

Trajectories of Perceived Benefits in Living Kidney Donors: Association With Donor Characteristics and Recipient Outcomes

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Background. While improved health of the recipient may serve as a primary motivating factor, living kidney donors (LDs) also may expect to accrue some personal benefit following donation. This study sought to identify trajectories of perceived benefit over the first 2 years after donation.

Methods. Prospective questionnaire data were collected from 133 LDs from three kidney transplant programs in the United States. Before surgery, LDs completed the Living Donation Expectancies Questionnaire to assess their expectations of personal growth, interpersonal benefits, and spiritual benefits from the donation experience. This report then assessed the degree to which these expectations were met at 1, 6, 12, and 24 months post-donation.

Results. Analyses revealed four (Interpersonal Benefit) and five (Personal Growth, Spiritual Benefit) distinct trajectories over time. For some LDs, pre-donation expectancies about benefit were met or exceeded over the 2 years, while for others the anticipated benefits were either short-lived or not met at all. Trajectory group assignment was associated with some donor characteristics (e.g., age, gender, and relationship to recipient). Also, LDs whose recipients had functioning grafts and who reported improved health status following transplantation were more likely to have their pre-donation personal growth and interpersonal benefit expectations consistently met or exceeded.

Conclusions. Longitudinal trajectory analysis can help to identify different outcomes patterns for LDs and factors associated with them. The relevance of these findings is discussed in the context of LD education, follow-up care, and future research on donation benefits.

Keywords: Living donation, Kidney donation, Living donor, Psychosocial.

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Altruism and selflessness characterize the decision by most adults to pursue living kidney donation. Indeed, most potential living donors (LDs) anticipate that their gift will result in health improvement for the intended recipient (1–3). While such improved health is a primary motivator, LDs may also expect to accrue some personal benefit following donation (1, 3–5). Feelings of pride or satisfaction about having helped someone else, heightened sense of closeness with the recipient, spiritual growth, or being perceived more favorably by others may be anticipated by some LDs. Whether these expectations of personal growth or interpersonal and spiritual benefit are realized following donation has not been prospectively examined.

There is clinical utility in identifying the expectations of LDs and whether they are met following donation. First, these expectations could contribute to poorer psychosocial outcomes if they are not met following donation. In a survey of LD programs, 66% identified unrealistic expectations as a relative contraindication to donation (6), although what constitutes realistic or unrealistic expectations is not well defined. Second, regulations mandate that potential LDs be given information about potential risks and benefits of donation;

however, less attention has focused on identification of benefits for the donor (7–9). To assess whether LD expectations are realistic requires knowledge of what expectations are typically realized by LDs following surgery.

The aim of this study was to identify trajectories of perceived benefit over the first 2 years after living kidney donation. Personal growth, interpersonal benefits, and spiritual benefits were chosen for study because they are the most commonly identified benefits reported by LDs (1, 2, 10–12). A secondary aim was to determine whether donor characteristics and recipient outcomes are associated with identified trajectories of benefit.

RESULTS

Donor Participation Rates and Data Completeness

During open enrollment, 154 LDs were pre-screened and eligible for study inclusion. Twelve (8%) refused and nine (6%)

consented but did not complete any assessments. The remaining 133 (86%) comprised the analytic sample. Most (86%) LD assessments were completed by telephone. Assessment completion rates were 100% (baseline), 93% (1 month), 89% (6 months), 87% (12 months), and 84% (24 months). Ninety-one (68%) completed all six assessments. These LDs did not differ from those with missing data on sociodemographic characteristics, site affiliation, assessment mode (telephone, mail), or recipient outcomes (all *P* values >0.05).

Donor Characteristics

Donor characteristics (Table 1) did not differ significantly by study site. LDs were predominantly younger than 50 years (66%), female (57%), white (84%), married/partnered (62%), and employed (89%). The majority (54%) was biologically related to the recipient. The study sample generally was representative of the United States LD population

TABLE 1. Characteristics of study sample, overall and by center, and of United States living kidney donors during observation period (2002–2012)

