

Research Article**A study to evaluate the effectiveness of Mitchell's Relaxation Technique on physiological (Heart Rate, BP, Respiratory Rate) and psychological parameters of patients with selected cardiovascular disorders in selected hospital at Kanpur, UP.****Anju Krishna¹**

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ABSTRACT

Cardiovascular disorders are major contributors to physiological strain and psychological stress, necessitating effective non-pharmacological nursing interventions to stabilize vital signs and improve patient well-being. Mitchell's Relaxation Technique offers a structured approach to achieving autonomic stability through specific joint positioning and muscle ease. The study aimed to evaluate the effectiveness of Mitchell's Relaxation Technique on physiological parameters (Heart Rate, BP, Respiratory Rate) and psychological parameters (stress levels) among patients with selected cardiovascular disorders in selected hospitals at Kanpur, Uttar Pradesh. A quasi-experimental, Control Group Time Series Design was adopted. The sample consisted of 60 patients (30 in each group) diagnosed with cardiovascular disorders, selected using a non-probability convenience sampling technique from the LPS Institute of Cardiology, Kanpur. Data were collected using a structured demographic questionnaire, a physiological parameter recording sheet, and a Modified Perceived Stress Assessment Scale. The Experimental group practiced Mitchell's Relaxation Technique daily for seven days,

while the Control group received routine hospital care. At pre-test, both groups exhibited comparable moderate-to-high stress levels and elevated physiological markers. Following the 7-day intervention, the Experimental group showed a significant reduction in mean stress scores from 21.37 to 9.10. Physiological parameters in the Experimental group also improved significantly, with a total mean reduction of 6.817 bpm in Heart Rate, 9.65 mmHg in Systolic BP, 8.40 mmHg in Diastolic BP, and 4.95 breaths/min in Respiratory Rate. No Significant associations were found between pre-test scores with selected demographic variables. Based on these results, the positive hypotheses H_1 were accepted and H_2 was rejected, while null hypotheses H_{01} was rejected and H_{02} was accepted. Mitchell's Relaxation Technique is a highly effective, safe, and non-invasive nursing intervention that significantly stabilizes physiological parameters and reduces psychological stress in cardiovascular patients..

Keywords: *Mitchell's Relaxation Technique, Cardiovascular Disorders, Physiological Parameters, Heart Rate, Blood Pressure, Respiratory Rate, Perceived Stress, Nursing Intervention.*

INTRODUCTION

Cardiovascular disorders (CVDs) represent a formidable challenge to global public health, standing as the preeminent cause of morbidity and mortality across diverse populations. According to the World Health Organization (2024), cardiovascular diseases account for an estimated 17.9 million deaths each year, representing approximately 32% of all global deaths¹. The physiological manifestation of cardiovascular illness is most visibly observed through fluctuations in vital signs, specifically heart rate, blood pressure, and respiratory rate².

In clinical settings within Uttar Pradesh, particularly in specialized centers like the LPS Institute of Cardiology, the focus has traditionally been on pharmacological and interventional management³. The evolution of nursing as a scientific discipline has seen a paradigm shift from a purely curative model to a holistic, evidence-based rehabilitative approach⁴.

In the context of a busy cardiology ward in Kanpur, where patients often experience sensory overload from monitors and medical equipment, a structured relaxation protocol provides a mental and physical sanctuary.⁵ Mitchell's Relaxation Technique (MRT) represents a distinct and scientifically grounded approach to the management of physiological stress, developed specifically to overcome the limitations of earlier, more strenuous relaxation models⁶.

