CASE REPORT

EFFECTIVENESS OF APITHERAPY ON REDUCTION OF PAIN AMONG ADULTS WITH KNEE ARTHRITIS

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ARTICLE INFO	ABSTRACT
  Corresponding author: **Savitha, A.**	There are more than 100 different types of arthritis. It is common chronic, progressive musculoskeletal disorder characterized by gradual loss of articular cartilage. The disease most commonly affects the middle-aged and elderly, although it may begin earlier as a result of injury or overuse. It is often more painful in weight bearing joints such as the knee, hip, and spine than in the wrist, elbow, and shoulder joints. All joints may be affected if they are used extensively in work or sports, or if they have been damaged from fractures or other injuries. **Methodology:** A pre experimental research design was adopted for this study.. The main study was conducted in selected rural areas of Puducherry like Kalitheerthalkuppam and Thirubuvanai. The period of data collection was six weeks. Totally 88 arthritis adult were selected by using the Systematic random technique and it was divided into two groups,44 in experimental group and 44 in control group. The pre-test was done among 88 adult by using Pain scale (Modified western ontrio and master universities osteoarthritis index) intervention was given to experimental group and routine measures was given for control group. And on sixth the post-level of pain was assessed for both groups. **Results:** The result of the study in experimental group mean effectiveness is 24.11. when compared with control group mean difference is 4.29. Concluded that rendering apitherapy to arthritis adult was more effective one in reduction of pain. Therefore the investigator suggests to use apitherapy for pain reduction and there is no side effects and resulting with good prognosis. **Conclusion:** The result of the study concluded that rendering apitherapy to arthritis adult was more effective one in reduction of pain. Therefore the investigator suggests to use apitherapy for pain reduction and there is no side effects and resulting with good prognosis.

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INTRODUCTION

Pain is common for all illness and last for a long and it may be different types with their characteristics. Therapeutically it functions as a diagnostic tool, as assessment variable and it is a measure of response to interventions. Pain may or may not have an easily identified cause, at any time during an illness, may not respond to conventional interventions, and may change in nature over time. Apitherapy is an alternative medicine where consist of various features of medical efforts, it can has the healing effort for arthritis, it reduces the pain and inflammation, thus it increase the activity index and function of daily living. It can be done on one's own, self safely or can be done by a professional. So the investigator assessed the effectiveness of apitherapy on reduction of pain for adult with knee arthritis.

Need for the study

Arthritis is one of the most common ailments in today life. It cause excruciating pain in the body. It affects the muscles, specifically the place where two or more bones meet and the joint such as the hip or knee, elbow, etc. Arthritis is a leading cause of disability in the world where 23% of adults are diagnosed as arthritis. In India specific prevalence estimates that arthritis attributable work limitation show a high impact of arthritis on working between the age of 18-64 years adult, ranging from a low of 8.4% to a high of 25% of adult in this age group. The prevalence exhibits that in 2009 there are 13,888,000 adults with arthritis in India, in 2011that are about 1,340,000 population of adults with arthritis, in 2014there are about 1,509,000 adults with arthritis. Tamil Nadu government reveals that 18% of all working group are affected with arthritis, 5% of all cases of arthritis are having gout. Apitherapy is a treatment approach by using honey and cinnamon powder. This therapy cures arthritis, bladder infections, ulcers, cough, reduces obesity and it reduces the high blood pressure. It is believed to reduce swelling and pain in arthritis due to its active compounds such as mellitin, adopalin and hyaluronidase. Mellitin stimulates the adrenal glands to produce cortisol, natural anti-inflammatory. Adopalin has analgesic effects in the enzyme. Hyaluronidase helps tissue permeability. Adopalin reduces the pain in case of arthritis

when acting along with cinnamon which releases the enzymes act on the inflammatory surfaces. Schmidt, Buchmann (2000) have commented that honey and cinnamon indicate the beneficial effects in arthritis shown by various anecdotal evidences. Recently a research is done in Copenhagen university proved that honey and cinnamon can cure acute and chronic arthritis. During the community posting the investigator found that most of adult are suffering with knee problems and they take analgesic for pain relief but it leads to impulse side effect like nausea, vomiting, stomach ulcer, chronic head ache, decrease appetite, constipation, kidney damage, liver damage. So the investigator viewed many literature to practice alterative treatment for knee arthritis with no side effects. Thus the investigator suggest to use apitherapy for pain reduction with no side effect and resulting with good prognosis.

