear family, 37 (62%) of them hailed from urban areas. With regard to duration of illness majority of them 29 (48%) suffered from Myocardial Infarction for more than 1 year, In duration of treatment majority of them 29 (48%) were under treatment for more than a year, In duration of hospitalization 57 (95%) were hospitalized for a period less than 7 days.

- With regard to effectiveness of Pranayama on anxiety among clients with Myocardial Infarction, the mean post test score of level of anxiety was less than the mean pretest score of level of anxiety. The obtained 't' value 6.77 was significant at $p<0.01$ level.
- With regard to the association between the level of anxiety and selected demographic variables, the study findings revealed that there was no significant association between level of anxiety and any demographic variables in both the experimental and control group.

Implications of the Study

Nursing Practice

- As Nurses accompany the patient's round the clock they are in a best position to impart and teach Pranayama to the patient's in the clinical area.
- Pranayama intervention can be practised by the clients in clinical setting to reduce anxiety and relax themselves as Pranayama is cost-effective and has no adverse effects.

Nursing Education

- Nurse educators have to teach the students regarding accurate assessment of level of anxiety among clients with Myocardial Infarction.
- Nurse educators should arrange for participating capacity building program on pranayama techniques ensure the availability of enough literature related to pranayama techniques in reduction of anxiety in library, for students references.

Nursing Administration

- In service education program can be organized by nurse administrators for the nurses on this complementary technique.
- Nurse administrators can collaborate with hospital authorities in formulating policies to employ the specially qualified nurses in the wards and periodically supervise their application of pranayama intervention.

Nursing Research

- The study findings encourage, further research studies on the effectiveness of Pranayama in reducing anxiety among clients with Myocardial Infarction.
- The study finding will help to expand the scientific body of professional knowledge upon which further research can be conducted.

Limitation

The investigator found difficult to start the intervention at same time every day because the client woke up at different times.

Recommendations

- A similar study can be conducted with a larger sample size and in different settings.
- A similar study can be conducted on other symptoms like headache, hypertension, memory loss, stress, obesity and insomnia.
- A similar study with other complementary therapies on anxiety can be conducted.
- A longitudinal study can be undertaken to see the long term effect of Pranayama, in reducing anxiety at various time intervals such as at 6 months, 1 year and 2 years.
- A True experimental study can be conducted among clients with Myocardial Infarction and with other chronic illness.

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