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Persistent Regional and Racial Disparities in Non-Directed Living Kidney Donation

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Abstract

Non-directed living donors (NDLD) are an important and growing source of kidneys to help reduce the organ shortage. In its infancy, NDLD transplantation was clustered at a few transplant centers and rarely benefited African American recipients. However, NDLDs have increased 9.4-fold since 2000, and now are often used to initiate kidney paired donation (KPD) chains. Therefore, we hypothesized that the initial geographic clustering and racial disparities may have improved. We used SRTR data to compare NDLDs and their recipients between 2008–2015 and 2000–2007. We found that NDLD increased an average of 12% per year, from 20 in 2000 to 188 in 2015 (IRR: 1.12, 95% CI: 1.11–1.13, $p < 0.001$). In 2000–2007, 18.3% of recipients of NDLD kidneys were African American; this decreased in 2008–2015 to 15.7%. NDLD transplants initially became more evenly distributed across centers (Gini 0.91 in 2000 to Gini 0.69 in 2011), but then became more clustered at fewer transplant centers (Gini 0.75 in 2015). Despite the increased number of NDLDs, racial disparities have worsened and the center-level distribution of NDLD transplants has narrowed in recent years.

Keywords

Non-directed donors; kidney allocation; living donor transplantation; living donation

INTRODUCTION

There are currently more than 97,000 patients on the kidney transplant waitlist with fewer than 20,000 transplants occurring each year (1, 2). One way to address the growing demand for kidney transplantation is by optimizing living kidney donation; however, only approximately 5,000 living donor kidney transplants are performed annually (1, 2). The vast

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DISCLOSURE

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majority of living kidney donations come from directed living donors (DLDs), who donate their kidneys to a specific person; however, there is an increasing number of living kidney donations from non-directed living donors (NDLD) each year (3). This form of donation has the potential to make a significant impact for candidates currently waiting for a suitable organ (1, 3) and might have psychosocial benefits for the donor as well (4).

We previously studied non-directed living kidney donation in the United States and found regional and racial disparities in utilization; of particular concern was that African Americans were significantly under-represented among NDLD recipients, despite substantial representation on the waiting list and the fact that NDLDs were supposed to be utilized equitably across the waiting list (5). This racial disparity—the under-representation of African Americans as recipients—has been described broadly in living kidney donation as well (6). However, these regional and racial disparities were seen in an era without widespread kidney paired donation (KPD). With KPD, NDLD kidneys have been used to benefit a different population of recipients (7, 8). Furthermore, there is evidence that transport of living donor kidneys does not worsen recipient outcomes (9), so it is possible that regional sharing might have increased.

In order to determine whether regional and racial disparities in NDLD utilization might have improved, we conducted a national registry study of the NDLD population in the US. We divided the study period into two eras to investigate temporal changes. We defined demographic variation among NDLDs, identified differences in recipients who received kidneys from NDLDs, and compared center-level and regional variation in NDLD use.

METHODS

Data Source

This study used data from the Scientific Registry of Transplant Recipients (SRTR). The SRTR data system includes data on all donors, waitlisted candidates, and transplant recipients in the United States, submitted by the members of the Organ Procurement and Transplantation Network (OPTN), and has been described elsewhere (10). The Health Resources and Services Administration (HRSA), US Department of Health and Human Services, provides oversight to the activities of the OPTN and SRTR contractors.

Study Population

We studied 1,590 adult non-directed living kidney donors and 95,288 adult directed living kidney donors who underwent nephrectomy in the United States between January 1, 2000 and December 31, 2015. We also studied 96,882 living donor kidney transplant recipients and 481,475 kidney transplant waitlist registrants during this period.

Demographic Trends over Time

We described the change in the incident rate of NDLDs per year using Poisson regression. In order to better power our analyses over time, we then divided the study period into two halves, 2000–2007 and 2008–2015, which also allowed for comparison to our previous study of disparities in NDLD transplantation (5). We compared gender, race, age, BMI,

blood type, education, and insurance type between eras. For kidney transplant recipients and waitlist registrants, we studied the same characteristics listed above, as well as time on dialysis, history of previous kidney transplant, waitlist time, and peak PRA.