Statement of the problem

"A study to assess the effectiveness of apitherapy on reduction of pain among adults with knee arthritis at selected rural areas in Puducherry".

Objectives

❖   To assess the level of pain among adults with knee arthritis of experimental group and control group.
❖   To evaluate the effectiveness of apitherapy on reducing the level of pain among experimental group.
❖   To compare the level of pain among adults of experimental and control group in pre-test and post-test.
❖   To associate the level of pain among adults with knee arthritis of the experimental and the control group with selected demographic variable.

Operational definition

Assess: It refers to the process of measuring the level of pain among adult with knee arthritis and effectiveness of apitherapy.

Effectiveness: It refer to the reduction in level of pain among the adults with knee arthritis after application of apitherepy. It is measured by using pain scale to modified western ontrio and master universities arthritis index pain scale.

Apitherapy: Apitherapy is the process of application with the product obtained from the honey comb which includes honey, bee venom, and bee pollen along with cinnamon powder. In apitherapy a paste has made with the mixture of 2.5 ml of honey and one teaspoon of cinnamon powder is used for arthritis.

Knee Arthritis: Arthritis is the inflammation of the joints. Here the investigator includes that the adults with the signs and symptoms of knee arthritis having joint pain.

Assumptions

- Adult with arthritis may have severe joint pain.
- Perception of pain may be varying from person to person.
- Arthritis pain may be reduced among adult through apitherapy.
- There may be no side effects for apitherapy.

Hypothesis

H_1- There will be a significant difference in pre and post test level of arthritis pain in the experimental group.
H_2– There will be a significant difference in post level of pain between the experimental and control group.
H_3-There will be a significant association between the level pain among adult with knee arthritis of experimental and control group with the selected demographic variable

METHODOLOGY

A pre experimental research design was adopted for this study.. The main study was conducted in selected rural areas of Puducherry like Kalitheerthalkuppam and Thirubuvanai. The period of data collection was six weeks. Totally 88 arthritis adult were selected by using the Systematic random technique and it was divided into two groups,44 in experimental group and 44 in control group. The pre-test was done among 88 adult by using Pain scale (Modified western ontrio and master universities osteoarthritis index) intervention was given to experimental group and routine measures was given for control group. And on sixth the post-level of pain was assessed for both groups.

Criteria for sample selection

Inclusion criteria

- Those with arthritis who are residing at selected rural areas.
- Those between the age group of 40-60 years.
- Those who are willing to participate in the study.
- Both male and female.
- Adult who diagnosed as knee arthritis and compliant with knee pain.

Exclusion criteria

- Those who have undergone ortho surgeries.
- Those who have allergies to honey.
- Those who having any other medical condition or following other treatment for arthritic pain.

Experimental Group

Regarding age shows that 15 (34.1%) of them were belongs to 51-55 years, Sex shows that 24 (54.5%) of them were belongs to male. Religion shows that 34 (77.2%) of them were belongs to Hindu. Duration of illness shows that 25 (56.8%) 0f them belongs to 1-5 years. Type of work shows that 27(61.4%) of them were belongs to sedentary work. Marital status shows that 26 (59.1%) of them belongs to married. Educational status shows that17 (38.6 %) of them were belongs to primary schooling,15 (34.1%) of them were belongs to higher secondary.No.of. Children shows that 18(40.9%) of them were belongs to 1- 2 children 23 (52.3%) of them were belongs to 3 -4 children. Types of family shows that 26(59.1%) of them were joint family, Dietary habit shows that 31(70.5%) of them were belongs to non vegetarian. Family income per Monthly shows that 23 (52.3%) of them were belongs to Rs. 11000 – 15000.Body mass Index 21(47.7%) of them belongs to normal weight 18.5-24.9, 10(22.7%) of them belongs to overweight.

