

A Study to Assess the Effectiveness of Anxiety and Physiological Parameters Among Elderly in Selected Old Home, Coimbatore

S.P. Deepa^{1*}, Raji K.², T.K. Kiruthika³

Abstract

An experimental study with a two-group pretest and posttest design was conducted to evaluate the effectiveness of massage therapy on anxiety and physiological parameters among elderly adults residing in Annai Mother Theresa Old Age Home, Coimbatore. The study included 40 participants selected through simple random sampling and assigned equally to experimental and control groups. Data were collected using a Socio-Demographic Data Sheet, the State-Trait Anxiety Inventory (STAI), and physiological measures, including pulse rate, respiratory rate, systolic blood pressure, and diastolic blood pressure. The experimental intervention included back massage techniques, such as effleurage, petrissage, kneading, friction, and frolement, and hand massage techniques, including petrissage, kneading, and friction. Descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics (t-test, z-test, coefficient of correlation, and chi-square test) were used for data analysis. Results showed that 65% of participants had moderate anxiety, 90% had normal pulse rate, 70% exhibited tachypnea, 60% had systolic prehypertension, and 55% had diastolic hypertension. Massage therapy was effective in reducing anxiety and stabilizing physiological parameters across three consecutive days, with the most significant improvement observed on the third day. The calculated Z value exceeded the tabulated value at the 5% significance level for all physiological parameters, leading to rejection of the null hypothesis. No significant association was found between systolic blood pressure and selected demographic variables in either group. The findings suggest that massage therapy is beneficial in promoting relaxation and physiological stability among the elderly.

Keywords: Massage therapy, anxiety, elderly, physiological parameters, experimental study

INTRODUCTION

The human lifespan encompasses a series of developmental stages from gestation to death, including infancy, childhood, adolescence, adulthood, and senescence. Growth begins during the prenatal period, leading to the full development of internal organs. About a decade later, the body gradually begins to lose vital capacities, marking the onset of aging [1].

The Indian family system has traditionally offered natural social security and support to elderly individuals. However, in more recent times, the love and affection that prevailed in the joint family system of our Indian culture is now losing place. Many elderly parents are now compelled to leave their children and reside in old-age homes. Once rare, these homes have recently become more common across the country, reflecting a widening gap between generations [2].

*Author for Correspondence

S.P. Deepa
E-mail: kanimozhi.nedumaran@gmail.com

¹Professor, Department of Nursing, Venkateswara College of Nursing, Chennai, Tamil Nadu, India

²Professor, Department of Nursing, K. G. College of Nursing, Coimbatore, Tamil Nadu, India

³Professor, Department of Mental Health Nursing, Dhanvantri College of Nursing, Pallakkapalayam, Tamil Nadu, India

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India is one of the sear countries. By the year 2020, the estimated population of the elderly will be 142 million or about 11% of the country's population. The National Population Survey shows that the population of India is 1.029 billion. Nearly 77 million constitute the elderly population, among them 75% of elderly people live in rural areas, and 25% live in urban areas. The record shows that 38 million are males and 39 million are females [3].

National Health interview survey shows that 39% of people over 65 years of age suffer from some limitation of activity due to chronic conditions, and 11% are unable to carry out major activities because of their anxiety toward illness, and suffer from some kind of anxiety disorders [4].

Many researchers have stated that anxiety is uncontrollable, and ambiguity is more stressful for geriatric patients, which can be predicted, modified, or terminated. Nurses, being the central figure in geriatric care, can help to identify the level of anxiety and provide opportunities for these people to cope with the stressful situation [5].

Large-scale surveys indicate that 35–60% of adults have used some form of complementary or alternative medicine (CAM). Among these, 24% used herbal remedies, 20% used chiropractic treatments, 15% used massage therapy, and 14% used acupuncture, making them the most reported therapies. CAM use was associated with improved health status in 80% of the participants. These findings suggest a significant interest in complementary and alternative medicine among elderly individuals [6].

Massage, an act of touch with bare human hands, which nevertheless involves coordination of high order and use of great skills. It is an entity needed by both healthy and sick people. Massages are varied in their application and can be given in different parts of the body like face, foot, hand, and back. Humanism places minimal value on human care and concern, which is heavily reliant on technology. In this situation, nurses will provide “hi-touch” treatment alongside “hi-tech” care [7].

NEED FOR THE STUDY

Approximately 25% of people are predicted to suffer from an anxiety at some point in their lives. Compared to men, women are twice as likely to experience anxiety problems. About 15% of people over 65 suffer from anxiety. Regretfully, barely 50% of patients obtain therapy for their illness. Mental disorders are frequently the result of anxiety problems. Additionally, substance use is more likely to harm those with anxiety disorders. Therefore, before an anxiety illness can be effectively treated, it must be addressed [8].

The elderly were neglected among family members, and their needs were not met adequately. So, they underwent long sufferings of pain, disrespect, and humiliation the society. They suffered from various diseases, like hypertension, mental disorders, and cardiac disease, reduced their life satisfaction [9].

The effects of slow-stroke hand and back massages on physiological and psychological aspects in older adults were investigated in meta-analysis research comprising 21 studies. The intervention protocols were a 3-minute slow-stroke back massage and a 10-minute hand massage. The findings of the study revealed that Physiological and psychological parameters indicated that slow-stroke back massage and hand massage lead to relaxation in elderly. The researcher concluded that this massage was effective [10].

Touch is a language spoken through the hands and understood by the heart. It is a universal and basic aspect of all nurse-patient relationships. Touch is often described as the first and most basic means of communication; nevertheless, relatively little is known about touch as it relates to health [11].