NEED FOR THE STUDY

Cardiovascular disorders remain the most significant contributor to the non-communicable disease burden globally, creating an urgent mandate for integrated care strategies.⁷ In the Indian subcontinent, the crisis of cardiovascular health is particularly acute due to a combination of genetic predisposition and rapid lifestyle transitions⁸. Indian researchers have noted

that these fluctuations are not merely symptoms but are active drivers of further myocardial damage and ventricular remodelling. Therefore, achieving hemodynamic stability requires more than just medication; it requires a mechanism to dampen the sympathetic nervous system's response. Relaxation techniques that focus on the neuromuscular pathway have shown promise in restoring this delicate autonomic balance.⁹

Mitchell's method, conversely, achieves neuromuscular release through passive positioning and the conscious registration of relaxation in antagonist muscle groups.¹⁰ By evaluating the effectiveness of a specific, structured technique like Mitchell's, this research seeks to provide a validated framework that nurses can implement at the bedside to manage tachycardia, hypertension, and tachypnea without the immediate need for escalating pharmacological sedation.¹¹ Mitchell's Relaxation Technique requires no specialized equipment, involves no additional cost to the patient, and can be taught by a nurse in a relatively short timeframe.¹² Despite the theoretical benefits of relaxation, there remains a significant empirical gap regarding the specific impact of Mitchell's technique on the physiological parameters of heart rate, blood pressure, and respiratory rate in the unique socio-cultural context of North India¹³.

In conclusion, the justification for this study lies in the critical need for a safe, non-invasive, and cost-effective nursing intervention that addresses the dual burden of physiological and psychological instability in cardiac patients.

STATEMENT OF THE PROBLEM

A study to evaluate the effectiveness of Mitchell's Relaxation Technique on

physiological (Heart Rate, BP, Respiratory Rate) and psychological parameters of patients with selected cardiovascular disorders in selected hospital at Kanpur, UP.

OBJECTIVES

1. To assess the existing level of physiological and psychological parameters of patients with selected cardiovascular disorders in both experimental and control groups.
2. To evaluate the effectiveness of Mitchell's Relaxation technique on physiological and psychological parameters of patients with selected cardiovascular disorders in experimental group.
3. To find out the association between pre-test scores of physiological and psychological parameters of patients with selected cardiovascular disorders in both experimental and control group with their selected socio-demographic variables.

HYPOTHESIS

Null Hypothesis

H₀₁: There will be no significant difference between pre and post-test score of physiological and psychological parameters among the person with selected cardiovascular disorders.

H₀₂: There will be no significant association between pre-test score of physiological and psychological parameters of patients with selected cardiovascular disorders with their selected socio-demographic variables

Positive Hypothesis

H₁: There will a significant difference between pre and post-test score of physiological and psychological parameters among the person with selected cardiovascular disorders.

H₂: There will be a significant association between pre-test score of physiological and psychological parameters of patients with selected cardiovascular disorders with their selected socio-demographic variables.

METHODS AND MATERIALS

Research approach

For the present study, a quantitative evaluative research approach was adopted

Research design

The research design selected for the present study is a Quasi-Experimental, Control Group Time Series Design.

VARIABLES

- **Independent Variable:** The independent variable in this study is Mitchell's Relaxation Technique, which is the non-pharmacological intervention administered to the experimental group.
- **Dependent Variables:** The dependent variables of the study are the Physiological Parameters (Heart Rate, Blood Pressure, and Respiratory Rate) and the Psychological Parameters (Stress level as measured by the Modified Perceived Stress Assessment Scale).
- **Socio-Demographic** These refer to the background characteristics of the patients that may influence their physiological response or stress levels. The variables considered in this study include Age (in years), Gender, Religion, Educational Status, Marital Status, Monthly Income (INR), Area of Living, Food Habits, Type of Cardiovascular Disorder Diagnosed, Previous Knowledge about Mitchell's Relaxation Technique.

POPULATION

In the present study, the population refers to all patients diagnosed with selected cardiovascular disorders who may experience physiological instability or psychological stress and could benefit from non-pharmacological relaxation interventions.

Target population

The target population for this study comprises patients with selected cardiovascular disorders admitted to selected hospitals in Kanpur, Uttar Pradesh.

Accessible population

The accessible population in the present study consists of patients with cardiovascular disorders admitted to the LPS Institute of Cardiology, Kanpur, who meet the inclusion criteria and are available during the period of data collection.

SAMPLE

The sample for the present study consists of patients diagnosed with selected cardiovascular disorders who are admitted to the selected hospitals in Kanpur, Uttar Pradesh

SAMPLE SIZE

The total sample size for the study is 60 patients. This sample is divided into two groups, consisting of 30 patients assigned to the experimental group and 30 patients assigned to the control group.

