



Original Contribution

Medicaid insurance as primary payer predicts increased mortality after total hip replacement in the state inpatient databases of California, Florida and New York



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ABSTRACT

Study objective: To confirm the relationship between primary payer status as a predictor of increased perioperative risks and post-operative outcomes after total hip replacements.

Design: Retrospective cohort study.

Setting: Administrative database study using 2007–2011 data from California, Florida, and New York from the State Inpatient Databases (SID), Healthcare Cost and Utilization Project, Agency for Healthcare Research and Quality.

Patients: 295,572 patients age ≥ 18 years old who underwent total hip replacement with non-missing insurance data were collected, using International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnoses and procedures code (ICD-9-CM code 81.51).

Interventions: Patients underwent total hip replacement.

Measurements: Patients were cohorted by insurance type as either Medicare, Medicaid, Uninsured, Other, and Private Insurance. Demographic characteristics and comorbidities were compared. Unadjusted rates of in-hospital mortality, postoperative complications, LOS, 30-day, and 90-day readmission status were compared. Adjusted odds ratios were calculated for our outcomes using multivariate linear and logistic regression models fitted to our data.

Main results: Medicaid patients incurred a 125% increase in the odds of in-hospital mortality compared to those with Private Insurance (OR 2.25, 99% CI 1.01–5.01). Medicaid payer status was associated with the highest statistically significant adjusted odds of mortality, any complication (OR, 1.26), cardiovascular complications (OR, 1.37), and infectious complications (OR, 1.66) when compared with Private Insurance. Medicaid patients had the highest statistically significant adjusted odds of 30-day (OR, 1.63) and 90-day readmission (OR, 1.58) and the longest adjusted LOS.

Conclusions: We found higher unadjusted rates and risk adjusted odds ratios of postoperative mortality, morbidity, LOS, and readmissions for patients with Medicaid insurance as compared to patients with Private Insurance. Our study shows that primary payer status serves as a predictor of perioperative risks and that primary payer status should be viewed as a peri-operative risk factor.

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1. Introduction

1.1. Background

Health insurance status, as measured by primary payer status, serves as a distinct marker of a patient's socioeconomic standing [1,2]. Since the enrollment of the Affordable Care Act in October 2013 and Medicaid expansion, an estimated 20 million adults have gained health insurance, causing the uninsured rate among non-elderly adults to decline from 20.3% in 2012–2013 to 11.5% as of early 2016 [3]. However, this decline

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may be at the expense of increasing the underinsured population, which was 23% or 31 million in 2014 [4]. Although the underinsured (those whose health insurance benefits do not adequately cover their medical expenses) have better outcomes than the completely uninsured, underinsurance still poses a major problem to our healthcare system [5–7].

Uninsured and underinsured patients have been shown to have worse outcomes following medical care of chronic pain, acute care surgery, and major surgeries, in both adult and pediatric populations [2,8–

13]. Total hip replacements are one of the most commonly performed procedures in the United States with a prevalence estimated at 2.5 million individuals in 2010 [14]. LaPar et al. demonstrated that insurance status is an independent risk factor of worse surgical outcomes in total hip replacements from years 2003–2007 [9]; however, apart from studies that are outdated, contain data from only single surgeon, single institution, or single states, do not have clearly delineated insurance cohorts, or have limited post-operative outcomes reported, no major follow up study has analyzed the association of insurance status with post-

Table 1

Review of literature: total hip replacement post operative outcomes by primary insurance payer.