Nurses traditionally have used massages to promote relaxation, relieve discomfort, and show care. It has been concluded that massage therapy is an effective tool to manage stress. However, the studies

reporting the effectiveness of massage have often been conducted on healthy subjects with a small sample size. The effects of slow-stroke hand and back massages on physiological and psychological aspects in older adults were investigated in meta-analysis research comprising 21 studies data. Therefore, this study may be considered important in providing empirical evidence for its effectiveness on physiological and psychological responses [12].

OBJECTIVES

- To assess the level of anxiety and physiological parameters among elderly in experimental and control group.
- To provide massage among elderly in the experimental group.
- To reassess the level of anxiety and physiological parameters among elderly in both groups.
- To assess how well massage works for senior citizens in both groups.
- To associate the level of anxiety and physiological parameters with selected demographic variables in both groups.

OPERATIONAL DEFINITIONS

Effectiveness

It refers to the outcome of massage therapy in terms of the reduction of anxiety and maintains normal limits of physiological parameters after 30 minutes of massage.

Massage

Back Massage

It refers to a technique by which the back of the patients, extending from the sacrum to the nape and shoulder blade is pressed using slow, gentle movements, like effleurage, friction, kneading, and frolement technique, by using coconut oil.

Hand Massage

It is a technique by which hands are gently and rhythmically stroked using coconut oil.

Anxiety

Unpleasant feeling that is typically associated with uneasiness, apprehension, fear, and worry.

Physiological Parameters

It includes pulse rate, respiratory rate, and systolic and diastolic blood pressure of the elderly.

Elderly

People who are above 60 years of age.

ASSUMPTIONS

- There will be a decrease in the level of anxiety among elderly people after receiving a massage.
- There will be stabilization of physiological parameters within normal limits among elderly after receiving a massage.

HYPOTHESIS

- After having a massage, the experimental group's anxiety levels differ significantly from those of the control group.
- Following the massage, the experimental group's physiological measures differ significantly from those of the control group.

LIMITATIONS

- Elderly people who are above 60 years.
- Elderly people at the selected old age home.

- Elderly people who are willing to participate.

PROJECTED OUTCOMES

- The findings of the study will reveal the need and effectiveness of massage for elderly people to reduce the level of anxiety and maintain physiological parameters within normal limits.
- The findings of the study will help the nurses to adopt massage therapy as a measure of relaxation for elderly staying in old age homes.

CONCEPTUAL FRAMEWORK

The conceptual framework for this study was adopted from Roy's adaptation model, which was designed by Sr. Callista Roy's in the year (1976). Roy's model focuses on the concept of adaptation. She considered individual as an open system, adjusted with stimuli of self and environment. When an individual reacts favorably to the stimuli, adaptation takes place, fostering the individual's integrity and promoting health. An individual's integrity is disrupted when they exhibit a maladaptive response to stimuli.

As per this model, the individual's adaptive response includes input (stimuli), Throughput includes control process (the regulator and cognator mechanisms), effector modes, and output (adaptive and maladaptive responses) and feedback.

MATERIALS AND METHODS

- *Research Design:* True experimental design with experimental and control group (Table 1).

Table 1. Diagrammatic representation of research design in experimental group.

Study Group	Pretest	Intervention	Posttest
Experimental Group	O1	Massage therapy.	O2
Control Group	O3	–	O4

Variables

- *Independent Variables:* Massage.
- *Dependent Variables:* Anxiety and physiological parameters such as pulse rate, respiratory rate, and systolic and diastolic blood pressure.
- *Influencing Variables:* Age, sex, marital status, number of children, duration of stay, couples staying together, and frequency of visit by family members.
- *Extraneous Variables:* Recreational facilities and support system.
- *Setting of the Study:* The study was conducted at Annai Mother Theresa Old Age Home, Puliyakulam in Coimbatore.

Sample

Elderly adults of more than 60 years of age at Annai Mother Theresa Old Age Home.

Sample Size

The total sample size was 40.

Sampling Technique

Simple random sampling technique.

CRITERIA FOR SAMPLE SELECTION

Inclusion Criteria

- Elderly who are in old age home.
- Elderly people are over 60 years.

- Elderly who are willing to participate.
- Elderly who can talk in Tamil or English.

Exclusion Criteria

- Elderly who are undergoing other therapy such as music therapy, muscle relaxation therapy.
- Elderly people who are mentally ill.
- Elderly people who are having surgery in the back, skin allergic condition, and malignant tumors.

Tools Used for the Study

The study instruments were organized into two main sections:

Section A: Demographic Variables

This section included data on the participants' personal and social characteristics, such as age, sex, religion, educational status, marital status, duration of residence in the old age home, frequency of family visits, present source of income, whether the participant was staying with a spouse, number of children, and reasons for residing in the old age home.

Section B: Assessment Tools

Tool I: State-Trait Anxiety Inventory (STAI): The STAI developed by Charles D. Spielberger (1968) was used to measure the participants' anxiety levels. The tool consists of 20 state anxiety statements that assess how the respondent feels "at the moment." Each statement has four response options:

- Not at all.
- Somewhat.
- Moderately so.
- Very much so.

The inventory includes both positive and negative statements. Positive items are reverse scored, while negative items are scored directly.

- *Positive statements:* Items 3, 4, 6, 7, 9, 12, 13, 14, 17, 18.
- *Negative statements:* Items 1, 2, 5, 8, 10, 11, 15, 16, 19, 20.

