

Application Of Hydrotherapy On The Intensity Of Pain And Quality Of Life Among Arthritis Patients

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Abstract: *Background Hydrotherapy has been used from ancient periods and is a cost-effective therapy for pain and inflammation. Objective: To evaluate the effect of hydrotherapy on the intensity of pain and quality of life among patients with arthritis. Design: Quasi-experimental design. Subject and methods: Arthritic patients of urban slum areas covering Bhubaneswar who were aged from 30years to 70 years of age volunteered to participate in the research study. The sampling technique for this study was non-probability purposive. Self-structured socio-demographic questionnaire, Self-structured modified arthritis quality of life scale and Visual analogue scale were used to accumulate the data. Sample size: 60 samples in the control group and 60 in the experimental group. Result: Hydrotherapy was effective to enhance the quality of life among arthritis patients. Conclusion: Based on the results of the current study it is recommended that a similar study can be done for higher analysis by utilizing randomized control trial design.*
Keywords: *Hydrotherapy, Intensity of pain, quality of life, arthritis urban slum areas.*

Introduction

Hydrotherapy has been used from ancient periods when Hippocrates had advised bathing in spring water for sickness. Arthritis may be the most common cause of disability and it includes obesity, age, hereditary cause, injury in joints, heavy work increases the rate of arthritis and enhances quality of life. Hence women have a higher rate of incidence than man.¹ According to Cheng YJ et al; 2007 arthritis is a disorder that affects joints with general Symptoms include joint pain, stiffness, redness, warmth, swelling, and also the decreased range of motion of the affected joints. This disease can very difficult for individuals to be physically active and some are forced to stay at home. This disease mostly attacks elderly people than young children²

A Centre for disease control survey conducted by the United States from 2007 to 2009 which showed 22.2% of adults aged ≥ 18 years had self-reported doctor-diagnosed arthritis, and 9.4% had arthritis-attributable activity limitation. With an aging population, this number is expected to increase². The disease Osteoarthritis is a degenerative joint disease, which is the common type of arthritis and this has been recognized by for long ago³. Among adults 60 years of age or older, the prevalence of symptomatic knee of Osteoarthritis is approximately 10% in men and 13% in women. The number of people affected with symptomatic osteoarthritis is likely to be increased due to the aging of the population and the obesity epidemic.⁴

Hydrotherapy is a cost-effective therapy, easily available in both hospitals, community set up based treatment, and all groups of people can use hydrotherapy. There are no side effects of this therapy. This study will beneficial to arthritis patients to relieve pain, swelling, inflammation, stiffness of the joints by using hydrotherapy and may improve the quality of life among arthritis patients. Hydrotherapy is the cheapest method, easily available for every individual both home and hospital basis. Only warm water is used and no chemicals added in this therapy so, after the use of this water we can use this for watering the plants after cooling it. Therefore, the investigator is interested to use

hydrotherapy for relief of pain, inflammation of joints and to enhance the quality of life among arthritis clients.

Subjects and methods

In this study, the sample, consisting of arthritis patients who were diagnosed with arthritis and having alterations in the level of pain that affect the quality of life. The sampling technique for this study was non-probability purposive. The study design was quasi-experimental research design (pre-test, post-test, and control group design). and the setting was an urban slum area of Bhubaneswar, Odisha.

The questionnaire consisted of three parts: the first part was designed to collect information on demographic factors, the second part was Self-structured modified arthritis quality of life scale on various factors of quality of life and the third part was standardized Visual analogue scale(VAS) on the intensity of pain which had been determined from a review of the literature. The intervention procedure was the application of Hydrotherapy on arthritis patients in which the affected joint is to be deep in warm water at 33⁰-36⁰ c, for 15-20 minutes once daily for one month and follow up after one month to assess the intensity of pain and quality of life.

