The Relationship Between Insomnia Severity and Postoperative Pain Management: A Survey Study of 110 Orthopaedic Trauma Patients

Austin T. Gregg, BS*; Healy Vise, BS; Adam N. Musick, BS; Thomas J. Policicchio, BA; Robert K. Wagner, MD; Carla H.Lehle, MD; Ericka Lai; Maaz Muhammad, MD; Maarten A. Van Weezenbeek, BS; Sikun Fan, Bsc; Stephen C. Moye, BS; Arun Aneja, MD, PhD; David C. Landy, MD, PhD*

Purpose: Sleep disturbance is common among patients with orthopaedic trauma and may influence pain perception and management. This study evaluated the association between insomnia and postoperative opioid use, as well as its relationship with pain interference and opioid refill requests.

Methods: In total, 96 consecutive patients with orthopaedic trauma were surveyed at 2-week follow-up visits after orthopaedic surgery or injury at an academic Level I trauma center. Insomnia severity was assessed using the Insomnia Severity Index, categorized into four severity levels. Pain interference and opioid use were evaluated using the Patient-Reported Outcomes Measurement Information System (PROMIS) Pain Interference Score and prescription refill data. A two-sample t-test compared pain interference scores between patients with and without significant insomnia, and Fisher's exact test assessed the relationship between insomnia severity and opioid refill requests.

Results: This study included 96 patients (median age: 62 years [IQR: 45–71.5], female: 40 [58.3%]). Surveys were administered at a mean follow up of 15.2 days after surgery or injury. Among participants, 76 (79.2%) reported no or subclinical insomnia, while 13 (13.5%) and 7 (7.3%) reported moderate or severe insomnia, respectively. Patients with moderate or severe insomnia had significantly higher PROMIS Pain Interference Scores (21.4, 95% CI: 18.0–24.9) compared to those without (15.3, 95% CI: 13.4–17.3, p = 0.002). Additionally, 40.0% of patients with insomnia requested opioid refills compared to 17.1% of those without insomnia (p = 0.037).

Conclusion: Insomnia severity is strongly associated with greater pain interference and higher opioid refill requests in patients with orthopaedic trauma. These findings highlight the critical role of sleep in postoperative pain perception and opioid consumption. Addressing sleep dysfunction as part of postoperative pain management may improve patient outcomes and reduce opioid reliance, underscoring the importance of interdisciplinary approaches to trauma recovery.