Characteristic	Study sample									
	All sites (n=133)		BIDMC (n=57)		MMC (n=28)		SHUF (n=48)		US, 2003–2012 (N=62,196) ^a	
Age, mean (SD)	43.1	(11.2)	43.1	(11.1)	45.2	(10.2)	41.8	(12.0)		
Age, n (%)										
18–34 yr	34	(25.6)	11	(19.3)	7	(25.0)	16	(33.3)	19,287	(31.0)
35–49 yr	54	(40.6)	30	(52.6)	9	(32.1)	15	(31.3)	27,674	(44.5)
50–64 yr	43	(32.3)	14	(24.6)	12	(42.9)	17	(35.4)	14,365	(23.1)
65 yr and older	2	(1.5)	2	(3.5)	0	(0)	0	(0)	865	(1.4)
Gender, n (%)										
Female	76	(57.1)	30	(52.6)	17	(60.7)	29	(60.4)	37,344	(60.0)
Male	57	(42.9)	27	(47.4)	11	(39.3)	19	(39.6)	24,852	(40.0)
Race/ethnicity, n (%)										
White	111	(83.5)	50	(87.7)	25	(89.3)	36	(75.0)	43,307	(59.6)
Non-white ^b	22	(16.5)	7	(12.3)	3	(10.7)	12	(25.0)	18,889	(30.4)
Education										
Did not graduate from college	69	(51.9)	27	(47.4)	16	(57.1)	26	(54.2)		
Graduated from college	64	(48.1)	30	(52.6)	12	(42.9)	22	(45.8)		
Marital status										
Married/partnered	82	(61.7)	38	(66.7)	17	(60.7)	27	(56.3)		
Not married/partnered	51	(38.3)	19	(33.3)	11	(39.3)	21	(43.7)		
Employed	118	(88.7)	52	(91.2)	25	(89.3)	41	(85.4)		
Relationship to recipient, n (%)										
Parent	6	(4.5)	2	(3.5)	2	(7.1)	2	(4.2)	5,286	(9.3)
Child	25	(18.8)	13	(22.8)	2	(7.1)	10	(20.8)	10,598	(18.6)
Sibling	35	(26.3)	17	(29.8)	10	(35.7)	8	(16.7)	15,241	(26.7)
Spouse or partner	27	(20.3)	9	(15.8)	4	(14.3)	14	(29.2)	7,509	(13.2)
Other relative	6	(4.5)	1	(1.8)	2	(7.1)	3	(6.3)	4,281	(7.5)
Unrelated, non-spouse	30	(22.6)	12	(21.1)	7	(25.0)	11	(22.9)	13,021	(22.8)
Anonymous non-directed	4	(3.0)	3	(5.3)	1	(3.6)	0	(0)	1,090	(1.9)

^a Data obtained from United Network for Organ Sharing (UNOS). Includes living kidney donors during study period, 2003 to 2012. Relationship to recipient data includes only individuals who donated to adult recipients (N=57,026). Data on education, marital status, and employment not available for U.S. living donor population.

^b Non-white sample includes 14 (11%) Blacks, 5 (4%) Hispanics, and 3 (2%) Asians.

BIDMC, Beth Israel Deaconess Medical Center (Boston, MA); MMC, Maine Medical Center (Portland, ME); SHUF, Shands Hospital at the University of Florida (Gainesville, FL).

(<http://optn.transplant.hrsa.gov>) during the study period, although there were fewer minorities in the study sample.

Recipient Outcomes

Graft failure and death were observed in 16 (12%) and 7 (5%) recipients, respectively. These outcomes did not differ significantly from graft or patient survival data reported for LD transplantation at the three sites during the study observation period (www.srtr.org). Of the 95 recipients for whom Physical Component Summary (PCS) change scores at the 2-year assessment were calculated, health status was classified as “Improved” for 70 (74%) and as “No change or worse” for 25 (26%).

Baseline Personal Growth, Interpersonal Benefit, and Spiritual Benefit Expectancies

Baseline mean scores on the three LDEQ subscales did not differ by center or donor sociodemographic characteristics. However, male (13.6 ± 4.0 vs. 12.1 ± 4.3 for females, $P=0.04$) and white (13.1 ± 4.3 vs. 11.0 ± 3.4 for non-whites, $P=0.04$) LDs reported higher interpersonal benefit expectations about donation.