The period of study was two months from October 23/01/18– 24/03/18. The researcher was first introduced herself to the arthritis patients at Mahavirbasti, Baramunda, Bhubaneswar, Odisha and was explain the purpose of the study and assured that their responses will be kept confidential and used only for research purpose. Informed consent has been taken from the samples. The socio-demographic profile of the samples was collected. The first pre-test will be done for both the control and experimental group. After that intervention is given to the experimental group on 23/01/18– 24/02/18. After 30days follow up was done along with that post-test is done for both the control group and experimental group was done.

The Research committee and ethical committee of IMS and SUM Hospital under Siksha ‘O’ Anusandhan Deemed to be university, approved research proposal and approved this study. Investigator provided self-introduction to the patient and his/her legal guardian. Written informed consent had been taken from the patient or the legal guardian. The procedure was explained to the patient and legal guardian in his /her local language and ensuring that the document was confidential. It was also informed that if the sample desire they can withdraw from the study at any time. Data were collected and analyzed anonymously.

Results

Distribution of study subjects according to socio-demographic variables (**Table-1**) revealed that in the control group; most (43.3%) samples were between 51-60-year age group. Most of (63.3%) total samples were females. All of them were Hindu. The majority of samples were having (66.7%) married. In the experimental group, total (30%) samples were above the 61years age group. Most (60%) total samples were females. All of them were Hindu and 66.7% of samples were married. in the control group most of the samples (36%) were illiterate, maximum samples (40%) were daily workers, most of the samples (66.7%) were no history of arthritis, majority of samples (93.3%) were no fracture around the arthritic joints.

In the experimental group 40% of samples were having primary education 33.3% of samples were having daily workers. In family history of arthritis, 26.7% samples were having history of arthritis and 73.3% samples were having no history of arthritis.13.3% samples were having less than 6months of arthritis, 13.3% samples were having above 24months of diagnosed arthritis.13.3% samples were having fractures around the arthritic joints and most of the samples were having 86.7% no fracture around arthritic joints.

The Distribution of study subjects according to intensity of pain among arthritis patients in pre-experimental and post-experimental group (**Figure 1**) represented that in experimental pretest group 23.3% samples were having uncomfortable pain, 20% samples were having miserable pain,16.7% samples were having horrible pain, 13.3% samples were having unbearable pain. In the experimental posttest group 10% of samples were having no pain, 30% samples were having mild pain,26.7% samples were having uncomfortable pain, 23.3% samples were having miserable pain,10% of samples were having horrible pain.

The quality of life among arthritis patients in the pre-experimental group and post-experimental group (**Figure 2**) represented that in the experimental pretest group 10% of samples were having a good quality of life, 86.7% of samples were having average quality of life. In the

experimental posttest group, 16.7% of samples were having a good quality of life, 83.3% of samples were having average quality of life.

Effect of hydrotherapy on the intensity of pain in experimental group (**Table 2**) depicted that the mean, standard deviation of intensity of pain in pre and post-experimental group were 90.9 ± 8.953 and 81.73 ± 9.62 respectively and 't' value was 6.485 at (df 29, $p = 0.001$), which was statically significant. Therefore, the research hypothesis was accepted and the alternative hypothesis was rejected. Hence the application of hydrotherapy is effective on the level of pain among arthritis patients.

Effect of hydrotherapy on pre and post-test score of quality of life in the experimental group by using paired t-test (**Table-3**) revealed that the mean, standard deviation of quality of life in pre and post-experimental group was 90.9 ± 1.635 and 100.7 ± 11.457 respectively. 't' value was -3.73 at (df 59, $p = 0.001$) which was statically significant. Therefore, the research hypothesis was accepted and the alternative hypothesis was rejected. Hence the application of hydrotherapy was effective to enhance the quality of life among arthritis patients.

Effect of hydrotherapy on quality of life in the experimental and control group (**Table-4**) revealed that the mean, standard deviation of quality of life in the control group (90.9 ± 1.635) and experimental group (93.27 ± 10.683) and 't' value was -0.93 at (df 118, $p = 0.035$) which was statically significant. Therefore, the research hypothesis was accepted and the alternative hypothesis was rejected. It revealed that the application of hydrotherapy was effective to enhance the quality of life among arthritis patients.

