

## **An International Comparison of Postoperative Pain Management in Patients Undergoing Orthopaedic Surgery**

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**Purpose:** Synthetic opioids are currently the main cause of drug overdose deaths in the US. A current thought is that the misuse of opioids by the American health-care systems is largely responsible for the current crisis. In America, opioids play a crucial role in postoperative pain management whereas in other countries, such as Romania, they are administered in a more conservative fashion. We sought to compare orthopaedic postoperative pain management in these countries to determine if the substantial discrepancy in opioid use would result in differences in subjective pain control.

**Methods:** This was a retrospective review of orthopaedic postoperative pain management between patients in the US and in Romania. 244 Romanian patients and 184 US patients underwent surgical treatment of bimalleolar ankle fractures, distal radius fractures, femoral neck fractures, hip arthritis treatment by total hip arthroplasty, intertrochanteric femur fractures, and tibial fractures with associated fibular fracture between 23 May 2019, and 23 November 2019. Opioid and non-opioid analgesic medication use and subjective pain scores during the first and second 24 hours after surgery were analyzed. Statistical analysis and logistical regression were performed using a predetermined P value of <0.05 as significant.

**Results:** In the US, females reported higher pain scores than males following the above listed musculoskeletal procedures ( $P = 0.0181$ ). Subjective pain scores for the first 24 hours were also higher in Romanian patients compared to American patients ( $P < 0.0001$ ), while Romanian patients reported lower pain scores than American patients in the second 24 hours ( $P < 0.0001$ ). Due to the differences in pain management medications, we were not able to quantitatively compare medication usage. Notable findings in the US regarding pain medication usage were that the effect of opioid medication depends on the injury type ( $P = 0.0215$ ), but not on patient age ( $P = 0.581178$ ) or sex ( $P = 0.470104$ ).

**Conclusion:** On postoperative day zero, opioid analgesics seem to improve pain control, but this effect was reversed on postoperative day 1. Higher pain scores in American females despite equivalent amounts of narcotic to their male counterparts, and the absence of a difference in Romanian patients, suggest that the current American postoperative pain regimen may be tailored to the needs of male patients. As the discussion over the use of opioids in the orthopaedic postoperative setting continues, these findings suggest that pain management is a complex process involving many factors including medication type, sex, age, and culture. Further research needs to be performed to determine the safest, most efficacious pain regimen suitable for all patients.