The scoring system is as follows:

- *Maximum score:* 80.
- *Minimum score:* 20.
- *Normal level:* 0–20.
- *Mild anxiety:* 21–40.
- *Moderate anxiety:* 41–60.
- *Severe anxiety:* 61–80.

Tool II: Physiological Parameters: Physiological parameters included pulse rate, respiratory rate, and systolic and diastolic blood pressure. These measures were used to assess changes in physiological responses before and after the intervention.

Massage Techniques

The intervention consisted of two types of massage:

- *Back massage:* Techniques used included effleurage, petrissage, kneading, friction, and frolement.
- *Hand massage:* Techniques used included petrissage, kneading, and friction.

Ethical Consideration

- Written permission was obtained from the in charge of the old age home.

- Prior informed consent was obtained from the study participants.

METHOD OF DATA COLLECTION

A written permission was obtained from the administrator of Annai Mother Theresa Old Age Home, Coimbatore. Data was collected between 28.6.10 and 28.7.10, which was a 4-week period. The subjects were introduced to the investigator before the exam. The sample was informed of the study's goal, the subjects' confidentiality was guaranteed, and the sample gave their consent.

The investigator selected the control group and collected demographic data using an interview schedule and assessed anxiety, physiological parameters (pulse rate, respiratory rate, systolic and diastolic blood pressure) by using STAI scale and sphygmomanometer. Routine care is provided for the control group in morning and evening sessions. At the end of every evening session, after an interval of 20 minutes anxiety and physiological parameters were reassessed using the same tools for consecutive 3 days.

The investigator selected the experimental group and collected demographic data using an interview schedule and assessed anxiety, physiological parameters (pulse rate, respiratory rate, and systolic and diastolic blood pressure) by using STAI scale and sphygmomanometer. The investigator provided 20 minutes back massage and 10 minutes hand massage in morning and evening sessions. At the end of every evening session, after an interval of 20 minutes anxiety and physiological parameters were reassessed using the same tools for consecutive 3 days.

Plan for Data Analysis

Data were analyzed using both descriptive and inferential statistics in accordance with the study objectives and hypotheses.

Descriptive Statistics

Descriptive statistics, such as frequency, percentage, mean, and standard deviation, were used to summarize and describe the study variables.

- *Demographic variables*: were analyzed using frequency and percentage to describe the characteristics of the participants.
- *Physiological parameters*: pulse rate, respiratory rate, systolic and diastolic blood pressure, and anxiety scores in both the experimental and control groups were analyzed using frequency, percentage, mean, and standard deviation to determine the distribution and central tendency of the data.

Inferential Statistics

Inferential statistical methods were employed to test the hypotheses and determine relationships, associations, and differences between variables. The following statistical tests were used.

- *Paired t-test*: To determine the significance of the difference between pretest and posttest scores within the experimental group.
- *Z-test*: To compare the effectiveness of massage therapy between the experimental and control groups.
- *Coefficient of Correlation (r)*: To assess the relationship between anxiety levels and physiological parameters in both groups.
- *Chi-square test (χ^2)*: To determine the association between selected demographic variables and the study findings in both groups.

All statistical analyses were performed at a 5% level of significance ($p < 0.05$).

ANALYSIS AND INTERPRETATION

Table 2 shows the distribution of demographic variables in both the groups.

Regarding the age of the subject, in experimental group, 9 (45%) were between 60 and 69 years, 8 (40%) were between 70 and 79 years, and 3 (15%) were between more than 79 years. In control group, 8 (40%) were between 60 and 69 years, 8 (40%) were between 70 and 79 years and 4 (20%) were more than 79 years.

- Regarding sex, in experimental group, 3 (15%) were males and 17 (85%) were females. In control group, 3 (15%) were males and 17 (85%) were females.

Table 2. Distribution of demographic variables.

S.N.	Demographic Variables	Experimental Group		Control Group	
		No.	Percentage (%)	No.	Percentage (%)
1	<i>Age</i>				
	a. 60–69 years	9	45	8	40
	b. 70–79 years	8	40	8	40
	c. Above 79 years	3	15	4	20
2	<i>Sex</i>				
	a. Male	3	15	3	15
	b. Female	17	85	17	85
3	<i>Religion</i>				
	a. Hindu	12	60	15	75
	b. Christian	8	40	5	25
4	<i>Educational status</i>				
	a. Illiterate	10	50	12	60
	b. Primary education	7	35	2	10
	c. Secondary education	3	15	6	30
5	<i>Marital status</i>				
	a. Unmarried	5	25	5	25
	b. Married	13	65	14	70
	c. Divorced	1	5	–	–
	d. Widow	1	5	–	–
	e. Separated	–	–	1	5
6	<i>No of years residing in old age home</i>				
	a. Less than 1 year	9	45	2	10
	b. 1–5 years	7	35	12	60
	c. 6–10 years	2	10	4	20
	d. More than 10 years	2	10	2	10
7	<i>Frequency of visit by family member</i>				
	a. Thrice a week	4	20	–	–
	b. Never	16	80	20	100
8	<i>Present source of income</i>				
	a. Institution	20	100	20	100
9	<i>Is your spouse staying with you at the old age home?</i>				
	a. Yes	2	10	2	10
	b. No	18	90	18	90
10	<i>Number of children</i>				
	a. One	2	10	5	25
	b. Two	3	15	1	5
	c. Three or more	4	20	2	10
	d. None	11	55	12	60
11	<i>Reason for staying in old age home</i>				
	a. Voluntary	2	10	4	20
	b. Forcefully left by family members	4	20	3	15
	c. Destitute	14	70	13	65

Note: n = 40.

