Improvement in sleep patterns after hip and knee arthroplasty: a prospective study in 780 patients

Jan Van Meirhaeghe
Lucy J Salmon
Michael O’Sullivan
Benjamin Gooden
Matthew C Lyons
Leo A Pinczewski
Justin P Roe

Background
While the relationship between OA and sleep has been examined, relatively few studies have prospectively assessed sleep before and after hip (THA) and knee arthroplasty (TKA). While improvement in sleep quality is consistently reported in these studies, subject numbers are small, ranging from 25 to 105 subjects. Further, there are conflicting reports on the relationship between sleep quality and pain scores, potentially due to inadequate sample sizes. The relationship between sleep and satisfaction with surgery has not been reported previously.

Methods
Between July 2016 and June 2018, surgical data and PROMs were collected on 780 subjects before and 12 months after THA or TKA. PROMs included Knee Injury and Osteoarthritis Outcome Score (KOOS), Hip Disability and Osteoarthritis Outcome Score (HOOS), patient satisfaction and 2 questions from the Pittsburgh Sleep Quality Index (PSQI).

Results
Before surgery, 35% (270/780) reported poor quality sleep. Sleep quality and duration were worse in females over males, and in THA patients (39%) over TKA patients (30%, p=0.011). Of those reporting bad sleep, 74% (201/270) were improved after arthroplasty. Satisfaction was higher in subjects reporting good sleep quality (626/676, 93%) compared to those reporting bad sleep quality (67/86, 78%) (p=0.001). Sleep was positively correlated with better HOOS/KOOS scores (r=0.2-0.3).

Conclusions
This cohort study found that nearly 1 in 2 report poor sleep quality and sleep duration of less than 6 hours before hip and knee arthroplasty. Poorer measures of sleep were seen in females compared to males, and hip over knee subjects before surgery. At 1 year after arthroplasty, significant improvements in sleep quality and duration were observed. For those with poor sleep quality or duration before surgery, 7 of 10 experienced improvement after arthroplasty. Measures of sleep were positively associated with measures of pain, symptoms, general health, well-being, and satisfaction with surgery. Improvement in sleep may be considered a realistic outcome of hip and knee arthroplasty surgery, with important and meaningful positive effects on health and quality of life.