Table I. Frequency and percentage wise distribution of demographic variables among adult with knee arthritis

S. No.	Demographic Variables	Experimental Group (N = 44)		Control Group (N = 44)	
		N	%	N	%
1.	**Age in years:**				
	40-45	8	18.2	3	6.8
	46-50	12	27.3	10	22.7
	51-55	15	34.1	17	38.6
	56-60	9	20.5	14	31.8
2.	**Gender:**				
	Male	24	54.5	18	40.9
	Female	20	45.5	26	59.1
3.	**Religion:**				
	Hindu	34	72.2	30	68.2
	Christian	9	20.5	14	31.8
	Muslims	1	2.3	2	4.5
	Others	0	0	0	0
4.	**Duration of illness:**				
	Less than 1 year	13	29.5	7	15.9
	1-5 years	25	56.8	30	68.2
	More than 5 years	6	13.6	7	15.9
5.	**Type of work:**				
	Sedentary work	27	61.4	19	43.2
	Moderate work	9	20.5	13	29.5
	Heavy work	8	18.2	12	27.3
6.	**Marital status:**				
	Single	8	18.2	3	6.8
	Married	26	59.1	24	54.5
	Divorced/separated	4	9.1	2	4.5
	Widow/Widower	6	13.6	15	34.1
7.	**Education:**				
	Illiterate	11	25.0	17	38.6
	Primary Schooling	17	38.6	17	38.6
	Secondary Schooling	15	34.1	7	15.9
	Degree	1	2.3	3	6.8
8.	**No. of children:**				
	1-2 children	18	40.9	13	29.5
	3-4 children	23	52.3	25	56.8
	More than 4 children	3	6.8	6	13.6
9.	**Type of family:**				
	Nuclear family	12	27.3	10	22.7
	Joint family	26	59.1	21	47.7
	Extended family	6	13.6	13	29.5
10.	**Dietary habit:**				
	Vegetarian	13	29.5	13	29.5
	Non vegetarian	31	70.5	31	70.5
11.	**Family income per month:**				
	Rs. 1000- 5000	2	4.5	3	6.8
	Rs.6000-Rs.10000	12	27.3	16	36.4
	Rs.11000-Rs.15000	23	52.3	20	45.5
	Rs.16000 and above/month	7	15.9	5	11.4
12.	**Body Mass Index:**				
	Under weight less than 18.5	11	25.0	16	36.4
	Normal weight 18.5-24.9	21	47.7	19	43.2
	Overweight 25 – 29.9	10	22.7	8	18.2
	Obese 30 or above	2	4.5	1	2.3

Table 1: reveals that, the frequency and percentage wise distribution of selected demographic variables among adult with knee arthritis in both experimental and control group.

Table II. **Frequency and percentage wise distribution on level of pain among adult with knee arthritis in experimental group.**

Level of pain	Pre test		Post test	
	N	%	N	%
Mild pain	-	-	32	72.7
Moderate pain	10	22.7	12	27.3
Severe pain	34	77.3	-	-

Table 2: shows the frequency and percentage wise distribution on level of pain among adult with knee arthritis of experimental group..

Table III. Frequency and percentage wise distribution onpre and post level of pain among adult with knee arthritis in control group

Level of pain	Pre test		Post test	
	No	%	No	%
Mild pain	1	2.3	2	4.5
Moderate pain	23	52.3	31	70.5
Severe pain	20	45.5	11	25.0

Table III: Shows the frequency and percentage wise distribution on pre and post level of pain among adult with knee arthritis in control group.

