

# Survival Outcomes Post-Nephrectomy for Non-Metastatic Renal Cell Carcinoma in Four Latin American Countries: A Systematic Review of Real-World Studies

Rojas M<sup>1</sup>; Quintana R<sup>2</sup>; Figueroa J<sup>3</sup>; Valentim Duarte Castelhana F<sup>4</sup>; Parellada C<sup>4</sup>; Wurcel V<sup>5</sup>

<sup>1</sup>MSD Colombia, Bogota, Colombia, <sup>2</sup>MSD (IA) LLC, Guaynabo, Puerto Rico, <sup>3</sup>MSD Peru S.R.L., Lima, Peru, <sup>4</sup>MSD Brazil, São Paulo, SP, Brazil, <sup>5</sup>MSD Argentina, Argentina

## Introduction

- Every year, approximately 435,000 new cases of kidney cancer are diagnosed globally.<sup>1</sup> In adults, renal cell carcinoma (RCC) accounts for around 85% of these cases, with clear cell RCC being the most common histologic type, comprising 70% of RCC cases.<sup>2</sup>
- The incidence of RCC is increasing in many countries, particularly in Latin America.<sup>3</sup> While mortality rates for RCC have decreased in developed countries due to advances in targeted therapies and comprehensive oncology care, RCC remains a major cause of death in Latin America. This is especially true in regions where nephrectomy might be the only treatment option.<sup>3</sup>
- This disparity is largely attributed to differences in access to advanced treatments, leading to higher mortality and recurrence rates in less developed regions.<sup>3</sup>
- Real-world evidence (RWE) on survival outcomes among adults with early-stage non-metastatic RCC is limited in Latin America.<sup>3</sup> Argentina, Brazil, Colombia, and Mexico account for two-thirds of new RCC cases in the region.<sup>1</sup> This review focuses on these countries to synthesize data and offer insights into RCC survival outcomes. Understanding these outcomes can improve treatment strategies and resource allocation, enhancing RCC care in Latin America.

## Objectives

- This systematic review aimed to describe survival outcomes, specifically overall survival (OS) and recurrence-free survival (RFS), following nephrectomy for non-metastatic RCC in real-world observational studies among patients aged ≥18 years in Argentina, Brazil, Colombia, and Mexico.

## Methods

### Study design

- A protocol was developed for this systematic review, which was conducted following Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA),<sup>5</sup> The inclusion criteria were defined using the PICOTS format (Figure 1).

### Figure 1. PICOTS question

Population	Adults ≥18 years with non-metastatic renal cell carcinoma (stage I-III) in Argentina, Brazil, Colombia, and Mexico who underwent surgery.
Intervention	Not restricted
Comparators	Not restricted
Outcomes	Overall survival (OS), recurrence-free survival (RFS), metastasis-free survival (MFS)
Time	Published from January 2015 to December 2023
Study design	Observational studies (prospective and retrospective cohort studies, case-control studies, cross-sectional studies, registry/database studies)
Other	No language restrictions were applied

### Search strategy

- A comprehensive literature search was conducted in four databases (Embase, LILACS, SCOPUS, and SCIELO) from January 2015 to December 2023. The search strategy included keywords and medical subject headings (MeSH) related to RCC and survival outcomes.

### Study selection

- Two independent reviewers (JF, CIP) screened titles and abstracts for eligibility. Full-text articles were assessed for inclusion by two reviewers (FV, CIP). Any disagreements were resolved through discussion or by involving a third author (MR).

### Data extraction

- Data were extracted using a standardized form, including study characteristics, patient demographics, intervention details, and survival outcomes.

## Results

- A total of 2,546 references were identified, with 379 duplicates. After screening the titles and abstracts of 2,151 references, 66 articles underwent full-text review, and 12 were included.
- Six studies were conducted in Brazil, three in Mexico, and three in Argentina. The analyzed period in the studies varied from 1985 to 2017.
- Clear cell RCC was the predominant histology, and radical nephrectomy was the most frequent treatment. The most frequently specifically reported disease stage was stage I.
- All studies reported at least one survival outcome (OS and/or RFS). However, most studies did not report stage-specific OS or RFS (n=8). Only a few studies reported stage-specific OS (n=4) and RFS (n=2).
- The 5-year OS for stage I varied from 77.6% to 93% (n=5), for stage II from 65% to 71.9% (n=3), and for stage III from 38% to 55% (n=3). Among the studies that reported RFS (n=7), two studies reported 3-year for stage I, and the remaining ones reported overall RFS for stage I-II or stage I-III (localized disease) (n=5), with a high percentage of stage I cases (51.7%-93.0%).