Center and Regional level Utilization of NDLD

We evaluated the equity of distribution of NDLDs at transplant centers across the United States using the Gini coefficient, a measure of inequality, and the Lorenz curve, a graphical representation of inequality (11, 12). In the case of perfect equality, the Lorenz curve would fall along the diagonal reference line. We computed the Gini coefficient, a dimensionless value between 0 and 1 with a higher number representing, in this context, a higher concentration of NDLD transplants at a smaller number of centers. We also produced Lorenz curves to illustrate the use of NDLD over time, across both eras of the study as well as in two-year periods of the study. All centers in the US with at least one living donor nephrectomy performed during 2000–2015 were included in the Lorenz curves. We similarly explored regional variation in NDLDs using OPTN regions.

Statistical Analysis

Cross-sectional waiting list demographics were determined based on the patients still awaiting a kidney transplant on the last day of the period (75,698 patients on 31 December 2007 for 2000–2007; 106,073 patients on 31 December 2015 for 2008–2015). Both crude demographics and adjusted waitlist demographics were compared to NDLD recipient demographics. In order to adjust for center-level differences in the racial composition of the local population, the racial composition of the waitlist was weighted by center-level number of NDLDs to create an adjusted waitlist such that the comparison of race of NDLD kidney recipients with waitlist candidates would account for differences in racial composition of the NDLDs donating at that center. Confidence intervals are reported per the method of Louis and Zeger (13). All analyses were performed using Stata 13.0/MP for Linux (Stata Corp, College Station, TX). All hypothesis tests were 2 sided ($\alpha = .05$).

RESULTS

Study Population

NDLDs increased an average of 12% per year, from 20 in 2000 to 188 in 2015 (IRR: 1.11^{1.12} 1.13, $p < 0.001$, Figure 1). Compared to DLDs, NDLDs were more likely to be older (median age 45 vs 41 years, $p < 0.001$), male (44.4% vs. 39.8%, $p < 0.001$), insured (85.7% vs. 76.5%, $P < 0.001$), have lower BMIs (median BMI 25.3 vs. 26.6, $p < 0.001$), and have higher levels of education (19.9% post-college and 30.4% college-educated vs. 8.7% post-college and 20.9% college-educated, $p < 0.001$, Table 1). NDLDs were less likely to be African American compared to DLDs (2.5% vs. 12.5%, $p < 0.001$, Table 1).

In comparison to 2000–2007, NDLDs during 2008–2015 were similar in regards to age, sex, and BMI but slightly more likely to be African American (2.2% vs. 1.9%, $p < 0.001$, Table 2). The proportion of African American NDLDs each year is shown in Figure 1. During 2008–2015, NDLDs were more likely to be insured (87.4% vs. 81.3%, $p < 0.001$) and have higher

levels of education (21.9% post-college and 33.3% college-educated vs. 14.8% post-college and 23.3% college-educated, $p<0.001$, Table 2) compared to the earlier half of the study.

Recipients of NDLD and DLD Kidneys

Over the whole study period, recipients of NDLD kidneys differed from both recipients of DLD kidneys, as well as from candidates on the deceased donor waitlist (Table 3). Compared to recipients of DLD kidneys, recipients of NDLD kidneys were older (median age 49 vs 47 years, $p<0.001$), more likely to be publicly insured (54.2% vs. 41.0%, $p<0.001$), had higher BMIs (median 27 vs. 26, $p<0.001$), spent longer time on dialysis (median 1.6 vs 0.6 years, $p<0.001$), spent longer time on the waitlist (median 1.3 vs. 0.4 years, $p<0.001$), were more likely to have had a prior kidney transplant (12.8% vs. 10.5%, $p=0.003$), and were less likely to have blood type O (37.6% vs. 44.8%, $p<0.001$, Table 3). Compared to waitlist candidates, recipients of NDLD kidneys were younger (median 49 vs. 52 years, $p<0.001$), had higher levels of education (50.2% college or above vs. 43.9%, $p<0.001$), had lower BMIs (median 27 vs 28, $p<0.001$), were less likely to have had a previous kidney transplant (12.8% vs. 13.3%, $p<0.001$), and were less likely to have blood type O (37.6% vs. 48.5%, $p<0.001$, Table 3).

