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Original Article

Commonly Practiced Physical Therapy Interventions for the Treatment of Knee Ostoearthritis; A Descriptive Study

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ABSTRACT

Background: Knee Osteoarthritis (OA) is a leading cause of disability, with treatment approaches varying widely based on clinical judgment and patient-specific factors. Despite the availability of clinical guidelines, there is inconsistency in treatment preferences among physical therapists, which may influence patient outcomes.

Objective: The study aimed to identify the commonly used treatment modalities for Knee OA by physical therapists in Punjab and to evaluate the adherence to clinical guidelines in practice.

Methods: A cross-sectional survey was conducted involving 100 physical therapists from various cities in Punjab, who were selected using convenience sampling. Participants were provided with a standardized questionnaire to capture demographic data, clinical experience, and preferred treatment approaches for Knee OA. Data was collected in a one-time setting across government and private clinical environments over a four-month period. Therapists with a minimum of three years of clinical experience were included if they consented to participate. The data was analyzed using SPSS version 25.0.

Results: Of the physical therapists surveyed, 54% were male and 46% were female. The majority (56%) worked in private/primary health centers, with lesser representation in general/specialist hospitals (19%), tertiary/teaching hospitals (17%), and secondary/federal medical centers (8%). Diagnostic preferences showed a reliance on Range of Motion assessments, with other methods such as muscle strength and radiographic findings also utilized. Treatment preferences indicated a predominant use of TENS (87 therapists), followed by ultrasound (61 therapists), and education regarding weight control (47 therapists). Less frequently used treatments included acupuncture (2 therapists) and aerobic exercises (4 therapists).

Conclusion: The treatment preferences for Knee OA among physical therapists in Punjab do not consistently align with established clinical guidelines, indicating a need for enhanced guideline education and integration. The predominance of private practice settings may influence these preferences, suggesting a potential area for targeted guideline dissemination.

Keywords: Knee Osteoarthritis, Physical Therapy, Treatment Preferences, Clinical Guidelines, Punjab.

INTRODUCTION

Osteoarthritis (OA) is a widely prevalent chronic degenerative disorder marked by significant changes in articular cartilage, sub-chondral bone, and para-articular structures (1, 2). This condition is characterized clinically by symptoms such as tenderness, crepitus, pain upon weight bearing, local joint effusion, stiffness, limited knee movement, and varying degrees of inflammation (3, 4). As a major health issue worldwide, OA is particularly prominent among Western populations, ranking as the second most common disease after ischemic heart disease, especially in males over the age of 50 (5, 6). The prevalence of OA is underscored by its radiographic evidence in a substantial portion of the elderly population and its higher hospitalization rate compared to Rheumatoid Arthritis (RA), making it a leading cause of disability and pain in older adults. OA's risk factors encompass a range of joint-level aspects, such as abnormal joint loading, previous knee injuries, and joint malalignment, as well as personal factors including genetics, gender, age, diet, ethnicity, and race, thus presenting a multifaceted challenge in its management (7, 8).

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Despite the existence of multiple evidence-based guidelines and treatments for OA, a universally effective disease-modifying treatment remains elusive due to the diversity in patient characteristics and preferences (9, 10). Management strategies vary globally, with each country adopting specific guidelines primarily focused on non-surgical approaches. This situation underscores the ongoing need for research to develop optimal care models and preventative strategies. Common treatment modalities include oral and topical NSAIDs, physical therapy, aquatic exercises, joint bracing, taping, intra-articular injections, and total knee replacement, all aimed at managing pain, reducing stiffness, decreasing the risk of disability, improving quality of life, slowing joint deterioration, and minimizing treatment side effects (11, 12).

