What is the Validity of the Patient Acceptable Symptomatic State? Not all Patients Report Dissatisfaction in Pain and Function Prior to Total Hip and Knee Replacement

Joshua P. Castle[1], Nikhil Yedulla[2], Mary Hennekes, Eleftherios Halkias, Tahsin M. Rahman, Hailey Olivia Heil, Michael A Charters[3], Eric C Makhni[4]

[1]Orthopaedic Surgery, Henry Ford Health, [2]Campbell Clinic, [3]Henry Ford Hospital K-12, [4]Henry Ford Health

INTRODUCTION:

The Patient Acceptable Symptom State (PASS) is a metric that assesses the minimum perceived health state that is acceptable to patients. Understanding patient's responses to PASS before and after surgery may assist in indicating patients for total knee (TKA) or hip arthroplasty (THA) and assess the success of surgical treatment. The goal of this study was to determine preoperative PASS scores in patients undergoing THA and TKA and identify associations of PASS with demographic variables and other patient-reported outcome metrics (PROMs). Secondarily, we aimed to identify Patient-Reported Outcomes Measurement Information System (PROMIS), Hip Disability and Osteoarthritis Outcome Score (HOOS), and Knee Injury and Osteoarthritis Outcome Score (KOOS) thresholds for achieving PASS preoperatively.

METHODS:

Patients who underwent either primary THA or TKA from January to October 2021 at a single institution and completed a PASS questionnaire within 30 days before surgery were enrolled. The PASS questionnaire item read: "Taking into account all of the activities you do during your daily life, your level of pain, and also your function, do you consider that your current state is satisfactory?" Patients selected a response of either "yes" or "no." PROMIS and HOOS and KOOS-JR surveys were also administered. Descriptive statistics and independent samples t-tests were utilized to assess patient responses. Receiver operating characteristic curves (ROC) and area under the curve (AUC) analysis were performed to determine threshold values for HOOS JR, KOOS JR, and PROMIS PF representing PASS achievement.

RESULTS:

A total of 727 patients were enrolled. Respectively, 287 THA and 378 TKA patients completed preoperative PASS forms (91.6% and 91.3% response rates). Only 87.0% of TKA patients and 72.1% of THA patients reported unacceptable preoperative health states. PASS questionnaire responses were significantly associated with PROMIS PF CAT and KOOS JR in TKA patients (p<.01 and p=0.03, respectively). In the TKA cohort, KOOS JR and PROMIS PF CAT threshold values of 52.5 and 39 were deemed to be weak predictors of achieving PASS (AUC=0.575 and 0.600, respectively). PASS questionnaire responses were only significantly associated with PROMIS PF CAT but not HOOS JR in THA patients (p<0.01 and p=0.07, respectively). For the THA cohort, HOOS JR and PROMIS PF CAT threshold values of 55.6 and 40 were determined to be weak predictors of achieving PASS (AUC=0.59 and 0.65, respectively). In the TKA cohort, White/Caucasian patients and those with a higher BMI were more likely to respond "no" to the PASS questionnaire (p<0.01 and p=<0.01, respectively). For THA patients, no significant associations were found between PASS responses and demographic variables.

DISCUSSION AND CONCLUSION:

In patients undergoing THA or TKA, 13.0% and 27.9% of patients, respectively, achieved PASS preoperatively. Given that not all patients indicated for hip or knee replacement reported unacceptable health states, these findings call to question the validity of the PASS questionnaires preoperatively. Furthermore, none of the threshold values for the assessed PROMs could strongly predict PASS achievement before surgery despite the significant associations between PASS and PROMIS-PF and KOOS JR.
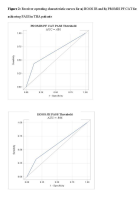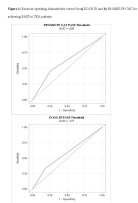

Figure 1: Receiver operating characteristic curves for achieving PASS in TKA patients

Figure 2: Receiver operating characteristic curves for achieving PASS in THA patients

Table 1: TKA Univariate Association with PASS for Demographic Variables

Table 2: THA Univariate Association with PASS for Demographic Variables

Table 3: TKA Univariate Association with PASS for PROMIS PF CAT, PASS (satRke) and KOOS JR

Table 4: THA Univariate Association with PASS for PROMIS PF CAT, PASS (satRke) and HOOS JR