Study citation	Data source (States, dataset)	Data collection (years)	Sample size (study N)	Outcomes reported (mortality, complications, readmissions, LOS, costs)	Limitations of prior studies
Kurtz, CORR [16]	Nationwide Readmissions Database (from HCUP)	2013	250,884	Readmission rates	Single year, limited outcomes reported, no mention of race
Tanenbaum, JOA [17]	NIS	2013	68,644	Incidence of Patient safety indicators (PSIs)	Single year, Grouped outcomes as PSI events without breakdown
Haghverdian, JOA [15]	Physical therapy data at one skilled nursing facility	2012–2014	114	Functional outcomes, LOS	Single institution, small sample
Memtsoudis, Anesthesiology [18]	Premier Perspective Database	2006–2013	1,062,152 (Hip and knee)	Use of neuraxial vs general anesthesia	Specific intra-op analysis, not much post-op outcomes
Oronce, Medical Care [20]	SID, California	2009–2011	58,837	Readmission rates	Single state, limited outcomes reported
Schwarzkopf, GOS [21]	California Hospital Discharge data set	2010	14,326	Discharge destination	Single state, limited outcomes reported
Lavernia, CORR [28]	single surgeon, single institution	May 2003 – Nov 2012	564	Post-op pain intensity	Single surgeon, single institution, small sample limited outcomes reported, only race and not insurance
Keeney, JOA [25]	Hospital admission database	Jan 2006 –Sept 2013	4131	Readmission rates	Single institution, small sample, limited outcomes reported
Paxton, CORR [26]	Kaiser Permanente Total Joint Replacement Registry	Jan 2009 – Dec 2011	12,030	Readmission rates	Limited outcomes reported
Illingworth, JOA [24]	NIS	2007–2008	508,150	Inpatient mortality	Limited outcomes reported (only mortality) for disparity analysis
Browne, JBJS [22]	NIS	2002–2011	191,911	Post-op in-hospital complications, LOS, total cost, discharge location	Only shows Medicaid vs. non-Medicaid, doesn't show readmissions
Girotti, JACS [23]	Center for Medicare and Medicaid Services	2006–2008	299,023	Readmission rates	Only Medicare population, only racial disparities, limited outcomes reported
Singh, ARD [27]	US Medicare Program	1991–2008	1646,310	LOS, readmission rates, discharge location, 30-day mortality, post-op complications	Outdated, only Medicare population, only racial disparities
Lavernia, CORR [19]	AHCA, Florida Hospital Association	April 2009 – March 2010	27,019	Readmission rates	Single state, Single year, limited outcomes reported
Martin, Orthopedics [29]	University of Iowa Hospitals and Clinics	Not stated	1312	No outcomes, only insurance disparity in pre-op assessment	Single hospital, small sample, No outcomes
Martin, JOA [30]	University of Iowa Hospitals and Clinics	Not stated	293	Postoperative pain and function scores	Single hospital, small sample,
Warth, IOJ [34]	University of Iowa Hospitals and Clinics	Jan 2004 – June 2008	874	No outcomes, only insurance disparity in pre-op comorbidities and accessibility	Outdated, single hospital, single surgeon, small sample, no outcomes
Freburger, Arthritis Care & Res [5]	SID (AZ, FL, NJ, WI)	2005–2006	164,875	Racial disparities in post-acute rehabilitation care	Outdated, limited outcomes reported, no insurance analysis
Lapar, Annals of Surgery [9]	NIS	2003–2007	893,658 (includes other procedures)	Mortality, LOS, total costs, in-hospital complications	Outdated, no analysis on race
Hinman, JOA [32]	UCSF Medical Center Data from 3 surgeons	Jan 2000 – May 2005,	224	Operative time, LOS, post-op complications	Outdated, small sample, single hospital, limited surgeons
Zhan, JBJS [35]	NIS	2003	About 200,000	LOS, total charges, in-hospital deaths, post-op complications	Outdated, only 1 year of data
Bozic, JOA [31]	MGF, Mayo Clinic, UCSF Medical Center	Jan 2000 – December 2002	4485	Discharge to an inpatient extended care facility	Outdated, limited to 3 hospitals, small sample, limited outcomes reported
Mahomed, JBJS [33]	Medicare claims	June 1995 – June 1996	75, 051	Death within 90 days, readmission, complications	Outdated, only Medicare population

Note: The literature search is Table 1 was performed using the Medical Subject Headings (MeSH) used by the National Library of Medicine. The MeSH terms that used to produce the search on PubMed were: ((total hip replacement) OR (total joint arthroplasty) OR (total hip arthroplasty) OR (81.51)) AND ((health insurance) OR (payer type) OR (primary payer) OR (healthcare disparities)) AND ((mortality) OR (complications) OR (morbidity) OR (patient readmission) OR (readmission) OR (length of stay) OR (resource utilization) OR (outcomes)).

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