The multimodal treatment approach is highly recommended, involving both pharmacological and non-pharmacological methods along with patient education focusing on lifestyle modifications like weight reduction and joint unloading (13, 14). Active, patient-driven treatments are emphasized, with interventions such as regular telephonic contact, thermal modalities, acupuncture, exercise, manual therapy, manipulation, stretching, electrotherapy (including TENS and ultrasound), and assistive devices forming the core of comprehensive management strategies. Additionally, interventions like patellar taping and massage therapy have been found beneficial (15).

Strengthening and aerobic exercises are particularly effective in reducing pain and improving the quality of life in patients with knee and hip OA. Tailoring exercise plans to individual patient conditions and functional statuses, while considering factors such as age, comorbidities, and mobility levels, is crucial. Both home-based and group exercises have proven effective, with adherence to exercise regimens being a critical factor in improving OA outcomes. These exercises also play a role in developing proprioception and muscle strength, potentially slowing the progression of knee and hip OA (16, 17).

In the realm of non-surgical interventions, a variety of strategies have been explored, including resistance exercises, hydrotherapy, and land-based exercises. Resistance exercises are particularly important for addressing muscle imbalances and strength deficits, as well as altering cartilage loading patterns. Hydrotherapy and land-based exercises have been shown to be effective in pain relief and functional improvement in knee OA, with hydrotherapy offering additional benefits due to its ability to reduce joint stress during exercise (18, 19).

Furthermore, modalities such as transcutaneous electrical nerve stimulation (TENS), acupuncture, and ultrasound therapy have been examined for their effectiveness in OA management. Studies have shown that these interventions can lead to improvements in pain, range of motion, functional capacity, and quality of life. TENS, for instance, has been found to be more effective when used in conjunction with exercise training, as compared to either treatment modality used alone (20-22).

In summary, the management of knee OA requires a comprehensive and personalized approach, integrating a variety of therapeutic modalities to address the unique needs and preferences of each patient. While significant progress has been made in understanding and managing OA, ongoing research and development of new treatment strategies remain crucial for further enhancing patient care and outcomes (23, 24).

MATERIAL AND METHODS

In conducting this research, a data collection letter was issued from the University of Faisalabad to facilitate the gathering of information. The primary tool for data collection was a standardized questionnaire, which was distributed to participants and subsequently collected after 15 minutes. This study employed convenience sampling as its data sampling technique, aiming to reach a broad range of participants with ease and efficiency. The research design was cross-sectional, involving a one-time data collection process from therapists in various clinical settings. Therapists from several locations including Faisalabad, Multan, Jaranwala, and Toba Take Singh were included in the study. The settings for data collection were diverse, encompassing both government and private sector environments (10, 13).

The duration of the study spanned four months, within which the data collection and analysis were completed. The inclusion criteria for participants were specific: only physical therapists with a minimum of three years of clinical experience and currently working in either government or private sectors were considered eligible. Their participation was contingent upon providing informed consent. Conversely, physical therapists practicing in more than two clinical settings or those who had any gaps in their clinical experience were excluded from the study.

Informed consent was a crucial aspect of the study. Participants were provided with consent forms along with a comprehensive description of the study, ensuring they were fully informed before agreeing to participate. The sample size determined for the study

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was 100 physical therapists. Regarding the data collection procedures, therapists were given a standard questionnaire (as detailed in the annexure). This questionnaire included demographic information and various treatment options. Therapists were presented with a hypothetical situation regarding knee osteoarthritis and were asked to indicate their treatment preferences for initial visits and follow-up sessions (25, 26).

The collected data was analysed using SPSS version 25.0, a more updated version than initially planned, to ensure a more robust and contemporary analysis approach. The outcome measure focused on discerning the treatment preferences for managing knee osteoarthritis among physiotherapists. This research aimed to provide insights into current practices and preferences in the field of physical therapy, particularly concerning the management of knee osteoarthritis, a prevalent and debilitating condition (27).

