

# Effectiveness of olive oil application on knee pain among patients with osteoarthritis in selected hospitals

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## Abstract

The aim of the present study was to assess the effect of olive oil application on knee pain among patients with osteoarthritis in selected hospitals at SangliMiraj and Kupwad corporation area. The study objectives were to assess the existing level of knee pain among patients with osteoarthritis in experimental and control group, to assess the level of knee pain after olive oil application in experimental group, to compare the level of pain in experimental and control group, and to find out the association of level of pain before olive oil application among patients with osteoarthritis with their selected demographic variables in both the groups. Hypothesis for this study was H0- There is no significant effect of olive oil application on level of knee pain among patients from experimental and control group. H1- There is significant effect of olive oil application on level of knee pain among patients from experimental and control group. Quantitative research approach with two groups pre test post test was used for this study. The conceptual framework used in this study was general system theory by Ludwig Von Bertalanffy. 60 samples were selected for the study by non-probability purposive sampling technique (30 samples of experimental group and 30 of control group). In experimental group, pain level was assessed prior to the intervention, after which olive oil is applied to the patients for once a day for 14 days and pain score level of day 1<sup>st</sup>,day 7<sup>th</sup> and day 14<sup>th</sup> was compared, Where as in control group daily routine care was given and pain score level was noted on same days as in experimental group. Data was collected using demographic data and Numerical pain rating scale. The data was analysed using descriptive and inferential statistics. The study result was, Variations are found in mean and SD scores in experimental and control group. P value is less than 0.005. There is significant difference in the level of knee pain among osteoarthritis patients. The reduction of pain is also seen in the control group, but not as significantly as in experimental group.Results shows that there is an effect of olive oil on knee pain among patients with osteoarthritis as the mean score for pain has seen to be reduced more in the experimental group as compared to that of control group.as a result, it can be concluded that using olive oil to alleviate knee pain in osteoarthritis patients is an effective and safe approach of pain control.

**Keywords:** Assess, Effect, Olive oil application, Knee pain

## 1 Introduction

Osteoarthritis is a degenerative chronic disorder with multiple causes to occur, and the most common indication is having pain in knee joints, that may occur after continuous activity with weight mobility and bearing, the individual may also experience joint stiffness if there is inactivity of joints. When a particularly heavy object is

lifted, the disease most commonly affects the joints of the upper and lower limbs, the spinal cord, and the joints of the hips and knees on which pressure is exerted. The research indicates that obesity, which causes additional pressure on the joint, repeated injuries to the joint, or weak muscle power of the lower limbs because of which weight bearing becomes difficult. The Hereditary vulnerability, Female gender and lower educational standard are other elements that contribute to osteoarthritis and put a person at risk for osteoarthritis.<sup>1</sup>

Worldwide the osteoarthritis ranks eight in all the diseases and covers totally around 15% in musculoskeletal problems. With 80 percent of the population over 65 years old suffering from joint wear and tear, India is likely to detect an endemic osteoarthritis. 40% of these persons are likely to have severe osteoarthritis, which will prevent them from doing daily activities<sup>2</sup>.

The prevalence rate is increasing in India related to knee pain in osteoarthritis patients and the treatments is getting expensive with many more side effects. Osteoarthritis affects around 80% of the elderly population. Patients with osteoarthritis may have considerable discomfort during mobility, preventing them from doing activities efficiently. Olive oil has a substantial impact on the discomfort associated with osteoarthritis. Female gender, old age, and obesity, as well as a history of previous knee injuries or surgeries, are undeniably risk factors of these high risk population. The prevalence of osteoarthritis among females is said to rise during menopause. Many studies have shown that estrogen loss during menopause increases a woman's risk of developing osteoarthritis<sup>3</sup>

The symptoms of osteoarthritis have a significant impact on the quality of life of an osteoarthritic patient. It has an impact on both the patient's psychological and physical well-being because both functions are impaired. Osteoarthritis of the knee does not just affect the cartilage, it affects the entire joint, including the meniscus, ligaments, and Peri-articular muscle. It is a painful and disabled condition that affects and hinders the quality of life of millions of individuals. Osteoarthritis (OA) is accepted as a major public health problem. It is one of the major causes of impaired function that reduces quality of life (QOL) worldwide. OA is a very common disorder affecting the joint cartilage<sup>4</sup>