SETTING

The setting of the present study was LPS Institute of Cardiology, Kanpur, Uttar Pradesh.

SAMPLING TECHNIQUES

The sampling technique adopted for the present study is the Non-Probability Convenience Sampling technique

SAMPLING CRITERIA

Inclusion Criteria

The study includes patients with cardiovascular disorders who meet the following requirements:

- Having selected cardiovascular disorders
- Can read and write Hindi & English
- Available at the time of data collection
- Willing to participate in the study

Exclusion Criteria

The study excludes patients with cardiovascular disorders who are:

- With disorders other than cardiovascular
- Contraindicated to do exercises
- With co-morbid disorders
- Having habit of meditation

DESCRIPTION OF THE TOOL

Section A: Socio-Demographic Questionnaire This section was designed to

collect background information from patients which may influence their physiological and psychological state. It includes:

- Age (in years), Gender, Religion, Educational Status, Marital Status, Monthly Income (INR), Area of Living, Food Habits, Type of Cardiovascular Disorder Diagnosed, and Previous Knowledge about Mitchell's Relaxation Technique.

Section B: Physiological Parameters

Recording Sheet This section is used to record the daily observations of the patients' vital signs over the 7-day study period. It includes:

- Heart Rate (beats per minute)
- Blood Pressure (Systolic and Diastolic in mmHg)
- Respiratory Rate (breaths per minute)

Section C: Modified Perceived Stress

Assessment Scale A modified Likert scale was used to assess the psychological stress levels of the participants before and after the intervention.

RESULTS & FINDINGS

Section A

Major findings of the present study are;

- The age distribution analysis shows that the 50–59 year age group is the most represented in the study.
- The gender distribution across both groups was relatively comparable, with a slight predominance of male participants.
- The majority of participants were Hindu, representing 22(73.3%) in the experimental group and 20(66.7%) in the control group.
- The majority of participants were married, representing 24(80.0%) in the experimental group and 23(76.7%) in the control group.
- The socio-economic profile of the participants reveals that the largest group across both study arms belongs to the Rs. 10,001–20,000 income bracket, with 12(40.0%) in the experimental group and 13(43.3%) in the control group.

- The geographical distribution shows a fairly balanced representation of participants from both urban and rural backgrounds.
- The dietary habits of the participants indicate that a majority follow a non-vegetarian diet, with 19(63.3%) in the experimental group and 18(60.0%) in the control group.
- Hypertension is the most prevalent diagnosis in the study population, affecting 12(40.0%) of the experimental group and 14(46.7%) of the control group.
- The vast majority of participants in both the experimental group 26(86.7%) and the control group 27(90.0%) reported having no prior knowledge of Mitchell's Relaxation Technique.

Section II: Assess the existing level of psychological and physiological

parameters of patients with selected cardiovascular disorders in both experimental and control groups.

The majority of participants (55%) had moderate stress, followed by high stress (30%) and low stress (15%). On Day 1, both groups showed elevated physiological parameters, with mean values above 80%. By Day 7, the Experimental group demonstrated marked improvement, with reduced heart rate (74.8 bpm), systolic blood pressure (126 mmHg), and respiratory rate compared with the Control group, which showed minimal change. The findings indicate that Mitchell's Relaxation Technique effectively reduced stress and improved physiological parameters among cardiovascular patients

Section III: Evaluate the effectiveness of Mitchell's Relaxation technique on physiological and psychological parameters of patients with selected cardiovascular disorders in experimental group

Effectiveness of Mitchell's Relaxation technique on psychological parameter in experimental group

n=60

Variable	N	Mean	Median	SD	SE	t	df	p
Pretest Stress	30	21.37	21.00	8.10	1.48	5.56	29	< .001
Post-test Stress	30	9.10	8.00	7.37	1.35			

The paired samples t-test conducted on a sample of 30 participants revealed a statistically significant decrease in stress scores from the pretest (Mean = 21.37, SD = 8.10) to the posttest. With a t-statistic of 5.56 and 29 degrees of freedom, the resulting p-value was less than .001, indicating that the observed reduction in stress is highly unlikely to have occurred by chance. These results suggest that the intervention or timeframe between measurements was effective in lowering reported stress levels among the participants. With a t-statistic of 5.56 (df = 29) and a p-value < .001, the result is statistically significant. Therefore, the Null Hypothesis (H_{01})—stating there would be no significant difference—is rejected, and the Positive Hypothesis (H_1) is accepted.

