International Journal of Biology, Pharmacy
and Allied Sciences (IJBPAS)
'A Bridge Between Laboratory and Reader'

www.ijbpas.com

A STUDY TO ASSESS THE EFFECTIVENESS OF AROMATHERAPY ON PAIN AND ITS ASSOCIATED CHANGES IN BEHAVIOUR AMONG PATIENTS WITH OSTEOARTHRITIS AT SRM GENERAL HOSPITAL RAMAPURAM, CHENNAI, TAMIL NADU, INDIA

T.SUSEELAL[1] AND K. LATHA[2]

1: Associate professor, College of Nursing, SRM Institute of Science and Technology, Kattankulathur, Kancheepuram district -603203, Tamil Nadu, India

2: Vice principal, MMM College of Nursing, Mugapere, Chennai Tamil Nadu, India

*Corresponding Author: Dr. T. Suseelal: E Mail: saravanamani481@gmail.com

ABSTRACT

Aromatherapy is one of the complimentary therapy used by arthritis patients. In the present study lavender oil is used for local application and inhalation to relieve pain among patient with osteoarthritis. The aim of the study was to assess the pre and post test level on pain perception and behaviour changes of patients with osteoarthritis and to associate the effectiveness of Aromatherapy and on pain and its behaviour changes with demographic variables. A single blindered true experimental study with one group pre and post test design and Convenient sampling technique,30 patients with osteoarthritis who were attending orthopaedic clinic at SRM General hospital, Ramapuram, were included in the study. Standard interview questionnaire was used to collect the data. After the pre test intervention was done with the preparation of lavender oil and the post test was done on the 5th day.

The result of the study revealed   among 30 patients 27(90.0%) were females, 10 (33.3%) had the pain first time. There was high significant reduction in the level of pain and it was proved by using student independent t-test at t=23.21, p<0.05. Association was observed with certain demographic variables like age (31-40 years), patients who experienced the pain on left knee, patients who experienced the pain for less years and with the patients who took

treatment for the first time. Also there was high significant behaviour changes at t=44.2 and p<0.05 and the association was accepted with certain variables like age (31-40 years) and with family support. The study concluded that aromatherapy by inhalation and massage was effective in relieving pain and it brought changes in behaviour on patients with osteoarthritis.

Keywords: Aromatherapy, Osteoarthritis, Lavender oil, Pain, Behaviour changes

INTRODUCTION:

Recent years complimentary therapies are used by patients with chronic diseases. Joint pain is one of the degenerative conditions experienced by aging population. Aroma therapy is treatment using scents, by some arthritis patients. The purpose of the present study was to evaluate the effectiveness of aroma therapy on pain and behaviour changes with osteo arthritis. Arthritis is an inflammation of the joints and it is characterized by pain, stiffness, swelling **[1]**. luckman Pain is a complex multi-dimensional experience. It is a major process that causes suffering and its redness the quality of life. Pain is a unpleasant sensory and emotional experience associated with central and potential tissue damage **[2-4]**. Aromatherapy relieves the pain and enhance nursing care **[5]**.

According to statistics around 40% of people above 70 years suffer from osteo arthritis of the knee. Almost 80% of patients have some of the limitations of movement and 25% of patients are not able to perform their major daily activities on life. Around 165 million people are affected with rheumatoid arthritis ever year.

In the United States about 40 million people are suffering with muscle skeletal disease condition. Women are affected with Rheumatoid arthritis 2-3 times more than men. It is going to be the top 5th chronic disease among adult. In India people are suffering with arthritis per year approximately 15 million people. In Tamil Nadu approximately people from 40-50 years age group are developing osteoarthritis.

Complementary therapy is an non pharmacological pain management option **[6]**. Most of the patients are taking allopathic drugs, but when they stop the medicine they are again affected with inflammatory process of the joint and not able to do their job and daily activities. Also the pharmacotherapy has more inflammatory gastro intestinal side effects. Hence complementary therapies with massage can help for the relief of arthritis **[7-9]**. It is difficult to find the cure for the disease. Arthritis may be genetic, it may be also due to the infection caused by toxins released in the body. Only we can treat the pain and symptoms of arthritis, but we

can't deal with the underlying cause for arthritis. .

Lavender is a common essential oil used typically for pain relief. Aroma therapy with lavender oil and massage is thought to enhance the parasympathetic response through the effects of touch, smell, enhancing relaxation at a deep level. It improves cognition by producing new immune cells by increasing immunity [10]. Herbal like menthe and piperita exhibit antimicrobial and antioxidant property [11, 14]. studies reported consequent decrease in prostaglandins concentrations in various fluids and tissues [12, 13].

