A QUASI EXPERIMENTAL STUDY TO EVALUATE THE IMPACT OF NATURAL CLAY THERAPY ON PHYSICAL FUNCTIONING, STIFFNESS, PAIN AND SWELLING OF ELDERLY WITH KNEE OA IN SELECTED OLD AGE HOME AT PUDUCHERRY.

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ABSTRACT

A quasi experimental study was carried out in St. Joseph of Cluny, Hospice convent at Puducherry to evaluate the impact of natural clay therapy on physical functioning, stiffness, pain and swelling of elderly with knee osteoarthritis(OA). A total 60 sample was selected by using non-probability convenient sampling technique and to study the subject the sample was equally divided into Experimental Group (EG) and Control Group (CG). The natural clay was applied 30 minutes per day for 15 days to the EG and CG received routine care. Data was collected before and after intervention by structured questionnaire containing demographic variables, health profile, the WOMAC OA index to assess the degree of OA (Physical functioning, stiffness and the activities that aggravate the pain), intensity of pain by using VAS (Visual Analogue Scale), and

swelling by using Lufkin flexible inch tape.The study results revealed that 86.67% of elderly in the EG and 63.33% in the CG had severe symptoms of knee OA, moderate level of pain and extreme level of swelling, respectively in the pretest. The pretest mean score of WOMAC OA index, pain and swelling of elderly in EG were 57.90, 37.93 and 68.20, whereas in CG, it was 55.47, 34.57 and 64.57 respectively. The posttest mean score of WOMAC index score, pain and swelling of elderly in EG were reduced to 35.57, 35.57, and 47, whereas in CG, it was increasing to 57.93, 4.67 and 70.60 respectively. The study concluded that the natural clay therapy was effective in improving the level of physical functioning and reduction in the level of stiffness, pain and swelling. As a natural elements it does not show any side effects which is also available and affordable at near reach and improves quality of life of elderly.

Keywords: Knee OA, natural clay therapy, WOMAC OA index, VAS, swelling, elderly, old age home.

INTRODUCTION

The prevalence of OA among elderly is high and it majorly affects the quality of life. Knee OA is the most common form of OA. Globally knee OA is the fourth most common predictor of problem in women and eighth common predictor in men and it is the single most common cause of disability in older adults. Timely diagnosis using clinical criteria and effective intervention is of utmost importance.

STATEMENT OF THE PROBLEM

A quasi experimental study to evaluate the impact of natural clay therapy on physical functioning, stiffness, pain and swelling of elderly with knee OA in selected old age home at Puducherry.

OBJECTIVES

1. To assess the level of physical functioning, stiffness, pain and swelling using WOMAC OA index, Visual Analogue Scale and Lufkin flexible inch tape of elderly with knee OA.

2. To evaluate the impact of natural clay therapy on physical functioning, stiffness, pain and swelling of elderly with knee OA.

3. To find an association between the pretest level of physical functioning, stiffness, pain and swelling and the selected demographic variables of elderly with knee OA.

MATERIALS AND METHODS

A quasi experimental with non- randomized control group design was adopted for the study. A total of 60 samples were selected by non-probability convenient sampling technique and study subject were divided into EG (n=30) and CG (n=30).The data was collected for the period of six weeks. Fifteen subjects were selected per day based on the inclusion criteria using structured questionnaire contains demographic variables, health profile, the WOMAC OA index to assess the degree of OA (Physical functioning, stiffness and the activities that aggravate the pain), intensity of pain by using VAS (Visual Analogue Scale), and swelling by using Lufkin flexible inch tape in the pretest. The natural clay was applied 30 minutes per day for 15 days to the EG and CG received routine care. The amount of natural clay was calculated based on individual Body Mass Index (BMI). The posttest was conducted at the end of the 15th day using the same instrument for both the groups (EG & CG). Data were analysed using descriptive and inferential statistics.

The tool was validated by the experts and the reliability of the tool was established by inter rater reliability method and found to be highly reliable. Pilot study was conducted among ten elderly with knee OA at Help Age India, Thamaraikulam, Cuddalore.

RESULTS

1. **Findings related to demographic variables**

➢ With regard to age, the highest number of elderly 9(30%) were in the age group of   64–67 years and 72–75 years respectively in the EG, whereas in the CG majority 11(36.67%) were in the age group of 72 – 75 years.

➢ Majority of elderly were female 21(70%) and 9(30%) were male in both the groups.