Table IV. Comparison ofpre-test and post-test level of pain among adult with knee arthritis in experimental group and control group

Sl. No	Group	Pre test		Post- test		Mean difference	't' value	P Value
		Mean	SD	Mean	SD			
1.	Experimental Group	64.11	5.23	39.70	4.67	24.11	37.11	0.0001
2.	Control group	59.11	8.27	54.32	8.64	4.79	8.02	0.0001

Table V. Association between the selected demographic variables with pre-test level of arthritis pain among adult with knee arthritis for experimental group

S. No.	Demographic Variables	Moderate pain		Severe pain		X^2	P value
		No	%	No	%		
1.	**Age in years:**						
	40-45	2	20	12	35.3	$\chi^2 = 7.143$ (df=3)	0.067
	46-50	5	50	4	11.8		
	51-55	2	20	9	26.5		
	56-60	1	10	9	26.5		
2.	**Gender:**						
	Male	7	70	17	50.0	$\chi^2 = 1.247$ (df=1)	0.264
	Female	3	30	17	50.0		
3.	**Religion:**						
	Hindu	10	100	24	70.5	$\chi^2 = 0.661$ (df=2)	0.718
	Christian	0	0	9	29.5		
	Muslims	0	0	1	2.9		
	Others	0	0	0	0.0		
4.	**Duration of illness:**						
	Less than 1 year	6	60	7	20.6	$\chi^2 = 5.826$ (df=2)	0.045*
	1-5 years	3	30	22	64.7		
	More than 5 years	1	10	5	14.7		
5.	**Type of work:**						
	Sedentary work	5	50	22	64.7	$\chi^2 = 1.315$ (df=3)	0.726
	Moderate work	2	20	7	20.6		
	Heavy work	3	30	5	14.7		
6.	**Marital status:**						
	Single	4	40	4	11.8	$\chi^2 = 4.871$ (df=3)	0.181
	Married	5	50	21	61.8		
	Divorced/separated	0	0	4	11.8		
	Widow/Widower	1	10	5	14.7		
7.	**Education:**						
	Illiterate	3	30	8	23.5	$\chi^2 = 2.548$ (df=3)	0.467
	Primary Schooling	2	20	15	44.1		
	Secondary Schooling	5	50	10	29.4		
	Under Graduate	0	0	1	2.9		
	Post Graduate	0	0	0	0.0		
8.	**No. of children:**						
	1-2 children	6	60	12	35.3	$\chi^2 = 2.408$ (df=2)	0.300
	3-4 children	4	40	19	55.9		
	More than 4 children	0	0	3	8.8		
9.	**Type of family:**						
	Nuclear family	4	40	8	23.5	$\chi^2 = 1.075$ (df=2)	0.584
	Joint family	5	50	21	61.8		
	Extended family	1	10	5	14.7		
10.	**Dietary habit:**						
	Vegetarian	2	20	11	32.4	$\chi^2 = 0.566$ (df=1)	0.452
	Non vegetarian	8	80	23	67.6		
11.	**Family income per month:**						
	Rs. 1000- 5000	1	10	1	2.9	$\chi^2 = 1.764$ (df=3)	0.623
	Rs.6000-Rs.10000	5	50	7	20.6		
	Rs.11000-Rs.15000	3	30	20	58.8		
	Rs.16000 and above/month	1	10	6	17.6		
12.	**Body Mass Index:**						
	Under weight less than 18.5	3	30	12	35.3	$\chi^2 = 3.496$ (df=3)	0.321
	Normal weight 18.5-24.9	5	50	8	23.5		
	Over weight 25 – 29.9	2	20	9	26.5		
	Obese 30 or above	0	0	5	14.7		

*-p<0.05, Significant & **-p<0.0001, Highly Significant

Table V: reveals that the association between the selected demographic variables with pre-test level of arthritis pain among adults of experimental group. It was statistically found that duration of illness has significant relationship with pre-test level of pain. P value is 0.05. It shows significant at p<0.05 level.