Effect of hydrotherapy in pretest score on intensity of pain between control and experimental group (**Table-5**) revealed that the mean, standard deviation of intensity of pain in control (2.9 ± 2.09) and experimental group (4.1 ± 2.44) and 't' value was -2.046 at (df =118), ($p = 0.045$) which was statically significant. Therefore, the research hypothesis was accepted and the alternative hypothesis was rejected. Hence, the application of hydrotherapy was effective to reduce the level of pain among arthritis patients.

Chi-square analysis revealed that there is no significant association of intensity of pain among arthritis patients with age, gender, marital status, educational status, occupation, family history of arthritis, arthritis diagnosed since, any fractures around the joints.

Chi-square analysis computed that there is no significant association of quality of life and age, sex, marital status, educational status, occupation, family history of arthritis, arthritis diagnosed since, any fractures around the joints.

4. DISCUSSION

Most of the samples in both control (43.3%) and experimental group (30%) samples were in the age group 51-60 years and >61 years. This study is supported by Johnson Levona (2011) The effect of hydrotherapy on the pain levels, stress levels, quality of life and functional disability in patients with rheumatic disease. The females are majority than males that is 84.2%. In 61-70 years age group is more affected in rheumatic disease that is 47.4%.⁵

The present study revealed that there was a statistically significant effect of hydrotherapy to decrease the level of pain and increasing quality of life among arthritis patients as calculated paired 't' value is 6.485 and unpaired 't' value is -2.046 & 'p' value is $< 0.001^*$ and 0.045^* which is being less than 0.05 level of significance. This study supported by similar findings was seen in a study conducted by J.M Dias (2017) Hydrotherapy improves pain and function in older women with knee osteoarthritis a randomized controlled trial. The hydrotherapy group had better outcomes for pain (adjusted mean difference = 11 points, 95% CI: 3–18) and function (adjusted mean difference = 12 points, 95% CI: 5–18). Patients receiving hydrotherapy had better performance for knee flexor and extensor strength, knee flexor power, and knee extensor endurance.⁶

The current study represented that 30% of samples were mild pain by giving hydrotherapy in the experimental group. A similar study conducted by David J. Hunter et al, the impact of arthritis on pain and quality of life an Australian survey the majority 71% found medium pain effectiveness.⁷

This study revealed that 16.7% of samples were good, 83.3% of samples were average quality of life enhances by giving the hydrotherapy experimental group. A similar study conducted by Wijdan Akram Hussein, 2017 a cross-sectional study on the quality of life in patients with arthritis in Baghdad. It depicted that role of the functional or physical domain had the highest mean score for

quality of life that is 53.78.⁸ A limitation of the study is its samples were not selected randomly and the study was conducted in limited duration.

Based on findings the investigator found that hydrotherapy was more effective to reduce pain and enhances quality of life among arthritis patients. Arthritis is a common disability and affects 15% of people that are over 180 million people in India according to arthritis of India and women are more affected than males. Hydrotherapy is the cheapest or cost-effective and easily available for all groups of peoples. Therefore, it concluded that hydrotherapy was more effective for arthritis patients. Health professionals' initiative in educating the patient and relatives to improve the skill of using hydrotherapy is very essential to make it effective.

