

30-Day All-Cause Readmission Outcomes Among Kidney Transplant Recipients with vs. without Autosomal Dominant Polycystic Kidney Disease

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Background

- Autosomal dominant polycystic kidney disease (ADPKD) is a genetic condition accounting for 5-10% of patients diagnosed with end-stage renal disease (ESRD) in the US and Europe.¹⁻³
- While dialysis prolongs life, kidney transplant (KTP) is the first-line treatment for patients with ESRD due to ADPKD.⁴
- KTP recipients with ADPKD have a higher rate of post-transplant complications, but evidence of their readmission outcomes is limited.⁵⁻⁹

Objectives

- To assess differences in 30-day all-cause readmission outcomes among KTP recipients with vs. without ADPKD.

Methods

Study Design & Data Source

- A case-cohort analysis of patients ≥ 18 years old with an index hospitalization for KTP surgery between 01Jan2018–31Dec2018 and at least one 30-day all-cause readmission between 01Jan2018–31Jan2019 in the Premier Healthcare Database (PHD). (Figure 1)

Sample Population

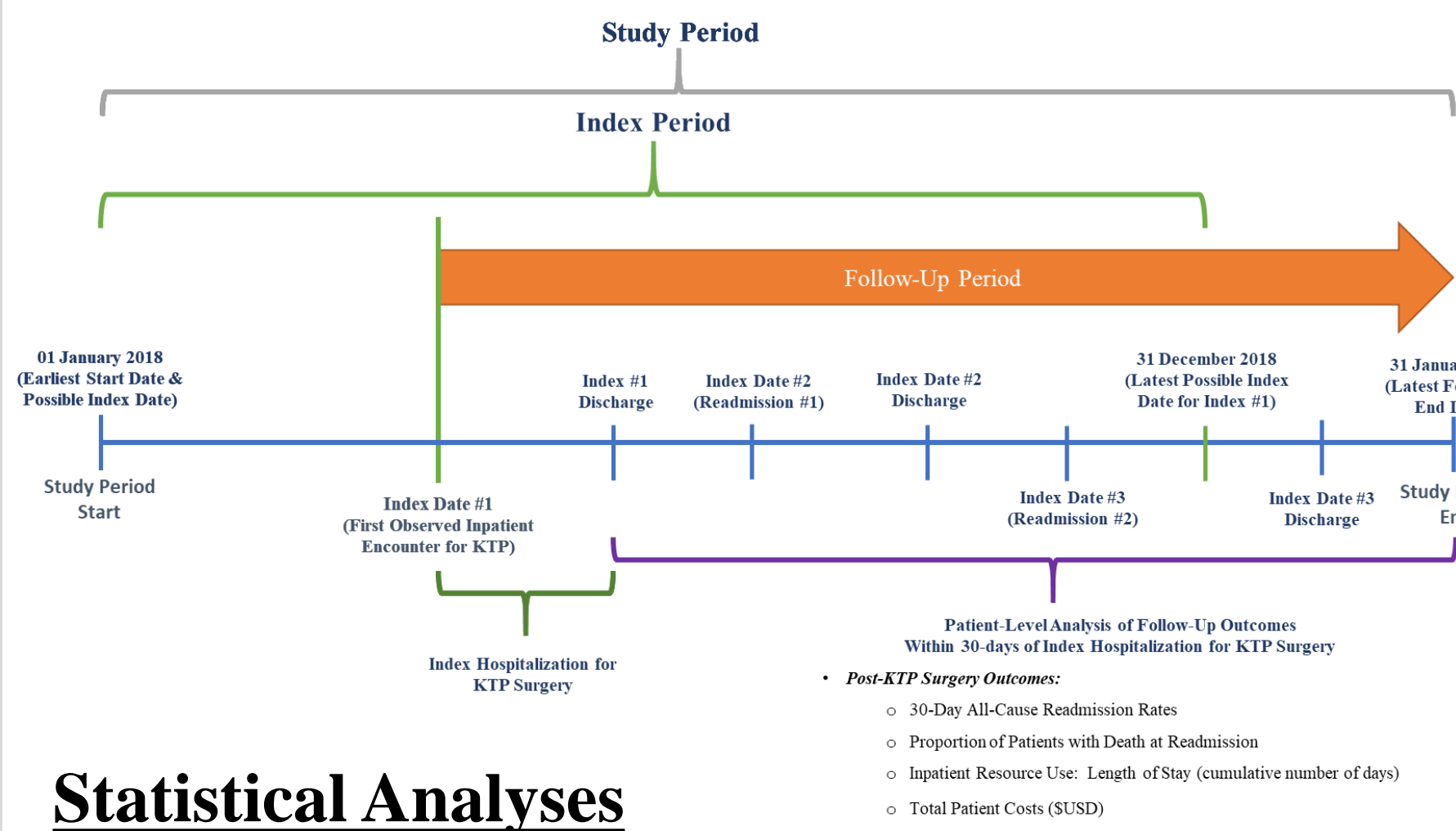
- Inclusion Criteria:** Inpatients ≥ 18 years old at KTP and distinguished as cases if presence of ADPKD and/or PKD-Unspecified was observed.
- Exclusion Criteria:** Inpatients were excluded if autosomal recessive polycystic kidney disease (ARPKD) diagnosis was observed.

