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**RESEARCH ARTICLE**

**COMPARATIVE STUDY TO ASSESS THE EFFECTIVENESS OF THE HOT APPLICATION AND  
 CASTOR OIL APPLICATION IN CLIENTS WITH JOINT PAIN.**

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**Abstract**

Pain is a complex, multidimensional phenomenon. Everyone has experienced some Types or degrees of pain. A comparative study to assess the effectiveness of the hot application and castor oil application in clients with joint. The study was conducted in selected old age homes. A sample of 50 old age people was selected using Non probability purposive sampling technique and then randomly assigned the samples in Experimental group (hot application) and Experimental group (castor oil application). The pre-test pain score was taken before using a hot application and Castor oil application on the first day interaction on both different groups. Following the pre-test subjects randomly apply Hot application and Castor oil application for a period of seven days once a day. The post-test pain score measured on the seventh day of interaction using Wong- Baker FACES rating scale. Wilcoxon test was used, In order to assess the comparison between hot application and castor oil application group on the level of pain in clients with joint pain. It shows that there is significant difference between Pain score (first day of interaction) and Pain score (seventh day of interaction) mean score ( $W=4.506$ ) of experimental group (Hot application). This indicates that hot application is effective in reducing pain level. In experimental group (Castor oil application) significant difference between Pain score (first day of interaction) and Pain score (seventh day of interaction) mean score ( $W=4.443$ ). This indicates that castor oil application is effective in reducing pain level. The “U” test value of both experimental group is ( $u=190$ ) indicates that there is significant difference between pre-test and post-test pain score of both experimental groups. So the results shows that castor oil application ( $u=3.20$ ) is more effective than the hot application ( $u=2.64$ ) in reducing pain level ( $3.20 > 2.64$ ).

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### Introduction:-

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage. It disables and distresses more people than any single disease. Pain is one of the most common problems faced by arthritis patients. Pain the major symptom of arthritis that most commonly causes a person to seek medical attention.<sup>1</sup>

Joint pain is a chronic, progressive process in which new tissue is produced in response to joint insults and cartilage deterioration. The most prevalent articular disease in adults 65 years of age and older.<sup>1</sup>

The knee is one of the most commonly affected joints. OA is usually a slowly progressive degenerative disease in which the joint cartilage gradually wears away.<sup>2</sup> Heat is used mostly in sub-acute and chronic conditions—after 48 hours—to decrease pain and spasm, promote healing, decrease inflammation, increase joint mobility and heal bruising”, Ainsworth says.<sup>3</sup>

Heat can be applied in several ways, including electric pads, hot water bottles, hot gel packs or via a warm bath. Heat dilates blood vessels and increases blood flow, delivering oxygen and nutrients to cells, which helps with the removal of cell waste and promotes healing.<sup>3</sup>

Castor oil is known for treating arthritis; its anti-inflammatory properties make it ideal massage oil for relieving joint pain, nerve inflammation and sore muscles. Massaging the joint with castor oil and placing a hot water bag helps in pain relief. Massaging the joint with castor oil and placing a hot water bag helps in pain relief. In cases of arthritis, this process if repeated twice a week will ensure better results. Castor oil strengthens the immune system by increasing white blood cells and thus fights infections.<sup>4</sup>

### Need for the study:-

Osteoarthritis (OA) is one of the most frequent causes of physical disability among adults. More than 27 million people in the United States have the disease. By 2030, 20 per cent of Americans - about 70 million people - will have passed their 65<sup>th</sup> birthday and will be at risk for osteoarthritis. Some younger people get osteoarthritis from joint injuries, but osteoarthritis most often occurs in older people. Both men and women have the disease. Before age 45, more men than women have osteoarthritis, whereas after age 45, it is more common in women<sup>5,6</sup>

Using a hot compress on certain health conditions can be extremely beneficial. Some of the physiological benefits of warmth treatment are speeds up chemical reactions, changes oils from semisolid to liquid, increases circulation by causing blood vessels to dilate.<sup>7</sup>

Castor is derived from castor seed scientific name *Ricinus communis*, which originates from India. Castor oil shows immense benefits in healing knee pain, joint pain and arthritis. It possesses anti-inflammatory properties, which help in curing pain and inflammation. People who have succeeded age more than 50 years are commonly prone to joint pains with stiffness and less mobility. Castor oil helps in healing the stiffness and improves mobility in joints.<sup>8</sup>

### Problem statement:-

A comparative study to assess the effectiveness of the hot application and castor oil application in clients with joint pain at selected old age home of Gujarat state .

