The DID models included variables for depression, anxiety, central sensitization may experience persistent pain post-surgery,4,5 and consequently incur higher healthcare utilization and costs, after recovery from the procedure.5

The interaction term (DID effect) was -.603 for knee replacement*time and -.438 for hip replacement*time (Table 3). Over time, OA-related costs for the joint replacement cohorts decreased more than for the comparison cohort (-1,233 for knee replacement, -1,236 for hip replacement; p<.001 for comparison for both). The difference in DID effect was -.667 for knee replacement and -1.37 for hip replacement vs. comparison (Table 3; p<.001 versus comparison for both).

The interaction term (DID effect) was -.667 for knee replacement and -1.37 for hip replacement vs. comparison (Table 3; p<.001 versus comparison for both). Exponentiating these coefficients (547 for knee and 445 for hip vs. comparison) suggests a 17.7% versus 669.99% for knee and 52.13% for hip (p<.01 for both comparisons). However, median cost values were similar (knee $364 vs. $333 and comparison $340, Table 1).

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**Discussion**

Wheras prior studies have shown knee and hip replacements result in improved outcomes,24 this is the first study to explicitly investigate a comparison cohort receiving either undergoing steroid or viscosupplementation injections.

Members without significant comorbid conditions undergoing knee or hip replacement procedures had a greater decrease in OA-related healthcare resource utilization and costs once they recovered from surgery relative to pre-surgery, and relative to the comparison cohort of members receiving injectable drug treatments.

These results also suggest that, while initially generating lower cost, the alternative treatment of steroid and viscosupplementation injections may actually increase overtime increased utilization and costs.

Reported elsewhere to increase the risk of persistent pain,5,8,9,10 the comorbid conditions of depression, anxiety, fibromyalgia and chronic pain could have resulted in increased costs despite a surgery conducted primarily to relieve pain. Patients with comorbid conditions were identified by a recorded diagnosis code on a medical claim, which is likely to be under-reported under normal medical practice.

Under-representation due to lack of medical recording may result in reduced statistical power to show a significant effect. A prospective study would be required more thorough investigation the potential effect of these comorbid conditions on costs following total joint replacement surgery.

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**Limitations**

Members of the comparison cohort may have been sicker and of lower socioeconomic status than members with joint replacements, as indicated by differences in demographic and clinical characteristics. While differences were small, these may have precluded some members of the comparison cohort from being considered for joint surgery.

If data was not documented on the post-surgery healthcare utilization and costs, then our estimates may be an underestimation of the cost of thromboembolic events, nosocomial infections, or other potential consequences of the surgery and incapable of being assigned to the study arm. If data was not documented by the study members with continuous enrollment may have resulted in an underestimation of readmissions, infections, and thromboembolic events resulting in the end of follow-up.

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**Conclusion**

This comparative study suggests better outcomes among OA members with knee or hip replacements relative to OA members with steroid or viscosupplementation injections. However, high rates of VTE post-surgery highlight the potential need for increasing prophylactic therapy with anticoagulants as appropriate.

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