

# Harnessing Perioperative Data via Telemonitoring to Forecast Chronic Pain following Total Joint Arthroplasty

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**INTRODUCTION:** This study investigates severe postoperative pain incidence and risk factors in patients undergoing total knee arthroplasty (TKA). Chronic pain affects around 25% of these patients, and identifying at-risk individuals can optimize pain management. Telemonitoring applications allow convenient pain data collection in clinics.

**METHODS:** A retrospective study included 623 total knee arthroplasty patients. They used an app to collect pre- and postoperative pain data, chronic pain risk factors, and analgesic usage. Pain was assessed using a visual analog scale. Patients were divided into two groups: those with pain >40/100 and/or using level 2 or 3 painkillers (D+), and those not meeting these conditions at three months postoperatively (D-). Statistical tests compared the groups' pre- and postoperative parameters.

**RESULTS:** The pain-free group (D-) had 542 patients (87%), while the pain group (D+) had 81 patients (13%). At three months postoperatively, 68 patients reported pain >40/100, and 19 used level 2 or 3 painkillers. The pre-surgery characteristics more closely correlated with pain at 3 months were the number of comorbidities, patient-reported high sensitivity, and higher preoperative rest pain ( $p < 0.05$ ). The pain slope evolution in the first weeks post surgery was lower in the pain group. Pain levels at 6 weeks strongly correlated with those at 3 months ( $r = 0.78$ ).

**DISCUSSION AND CONCLUSION:** The proportion of patients with severe to moderate pain remained stable between 6 weeks and 3 months postoperatively. Identifying pre and perioperative pain characteristics helps identify patients at risk of chronic pain. Targeted preventive interventions such as preoperative prehabilitation, adapted and personalized pain medication, or cognitive therapy could help reduce the incidence of pain at 3 months.

Percentage of patients with significant pain