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Conflict of Interest: None

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Table 1. Distribution of study subjects according to socio-demographic variables
(N=n1+n2=60+60=120)

Sl. No.	Variables		Control group(%)	Experimental group(%)
01.	Age	a)30-40yrs	16.7	16.6
		b)41-60yrs	20.0	26.7
		c)51-60yrs	43.3	26.7
		d)>61yrs	10.0	30
02.	Sex	a) Male	36.0	40.0
		b)Female	6.3	60.0
03.	Religion	a) Hindu	100.0	100
		b) Islam	--	--
		c)Christian	--	--
05.	Educational status	a) Illiterate	36.7	16.7
		b) Primary	26.7	40.0
		c)Secondary	23.3	20.0
		d)Higher secondary and above	13.3	23.3
06.	Occupation (type of work)	a) Framer	20.0	10.0
		b) Daily worker	43.3	33.3
		c)Govt./private job	13.3	26.7
		d)Non-working	23.3	30
07.	Family history of arthritis	a) Yes	33.3	26.7
		b)No	66.7	73.3
08.	Arthritis diagnosed since	a) <6months	20.0	13.3
		b)6-9months	36.7	36.7
		c)10-24months	30.0	36.7
		d)>24months	13.3	13.3
09.	Is there any fracture around the arthritic joint?	a) Yes	3.3	13.3
		b) No	93.3	86.7
		If yes (a)<1year	3.3	--
		(b)1-5years (c)>5years		

Table 2. Effect of hydrotherapy on intensity of pain in experimental group by using paired ‘t’ test.

n1=60

Item	Mean ±SD	SE	‘t’ value	Df	‘p’ value
Pain (Experimental group)					
Pretest	90.9 ±8.953	1.635	6.485*	59	0.001*
Post-test	81.73±9.62				

p≤0.05 (*statistically significant)

Table 3. Effect of hydrotherapy on quality of life in the experimental group by using paired 't' test.
n1 =60

Item	Mean ±SD	SE	't' value	Df	'p' value
Quality of life (Experimental group)					
Pretest	90.9 ±8.953				
Post-test	100.7±11.457	1.635	-3.73	59	0.001*

p≤0.05(*Statistically significant)

Table 4 Effect of hydrotherapy on quality of life in the experimental and control group by using unpaired paired 't' test.

n1+n2=120

Item	Mean ± SD	SE	Df	't' value	p'value
Control group	90.9± 8.953	1.653	118	-0.93	0.035*
Experimental group	93.27±10.683				

p≤0.05(*Statistically significant)

Table 5. Effect of hydrotherapy on intensity of pain between the control and experimental group by using an unpaired t-test.

n1+n2=120

Items	Mean ± SD	SE	Df	't' value	'p' value
Control group	2.9± 2.09	0.382	118	-2.046	0.045*
Experimental group	4.1±2.44				

p≤0.05(*Statistically significant)

