

# Long-term outcome of kidney transplantation among Iranian children A systematic review and meta-analysis

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- Renal transplantation is the treatment of choice for patients with advanced kidney disease, even when compared with more sophisticated dialysis modalities.
- The outcome of renal transplantation in children has improved over the last several decades, but a proportional improvement in long-term outcomes was not observed, even in the most recent eras.
- According to previous studies, the main causes of renal graft loss are chronic rejection, death with the functioning kidney, recurrence of the underlying disease, and acute rejection.
- K. E. Lamb, “Long-term renal allograft survival in the United States: a critical reappraisal,” *American Journal of Transplantation*, vol. 11, no. 3, pp. 450–462, 2011

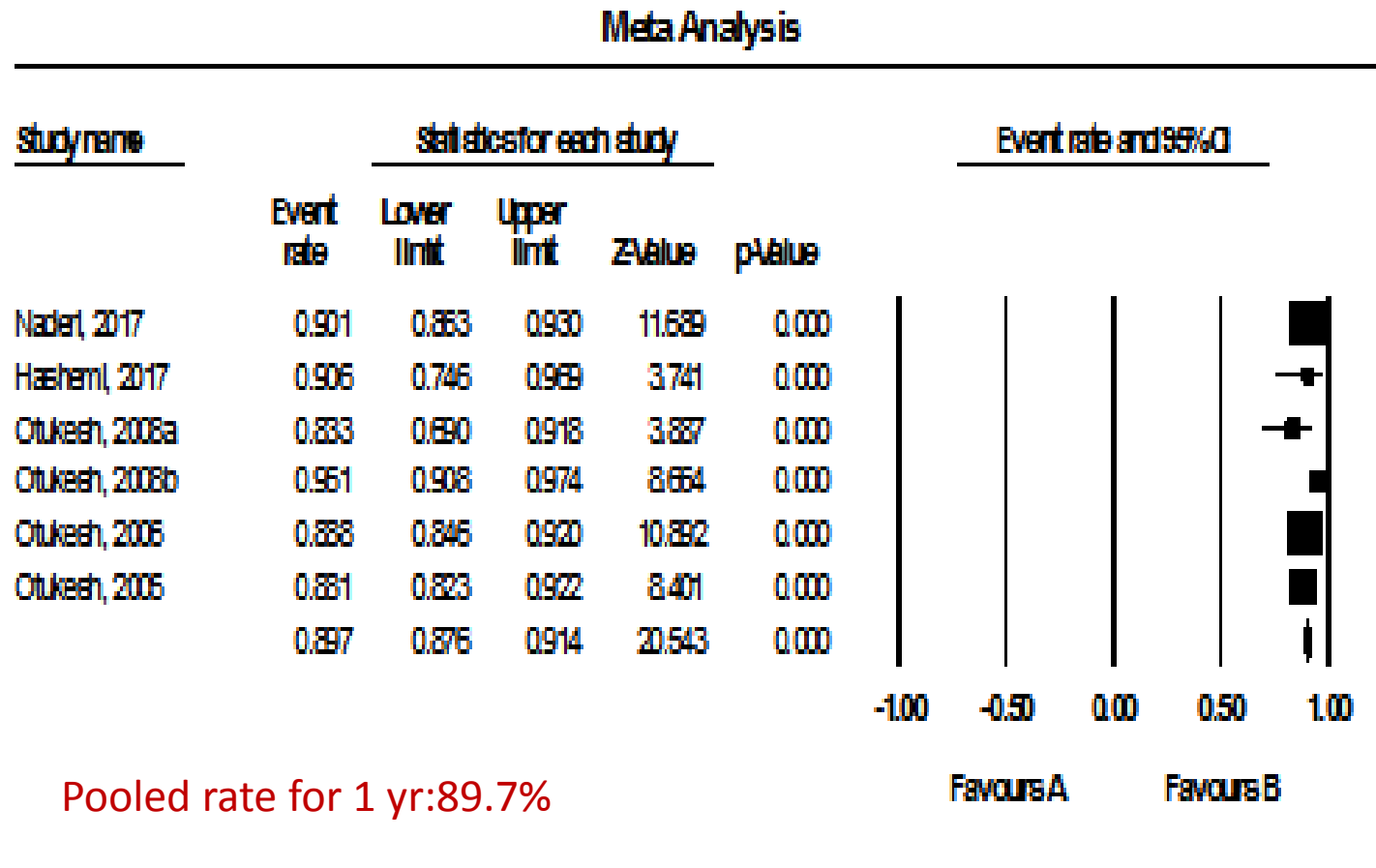
- Due to unavailability of comprehensive information on the outcome of kidney transplantation among Iranian children, we aimed to present a proper vision of pediatric kidney transplantation in Iran by systematically reviewing the current literatures.
- We searched databases including Medline, Web of knowledge, Google scholar, Scopus, Cochrane, and Iranian web of SID for all eligible studies in accordance with the considered keywords("kidney", "renal", "transplantation", "pediatrics", "children" and "Iran").
- Of total 115 studies that initially assessed based on the keywords, 8 were complete and considered for final analysis that were published between 2005 and 2017.

