Capitated Health Insurance Plans are Associated with Delayed Incidence of Total Joint Arthroplasty

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INTRODUCTION:

It is well known that financial incentives can influence healthcare utilization. Insurance plan structure (i.e., capitated, high deductible, etc.) may be associated with use of various incentives to promote or dissuade consumption of specific resources. We hypothesized that capitated health plans would be associated with lower incidence of total joint arthroplasty among patients with hip and knee osteoarthritis.

METHODS:

This study utilized a large healthcare database. Patients <65 years-old enrolled from 2015-2019 with a minimum of 2 years of continuous enrollment were included. ICD-10-CM codes for hip and knee osteoarthritis were used to identify the first instance of these diagnoses for each patient. CPT codes were used to identify which patients were managed operatively with total hip arthroplasty (THA) and total knee arthroplasty (TKA). The time from initial diagnosis to surgery was determined. Insurance plan type was defined as partially or fully capitated (CAP), high deductible (HDHP), or non-capitated, non-HDHP (NC: non-HDHP). Proportional hazards regression was utilized to assess the occurrence of surgery, adjusting for patient age and sex.

RESULTS:

In total, 892,755 patients with knee osteoarthritis and 262,671 patients with hip osteoarthritis were analyzed. The vast majority of patients were insured with non-capitated, non-HDHP plans (80.4% [n=705,082] for knee osteoarthritis, 80.7% [n=208,326] for hip osteoarthritis). Of those with knee osteoarthritis, 9.2% (n=81,990) underwent TKA, and 20.1% (n=52,838) of patients with hip osteoarthritis underwent THA. The mean days to surgery was 354.5 (SD 332.6) for knee osteoarthritis and 244.8 (SD 261.3) for hip osteoarthritis. Cumulative occurrence of TKA and THA after first listed diagnosis of knee and hip osteoarthritis are depicted in Figures 1 and 2, respectively. Cumulative occurrence of TKA and THA after first listed diagnosis of knee and hip osteoarthritis are depicted in Figures 1 and 2, respectively. In general, non-capitated, non-HDHP and HDHP plans exhibited higher cumulative incidence of TKA and THA, as compared to partially or fully capitated plans. The adjusted hazard ratios for surgery were significantly higher for non-capitated, non-HDHP vs. partially/fully capitated (TKA [adjusted HR 1.22, p<0.0001], THA [adjusted HR 1.15, p<0.0001]), and HDHP vs. partially/fully capitated (TKA [adjusted HR 1.25, p<0.0001], THA [adjusted HR 1.28, p<0.0001]). Smoothed relative density functions of surgery occurrence by day of the year are depicted for TKA and THA in Figures 3 and 4. In general, partially/fully capitated plans exhibited less variation over the course of the year than did non-capitated plans, which had a marked increase in the occurrence of surgery at the end of the calendar year.

DISCUSSION AND CONCLUSION:

Partially or fully capitated insurance plans are associated with longer time to surgery among patients with hip and knee osteoarthritis undergoing THA and TKA, respectively. It is likely that these dynamics are due to financial or logistical features of these insurance plans that tend to promote a longer period of nonsurgical management through patient, physician, and hospital levels. It is possible that differences in time-to-surgery may impact outcomes – further study of this possibility is highly warranted.