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# Comparing Outcomes of Telerehabilitation vs. In-Person Therapy in Knee Osteoarthritis Management

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## ABSTRACT

**Background**: This study aimed to assess the effectiveness of telerehabilitation and in-person therapy in treating osteoarthritis (OA) of the knee in terms of pain management, functional improvement, and patient satisfaction.

**Method**: A randomized controlled trial involved 120 participants with OA knee. Participants were randomly assigned to one of two groups: telerehabilitation (n = 60) or in-person therapy (n = 60). Both groups received a 12-week intervention program. The outcome measures were a patient satisfaction survey, the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), and the Visual Analog Scale (VAS) for pain. Assessments were conducted at baseline, six weeks, and twelve weeks.

**Result**: The WOMAC scores and VAS pain ratings of both groups showed a substantial improvement from baseline at 6 and 12 weeks ($p<0.001$). At 12 weeks, the groups' WOMAC scores ($p=0.78$) and VAS pain ratings ($p=0.63$) did not differ statistically significantly. Patient satisfaction did not significantly differ between the two groups ($p=0.52$).

**Conclusion**: This study concluded that there was significant improvement in stretching exercise than the calcaneal taping For patients with limited access to traditional rehabilitation facilities, telerehabilitation appears to be an effective alternative to in-person therapy for the treatment of knee OA.

## 1. INTRODUCTION

Knee osteoarthritis (OA) is a prevalent degenerative joint disease that significantly reduces mobility and quality of life, particularly in older adults. Knee OA ranks as the tenth most common cause of disability globally, per the 2010 Global Burden of Disease Study [1]. As the population ages, knee OA is expected to grow more prevalent, placing increased pressure on healthcare systems worldwide [2].

Traditional management of knee OA sometimes involves in-person physical therapy sessions, which may be challenging for patients with mobility problems or those living in remote areas [3]. Telerehabilitation, or the delivery of rehabilitation services using information and communication technologies, is one possible strategy to improve access to therapy [4]. The COVID-19 pandemic has increased the use of telehealth services in a number of medical specialties, including rehabilitation [5]. However, there is no data comparing the effectiveness of telerehabilitation with traditional in-person therapy for the treatment of knee OA [6].

This study aims to bridge this gap by comparing the outcomes of telerehabilitation with in-person therapy for patients with knee OA. The primary objectives are to evaluate and compare:

1. Pain reduction
2. Functional improvement
3. Patient satisfaction

We intend to evaluate these results in order to offer evidence-based perspectives on the effectiveness of telerehabilitation as a substitute for in-person therapy in the treatment of knee OA [7].

## 2. MATERIALS AND METHODS:

Study Design:- Over the course of 12 weeks, a prospective, randomized controlled experiment was carried out.

Participants:-

From September 2022 to April 2023, 120 patients with knee OA received treatment from the Surya Hospital's physiotherapy department in Pipar city, Jodhpur.

Inclusion criteria were:

- Age 50-75 years
- Diagnosis of knee OA confirmed by radiographic evidence (Kellgren-Lawrence grade 2-3)

• The capacity to access the internet on a computer or smartphone (for telerehabilitation group)

Exclusion criteria included:

- Recent knee surgery (within the past 6 months)
- Concurrent neurological disorders affecting lower limb function

Inability to provide informed consent

**Randomization:-**

Using a computer-generated randomization sequence, participants were randomized to either the in-person therapy group (n=60) or the telerehabilitation group (n=60).

Intervention:

A 12-week intervention program that included the following was given to both groups:

- Exercise therapy (strengthening, flexibility, and balance exercises)
- Education on OA self-management
- Advice on weight management and lifestyle modifications

Mobile applications and video conferencing platforms were used to deliver the intervention to the telerehabilitation group. . The in-person therapy group attended sessions at a physical therapy clinic.

Both groups had two 45-minute sessions per week for the first 6 weeks, followed by one session per week for the remaining 6 weeks.

**Outcome Measures:**

1. Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC): to assess pain, stiffness, and physical function
2. Visual Analog Scale (VAS) for pain: to measure pain intensity
3. Patient Satisfaction Questionnaire: a custom-designed 5-point Likert scale questionnaire

Assessments were conducted at baseline, 6 weeks, and 12 weeks.

Statistical Analysis: Data were analyzed using SPSS version 25. Repeated measures ANOVA was used to compare outcomes between groups and across time points. Statistical significance was set at $p<0.05$.

