

# Cannabis Use Disorder in the Setting of Primary Total Hip Arthroplasty (THA): Understanding the Epidemiology, Demographic Characteristics, and Inpatient Postoperative Outcomes

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## Introduction

The recent legalization of cannabis in several states across the United States has been correlated with a marked increase in patient-reported cannabis use in the clinical setting and among those undergoing total joint arthroplasty.<sup>1,2</sup> However, little is known regarding the epidemiologic, demographic, and inpatient postoperative outcomes profile of patients with cannabis use disorder undergoing primary total hip arthroplasty (THA).

## Results

A total of 2,838,742 THAs were performed during the study period. The prevalence of CUD significantly increased from 0.10% in 2006 to 0.39% in 2015 ( $p < 0.0001$ ). CUD patients were significantly younger, more likely to be male, had higher rates of Medicaid insurance, and were more likely to be non-Hispanic Black and less likely to be non-Hispanic White when compared to the control group. When comparing patients with and without CUD, there was no significant difference in the composite “any complication” variable and no significant difference in 7 of 8 individual in-hospital complications assessed, with the exception being higher genitourinary (GU) complications in the CUD group. There were no significant differences in discharge disposition or length of stay (LOS) between the CUD cohort and control groups. Patients with CUD accrued significantly higher total charges in the immediate post-operative period.

## Conclusions

This study reported a significant increase in the prevalence of CUD among patients undergoing primary THA between 2006 to 2015. While CUD is significantly associated with various demographic and hospital characteristics, it is not significantly associated with in-hospital complications, discharge disposition, and LOS outcomes in the immediate in-hospital, postoperative period.

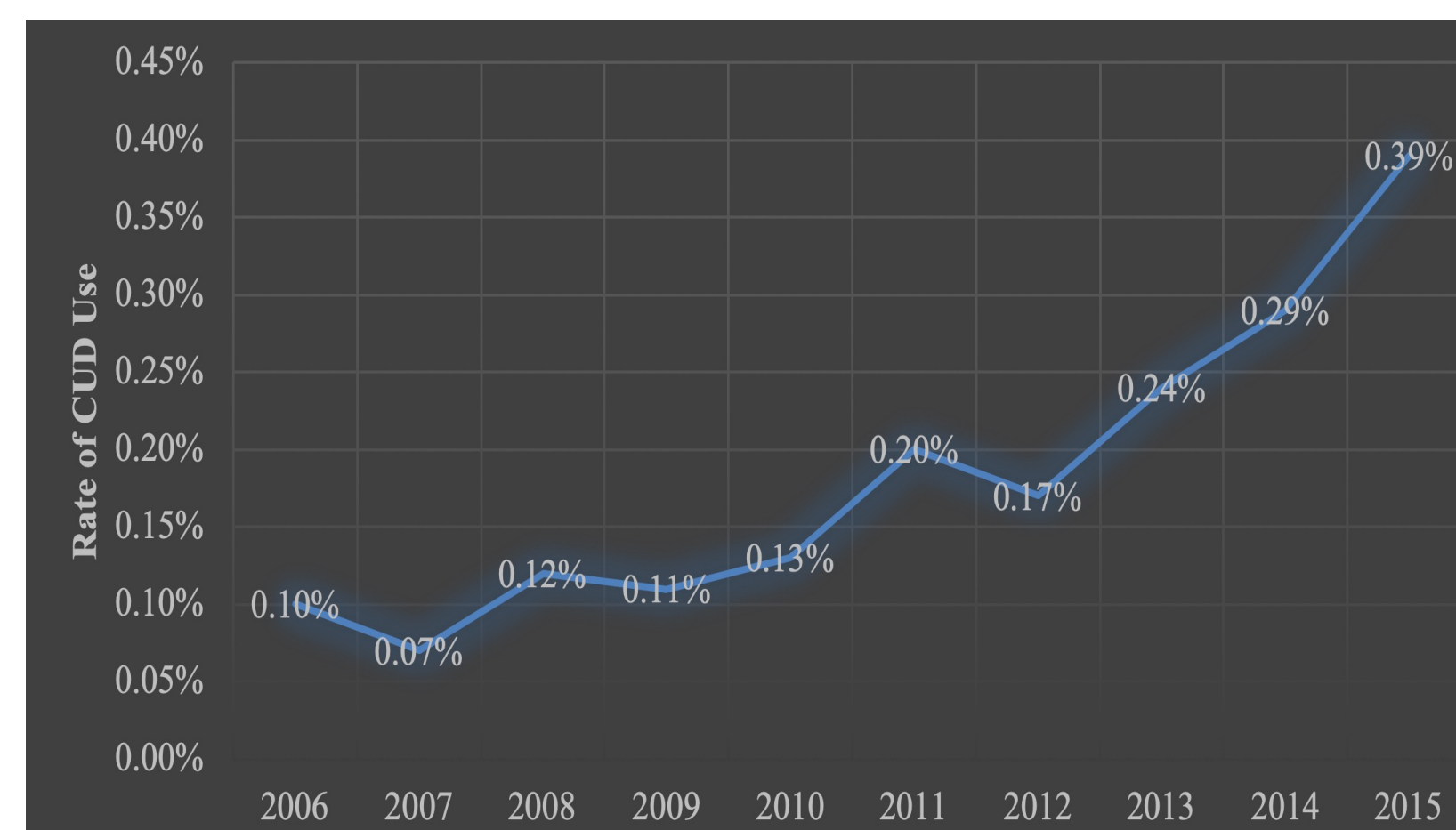
## Aims and Objectives

This study aimed to:

- i. Evaluate the epidemiology and demographic characteristics of patients with CUD undergoing primary THA in comparison to non-CUD patients.
- ii. Compare primary THA inpatient postoperative clinical and economic outcomes in patients with and without CUD.

