

Effectiveness of Olive Oil Application on Knee Pain among Patients with Osteoarthritis in Selected Hospital at Nagercoil

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Abstract: *Background of the Study:* Osteoarthritis is a nearly universal, slowly progressive degenerative condition affecting men and women as they age. It causes pain and difficulty moving the joint, muscle weakness, limited range of motion, joint deformities, disturbance in gait and sleep. About 80% of the elderly people are having osteoarthritis the patient's may experience severe pain during mobility due to that the patient's are not able to do activities properly. Emerging research study suggests the potential benefits of olive oil application on knee pain. *Objectives:* 1. To assess the level of knee pain among patients with osteoarthritis. 2. To assess the effectiveness of olive oil application on knee pain among patients with osteoarthritis. 3. To find out the association of post-test level of pain among patients with osteoarthritis with their selected demographic variables in the experimental group. *Hypotheses:* 1. There will be a significant reduction in knee pain among patients with osteoarthritis after olive oil application. 2. There will be a significant association between post-test level of knee pain and selected demographic variables of patients with osteoarthritis who received olive oil application in experimental group. *Methodology:* An evaluatory research approach, True experimental pre-test and post-test control group design was used. Using Simple random sampling technique 60 patients with Osteoarthritis were selected from Salvation Army Catherine Booth Hospital, Nagercoil of which 30 patients were assigned in experimental group and another 30 were in control group. Application of Olive oil was done in the affected knee for experimental group for 14 days and pain assessment was done using descriptive pain scale. *Results:* In experimental group post-test mean pain score was 1.40 with standard deviation of 0.49 and the control group post-test mean pain score was 3.03 with standard deviation of 0.61. And the calculated 't' value was 11.303 which showed that there was a significant difference between the experimental and control group post-test level of pain among patients with osteoarthritis at $p < 0.001$ level of significance. *Conclusion:* The outcome of the study showed that olive oil application was effective in reducing the level of pain among patients with osteoarthritis.

Keywords: Effectiveness, Olive oil application, pain, Osteoarthritis

1. Introduction

Musculoskeletal problems becomes a major health problem. This problem has been recognized by United Nations and World Health Organization in the bone and joint decade 2000-2010. The bone and joint decade report describes that osteoarthritis which is characterized by loss of joint cartilage that leads to pain and dysfunction, osteoarthritis decrease the life expectancy of aged people. About 80% of the elderly people are having osteoarthritis the patient's may experience severe pain during mobility due to that the patient's are not able to do activities properly.

Pain is the more terrible lord of mankind than even death itself today. Pain has become the universal disorder, a serious and costly public health issue, and a challenge for the family friends, and health care providers who must give support to the individuals suffering from physical as well as the emotional consequences of pain. When knee is the most complex and nerve rich joint over use, the knee will react sharply causing discomfort and pain.

Osteoarthritis has often progressive despite treatments such as: pain medication, exercises, hot application, cold application, corticosteroid injections before eventually requiring joint replacement. The use of topical substances for the relief of symptoms in osteoarthritis has been addressed in few studies. Gemmel et.al., reported the use of herbal creams for improvement of pain and stiffness. Field

et.al, reported on effectiveness of massage to reduce pain in osteoarthritis, Vanhaslen et al reported massaging oil reduces pain in osteoarthritis.

Olive oil application is one of the traditional methods of pain reduction in patients with osteoarthritis. Olive oil is extracted from the ripened fruit, it is otherwise known as liquid gold. Olive oil is one of the most healing substances that can be applied on body especially on osteoarthritis pain and it consists of a powerful inflammation-fighting compound.

Olive oil contains a compound called Oleocanthal that acts in the same way ibuprofen does to relieve pain. Olive oil contains numerous phenolic compounds that exert potent anti-inflammatory action. (Lucas. L, Russell.). Olive oil increases blood flow to particular area. Olive oil improves the tone of supportive muscles, enhances joint flexibility and relieves pain. In a study it was stated the application of 3ml of olive oil daily relieves osteoarthritis pain.

Scientists at the Monell Chemical Senses Centre in Philadelphia reported in the August 31, 2005 issues on the Journal Nature that oleocanthal acts as a natural anti-inflammatory by inhibiting COX-2 enzymes in the same way ibuprofen does. COX-2 enzymes takes a part in the process of joint inflammation that can lead to arthritis pain. This study was conducted to evaluate the claimed

therapeutic effect of olive oil application in pain reduction among patients with osteoarthritis.