Table VI. Association between the selected demographic variables with pre-test level of arthritis pain among adult with knee arthritis for control group

S. No.	Demographic Variables	Mild pain		Moderate pain		Severe pain		Chi square test	P value
		No	%	No	%	No	%		
1.	**Age in years:**								
	40-45	0	0.0	2	8.7	1	5	$\chi^2 = 5.028$ (df=6)	0.540
	46-50	0	0.0	4	17.4	6	30		
	51-55	1	100.0	7	30.4	9	45		
	56-60	0	0.0	10	43.5	4	20		
2.	**Gender:**								
	Male	0	0.0	8	34.8	10	50	$\chi^2 = 1.733$ (df=2)	0.420
	Female	1	100.0	15	65.2	10	50		
3.	**Religion:**								
	Hindu	0	0.0	19	88.5	9	45	$\chi^2 = 4.203$ (df=3)	0.701
	Christian	0	0.0	4	17.4	10	50		
	Muslims	1	100.0	0	0.0	1	5		
	Others	0	0.0	0	0.0	0	0		
4.	**Duration of illness:**								
	Less than 1 year	0	0.0	3	13.0	4	20	$\chi^2 = 0.874$ (df=4)	0.928
	1-5 years	1	100.0	16	69.6	13	65		
	More than 5 years	0	0.0	4	17.4	3	15		
5.	**Type of work:**								
	Sedentary work	1	100.0	9	39.1	9	45	$\chi^2 = 2.733$ (df=6)	0.842
	Moderate work	0	0.0	7	30.4	6	30		
	Heavy work	0	0.0	7	30.4	5	25		
6.	**Marital status:**								
	Single	1	100.0	1	4.3	1	5	$\chi^2 = 3.611$ (df=6)	0.611
	Married	0	0.0	11	47.8	13	65		
	Divorced/separated	0	0.0	2	8.7	0	0		
	Widow/Widower	0	0.0	9	39.1	6	30		
7.	**Education:**								
	Illiterate	0	0.0	9	39.1	7	35	$\chi^2 = 3.094$ (df=6)	0.797
	Primary Schooling	1	100.0	8	34.8	8	40		
	Secondary Schooling	0	0.0	5	21.7	2	10		
	Degree	0	0.0	1	4.3	2	10		
8.	**No. of children:**								
	1-2 children	0	0.0	8	34.8	5	25	$\chi^2 = 2.108$ (df=4)	0.716
	3-4 children	1	100.0	11	47.8	13	65		
	More than 4 children	0	0.0	4	17.4	2	10		
9.	**Type of family:**								
	Nuclear family	0	0.0	5	21.7	5	25	$\chi^2 = 9.029$ (df=4)	0.060
	Joint family	1	100.0	7	30.4	13	65		
	Extended family	0	0.0	11	47.8	2	10		
10.	**Dietary habit:**								
	Vegetarian	1	100.0	5	21.7	7	35	$\chi^2 = 3.344$ (df=2)	0.188
	Non vegetarian	0	0.0	18	78.3	13	65		
11.	**Family income per month**:								
	Rs. 1000- 5000	0	0.0	3	13.0	0	0	$\chi^2 = 7.861$ (df=6)	0.248
	Rs.6000-Rs.10000	0	0.0	11	47.8	5	25		
	Rs.11000-Rs.15000	1	100.0	7	30.4	12	60		
	Rs.16000 and above/month	0	0.0	2	8.7	3	15		
12.	**Body Mass Index:**								
	Under weight less than 18.5	1	100.0	7	30.4	8	40	$\chi^2 = 4.765$ (df=6)	0.574
	Normal weight 18.5-24.9	0	0.0	9	39.1	10	50		
	Over weight 25 – 29.9	0	0.0	6	26.1	2	10		
	Obese 30 or above	0	0.0	1	4.3	0	0		

*-p<0.05,Significant & **-p<0.0001,Highly Significant

Table-VI: Reveals that the association between the selected demographic variables with pre-test level of arthritis pain among adults of control group. It was statistically found that there was no significant association between pre-test level of pain and selected demographic variables at p< 0.001 level.