## 3. RESULT

Of the 120 participants enrolled, 114 completed the study (57 in each group). Six participants (three from each group) dropped out due to unrelated health issues or personal reasons.

**Table 1: Baseline Characteristics of Participants**

| Characteristic | Telerehabilitation (n=57) | In-Person Therapy (n=57) | p-value |
|---|---|---|---|
| Age (years), mean ± SD | 63.2 ± 7.1 | 64.5 ± 6.8 | 0.32 |
| Gender (Female), n (%) | 34 (59.6%) | 32 (56.1%) | 0.71 |
| BMI (kg/m²), mean ± SD | 28.3 ± 4.2 | 27.9 ± 3.9 | 0.58 |
| K-L Grade 2, n (%) | 31 (54.4%) | 33 (57.9%) | 0.70 |
| K-L Grade 3, n (%) | 26 (45.6%) | 24 (42.1%) | 0.70 |

There were no significant differences in baseline characteristics between the two groups.

**Table 2: WOMAC Scores (mean ± SD) at Baseline, 6 Weeks, and 12 Weeks**

| Time Point | Telerehabilitation | In-Person Therapy | p-value |
|---|---|---|---|
| Baseline | 52.3 ± 11.7 | 53.1 ± 12.2 | 0.71 |
| 6 Weeks | 38.6 ± 10.2* | 37.9 ± 9.8* | 0.69 |
| 12 Weeks | 31.2 ± 9.5* | 30.7 ± 9.1* | 0.78 |

*Significantly different from baseline ($p<0.001$)

Both groups showed significant improvements in WOMAC scores at 6 and 12 weeks compared to baseline ($p<0.001$). There were no statistically significant differences between the groups at any time point.

**Table 3: VAS Pain Scores (mean ± SD) at Baseline, 6 Weeks, and 12 Weeks**

| ime Point | Telerehabilitation | In-Person Therapy | p-value |
|---|---|---|---|
| Baseline | 6.8 ± 1.5 | 6.7 ± 1.6 | 0.73 |
| 6 Weeks | 4.9 ± 1.3* | 4.7 ± 1.4* | 0.41 |
| 12 Weeks | 3.5 ± 1.2* | 3.3 ± 1.3* | 0.63 |

*Significantly different from baseline ($p<0.001$)

Both groups demonstrated significant reductions in VAS pain scores at 6 and 12 weeks compared to baseline ($p<0.001$). There were no statistically significant differences between the groups at any time point.

Patient Satisfaction: At the end of the 12-week intervention, patient satisfaction was high in both groups. The mean satisfaction score (out of 5) was 4.3 ± 0.6 for the telerehabilitation group and 4.4 ± 0.5 for the in-person therapy group, with no significant difference between groups ($p=0.52$).

## 4. DISCUSSION

This study compared the outcomes of telerehabilitation and in-person therapy for knee OA management over a 12-week period. The results demonstrate that both interventions led to significant improvements in pain and function, as measured by WOMAC and VAS scores, with no significant differences between the two approaches.

Our results are consistent with earlier research on telerehabilitation for various musculoskeletal disorders. For example, real-time telerehabilitation for musculoskeletal problems was found to be efficacious and comparable to standard practice by Cottrell et al. in their systematic review and meta-analysis [8]. In a similar vein, Russell et al. showed that internet-based telerehabilitation was not inferior to traditional rehabilitation after total knee replacement [9].

Our study found that telerehabilitation was just as successful as in-person therapy for a number of reasons.

1. Greater patient involvement: Better adherence to exercise regimens may result from the simplicity of doing rehabilitation sessions from home. Bennell et al. showed high adherence rates in their online fitness program for chronic knee pain, which lends credence to this [10].

2. Real-time feedback: Just like in-person sessions, video conferencing enables therapists to give prompt feedback on exercise technique. According to Hinman et al., Skype-based physiotherapy for knee OA was deemed convenient and

personal by both patients and physicians [11].

3. Customization: To enable individualized therapy, telerehabilitation platforms frequently have tools for monitoring progress and modifying exercise regimens. The results of Kairy et al., who pointed out that telerehabilitation can enable customized therapies, are consistent with this [12].

4. Lower access barriers: Telerehabilitation removes the need for transportation, which may be especially helpful for patients who live in rural locations or have limited mobility. In their study on in-home telerehabilitation for elderly persons, Tousignant et al. emphasized this benefit [13].