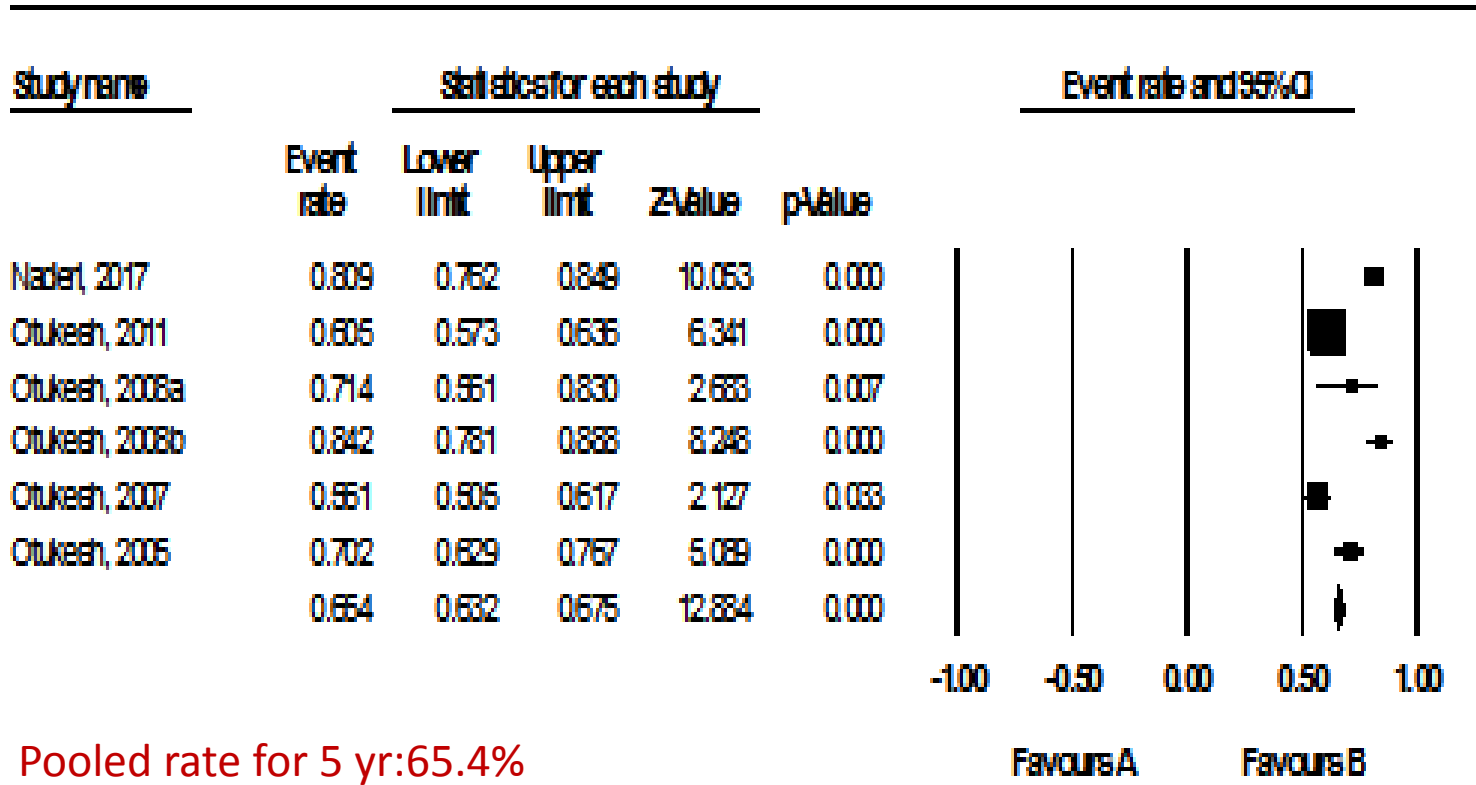
- The inclusion criterion for retrieved the studies was to determine graft survival, patients' survival, and the reasons for graft failure.
- The exclusion criteria were thus as follows:
  - 1) a lack of clear and reproducible results
  - 2) non-English or Persian studies
  - 3) lack of access to the manuscripts full texts
  - 4) case reports, case series and review paper