As there is no cure for OA, treatments currently focus on management of symptoms. Pain relief, improved joint function, and joint stability are the main goals of therapy. The muscle weakness and muscle atrophy contribute to the disease process. So, rehabilitation and physiotherapy were often prescribed with the intention to alleviate pain and increase mobility. However, as exercise has to be performed on a regular basis in order to counteract muscle atrophy, continuous exercise programs are recommended in people with degenerative joint disease<sup>5</sup>

Therapeutic exercise regimes either focus on muscle strengthening and stretching exercises or on aerobic activity which can be land or water based. This article presents an overview of the current knowledge on OA and focuses on biomechanics, etiology, diagnosis and treatment strategies, conservative treatment including the physical therapy management are discussed. This information should assist health care practitioners who treat patients with this disorder<sup>6</sup>

It has been discovered that, despite the significant prevalence of osteoarthritis, awareness of the disease is quite poor when compared to other disorders (Arogya TNS). In affluent countries, osteoarthritis is a significant source of disability. We should expect knee arthritis to be a big public health issue as populations get old. Therefore, preventive efforts to minimize the risk of both knee arthritis development and progression are of paramount importance, as regards not only the quality of life issues, but also the burden of management and the treatment of this common condition in the coming decades. Osteoarthritis becomes a major source of impairment, prevention efforts must be done, and osteoarthritis and osteoarthritis therapy must be addressed<sup>7</sup>

## 2 Materials and Methods

In this study quantitative research approach was adopted and pre-test and post-test control group design was used to assess effect of olive oil on knee pain in selected hospitals at Sangli, Miraj and Kupwad, corporation area. The research tool has two sections, section I contains demographic variables like age, gender, occupation, type of work, family monthly income in rupees, BMI and duration of illness in years. and section II contains Numerical Pain Rating scale<sup>8</sup>

The level of effectiveness on knee pain was assessed in both groups using a Numerical pain rating scale on the 1st day, 7th day and at the end of the 14th day.

In the experimental group 5ml of olive oil was applied on affected knee for 10 minutes once a day for 14 days. Total 60 samples were selected by non-probability purposive sampling method. The content validity of

tool was done by 27 experts and for the reliability of the tool inter-rater method was used, the reliability coefficient 'r' of the tool was 0.98 hence the tool was found reliable. Pilot study was also conducted to check feasibility of the study and the study was found feasible. The study adopted "General System Theory" as a theoretical base for framework of the study. Analysis was done using frequency and percentage distribution and Anova test.

### 3 Results and Discussion

Based on the objectives of the study, frequency, percentage, mean, SD were calculated to pre and post test score. Unpaired t-test is calculated to get pre and post test score. Frequency and percentage distribution is done for demographic variables.

The readings were consistent with a study conducted by S Holmberg, A thelin, on Knee osteoarthritis and body mass index: a population-based case-control study in this, knee osteoarthritis was substantially linked to a mild increase in BMI within the normal weight range. Knee osteoarthritis was linked to being overweight at anytime<sup>9</sup>

**Table 1: General assessments of level of knee pain among patients with Osteoarthritis in Experimental group n=60**

Experimental Group	Score	Level of Pain	Before		After	
			Frequency	Percentage	Frequency	Percentage
	0	No Pain	0	0.00	0	0.00
	1-3.	Mild Pain	0	0.00	13	43.33
	4-6.	Moderate Pain	17	56.67	15	50.00
	7-10.	Severe Pain	13	43.33	2	6.67

Table no 1 shows that for the assessment purpose the total score of level of knee pain was divided in to four groups like no pain (0 score), mild pain (1-3 score), moderate pain (4-6 pain) and severe pain (7-10 score). Before olive oil application there were 17 patients with moderate pain and 13 patients with severe pain in experimental group which is of 56.67% and 43.33% respectively. After olive oil application there were 13 patients with mild pain, 15 patients with moderate pain and 2 patients severe pain in experimental group which is of 43.33%, 50% and 6.67% respectively

A study conducted by Heidi Kupsad, Berit R Hanestad, Norvald Langeland (et.al) shows that cut points for mild, moderate and severe pain in clients having osteoarthritis of the joint related to hip and knee ready for joint replacement surgery concludes that the ideal cut point for average pain classified as Mild, Moderate, or Severe, indicating mild to moderate pain for patients with osteoarthritis of the knee.<sup>10</sup>