**Table 1. Main characteristics of the studies of real-world reporting of survival outcomes post-nephrectomy for non-metastatic renal cell carcinoma**

	First author	No. patients	Study period	Mean age (years)	Surgery (%)	Staging (classification) (%)			Non-clear cell RCC histology (%)	Survival outcome (Kaplan-Meier)	
						Stage I	Stage II	Stage III		Outcome	%
ARGENTINA	Marchiñena 2018	314	2010-2015	58.3	PN 100	pT1a: 84.7	—	—	22	3y-LRFS stage I neg margins	96.4
						pT1b: 15.3				3y-LRFS stage I pos. margins	87.3
						Pathological staging				3y-MFS stage I neg. margins	87.8
						6th edition TNM				3y-MFS stage I pos. margins	95.4
	Romeo 2020	561	2010-2016	63.5	RN 100	52.80	13.90	31.90	15	4y-RFS all stages	94.9
						Pathological staging					
					7th edition TNM						
BRAZIL	Colaci 2022	50	2005-2009	60	RN or PN	54.00	4.00	42	0.0	5y-OS	70.0
						Clinical stage				5y-OS - stage T1	93.0
	Aguiar 2016	118	2004-2014	58.3	100 RN	30.20	13.80	18.10	14.4	5y-OS - stage T2	100.0
						Clinical stage				5y-OS - stage T3	55.0
										5y-OS stage I	85.0
										5y-OS stage II	65.0
									5y-OS stage III	38.0	
MEXICO	Gurgel et al 2017	115	1999-2010	59	93.4 RN	pT1a: 16.5	pT2: 33	pT3a: 20	24.0	OS-localized disease	41.1
						pT1b: 25.2					
BRAZIL	Da Costa 2018	441	1990-2016	54	37.9 RN	88.50	11.50	—	0.0	10y-RFS stage I/II	89.5
						62.1 PN					
BRAZIL	Sierra 2020	104 (<40y)	2006-2017	32.5	60.4 RN	55.8	—	44.2	53.8	5y-RFS localized disease	72.0
						341 (>41-55y)					
BRAZIL	Santos 2021	662	1985-2016	54	49.9 RN	68.10	6.50	21.90	0.0	10y-OS localized disease	48.1
						51.6 PN					
BRAZIL	Mourão 2023	729	1985-2016	55	100 RN or PN	70.20	7.20	20.00	0.0	10y-RFS localized disease	59.6
						Pathological staging				10y-OS localized disease	66.7
MEXICO	Rodríguez-Covarrubias 2016	156	1985-2016	72	81.4 RN	45.5	17.3	30.8	NR	5y-OS - T1	77.6
						18.6 PN				Pathological staging	
MEXICO	Muñoz et al 2019	79	2000-2008	52	100 PN	T1a 74.6	—	—	19.5	2y-OS stage I	98.0
						T1b 24.42				5y-OS stage I	92.0
MEXICO	Uscanga-Yépez et al 2020	89	2011-2016	58.1	RN (91) PN (9)	51.70	31.10	7.90	21.3	5y-RFS localized disease	83.0
						Clinical stage					

RN, radical nephrectomy; PN, partial nephrectomy, OS, overall survival; RFS, recurrence-free survival, LRFS, local recurrence free survival, MFS, metastasis-free survival

## Discussion and Conclusions

- This systematic review evaluating real-world studies on OS and RFS in non-metastatic RCC patients in Latin America revealed a lack of specific outcomes for different disease stages, underscoring the need for more comprehensive survival outcomes reporting.
- The review is limited by the heterogeneity of the included studies, variations in study periods, and the lack of stage-specific survival data in many studies. These factors may affect the generalizability of the findings.
- Our findings are consistent with global data showing better survival outcomes in stage I RCC. Radical nephrectomy was the most common treatment option. However, the lower survival rates reported in stages II and III in Latin American studies emphasize the critical need for enhanced oncology care and targeted therapies in Latin America. Improving access to comprehensive cancer care could significantly reduce mortality and recurrence rates.
- Future research should focus on longitudinal studies with standardized reporting of stage-specific outcomes. In addition, exploring the impact of socioeconomic factors on RCC outcomes in Latin America could provide deeper insights into the disparities observed.

## References

- International Agency for Research on Cancer. Available from: <https://gco.iarc.fr/today/en/dataviz/tables?mode=population&cancers=29>. Accessed October 28, 2024.
- Molzer RJ, et al. *J Natl Compr Canc Netw*. 2022;20(1):71-90.
- Znaor A, et al. *Eur Urol*. 2015;67(3):519-530.