Racial Disparities

29.2% of waitlist candidates were African American, compared to 14.0% of DLD kidney recipients and 16.5% of NDLD recipients ($p<0.001$, Table 3). Comparing NDLD recipients over time, in 2000–2007, 18.3% of NDLD kidney recipients were African American, compared to 35.2% of waitlist candidates. This under-representation of African American NDLD recipients relative to the waitlist worsened in 2008–2015: 15.7% of NDLD kidney recipients were African American, compared to 33.8% of waitlist candidates. After adjustment for center-level waitlist race distribution, this disparity persisted (Figure 2). The proportion of African American NDLD kidney recipients each year is shown in Figure 1.

Center-level and Regional Variation

From 2000–2011, recipient NDLD transplants became more evenly distributed across transplant centers (Gini 0.91 to Gini 0.69), but from 2012–2015 the distribution of NDLD became more clustered at a fewer number of transplant centers (Gini 0.71 to Gini 0.75, Figure 3). Similarly, from 2000–2011, NDLD transplants became more evenly distributed across regions (Gini 0.44 to Gini 0.30), but from 2012–2015 the distribution became more regionally clustered (Gini 0.34 to Gini 0.36, Figure 3). The absolute number of NDLD transplants and proportion by OPTN region within the first half and second half of the study period is shown in Table 4; of note, all regions increased in absolute number of NDLD nephrectomies in the second half of the study period as compared to the first.

DISCUSSION

In this study, we found that NDLDs in the United States have increased an average of 12% per year, from 20 in 2000 and 188 in 2015. While there were no clinically significant differences in NDLDs over time, NDLDs did differ from DLDs in that they were older, and more likely to be male, Caucasian, educated and insured. African American recipients were

under-represented among recipients of NDLD kidneys as compared to the composition of the waitlist during both the first and second half of the study period. From 2000–2011, NDLD transplants became more evenly distributed across transplant centers (Gini 0.91 to Gini 0.69), but from 2012–2015 the distribution of NDLD became more clustered at a fewer number of transplant centers (Gini 0.71 to Gini 0.75). In summary, despite the increased number of NDLDs, racial disparities have persisted and the regional and center-level distribution of NDLD transplants has narrowed in recent years.

A recent consensus conference on overcoming disparities in living kidney donation provided several recommendations including removing financial disincentives, implementing community-based educational programming, and better characterizing existing disparities in living kidney donation (6). Better characterization of disparities in NDLD transplantation is an important step in this process. Our finding that African Americans were under-represented as NDLDs and as recipients of NDLD kidneys is consistent with previous reports. One study that examined willingness to participate in kidney-paired donation found that African Americans were less willing to donate kidneys (14). Previous literature has documented poor access to living donor transplant among African American candidates with barriers including inability to identify a clinically suitable donor, fear of surgery, and religious concerns (15). Efforts towards increasing the number of African American living donors might allow more African American recipients to benefit from NDLD transplantation as well. One potential explanation of the high proportion of Caucasian recipients of NDLD kidneys is HLA compatibility: matching of donor and recipient race may occur to maximize HLA compatibility. Another potential explanation is geographic patterns of race; donor and recipients in the same geographic area may be of similar race. Regardless, the continued racial disparity in NDLD allocation over the course of the study period highlights the need for novel solutions for these organs and warrants consideration as programs for NDLDs develop. There have been recent efforts to decrease disparities in living kidney transplantation targeting both transplant candidates seeking DLDs as well as streamlining donor evaluation processes, which might be considered for NDLDs as well (16, 17). These efforts follow the recommendations made by Rodrigue et al. in their consensus conference statement by engaging in the community and working to reduce financial burden of living donation.