Figure 1 illustrates the percentage of LDs with pre-donation expectations of benefit (i.e., responding “agree” or “strongly agree”) for personal growth (a), interpersonal benefit (b), and spiritual benefit (c) individual items. In addition to improving the recipient’s life (97%), common personal growth expectancies were that donation would help them appreciate each day more (63%), feel more proud of oneself (62%), lead to improvements in lifestyle (62%), add extra meaning to life (56%), and help them appreciate their own life more (53%). Common interpersonal benefit expectations included a desire to talk to others about their donation experience (59%), stronger sense of closeness with the recipient (44%), and more compassion for others (32%). Comparatively fewer LDs expected spiritual benefit, although nearly half (47%) expected donation would serve as a model for others to follow.

Trajectories of Donation Benefits

Distinct trajectory groups emerged for personal growth (Fig. 2A), interpersonal benefit (Fig. 2B), and spiritual benefit (Fig. 2C). Group 1 (Stable) trajectory began with moderate pre-donation expectancies that were met and remained stable over time. Group 2 (Rising) trajectory began with low pre-donation expectancies that were exceeded and continued to rise over time. Group 3 (Early Rise) trajectory began with moderate pre-donation expectancies that were exceeded early after donation but then returned to baseline. Group 4 (Falling) trajectory began with high pre-donation expectancies that were never met and declined over time. An additional fifth trajectory emerged for personal growth and spiritual benefit. Group 5 (Early Fall) trajectory began with moderate pre-donation expectancies that were not met early after donation but then returned to baseline. Table 2 provides the number and percentage of donors in each group by domain. Overall, the majority of LDs fell into groups 1 to 3, indicating that pre-donation personal growth (71%), interpersonal benefit (90%), and spiritual benefit (79%) expectancies initially were met or exceeded following donation, although trajectories differed after the 1-month assessment. Expected

benefits were not maintained for some LDs and others did not experience the expected benefits at all.

Trajectory Groups: Donor Characteristics and Recipient Outcomes

Younger (18–34 years old) and older (50+ years old) LDs were more likely to have their pre-donation personal growth ($\chi^2=16.6$, $P=0.03$) and interpersonal benefit ($\chi^2=12.9$, $P=0.04$) expectations consistently met (group 1) or exceeded (group 2), while adults 35 to 49 years old were more likely to never have these expectations met after donation (group 4). Men were more likely to have their moderate pre-donation personal growth ($\chi^2=9.9$, $P=0.04$) and interpersonal ($\chi^2=9.1$, $P=0.03$) expectations met over time (group 1), while women were more likely to report declining personal growth (group 4) and rising interpersonal benefit (group 2) over time. Older (50+ years old) and non-white LDs were more likely to persistently exceed (group 2) their pre-donation spiritual growth expectations ($\chi^2=17.7$, $P=0.02$ and $\chi^2=9.6$, $P=0.05$, respectively). Related

