Do Patient-Reported Outcomes Correlate with Objective Measures of Function After TKA?

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INTRODUCTION:
Patient-reported outcome measures (PROs) are essential for evaluating patients undergoing total knee arthroplasty (TKA). While wearable technologies like the Apple Watch offer objective measures of physical function through Apple HealthKit, their relationship with PROs in TKA patients is not well understood. We investigated the association between commonly used PROs and objective measures of physical function in patients undergoing TKA.

METHODS:
We conducted a prospective cohort study involving 152 patients undergoing unilateral TKA, assessing PROs (Knee Injury and Osteoarthritis Outcome Score [KOOS] and EuroQol Five-Dimensional Questionnaire [EQ-5D]) and objective HealthKit metrics (gait speed, step count, standing duration, steadiness, estimated six-minute walk test) before and at 1, 6, and 12 months after surgery. Pearson correlation coefficients were used to analyze the relationship between PROs and HealthKit metrics at each time point, adjusting for multiple comparisons.
RESULTS:
Significant improvements were observed in PROs post-TKA. KOOS scores improved from 52.09 ± 11.89 preoperatively to 82.48 ± 13.22 at 12 months postoperative ($p < 0.001$), and EQ5D scores improved from 73.90 ± 17.83 to 85.69 ± 11.60 over the same period ($p < 0.001$). However, correlations between PROs and HealthKit metrics were consistently low (mean $r = 0.2$ to 0.3) and not significant after adjusting for multiple comparisons at various operative time points. Notably, correlations among HealthKit metrics themselves remained high, indicating that objective measures were internally consistent but not strongly related to PROs.
DISCUSSION AND CONCLUSION: Despite their importance in patient-centered care, PROs may not fully reflect actual physical function. Clinicians should consider incorporating objective measures, such as those provided by HealthKit, into routine assessments to obtain a more comprehensive view of patient recovery post-TKA.