- Regarding religion, in experimental group, 12 (60%) were Hindu and 8 (40%) were Christian. In control group, 15 (75%) were Hindu and 5 (25%) were Christian.
- About educational status, in experimental group, 10 (50%) were illiterate, 7 (35%) were having primary education and 3 (15%) were having secondary education. In control group, 12 (60%) were illiterate, 2 (10%) were having primary education, and 6 (30%) were having secondary education.
- Regarding marital status, in experimental groups, 5 (25%) were unmarried, 13 (65%) were married, 1 (5%) was divorced, and 1 (5%) was widow. In control group, 5 (25%) were unmarried, 14 (70%) were married, 1 (5%) was separated.
- Regarding number of years of residing in old age home, in experimental group, 9 (45%) were resided less than 1 year, 7 (35%) resided between 1 and 5 years, 2 (10%) were between 6 and 10 years and 2 (10%) were resided more than 10 years. In control group, 2 (10%) resided less than 1 year, 12 (60%) resided between 1 and 5 years, 4 (20%) were between 6 and 10 years and 2 (10%) resided more than 10 years.
- Regarding frequency of visits by family members, 16 (80%) of them are not visited by family members, 4 (20%) of them are visited by three times a week. In control groups, 20 (100%) of them are not visited by family members.
- Regarding present source of income, in experimental and control group, 20 (100%) were getting support from institution.
- Regarding couples staying together at the old age home, in experimental and control group, 2 (10%) were staying together and 18 (90%) were staying alone.
- Regarding number of children, in experimental group, 2 (10%) were having only one child, 3 (15%) were having two children, 4 (20%) were having three children, and 11 (55%) were not having children. In control group, 5 (25%) were having only one child, 1 (5%) were having two children, 2 (10%) were having three children, and 12(60%) were not having children.
- Regarding reason for staying at an old age home, in experimental group, 2 (10%) were voluntary, 4 (20%) were forcefully left by family members, 14 (70%) were destitute. In control group, 4 (20%) were voluntary, 3 (15%) were forcefully left by family members, and 13 (65%) were destitute.
- The results revealed that majority of the destitutes were married females who belonged to Hindu religion and were illiterate.

Table 3. Distribution of pre- and post-tests scores of anxieties and physiological parameters in the experimental group.

S.N.	Parameters		Experimental Group											
			I Day				II Day				III Day			
			Pre		Post		Pre		Post		Pre		Post	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	Anxiety	Normal	–	–	1	5	1	5	2	10	3	15	4	20
		Mild	5	25	4	20	5	25	5	25	7	35	12	60
		Moderate	13	65	15	75	14	70	13	65	10	50	4	20
		Severe	2	10	–	–	–	–	–	–	–	–	–	–
2	Pulse rate	Normal	18	90	18	90	20	100	20	100	20	100	20	100
		Brady cardia	2	10	2	10	–	–	–	–	–	–	–	–
3	Respiratory Rate	Normal	6	30	10	50	10	50	11	55	13	65	13	65
		Tachypnea	14	70	10	50	10	50	9	45	7	35	7	35
4	Systolic blood pressure	Normal	3	15	4	20	6	30	10	50	12	60	15	75
		Pre-hypertension	12	60	12	60	12	60	8	40	7	35	4	20
		Hypertension	5	25	4	20	2	10	2	10	1	5	1	5
5	Diastolic blood pressure	Normal	1	5	2	10	3	15	10	50	11	55	12	60
		Pre-hypertension	8	40	10	50	11	55	6	30	7	35	6	30
		Hypertension	11	55	8	40	6	30	4	20	2	10	2	10

Note: n = 20.

From Table 3 in experimental group, during I day pretest anxiety, 5 (25%) had mild anxiety, 13 (65%) had moderate anxiety, and 2 (10%) had severe anxiety. In posttest, 1 (5%) had no anxiety, 4 (20%) had mild anxiety, and 15 (75%) had moderate anxiety.

- II-day pretest anxiety, 1 (5%) had no anxiety, 5 (25%) had mild anxiety, and 14 (70%) had moderate anxiety. In posttest, 2 (10%) had no anxiety, 5 (25%) had mild anxiety, and 13 (70%) had moderate anxiety.
- III-day pretest anxiety, 3 (15%) had no anxiety, 7 (30%) had mild anxiety, and 10 (50%) had moderate anxiety. In posttest 4 (20%) had no anxiety, 12 (60%) had mild anxiety, and 4 (20%) had moderate anxiety.

Regarding I day pretest and posttest pulse rate, 18 (90%) had normal, 2 (10%) had bradycardia. Regarding II- and III-day pre- and post-test pulse rate, 20 (100%) had normal pulse rate.

