



EFFECTIVENESS OF PATELLAR TAPING AND MULLIGAN'S MOBILIZATION WITH MOVEMENT TECHNIQUES ON PAIN AND KNEE FUNCTION AMONG PATELLOFEMORAL OSTEOARTHRITIS PATIENTS - AN EXPERIMENTAL STUDY

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ABSTRACT

Background: Patellofemoral osteoarthritis is common clinical problem seen in all age group and presented in general practice. Knee pain may be caused by an injury such as ruptured ligament or torn cartilage, gout, rheumatoid arthritis, chondromalacia, tibiofemoral osteoarthritis and patellofemoral osteoarthritis. Globally it is estimated that among all the knee pain patients 12% of patients suffer by patellofemoral osteoarthritis. The incidence of symptomatic patellofemoral osteoarthritis of the knee is more common in people more than 55 years of age. Disease of patellofemoral joint can cause severe pain particularly when the patient is ascending and descending stairs, cycling, sitting with knee flexed for prolonged period of time, squatting and kneeling. The study aims to find and compare the effects of patellar taping and mulligan's mobilization with movement techniques on pain and knee function among patellofemoral osteoarthritis patients.

Methods: Twenty clinically diagnosed patellofemoral osteoarthritis patients were selected for the study and randomly divided into two groups A and B. Group A received patellar taping and group B received mulligan's mobilization with movement techniques. Intervention lasted for one week. Knee pain and knee function were assessed by visual analog scale and the western ontario and mcmaster universities osteoarthritis index (WOMAC index) respectively.

Conclusion: Both patellar taping and mulligan's mobilization with movement techniques were effective in reducing knee pain and improving knee function among patellofemoral osteoarthritis patients. When comparing both patellar taping is more effective than mulligan's mobilization with movement techniques in reducing knee pain and improving knee function among patellofemoral osteoarthritis patients.

KEYWORDS

Patellofemoral osteoarthritis, Patellar taping, Mulligan's mobilization with movement techniques.

1. INTRODUCTION

Patellofemoral arthritis is a fairly common disease, and it has been gaining interest with increasing number of studies due to its diverse treatment methods. Unicompartamental arthritis of the knee generally refers to not only tibiofemoral arthritis but also to disorders of the patella and the cartilage. Patellofemoral arthritis occurs due to the loss of the cartilage of the patella and the trochlear groove in approximately half of the patients diagnosed with degenerative arthritis of the knee (Davies *et al.*, 2002). Isolated patellofemoral arthritis is not rare and radiographic evidence of deformity can be observed in 17.1-34% of female patients and 18.5-19% of male patients in the age of ≥ 55 or ≥ 60 years old (Noble and Hamblen, 1975).

People with patellofemoral joint osteoarthritis exhibited greater lateral displacement and patellar taping is a conservative treatment that may reduce patellar malalignment and reduce pain in people with patellofemoral joint osteoarthritis (Crossley *et al.*, 2009). Patellar malalignment is typically observed in a lateral direction (displacement or tilt), which likely reflects the osteoarthritis disease process predominantly affecting the lateral patellofemoral joint compartment (Cahue *et al.*, 2004). Therefore, if patellar malalignment is a feature of patellofemoral joint osteoarthritis, then interventions with the potential to improve patellar malalignment, patellar taping, which may be beneficial in the management of this disease. Patellar taping is postulated to improve patellar alignment. The alignment of the patella within the femoral trochlea influences the magnitude and location of patellofemoral joint force (Lawrence *et al.*, 2008).

Mulligan's mobilization with movement (MWM) is a manual therapy technique, in this technique, the painful movement is performed actively by the patient while the physiotherapist applies a sustained glide perpendicular or parallel to the joint. This technique aims to restore pain-free and a full range of motion in the joint. It is postulated that MWM minimizes the positional faults at joints which occur following a joint injury (Elahi *et al.*, 2000).

The study aims to find and compare the effects of patellar taping and mulligan's mobilization with movement techniques on pain and knee function among patellofemoral osteoarthritis patients.

MATERIALS AND METHODS

Review Board of Lourde hospital and Lourde Institute of Allied Health Sciences, Kannur has approved this two group pre and post-test

experimental study and a written consent was obtained from the participants after giving clear instructions regarding the treatment procedure and its implications. The study was conducted in Lourde hospital, Taliparamba, Kerala. Twenty clinically diagnosed patellofemoral osteoarthritis patients were selected for the study and randomly assigned into anyone of the experimental group. Group A- ten patients treated with patellar taping and group B- ten patients treated with mulligan's mobilization with movement techniques.