➢ Regarding the marital status most of the elderly 17(56.67%) in the EG, whereas in the CG 21(70%) were widow/widower and with religion most of the elderly 16(53.33) in the EG, 20(66.67%) in the CG were Hindus.

➢ Regarding the educational status majority of the elderly 8(26.67%) had no formal education in the EG, 10(33.33%) in the CG had primary school education.

➢ 20(66.67%) of elderly received financial support by pension in both the groups.

➢ Considering the previous occupational groupthe majority of the elderly15(50%) were moderate workers in the EG whereas, in the CG majority 13(43.33%) were sedentary workers.

➢ Regarding food habit most of the elderly 23(76.67%) in the EG, 22(73.33%) in the CGwere non-vegetarian and 17(56.67%) in the EG, 20(66.67%) in the CG were staying in old age home for more than two years.

➢ In regard of personal habits most of the elderly 20(66.67%) in the EG, 19(63.33%) in theCG had no personal habit

2. Findings related to health profile

➢ The majority of elderly 19(63.33%) were aged 61 years and above at the time of onset of knee OA in both the groups.

➢ Regarding duration of illness after diagnosis of knee OA majority of elderly 14(46.67%) in the EG, 11(36.67%) in the CG were diagnosed of knee OA before 2 – 4 years.

➢ The majority of elderly 25(83.33%) in the EG, 21(70%) in the CG had joint pain on both the knees and 21(70%) in the EG, 18(70%) in the CG had no previous history of injury in knee joint.

➢ Regarding the aggravating factor the majority of elderly 10(33.33%) in the EG, 11(36.67%) in the CG due to excessive activity, whereas 15(50%) had pain frequently in theEG and 17(56.67%) in the CG had pain periodically.

➢ Considering period of rest in a day the majority of elderly 17(56.67%) in the EG had taken 8 hours of rest in a day and 13(43.33%) had taken rest for 6 hours in the CG.

➢ The majority of elderly 19(63.33%) in the EG, 17(56.67%) inthe CG had not taken any treatment for joint pain, whereas in the EG 20(66.67%) had taken complementary and alternative medicine and 16(53.33%) in the CG had not taken any complementary and alternative medicine for knee OA.

➢ Regarding the BMI, majority of the elderly 12(40%) were pre-obese (25 – 29.99) in theEG, 14(46.67%) in the CG had normal BMI (18.50 – 24.99).

➢ Considering the co-morbid condition 11(36.67%) of elderly had no co-morbid condition in the EG, whereas in the CG 10(33.33%) of elderly had diabetes mellitus and hypertension as a co-morbid condition.

3. **Findings related to the assessment of physical functioning, stiffness, pain and swelling of elderly with knee OA**

➤ Assessment of pretest level of physical functioning, stiffness and pain (WOMAC OA index) of elderly revealed that majority of the elderly 26(86.67%) in the EG had severe symptoms and 4(13.34%) had moderate symptoms of knee OA, whereas in the CG 19(63.33%) had severe symptoms and 11(36.67%) had moderate symptoms of knee OA.

➤ Assessment of pretest intensity level of pain of elderly in the EG, 13(43.33%) had severe pain, 16(53.33%) had moderate pain, and only one (3.33%) had mild pain, whereas, in the CG 6(20%) had severe pain, 22(73.33%) had moderate pain, and 2(6.67%) had mild pain.

➤ Assessment of pretest level of swelling of elderly in the EG the left knee, 7(23.3%) had extreme swelling, 14(46.7%) had severe swelling, 6(20%) had moderate swelling and 1(3.3%) had mild swelling and 2(6.67%) had no swelling and in the right knee, 8(26.7%) had extreme swelling, 10(33.3%) had severe swelling, 7(23.3%) had moderate swelling, 2(6.7%) had mild swelling and 3(10.0%) had no swelling, whereas in the CG the left knee, 9(30%) had extreme swelling, 6(20%) had severe swelling, 10(33.3%) had moderate swelling, 2(6.6%) had mild swelling and 3(10%) had no swelling and in the right knee 9(30%) had extreme swelling respectively, 8(26.7%) had severe swelling, 4(13.3%) had moderate swelling and 3(10%) had mild swelling and 6(20%) had no swelling,

4. **Findings related to impact of natural clay therapy on physical functioning, stiffness, pain and swelling of elderly with knee OA**

➤ The mean score physical functioning of elderly in the EG was improved from the pretest score 41.60 to 25.87 in posttest (p value <0.001), whereas in the CG the pretest score 39.67 to 40.87 in posttest (p <0.001).

