EFFECT OF KINESIO TAPING AND CONVENTIONAL PHYSIOTHERAPY ON DISABILITY AND PAIN IN KNEE OSTEOARTHRITIS

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ABSTRACT

Objective: To find out whether Kinesiology taping and conventional physiotherapy is effective on disability and pain in knee osteoarthritis patients.

Methods: It was pre-test and post-test study design. 30 patients of knee osteoarthritis were selected by convenient sampling and were randomly divided into two groups. Pre-treatment visual analogue scale (VAS) score and Western Ontario and McMaster Universities osteoarthritis index (WOMAC) was noted in both the groups. Group 1 consisted of 15 subjects and received conventional physiotherapy and kinesio taping. Group 2 consisted of 15 subjects and received only conventional physiotherapy. Kinesio taping was applied once every 3 days for 3 weeks. Additionally all patients continued home based exercise program. After three weeks re-evaluation of VAS and WOMAC was done.

Results and conclusion: Result reflected significant difference within and between the group 1 and group 2 for VAS and WOMAC. Both Kinesiotaping along with conventional physiotherapy and Conventional physiotherapy alone show significant improvement on pain & disability scales, however the subjects who participated in the Kinesio taping along with Conventional physiotherapy group programme showed a significantly better improvement in pain and disability as compared to the group with conventional physiotherapy alone.

Key Words: Knee pain, K taping, Osteoarthritis, Visual analogue scale

I. INTRODUCTION

Osteoarthritis is slowly progressive degenerative condition affecting synovial joints. Osteoarthritis (OA) of knee is prevalent worldwide, majorly affecting 30-40% of the population aged more than 70 year.¹,² Major cause of impairment and disability among elder population in OA of knee.³,⁴ Patients with knee osteoarthritis suffer gradual loss of function, with increasing dependency while walking, stair climbing and other lower extremity tasks of daily living. Also rise has been seen in annual consultation rate in osteoarthritis.⁴,⁵,⁶

Disability associated with knee osteoarthritis occurs due to quadriceps weakness and pain, rather than radiographic changes.⁷ Two types of osteoarthritis are known, primary and secondary in which primary osteoarthritis is the result of aging, while secondary osteoarthritis is usually associated with disease or injury. It is the second most common form of disabilities and although in men and woman, woman is most likely to be symptomatic.⁸,⁹
Some conventional physiotherapy treatment measures for osteoarthritis knee include Interferential therapy (IFT) and heat therapy. IFT is a form of electrical stimulation therapy which has shown a strong sensory effect and used for stimulation of deep muscles, through an interference pattern producing low frequency stimulation at very high intensity, bypassing the sensory barrier of the skin. Heat therapy is most commonly used for rehabilitation purposes. The local application of heat creates an erythematic response with localised swelling. It also causes vasodilatation of the blood vessels which increases circulation to the area. It is found to be effective in patients with muscle strains, spasm or arthritis.

Knee Taping is one of the recent treatment technique recommended and used by physiotherapists to manage different joint pain including knee pain.

Tape used for musculoskeletal pain has two categories; the elastic tapes and rigid tapes. Benefit of K-Tape is that its extension capacity is comparable to human muscle. The physiological applications of K tape include correction of muscle activity, increment in active range of motion, enhance blood and lymphatic circulation and decreasing pain in muscle and joints.

Physiotherapy treatment encompasses numerous treatment modes including exercise, conventional physiotherapy, knee taping, and education to impart patient self-management strategies, still best and evidenced based treatment is needed. Our study aimed to find out effectiveness of Kinesiology taping along with conventional physiotherapy on disability and pain in knee osteoarthritis patients.

II. METHODS:

The subjects participated in the study belong to Tata Main Hospital, Jamshedpur. Subjects were selected on the basis of inclusion criteria and with a written consent to participate in the study. A sample of 30 subjects was taken for the study by convenient sampling. The study was an experimental pre-test and post test study design. Patients with knee joint osteoarthritis referred by orthopaedic surgeon, osteophytes on X-ray (grade 2 and 3) of age group 50-70 were included in the study. Exclusion Criteria were previous history of knee surgery, patients who took intra articular steroid injection in the previous six months, patients with systemic arthritis.

Outcome measures:

1. WOMAC Scale was used to measure dimension particularly relevant to osteoarthritis of knee joints. It is tridimensional measuring pain, stiffness and physical disability. The WOMAC is used to assess patients with osteoarthritis of the hip or knee using 24 parameters.

2. A Visual Analog Scale (VAS) was used to measure a characteristic or attitude that is believed to range across a continuum of values and cannot easily be directly measured. Operationally a VAS is usually a horizontal line, 100 mm in length, anchored by word descriptors at each end, as illustrated below. The patient marks on the line the point that they feel represents their perception of their current state. The VAS score is determined by measuring in millimetres from the left hand end of the line to the point that the patient marks.