n1=60

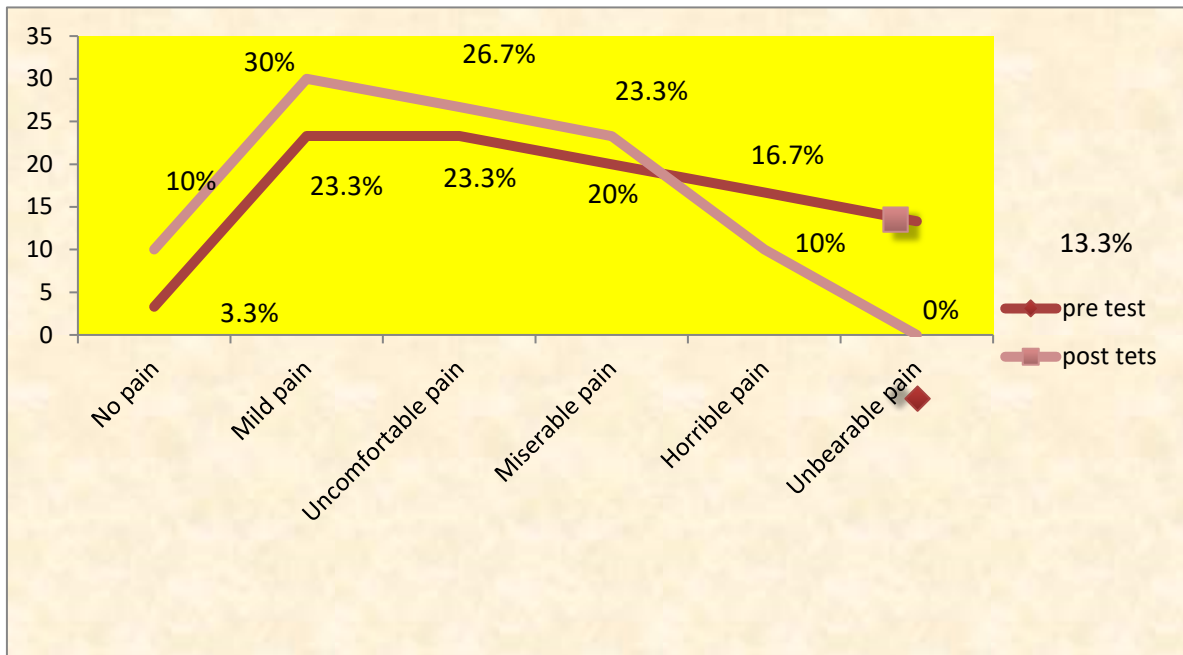


Figure 1 Line graph showing distribution of pretest and post-test score of pain in experimental group.

n1=60

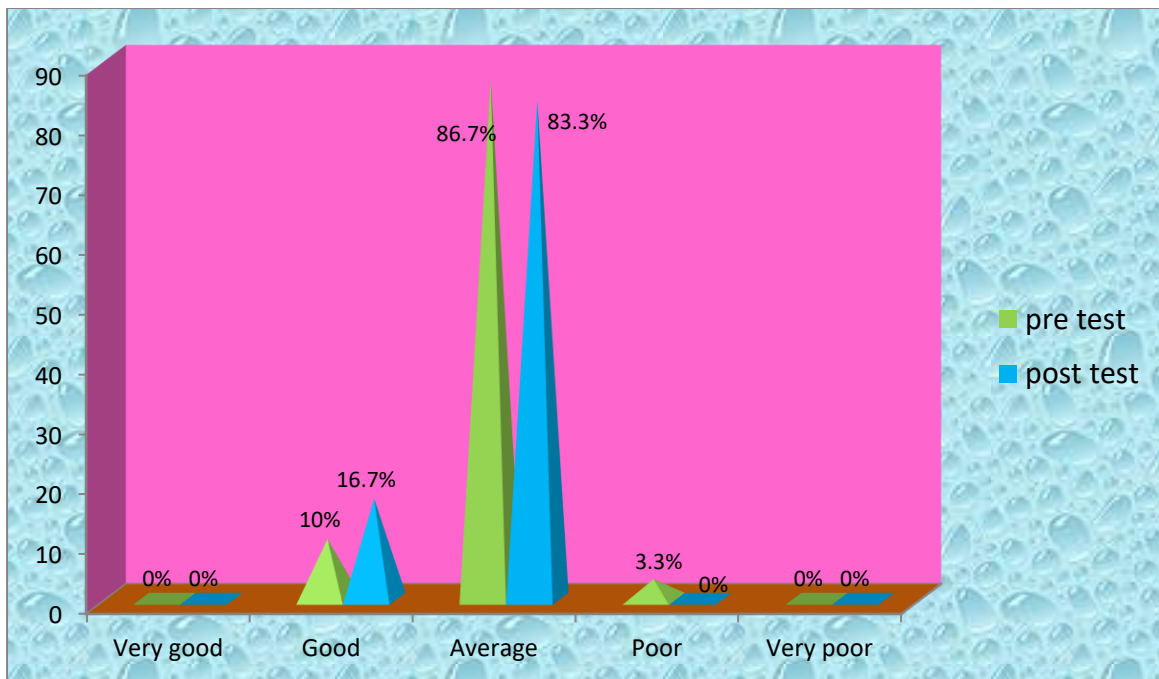


Figure 2. pyramidal graph showing that pre-experimental and post-experimental scores on quality of life in the experimental group.