Table 1: The details of the studies on the outcome of kidney transplantation among Iranian children

author, year	location	number	M/F	mean age	graft survival	patients survival	risk factor for failure
Naderi, 2017 (13)	Tehran	314	164/150	15.8	1 year: 90.0% 5 years: 81.0% 10 years: 62.0% 20 years: 62.0%	1 year: 100% 5 years: 99.4% 10 years: 97.8% 20 years: 96.5%	acute rejection, primary hyperoxaluria
Hashemi, 2017 (14)	Shiraz	32	18/14	12.0	1 year: 89.0% 2 years: 71.0%	1 year: 93.0% 2 years: 86.0%	-
Otukesh, 2011 (15)	Tehran	922	515/407	13.1	5 years: 60.5%	5 years: 90.0%	Transplantation year, dialyzing status before transplantation
Otukesh, 2008 (16)	Tehran	42	26/16	13.0	1 year: 83.0% 3 years: 80.0% 5 years: 71.0% 7 years: 60.0%	-	-
Otukesh, 2008 (17)	Tehran	183	109/74	11.9	1 year: 94.9% 3 years: 91.9% 5 years: 83.9% 7 years: 79.2% 10 years: 72.0%	-	dialysis before, acute rejection, inappropriate immunosuppression
Torkaman, 2007 (18)	Tehran	301	177/124	14.0	5 years: 56.0%	5 years: 88.0%	-
Otukesh, 2006 (19)	Tehran	278	166/112	11.6	1 year: 88.8% 3 years: 77.0% 5 years: 67.0% 7 years: 50.0% 10 years: 43.0%	-	acute rejection
Otukesh, 2005 (20)	Tehran	168	112/56	11.5	1 year: 88.0% 3 years: 73.0% 5 years: 70.0% 7 years: 49.0%	-	-
		<b>Total: 2240</b>	<b>M/F:1.3/1</b>	<b>Average age:12.8</b>			

Figure 1: The pooled 1-year and 5-year graft survival rates following kidney transplantation among Iranian children

