



AN EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF ISOMETRIC EXERCISES ON JOINT PAIN AMONG OLDER ADULTS IN SELECTED OLD AGE HOMES, AGARTALA.

Nursing

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ABSTRACT

The experimental study aimed to evaluate the effectiveness of isometric exercises in reducing joint pain among older adults residing in selected old age homes in Agartala. A true experimental design with a pre-test post-test control group approach was employed, involving 60 older adults with joint pain from three old age homes. Randomization assigned 30 participants to the experimental group, receiving isometric exercises, and 30 to the control group. The experimental group underwent a four-week intervention, practicing isometric exercises daily for 20 minutes under the investigator's guidance. Pre and post-intervention pain assessments were conducted using a numerical pain rating scale. The analysis utilized descriptive and inferential statistics. Results revealed a significant decrease in pain levels among the experimental group, with severe pain decreasing from 63.3% in the pre-test to 46.7% in the post-test. Conversely, the control group exhibited an increase in severe pain from 46.7% pre-test to 50% post-test. Statistical analysis indicated a significant difference in pain levels within both the experimental ($t=8.89$, $df=29$, $p<0.05$) and control ($t=1.65$, $df=29$, $p>0.05$) groups. The individual 't' test between post-test scores of experimental and control groups was also significant ($t=4.21$, $df=58$, $p<0.05$). However, no statistical association was found between joint pain levels and background variables in either group. **Conclusion**, the study demonstrated that isometric exercises significantly reduced joint pain among older adults in the selected old age homes in Agartala. The findings underscore the potential benefits of incorporating isometric exercises into the routine care of older adults to enhance their overall well-being and alleviate joint pain.

KEYWORDS

Isometric exercises, Joint pain, Older adults, Old age homes, Physical activity, Geriatric care

INTRODUCTION

Aging is a natural process that affects the entire body, including the joints. As people age, their joints become stiffer and less flexible, resulting in joint pain and discomfort. This is especially true for older adults living in old age homes, as they may not have access to regular physical activity and may spend most of their days in a sedentary lifestyle. Joint pain can have a significant impact on the quality of life for older adults, affecting their mobility, independence, and overall well-being. To address this issue, isometric exercises have been proposed as a potential intervention to reduce joint pain and improve joint flexibility. This study aims to assess the effectiveness of isometric exercises on joint pain among older adults living in selected old age homes in Agartala.

Old age homes are residential facilities that provide housing and care for older adults who are unable to live independently. According to the World Health Organization, the global population of people aged 60 years and above is expected to reach 2 billion by 2050. In India, the older adult population is rapidly increasing, with estimates suggesting that by 2050, there will be over 300 million people aged 60 years and above. This increase in the older adult population has led to a rise in the number of individuals living in old age homes.

As people age, they are more prone to joint pain due to the natural degeneration of joints. Joint pain can significantly impact the quality of life of older adults, leading to reduced mobility, decreased independence, and social isolation. Isometric exercises, also known as static strength training, have been shown to improve joint flexibility, reduce pain, and increase muscle strength in older adults. Isometric exercises involve holding a muscle in a static position for a set period, without any joint movement. These exercises are low impact and can be easily performed by older adults with limited.

Study Objectives

1. To assess the pre-test level of joint pain among older adults with joint pain.
2. To assess the post-test level of joint pain among older adults with joint pain.
3. To assess the effectiveness of isometric exercises on joint pain among older adults with joint pain.
4. To find out association between the pre-test level of joint pain among older adults with their selected background variables.

HYPOTHESIS:-

- H₁:** There is a significant difference in the mean pre-test and post-test level of joint pain among older adults with joint pain.
- H₂:** There is an association between the pre-test level of joint pain

among older adults with joint pain with their selected background variables.

METHODOLOGY

Research Design:

The research design employed in this study is a true experimental design utilizing a pre-test post-test control group.

Experimental Group:

- Pre-test (Baseline Assessment) → Isometric Exercises (xx) → Post-test (Assessment after 4 weeks of exercises)

Control Group:

- Pre-test (Baseline Assessment) → No Isometric Exercises → Post-test (Assessment after 4 weeks without exercises)

Pre-test and Post-test Assessments:

Pre-test involves the initial assessment of joint pain using the Numerical Pain Intensity Scale for both the experimental and control groups. Post-test includes the assessment after 4 weeks, where the experimental group performs isometric exercises, and the control group remains without exercises.

Isometric Exercises (xx):

Isometric exercises were taught to the experimental group in standing, sitting, and lying down positions. The exercises were conducted for 20 minutes daily for 4 consecutive weeks under the supervision of the researcher.

Research Variables:

- *Independent Variable:* Isometric exercises
- *Dependent Variable:* Knee joint pain among older adults assessed by the Numerical Pain Scale

Setting:

The primary study was conducted at Abalamban Old Age Home, Sandhyaneer Old Age Home, and Ashray Old Age Home in Agartala.

A pilot study was conducted at Mahatma Gandhi Memorial Old Age Home and Ashray Old Age Home.