Clinically diagnosed patellofemoral osteoarthritis patients of both the sex and age between 55 to 65 were included for the study. All extraneous variables were clearly identified and ruled out from the study. Subjects in group A received patellar rigid taping, to maintain the alignment of the patella within the femoral trochlea. Subjects in group B received mulligan's mobilization with movement.

Both the experimental groups were given treatment for 1 week continuously. Before and after the completion of 1 week treatment intervention, pain was evaluated by VAS and knee function by WOMAC index scale.

DATA ANALYSIS AND RESULTS

The study aims to compare and find the effects of patellar taping and mulligan's mobilization with movement on pain and knee function among patellofemoral osteoarthritis patients.

Table 1: Mean value, mean difference, standard deviation and paired 't' value scores of pain and knee function in group A and B.

Group	Variable	Measurement	Mean	Mean Difference	Standard Deviation	Paired 't' value
A	Pain	Pre-test	7.8	4.4	0.96	14.39*
		Post-test	3.4			
B	Pain	Pre-test	7.9	3.0	0.63	16*
		Post-test	4.9			
A	Knee Function	Pre-test	74.34	32.76	8.78	11.79*
		Post-test	41.58			
B	Knee Function	Pre-test	76.85	21.51	26.14	6.25*
		Post-test	55.34			

0.005 level of significance

In group A and B for pain the calculated paired 't' values are 16 and 14.39, the 't' table value is 3.250 at 0.005 level. Since the calculated 't'

values are more than 't' table value above scores shows that there is significant difference in pain following patella taping and mulligan's mobilization with movement among patellofemoral osteoarthritis subjects.

In group A and B for knee function the calculated paired 't' values are 11.79 and 6.25, the 't' table value is 3.250 at 0.005 level. Since the calculated 't' values are more than 't' table value above scores shows that there is significant difference in knee function following patella taping and mulligan's mobilization with movement among patellofemoral osteoarthritis subjects.

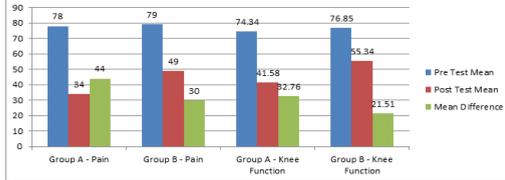


Figure 1: Graphical representation of pretest, posttest and mean difference values of pain and knee function in group A and B (Scores in Percentage).

Table 2: Mean, Mean difference, Standard deviation, and Unpaired 't' value of pain and knee function in group A and B

Variable	Groups	Mean	Mean Difference	Standard deviation	Unpaired 't' test
Pain	Group-A	4.4	1.4	0.61	4.37*
	Group-B	3.0			
Knee Function	Group-A	32.76	11.25	17.46	3.66*
	Group-B	21.51			

0.005 level of significance

In between group analysis the calculated unpaired 't' values for pain and knee function are 4.37 and 3.66, the 't' table value is 2.878 at 0.005 level. Since the calculated 't' values are more than the 't' table value there is significant difference between the scores of group A and B in both the variables. When comparing the mean values of both the groups, group A subjects treated with patella taping showed more difference in pain and knee function than the group B subjects treated by mulligan's mobilization with movement.

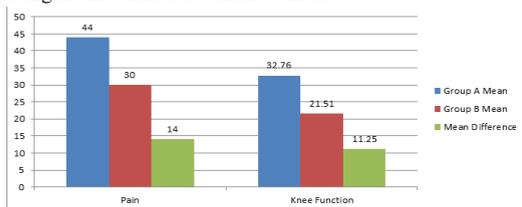


Figure 2: Graphical representation of mean difference values of pain and knee function in group A and group B (Scores in Percentage).

DISCUSSION

The major finding of the study is taping and mulligan's mobilization with movement have a positive effect in realigning pain and improving knee function among patellofemoral osteoarthritis subjects. Rigid taping mechanically corrects the alignment of patella also reduces the stress on patellofemoral joint, which reduces the knee pain thereby enhances the knee function. The possible mechanisms behind mulligan's mobilization with movement may be the neurophysiological effects of small amplitude oscillatory and distraction movements which stimulate the mechanoreceptors that inhibit the transmission of nociceptive stimuli at the spinal cord or brain stem level.

CONCLUSION

Twenty patients with patellofemoral osteoarthritis were included in this study and randomly divided into two groups A and B each group consist of 10 subjects. Group A was treated with patella taping. Group B was treated with mulligan's mobilization with movement techniques. Pain and knee function were assessed before and after intervention by VAS and WOMAC index. The statistical result shows that there is improvement in both the groups. But when comparing both it was found that patella taping was more effective than mulligan's mobilization with movement in the management of pain and knee function among patellofemoral osteoarthritis subjects.

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