Aroma used for inhalation as coated with oxygen decreased pain intensity of needle insertion [15]. Activities such as meditation, relaxation and hypnosis cause various physiologic changes. For example peripheral blood vessels may dilate, blood range may change and muscle tension is reduced. Herbal medicine has a common use in traditional practice [16]. Hence technique like aromatherapy with lavender oil and massage can be used to relieve pain and to lead healthy life among patients with osteoarthritis.

MATERIAL AND METHODS

After the approval from experts from nursing, orthopedician, statistician and permission from SRM Research Ethical committee the study was conducted among patients with osteoarthritis. The study was done in orthopedic clinic, SRM GENERAL HOSPITAL, Ramapuram, Chennai. The patients were referred by the orthopedician. One group pretest and post test design with quantitative approach was used in this study. The sample consisted of 30 patients with osteoarthritis.

Data collection tool comprises of demographic profile which includes age (31-40, 41-50, 51-60, 61-75years), sex (male, female), education (illiterate, literate), marital status, religion, pain (right, left, both knee), duration of pain (first time,1-3years, > 4 years), family support and treatment first time. Standardised MC Gill Meshach pain questionnaire on patients pain perception during standing, squatting, climbing and FLACC behaviour changes scale with facial grimace, leg position, activity, cry and consol ability was used to collect data. The Reliability of instrument was tested by using cronbach Alpha reliability method. It was found to be reliable at r = 0.81.

Intervention

After explaining and getting written consent from the participants, pre assessment was done. Intervention was done with the preparation of lavender oil 6ml added with 90 ml of vegetable oil. 1ml oil was given in tissue paper for inhalation for 10 mins, 10 ml was used for local application for 10mts, and 10 ml was applied as foot massage using effleurage

method for 10 minutes for 5 consecutive days. Post assessment was done on the 5th day with the same tool. The clients were given a placebo tablet of paracetamol. Data collection period was one month.

Statistical Analysis

The collected raw data was entered into the master coding sheet and saved in excel and it was analyzed using statistical package for social sciences (SPSS-16). The p value of 0.05 level was used for statistical significant. Student paired t- test was used to find out the mean and standard deviation.

RESULTS

The pre test assessment on pain revealed majority of the participants had pricking pain 30 (100.0%), pulling pain 30 (100.0%), cramping pain 29 (96.7%), pain during squatting 24 (80.0%), pain when climbing 23 (76.7%), pain during standing 22 (73.3%), tingling pain 21 (70.0%) tender pain 18(60.0%) exhausting pain 17(56.7%), few of them having hurting pain 7 (23.3%), unbearable pain 6 (20.0%), radiating pain 1 (3.3%).

Where as in the post test majority of the patients were found to have 23 (76.7%) had moderate cramping pain, 6 (20.0%) of them had mild pain and 21 (70.0%) had moderate pricking pain 9 (30.0%) had mild pain. 17 (56.7%) had moderate pulling pain and 13(43.3%) had mild pain,5 (16.7%) had moderate tingling pain 17 (56.7%) had mild pain, 9 (30.0%) of them had mild

hurting pain and 4 (13.3%) had moderate pain during squatting and 22 (73.3%) had mild pain, 2 (6.7%) of them had moderate pain during climbing, 23(76.7%) had mild pain. 1(3.3%) had tender pain and 1(3.3%) had exhausting pain, 1(3.3%) moderate pain during standing **(Table 1)**.

Association on pain was accepted with certain demographic variables like age (31-40 years), Patients who had pain on left knee, patients who experienced the pain for few years and with the patients who took treatment for the first time.

Regarding pre assessment of behaviour changes majority of them had constant grimace 29(96.7%), kicking leg position 29(96.7%), activity changes 28(93.3%), crying 22(73.3%) and 8(26.7%) of them were difficult to console. Whereas the behavior change after aromatherapy reveals majority of the patients had minimum behavior change 28(93.3%) majority of them had uneasy leg position and 27(90.0%) of them had minimum activity change and 17(56.7%) had grimace and 13(43.3%) had no particular expression, 7(23.3%) of them had moaning 23(76.7%) had no cry and 30 (100.0%) of them were consoled **(Table 2)**.

The comparison of pre and post assessment on pain revealed that in pre assessment 30(100%) of them had severe pain with mean score of 38.00 and SD 6.513 and in post assessment 30 (100%) of them had

mild pain with mean score of 10.30 and SD 1.803. The difference between pre and post assessment is statistically significant at t=23.21, p=0.001 by paired t-test and the research hypothesis was accepted.

