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ORIGINAL ARTICLE

Kinesiophobia and Outcomes of Lower Extremity Exercise Regime in Subjects with Knee Osteoarthritis: A Case Series

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ABSTRACT

Aim: To estimate the effectiveness of lower limb exercise regime in subjects with knee osteoarthritis in terms of Kinesiophobia.
Methodology: This was a case series, conducted in the Physiotherapy Department Health Centre University of the Punjab Lahore after ethical approval from June 2018 to February 2019 on 44 patients with knee Osteoarthritis. Non-probability purposive sampling technique was used to enroll the participants according to predefined inclusion and exclusion criteria. Lower limb exercise regime was applied for eight weeks, thrice a week. TAMPA scale for Kinesiophobia (TSK), KOOS and 6 min walk test (6MWT) were used to measure the outcomes. Paired sample T test was applied to find the difference before and after LLEP. Statistical significance was set at P= 0.05
Results: Mean age of the participants was 52±6.54 years ranging from 41-65 years. The mean difference in pre and post treatment KOOS Score was 15.13±12.38 (P=.000), 14.34±7.97 (P=.000) for TAMPA Score and 196.00±94.01 (P=.000) for 6 Mint walk distance.
Conclusion: Lower limb exercise program is found effective in the management of knee osteoarthritis. Subjects undergoing in 8 weeks lower limb exercise program showed improvement in KOOS Score, reduction in TAMPA Score, and improvement in 6 mint walk distance.
Keywords: Knee Osteoarthritis, Kinesiophobia, TAMPA, knee osteoarthritis outcome score (KOOS), Lower limb exercise regime,

INTRODUCTION

Osteoarthritis (OA), being a degenerative disease is known for morbidity. OA produces the pain, edema and restricted movement of the joints. It affects the articular cartilage ultimately compromising the freedom of movement in the weight bearing joints[1]. Prevalence on knee OA has increased with high BMI and increased life expectancy in recent years labeled as Post-industrial era[2]. Causes of knee OA may be modifiable (genetics) and non-modifiable; obesity being the most targeted. Treatments are aimed to manage pain, improve function and reduce the disabilities ranging from non-operative to operative measures, according to the stage of knee OA. Non- operative methods include pharmaceutical agents, intra articular injections, use of orthotic devices and physical therapy. Physical therapy offers variety of regimes including, exercise therapy, activity modification, electrotherapy, dry needling and use of physical agents[3] . Exercise has been prescribed as an important treatment for knee OA[4].

Kinesiophobia or fear of movement is one of the barriers to exercise therapy. It is a debilitating and irrational fear of activity and movement. Eventually it leads towards poor outcomes of rehabilitation with a high level of kinesiophobia in subjects with post total joint arthroplasty[5].
Knee OA is best managed by an inter-professionals team including orthopedic surgeon, rheumatologist, pharmacist, pain specialist, physiotherapist, occupational therapist, nutritionist and nursing staff. Patient education regarding prevention and adherence to prescribed exercise progarmme is most beneficial[6]. In a recently published Delphi study, 132 physiotherapist from 14 countries agreed on the top recommendations were related to providing education and prescribing exercise and weight loss as core treatments, followed by individualized OA assessment and treatment and communication plans[7]. Earlier this year, Aydemir B and coauthors, reported that Knee extension strength can directly influence the physical activity and indirectly to the kinesiophobia. They performed mediation analysis using bootstrap approach for pain score and fear of movement[8].

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The pain and prevention education is very important for the management of knee AO. There is no study reported from Pakistan in this domain for the patients with Knee OA. Our aim was to study the factors involve in reducing fear of pain and improving functional and clinical terms.