- Regarding I day pretest respiratory rate, 6 (30%) had normal respiratory rate and 14 (70%) tachypnea. In posttest respiratory rate, 10 (50%) had normal respiratory rate and 10 (50%) had tachypnea.
- Regarding II day pretest respiratory rate, 10 (50%) had normal respiratory rate and 10 (50%) had tachypnea. In posttest, 11 (55%) had normal respiratory rate, 9 (45%) had tachypnea.
- Regarding III day pretest and posttest respiratory rate, 13 (65%) had normal respiratory rate and 7 (35%) had tachypnea.
- Regarding I day pretest systolic blood pressure, group 3 (15%) had normal, 12 (60%) had prehypertension and 5 (25%) had hypertension. In posttest systolic blood pressure, 4 (20%) was normal, 12 (60%) had pre-hypertension, and 4 (20%) had hypertension.
- Regarding II day pretest systolic blood pressure, 6 (30%) had normal, 12 (60%) had prehypertension, and 2 (10%) had hypertension. In posttest systolic blood pressure, 10 (50%) had normal, 8 (40%) had pre-hypertension, and 2 (10%) had hypertension.
- Regarding III day pretest systolic blood pressure, 12 (60%) was normal, 7 (35%) had prehypertension and 1 (5%) had hypertension. In posttest systolic blood pressure, 15 (75%) had normal, 4 (20%) had pre-hypertension, and 1 (5%) had hypertension.
- Regarding I day pretest diastolic blood pressure, 1 (5%) was normal, 8 (40%) had prehypertension and 11 (55%) had hypertension. In posttest diastolic blood pressure, 2 (10%) had normal, 10 (50%) had pre-hypertension, and 8 (40%) had hypertension.
- Regarding II day pretest diastolic blood pressure, 3 (15%) had normal, 11 (55%) had prehypertension and 6 (25%) had hypertension. In posttest diastolic blood pressure, 10 (50%) had normal, 6 (30%) had prehypertension, and 4 (20%) had hypertension.
- Regarding III day pretest diastolic blood pressure, 9 (45%) had normal, 7 (35%) had prehypertension and 2 (10%) had hypertension. In posttest diastolic blood pressure, 12 (60%) had normal, 6 (30%) had prehypertension, and 2 (10%) had hypertension.
- The results revealed that 65% had moderate anxiety, 90% had normal pulse rate, 70% had tachypnea, 60% had systolic prehypertension and 55% had diastolic hypertension.

From Table 4 in control group, during I day pretest anxiety, 4 (20%) had mild anxiety, 11 (55%) had moderate anxiety and 5 (25%) had severe anxiety. In posttest 4 (20%) had mild anxiety, 11 (55%) had moderate anxiety and 5 (25%) had severe anxiety.

- II-day pretest anxiety, 3 (15%) had mild anxiety, 11 (55%) had moderate anxiety, 6 (30%) had severe anxiety. In posttest, 3 (15%) had mild anxiety, 10 (50%) had moderate anxiety, and 7 (35%) had severe anxiety.
- During III-day pretest anxiety, 2 (10%) had mild anxiety, 11 (55%) had moderate anxiety, and 7 (35%) had severe anxiety. In posttest, 2 (10%) had mild anxiety, 11 (55%) had moderate anxiety, and 7 (35%) had severe anxiety.
- Regarding I day pretest pulse rate, 17 (85%) had normal pulse rate 3 (15%) had bradycardia. In posttest, 15 (75%) had normal, 3 (15%) had bradycardia, and 2 (10%) had tachycardia. Regarding II day pretest and posttest pulse rate, 14 (70%) were normal, 4 (20%) had bradycardia, and 2 (10%) had tachycardia.

Table 4. Distribution of pre- and post-tests scores of anxiety and physiological parameters in the control group.

S.N.	Parameters		Control Group											
			I Day				II Day				III Day			
			Pre		Post		Pre		Post		Pre		Post	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	Anxiety	Mild	4	20	4	20	3	15	3	15	2	10	2	10
		Moderate	11	55	11	55	11	55	10	50	11	55	11	55
		Severe	5	25	5	25	6	30	7	35	7	35	7	35
2	Pulse rate	Normal	17	85	15	75	14	70	14	70	13	65	12	60
		Brady cardia	3	15	3	15	4	20	4	20	5	25	5	25
		Tachycardia	–	–	2	10	2	10	2	10	2	10	3	15
3	Respiratory Rate	Normal	7	35	8	40	8	40	7	45	6	30	6	30
		Tachypnea	13	65	12	60	12	60	13	55	14	70	14	70
4	Systolic blood pressure	Normal	8	40	8	40	7	35	7	35	7	35	7	35
		Pre-hypertension	9	45	9	45	10	50	10	50	11	55	11	55
		Hypertension	3	15	3	15	3	15	3	15	2	10	2	10
5	Diastolic blood pressure	Normal	2	10	2	10	2	10	2	10	2	10	2	10
		Pre-hypertension	11	55	11	60	12	60	13	65	13	65	13	65
		Hypertension	7	35	7	30	6	30	5	25	5	25	5	25

Note: $n = 20$.

- Regarding III day pretest pulse rate, 13 (65%) had normal pulse rate, 5 (25%) had bradycardia and 2 (10%) had tachycardia. In posttest, 12 (60%) had normal, 5 (25%) had bradycardia, and 3 (15%) had tachycardia.
- Regarding I day pretest respiratory rate, 7 (35%) had normal respiratory rate and 13 (65%) tachypnea. In posttest respiratory rate, 8 (40%) had normal respiratory rate and 12 (60%) had tachypnea. II-day pretest respiratory rate, 8 (40%) had normal respiratory rate and 12 (60%) tachypnea. In posttest respiratory rate, 7 (35%) had normal respiratory rate and 13(65%) had tachypnea. III day pre- and post-test respiratory rate, 6 (30%) had normal respiratory rate and 14 (70%) had tachypnea.
- Regarding I day pretest systolic blood pressure, 8 (40%) was normal, 9 (45%) had pre-hypertension, and 3 (15%) had hypertension. In posttest systolic blood pressure, in control group 8 (40%) had normal, 9 (45%) had prehypertension and 3 (15%) had hypertension.
- Regarding II day pretest and posttest systolic blood pressure, 7 (35%) had normal, 10 (50%) had prehypertension and 3(15%) had hypertension. Regarding III day pretest and posttest systolic blood pressure, 7 (35%) had normal, 11 (55%) had prehypertension, and 2 (10%) had hypertension.
- Regarding I day pretest diastolic blood pressure, 22 (10%) had normal, 11 (55%) had prehypertension, and 7 (35%) had hypertension. In posttest diastolic blood pressure, 2 (10%) had normal, 12 (60%) had prehypertension, and 6 (30%) had hypertension.
- Regarding II day pretest diastolic blood pressure, 2 (10%) had normal, 12 (60%) had pre-hypertension, and 6 (30%) had hypertension. In posttest diastolic blood pressure, 2 (10%) had normal, 13 (65%) had pre-hypertension, and 5 (25%) had hypertension.
- Regarding III day pretest and posttest diastolic blood pressure, 2 (10%) had normal, 13 (65%) had pre-hypertension, and 5 (25%) had hypertension.