Outcomes

- 30-Day All-Cause Readmission Rate (%)**
- Inpatient Resource Use:** Length of Stay in cumulative number of days at 30-day all-cause readmission
- Total Patient Cost (\$USD)** at 30-day all-cause readmission
- Mortality (%)** at 30-day all-cause readmission

Methods (Continued)

Figure 1. Study Schematic



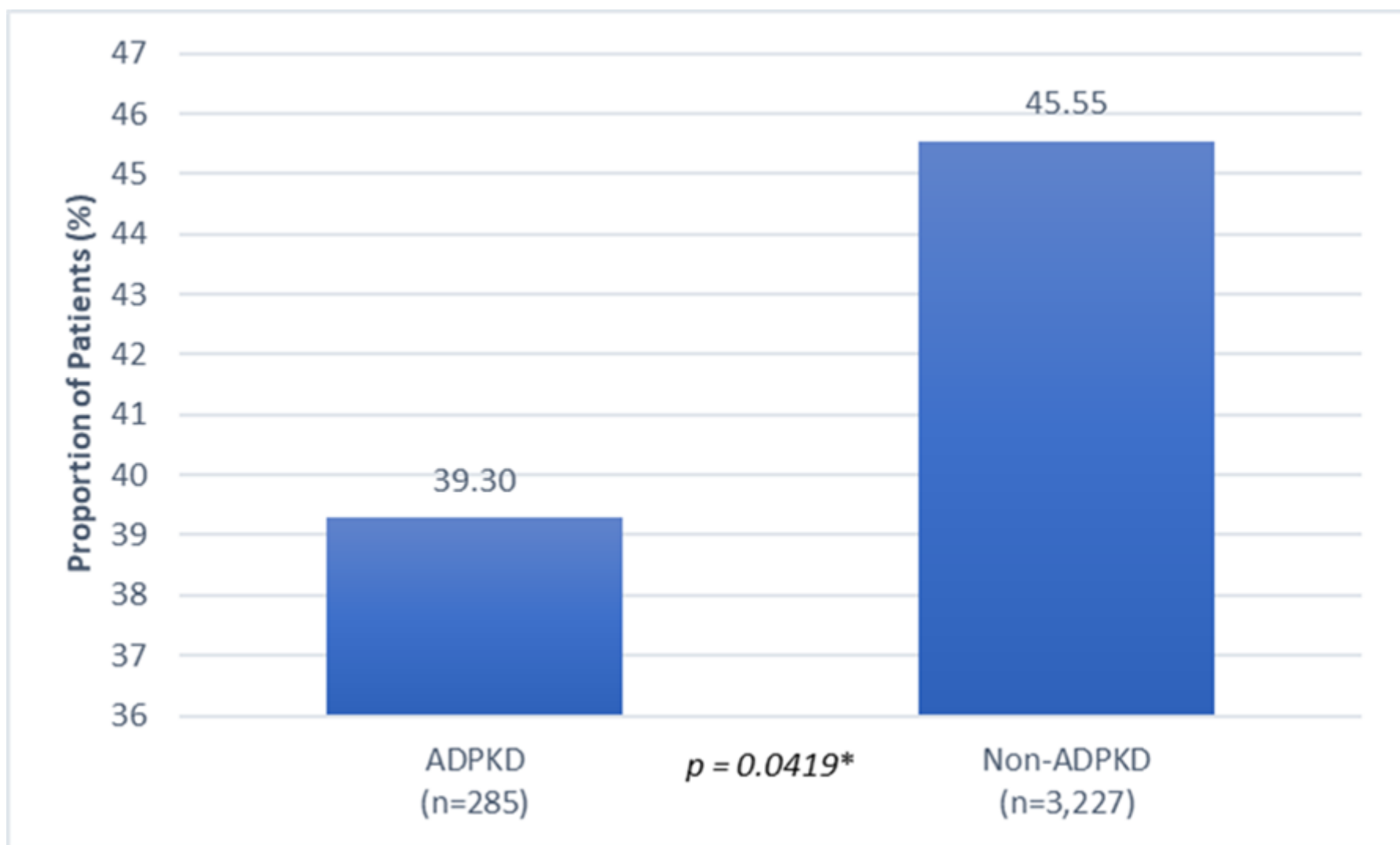
Statistical Analyses

- The 30-day all-cause readmission rate, length of stay (LOS), and total cost at readmissions were compared for those with vs. without ADPKD using descriptive statistics.
- Logistic, negative binomial and quantile regressions were used to assess the association between ADPKD diagnosis and the 30-day all-cause readmission outcomes. Alpha level was set at ≤ 0.05 .