Another study on Moderate to severe osteoarthritis pain and its impact on patients done by Patricia Schepman (et.al) shows that moderate to severe osteoarthritic pain has significantly greater multidimensional impact compared with mild osteoarthritic pain<sup>11</sup>

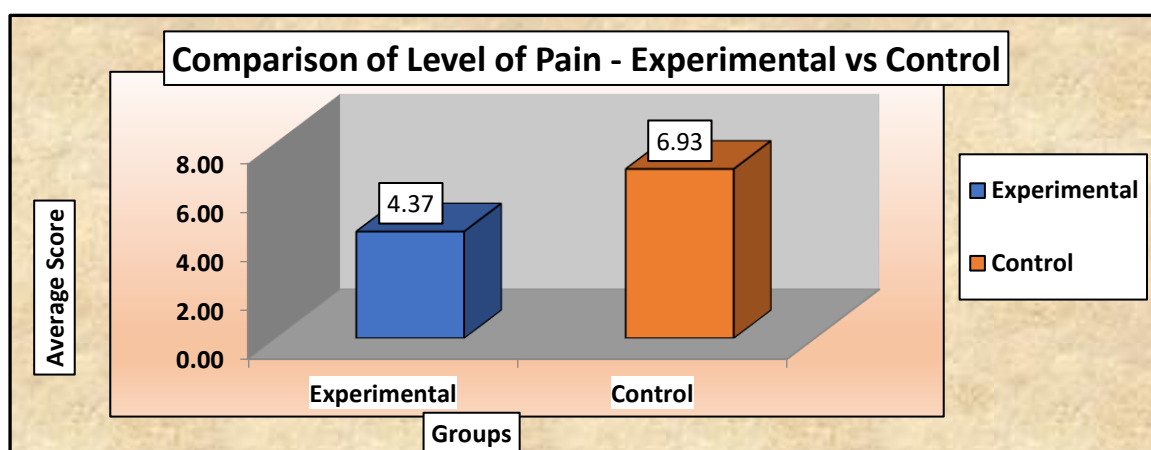
	Score	Level of Pain	Before		After	
			Frequency	Percentage	Frequency	Percentage
<b>Control Group</b>	0	No Pain	0	0.00	0	0.00
	1-3.	Mild Pain	0	0.00	0	0.00
	4-6.	Moderate Pain	6	20.00	11	36.67
	7-10.	Severe Pain	24	80.00	19	63.33

**Table 2: General assessments of level of knee pain among patients with Osteoarthritis in Control group n=60**

Table no 2 shows that in control group there were 24 patients with severe pain and 6 patients with Moderate pain which is of 80% and 20% respectively. After intervention there were 19 patients with severe pain, and 11 patients with moderate pain which is of 63.33% and 36.67% respectively.

**Table 3: Comparison of the level of knee pain – Experimental vs Control n=60**

Groups	Mean	S.D.	t value	P value
Experimental	4.37	1.69	7.00	0.000
Control	6.93	1.08		



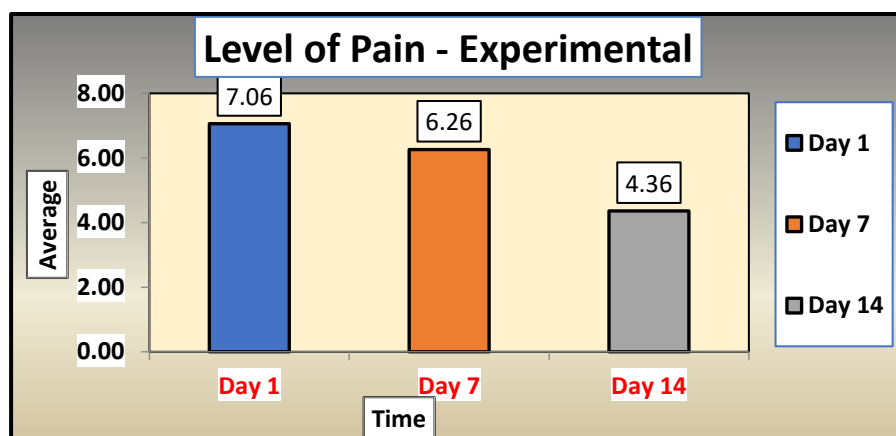
**Figure 1: Comparison of the level of knee pain**

Table no 3 and figure no 1, Shows that, mean value in Experimental group is 4.37 and SD is 1.69 whereas in control group mean value is 6.93 and SD is 1.08 Calculated t value is 7.00 and p value is 0.000 which is  $<0.05$  which shows there is significant difference in Experimental group after oil application on knee pain in osteoarthritis patients.