The results revealed that 55% had moderate anxiety, 85% had normal pulse rate, 65% had tachypnea, 65% had systolic prehypertension, and 55% had diastolic prehypertension (Figure 1).

From Table 5, the calculated value of “t” is greater than tabulated value of “t” at 5% level for the anxiety.

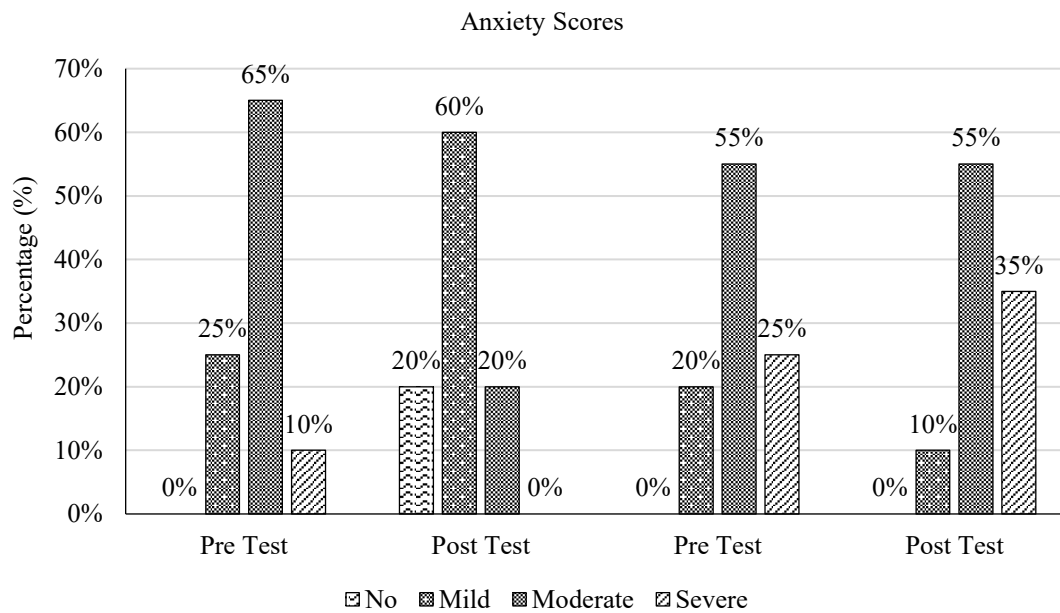


Figure 1. Distribution of pretest and posttest scores of anxiety in both the groups.

Table 5. Comparison of anxiety and physiological parameters within the experimental group.

S.N.	Parameters	Days	Pretest		Posttest		Calculated Value of "t"	Tabulated Value of "t" at 5% Level
			Mean	SD	Mean	SD		
1	Anxiety	I	48.7	12.13	48.15	7.98	2.65	2.09
		II	47.85	7.64	45.7	16.74	6.9	
		III	45.5	7.2	40	4.76	5.61	
2	Pulse	I	80.25	10.15	78.45	9.84	4.74	
		II	77.8	10.9	75.9	8.91	2.99	
		III	75.95	8.74	73.7	8.72	4.65	
3	Respiratory rate	I	23.2	4.75	22.1	4.58	2.7	
		II	21.4	6.26	20.2	7.2	4.7	
		III	20	4.2	18.4	8.78	7.5	
4	Systolic blood pressure	I	132	14	127.5	13.64	2.99	
		II	127.5	32.16	117.7	11.25	4.1	
		III	106.5	11.94	88.5	15.41	7.29	
5	Diastolic blood pressure	I	88.5	15.41	82.5	9.29	4.65	
		II	80	9.87	76.5	10.13	4.16	
		III	74.5	7.89	69.65	8.3	3.46	

Note: n = 20.

The calculated value of "t" is greater than tabulated value of "t" at 5% level for the I day physiological parameters such as pulse, respiratory rate, systolic and diastolic blood pressure. So, the null hypothesis is rejected. Therefore, there is a significant difference in the anxiety and physiological parameters between pre- and post-tests.

The calculated value of "t" is greater than tabulated value of "t" at 5% level for the anxiety.

- The calculated value of "t" is greater than tabulated value of "t" at 5% level for the II-day physiological parameters such as pulse, respiratory rate, systolic and diastolic blood pressure. So, the null hypothesis is rejected. Therefore, there is a significant difference in the anxiety and physiological parameters between pre- and post-tests.

The calculated value of "t" is greater than tabulated value of "t" at 5% level for the anxiety.

- The calculated value of “t” is greater than tabulated value of “t” at 5% level for the II-day physiological parameters such as pulse, respiratory rate, and systolic and diastolic blood pressure. Thus, the null hypothesis is disproved. As a result, the physiological and anxiety markers before and after testing differ significantly.

According to the findings, the massage effectively lowers anxiety and stabilizes physiological markers over the course of the three days. When compared to the other 2 days, the mean score indicates that the third day’s massage impact is successful.