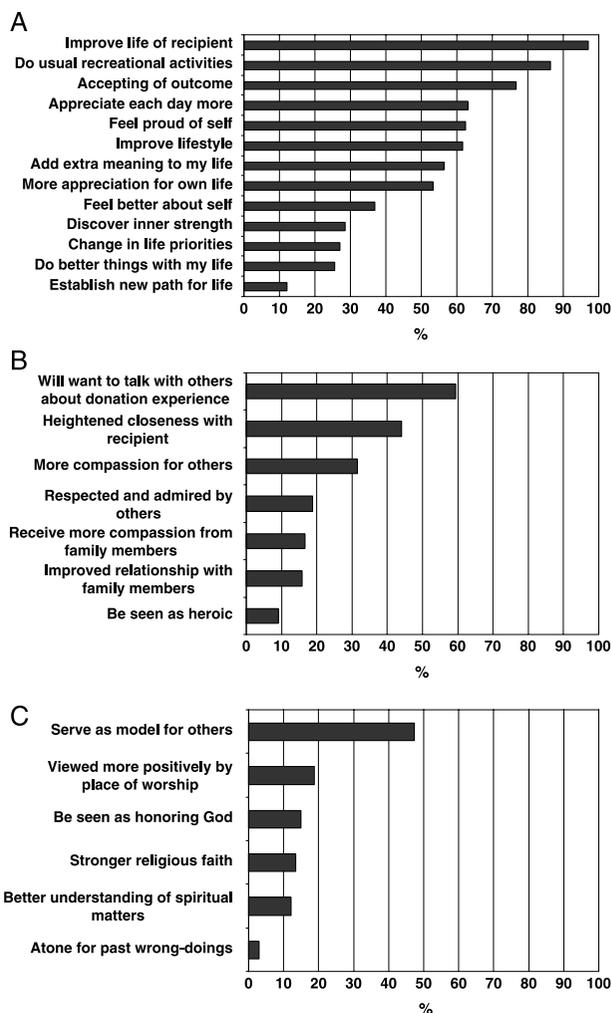


FIGURE 1. Before living kidney donation, the percentage of adults reporting positive expectations about personal growth (A), interpersonal benefit (B), and spiritual benefit (C) following living donation on the Living Donation Expectancies Questionnaire. N=133.

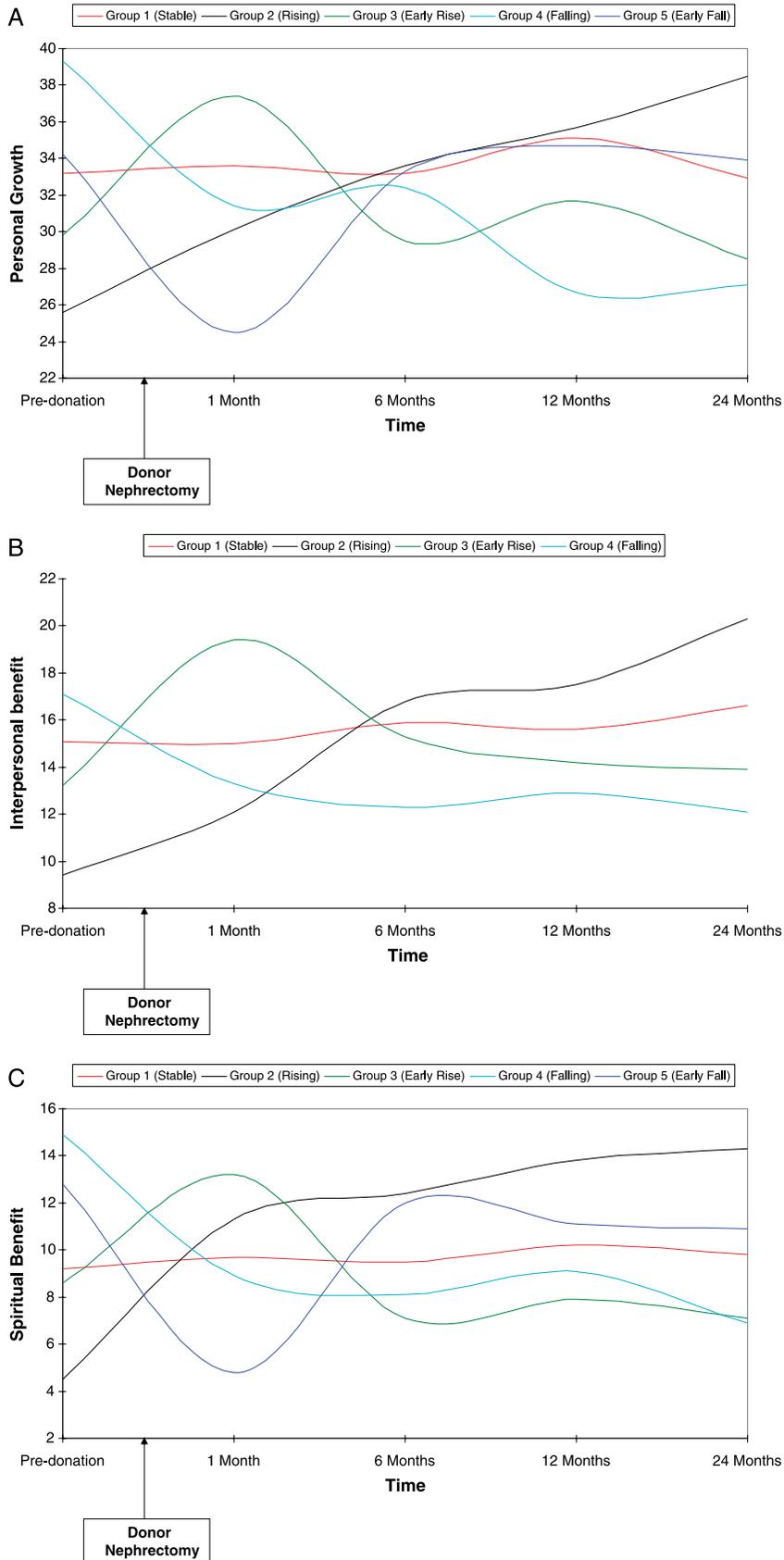


FIGURE 2. Trajectories that emerged for the mean scores of personal growth (A), interpersonal benefit (B), and spiritual benefit (C) over time.