### Objectives of the study:-

1. To assess the effect of hot application on the level of pain in clients with joint pain.
2. To assess the effect of castor oil application on the level of pain in clients with joint pain.
3. To compare the effect of hot application and castor oil application on the level of pain in clients with joint pain.
4. To associate the level of pain with their selected demographic variables of hot application and castor oil application in clients with joint pain.

### Hypothesis:-

**H<sub>1</sub>**:- There will be significant difference in the post test level of pain between hot application and castor oil application in clients with joint pain at the level of significance  $p < 0.05$

**2H<sub>1</sub>**:- There will be significant association of the level of pain with their selected demographic variables of hot application and castor oil application in clients with joint pain at the level of significance  $p < 0.05$

### **The Conceptual Framework:-**

The conceptual framework of the study is based on modified General System theory by Ludwig Von Bertalanffy (1968).

### **Research Methodology:-**

A quantitative research approach with Quasi Experimental design (Two group pre-test, post-test) was used for the study. Research study was conducted in June 2017 at selected old age home of Gujarat state. A sample of 50 old age people was selected using Non probability purposive sampling technique and then randomly assigned the samples in Experimental group (hot application) and experimental group (castor oil application).

**Tools:-** The tool consisted of three sections.

### **Section A:-**

This section includes assessing Socio-demographic variables Age, Gender, Weight, Occupation, Diet, Duration of Joint Pain, Daily living activity and Habits

### **Section B:-**

This section includes Wong- Baker FACES rating scale was used to assess the pain level and its shows the rating scale according to the pain level.

0: No Pain

1-3: Mild Pain

4-6: Moderate Pain

7-9: Severe Pain

10: Worst Pain

### **Section C:-**

This section includes checklist for hot application and castor oil application.

### **Results and Interpretations:-**

Analysis and interpretation of the data collected from 50 old age people who are suffering from joint pain in order to assess the effectiveness of the hot application and castor oil application in selected old age home of Gujarat state. The data analyzed by using descriptive and inferential statistics.

### **Characteristics of demographic variables of old age people:-**

In experimental group (hot application) with regard to age majority most of the subjects 10 (40%) were in >75 years of age, 8 (32%) were in 71 to 75 year. With regards to gender 11(44%) belong to Male, 14(56%) belongs to female. With regard to Weight 8(32%) were in 45 to 55 kg, 8(32%) were in 56 to 65 kg, 8(32%) were in 66 to 75 kg. With regard to Occupation 11(44%) belongs to labourers. With regards to diet 22(88%) were having vegetarian diet and 3 (12%) were having mixed diet. With regard to duration of suffering from joint pain 10(40%) were suffering since 0 to 1 year. With regards to performing daily living activity independently 20(80%) were able to perform their daily living activities independently. With regard to habits majority of subjects 15(60%) having no any kind of bad habits

In experimental group (Castor oil application) with regards to the age 10 (40%) were in > 75 years of age, 7(28%) were in 60 to 65 years. With regards to gender 15(60%) belongs to male, 10 (40%) belongs to female. With regard to Weight 11(44%) were in 56 to 65kg, 7(28%) were in 45 to 55 kg. With regard to Occupation 8(32%) belongs to others, 7(28%) belongs to labourers. With regards to diet 20(80%) were having vegetarian and 5 (20%) were having mixed diet. With regard to duration of suffering from joint pain 10(40%) were suffering since 0 to 1 year. With regards to performing daily living activity independently 17(68%) were able to perform their daily living activities independently. With regard to habits 15 (60%) having no any kind of bad habits.

### **Comparison between hot application and castor oil application group on the level of pain in clients with joint pain:-**

In order to compare between hot application and castor oil application group on the level of pain in clients with joint pain, Wilcoxon test was used. The value indicates significant difference between Pain score (first day of interaction)

and Pain score (seventh day of interaction) mean score (W=4.506) of experimental group (Hot application) of this indicates that hot application is effective in reducing pain level. In experimental group (Castor oil application) significant difference between Pain score (first day of interaction) and Pain score (seventh day of interaction) mean score (W=4.443) of this indicates that castor oil application is effective in reducing pain level.

**I(a):-** Mean, Standard Deviation, Wilcoxon test among hot application and castor oil application group on the level of pain in clients with joint pain. N = 50

Group	Pain score	Mean	Standard Deviation	Wilcoxon Test	P Value
Experimental Group ( Hot application)	Pain score (first day of interaction)	5.24	1.091	4.506	S
	Pain score (seventh day of interaction)	2.60	1.155		
Experimental Group (Castor oil application)	Pain score (first day of interaction)	5.60	1.225	4.443	S
	Pain score (seventh day of interaction)	2.40	1.041		

I.Shows Comparison between hot application and castor oil application group on the level of pain in clients with joint pain.