Population:

The population includes all older adults with joint pain in the selected old age homes in Agartala.

Sample:

A total of 60 older adults from Abalamban Old Age Home, Sandhyaneer Old Age Home, and Ashray Old Age Home were

included in the study (30 in the experimental group and 30 in the control group).

Sampling Technique:

The study employed a Probability – Simple Random Sampling technique, and samples were selected through a lottery method. Criteria for Sample Selection:

Inclusion Criteria:

1. Aged above 60 years, both male and female.
2. Present at the time of data collection.
3. Can understand Bengali, English, or Hindi.
4. Willing to participate in the study.

Exclusion Criteria:

1. Bedridden.
2. Had undergone orthopedic surgery.
3. Undergoing other forms of treatment modalities.

Development and Description of Tool:

The research tool includes a Self-Structured Likert Scale for joint pain, a Demographic Proforma, and a Numerical Pain Rating Scale. The Likert scale assesses joint pain severity, the proforma collects demographic data, and the pain rating scale measures pain intensity. Scoring and Interpretation:

Likert Scale:

- 0: No pain
- 1-15: Mild pain
- 16-30: Moderate pain
- 30-40: Severe pain

Numerical Pain Rating Scale:

- 0-3: No Pain
- 4-6: Mild Pain
- 7-9: Severe Pain
- 10: Worst Pain

Ethical Consideration

1. Approval has been obtained from research and ethical committee of the institute.
2. Formal permission was obtained from the concerned authority of Abalamban old age home, Mahatma Gandhi Memorial old age home, Ashray old age home and Sandhyaneer Old Age Home, Agartala.
3. After explaining the purpose of the study and ensuring about the confidentiality, informed consent has been obtained from the study samples..

RESULTS:

The demographic variables key findings among older adults in the experimental and control groups (n=30 each). In the experimental group, 53.3% were aged 60-69, 53.3% were male, and 60% had no formal education. Unemployed individuals comprised 40%, and 96.7% were Hindu. Most (46.7%) stayed in the old age home for more than 18 months. Additionally, 33.3% had other orthopedic illnesses, and 76.7% experienced joint pain for over 15 months. Only 26.7% had practiced exercises for joint pain. The majority (56.7%) followed a vegetarian diet. In the control group, findings were comparable with slight variations.

Table: 1 Pre-test and post-test level of pain among older adults with joint pain in experimental and control group.

Interpretation Scale	Experimental Group (N=30)				Control Group (N=30)			
	Pretest		Posttest		Pretest		Posttest	
	F	%	F	%	F	%	F	%
No Pain (0)	00	00	02	6.7	00	00	00	00
Mild Pain (1 To 3)	02	6.7	14	46.7	04	13.3	03	10
Moderate Pain (4 To 6)	08	26.7	10	33.3	15	50	13	43.3
Severe Pain (7 To 9)	19	63.3	04	13.3	11	36.7	14	46.7
Worst Pain (10)	01	3.3	00	00	00	00	00	00
TOTAL	30	100	30	100	30	100	30	100

Table: 2 Paired t-test to assess the significance of pre and post test level of pain among older adults with joint pain in experimental group.

Experimental Group	Mean		Mean Difference	Paired 't' test
	Pre-test	Post-test		
	7	3.63	3.37	8.89 <0.05 S
Control Group	5.6	5.83	0.23	1.65 0.10 NS

Table 2 depicts that the mean improvement score of pain was 3.37. Paired 't' test was used to assess the significance of pre and post test level of pain among older adults with joint pain for experimental group, which shows the calculated value 8.89 is greater than tabulated value 2.05 and p-value is <0.05, which indicates significant difference between pre-test and post-test level of pain among older adults with joint pain in experimental group.

Table: 3 Effectiveness of isometric exercises on post-test level of pain between experimental and control group.

Posttest Group	Mean	Mean difference	SD	Individual 't' test	
				t test value	Table value (df)
Experimental (n=30)	3.63	2.2	2.14	4.21	2.001 (58)
Control (n=30)	5.83		1.89		<0.05 S*

Table 3 presents the effectiveness of isometric exercises on the post-test level of pain between the experimental and control groups. The mean difference in posttest levels of pain between the experimental and control groups is 2.2, with a standard deviation (SD) of 2.14. The individual 't' test value is 4.21, exceeding the table value (df=58) of 2.001 at a significance level of <0.05. The result is statistically significant, indicating a significant difference in the post-test level of pain between the two groups, favoring the experimental group (S*).

Regarding Association between the pre test level of pain among older adults with joint pain and their selected background variables in experimental group and Control group No statistical association found between the level of pain and the selected background variables in both the experimental and control groups

CONCLUSION:

The study aimed to assess pre-test and post-test levels of joint pain among older adults, evaluate the effectiveness of isometric exercises, and explore associations with background variables. Isometric exercises significantly reduced pain in the experimental group compared to the control group. No statistical associations were found between pain levels and background variables in either group. This study clearly stated that isometric exercises play a vital role in reducing joint pain among older adults with joint pain. The control group without intervention did not show any significant difference in the degree of pain after 4 weeks.

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