Results

- Among 3,512 KTP recipients, 45% (n=1,582) had at least one 30-day all-cause readmission, which was lower for those with ADPKD (39.3%, n=112) compared to those without ADPKD (45.6%, n=1,470; p = 0.0419). (Figure 2)

Figure 2. 30-Day All-Cause Readmission Rates Following KTP Surgery Among Recipients with vs. without ADPKD



Results (Continued)

- There was no significant difference in the unadjusted median LOS and total patient cost at 30-day all-cause readmission. (Table 1)
- There was no significant difference in the unadjusted proportion of KTP recipients with death at 30-day all-cause readmission. (Table 1)

Table 1. Inpatient Resource Use (LOS), Total Patient Cost, and Mortality at 30-Day All-Cause Readmissions Following KTP Surgery Among Recipients with vs. without ADPKD

Outcome	Total Sample (N=1,582)	ADPKD (n=112)	Non-ADPKD (n=1,470)	p value
LOS for 30-Day All-Cause Readmissions, cumulative number of days				
Median (IQR)	3 (2 - 6)	3 (2 - 5)	3 (2 - 6)	0.4421
Total Cost of 30-Day All-Cause Readmissions, \$USD				
Median (IQR)	\$8,550.19 (\$4,805.57 - \$16,670.40)	\$8,574.55 (\$4,904.18 - \$14,743.81)	\$8,550.19 (\$4,773.64 - \$16,939.48)	0.5364
Mortality at 30-Day All-Cause Readmission, n (%)				
All-Cause Mortality	9 (0.57%)	1 (0.89%)	8 (0.54%)	0.4845
Abbreviations: ADPKD-autosomal dominant polycystic kidney disease, IQR-interquartile range, KTP-kidney transplantation, LOS-length of stay, SD-standard deviation, USD-United States Dollars.				
Significance: p $\leq 0.05^*$; <i>Wilcoxon Rank Sum tests</i> were conducted to compare the medians for continuous variables (LOS and total costs). <i>Fisher's Exact test</i> was conducted to compare the proportion of patients with vs. without ADPKD having mortality at 30-day all-cause readmissions.				

No Significant Association Between ADPKD Diagnosis & Readmission Outcomes

- OR: 0.99, 95% CI: 0.76-1.28, p = 0.9272 was observed for KTP recipients with ADPKD. (Table 2)
- IRR: 0.85, 95% CI: 0.72-1.01, p = 0.0687 was observed for KTP recipients with ADPKD (Table 2)
- \$1,252; 95% CI: -\$1,057-\$3,088; p ≥ 0.05 was observed for KTP recipients with ADPKD. (Table 2)

Table 2. Adjusted 30-Day All-Cause Readmission Outcomes Following KTP Surgery Among Recipients with vs. without ADPKD*

Dependent Variable	Estimate	95% Confidence Intervals		p value
30-Day All-Cause Readmission Outcomes				
At least One 30-Day All-Cause Readmission	0.99	0.762	1.282	0.9272
Incidence Rate Ratio for Mean LOS	0.85	0.72	1.01	0.0687
Median Incremental Total Patient Cost	\$1,251.93	-\$1,056.84	\$3,087.90	≥ 0.05
*Adjustment for age, gender, race, congestive heart failure (CHF), valvular disease (VD), uncomplicated hypertension (HTN-U), complicated hypertension (HTN-C), complicated diabetes (DC), rheumatoid arthritis (RA), weight loss (WL), and alcohol abuse (AA).				
Significance: p $\leq 0.05^*$; <i>Logistic Regression</i> was conducted for the binary variable of at least one 30-day all-cause readmission. <i>Generalized Linear (Negative Binomial with log link) Regression</i> was conducted for the mean LOS at 30-day all-cause readmissions. <i>Quantile Regression</i> was conducted for the median total patient cost of 30-day all-cause readmissions.				



Conclusions

- Nearly half of KTP recipients experienced at least one 30-day all-cause readmission, highlighting the complexity in post-KTP care needs and the opportunity for improvement in the quality of KTP care in the US.
- The inpatient resource use and cost burden to hospitals financially responsible for 30-day all-cause readmissions was found to be similar for KTP recipients with and without ADPKD.

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