➤ The mean score stiffness of elderly in the EG was reduced from the pretest score 4.80 to 2.90 in posttest (p value <0.001), whereas in the CG the pretest score 4.87 increased to 4.93 in posttest (p <0.001).

➤ The mean score of the activities that aggravate pain of elderly in the EG was reduced from the pretest score 11.50 to 6.80 in posttest (p value <0.001), whereas in the CG the pretest score 10.93 increased to 12.13 in posttest (p <0.001).

➢ The mean score of intensity of pain in the EG of elderly was reduced from the pretest score 68.20 to 47.0 in posttest (p<0.001) level, whereas in the CG the pretest score 64.57 increased to 70.60 in the posttest (p<0.001 level).

➢ The mean score swelling of left knee in the EG was reduced from the pretest score 38.43 to 35.87 in posttest (p value <0.001), whereas in the CG the pretest score 36.57 increased to 36.67 in posttest.

➢ The mean score swelling of right knee of elderly in the EG was reduced from the pretest score 37.43 to 35.27 in posttest (p value <0.001), whereas in the CG the pretest score 32.57 increased to 32.67 in posttest.

➢ The comparison of posttest mean score physical functioning of elderly in the EG was 25.87 (p value <0.001), whereas in the CG increased to 40.87 (p <0.001).

➢ The comparison of posttest mean score of stiffness of elderly in the EG was 2.90 (p value <0.001), whereas in the CG increased to 4.93 (p <0.001).

➢ The comparison of posttest mean score of the activities that aggravate pain in the EG of elderly was 6.80 (p value <0.001), whereas in the CG increased to 12.13 (p <0.001).

➢ The comparison of posttest mean score of the intensity of pain of elderly in the EG was 47.0 (p value <0.001), whereas in the CG increased to 70.60 (p <0.001).

➢ The comparison of posttest mean score of swelling in the left and right knee of elderly in the EG was 35.87 and 35.87, whereas in the CG 36.67 and 32.67 respectively.

➢ The present study revealed that the application of natural clay therapy on physical functioning, stiffness, pain and swelling had positive impact and found to be effective in reducing the symptoms of OA in the EG.

Comparison of Intensity Level of the Pain of Elderly with Knee OA between the EG and CG in the Posttest

N = 60

Variable	EG (n=30)		CG (n=30)		Unpaired 't' Value	P value
	Mean	S.D	Mean	S.D		
Pain	47.0	11.91	70.60	11.99	**7.648**	**0.0001***\nS

***p<0.0001, S – Significant

The table shows that in the EG, the posttest mean score of pain was 47.0 ± 11.91 and the posttest mean score in the CG was 70.60 ± 11.99. The calculated unpaired 't' value 7.648 was found to be statistically significant (p value 0.0001).

Comparison of Level of Swelling of Elderly with Knee OA between the EG and CG in the Posttest

N = 60

Knee circumference (swelling)	EG (n=30)		CG (n=30)		Unpaired 't' Value	P value
	Mean	**S.D**	**Mean**	**S.D**		
Left knee	35.87	10.55	36.67	13.05	0.261	0.795 N.S
Right knee	35.26	12.95	32.67	17.02	0.666	0.508 N.S

N.S – Non Significant

The table shows that in the EG, the posttest mean score of swelling in the left knee was 35.87 ± 10.55 and the posttest mean score in the CG was 36.67 ± 13.05. The calculated unpaired 't' value 0.261 was not found to be statistically significant (p value 0.795). Whereas the posttest mean score of swelling in the right knee in the EG was 35.26 ± 12.95 and the posttest mean score in the CG was 32.67 ± 17.02. The calculated unpaired 't' value 0.666 was not found to be statistically significant (p value 0.508).