According to the preceding Table 6, the computed value of “Z” for anxiety is higher than the tabulated value of “Z” at the 5% level.

Table 6. Comparison of physiological parameters and anxiety between the groups.

S.N.	Parameters	Experimental Group		Control Group		Calculated Value of “Z”	Tabulated Value of “Z” at 5%
		Mean	SD	Mean	SD		
1	Anxiety	40	4.76	49.9	11.28	3.515	1.96
2	Pulse rate	73.7	8.72	79.2	6.76	2.44	
3	Respiratory rate	18.4	8.78	22.7	3.36	3.58	
4	Systolic blood pressure	88.5	15.41	120.5	16.8	3.58	
5	Diastolic blood Pressure	69.65	8.3	84.5	11.60	3.48	

Note: n = 40.

The calculated value of “Z” is greater than tabulated value of “Z” at 5% level for the physiological parameters such as pulse, respiratory rate, and systolic and diastolic blood pressure. So, the null hypothesis is rejected. Therefore, there is a significant difference in the anxiety and physiological parameters between the experimental and control group.

This shows that massage is effective in reducing anxiety and stabilizing physiological parameters in experimental group than control group.

From Table 7, in the pretest “r” value reveals that there is a positive correlation between anxiety and physiological parameters.

Table 7. Coefficient of correlation of anxiety and physiological parameters in experimental group.

S.N.	Parameters	Pretest			Posttest		
		Mean	SD	Calculated Value of “r”	Mean	SD	Calculated Value of “r”
1	Anxiety	48.7	8.23	0.02	40	4.76	0.04
	Pulse rate	80.25	10.15		73.4	8.72	
2	Anxiety	48.7	8.23	0.06	40	4.76	0.04
	Respiratory rate	23.2	4.75		18.4	8.78	
3	Anxiety	48.7	8.23	0.07	40	4.76	0.2
	Systolic blood pressure	132	14		106.5	11.94	
4	Anxiety	48.7	8.23	0.09	40	4.76	0.7
	Diastolic blood pressure	88.5	12.36		69.65	8.3	

Note: n = 20.

In the posttest, “r” value reveals that there is a positive correlation between anxiety and physiological parameters in experimental group.

From Table 8, in the pretest “r” value reveals that there is a positive correlation between anxiety and physiological parameters.

Table 8. Coefficient of correlation of anxiety and physiological parameters in control group.

S.N.	Parameters	Pretest			Posttest		
		Mean	SD	Calculated Value of "r"	Mean	SD	Calculated Value of "r"
1	Anxiety	49	13.08	0.05	49.9	6.76	0.1
	Pulse rate	77.6	5.83		79.2	11.29	
2	Anxiety	49	13.08	0.07	49.9	6.76	0.08
	Respiratory rate	22.7	3.36		22.7	3.36	
3	Anxiety	49	13.08	0.49	49.9	6.76	0.5
	Systolic blood pressure	115	13.96		120.5	16.89	
4	Anxiety	49	13.08	0.02	49.9	6.76	0.03
	Diastolic blood pressure	85.5	10.2		84.5	11.60	

Note: n = 20.

In the posttest, "r" value reveals that there is a positive correlation between anxiety and physiological parameters in control group.

From Table 9, the calculated value of χ^2 is less than the tabulated value of χ^2 at 5% level of significance. The results revealed that,

- There is no association between duration of stay and anxiety.
- There is no association between marital status and anxiety.
- There is no association between number of children and anxiety.
- There is no association between reason for staying and anxiety.

Table 9. Association of anxiety with the selected demographic variables in both the groups.

S.N.	Variables	Anxiety						Tabulated Value of χ^2 at 5%
		Experimental Group			Control Group			
		Above Median	Below Median	Calculated Value of χ^2	Above Median	Below Median	Calculated Value of χ^2	
1	<i>Duration of stay</i>							3.84
	a. Less than 1-6 years	10	7	<1	6	7	<1	
	b. More than 7 years	1	2	NS	3	4	NS	
2	<i>Marital status</i>							
	a. Married	9	6	<1	8	8	<1	
	b. Unmarried	2	3	NS	1	3	NS	
3	<i>Number of children</i>							
	a. No children	6	5	<1	4	9	<1	
	b. Having children	5	4	NS	4	3	NS	
4	<i>Reason for stay</i>							
	a. Voluntary	10	6	<1	4	10	1.2	
	b. Forcefully	1	3	NS	4	2	NS	

Note: n = 40. NS – Not significant.

From Table 10, the calculated value of χ^2 is less than the tabulated value of χ^2 at 5% level of significance. The results revealed that,

- There is no association between duration of stay and pulse rate.
- There is no association between marital status and pulse rate.
- There is no association between number of children and pulse rate.

- There is no association between reason for staying and pulse rate.

Table 10. Association of pulse rates with the selected demographic variables in both the groups.

S.N.	Variables	Pulse Rate						Tabulated Value of χ^2 at 5%
		Experimental Group			Control Group			
		Above Median	Below Median	Calculated Value of χ^2	Above Median	Below Median	Calculated Value of χ^2	
1	<i>Duration of stay</i>							3.84
	a. Less than 1-6 years	10	7	<1	10	7	<1	
	b. More than 7 years	1	2	NS	1	2	NS	
2	<i>Marital status</i>							
	a. Married	9	6	<1	9	6	1.47	
	b. Unmarried	2	3	NS	2	3	NS	
3	<i>Number of children</i>							
	a. No children	6	5	<1	6	5	<1	
	b. Having children	5	4	NS	5	4	NS	
4	<i>Reason for stay</i>							
	a. Voluntary	10	6	<1	10	6	1.5	
	b. Forcefully	1	3	NS	1	3	NS	

Note: n = 40. NS – Not significant.