PATIENTS & METHODS

This case series was conducted in the Physiotherapy Department Health Centre of Punjab University new Campus Lahore in 8 months after ethical approval. Non-probability purposive sampling technique was used to recruit sample of 44 participants. ACR guidelines for the diagnosis of osteoarthritis[9] were followed. Individuals aged 40 to 65 years with symptoms; stiffness for less than 30 minutes, crepitus, no palpable joint warmth and patients who had a diagnosis on x-rays were also included in the study while patients with history of intra articular injection in knee joint within last 3 months, previous knee or hip joint surgeries, any significant cardiorespiratory, neurological or musculoskeletal diagnosis that render participants unable to exercise and BMI over 30 were excluded.

Written informed consent was taken. The exercise regime included a set of 14 particular leg workouts, having repetition for two min with one min relax in every workout. 5 mins hydrating break was given after 7 workouts. The regime applied for 8 weeks, three times a week. TAMPA Scale of Kinesiophobia[10], Knee Osteoarthritis outcome scale KOOS[11], 6 min walk test[12] scores were recorded before 1st and after last treatment sessions. Differences in outcomes were calculated and paired sample t test was applied.

RESULTS

Mean age of the participants was 52±6.54 years ranging from 41-65 years. There were 21(47.72%) male 23(52.27%) females. Demographics of participants are expressed as table 1. The mean±SD of pre-treatment scores and post treatment score of TAMPA, KOOS and 6MWT, and their respective mean differences±SD along with P values are expressed as table 2 which are significant for all three outcome measurement tools. The results are found statistically and clinically significant.

Table 1: Demographics of study participants

	N	Mean±SD
Age	44	52.1277±6.54289
Weight	44	1.7915±0.11233
Height	44	66.7660±6.59121
BMI	44	20.8520±1.69505

Table 2: Comparison between Pre and post KOOS score, TAMPA score and 6MWT score by paired sample T Test

Outcome Measurements		Mean±SD	Mean difference	P value
KOOS* score	Pre-test	50.0904±8.46740	15.13±12.38	.000
	Post-test	65.2234±11.43641		
TAMPA** score	Pre-test	43.8511±3.86162	14.34±7.97	.000
	Post-test	29.5106±6.74657		
6 Min walk distance	Pre-test	398.8723±28.06639	196.00±94.01	.000
	Post-test	594.8723±93.28256		

* **TAMPA: Tampa scale for Kinesiophobia.

DISCUSSION

In the beginning of rehabilitation, we used motivational interview by experienced therapist. The patients with high scores of kinesiophobia needed physical activity education in the management of knee OA. Fletcher et al. in 2016 found that individuals with better pain knowledge there are minor activity related fears, so, implementation of a pain education programme before starting the exercise regime would further enhance the outcomes of our regime[5,13].

In this study the results calculated were for comparison of pre and post treatment KOOS Score showing mean difference 15.13, which was statistically significant with P value less than 0.05. In another study it has been observed that perceptible difference even 9.2 is found for low back torment[14,15]. Kinesiophobia is obvious in people who have knee OA after cruciate tendon reconstruction surgery and show lower scores with game and exercises and ADL's[16].

Ozmen et al found that Quadriceps muscle weakness was associated with increased pain intensity and disability and reduced quality of life in females but not in males with osteoarthritis. Additionally, kinesiophobia was associated with higher pain intensity during activity, quadriceps muscle weakness and poorer quality of life in females. Level of kinesiophobia was associated with quadriceps muscle weakness in males[17]. In a study conducted on Turkish population by Alaca N, it was found that Patients with chronic knee OA had high levels of fear of movement and organic pain beliefs, while having weaker psychological pain beliefs. The situation was associated with functional and clinical limitations[18].

CONCLUSION

Lower limb exercise program is found effective in the management of knee OA. Kinesiophobia is reduced after the administration of Lower Limb Exercise Programme.

Author's contribution: IF&DH: Conceptualized the study, analyzed the data, and formulated the initial draft, **WP&MAA:** Contributed to the histomorphological evaluation, **ZMB&AA:** Contributed to the analysis of data and proofread the draft.

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