Comparison of Mean Score of Degree of WOMAC OA Index, Intensity Level of the Pain and Swelling of Elderly with Knee OA between the EG and CG in the Pretest and Posttest
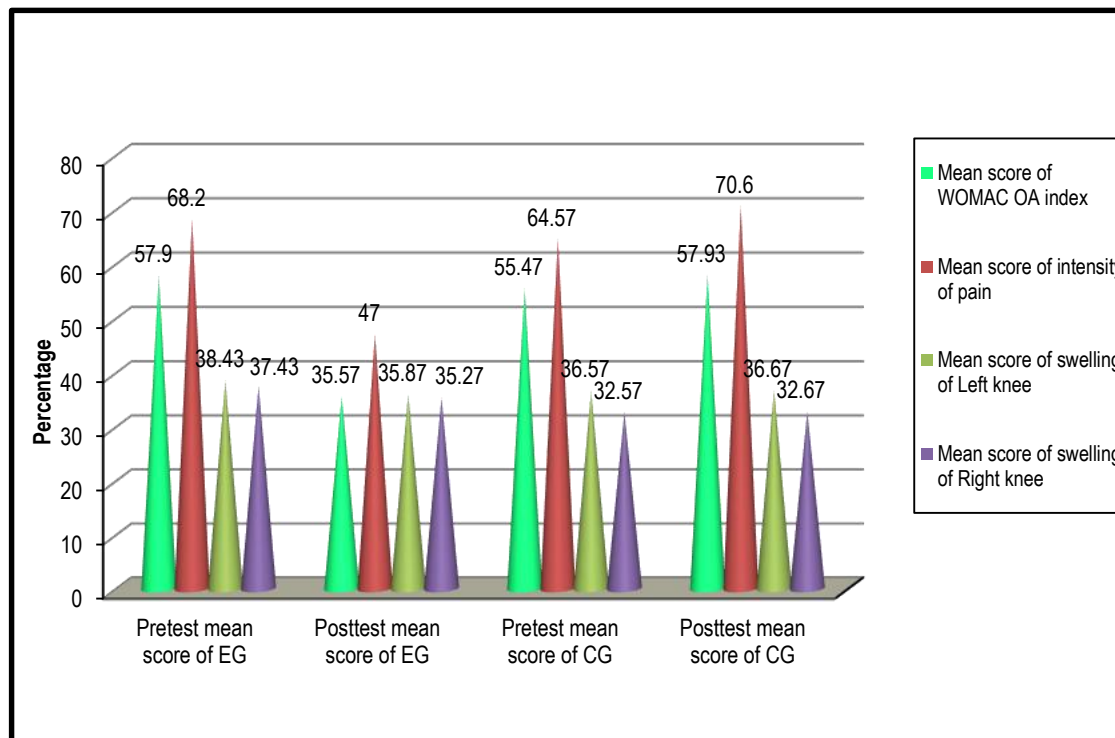
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N = 60 (30+30)

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Figure shows the comparison of pre and posttest mean score of WOMAC OA index, intensity level of the pain (VAS) and swelling in the EG and CG. The pretest mean score in the EG was 57.90, 68.20, 38.43 and 37.43, whereas in the CG it was 55.47, 64.57, 36.57 and 32.57 respectively. The posttest mean score in the EG was reduced to 35.57, 47.0, 35.87 and 35.27, when comparing with the CG it was increased to 57.93, 70.60, 36.67 and 32.67 respectively. The obtained 't' value of WOMAC OA index in the EG and CG was 40.339 and 5.761 (p value 0.0001), the intensity level of pain (VAS) was 25.947 and 16.05 (p value 0.0001) and the swelling of left and right knee in the EG was 11 and 10.084 (p value 0.0001), whereas in the CG both the knee has 1.795 (p value 0.083) and can be attributed to the effectiveness of natural clay therapy on improving the level of physical functioning and reduction in the level of stiffness, pain and swelling of elderly with knee OA. There is no significant difference between the pre and posttest mean levels in the CG.

5. **Findings related to an association between pretest level of physical functioning, stiffness, pain and swelling and the selected demographic variables of elderly with knee OA**

➢ It revealed that the demographic variables like gender, previous occupational group and personal habits had shown statistically significant association with pretest level of physical functioning, stiffness, pain and swelling of elderly with knee OA in the EG (p<0.05 level) and the other demographic variables in EG had not shown statistically significant association with pretest level, whereas in CG that none of the demographic variables had shown statistically significant association.

CONCLUSION:

Alternative treatment is one of the best methods to treat the knee OA as well to overcome the effects of Over the Counter (OTC) medications. The data revealed that application of natural clay therapy among elderly with knee OA had positive impact and found to be effective in reducing the symptoms of OA in the EG. The study concluded that the natural clay therapy was effective in improving the level of physical functioning and reducing the level of stiffness, pain and swelling. As a natural elements it does not show any side effects which is also available and affordable at near reach also improves quality of life of elderly.

RECOMMENDATIONS

Based on the study findings and personal experience of the investigator during the study the following recommendations are made.

- ✓ A similar study may be replicated with larger samples to validate and generalize the findings.

- ✓ A similar study may be done in a different settings.

- ✓ A similar study may be conducted among elderly having impaired physical functioning, stiffness, pain and swelling at different joints.

- ✓ A comparative study may be conducted with natural clay therapy and commercial clay therapy among elderly with knee OA.

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