2. Objectives

- To assess the level of knee pain among patients with osteoarthritis.
- To assess the effectiveness of olive oil application on knee pain among patients with osteoarthritis.
- To find out the association of post-test level of pain among patients with osteoarthritis with their selected demographic variables in the experimental group.

Hypotheses:

- There will be a significant reduction in knee pain among patients with osteoarthritis after olive oil application.
- There will be a significant association between post-test level of knee pain and selected demographic variables of patients with osteoarthritis who received olive oil application in experimental group.

3. Methodology

An evaluatory research approach was used. A true experimental pre-test and post-test control group design was adopted for this study. The study was conducted in orthopedics department at The Salvation Army Catherine Booth Hospital, Nagercoil. The study population comprised of patients with osteoarthritis. Patients who were not willing to participate and patients who were having other types of arthritis were excluded for the study. The sample size consisted of 60 Osteoarthritis patients. Using Simple random sampling technique 30 patients were assigned in experimental group and another 30 were in control group.

Tools: The tools used for this study comprised of 2 sections:

Section A: It consists of demographic variables like age, gender, type of work, family monthly income, body mass index and duration of illness.

Section B: It consists of descriptive pain scale. The total score is 5. The rating scale has score's such as 0-No pain, 1-Mild pain, 2-Moderate pain, 3-Severe pain, 4-Very severe pain, 5-Worst pain.

Content validity of the tool was established by sending it to various experts. Permission for data collection was obtained from the hospital authority. The purpose of the study was explained to the samples and an informed consent was obtained prior to the study. The data collection procedure was done for 1 month.

The subjects were divided into experimental group and control group. Initially the subjects were interviewed in order to collect demographic data. Then the investigator assessed pain by using descriptive pain scale in both the groups. Experimental group was given the application of Olive oil in the affected knee for 14 days. After 14 days post-test pain assessment was done with descriptive pain scale for both the groups. The obtained data were analyzed using descriptive and inferential statistics.

4. Results

1) Frequency and percentage distribution of demographic variables of patients with osteoarthritis in experimental and control group

Table 1:

S. No	Demographic variables	Experimental group Olive oil application (n=30)		Control group (n=30)	
		f	%	f	%
1.	Age in years				
	<40	5	16.67	4	13.33
	41-50	8	26.67	7	23.33
	51-60	8	26.67	9	30
	>60	9	30	10	33.33
2.	Gender				
	Male	16	53.33	13	43.33
	Female	14	46.67	17	56.67
3.	Type of work				
	Mild work	11	36.67	13	43.33
	Moderate work	13	43.33	12	40
	Heavy work	6	20	5	16.67
4.	Family monthly income in Rs				
	<5,000	6	20	7	23.33
	5,001-10,000	16	53.33	16	53.33
	>10,000	8	26.67	7	23.33
5.	Body mass index				
	Underweight	3	10	4	13.33
	Normal weight	16	53.33	18	60
	Over weight	7	23.33	5	16.67
	Obesity	4	13.33	3	10
6.	Duration of illness in years				
	<1	3	10	4	13.33
	1-3	12	40	13	43.33
	3-5	8	26.67	9	30
	>5	7	23.33	4	13.33

Table 1 reveals that from majority of the participants 9 (30%) in experimental group and 10 (33.33%) in control group belongs to 60-70 years of age group. Majority of subjects 16 (53.33%) in experimental group were male and 17 (56.67%) in control group were female. Majority of subjects 13 (43.33%) in experimental group were moderate workers and 13 (43.33%) in control group were mild workers. Majority in both groups, 16 (53.33%) were receiving Rs.5000-10,000/- as monthly family income. Majority 16 (53.33%) in experimental group and 13 (43.33%) in control group had normal bodyweight. Majority of subjects 12 (40%) in experimental group and 13 (43.33%) in control group were having illness for 1-3 yrs.

2) Comparison of mean pain score and standard deviation of pretest and post-test among patients with osteoarthritis in the experimental group, N=60

Test	Maximum score	Mean	Mean difference	S.D	't' test
Pre-test	5	3.33		0.66	t=15.314***
Post-test	5	1.40	1.93	0.49	p=S

*** $p < 0.001$, S-Significant

Table 2 delineates that the calculated pre-test mean pain score was 3.33 with standard deviation of 0.66 and the post-test mean pain score was 1.40 with standard deviation of 0.49. The mean difference was 1.93 and the calculated 't' value was 15.314 which was significant at $p < 0.001$ level.

