Living Donor Kidney Transplantation: Global And Regional Trend

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Request for kidney transplantation (K.T.) is increasing rapidly because of the worldwide pandemic of end-stage renal disease, and the most critical issue is organ shortage. The available deceased donors will not resolve the continuing scarcity of organs. It is now professionally and ethically acknowledged and is vital to pay money to the donors for excluding disincentives of living organ donation. Living organ donation should be a vital part of the K.T. Program of any country.

The worldwide pandemic of end-stage renal disease results from an aging population, increased heart and vascular diseases, and inadequate preventive medical care[1]. Kidney transplantation (K.T.) is the treatment of choice for escalating chronic kidney disease. Request for K.T. is increasing rapidly[2,3], and the most critical issue is the organ shortage. Obviously, the available deceased donors will not resolve the continuing scarcity of organs[1].

At the end of 2017, 192,307 patients were on K.T. waiting lists globally. However, only 34% received K.T. K.T.'s mean waiting time is 3 to 5 years, and yearly mortality is 15% to 30%[2]. Due to the deficiency of deceased donor kidneys (DDK), living kidney donation (LKD) has become a crucial necessity for the increasing number of patients with end-stage renal disease in need of transplantation[2].

The superiority of LKD over DDK is diverse: LKD helps patients avoid the waitlist and alleviate the hardships of dialysis. The kidney survival rates for LKD are significantly better; 50% still functioning after 20 years; for DDK, this is only ten years[2]; kidney survival half-life of 17–18 years for LDK vs. 10–11 years for DDK[4]. In 2016, the graft failure rates for LDK and DDK were 1.3% and 4.8%; 34.2% and 51.6% at six months and ten years, respectively[5]. Also, LDK is more cost-effective than DDK. Smith and colleagues figured out that LDK's mean payment to be 37.7% less than DDK[6]. In most cases, living donation enables patients to circumvent years of dialysis waiting for DDK. Longer time on dialysis is consistent with inferior results after a kidney transplant[6]. Five and ten year event free graft survival is two times better for K.T. recipient on dialysis less than 6 months vs. more than two years (78% vs. 58% at 5 years; 63% vs. 29% at 10 years, respectively)[7]. Many patients prefer LDK to DDK[2]. For these reasons, this is evident that adequate medical and ethical rationals exist to encourage the many possibilities of LKD[2].

In the U.K., Living donor kidney transplantation (LDKT) is one of the most forward-looking and growing areas of donation and transplantation[8]. From 2000 to 2010, living donation transplantation activity in the U.K. trebled, most of which was in LDKT because:

- State of the art donor care is a prime concern
- Patient and graft survival are better than for deceased donor kidney transplantation (DDKT)
- It is the treatment of choice for pre-emptive transplantation
- It is the treatment of choice for clinically complex patients
- It is a cost-effective alternative to dialysis

Also, more patients and their families will benefit from K.T., and it will be feasible to provide transplants to those that might not else get a transplant[9]. The U.K. National Health Service (NHS) claims benefit as more people get K.T. before entering the kidney dialysis treatment, thus reducing costs[9]. The strategy's effective operation will be reliant on all members of the broader transplant community[9]. To better promote the plan, Nottingham City Hospital in an innovative manner sent a silver pin to every organ donor in recognition of the gift of donation. Now sending the gift is adopted by NHS to every donor in the UK.[9]. In the U.K., the rate of LDKT was 16 per million population (pmp) in 2016, and the proposed plan by the LDKT strategy implementation group was to reach 26 pmp by March 2020[9].

From 2004 to 20017 the LKD rate decreased in the U.S. due to the substantial economic disincentives that exist, including out-of-pocket expenses, loss or increased costs of insurability, and possible loss of career[7]. Stale in 2014 wrote: “Our current transplant regime is a qualified failure. In 2013, in one year about 4300 patiets in the waiting list died, and over 3000 were removed from the list due to medical conditions that prohibited K.T.[10]. About 27 years ago, the typical waiting time for a DDKT about one year; now, it is almost five years[10]. In many parts in the U.S. it has reached 10 years—if one can live for these years[10].The U.S. transplant community has recognized the need to lessen barriers and increase oppurtiunities was posed by the the National Organ Transplant Act (NOTA) of 1984 which expressly has forbidden the offer of ‘valuable

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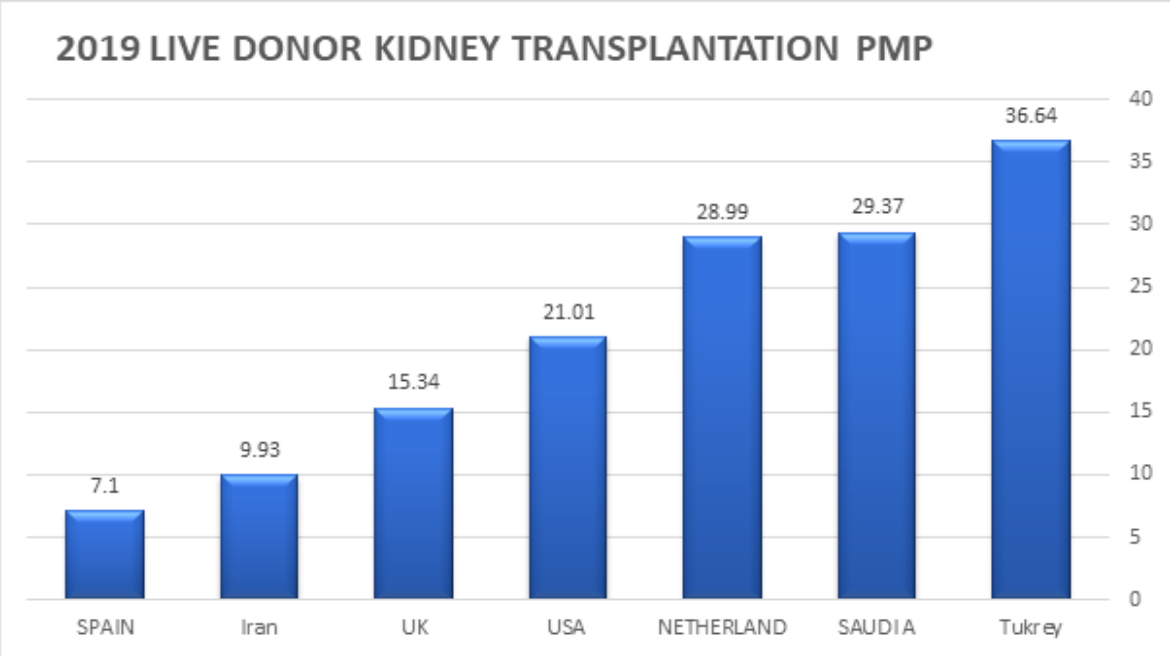