TABLE 2. The number (and percent) of living kidney donors in each trajectory group for personal growth, interpersonal benefit, and spiritual benefit

	Trajectory group				
	Group 1 (stable)	Group 2 (rising)	Group 3 (early rise)	Group 4 (falling)	Group 5 (early fall)
Personal Growth	36 (27.1%)	32 (24.1%)	26 (19.5%)	23 (17.3%)	16 (12.0%)
Interpersonal Benefit	36 (27.1%)	46 (34.6%)	37 (27.8%)	14 (10.5%)	—
Spiritual Benefit	51 (38.3%)	26 (19.5%)	28 (21.1%)	15 (11.3%)	13 (9.8%)

and spouse LDs were more likely than unrelated non-spouses to have pre-donation expectancies that were exceeded initially but then returned to baseline 6 months after donation (group 3). Finally, LDs whose recipients had functioning grafts and who reported improved health status following transplantation were more likely to have their pre-donation personal growth ($\chi^2=11.5$, $P=0.02$ and $\chi^2=11.2$, $P=0.02$, respectively) and interpersonal benefit ($\chi^2=14.7$, $P=0.01$ and $\chi^2=10.7$, $P=0.01$) expectations consistently met (group 1) or exceeded (group 2). In contrast, LDs whose recipients had graft failure or no change or had worse health status were more likely to experience retraction in perceived benefit after an early rise (group 3) or a persistent decline (group 4) in these two domains (Fig. 3).

In the logistic regression analyses, LDs whose recipients had graft failure (OR=0.18, 95% CI=0.03, 0.92, $P=0.04$) were most likely to have overestimated prior to surgery how much personal growth benefit they would experience 2 years following donation (model: $\chi^2=17.2$, $P=0.03$). The other two regression models (interpersonal benefit, spiritual growth) were not statistically significant ($P>0.05$).

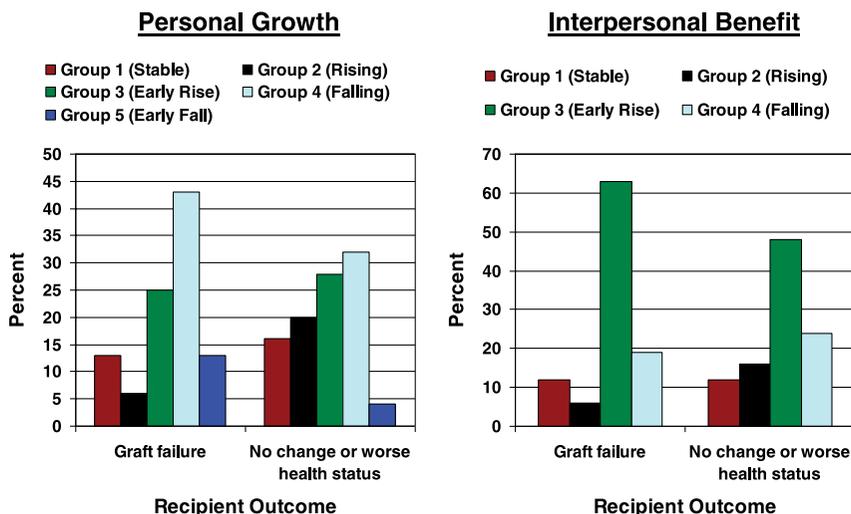
Most Common Benefits Reported 2 Years Following Donation

This study examined the percentage of LDs who reported experiencing benefit (i.e., responding “agree” or “strongly agree”) at the final 2-year assessment for each personal

growth, interpersonal benefit, and spiritual benefit LDEQ item, regardless of pre-donation baseline levels. Personal growth benefits most often identified by donors were feeling good about having improved the life of the recipient (93%), feeling proud of oneself (76%), increased appreciation for value of own life (58%), and feeling better about self (57%). The most common Interpersonal benefits were feeling more respected and admired by others (77%), improvement in relationships with family members other than the recipient (73%), and feeling a greater sense of closeness to the recipient (69%). Finally, serving as a model for others (37%) and being viewed more positively by others at place of worship (22%) were the most commonly spiritual benefits reported 2 years after donation.