## Methods

This retrospective cohort study used the NIS registry to identify patients undergoing THA between 2006 to the third quarter of 2015. Patients were stratified into two groups with and without CUD, and demographic, comorbidity, and postoperative outcomes data were comparatively analyzed between these two groups. Propensity score methodology was used to compare in-hospital complications and economic outcomes between the two groups.



**Figure 1. Trend in cannabis use disorder (CUD) rate by year.** Trends in self-reported cannabis use disorder (CUD) rate among patients undergoing total hip arthroplasty (THA) between years 2006 through the third quarter of 2015.

	CUD (n=5,390)	No CUD (n= 2,833,351)	P-Value
AIDS	73 (1.36%)	3,571 (0.13%)	<0.0001
Alcohol Abuse	1,295 (24.02%)	46,774 (1.65%)	< 0.0001
Chronic Pulmonary Disease	1,280 (23.74%)	406,578 (14.35%)	< 0.0001
Depression	1,018 (18.89%)	317,299 (11.20%)	< 0.0001
Liver Disease	317 (5.87%)	30,281 (1.07%)	< 0.0001
Psychoses	403 (7.48%)	53,476 (1.89%)	< 0.0001

**Table 2. Elixhauser comorbidities, stratified by CUD vs. no CUD.** Elixhauser-defining comorbidities among patients undergoing primary total hip arthroplasty (THA) between years 2006 through the third quarter of 2015. Prevalence of Elixhauser-defining comorbidities are stratified between patients with and without cannabis use disorder (CUD).

	CUD (n=5,390)	No CUD (n= 2,833,351)	P-Value
Mean Age (Years)	54.79	66.00	< 0.0001
Male	3,733 (69.25%)	1,235,375 (43.60%)	<0.0001
Female	1,658 (30.75%)	1,597,977 (56.40%)	<0.0001
Expected Primary Payor			
Medicare	1,641 (30.45%)	1,517,478 (53.56%)	<0.0001
Medicaid	1,183 (21.94%)	94,738 (3.34%)	<0.0001
Private	2,089 (38.75%)	1,122,876 (39.63%)	<0.0001
Race of Patient			
Non-Hispanic White	3,291 (61.05%)	2,120,111 (74.83%)	<0.0001
Non-Hispanic Black	1,219 (22.61%)	169,972 (6.00%)	<0.0001
Hispanic	143 (2.65%)	76,117 (2.69%)	<0.0001
Other Race	738 (13.69%)	467,151 (16.49%)	<0.0001
Location/Teaching Status of Hospital			
Rural	390 (7.23%)	277,383 (9.79%)	<0.0001
Urban Nonteaching	1,534 (28.45%)	1,151,967 (40.66%)	<0.0001
Urban Teaching	3,457 (64.14%)	1,395,165 (49.24%)	<0.0001
Region of Hospital			
Northeast	908 (16.85%)	565,930 (19.97%)	<0.0001
Midwest	1,521 (28.22%)	745,119 (26.30%)	<0.0001
South	1,389 (25.77%)	937,718 (33.10%)	<0.0001
West	1,572 (29.16%)	584,584 (20.63%)	<0.0001

**Table 1. Demographic and hospital factors, stratified by CUD vs. no CUD.** Demographic and hospital characteristics of patients undergoing primary total hip arthroplasty (THA) between years 2006 through the third quarter of 2015. Demographic and hospital characteristics data is stratified between patients with and without cannabis use disorder (CUD).

## Discussion

As marijuana becomes increasingly legalized, it is critical for clinicians to understand the epidemiologic and demographic characteristics of this evolving patient population. Additionally, having a grasp on the comorbidities and post-operative outcomes unique to this patient population will allow surgeons and perioperative providers to better tailor their care and management of these patients. Further research should aim to assess how these demographic and epidemiologic characteristics change over time in this evolving patient population and attention should be directed to create standardized protocols optimizing postsurgical outcomes.

## References

1. Goel A, McGuinness B, Jivraj NK, et al. Cannabis Use Disorder and Perioperative Outcomes in Major Elective Surgeries: A Retrospective Cohort Analysis. *Anesthesiology*. 2020;132(4):625-635.
2. Jennings JM, Williams MA, Levy DL, Johnson RM, Eschen CL, Dennis DA. Has Self-reported Marijuana Use Changed in Patients Undergoing Total Joint Arthroplasty after the Legalization of Marijuana? *Clin Orthop Relat Res*. 2019;477(1):95-100.