

Comparable Clinically Significant Improvements in Knee Pain and Function for UKA Patients with and without Preoperative Chronic Pain Diagnoses

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INTRODUCTION:

One in four adults in the USA suffer from chronic pain – pain lasting longer than 3 months in one or more locations in your body. These patients can perceive pain differently and may not be satisfied with pain relieving surgeries like unicompartmental knee arthroplasty (UKA). This study aimed to assess (1) clinically relevant improvement in patient-reported outcome measures (PROMs), and (2) self-reported satisfaction at 1-year between patients with and without a preoperative chronic pain diagnosis undergoing a UKA

METHODS:

A cohort of primary elective unilateral UKAs performed at a large tertiary academic center in the United States from 2016-2022 were included (n = 1039 patients). Electronic medical record (EMR) was used to identify a preoperative diagnosis of chronic pain using ICD-9 (338.2 and 338.4) and ICD-10 (G89.2 and G89.4) coding. Multivariable logistic regression models were used to compare 1-year PROMs between those with chronic pain versus those without chronic pain. The included PROMs were the Knee disability and Osteoarthritis Outcome Score (KOOS) Pain, Physical function Shortform (PS), Joint Replacement (JR), and Veteran Rand-12 mental component score (VR-12 MCS). Clinically relevant improvements were assessed through minimal clinically important difference (MCID) and Patient Acceptable Symptom State (PASS) threshold achievement. The models were controlled for pre-specified demographics and surgical confounding variables. The 'failure to reach the threshold (or the so-called treatment failure)' were modeled and considered as the event of interest in all the models. All tests were two-sided, with a Type I error rate of 0.05. Cohort characteristics are displayed in **Table 1**.

RESULTS:

Overall, 18.3% (190/1039) of patients had a diagnosis of chronic pain before their UKA. After adjusting for confounding variables, chronic pain was not associated with failure to reach MCID improvement in any of the KOOS domains (**Table 2**). Chronic was also not associated with failure to reach PASS threshold in any of the KOOS subscales (**Table 3**). Finally, chronic pain does not have an association with failure to achieve satisfaction at 1-year after UKA (OR 1.39; CI: 0.93, 2.08; p=0.112) (**Table 4**).

DISCUSSION AND CONCLUSION:

Nearly one in five patients undergoing UKA have a preoperative diagnosis of chronic pain. Patients with a chronic pain diagnosis before UKA have comparable satisfaction and clinical improvement in knee pain and function to their non-chronic pain counterparts. Surgeons may use these results to set realistic expectations in these patients, while further research to understand the mechanisms behind the similar improvement in these patients could lead to better-targeted interventions.

Table 1 - Cohort demographics

Variable	Level	n (%)	n (%)	n (%)	P-value
Age	18-29	103 (9.9%)	19 (9.9%)	84 (80.1%)	0.21
Sex	Male	493 (47.4%)	93 (47.6%)	399 (49.8%)	0.61
Female	546 (52.6%)	97 (52.4%)	549 (57.4%)		
BMI	18.5-24.9	383 (36.9%)	73 (38.4%)	310 (39.5%)	0.002
25-29.9	383 (36.9%)	73 (38.4%)	310 (39.5%)		
30-34.9	193 (18.6%)	37 (19.5%)	156 (20.1%)		
35-39.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
40-44.9	153 (14.7%)	30 (15.8%)	123 (15.9%)		
45-49.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
50-54.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
55-59.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
60-64.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
65-69.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
70-74.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
75-79.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
80-84.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
85-89.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
90-94.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
95-99.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
100-104.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
105-109.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
110-114.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
115-119.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
120-124.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
125-129.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
130-134.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
135-139.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
140-144.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
145-149.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
150-154.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
155-159.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
160-164.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
165-169.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
170-174.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
175-179.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
180-184.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
185-189.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
190-194.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
195-199.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
200-204.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
205-209.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
210-214.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
215-219.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
220-224.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
225-229.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
230-234.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
235-239.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
240-244.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
245-249.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
250-254.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
255-259.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
260-264.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
265-269.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
270-274.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
275-279.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
280-284.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
285-289.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
290-294.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
295-299.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
300-304.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
305-309.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
310-314.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
315-319.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
320-324.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
325-329.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
330-334.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
335-339.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
340-344.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
345-349.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
350-354.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
355-359.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
360-364.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
365-369.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
370-374.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
375-379.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
380-384.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
385-389.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
390-394.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
395-399.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
400-404.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
405-409.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
410-414.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
415-419.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
420-424.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
425-429.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
430-434.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
435-439.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
440-444.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
445-449.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
450-454.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
455-459.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
460-464.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
465-469.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
470-474.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
475-479.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
480-484.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
485-489.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
490-494.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
495-499.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
500-504.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
505-509.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
510-514.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
515-519.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
520-524.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
525-529.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
530-534.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
535-539.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
540-544.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
545-549.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
550-554.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
555-559.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
560-564.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
565-569.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
570-574.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
575-579.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
580-584.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
585-589.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
590-594.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
595-599.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
600-604.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
605-609.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
610-614.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
615-619.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
620-624.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
625-629.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
630-634.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
635-639.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
640-644.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
645-649.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
650-654.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
655-659.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
660-664.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
665-669.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
670-674.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
675-679.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
680-684.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
685-689.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
690-694.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
695-699.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
700-704.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
705-709.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
710-714.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
715-719.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
720-724.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
725-729.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
730-734.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
735-739.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
740-744.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
745-749.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
750-754.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
755-759.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
760-764.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
765-769.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
770-774.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
775-779.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
780-784.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
785-789.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
790-794.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
795-799.9	103 (10.0%)	20 (10.5%)	83 (10.7%)		
800-804.9					