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Research Article

**A RANDOMIZED, CONTROLLED TRIAL OF TOTAL KNEE
REPLACEMENT**¹Dr Waheed Sardar, ²Dr Zill e Rehman, ³Dr Aniq Khan¹MBBS, Sahiwal Medical College, Sahiwal.²MBBS, Akhtar Saeed Medical and Dental College, Lahore.³MBBS, Quaid e Azam Medical College, Bahawalpur.**Article Received:** March 2020**Accepted:** April 2020**Published:** May 2020**Abstract:**

In United States, the number of total knee replacements has been increased drastically from 31.2 per 100,000 person-years. Approximately 670,000 total knee replacements were conducted in 2012 in United States only. With the increase of average age there is expected increase in the number of total knee replacements, which points toward future economic burden.

The results of current study has shown that non-surgical treatment followed by total knee replacement therapy are more favorable as compared to nonsurgical treatment alone with pain killers and improving quality of life 12 months in patients with moderate-to-severe knee osteoarthritis who are eligible for unilateral total knee replacement. While total knee replacement is linked with a greater number of serious adverse problems and participants who were assigned to get nonsurgical treatment alone were not underwent total knee replacement before the 12-month follow-up and clinically well improvements.

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INTRODUCTION:

For end stage knee osteoarthritis, the considered effective treatment is total knee replacement. [1]

In United States, the number of total knee replacements has been increased drastically from 31.2 per 100,000 person-years. [2] Approximately 670,000 total knee replacements were conducted in 2012 in United States only. [3] With the increase of average age there is expected increase in the number of total knee replacements [4] which points toward future economic burden.

Recent researches have recommended that non-surgical treatment of knee osteoarthritis has moderate effectiveness. [5] Such literature encourages the early use of nonsurgical treatment.

The available clinical guidelines and evidence suggest a core treatment program that contains of exercise, education, dietary advice, biomechanical interventions such as insoles, and pharmacologic treatment. [6]

This randomized controlled trial including patients with knee osteoarthritis who were eligible for unilateral total knee replacement, to investigate whether total knee replacement followed by a 12-week nonsurgical-treatment program that consists of exercise, education, dietary advice, use of insoles, and pain medication provides greater pain relief and improvement in function and quality of life than does nonsurgical treatment alone.

METHODS:

It was a randomized controlled trial. 120 participants were recruited into the study after following the inclusion criteria. According to the Kellgren-Lawrence scale, participants with more than >2 score indicating definite osteoarthritis who were eligible for total knee replacement were recruited into the study. The exclusion criteria were containing a need for bilateral total knee replacement, previous total replacement of the same knee, and knee pain during the previous. The randomly assigned participants had to undergo total knee replacement followed by 12 weeks of nonsurgical treatment. According to standard methods [12] for insertion of a total cemented prosthesis with patellar resurfacing the total knee replacement was performed. The 12-week nonsurgical-treatment program contained of five interventions: exercise, education, dietary advice, use of insoles, and pain medication. The two groups of total knee replacement were performed in separately but identically, at the same facility, by specially trained physiotherapists and dietitians to ensure proper standardization and to reduce the number of crossovers.

Literature has shown more effectiveness in nonsurgical treatment in a population of patients with knee osteoarthritis of a severity similar to that seen in the study participants [7]

Exercise

Participants who met the inclusion criteria for total knee replacement were introduced for neuromuscular training program which previously had shown more feasible to patients suffering from moderate to severe knee osteoarthritis. The training program was consisted of 1 hour, group based and twice a week for 12 weeks. The aim of the exercise program was rehabilitation mainly focused on neutral, functional alignment of the legs by building compensatory functional stability and improving sensorimotor control [8] [9]. Patients were analyzed individually to evaluate the exercise quality in which Neutral, dynamic alignment was emphasized.

Pain level was used to guide progression [10].

Education

1-hour educational session was about detail discussion on disease characteristics, treatments, and self-help strategies. The sessions actively engaged patients in the treatment of their knee osteoarthritis.

Dietary Advice

Participants who were having BMI more than 25 were added into dietary weight loss program which contains of 30 to 60 minutes per session. The main goal of the program was to lower the body weight by at least 5%. [11] After the initiation of the nonsurgical treatment a dietitian had communicated thorough telephone to support adherence for at least 30 minutes.

Insoles

The patients received individually fitted, full length insoles with medial arch support.

Pain Medication

if an orthopedic surgeon considered it to be necessary for participation in the exercise program medications were given to the patients. A prescription (reassessed every 3 weeks) was provided for acetaminophen, ibuprofen, and pantoprazole, to be used as needed.

RESULTS:

Total 80 participants were recruited into the study. A 12 month follow up assessment was completed by 98% of participants of nonsurgical-treatment group and 91% of total knee replacement group. 24% had total knee replacement before the 12 month of follow up in the non-surgical treatment group. Whereas in the non-surgical group 28% had

total knee replacement before the 12 month follow up. In the total knee replacement group 3% manifested to avoid total knee replacement therapy and underwent only non-surgical treatment. The mean follow-up time after the initiation of nonsurgical treatment was 12.4 months in the nonsurgical-treatment group and 12.1 months in the total-knee-replacement group.

DISCUSSION:

The study has showed that total knee replacement followed by nonsurgical treatment is more efficacious than nonsurgical treatment alone in providing pain relief and improving function and quality of life after 12 months in patients with knee osteoarthritis who are eligible for unilateral total knee replacement. Participants who underwent total knee replacement had faced some serious adverse events which need some clinically relevant improvements in both total knee replacement and non-surgical group. An extensive literature needed on the effectiveness of total knee replacement therapy before its wide use. [13] Both groups in our study had substantial improvement with respect to most outcomes, and only 28% of the patients who were assigned to receive nonsurgical treatment alone underwent total knee replacement in the following year. Previous studies are in favor of non-surgical treatment for those patients suffering from moderate to severe knee osteoarthritis who are even eligible for total knee replacement. [14] Those participants who had followed a supervised exercise before undergoing the surgery have reported fast post-operative recovery. [15]

The study has some limitations. It has been comprehended that to some extent surgery and non-surgical treatments are linked with placebo effects. [16] These findings may over take the effects characterized to specific treatments and particularly in surgery.

The scores on the KOOS pain subscale that were obtained before surgery were similar to those obtained in previous studies of total knee replacement and indicated mild-to-severe pain during activities, but it is not known whether our results are generalizable to patients with more severe pain. [18] [19] The intensity of nonsurgical treatment may have differed between groups owing to differences in clinical status at the time treatment was initiated. However, the intervention was standardized and administered in both groups by the same physiotherapists and dietitians. Since all patients received multimodal nonsurgical treatment, it is not possible to separate the effects of the individual modes of treatment. [22, 23] The combination of nonsurgical treatments that we administered complies with international recommendations on the treatment of knee

osteoarthritis, which increases the generalizability of the results. [24] [25]

CONCLUSION:

The results of current study has shown that non-surgical treatment followed by total knee replacement therapy are more favorable as compared to nonsurgical treatment alone with pain killers and improving quality of life 12 months in patients with moderate-to-severe knee osteoarthritis who are eligible for unilateral total knee replacement. While total knee replacement is linked with more number of serious adverse problems and participants who were assigned to get nonsurgical treatment alone were not underwent total knee replacement before the 12-month follow-up and clinically well improvements.

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