III. PROCEDURE

30 patients with knee joint osteoarthritis referred by orthopaedic surgeon and fulfilling inclusion criteria for selection, were selected for the study. A detailed explanation of the procedure was given after which the subjects gave written informed consent. Demographic details of subjects were collected and subjects were then randomly divided into two groups. Pre-treatment VAS and WOMAC was noted in both the groups. Subjects of group 1 consisted of 15 subjects received Kumbrink K–tape continuous for 3 days and Conventional physiotherapy i.e. Heat therapy for 15 minutes, IFT for 10 minutes and isometric quadriceps exercise. Subjects of group 2 consisted of 15 subjects and received only conventional physiotherapy. Kinesio taping was applied once every 3 days for 3 weeks. Additionally all patients continued home based exercise program. After three weeks re-evaluation of VAS and WOMAC was done. Kinesio taping was done with use of functional corrective technique using a fascia application. I and Y cutting tape were used.
IV. DATA ANALYSIS

Statistics were performed using SPSS software version 23. A student’s t-test was used to analyse the difference between the pain and disability in group 1 and group 2. Intra and inter group analysis between pre and post intervention scores were also done for both the groups. A level of p≤0.05 was considered significant.

V. RESULTS

The mean age of group 1 was (x=58.53±6.93) and the mean age of group B was (x=56.07±5.28). There was statistically insignificant difference in the mean age of both the groups (t=1.096, p=0.28). This shows that prior to intervention both the groups were matched in terms of age and sex. Mean and SD of within the group 1 and group 2 for VAS. Experimental group 1 VAS Pre-intervention was 6.33±1.49 and VAS Post-intervention was 3.64±1.44 with a t value of 12.64 and P value =.000. Result reflected significant difference within group 1.

Experimental group 2 VAS Pre-intervention was 6.53±1.30 and VAS Post-intervention was 5.53±1.40 with a t value of 7.24 and P value =.000. Result reflected significant difference within group 2. Mean and SD of between the group 1 and group 2 for VAS. Experimental group 1 VAS Pre-intervention was 6.33±1.49 and VAS Post-intervention was 3.64±1.44 with a t value of 12.64 and P value =.000. In the control group 2, VAS Pre-intervention was 6.53±1.30 and VAS Post-intervention was 5.53±1.40 with a t value of 7.24 and P value =.000. So both in group 1 and group 2 VAS there is significant difference in pain.
Mean and SD of within the group 1 and group 2 for WOMAC. Experimental group 1 WOMAC Pre-intervention was 66.10±3.75 and WOMAC Post-intervention was 53.25±5.26 with t value of 12.60 and p=.000. Result reflected significant difference within group 1. Experimental group 2 WOMAC Pre-intervention was 66.01±3.91 and WOMAC Post-intervention was 63.88±3.91 with t value of 9.45 and p=.000. Result reflected significant difference within group 2. Mean and SD of between the group 1 and group 2 for WOMAC. Experimental group 1 WOMAC Pre-intervention was 66.10±3.75 and WOMAC Post-intervention was 53.25±5.26 with t value of 12.60 and p=.000. In the control group 2 WOMAC Pre-intervention was 66.01±3.91 and WOMAC Post-intervention was 63.88±3.91 with a value of 9.45 and p=.000. Thus there was significant difference in WOMAC Score in both Groups 1 and Group 2. (Figure 3 and 4)

![Figure 3: Mean and SD of within the group 1 and group 2 for WOMAC](image1)

![Figure 4: Mean and SD of between the group 1 and group 2 for WOMAC](image2)

### VI. DISCUSSION

The results of our study revealed that Kinesio Taping along with conventional physiotherapy reduces the pain in patients with knee osteoarthritis more effectively than conventional physiotherapy alone.

The results are in agreement with the study conducted by Cho-Hyetal. In which they studied the short term effect of Kinesio taping (KT) on various type of pain, active range of motion (AROM) and proprioception in patients with knee osteoarthritis. 17 Our study is also in agreement with the study presented by Anandkumar S et al. in which their results showed the effectiveness of application of therapeutic KT in improving isokinetic torque of quadriceps muscle and reducing pain in knee osteoarthritis. 18
These data suggest that the Kinesio taping along with Conventional Physiotherapy is more effective in improving pain and disability in osteoarthritis patients as compared to the Conventional physiotherapy alone. This helps us to choose a combination of Kinesio taping and conventional physiotherapy programme in osteoarthritis population above 50 years in order to improve pain and disability even in short time duration. Limitation of study was that no grades in Osteoarthritis and only one type of Kinesio Taping method were used. Future research scope are further study can be done in more number of patients and by applying different methods of Kinesio taping.

Limitation of study was small sample size and lack of long term follow up of patients.

VII. CONCLUSION

Both Kinesiotaping along with conventional physiotherapy and Conventional physiotherapy alone show significant improvement on pain & disability scales, however the subjects who participated in the Kinesio taping along with Conventional physiotherapy group programme showed a significantly better improvement in pain and disability as compared to the group with conventional physiotherapy alone. Thus, concluding that Kinesio taping has additional benefit in improving pain and disability score in osteoarthritis patients.

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