3) Comparison of mean pain score and standard deviation of pretest and post-test among patients with osteoarthritis in the control group, N=60

Test	Maximum score	Mean	Mean difference	S.D	't' test
Pre-test	5	3.20	0.17	0.61	t=1.980
Post-test	5	3.03	0.61	0.61	p=S

*** $p < 0.001$, S-Significant

Table 3 reveals that the calculated pre-test mean pain score was 3.20 with standard deviation of 0.61 and the post-test mean pain score was 3.03 with standard deviation of 0.61. The mean difference was 0.17 and the calculated 't' value was 1.980 which was significant at $p < 0.001$ level.

4) Comparison of mean pain score and standard deviation in the post-test among patients with osteoarthritis in experimental and control group, N=60

Group	Maximum score	Mean	Mean difference	S.D	't' test
Experimental	5	1.40	1.63	0.49	t=11.303***
Control	5	3.03	0.61	0.61	p=S

*** $p < 0.001$, S-Significant

Table 4 illustrates that the calculated experimental group post-test mean pain score was 1.40 with standard deviation of 0.49 and the control group post-test mean pain score was 3.03 with standard deviation of 0.61. The mean difference was 1.63 and the calculated 't' value was 11.303 which was significant at $p < 0.001$ level.

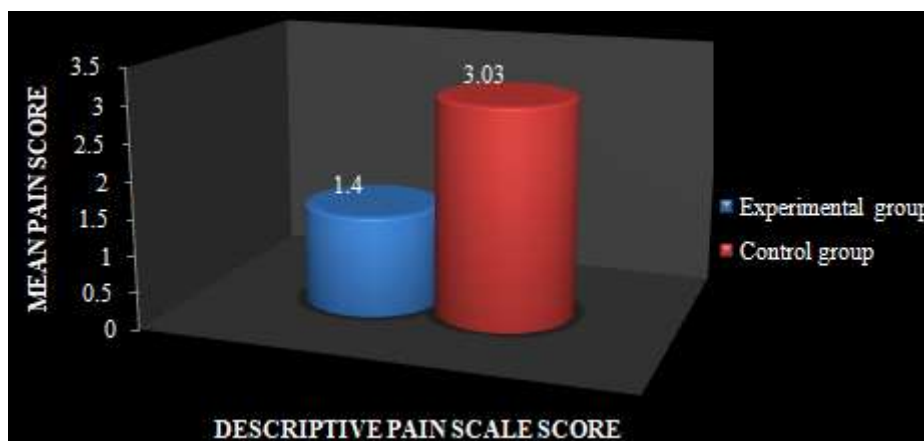


Figure 1: Comparison of post-test mean pain score among patients with osteoarthritis in the experimental and control group

5. Discussion

In experimental group post-test mean pain score was 1.40 with standard deviation of 0.49 and in the control group post-test mean pain score was 3.03 with standard deviation of 0.61. The difference was 1.63 and the calculated 't' value was 11.303 which was significant at $p < 0.001$ level. Hence Olive oil application was effective in reducing knee pain among Osteoarthritis patients.

6. Conclusion

The study findings provides the statistical evidence which clearly indicates that Olive oil application can be used to reduce knee pain. Therefore with technological advances and ever growing challenges nurses should update their knowledge in the latest innovation and should take initiatives to implement Olive oil application in Osteoarthritis patients.

References

[1] Barbara K Timby Introductory Medical- surgical Nursing 10th ed. (2007). Wolters Kluwer publications China. pp:1004-1006.

- [2] Basavanthappa Nursing Research 3rd ed. (2007) Jaypee Brothers publications. New Delhi pp:30-45.
- [3] Black Medical Surgical Nursing 7th ed. (2005) Elsevier publications. India. Pp: 1489-1508.
- [4] David.J.magee Orthopedic assessment 5th ed. (2008) saurabh printers noida pp-816.
- [5] John Ebenezer Disorder of joints 1st ed. (2012) CBD publication pp-99.
- [6] Joseph Gait disorder of aging 1st ed. (1997) library of congress publication USA pp-348.
- [7] Larry Katzenstein Nursing. 7th ed. Charge of Arthritis, Reader's Digest publications. Australia Pp-442-439.
- [8] Abbott.j.h (2013) Manual therapy, exercise therapy or both in usual care for osteoarthritis of hip and knee a randomized control trail osteoarthritis and cartilage 21(4)528 -534.
- [9] Almalty abdul majeed (2013) The effects of topical application of olive oil on alleviation of knee pain in patient with knee osteoarthritis Indian journal of physiotherapy 7(3)6-11.
- [10] Alouch et al. (2009) Risk for occupational osteoarthritis AAOHN Journal 2009 Jul;57(7):283-90; quiz 291-292.