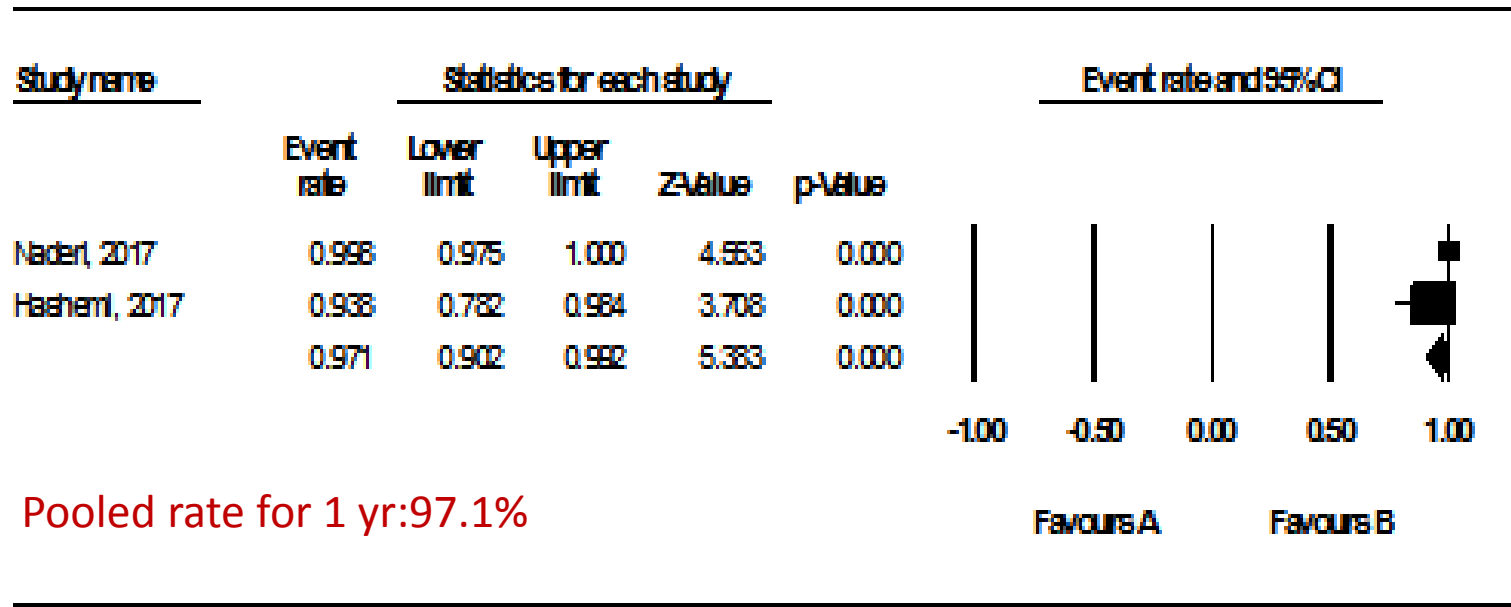


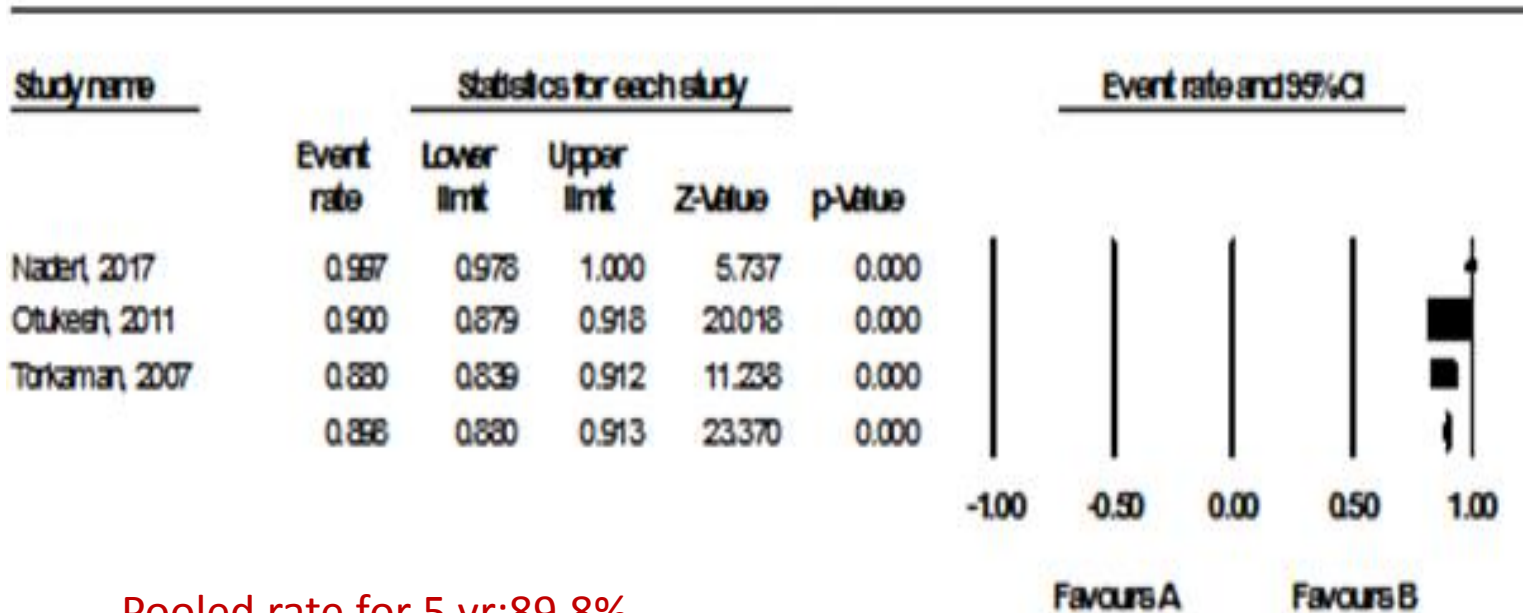


- The statistical heterogeneity was not significant with an  $I^2$  of 37.619% ( $P = 0.155$ ) for assessing 1-year graft survival but was significant for 5-year graft survival with an  $I^2$  of 93.713% ( $P < 0.001$ ) .
- There was no significant publication bias as evidenced by either funnel plot asymmetry or Egger test for estimating 1-year and 5-year graft survival



Figure 2: The pooled 1-year and 5-year patients' survival rates following kidney transplantation among Iranian children