Limitations of our study are inherent to use of SRTR data. Our study is limited by granularity of detail on decision processes for allocation of NDLD kidneys and for data regarding donor motivation, which may be different between NDLDs and DLDs. Our data do not include which NDLDs or DLDs participated in KPD programs, as this is not available in the registry. While this limitation does limit conclusions regarding the distribution of NDLDs directly to waitlisted candidates versus through KPD registries, if NDLD kidneys are considered a truly non-directed resource, the recipients of these kidneys should be representative of those in need across the entire waiting list. Finally, in our analysis of regional and center-level differences over time, our study is limited by lack of data on sentinel events, which may have led to changes over time such as center-level donor risk acceptance or donor recruitment campaigns.

In conclusion, we have demonstrated that despite increasing use of NDLD kidneys over time both in absolute number and in center-level distribution, the recipients of NDLD kidneys are disproportionately Caucasian and this racial disparity has not improved over time. In fact, there is evidence this racial disparity has worsened. While there are several explanations for this finding, the persistence of the disparity alongside the steady increase in NDLD transplants over a 16-year period suggests that there is need for novel solutions to ensure that the benefit of NDLD kidneys is not limited to a subset of the population in need of a kidney transplant.

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Abbreviations

AA	African American
DLD	directed living donation
NDLD	non-directed living donors

References

1. Hart A, Smith JM, Skeans MA, Gustafson SK, Stewart DE, Cherikh WS, et al. OPTN/SRTR 2015 Annual Data Report: Kidney. *Am J Transplant.* 2017; 17(Suppl 1):21–116. [PubMed: 28052609]
2. Matas AJ, Smith JM, Skeans MA, Thompson B, Gustafson SK, Schnitzler MA, et al. OPTN/SRTR 2012 Annual Data Report: kidney. *Am J Transplant.* 2014; 14(Suppl 1):11–44.
3. van den Bosch P. Non-Directed Altruistic Kidney Donation: A Donor Perspective. *J Ren Care.* 2014
4. Massey EKKL, Zuidema WC, Hak G, Erdman RA, Hilhorst M, Ijzermans JN, Busschbach JJ, Weimar W. Encouraging psychological outcomes after altruistic donation to a stranger. *Am J Transplant.* 2010; 10(6):1445–1452. [PubMed: 20486913]
5. Segev DLMR. Regional and racial disparities in the use of live non-directed kidney donors. *Am J Transplant.* 2008; 8(5):1051–1055. [PubMed: 18416741]
6. Rodrigue JR, Kazley AS, Mandelbrot DA, Hays R, LaPointe Rudow D, Baliga P. Living Donor Kidney Transplantation: Overcoming Disparities in Live Kidney Donation in the US—Recommendations from a Consensus Conference. *Clin J Am Soc Nephrol.* 2015; 10(9):1687–1695. [PubMed: 25883072]
7. Gentry SEMR, Swihart BJ, Segev DL. The roles of dominos and nonsimultaneous chains in kidney paired donation. *Am J Transplant.* 2009; 9(6):1330–1336. [PubMed: 19656136]
8. Melcher ML, Veale JL, Javaid B, Leiser DB, Davis CL, Hil G, et al. Kidney transplant chains amplify benefit of nondirected donors. *JAMA Surg.* 2013; 148(2):165–169. [PubMed: 23426593]
9. Segev DLVJ, Berger JC, Hiller JM, Hanto RL, Leiser DB, Geffner SR, Shenoy S, Bry WI, Katznelson S, Melcher ML, Rees MA, Samara EN, Israni AK, Cooper M, Montgomery RJ,