From Table 11, the calculated value of χ^2 is less than the tabulated value of χ^2 at 5% level of significance. The results revealed that,

Table 11. Association of respiratory rate with the selected demographic variables in both the groups.

S.N.	Variables	Respiratory Rate						Tabulated Value of χ^2 at 5%
		Experimental Group			Control Group			
		Above Median	Below Median	Calculated Value of χ^2	Above Median	Below Median	Calculated Value of χ^2	
1	<i>Duration of stay</i>							3.84
	a. Less than 1-6 years	9	8	<1	7	7	<1	
	b. More than 7 years	1	2	NS	4	2	NS	
2	<i>Marital status</i>							
	a. Married	7	8	<1	7	7	<1	
	b. Unmarried	2	3	NS	5	1	NS	
3	<i>Number of children</i>							
	a. No children	4	7	<1	7	5	<1	
	b. Having children	5	4	NS	4	4	NS	
4	<i>Reason for stay</i>							
	a. Voluntary	7	9	<1	8	5	<1	
	b. Forcefully	2	2	NS	3	4	NS	

Note: n = 40. NS–Not significant.

- There is no association between duration of stay and respiratory rate.
- There is no association between marital status and respiratory rate.
- There is no association between number of children and respiratory rate.
- There is no association between reason for stay and respiratory rate.

From Table 12, the calculated value of χ^2 is less than the tabulated value of χ^2 at 5% level of significance. The results revealed that:

- There is no association between duration of stay and systolic blood pressure.
- There is no association between marital status and systolic blood pressure.
- There is no association between number of children and systolic blood pressure.
- There is no association between reason for staying and systolic blood pressure.

Table 12. Association of systolic blood pressure with the selected demographic variables in both the groups.

S.N.	Variables	Systolic Blood Pressure						Tabulated Value of χ^2 at 5%
		Experimental Group			Control Group			
		Above Median	Below Median	Calculated Value of χ^2	Above Median	Below Median	Calculated Value of χ^2	
1	<i>Duration of stay</i>							3.84
	a. Less than 1-6 years	6	11	<1	5	9	<1	
	b. More than 7 years	2	1	NS	4	2	NS	
2	<i>Marital status</i>							
	a. Married	6	9	<1	9	6	1.87	
	b. Unmarried	2	3	NS	2	3	NS	
3	<i>Number of children</i>							
	a. No children	4	6	<1	6	8	<1	
	b. Having children	4	6	NS	4	2	NS	
4	<i>Reason for stay</i>							
	a. Voluntary	6	10	<1	6	7	<1	
	b. Forcefully	2	2	NS	4	3	NS	

Note: n = 40. NS – Not significant.

Table 13. Association of diastolic blood pressure with the selected demographic variables in both the groups.

S.N.	Variables	Diastolic Blood Pressure						Tabulated value of χ^2 at 5%
		Experimental Group			Control Group			
		Above Median	Below Median	Calculated Value of χ^2	Above Median	Below Median	Calculated Value of χ^2	
1	<i>Duration of stay</i>							3.84
	a. Less than 1-6 years	3	11	2.05	7	10	<1	
	b. More than 7 years	4	2	NS	2	1	NS	
2	<i>Marital status</i>							
	a. Married	6	9	<1	7	8	1.87	
	b. Unmarried	1	4	NS	1	4	NS	
3	<i>Number of children</i>							
	a. No children	4	7	<1	5	6	<1	
	b. Having children	5	4	NS	4	5	NS	
4	<i>Reason for stay</i>							
	a. Voluntary	5	8	<1	5	11	<1	
	b. Forcefully	3	4	NS	3	1	NS	

Note: n = 40. NS – Not significant.

From Table 13, the calculated value of χ^2 is less than the tabulated value of χ^2 at 5% level of significance. The results revealed that:

- There is no association between duration of stay and diastolic blood pressure.
- There is no association between marital status and diastolic blood pressure.
- There is no association between number of children and diastolic blood pressure.
- There is no association between reason for stay and diastolic blood pressure.

DISCUSSION

The findings of the present study demonstrated that massage therapy was effective in reducing anxiety and stabilizing physiological parameters among elderly individuals residing in an old age home [13]. The results revealed a significant reduction in anxiety levels and improvement in physiological measures, such as pulse rate, respiratory rate, and systolic and diastolic blood pressure, after the intervention, with the greatest effect observed on the third day of therapy. These findings are consistent with previous studies indicating that massage promotes relaxation by enhancing parasympathetic nervous system activity and reducing sympathetic arousal, thereby lowering physiological stress responses. The study supports the use of non-pharmacological interventions, like massage therapy, as an effective and low-cost approach to managing anxiety and improving overall well-being among older adults. The absence of a significant association between systolic blood pressure and demographic variables suggests that the benefits of massage therapy are independent of factors such as age, gender, or duration of stay in the old age home [14].

These results are in line with earlier research emphasizing the positive effects of touch and massage on both psychological and physiological outcomes in the elderly. Regular massage therapy can thus be recommended as a complementary nursing intervention to promote comfort, reduce anxiety, and enhance the quality of life in geriatric care settings [15].

CONCLUSIONS

Several other research have indicated that massages are useful for anxiety and physiological components such as pulse rate, respiration rate, and systolic and diastolic blood pressure. The study highlights the power of touch as an important technique to maintain a therapeutic relationship. Hence, massage therapy can be used as a relaxation technique.

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