Preoperative Veteran Rand-12 Mental Composite Score of >60 Associated with Increased Likelihood of Patient Satisfaction after Total Hip Arthroplasty

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INTRODUCTION: Up to one-third of patients undergoing primary elective total hip arthroplasty (THA) report symptoms of psychological distress. The Veterans RAND 12-Item Health Survey (VR-12) mental component score (MCS) is a patient-reported outcome measure quantifying mental health problems, vitality, and social functioning. To date, a quantifiable risk threshold for baseline VR-12 MCS has not been developed. We aimed to determine 1) VR-12 MCS distribution for patients undergoing primary THA; and 2) thresholds associated with healthcare utilization and 1-year patient-reported outcome measures (PROMs).

METHODS:

A prospective cohort of 4,194 primary THAs (January 2016–December 2019) was included (Figure 1). Multivariable and spline regression models were used to test for associations between preoperative VR-12 MCS and postoperative outcomes [i.e., 90-day hospital resource utilization (non-home discharge, prolonged length of stay [LOS] (i.e., ≥3 days), all-cause readmission), attainment of Patient Acceptable Symptom State (PASS) at 1-year postoperative, as well as Substantial Clinical Benefit (SCB) in the Hip Disability, Osteoarthritis Outcome Score (HOOS)-pain, and HOOS-physical short form (PS)].

RESULTS:

Average age was 66.5 ± 10.0, and BMI was 30.1 ± 6.4. Patients with a VR-12 MCS of 40-59 comprised the largest preoperative cohort (28.5%; n=2,163). Patients having the lowest mean VR-12 MCS were in the youngest category (18-29), of the greatest BMI (Obese Class III), female sex, and of current smoking status (p<0.001, each) (**Table 1; Fig 2**).

Unadjusted analysis

Patients who were discharged to a facility had significantly lower VR-12 MCS. Similarly, patients needing LOS ≥3 days or a 90-day readmission had significantly lower preoperative VR-12 MCS values (**Table 2**). Patients who achieved 1-year PASS had significantly higher VR-12 MCS than those reporting dissatisfaction (**Table 2**).

Adjusted Multivariable Regression

When controlling for age, sex, race, smoking status, BMI, and Charlson Comorbidity Index in a multivariable regression analysis, there were statistically significant higher odds of non-home discharge (OR, 2.31; 95% confidence interval [CI], 1.00-4.94, p=0.038) and prolonged LOS (OR, 3.46, 95% CI, 1.72-6.80, p<0.001) for patients in the 0-19 VR-12 MCS as compared to the reference group of 40-59 (**Table 3**). Patients with higher VR-12 MCS values of 60-79 had lower odds of non-home discharge (OR, 0.62; 95% confidence interval [CI], 0.46-0.83, p=0.001).

Patients with VR-12 MCS values of 60-79 demonstrated higher odds of achieving PASS (OR, 2.00; 95% confidence interval [CI], 1.52-2.68, p<0.001), and SCB according to HOOS-JR (OR, 1.16; 95% confidence interval [CI], 1.00-1.35, p=0.048) (**Table 4**). Conversely, patients in the 0-19 VR-12 MCS category had significantly higher odds of achieving HOOS-PS at one year (OR, 2.51, 95% CI, 1.12-6.70, p=0.040). Restricted cubic spline models further assessed the association between VR-12 MCS and the corresponding odds of experiencing each of the outcomes (**Fig 3**), where a VR-12 MCS of 40 or lower was associated with exponentially higher odds of adverse outcomes across all study endpoints.

DISCUSSION AND CONCLUSION:

Low preoperative (<40) VR-12 MCS may predict increased healthcare utilization. Further, preoperative VR-12 MCS >60 predicts greater overall satisfaction at 1-year as well as achieving a PASS threshold for HOOS-JR. Quantifiable thresholds for VR-12 MCS may aid in shared-decision making and patient counseling in setting expectations or may guide specific care pathway interventions to address mental health during THA.