- Malinzak L, Whiting J, Baran D, Tchervenkov JI, Roberts JP, Rogers J, Axelrod DA, Simpkins CE, Montgomery RA. Transporting live donor kidneys for kidney paired donation: initial national results. *Am J Transplant*. 2011; 11(2):356–360. [PubMed: 21272238]
10. Massie AB, Kucirka LM, Segev DL. Big data in organ transplantation: registries and administrative claims. *Am J Transplant*. 2014; 14(8):1723–1730. [PubMed: 25040084]
11. Massie AB, Gentry SE, Montgomery RA, Bingaman AA, Segev DL. Center-level utilization of kidney paired donation. *American journal of transplantation : official journal of the American Society of Transplantation and the American Society of Transplant Surgeons*. 2013; 13(5):1317–1322.
12. Massie AB, Zeger SL, Montgomery RA, Segev DL. The effects of DonorNet 2007 on kidney distribution equity and efficiency. *American journal of transplantation : official journal of the American Society of Transplantation and the American Society of Transplant Surgeons*. 2009; 9(7):1550–1557.
13. Louis TA, Zeger SL. Effective communication of standard errors and confidence intervals. *Biostatistics (Oxford, England)*. 2009; 10(1):1–2.
14. Segev DL, Powe NR, Troll MU, Wang NY, Montgomery RA, Boulware LE. Willingness of the United States general public to participate in kidney paired donation. *Clinical transplantation*. 2012; 26(5):714–721. [PubMed: 22404601]
15. Purnell TS, Hall YN, Boulware LE. Understanding and overcoming barriers to living kidney donation among racial and ethnic minorities in the United States. *Adv Chronic Kidney Dis*. 2012; 19(4):244–251. [PubMed: 22732044]
16. Sieverdes JC, Price M, Ruggiero KJ, Baliga PK, Chavin KD, Brunner-Jackson B, et al. Design and approach of the Living Organ Video Educated Donors (LOVED) program to promote living kidney donation in African Americans. *Contemporary clinical trials*. 2017; 61:55–62. [PubMed: 28687348]
17. Bornemann K, Croswell E, Abaye M, Bryce CL, Chang CH, Good DS, et al. Protocol of the KTFT-TALK study to reduce racial disparities in kidney transplant evaluation and living donor kidney transplantation. *Contemporary clinical trials*. 2017; 53:52–59. [PubMed: 27923612]

Figure 1. Non-directed living kidney donors (NDLDs) between 2000–2015

The number of NDLDs increased from 20 in 2000 and 188 in 2015; on average there was a 12% increase in number of NDLDs per year. While the proportion of African American (AA) NDLD kidney donors has remained between 1–5% per year, the proportion of AA NDLD kidney recipients has decreased in recent years.

Figure 2. NDLD kidney recipients by race in 2000–2007 compared to 2008–2015

From 2000–2007, 18.3% of recipients of NDLD kidneys were African American, however from 2008–2015, the percent of recipients of NDLD kidneys who were African American decreased to 15.7%.

Figure 3. Center-level and Regional distribution of NDLDs from 2000–2015

From 2000–2011, NDLD transplants became more evenly distributed across transplant centers and OPTN regions, but from 2012–2015 the distribution of NDLD became more clustered both at the center-level and regionally.

Table 1

Characteristics of NDLDs vs. DLDs in the US from 2000–2015.

	NDLDs (n=1,590)	DLDs (n=95,288)	p-value
Median Age (IQR)	45.0 (35.0–54.0)	41.0 (32.0–49.0)	<0.001
Male (%)	44.4	39.8	<0.001
Median BMI (IQR)	25.3 (22.7–28.2)	26.6 (23.7–29.7)	<0.001
ABO type (%)			<0.001
A	39.8	26.3	
AB	4.7	0.9	
B	12.1	7.8	
O	43.4	64.9	
Race (%)			<0.001
Caucasian	93.1	69.4	
African American	2.1	12.5	
Other	4.8	18.1	
Hispanic ethnicity (%)	2.6	13.5	<0.001
Education Level (%)			<0.001
Grade School	0.8	1.7	
High school	15.9	24.4	
Some College	19.8	21.9	
College	30.4	20.9	
Post College	19.9	8.7	
Insurance (%)			<0.001
Yes	85.7	76.5	
No	5.6	9.8	
Unknown	8.4	13.7	

Table 2

Characteristics of NDLDs in the US from 2000–2007 compared to 2008–2015.