RESULTS

The pie chart depicting the gender distribution of physical therapists shows a slight male dominance, with males comprising 54% compared to females at 46%. In contrast, the clinical setup distribution is more varied, with the majority of therapists, 56%, working in Private/Primary Health Centres. General/Specialist Hospitals account for 19%, Tertiary/Teaching Hospitals for 17%, and a smaller fraction, 8%, are in Secondary/Federal Medical Centres.

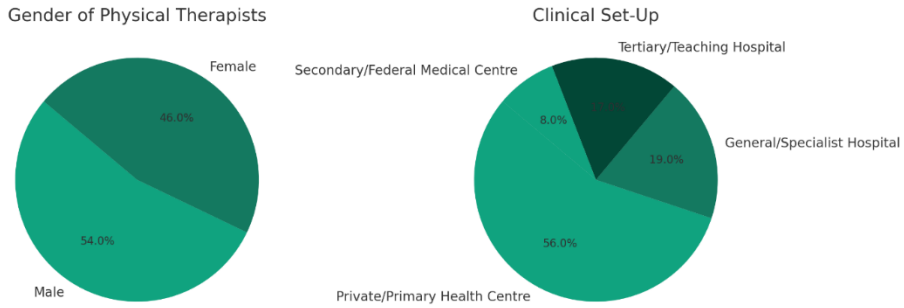

Figure 1 Demographics

Moving to the bar charts, the "Core Treatment Preferences" chart reveals that TENS is the most favoured treatment, chosen by 87 therapists. This is followed by Ultrasound, selected by 61 therapists, and Heat Excluding, preferred by 55. Interestingly, treatments like Stretching Exercise and Hydrotherapy are less popular, each chosen by only 5 therapists, and Strengthening and Aerobic Exercises by merely 4 therapists each. Acupuncture is the least preferred, with only 2 therapists opting for it.

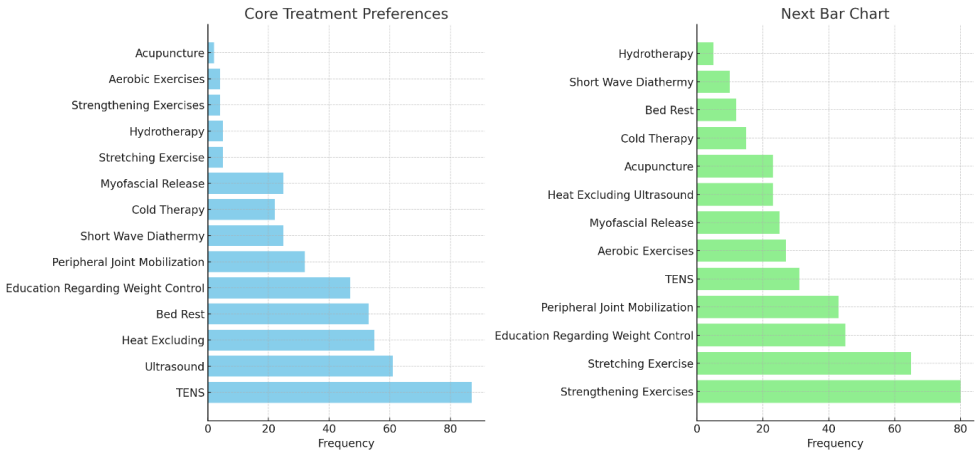

Figure 2 Core Competencies and study characteristics

The subsequent chart, however, presents a different preference pattern. Here, Strengthening Exercises dramatically rise in popularity, being the choice of around 80 therapists. Stretching Exercise also sees a significant increase to 65, while Education Regarding Weight Control is chosen by 45 therapists. In contrast, preferences for TENS and Ultrasound diminish, with TENS dropping to 31 and Ultrasound not featuring in the top preferences at all. This shift indicates a potential trend towards more active and patient-involved therapies in future practices.

DISCUSSION

The intent of this study was to identify the prevailing treatment approaches for Knee Osteoarthritis (OA), with an emphasis on the influence of clinical experience and patient-specific conditions on therapeutic choices. Data was drawn from the responses of 100 physical therapists in various cities of Punjab, who provided insights through a comprehensive questionnaire.