Effectiveness of Mitchell's Relaxation technique on psychological parameter in control group

n=60

Variable	N	Mean	Median	SD	SE	t-statistic	df	P
Pretest Stress	30	23.00	22.50	10.58	1.93	0.283	29	0.779
Posttest Stress	30	22.40	21.50	8.78	1.60			

The paired t-test showed no significant change in stress scores ($t = 0.283$, $p = 0.779$). However, repeated-measures ANOVA revealed significant changes over time and significant Time $\times$ Group interactions for heart rate, systolic BP, diastolic BP, and respiratory rate ($p < 0.001$), indicating greater improvement in the experimental group than the control group. Greenhouse-Geisser correction was applied due to violation of sphericity. Thus, H_1 was accepted and H_{01} was rejected, confirming the effectiveness of the intervention on physiological parameters.

Section IV: Association between pre-test scores of physiological and psychological parameters of patients with selected cardiovascular disorders in both experimental and control group with their selected socio-demographic variables.

The analysis revealed that none of the selected demographic variables had a statistically significant association with the pre-test scores of heart rate, systolic blood pressure, diastolic blood pressure, respiratory rate, and stress among the study participants. Since no significant relationships were observed between the demographic variables and the physiological and psychological parameters. Hence, the research hypothesis (H_2) was rejected and the null hypothesis (H_{02}) was accepted.

IMPLICATIONS

Nursing Practice

- The technique should be integrated into routine cardiac nursing care plans to move patients from "Moderate/Severe" physiological strain toward a stable clinical state.

- Nurses should encourage the daily practice of the technique, as the study confirms a cumulative physiological benefit over a 7-day period.

Nursing Education

- Mitchell's Relaxation Technique should be included in the Medical-Surgical Nursing curriculum as a core non-pharmacological strategy for cardiovascular care.
- Nursing students should practice the specific joint-alignment principles of the technique in skill laboratories before their clinical postings in cardiology departments.

Nursing Research

- This study provides a baseline for further research into the long-term effects of relaxation techniques on cardiac remodeling and patient re-hospitalization rates.

Nursing Administration

- Nurse administrators should establish standardized protocols that prioritize the scheduled practice of relaxation techniques for all stable cardiovascular patients.

LIMITATIONS

- The time duration between the pre-test and the post-test was only one week.

- The number of sample selected for the present study was only 60 patients
- The study was limited to the patients admitted with selected cardiovascular disorders.
- The study was limited to the selected hospital.

RECOMMENDATIONS

- Future studies should be conducted with a larger sample size across diverse geographical settings to strengthen the external validity of Mitchell's Relaxation Technique.
- Comparative studies should be undertaken to evaluate the technique against routine care for specific disorders like Arrhythmia or Heart Failure to determine specialized benefits.
- Qualitative studies should explore the lived experiences of cardiac patients regarding the perceived barriers to maintaining daily relaxation practice at home.
- A longitudinal study is recommended to follow up with patients at 3 and 6 months post-intervention to evaluate the sustained impact on blood pressure and stress management

CONCLUSION

- Mitchell's Relaxation Technique emerges as a safe, simple, cost-effective, and non-invasive nursing intervention for reducing physiological strain and psychological stress among cardiovascular patients. Its holistic approach addresses the requirements of cardiac recovery while facilitating autonomic stability. The study recommends the integration of this technique into routine medical-surgical nursing protocols and its inclusion in cardiac rehabilitation programs. Such integration could significantly enhance patient comfort, support the recovery process, and promote overall cardiovascular health

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