	2000–2007 (n= 464)	2008–2015 (n= 1,126)	p-value
Median Age (IQR)	46.0 (37.0–53.5)	45.0 (33.0–54.0)	0.09
Male (%)	45.0	44.1	0.74
Median BMI (IQR)	25.1 (22.6–28.1)	25.4 (22.9–28.3)	0.22
ABO type (%)			<0.001
A	38.4	40.3	
AB	5.0	4.5	
B	11.0	12.6	
O	45.7	42.5	
Race (%)			<0.001
Caucasian	94.4	92.5	
African American	1.9	2.2	
Other	3.7	5.3	
Hispanic ethnicity (%)	1.7	2.9	0.2
Education Level (%)			<0.001
Grade School	0	1.1	
High school	13.6	17.0	
Some College	19.2	20.0	
College	23.3	33.3	
Post College	14.8	21.9	
Insurance (%)			=0.001
Yes	81.3	87.4	
No	6.0	5.8	
Unknown	12.7	6.8	

Table 3

Characteristics of NDLD Recipients compared to DLD Recipients and Waitlist Candidates in the US from 2000–2015.

	Recipients of NDLD (n=1,590)	Recipients of DLD (n=95,292)	Waitlist Candidates (n=481,475)	p-value NDLD vs. DLD	p-value NDLD vs. Waitlist
Median Age (IQR)	49 (38–58)	47 (34–57)	52 (42–61)	<0.001	<0.001
Male (%)	59.6	60.6	60.5	0.4	0.5
Median BMI (IQR)	27 (23–32)	26 (23–31)	28 (24–32)	<0.001	<0.001
Race (%)				0.01	<0.001
Caucasian	65.8	67.2	46.8		
African American	16.5	14.0	29.2		
Other	17.7	18.8	24.1		
Hispanic ethnicity (%)	9.2	13.7	16.1	<0.001	<0.001
Education				0.22	<0.001
High school or less	37.2	38.9	45.0		
College or above	50.2	47.9	43.9		
Insurance (%)				<0.001	0.04
Public	54.2	41.0	55.2		
Private	45.4	58.4	43.8		
Other	0.4	0.6	1.0		
Median years on dialysis (IQR)	1.6 (0.3–3.6)	0.6 (0–1.7)	0 (0–1.2)	<0.001	<0.001
Previous kidney transplant (%)	12.8	10.5	13.3	0.003	0.5
ABO type (%)				<0.001	<0.001
A	40.9	38.3	33.0		
AB	6.3	3.8	3.8		
B	15.2	13.1	14.7		
O	37.6	44.8	48.5		
Median years on the waitlist (IQR)	1.3 (0.5–2.6)	0.4 (0.02–0.9)	1.7 (0.6–3.2)	<0.001	<0.001
Median PRA (IQR)	0 (0–24)	0 (0–5)	0 (0–23)	<0.001	0.003

Table 4

Number and Proportion of NDLD Nephrectomies by OPTN Region in the US in 2000–2007 and 2008–2015.

	2000–2007	2008–2015
1	60 (12.9)	101 (9.0)
2	70 (15.1)	133 (11.8)
3	14 (3.0)	46 (4.1)
4	9 (1.9)	22 (2.0)
5	76 (16.4)	195 (17.3)
6	35 (7.5)	89 (7.9)
7	88 (19.0)	149 (13.2)
8	35 (7.5)	70 (6.2)
9	16 (3.5)	201 (17.9)
10	22 (4.8)	70 (6.2)
11	39 (8.4)	50 (4.4)