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The demographic profile of the physical therapists revealed a predominance of males in the profession within the region of Punjab. This finding aligns with a past study which suggested that physical therapy has become increasingly male-dominated, contrary to the profession's origins and historical trends where physical therapy was predominantly a female profession, particularly highlighted by the formation of the American Women's Physical Therapy Association. The shift towards a more balanced gender representation in recent years has been noted, reflecting broader changes in workforce dynamics.

Private practice emerged as the preferred employment setting among the surveyed physical therapists. This could be indicative of the job market dynamics and possibly a lack of sufficient public sector opportunities, as evidenced by the limited number of positions in government health facilities. The trend towards private practice may also be a result of inadequate professional growth and job creation efforts by relevant associations and societies, compounded by challenges such as funding shortages, absence of a governing body, and a lack of coordination between professionals and societies.

Diagnostic approaches for OA varied among the respondents, with Range of Motion (ROM) assessments being commonly reported as a primary diagnostic tool. This is in line with previous studies that have recognized ROM limitations as a predictive factor for OA in patients presenting with joint pain. However, the reliance on ROM as a solitary diagnostic criterion has been contested, with other studies advocating for a more nuanced approach that considers additional factors such as stiffness, increased BMI, age, and gender. Despite the prevalence of ROM assessments, clinical examination and history-taking remain central to OA diagnosis, with radiographic imaging serving to enhance diagnostic accuracy.

The treatment preferences of physical therapists for OA management showed a strong inclination towards the use of Transcutaneous Electrical Nerve Stimulation (TENS). This preference aligns with earlier research underscoring the efficacy of TENS in pain relief for OA patients. Despite this, the guidelines suggest that TENS should not be the first-line treatment due to its short-term effect on pain relief. Nonetheless, combining TENS with therapeutic exercises may augment functional improvement, particularly for patients experiencing severe pain.

The study also noted a departure from the traditional recommendation of bed rest, which aligns with current literature advocating for physical activity over bed rest to improve quality of life and reduce pain in OA patients. Long-term bed rest has been associated with adverse effects such as decreased bone mineral density, reinforcing the shift towards more active treatment modalities.

In terms of therapeutic interventions, the use of Short Wave Diathermy (SWD) and ice therapy was noted as a common practice, reflecting previous findings on their effectiveness in managing pain and improving ROM. Furthermore, therapeutic exercises emerged as a recommended adjunct treatment, supporting the notion that a combination of strengthening, aerobic, and flexibility exercises offers greater benefits than a sedentary approach.

The study's limitations include its small sample size and the geographical restriction to a single region, which may limit the generalizability of the findings. The practices identified were not compared against standardized guidelines, thus providing only a snapshot of general practice rather than a comprehensive evaluation.

In conclusion, while some treatment practices for knee OA among physical therapists are aligned with established guidelines, many diverge, indicating a potential gap in awareness and adherence to clinical guidelines. Future research should aim to enhance the understanding and application of evidence-based treatments and explore physical therapists' perceptions of treatment effectiveness, duration, and patient satisfaction. Furthermore, efforts to improve guideline dissemination and education are imperative for aligning clinical practice with current recommendations.

CONCLUSION

The conclusion of this study underscores the heterogeneity in treatment preferences among physical therapists for Knee Osteoarthritis, reflecting a divergence from established clinical guidelines. This gap highlights the necessity for enhanced dissemination and education regarding evidence-based practices. The findings suggest an imperative for future research to focus on improving adherence to clinical guidelines, understanding treatment effectiveness from the therapists' perspective, and examining patient outcomes to ensure the highest standard of care. Furthermore, the implications of this study call for a systematic approach to professional development and guideline integration within the physical therapy community to bridge the divide between current practices and recommended treatment protocols.

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