DISCUSSION

This study identified multiple patterns of personal, interpersonal, and spiritual benefit following living donation. While most LDs had pre-donation expectancies that were either met or exceeded shortly after donation, there is some divergence in the pattern of these benefits beyond early recovery. Some LDs experience maintenance or an increase in perceived benefits over time, while others experience some retraction in benefits within 6 months of donation. A minority of LDs, perhaps resulting from much higher expectancies

**FIGURE 3.** Percentage of living kidney donors assigned to each personal growth and interpersonal benefit trajectory group based on recipient outcomes.

before surgery, felt that donation did not yield the personal benefit they expected.

Consistent with previous studies (1, 3, 11, 13, 14), findings confirm that most LDs perceive some benefits from donation. We extend earlier findings by showing that the benefits pattern during the first 2 years after donation may vary considerably based on donor characteristics and recipient outcomes. Some LDs may expect the recipient, once the organ is transplanted, to be able to participate more actively in family activities or to resume roles previously abandoned because of illness. If expectations about how the recipient will benefit from transplantation are met, the LD may perceive more favorable personal benefits from the donation experience (15). In contrast, if the recipient does not have a favorable outcome, this may impact how LDs assess the benefit (personal growth, relationship with recipient) of donation for themselves (2, 13). Moreover, those in more frequent contact with the recipient (e.g., spouses, adult children, and close relatives) may have higher expectations of benefit following donation, which are less likely to be realized long term. Tong et al. (1) found that some LDs, particularly those in the family and women, often have to manage multiple roles simultaneously after donation (donor, caregiver, provider, homemaker, etc.), which may have an impact on their perception of the donation experience. Perhaps these LDs experience short-term benefits that dissipate more rapidly as they resume these other life activities following initial recovery from donor surgery. Clearly, more research is needed to better understand the relationship between perceived donation benefit, donor characteristics, and recipient outcomes.

Findings from this study and others highlight the need for assessing potential donors' expectations about their own post-donation outcomes. Some programs consider "unrealistic" expectations about donation benefit to be a contraindication to donation (6). However, it is unclear what constitutes unrealistic expectations. In this study, 69% of LDs before surgery expected some post-donation personal growth benefit and 80% of them experienced this benefit 2 years after donation. Similarly, 30% expected donation to yield interpersonal benefits and more than twice as many (71%) experienced at least some mild to moderate interpersonal benefits at the final assessment. These findings of favorable outcomes many months after donation generally mirror those reported by others, which include enhanced self-esteem, closer relationship with the recipient and others, and spiritual confirmation (1–3, 10, 14). Perhaps some potential LDs *underestimate* the future benefits that await them. Appropriately, in light of the relative risks of donation, transplant programs may be hesitant to emphasize the potential benefits of living donation to the donor, which may be contributing to these more tempered pre-donation expectancies. Nevertheless, truly informed consent necessitates disclosure of potential risks *and* benefits of donation to potential donors, and some recalibration of what constitutes unrealistic expectations may be necessary (9).

Our trajectory analyses showed that LDs with the highest expectations prior to donation were less likely to realize the benefits they anticipated (group 4). It is possible that failure to hit expected targets for these benefits may contribute to feelings of disappointment, dissatisfaction, and regret in some LDs, although this warrants further study. Individual discussions between members of the donor follow-up team (e.g., nurse

coordinator, physician, social worker) and LDs about which specific benefits they anticipated but did not experience may help to attenuate these negative post-donation outcomes.