The pre test assessment on behaviour changes shows that 30 (100%) of them having severe behavioural change with mean score 8.87, SD 0.86 whereas in post assessment on behavioral change, 26 (86.7%) of them in mild behavioural change with the mean score 8.87 and SD 0.864 and 4 (13.3%) of them had in moderate behavioural change with mean score of 2.63, SD 0.718. The difference between pre test and post test was statistically significant **at t=44.2, p=0.001 by paired t-test and the research hypothesis was accepted.**

The association was accepted with certain variables like age (31-40 years) and with the patients who had good family support. . It was found that there was no significant association of behaviour changes with the demographic variables like sex, education, occupation, religion, site of pain, duration of pain and treatment **(Table 3)**.

Table 1: Comparision on level of pain with MC Gill Melshack pain questionare among the patients with osteo arthritis (N=30)

Type of pain	Pretest						posttest					
	No pain(0) N(%)	Mild (1)	Dis Com Fort (2)	Dis Tress Ing (3)	Horri Ble (4)	Excruci Ating (5) N(%)	No pain(0) N(%)	Mild (1)	Dis Com Fort (2)	Dis Tress Ing (3)	Horri Ble (4)	Excruci Ating (5) N(%)
Pricking pain						30 (100.0)		9 (30.0)	21 (70.0)			
Cramping pain	1 (3.3)					29 (96.7)	1 (3.3)	6 (20.0)	23 (76.7)			
Pulling pain						30 (100.0)		13 (43.3)	17 (56.7)			
Tingling pain	9 (30.0)					21 (70.0)	8 (26.7)	17 (56.7)	5 (16.7)			
Unbearable pain	24 (80.0)					6 (20.0)	25 (83.3)	5 (16.7)				
Radiating Pain	29(96.7)					1 (3.3)	28 (93.3)	2 (6.7)				
Hurting pain	23(76.7)					7 (23.3)	21 (70.0)	9 (30.0)				
Tender pain	12(40.0)					18 (60.0)	9 (30.0)	20 (66.7)	1 (3.3)			
Exhausting pain	13(43.3)					17 (56.7)	16 (53.3)	13 (43.3)	1 (3.3)			
Pain during standing	8(26.7)					22 (73.3)	9 (30.0)	20 (66.7)	1 (3.3)			
Pain during squating	6(20.0)					24 (80.0)	4 (13.3)	22 (73.3)	4 (13.3)			
Pain when climbing	7(23.3)					23 (76.7)	5 (16.7)	23 (76.7)	2 (6.7)			

Table 2: Comparison of behaviour changes by FLACC behaviour changes scale (N=30)

Catagories of pain	Pre test			Post test		
	0 no	1 minimum	2 maximum	0	1	2
	n%	n%	n%	n%	n%	n%
Face (grimace)	-	1 (3.3)	29 (96.7)	13 (43.3)	17(56.7)	-
Legs (Position)	-	1 (3.3)	29(96.7)	2(6.7)	28(93.3)	-
Activity	-	2 (6.7)	28(93.3)	3(10.0)	27(90.0)	-
Cry	-	8 (26.7)	22(73.3)	23(76.7)	7(23.3)	-
Consolability	-	22(73.3)	8 (26.7)	30(100.0)	-	-

Table 3: Comparision of overall score (N=30)

Tools	Pretest			Post Test			Student Independent T - Test
	n	Mean gain score	SD	Mean gain score	SD		
Assessment on pain by modified Mc. gill melshack pain questionnaire	30	38.00	6.513	10.30	1.803		t = 23.21 p = 0.001 highly significant
Assessment on behaviour changes by FLACC Behavioral changes scale	30	8.87	0.860	2.63	0.718		t = 44.2 p = 0.001 highly significant

DISCUSSION

Osteoarthritis is a chronic disease affecting men and woman. Obesity and menopause are considered as influencing factors. At times people who are doing vigorous activities are developing osteoarthritis. Essential oils is used by patients to relieve the chronic pain[17]. .Extraction of oils from different plant organs is achieved by different methods.[18] The present study on lavender oil massage, revealed among 30 patients majority of the participants belong to the age group of 51-60 years 13 (43.3%), literates were 28 (93.3%), and 2 (6.7%) were illiterate. Majority of them had 14 (46.7%) pain at left knee, 9 (30.0%) were having pain at right knee, 7 (23.3%) were having pain at both knee. Regarding duration of pain majority of them 18 (60.0%) were having pain for 1-2 years, 10 (33.3%) were having pain for the first time,

2 (6.7%) were having pain above 4 years. 27 (90.0%) had family support and 24 (80.0%) were newly diagnosed.

