**Functional Outcomes of a Comprehensive Joint Health Program for Whole Person Management of Knee Osteoarthritis**

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**INTRODUCTION:**

Osteoarthritis (OA) is a whole person problem that can substantially impact the physical, emotional, and social aspects of an individual’s health and wellbeing. Few models currently integrate and tailor a comprehensive range of nonsurgical treatments to an individual’s biopsychosocial needs or systematically assess the patient-reported outcomes of these strategies over time. The purpose of this study is to demonstrate the baseline, 6-month, and 1-year condition-specific health outcomes (KOOS JR) of a comprehensive, multimodal, primary OA provider-led program (the Joint Health Program or JHP) alone (JHP only), and JHP combined with total knee replacement (TKR) (JHP-based TKR). Second, we demonstrate the proportion of patients experiencing the JHP only and JHP-based TKR achieving minimal clinically important difference (MCID) and substantial clinical benefit (SCB) at 6-month and 1-year follow up. Finally, we assess baseline demographic, clinical, and psychological factors (Optimal Screening for Prediction of Referral and Outcome Yellow Flag (OSPRO-YF) associated with functional outcomes at 1-year in all JHP patients.

**METHODS:**

We performed a retrospective evaluation of a consecutive series of 1,504 new patients referred to the JHP with knee pain secondary to OA between October 2017 and December 2020. The JHP provides physical therapy, self-management, structured exercise programs, sleep hygiene coaching, psychologically informed physical therapy, cognitive-behavioral therapy-based strategies, nutrition and lifestyle coaching, based on the patient’s needs. These strategies are delivered by physical therapists trained to deliver multiple treatment modalities as primary OA care providers working at the top of their license alongside orthopaedic surgeons, and coordinating care within a broader institutional network of dieticians, social workers, and psychologists. Only patients with baseline and 6-month PROs measuring functional outcomes or baseline and 1-year PROs were included. Established anchor based MCID and SCB thresholds developed in TKR surgery were utilized for assessing perceived clinical improvement at 1 year. Binary logistic regressions, created using the forward-stepwise approach, were used to identify factors associated with MCID and SCB. Psychological factors were measured using the OSPRO-YF tool – a concise multi-dimensional yellow flag assessment tool that enables accurate estimates of individual, full-length psychological questionnaire scores for depressive symptoms, anxiety, anger, fear-avoidance beliefs, kinesiophobia, catastrophizing, self-efficacy, and pain acceptance.

**RESULTS:**

A total of 1,297 patients (86%) experienced the JHP alone while 207 patients (14%) experienced the JHP-based TKR. Some 559 (37%) completed KOOSJR surveys at baseline and 6-month follow up, and 358 (24%) at baseline and 1-year. KOOSJR scores increased from baseline to 6 months (D=15.7 ±12.9, p<0.001) and baseline to 1 year (D=25.9 ±15.0, p<0.001). At 1-year, 74.2% (JHP only) and 90% (JHP based TKR) achieved MCID, and 57.4% (JHP only) and 83.3% (JHP plus TKR) achieved SCB. In multivariable regression, lower baseline KOOSJR (p<0.001), fewer yellow-flags for pain-related psychological distress (OSPRO-YF) at baseline (p=0.003), and improved psychological distress within 6-weeks of baseline (p=0.002) were the most dominant factors associated with achieving MCID and SCB at 1-year. In further analysis of the OSPRO subdomains, negative coping was found to provide the greatest predictive value.

**DISCUSSION AND CONCLUSION:**

A comprehensive whole person management program for knee OA led by multi-skilled physical therapists capable of providing a range of treatments including behavioral health strategies for psychological distress – a major determinant of functional outcomes – who work alongside orthopaedic surgeons can achieve significant improvements in functional outcomes. Improvements in patients undergoing such programs along with TKR can also be optimized. Further studies should 1) enable comparison of these outcomes with population norms and usual orthopaedic care, 2) prospectively establish the MCID and SCB thresholds for comprehensive OA management, 3) assess the impact of different service patterns on patient outcomes, and 4) establish patient phenotypes in these complex models of care that may streamline the delivery of different services.