The computed Man Whitney U test value of experimental and comparative group is (u =190, p<0.01) indicates that there significant difference between pre-test and post-test pain score of both experimental groups. So the results shows that castor oil application(u=2.64) is more effective that the hot application(u=3.20) in reducing pain level (3.20>264).

**II(b):-** Mean, Standard Deviation, Man Whitney test between Experimental group (Hot application) and Experimental Group (Castor oil application) N = 50

Group		Mean	Standard Deviation	Man Whitney U test	P Value
Experimental Group ( Hot application)	Diff	2.64	0.638	190	S
Experimental Group (Castor oil application)	Diff	3.20	0.764		

II(b) Shows comparison between hot application group and Castor oil application group

Association between post-test pain score and demographic variable in clients with joint pain.

Chi-Square value of hot application and castor oil application in clients with joint pain association with weight N = 50

Posttest pain score									
	Demographic variable	No pain (0)	Mild pain (1-3)	Moderate pain (4-6)	Severe pain (7-9)	Worst pain (10)	d.f	Fishers Chi Square	P Value
Experimental group (1)	Weight in kg:								
	a. 45 –55	2	2	3	0	1	12	11.852	NS
	b. 56 –65	2	4	1	1	0			
	c. 66 –75	0	3	3	1	1			

	d. 76 –85	0	0	0	1	0			
<b>Experimental group (2)</b>	<b>Weight in kg:</b>								
	a. 45 –55	2	2	0	2	1	12	16.773	S
	b. 56 –65	0	10	0	1	0			
	c. 66 –75	0	2	1	1	0			
	d. 76 –85								

**Chi-Square value of hot application and castor oil application in clients with joint pain association with occupation N = 50**

<b>Posttest pain score</b>									
	<b>Demographic variable</b>	<b>No pain (0)</b>	<b>Mild pain (1-3)</b>	<b>Moderate pain (4-6)</b>	<b>Severe pain (7-9)</b>	<b>Worst pain (10)</b>	<b>d.f</b>	<b>Fishers Chi Square</b>	<b>P Value</b>
<b>Experimental group (1)</b>	<b>Occupation:</b>						8	5.607	NS
	a. Teachers	1	2	2	0	0			
	b. Laborers	2	2	3	2	2			
	c. Others	1	5	2	1	0			
<b>Experimental group (2)</b>	<b>Occupation:</b>						12	15.911	S
	a. Teachers	2	2	0	0	0			
	a. Health care workers	0	5	0	1	0			
	b. Laborers	1	1	2	2	1			
	c. others	0	7	0	1	0			

**Chi-Square value of hot application and castor oil application in clients with joint pain association with performing daily activity independently. N =50**

<b>Post-test pain score</b>									
	<b>Demographic variable</b>	<b>No pain (0)</b>	<b>Mild pain (1-3)</b>	<b>Moderate pain (4-6)</b>	<b>Severe pain (7-9)</b>	<b>Worst pain (10)</b>	<b>d.f</b>	<b>Fishers Chi Square</b>	<b>P Value</b>
<b>Experimental group (1)</b>	<b>daily activity independently:</b>								
	a. Yes	4	8	7	1	0	4	11.046	S
	b. No	0	1	0	2	2			
<b>Experimental group (2)</b>	<b>daily activity independently:</b>								
	a. Yes	3	13	1	0	0	4	13.175	S
	b. No	0	2	1	4	1			

To determine the level of association between post-test pain score and selected demographic variable (age, gender, weight, occupation, diet, duration of Joint Pain, daily living activity and habits) in clients with joint pain of both experimental groups.

In the present study it was found that there was no statistically significant association between post-test pain score and demographic variable in clients with joint pain except weight, occupation and performing daily activity independently.

**Conclusion:-**

Those clients who had joint pain require effective alternative therapy for reducing joint pain. Nurses can provide Castor oil application, which will help in reducing joint pain in old age people. Nursing students should be encouraged to teach various aspects of management about how to reduce joint pain in old age people under supervision during training period. This study will create awareness among the nursing fraternity regarding the importance of different techniques to reduce joint pain in the curriculum of nursing students, which leads to the contribution of scientific knowledge, academic growth and development of students.

**Conflict of Interest:** None

**Source of Funding:**

No separate funding was received for this study.

**Ethical Clearance:**

The ethical clearance obtained from our Institute (CHARUSAT University, Changa ).

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