In post assessment on pain 30 (100%) of them had mild pain with mean score of 10.30 and SD 1.803. The difference between pre and post assessment is statistically significant at t=23.21, p=0.001 by paired t-test and the research hypothesis was accepted. In post assessment on behavioral change, 26 (86.7%) of them in mild behavioral change with the mean score 8.87 and SD 0.864 and 4 (13.3%) of them had in moderate behavioral change with mean score of 2.63, SD 0.718. The difference between pre test and post test was statistically significant at t=44.2, p=0.001 by paired t-test and the research hypothesis was accepted.

This result is consistent with the study done by YIb YB (2004) a

randomized control trial "to assess the effect of relaxation on acupuncture and acupressure with aromatic lavender oil for fifty patients with non-specific low back pain. The finding was similar to the finding of present study with lavender oil and aromatherapy done among osteo arthritis patients. It may be used to relieve stress, anxiety and post operative pain.

CONCLUSION:

The present study assessed the effectiveness of aromatherapy on pain by using lavender oil among the osteoarthritis clients attending to orthopaedic clinic at SRM General Hospital Ramapuram. The results revealed that the administration of aromatherapy was significant in relieving pain and it brought changes in behaviour at significant variables among the patients with osteoarthritis and the hypothesis framed was proved.

REFERENCE:

[1] Luckmann and sorenson's (4th ed) (1993) "Medical And Surgical Nursing", A Psycho physiological approach, "Philadelphia, W.B. Saunders Company.

[2] Wmbriet, (Feb 2000) "Healing touch", AACN clinical issues Vol-11, No.1, P-105.

[3] Dennis Rankinbox; Nurses hand book of comple mentary therapies. 1995;1:

[4] Lewis SM. Assessment and management of clinical problems.1996; 4 ed

[5] Buckle. The role of Aroma therapy in nursing care, nursing clinics in NorthAmerica.2001; 36: 57-72

[6] Jill R.J, Rachel L.R, Kristen H.U, Alison K.K, Dennis J, Marry E.K, Jeffery A.D. The effectiveness of nurse – delivered aromatherapy in an acute care setting/ complementary Therapies in Medicine. 2016; 25 :164-169

[7] Cherkin D.C. Olyo L.A Rando mized trial comparing traditional chinese medical accupunture, therapeutic massage and self care education for chronic low back pain. 2001; 106: 131-145

[8] Hermandez R, Fidel T, Theakstonlt. Lower back pain is reduced and range of motion increased after massage therapy. 2001; 106: 131-145

[9] Had field N, Role of Aromatherapy massage in patients with malignant brain tumors, International Journal palliative Nursing. 2001; 17: 279-85.

[10] Moss m. Aromas of rosemary and lavender essential oils differentially affect cognition and mood in healthy adults. International journal of new

science. 2003; 113(1): 15-38.

[11] Kanza Saeed, Imran Pasha, Hina Bukhari, Masood Sadiq Butt Tayyaba Iffikhar ushnah. Compositional ptofiling of *menthe piperita*. 2014; 24(3): 151-156.

[12] Shavifa A, Aljabri M.H chemical and Bio analytical studies on *perghularia fomentosa* and species from the menthagenus.2013

[13] Faqir Mohammed, Wiley J, Riviere JE. Influence of some plant actresses on the trans dermal absorption and penetrations. 2017; 36(1): 60-66

[14] Bozovic MI Ragno R, Calamintha N L, Savi and Its main essential oil constituent pulagone; Biological activities and chemistry 2017; 22(2): 290

[15] Kim S, Kim HJ, Yeo JS, Hong SJ, Lee J, Jeon YR, The effect of Lavender oil on stress, bispectral index values and needle insertion pain in volunteers. 2011

[16] Anne K.S, Fawzl M. Ethno pharmacological analysis of medicinal plants used against non-communicable disease in rodrigues Island Indian Ocean 2015; 175: 20-38.

[17] Amy C.S. Pearson, Susanne M. Cutshall, Anjali B. Perspectives on the use of aromatherapy from clinicians attending an integrative medicine continuing education event. BMC Journal complimentary medicine and Therapies 2019; 19: 174

[18] Amira A, Kamal E.E. Aromatherapy as complimentary medicine 2020; DOI: 10.5772/ intechopen. 92021