**Does outpatient knee or hip arthroplasty improve patient outcome?**

Amir Human Hoveidaei, Amirhossein Ghaseminejad-Raeini, Pouya Taghavi, Christopher McClellan, Bosco Joseph, Ferru Paolo, Jan Geurts, Georgi Wassilew, Mustafa Citak.

**Response/Recommendation:** Current evidence shows that outpatient total joint arthroplasty is safe to perform in carefully selected patients. The outcome of outpatient total joint arthroplasty is not inferior to inpatient surgery.

**Level of Evidence: Moderate**

**Rationale:** To address the above question, we performed a systematic review. After initial screening of titles and abstracts by two researchers, 154 studies were selected for full-text review. Finally, 67 studies met the inclusion criteria and were included in our analysis (5-71). In the dataset, there were 20 studies conducted after the year 2020 and 39 conducted before the year 2020. The majority of these studies were conducted in the USA, Canada and the UK. In the dataset, 35 of the articles focused on hip arthroplasty, 32 studies focused on knee arthroplasty, and 13 studies addressed both hip and knee arthroplasty.

The studies revealed significant reductions in both complications and readmission rates for outpatient procedures. For outpatient TJA, the total complications odds ratio (OR) was 0.70 (95% CI: 0.61-0.81, $p<0.01$, $I^2=97\%$) **(Figure 1)**. Specifically, outpatient THA showed an even greater reduction in complications with an OR of 0.59 (95% CI: 0.48-0.73, $p<0.01$, $I^2=96\%$). Readmission rates also significantly decreased for outpatient TJA (OR=0.67, 95% CI: 0.59-0.77, $p<0.01$, $I^2=86\%$) **(Figure 2)**, outpatient TKA (OR=0.75, 95% CI: 0.61-0.93, $p<0.01$, $I^2=88\%$), and outpatient THA (OR=0.55, 95% CI: 0.43-0.71, $p<0.01$, $I^2=78\%$). Despite the high heterogeneity in these analyses, the consistent pattern of reduced risks highlights the effectiveness of outpatient procedures in lowering both complications and readmissions, thereby improving patient outcomes. However, the analysis did not find a significant difference in the occurrence of PJI: (OR [95%CI] = 0.95 [0.87-1.04], $p=0.28$, $I^2=14\%$) (and Revision: (OR[95%CI] = 0.95 [0.82-1.10], $p=0.52$, $I^2=0\%$) between inpatient and outpatient settings **(Figure 3)**.

Outpatient TJA showed a significantly lower total cost (SMD [95%CI] =-0.65 [-0.93 to -0.37], $p<0.01$, $I^2=97\%$) **(Figure 4)**. For TKA, outpatient procedures also indicated cost savings, though with borderline significance (SMD [95% CI] = -0.42: [-0.85 to 0.00], $p=0.05$, $I^2=92\%$). Additionally, Outpatient THA resulted in cost reduction as well (SMD [95% CI] =-0.81: [-1.10 to -0.52], $p<0.01$, $I^2=67\%$). These findings highlight significant cost benefits for outpatient surgeries.

Some studies have evaluated the key requirements for successful outpatient TJA. For example, Hoffman et al. discovered that most patients undergoing outpatient TJA were relatively young (average age around 60 years) and had been prescreened for a low level of

comorbidities. Another inclusion criterion mentioned in the studies was living within an hour's distance from the hospital and having a BMI below 40 $Kg/m^2$(27). Current contraindications included obstructive sleep apnea, poor balance, cognitive deficiencies, and a lack of social support. According to included studies, older age (≥68 years), higher BMI, and comorbidities such as chronic dyspnea, COPD, diabetes, and hypertension are associated with a higher risk of anesthetic-related side effects and 30-day morbidity after outpatient TKA(51). For these reasons, it is recommended that patients selected for outpatient procedures meet certain criteria. (72). Additionally, having strong home support could be a crucial factor that its evaluation for each patient might have beneficial results(73). One of the main tools for selecting patients for outpatient procedures is the Outpatient Arthroplasty Risk Assessment (OARA) score, which stratifies patients into "low-moderate risk" (scores ≤59) and "not appropriate" (scores ≥60) for early discharge(74). Moreover, the implementation of Enhanced Recovery After Surgery (ERAS) protocols, properly coordinating the perioperative staff, the use of rapid-recovery anesthetic techniques, effective blood loss mitigation, and multimodal (opioid-sparing) analgesia strategies could result in optimal outcomes following outpatient TJA (4).