Fig 1. LDKT PMP in 2019. https://www.irodat.org/

consideration' for LKD[7]. In 2007, the U.S. Congress funded the National Living Donor Assistance Center (NLDAC) to assist low-income organ donors and recipients by paying travel and lodging expenses[11]. Once more, On July 10, 2019, President of the United States issued an executive order to reimburse living donors for extra costs associated with organ donation, such as lost wages and childcare[11]. HHS Secretary Alex Azar states that "Decades of paying for sickness and procedures in kidney care, rather than paying for health and outcomes, has produced less-than-satisfactory outcomes at tremendous cost. Through new payment models and many other actions under this initiative, the U.S. Administration will transform this situation and deliver Americans better kidney health, more kidney treatment options, and more transplants[12]."

In the United States there has been a energetic argument on the wisdom of paid donation, indirectly referred to as "compensation" or "financial incentives[7]. Matas states: "organ sale just does not sense proper; but letting patients die on the waiting list (when this could be prevented) also does not feel correct."[13] Are doctors "failing their patients "as long as the ban on payments is maintained?[13] Working Group on Incentives for Living Donation claim that incentives for donation could—and should—be explored in other countries to increase the number of donations[2]. This may not be appropriate in all countries[2]. In some authoritiy, such as the Netherlands, the number of LKDs is now so high that the waitlist has decreased significantly[2]. Models of 'rewarded gifting' may not be needed in countries with high LKD rates[2]. Supporters of financial rewards or incentives for live kidney donors[3] say that the prohibition of payment is "sanctimonious."[2] In current transplant medicine, everybody is earning, but the donor: society benefits, the hospital gets reimbursements, the surgeon and the medical team are salaried, the transplant coordinator gets waged, and the recipient receives a vast profit[2]. Some authors say that an effective and proper response is regulation or a monopsonistic market[2,14]. They also submit the most crucial and proper standards or conditions[2] for such a marketplace[2]. In contrast to the concept of "transplant commercialism", there is no doubt that organ trafficking should be forbidden totally[2]. It is projected that about 5–10% of all kidney transplants globally in 2005 were through transplant tourism[7]. The idea of "rewarded gifting" was developed during the 1990s. According to this standards, organs are not sailed, rather donors have a "reward" for the gifted organ[14]. Reward given to the donors is not the same as obtaining a good with a price tag on it, but rather a acknowledgement that somebody who volunteer to donate an organ should have gratitude and some level of compensation for time taken from work, travel, and loss of wages incurred, and even perhaps to be suffered in future, with the intention of supply the organ[14]. Obviously it is not ethically suitable to offer a tempting "inducement" that may drive miserable people to offer their organs. Defining whether an offer meet the requirements as fair compensation or a coercively persuasive inducement is a serious subject and an important mission of the ethics committees that would develop and manage any procurement policy involving donor compensation[14].

Regarding LDK, WHO has changed its principle of transplantation during the last three decades. In 1991 the WHO issued its guiding principles on human organ transplantation[2]. Principle 3 stated that organs for transplantation "should be removed preferably from the bodies of deceased persons." Adult living persons "may donate organs, but in general, should be genetically related to the recipient." For years LDK was generally limited to genetically related donors[2]. In 2008 the WHO updated its guiding principles. Principle 3 now states, "living donors should be genetically, legally or emotionally related to their recipients."[2] A working group of the European platform on Ethical, Legal, and Psychosocial Aspects of Organ Transplantation

(ELPAT) developed a new classification for LOD[2]. At present, the donor pool has extended from genetically related donors to partners, supports, friends, and even anonymous donors[2]. By 2010, genetically unrelated donors accounted for 48% of LKD in the United States[2], 45% in the Eurotransplant area, and 52% in the Netherlands[2]. The development of new technologies and innovations, and changes under the Human Tissue Acts (H.T. Acts) has made more living donor organs available for transplant in the U.K.[8].

Instances of successful other living donation programs are national kidney-exchange programs, domino-paired anonymous donation, ABO-incompatible programs, and desensitization in HLA incompatible recipients[2]. Under the rule and regulation of the parliament's law, Iran runs a regulated NGO compensation system called the Iranian model of kidney transplantation, a rewarded gifting model, and an active cadaveric transplantation program[14]. Figure one shows the rate of LDK transplantation in 2019. Figure two compares the rate of LDK of Iran and Turkey. The Iranian model has a crucial role in minimizing transplantation costs as the model views this challenging surgery as a humanitarian act rather than a source of revenue[14].

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