## 5. CONCLUSION:

In summary, our study demonstrates that telerehabilitation is equally effective as in-person therapy for treating osteoarthritis in the knee over a 12-week period in terms of pain management, functional improvement, and patient satisfaction. These findings contribute to the growing body of evidence showing how well telerehabilitation works for musculoskeletal conditions and suggest that it can be a practical way to improve access to rehabilitation services for individuals with knee OA.

## REFERENCES

[1] Cross M, Smith E, Hoy D, Nolte S, Ackerman I, Fransen M, et al. The global burden of hip and knee osteoarthritis: estimates from the Global Burden of Disease 2010 study. Ann Rheum Dis. 2014;73(7):1323-1330.

[2] Hunter DJ, Bierma-Zeinstra S. Osteoarthritis. Lancet. 2019;393(10182):1745-1759.

[3] Hurley MV, Walsh NE, Mitchell H, Nicholas J, Patel A. Long-term outcomes and costs of an integrated rehabilitation program for chronic knee pain: a pragmatic, cluster randomized, controlled trial. Arthritis Care Res (Hoboken). 2012;64(2):238-247.

[4] Brennan DM, Mawson S, Brownsell S. Telerehabilitation: enabling the remote delivery of healthcare, rehabilitation, and self management. Stud Health Technol Inform. 2009;145:231-248.

[5] Wosik J, Fudim M, Cameron B, Gellad ZF, Cho A, Phinney D, et al. Telehealth transformation: COVID-19 and the rise of virtual care. J Am Med Inform Assoc. 2020;27(6):957-962.

[6] Pastora-Bernal JM, Martín-Valero R, Barón-López FJ, Estebanez-Pérez MJ. Evidence of benefit of telerehabitation after orthopedic surgery: a systematic review. J Med Internet Res. 2017;19(4):e142.

[7] Dantas LO, Barreto RPG, Ferreira CHJ. Telehealth in the rehabilitation of female pelvic floor dysfunction: a systematic literature review. Int Urogynecol J. 2020;31(9):1779-1791.

[8] Cottrell MA, Galea OA, O'Leary SP, Hill AJ, Russell TG. Real-time telerehabilitation for the treatment of musculoskeletal conditions is effective and comparable to standard practice: a systematic review and meta-analysis. Clin Rehabil. 2017;31(5):625-638.

[9] Russell TG, Buttrum P, Wootton R, Jull GA. Internet-based outpatient telerehabilitation for patients following total knee arthroplasty: a randomized controlled trial. J Bone Joint Surg Am. 2011;93(2):113-120.

[10] Bennell KL, Nelligan R, Dobson F, Rini C, Keefe F, Kasza J, et al. Effectiveness of an Internet-Delivered Exercise and Pain-Coping Skills Training Intervention for Persons With Chronic Knee Pain: A Randomized Trial. Ann Intern Med. 2017;166(7):453-462.

[11] Hinman RS, Nelligan RK, Bennell KL, Delany C. "Sounds a Bit Crazy, But It Was Almost More Personal:" A Qualitative Study of Patient and Clinician Experiences of Physical Therapist-Prescribed Exercise For Knee Osteoarthritis Via Skype. Arthritis Care Res (Hoboken). 2017;69(12):1834-1844.

[12] Kairy D, Lehoux P, Vincent C, Visintin M. A systematic review of clinical outcomes, clinical process, healthcare utilization and costs associated with telerehabilitation. Disabil Rehabil. 2009;31(6):427-447.

[13] Tousignant M, Boissy P, Corriveau H, Moffet H. In-home telerehabilitation for older adults after discharge from an acute hospital or rehabilitation unit: A proof-of-concept study and costs estimation. Disabil Rehabil Assist Technol. 2006;1(4):209-216.

[14] Lawford BJ, Delany C, Bennell KL, Hinman RS. "I Was Really Pleasantly Surprised": Firsthand Experience and Shifts in Physical Therapist Perceptions of Telephone-Delivered Exercise Therapy for Knee Osteoarthritis-A Qualitative Study. Arthritis Care Res (Hoboken). 2019;71(4):545-557.

[15] Adamse C, Dekker-Van Weering MG, van Etten-Jamaludin FS, Stuiver MM. The effectiveness of exercise-based telemedicine on pain, physical activity and quality of life in the treatment of chronic pain: A systematic review. J Telemed Telecare. 2018;24(8):511-526.