Table VII. Association between the selected demographic variables with post-test level of arthritis pain among adult with knee arthritis for experimental group

S. No.	Demographic Variables	Mild pain		Moderate pain		Chi Square Test	P value
		No	%	No	%		
1.	**Age in years:**					$\chi^2 = 11.43$ (df=3)	0.0096*
	40-45	13	40.6	1	16.7		
	46-50	5	15.6	4	8.3		
	51-55	10	31.3	1	33.3		
	56-60	4	12.5	6	41.7		
2.	**Gender:**					$\chi^2 = 0.138$ (df=1)	0.7108
	Male	18	56.3	6	50.0		
	Female	14	43.8	6	50.0		
3.	**Religion:**					$\chi^2 = 0.843$ (df=2)	0.6560
	Hindu	28	71.9	6	50.0		
	Christian	3	25.0	6	50.0		
	Muslims	1	3.1	0	0.0		
	Others	0	0.0	0	0.0		
4.	**Duration of illness:**					$\chi^2 = 0.326$ (df=2)	0.8495
	Less than 1 year	9	28.1	4	33.3		
	1-5 years	19	59.4	6	50.0		
	More than 5 years	4	12.5	2	16.7		
5.	**Type of work:**					$\chi^2 = 0.978$ (df=3)	0.8066
	Sedentary work	21	65.6	6	50.0		
	Moderate work	6	18.8	3	25.0		
	Heavy work	5	15.7	3	25		
6.	**Marital status:**					$\chi^2 = 2.422$ (df=3)	0.4895
	Single	7	21.9	1	8.3		
	Married	18	56.3	8	66.7		
	Divorced/separated	2	6.3	2	16.7		
	Widow/Widower	5	15.6	1	8.3		
7.	**Education:**					$\chi^2 = 6.251$ (df=3)	0.1000
	Illiterate	9	28.1	2	16.7		
	Primary Schooling	10	31.3	7	58.3		
	Secondary Schooling	13	40.6	2	16.7		
	Degree	0	0.0	1	8.3		
8.	**No. of children:**					$\chi^2 = 4.056$ (df=2)	0.1316
	1-2 children	16	50.0	2	16.7		
	3-4 children	14	43.8	9	75.0		
	More than 4 children	2	6.3	1	8.3		
9.	**Type of family:**					$\chi^2 = 2.245$ (df=2)	0.3255
	Nuclear family	10	31.3	2	16.7		
	Joint family	19	59.4	7	58.3		
	Extended family	3	9.4	3	25.0		
10.	**Dietary habit:**					$\chi^2 = 0.164$ (df=1)	0.6857
	Vegetarian	10	31.3	3	25.0		
	Non vegetarian	22	68.8	9	75.0		
11	Family income per month:					$\chi^2 = 1.764$ (df=3)	0.6227
	Rs. 1000- 5000	1	3.1	1	8.3		
	Rs.6000-Rs.10000	9	28.1	3	25.0		
	Rs.11000-Rs.15000	18	56.3	5	41.7		
	Rs.16000 and above/month	4	12.5	3	25.0		
12.	**Body Mass Index:**					$\chi^2 = 7.982$ (df=3)	0.0464*
	Under weight less than 18.5	12	37.5	3	25.0		
	Normal weight 18.5-24.9	10	31.3	3	8.3		
	Over weight 25 – 29.9	9	28.1	2	58.3		
	Obese 30 or above	1	3.1	4	8.3		

*-p<0.05,Significant & **-p<0.0001,Highly Significant*

Table–VII: reveals that the association between the selected demographic variables with post-test level of arthritis pain among adults of experimental group. It is statistically found that age and body mass index has significant relationship with post-test level of pain. P value is 0.05. it shows significant at p<0.05 level.