Bohlooli S, Jastan M (et.al) conducted research at the Imam Hospital's Rheumatology medical institution at Ardabil university of scientific Sciences in Iran, concludes that topical olive oil treatment for knee osteoarthritis is related with higher improvement in all end measures.

**Table 4: Day wise comparison of the level of knee pain – Experimental**  
n=60

Experimental	Mean	F	P	Significance
Day 1	7.06	22.34	0.000	Significant
Day 7	6.26			
Day 14	4.36			



**Figure 2: Comparison of the level of knee pain**

Table no 4 and figure no 2 shows that,mean value in Experimental group during 1<sup>st</sup> Day is 7.06, on 7<sup>th</sup> Day is 6.26 and at the end of 14<sup>th</sup> Day is 4.36, Calculated F value is 22.34 and p value is 0.000 which is <0.05 which shows there is significant difference in Experimental group after oil application on knee pain in osteoarthritis patients.

A study published by Lisa Parkinson and Russell Keast concludes that There are various anti-inflammatory chemicals in olive oil. One of these chemicals, oleocanthal, shows actions that are very comparable to ibuprofen<sup>12</sup>

**Table 5: Day wise comparison of the level of knee pain – Control**  
n=60

Control	Mean	F	P	Significance
Day 1	8.36	12.18	0.000	Significant
Day 7	7.36			
Day 14	6.93			

**Figure 3: Comparison of the level of knee pain**

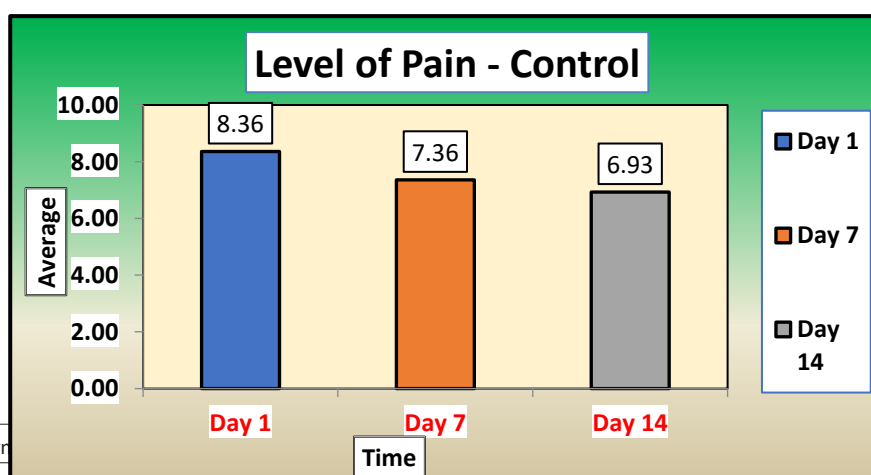


Table number 5 and figure no 3 shows that, mean value in Control group during 1<sup>st</sup> Day is 8.36, on 7<sup>th</sup> Day is 7.36 and at the end of 14<sup>th</sup> Day is 6.93, Calculated F value is 12.18 and p value is 0.000 which is <0.05, which shows there is significant difference in Control group on knee pain in osteoarthritis patients.

#### 4 Conclusion

The study findings showed that variations are found in mean and SD scores in experimental and control group. P value is less than 0.005. There is significant difference in the level of knee pain among osteoarthritis patients. The reduction of pain is also seen in the control group, but not as significantly as in experimental group. Results shows that there is an effect of olive oil on knee pain among patients with osteoarthritis as the mean score for pain has seen to be reduced more in the experimental group as compared to that of control group.

As a result, it can be concluded that using olive oil to alleviate knee pain in osteoarthritis patients is an effective and safe approach of pain control. This study suggests that olive oil application can be included as one of the pain management modalities in routine practice, which will improve the quality of life for patients with osteoarthritis

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