The current study was bolstered by several strengths, including the inclusion of multiple sites, prospective data collection, a large sample size that was generally representative of the U.S. donor population, high participation rate, low attrition, use of validated questionnaires, inclusion of recipient outcomes, and use of trajectory analyses. Notwithstanding these notable strengths, study findings must be considered in the context of important limitations. First, our sample had relatively low minority representation, which limits generalization of findings. Second, it is possible that some LDs prior to surgery minimized their expected donation benefits, which would contribute to assignment error in trajectory group analyses at the level of the individual donor. It is also possible that their perception of the donor evaluation process may influence their expected benefits from donation, but we did not capture this information in the current study. Third, we did not measure constructs that may change over time (e.g., religiosity or spirituality, perception of the relationship with the recipient) and be important contributors to trajectory group assignment. Changes in these covariates over time may be associated with trajectory changes or may help to explain why some donors experienced expected benefits and others did not. Fourth, restricted cell sizes for many variables (e.g., recipient survival, graft survival) did not allow us to conduct multivariate analyses to isolated key predictors of those who may be at highest risk for not having pre-donation expectations met following donation. Finally, the LDEQ is not exhaustive and may not capture other benefits that are of importance to LDs.

In conclusion, this study addresses gaps in prior cross-sectional studies on LD outcomes. Longitudinal trajectory analysis can help to identify characteristics of LDs who may experience unrealistic expectations or who derive benefit from donation. Future research is needed to examine whether these trajectories of personal, interpersonal, and spiritual benefit change or are maintained beyond 2 years. Also, studies are needed to validate the trajectories and to examine whether the trajectories portend favorable or unfavorable long-term donation outcomes, including decision regret, psychosocial adjustment difficulties, or unwanted changes in the relationship with the recipient.

MATERIALS AND METHODS

Study Sample and Data Collection Procedures

Adults approved for LD and their intended transplant recipients were recruited at Shands Hospital at the University of Florida (Gainesville, FL; September 2002 to August 2005), Beth Israel Deaconess Medical Center (Boston, MA; September 2006 to April 2010), and Maine Medical Center (Portland, ME; August 2008 to February 2010). This preliminary study was being done in preparation for a subsequent larger multisite study on LD outcomes that has since been funded (R01DK085185).

Inclusion criteria were LDs who were 18 years and above, English-speaking, able to provide informed consent, donating to an adult recipient, and approved/scheduled for surgery. Only if the LD consented to study participation was their intended transplant recipient approached and asked to participate. To maximize study retention, participants were given a choice to complete questionnaires by mail or telephone interview with a research assistant. Both LDs and recipients completed several questionnaires 1 to 4 weeks before

surgery (baseline) and at 1, 6, 12, and 24 months after donation. The Institutional Review Boards at all sites approved the study.

Perceived Benefits Assessment

To measure perceived benefit, LDs completed the Living Donation Expectancies Questionnaire (LDEQ) (4), comprising 42 expectancy statements with five-point Likert scales (0=strongly disagree, 1=disagree, 2=neutral, 3=agree, 4=strongly agree). There are six subscales, although only the three reflecting positive expectancies or benefits were examined—Personal Growth (13 items; $\alpha=0.84$), Interpersonal Benefit (7 items; $\alpha=0.77$), and Spiritual Benefit (6 items; $\alpha=0.82$). The pre- and post-donation LDEQ versions are identical except for verb tense (e.g., Pre: “As an organ donor, I expect my priorities about what is important will change”; Post: “As an organ donor, my priorities about what is important have changed”).

Donor Sociodemographic Characteristics and Recipient Outcomes

LD age, gender, race, marital status, education, and relationship to the recipient were recorded at baseline. Changes in these characteristics were not assessed during the study. Recipient outcomes included patient survival, graft survival, and perceived health status change as measured by the PCS on the SF-36 Health Survey (16). The recipient's baseline PCS score was subtracted from the PCS score from each of the posttransplant assessments. If the change score was less than 10 points (i.e., <1 SD) in either direction or if the change score was -10 points or lower, the recipient's health status at that time point was classified as “No change or worse.” The recipient's health status was classified as “Improved” if the change score was $+10$ points or higher.