Table VIII. Association between the selected demographic variables with post-test level of arthritis pain among adult with knee arthritis for control group

S. No.	Demographic Variables	Mild pain		Moderate pain		Severe pain		Chi Square Test	PValue
		No	%	No	%	No	%		
1.	**Age in years:**							$\chi^2 = 6.961$ (df=6)	0.3245
	40-45	0	0.0	2	6.5	1	9.1		
	46-50	1	50.0	4	12.9	5	45.5		
	51-55	1	50.0	13	41.9	3	27.3		
	56-60	0	0.0	12	38.7	2	18.2		
2.	**Gender:**							$\chi^2 = 2.293$ (df=2)	0.3178
	Male	0	0.0	12	38.7	6	54.5		
	Female	2	100	19	61.3	5	45.5		
3.	**Religion:**							$\chi^2 = 5.733$ (df=4)	0.1827
	Hindu	1	50.0	21	67.7	6	54.5		
	Christian	0	0.0	10	32.3	4	36.4		
	Muslims	1	50.0	0	0.0	1	9.1		
	Others	0	0.0	0	0.0	0	0.0		
4.	**Duration of illness:**							$\chi^2 = 2.193$ (df=4)	0.7003
	Less than 1 year	0	0.0	5	16.1	2	18.2		
	1-5 years	1	50.0	22	71.0	7	63.6		
	More than 5 years	1	50.0	4	12.9	2	18.2		
5.	**Type of work:**							$\chi^2 = 1.997$ (df=6)	0.9200
	Sedentary work	1	50.0	13	41.9	5	45.5		
	Moderate work	1	50.0	10	32.3	2	18.2		
	Heavy work	0	0.0	8	25.3	4	36.4		
6.	**Marital status:**							$\chi^2 = 4.799$ (df=6)	0.4463
	Single	1	50.0	1	3.2	1	9.1		
	Married	1	50.0	14	45.2	9	81.8		
	Divorced/separated	0	0.0	2	6.5	0	0.0		
	Widow/Widower	0	0.0	14	45.2	1	9.1		
7.	**Education:**							$\chi^2 = 3.841$ (df=6)	0.6982
	Illiterate	1	50.0	12	38.7	4	36.4		
	Primary Schooling	1	50.0	12	38.7	4	36.4		
	Secondary Schooling	0	0.0	6	19.4	1	9.1		
	Degree	0	0.0	1	3.2	2	18.2		
8.	**No. of children:**							$\chi^2 = 3.557$ (df=4)	0.4693
	1-2 children	0	0.0	11	35.5	2	18.2		
	3-4 children	2	100	15	48.4	8	72.7		
	More than 4 children	0	0.0	5	16.1	1	9.1		
9.	**Type of family:**							$\chi^2 = 8.753$ (df=4)	0.0676
	Nuclear family	0	0.0	8	25.8	2	18.2		
	Joint family	1	50.0	11	35.5	9	81.8		
	Extended family	1	50.0	12	38.7	0	0.0		
10.	**Dietary habit:**							$\chi^2 = 2.462$ (df=2)	0.2920
	Vegetarian	1	50.0	7	22.6	5	45.5		
	Non vegetarian	1	50.0	24	77.4	6	54.5		
11.	**Family income per month:**							$\chi^2 = 8.800$ (df=6)	0.1851
	Rs. 1000- 5000	0	0.0	3	9.7	0	0.0		
	Rs.6000-Rs.10000	0	0.0	14	45.2	2	18.2		
	Rs.11000-Rs.15000	2	100	12	38.7	6	54.5		
	Rs.16000 and above/month	0	0.0	2	6.5	3	27.3		
12.	**Body Mass Index:**							$\chi^2 = 2.619$ (df=6)	0.8550
	Under weight less than 18.5	1	50.0	11	35.5	4	36.4		
	Normal weight 18.5-24.9	0	0.0	14	45.2	5	45.5		
	Overweight 25 – 29.9	1	50.0	5	16.1	2	18.2		
	Obese 30 or above	0	0.0	1	3.2	0	0.0		

*-p<0.05, Significant & **-p<0.01, Highly Significant

Table-VIII: Reveals that the association between the selected demographic variables with post-test level of arthritis pain among adults of control group. It was statistically found that there was no significant association between pre-test level of pain and selected demographic variables at p< 0.001 level.