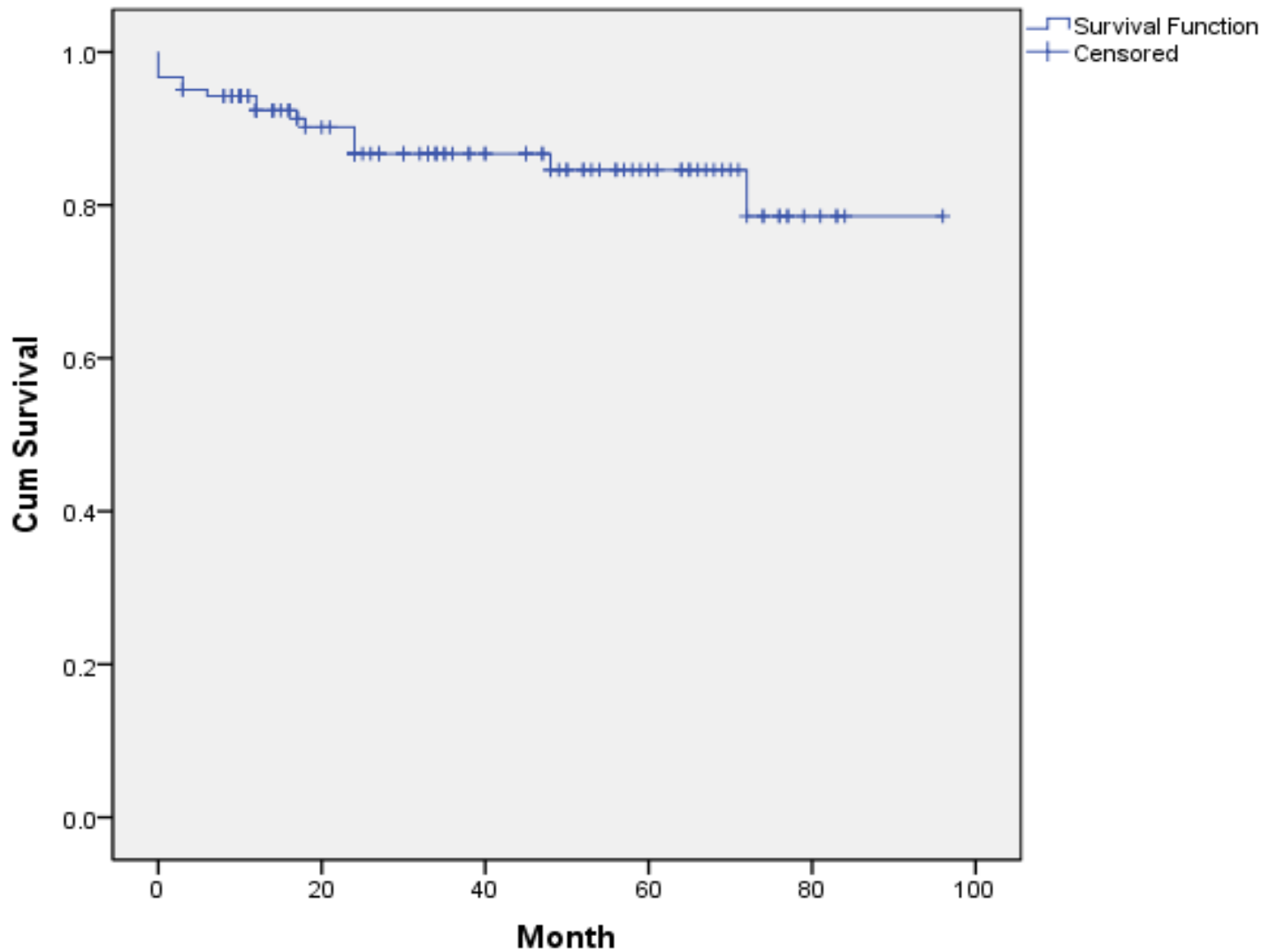


Pooled rate for 5 yr:89.8%

- To determine 1-year and 5-year survival rate of the patients, the statistical heterogeneity was significant with an  $I^2$  of 81.828% ( $P < 0.001$ ) and 85.482% ( $p < 0.001$ ) respectively .
- There was no significant publication biases as evidenced by either funnel plot asymmetry or Egger test ( $P = 0.678$ ,  $p = 0.601$ , respectively).

- In our center( Rasoul-e-Akram hospital), 123 pediatric kidney transplantation( **81 from living donors and 42 from deceased donors**) were performed from 2011 to 2017
- The mean age of the recipients was 10.7 (SD: 3.52), ranging from 4.5 to 20 years.
- Female 68 (55.7%), male 54 (44.3%)
- The mean±SD graft survival time was 82.3 months (76.0 – 88.6 months)
- The 1-, 3-, 5-, 7-year graft survival rates were 95%, 89%, 87%, 82% respectively

# Survival Function



# CONCLUSION

- As the final conclusion, our review shows high success rate of kidney transplantation in Iranian young population with 1-year and 5-year graft survival rates of 89.7% and 65.4%
- 1-year and 5-year patients' survival rates of 97.1% and 89.8% respectively.
- To obtain more valid results on outcome of childhood kidney transplantation in our population, further cohort studies on populations in other regions of country is highly recommended.

# REFERENCES

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