The question of whether implementing outpatient TJA offers more benefits than challenges within healthcare systems remains pivotal. Understanding its potential advantages in terms of cost-effectiveness and patient satisfaction necessitates addressing the complexities of patient selection and postoperative care(1-4). Outpatient TJA can be beneficial in several aspects, including reducing total complications, lowering readmission rates, and decreasing costs. However, careful patient selection is crucial for achieving successful outcomes with outpatient procedures. It could be suggested that patients with fewer comorbidities, lower BMI, and younger age are more suitable for outpatient procedures. Further studies are needed to investigate the long-term outcomes of outpatient TJA and to address challenges faced by elderly patients, evaluating costs, patient and surgeon satisfaction, and the effects on hospital load. Ultimately, the judgment of the surgeon and anesthesiologist, as well as patient education and support, remain the primary factors in making this decision, which may vary based on individual cases.

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## Figures:

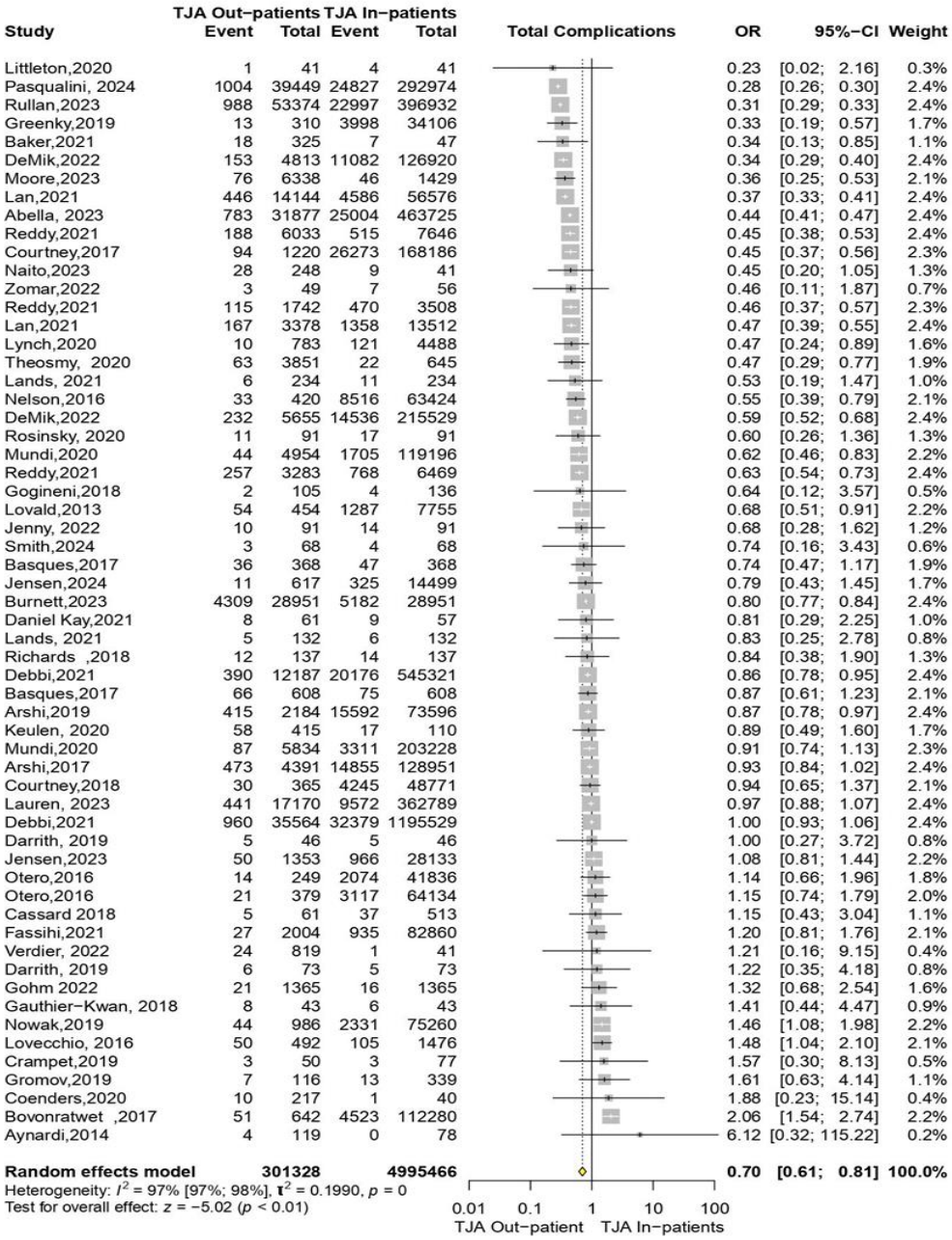


**Figure 1-**Total complications among outpatient and inpatient TJA

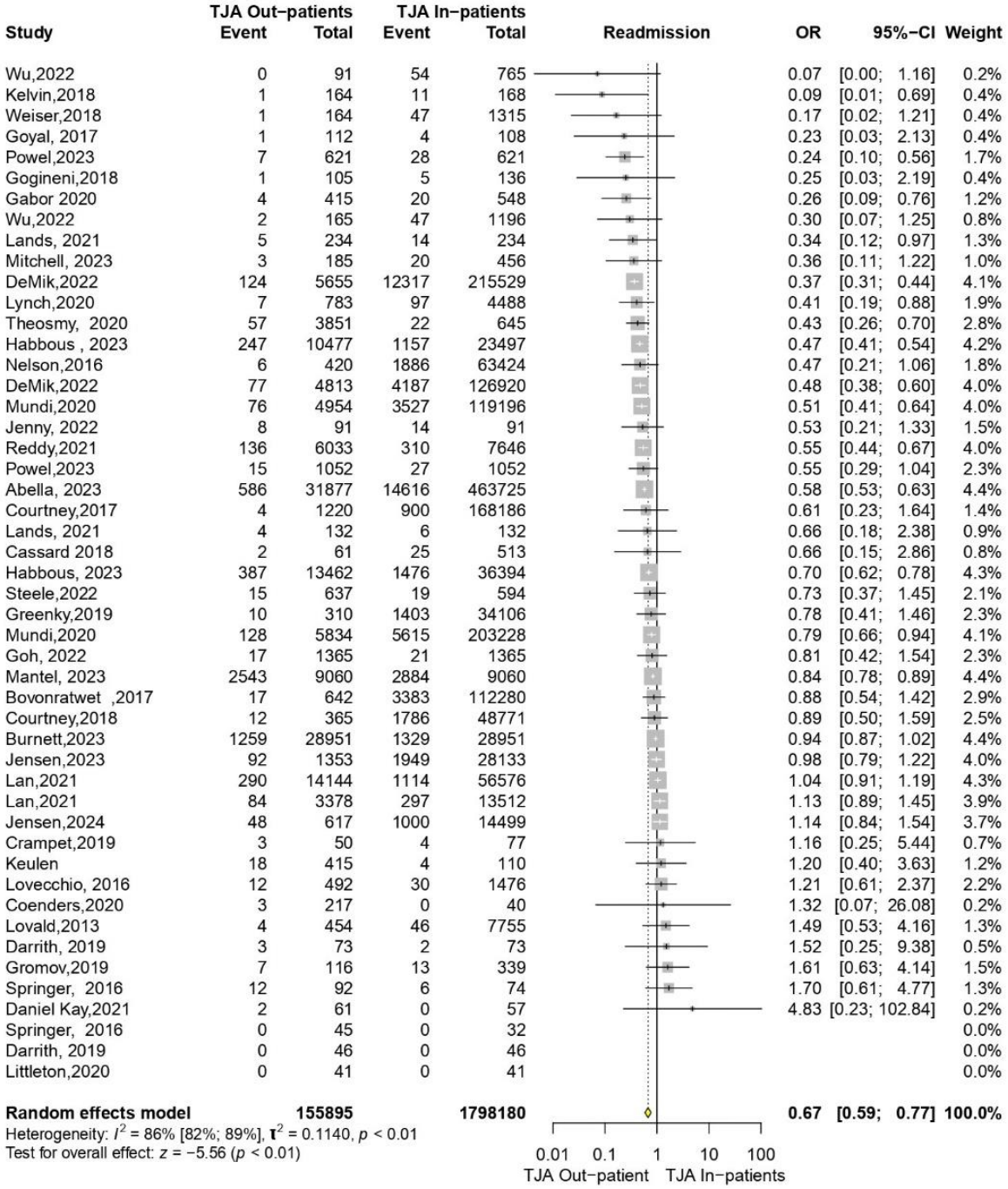


**Figure 2-** Readmissions among outpatient and inpatient TJA

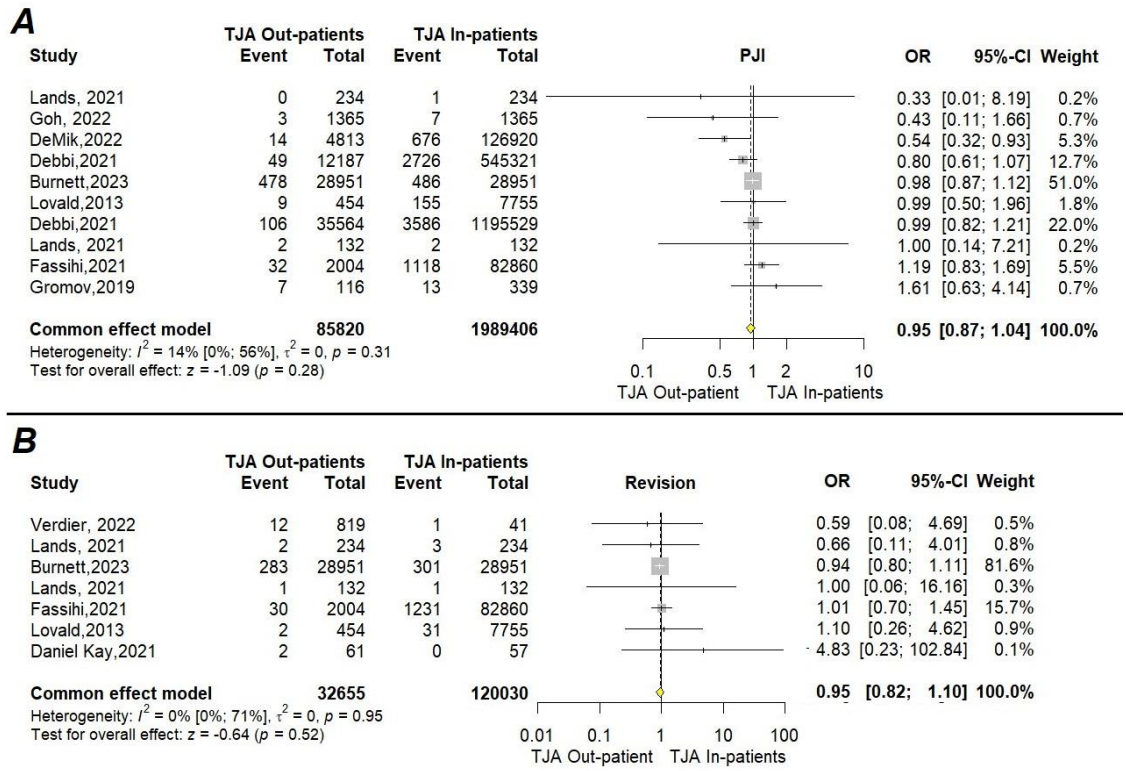


**Figure 3-** PJI and Revision among outpatient and inpatient TJA

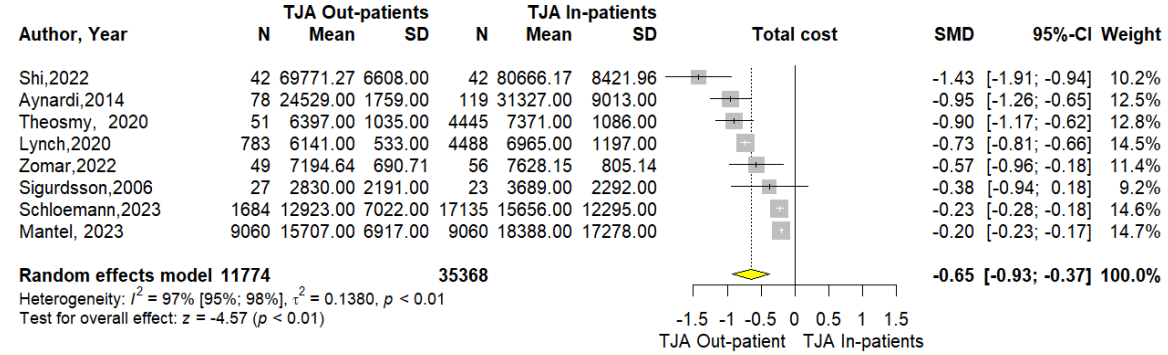


**Figure 4-** Total cost among outpatient and inpatient TJA