Control group: According to age shows that 17 (38.6%) of them were belongs to 51-55 years, 14(31.8%) of them were belongs to 56-60 years. Sex shows that 26 (59.1%) of them were belongs to female. Religion shows that 30 (68.2%) of them were belongs to Hindu. Duration of illness shows that 30 (68.2%) 0f them belongs to 1-5 years. Type of work shows that 19 (43.2%) of them were belongs to sedentary work. Marital status shows that 24 (54.5%) of them belongs to married. Educational status shows that 17 (38.6%) of them were belongs to Non-Literate, 17 (38.6 %) of them were belongs to primary schooling. No. of. Children shows that 25 (56.8%) of them were belongs to 3 -4 children. Types of family shows that 21(47.7%) of them were joint family. Dietary habit shows that 31(70.5%) of them were belongs to non vegetarian. Family income per Monthly shows that 20 (45.5%) of them were belongs to Rs.11000-Rs.15000/month. Body mass Index 19(43.2%) of them belongs to normal weight 18.5-24.9. The findings reveals that, out of 44 adults of experimental group, 10 (22.7%) of them had moderate level of arthritis pain, 34 (77.3%) of them had severe level of arthritis pain in pre-test and in post –test level of pain32(72.77%) of them had mild pain, 12(27.3%) of them had moderate pain, none of them had in severe pain.

The finding reveals that out 44 adult of control group, 1(2.3%) of them had mild level of pain, 23(52.3%) of them had moderate level of pain, 20(45.5%) of them had sever level of pain in pre test. In post test 2(4.5%) of them had mild level pain 31(70.5%) of them had moderate level of pain, 11 (25%) of them had sever level of pain. In experimental group the calculated mean, standard deviation values are 64.11, and 5.23. After the intervention, the post-test level of arthritis pain was assessed by using the same tool and the mean was calculated as 39.70 and standard deviation is 4.67. In control group the calculated pre test mean value is 59.11 and standard deviation is 8.27. After the intervention, the post-test level of arthritis pain was assessed by using the same tool and the mean was calculated as 54.32 and standard deviation is 8.64. The mean difference in experimental group is 24.11 is high when compared to the mean difference 4.79 of control group which show the effectiveness of apitherapy in reduction of pain among adults of experimental group.

- The improvement was statistically tested with paired 't'- test. The result found to be significant at p <0.0001, because of apitherapy. It shows that apitherapy was effective to reduce level of pain among arthritis adults.

Major findings

- In pre-test level of pain among adult with arthritis is measured by using Pain scale (the Modified western ontrio and master universities osteoarthritis index) among 88 older adult, 44 in experimental group 10 (22.7%) of them had moderate level of arthritis pain, 34 (77.3%) of them had severe level of arthritis pain.

- In experimental group post test mean value is 39.70, standard deviation is 4.67 and mean difference is 24.11. when compared with control group post mean value is 54.30 standard deviation is 8.64 and mean difference is 4.29.

- The paired T- test value for experimental group is 37.11. and the control group is 8.02. This shows this study is significant at p<0.0001.

Recommendations

Based on findings of the present study, the following recommendations have been made.

- Similar study can be conducted in other parts of the country with a large sample and in different setting.
- The same study can be conducted with true experimental research design.
- The study can be replicated with larger samples for better generalization.
- A comparative study can be conducted between pharmacological and non-pharmacological intervention.

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