

## What are the Patient Factors Associated with Poor Completion Rate of Patient-reported outcome measures following revision surgery?

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**INTRODUCTION:** Total joint arthroplasty (TJA) is a commonly performed orthopaedic procedure that will only continue to increase in prevalence due to an ageing population, with an estimated 4 million TJAs being performed by 2030. Patient-reported outcome measures (PROMs) are becoming an increasing important tool in TJA research as these provide a mechanism for quantifying the clinical effectiveness of the procedure. Previous studies have investigated demographic parameters that affect the completion rate of PROMs. However, these analyses were performed years ago and therefore may not represent the current standard for predictors of PROMs response rates. The goal of this study is to identify any patient characteristics that may be associated with the completion rate of patient-reported outcome measures following revision TJA.

**METHODS:** A total of 1471 patients who underwent revision hip and knee surgery was reviewed. Clinically recorded PROMs were collected for all patients alongside demographic and socio economic factors. The study included 4 PROMs to characterize the whole breadth of PROMs to fully quantify the clinical effectiveness of the clinical procedure with respect to both THA and TKA performance (HOOS\_PS; KOOS\_PS), mental health (PROMIS SF mental) and general patient well-being (PROMIS SF physical; PROMIS SF 10A). A Cochran Armitage test was used to identify patient characteristics that are associated with poor completion rates for PROMs.

**RESULTS:** A total of 352 (24%) patient completed post-operative PROMs within 2 years following revision TJA. The completion rates for PROMs were as follows: PROMIS SF physical (339 patients, 23%), PROMIS SF mental (339 patients, 23%), KOOS\_PS (229 patients, 16%) and Physical SF 10A (293 patients, 19%). The completion rates for PROMIS SF physical and PROMIS SF mental were significantly higher ( $p<0.01$ ) than that of the KOOS\_PS. Poor completion rates for PROMs were associated with race ( $p=0.04$ ), occurrence of complications ( $p<0.01$ ), 30 day hospital readmissions ( $p=0.03$ ) and an age above 70 years ( $p<0.01$ ) (Table 1). There was no correlation between poor complication rates for PROMs and gender ( $p=0.32$ ), marital status ( $p=0.58$ ), native language ( $p=0.63$ ), ASA score ( $p=0.11$ ) and comorbidities ( $p=0.43$ ).

**DISCUSSION:** This study identified patient characteristics (race and age) to correlate with poor completion rates of post-operative PROMs. Furthermore, post-operative complications were associated with poor PROM completion rates. This is clinically important data in identifying potential patient barriers to increase the capture rate of PROMs, which provide an effective mechanism for quantifying the clinical effectiveness of total joint arthroplasty and thus provide a valuable tool in both clinical practice as well as research environments.

**SIGNIFICANCE/CLINICAL RELEVANCE:** This study identified patient characteristics correlated with poor completion rates of PROMs, providing clinically important data to identify and address potential barriers that currently limit completion rates.

**Table 1:** Risk factors correlated with poor completion rates of patient-reported outcome measures.

Risk factor	Prevalence	p-value
Age above 70 years	176 Patients	<b>&lt;0.01</b>
Gender	214 Females; 138 Males	0.32
Marital status	93 Married, 259 Single	0.58
Language	302 Native Speaker, 50 Non-Native Speaker	0.63
ASA score	3% ASA 1; 56% ASA 2; 39 % ASA 3; 2% ASA 4	0.11
Smoking	115 Smokers/ 237 Non-Smokers	0.38
Drinking	131Smokers/ 221 Non-Smokers	0.75
Renal failure	31 Renal Failure/ 321 No Renal Failure	0.44
Depression	68 Depression/ 284 No Depression	0.57
Diabetes	83 Diabetes/ 269 No Diabetes	0.61
Re-revision rates	32 Re-revision/ 320 No Re-revision	<b>0.01</b>
30 day readmission	41 Readmission/ 311 No Readmission	<b>0.03</b>
60 day readmission	53 Readmission/ 299 No Readmission	0.09
90 day readmission	70 Readmission/ 282 No Readmission	0.18