

#5479 Trends in Comorbidities and Complications in Octogenarians and Nonagenarians Undergoing Total Hip and Knee Arthroplasty

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INTRODUCTION

- With an **ever-increasing median age** of total hip and knee arthroplasty (THA, TKA) recipients the **proportion of patients aged 80+ and 90+ is likely to increase**.
- These patients present **unique challenges in terms of higher comorbidity burden, frailty and perioperative risks** requiring a customized approach to healthcare to meet their unique needs.
- However, large scale data specifically characterizing these patient groups is lacking.
- The primary objective of this study was to offer an **extensive overview of the variations in THA/TKA outcomes and practices across diverse age spectrums**, with a **specific focus on addressing the challenges posed by an aging population**.

METHODS

- We utilized the Premier Healthcare database to identify patients undergoing **THA and TKA from 2006 to 2022** in two age groups: **80-88 years and ≥89 years**.
- These two groups were then **compared to those aged 65-70**, the typical age group for THA/TKA recipients.
- We evaluated **trends in proportion of octogenarian and nonagenarian and patient and hospital level characteristics, and perioperative complications**, stratified by age groups.
- Subsequently, multivariable mixed-effects models were applied to **compare octogenarian and nonagenarian patients to those aged 65-70 in terms of major complications** (defined as having any complications including acute renal failure, delirium, myocardial infarction, pulmonary embolism, respiratory failure, cerebral complication and mortality during hospitalization).
- Estimates were presented as odds ratios (OR) and 95% CIs.

The proportion of octo- and nonagenarians increased

Lower comorbidity burden >80 years old – survivor bias

Increased morbidity and mortality in major surgical procedures

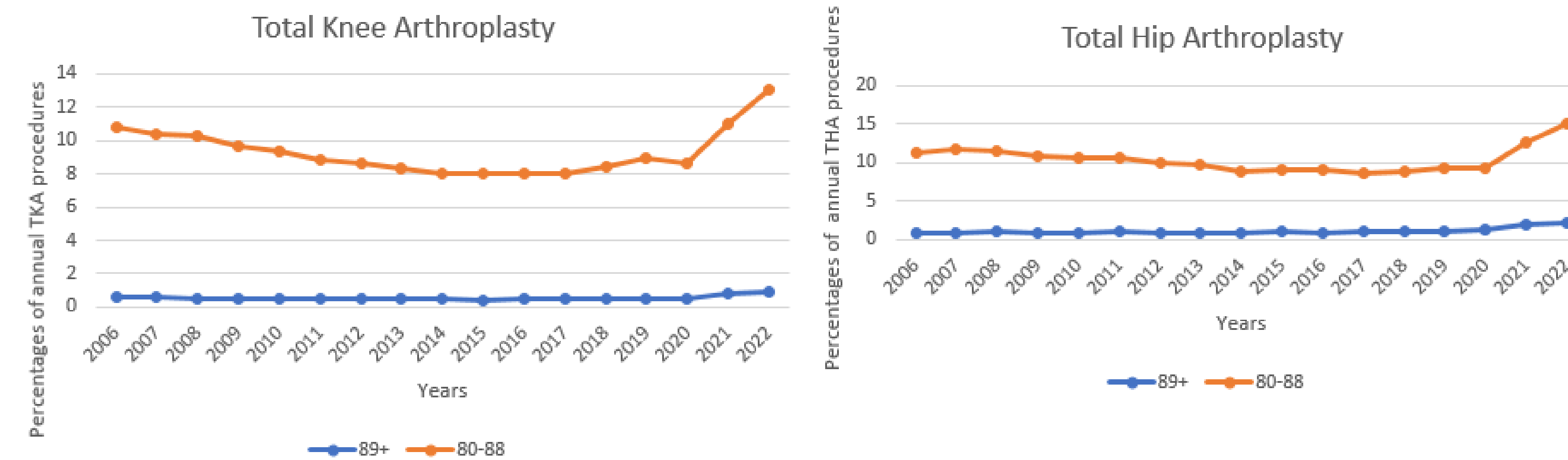


Table 2. Mixed Model Outcomes Comparing Major Complications Between Age Groups

		TKA		THA	
		OR (95% CIs)	p-value	OR (95% CIs)	p-value
Overall	89+ vs 65-70	3.98 (3.62, 4.37)	<.001	5.6 (5.09, 6.16)	<.001
	80-88 vs 65-70	2.75 (2.65, 2.86)	<.001	3.32 (3.13, 3.53)	<.001
Subgroups	ELX=0, 89+ vs 65-70	5.63 (4.77, 6.64)	<.001	7.63 (6.25, 9.32)	<.001
	ELX=0, 80-88 vs 65-70	3.53 (3.27, 3.8)	<.001	4.47 (3.95, 5.05)	<.001
	ELX=1 or 2, 89+ vs 65-70	4.08 (3.54, 4.69)	<.001	6.09 (5.3, 7)	<.001
	ELX=1 or 2, 80-88 vs 65-70	2.83 (2.68, 3)	<.001	3.4 (3.11, 3.71)	<.001
	ELX=3+, 89+ vs 65-70	2.63 (2.17, 3.18)	<.001	3.64 (3.06, 4.32)	<.001
	ELX=3+, 80-88 vs 65-70	2 (1.86, 2.15)	<.001	2.42 (2.18, 2.68)	<.001

RESULTS

- We identified **n=583,539, n=73,936 and n=10,142 TKA patients aged 65-70, 80-88 and ≥89 years; this was n=191,064, n=105,803 and n=11,173 for THAs**.
- The **proportion of octogenarians and nonagenarians increased** over time for both THA (from 11.4% to 15.0% and from 0.91% to 2.51% from 2006 to 2022, respectively) and TKA (from 10.7% to 13.0% and from 0.59% to 0.95% from 2006 to 2022, respectively).
- In TKAs, **neuraxial anesthesia was more frequently used in older patients** (16.6% in patients 89+, 14.9% in patients aged 80-88 and 13.9% in patients aged 65-70); a similar pattern was observed for THA.
- Nonagenarian and octogenarian TKA recipients had a **lower comorbidity burden** than those aged 65-70, the reverse was true for THA recipients.
- Our multivariable models showed that even among patients who have the same level of comorbidity burden, **octogenarian and nonagenarian patients** (compared to those aged 65-70) are **at higher risk for experiencing major complications**.

DISCUSSION

- We were able to demonstrate **an increase in the proportion of octogenarian and nonagenarian THA/TKA recipients**.
- These finding can be attributed to the **growing elderly population** and advancements in less invasive surgical techniques. It is imperative to acknowledge the presence of survivor bias within our analyzed cohort.
- Patients **aged >80 years** demonstrated a **comparable or even lower burden of comorbidities**, likely due to their survival up to cohort entry.
- Even when octogenarian and nonagenarian THA/TKA patients appear to be in good health, age remains a significant risk factor for increased morbidity and mortality in major surgical procedures**.
- Our analysis was specifically concentrated on inpatient mortality and complications, as the Premier Healthcare database does not include data on readmissions and post-discharge complications. It is important to recognize that the absence of this data influences the interpretation of our findings.
- Therefore, an evaluation that includes outpatient complications is essential to fully understand the risks associated with octogenarians and nonagenarians undergoing THA and TKA surgery.

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References