Statistical Analyses

Descriptive statistics were calculated for donor sociodemographic characteristics, perceived donation benefits, and recipient outcomes. Chi-square and analysis of variance tests were conducted to identify any differences on these variables across the three study sites. Proc TRAJ (17) is a SAS group-based modeling procedure that identifies clusters of participants who follow similar progressions of an outcome over time. Using this procedure, we identified groups of LDs with similar trajectories for personal growth, interpersonal benefits, and spiritual benefits. LDs who dropped out or who missed assessment time points were included in the analysis because modeling accounts for participants with varying degrees of follow-up. The final number of distinct trajectory groups was selected based on achieving the maximum Bayesian Information Criteria (18). For all figures, the actual (or observed) mean scores for LDs assigned to the trajectory group are displayed. Univariate analyses (Fisher exact or χ^2 tests) examined the association between trajectory group assignments and donor sociodemographic characteristics and recipient outcomes. Recipient outcomes included patient survival, graft survival, and change in recipient's perceived health status (improved, no change or worse) from baseline to the 2-year assessment. Ninety-five LDs (71%) had recipients for whom PCS delta could be calculated. Deceased recipients were classified as “No change or worse.” Finally, we categorized LDs based on whether they overestimated the benefits they would derive from donation, based on whether their LDEQ score at the 2-year assessment was less than the pre-donation score (i.e., trajectory groups 3 and 4). Separate stepwise logistic regression analyses were then conducted to identify multivariate predictors of those most likely to overestimate benefit.

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REFERENCES

1. Tong A, Chapman JR, Wong G, et al. The motivations and experiences of living kidney donors: a thematic synthesis. *Am J Kidney Dis* 2012; 60: 15.
2. Simmons RG, Klein SD, Simmons RL. *Gift of Life: The Social and Psychological Impact of Organ Transplantation*. NY: Wiley; 1977. Reprinted with additions, Brunswick, NJ: Transaction Books; 1987.
3. Dew MA, Switzer GE, DiMartini AF, et al. Psychosocial aspects of living organ donation. In: Tan HP, Marcos A, Shapiro R, eds. *Living Donor Organ Transplantation*. NY: Taylor and Francis; 2007: 7–26.
4. Rodrigue JR, Guenther R, Kaplan B, et al. Measuring the expectations of kidney donors: initial psychometric properties of the Living Donation Expectancies Questionnaire. *Transplantation* 2008; 85: 1230.
5. Rodrigue JR, Widows MR, Guenther R, et al. The expectancies of living kidney donors: do they differ as a function of relational status and gender? *Nephrol Dial Transplant* 2006; 21: 1682.
6. Rodrigue JR, Pavlakis M, Danovitch GM, et al. Evaluating living kidney donors: relationship types, psychosocial criteria, and consent processes at US transplant programs. *Am J Transplant* 2007; 7: 2326.
7. Parekh AM, Gordon EJ, Garg AX, et al. Living kidney donor informed consent practices vary between US and non-US centers. *Nephrol Dial Transplant* 2008; 23: 3316.
8. Valapour M, Kahn JP, Bailey RE, et al. Assessing elements of informed consent among living donors. *Clin Transplant* 2011; 25: 185.
9. Gordon EJ. Informed consent for living donation: a review of key empirical studies, ethical challenges and future research. *Am J Transplant* 2012; 12: 2273.
10. Clemens KK, Thiessen-Philbrook H, Parikh CR, et al. Psychosocial health of living kidney donors: a systematic review. *Am J Transplant* 2006; 6: 2965.
11. de Groot IB, Schipper K, van Dijk S, et al. Decision making around living and deceased donor kidney transplantation: a qualitative study exploring the importance of expected relationship changes. *BMC Nephrol* 2012; 13: 103.
12. Dixon DJ, Abbey SE. Religious altruism and organ donation. *Psychosomatics* 2000; 41: 407.
13. Schover L, Streem SB, Boparai N, et al. The psychosocial impact of donating a kidney: long-term follow up from a urology based center. *J Urol* 1997; 157: 1596.
14. Fisher PA, Kropp DJ, Fleming EA. Impact of living kidney donors: quality of life, self-image, and family dynamics. *Nephrol Nurs J* 2005; 32: 489.
15. Gill P, Lowes L. Gift exchange and organ donation: donor and recipient experiences of live related kidney transplantation. *Int J Nurs Stud* 2008; 45: 1607.
16. Ware JE, Kosinski M, Dewey JE. *How to score version two of the SF-36® Health Survey*. Lincoln, RI: QualityMetric Incorporated; 2000.
17. Jones BL, Nagin DS. Advances in group-based trajectory modeling and a SAS procedure for estimating them. *Sociol Methods Res* 2007; 35: 542.
18. Nagin DS. *Group-based modeling of development*. Cambridge, MA: Harvard University Press; 2005.