

Running Head: Can Cadaveric Transplant Alone Eradicate the Kidney WL?

Can Deceased Donor Transplantation Alone Eradicate the Kidney Waiting List?

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The prevalence of end-stage kidney disease (ESKD) could greatly increase in the upcoming decades, caused by population aging and rising diabetes and hypertension cases. An estimation of 3.9 million individuals globally undergoing renal replacement therapy for ESKD in 2017 is expected to climb to 5.4 million by 2030. Chronic kidney disease was the 13th most common cause of death all around the world in 2016, and it is predicted to be the 5th leading cause of years of life lost by 2040⁽¹⁾.

Kidney transplantation is the gold standard treatment for ESKD patients. However, the shortage of transplant kidneys is a global crisis. It is well understood that post-transplant outcomes of living donor kidney transplants are better than those of deceased donor transplants. Living donor kidney transplants from unrelated donors resulted in longer graft survival compared to related donors, according to a large cohort study on more than 70,000 kidney transplants in the US⁽²⁾. Nevertheless, some authors believe that living unrelated donor kidney transplantation should be stopped⁽³⁾; the experience of Shiraz Transplant Center (STC) with the exclusively deceased organ donation program may apply to the city or province, but it cannot be extended to larger regions like Iran or the Middle East. Some patients on the waiting list of the STC, especially those requiring second or third re-transplantation, have gone to other centers in the country to have a living unrelated kidney transplant, as they could not wait any longer for a deceased donor in Shiraz.

Even in developed countries with the most successful deceased organ procurement and transplantation networks, the entire demand for kidney transplants cannot be met (**Figure 1**), resulting in many deaths for patients on long waiting lists. For example, in the United States, over 90,000 patients are currently wait-listed for a kidney transplant with an average waiting time of five years. Tragically, 4-5 thousand of these patients lose their lives each year before

receiving the kidney they need. Spain, which has approximately 90% of kidney transplants coming from deceased donors, had the most deceased-donor kidney transplants per population in the world from 2017 to 2019 and was ranked second after the United States in 2020 and 2021, but the waiting list did not decrease significantly. At the end of 2017 and 2021, the number of people awaiting a kidney transplant in Spain was 3942 and 3945, respectively⁽⁴⁾.

In Iran and the Middle East, even if the number of kidney transplants from deceased donors reaches the highest possible level, it will still not be enough to meet the needs of those on the waiting list. Health systems officials should therefore consider supporting all types of kidney transplants, including living related and unrelated donors, as they are directly responsible for the lives and well-being of patients. More than twenty countries have implemented some types of reimbursement programs to remove disincentives for living kidney donors⁽⁵⁾. Anyone who donates a kidney, even if they receive a financial reward, should be celebrated as a hero since they are saving a human life.

The Iranian model of government regulated paid living-unrelated kidney donation (rewarded gifting) started in the 1980s has proven its usefulness and success in shortening the waitlist⁽⁶⁾ and now requires more support from the government and the public. In this direction, in November 2022, the Iranian government substantially increased the financial compensation by forty times. With this cost-effective approach, compared to dialysis, more lives can be saved, patients can experience a higher quality of life, and the burden on taxpayers can be reduced⁽⁷⁾.

Rewarded or paid living kidney donation has been endorsed by Islamic religious-ethical leaders. Nonetheless, some opponents find this practice unethical. They do not feel accountable for the lives of dialysis patients, and they strive to propagate their critical views in society, but this will only lead to more deaths. Deceased and living kidney donations must be used together, like two

wings of a bird (Upgraded Iranian Model of Kidney Transplantation), and weakening either will cause irreparable damage. Once the waiting list is eliminated, living-donor kidney transplantation can be reconsidered. Until that time, which does not appear to be soon, the transplant community should unite in the pursuit of saving human lives.

Accepted

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Figure 1. Despite the growth in kidney transplants, the gap between demand and supply has expanded.

