



Mental Distress Symptoms and Life Satisfaction Among Living Kidney Donors: Frequency and Association With Subjective Evaluations

Evrım Gode Oğuten^{a,*}, İlhami Soykan Barlas^b, and Emin Barış Akin^b

^aDepartment of Psychiatry, School of Medicine, Demiroğlu Bilim University, Sisli Florence Nightingale Hospital, Istanbul, Turkey; and

^bDepartment of General Surgery, School of Medicine, Demiroğlu Bilim University, Sisli Florence Nightingale Hospital, Istanbul, Turkey

ABSTRACT

The aims of this study were to (1) determine psychological states and wellbeing of living kidney donors and (2) assess their interaction and association with subjective evaluations of donors. This retrospective, cross-sectional study was conducted with 208 living kidney donors (123 women; 59.1%), aged between 22 and 79 years (48.74 ± 11.78) who underwent a nephrectomy between 2006 and 2017. All donors were evaluated face-to-face. The sociodemographic data collection form, a 4-question survey developed by researchers for subjective evaluations, the Beck Depression Inventory (BDI), the Beck Anxiety Inventory (BAI), and Contentment with Life Assessment Scale (CLAS) were administered. Only few donors, 3.8% and 7.2% respectively, were above the clinical cut off scores of the BDI and BAI. This was equivalent to the normal population. Eighty percent of respondents were satisfied with life. Only 5 donors (2.4%) claimed to have any regrets about their experience and scored higher for depression and lower for life satisfaction ($P < .001$). Similarly, 33 (15.9%) donors having thoughts of getting ill easily after the operation were found to be more depressive and anxious, with lower life satisfaction ($P < .001$). In most cases their relationship to the recipient was reported not to be changed (64.4%) or even improved (32.5%), and that was found to be related to lower depression scores ($P < .001$). Respondents within the first year of donation reported higher depression ($P = .019$) and lower life satisfaction ($P = .001$) scores. Finally, postoperative complications were found to increase anxiety and lower life satisfaction ($P = .018$, $P = .026$). Degree of affinity between donors and recipients showed no difference in postoperative psychological outcomes and life satisfaction. These results suggest that overall, living kidney donation does not have a negative impact on donors' life satisfaction and mental status in the long term. However, the results of the unvalidated additional survey questions underlined the importance of follow-up of donors, especially in the first year, and screening of donors' subjective experiences in gaining additional insight about donors' mental well-being.

LIVING kidney donation is supported as a new solution for organ replacement treatment for the unmet need of waiting organ transplantation lists. In Turkey, there are more than 24,000 patients with end-stage chronic kidney diseases on a waiting list which grows longer day by day. This discrepancy between the need for and supply of cadaveric organs prompted a search for a new solution, which led to the use of living donors [1–3].

Most studies have shown that living donors have positive experiences after donation; however, it should still be taken into account that living donors are healthy volunteers and

there are some legal, ethical, psychological, and medical issues to be concerned about. Some psychosocial difficulties such as depression, anxiety, stress, and worries about health

*Address correspondence to Evrim Gode Oğuten, Department of Psychiatry, School of Medicine, Demiroğlu Bilim University, Sisli Florence Nightingale Hospital, Merkez Mahallesi, Abide-i Hürriyet Cd No:164, 34387 Şişli, Istanbul, Turkey. Tel: +902123756565; Fax: +90 (212) 213 64 86. E-mail: evrimgode@yahoo.com

have been reported in the literature. These psychosocial difficulties are called mental distress—a term for psychiatric symptoms rather than a psychiatric disorder [4–6].

To understand long-term consequences, long-term follow-up studies are important [5]. To our knowledge, our study is the first in Turkey to address the long-term mental effects of the donation process and to evaluate contentment with life.

The aims of this study were to (1) determine psychological states and wellbeing of living kidney donors and (2) assess their interaction and association with subjective evaluations of donors. The hypotheses were: 1. that living kidney donors would have depression and anxiety scores similar to those of the normal population, and 2. subjective complaints would interfere with patients’ psychological state and wellbeing.

MATERIALS AND METHODS

Eight hundred and fifty eight donors underwent living kidney explantation between the years 2006 and 2017. This cross-sectional study was designed in 2018; 620 out of 858 living donors were called via telephone; 405 donors were reached; 260 of donors agreed to meet with us; and finally, 208 donors completed the evaluation. Each of these 208 participants was evaluated in person and gave informed consent prior to inclusion. Ethics committee approval for the study was obtained from the ethical review board of Demiroglu Bilim University. All procedures were performed in accordance with the ethical standards of the Declaration of Helsinki.

Subjects

This cross-sectional study was conducted in 2018 with 208 living kidney donors (123 women; 59.1%), aged between 22 and 79 years (48.74 ± 11.78) who had undergone a nephrectomy in between 2006 and 2017 (4.55 ± 2.5 ; 1–11years). Sixty-five (31.25%) donors were spouses; 73 (35.09%) were first-degree relatives; 43 (20.68%) were second-degree relatives; and 8 (3.85%) were third- or fourth-degree relatives of the kidney recipients. Nineteen donors (9.13%) were emotionally related to the recipients. Further sociodemographic parameters are shown in Table 1.

Measurements

The sociodemographic data collection form, a 4-question survey developed by researchers for subjective evaluations, the Beck Depression Inventory (BDI), the Beck Anxiety Inventory (BAI), and the Contentment with Life Assessment Scale (CLAS) were administered.

Sociodemographic Data Collection Form and 4 Question Survey. A form and survey was developed by researchers to determine sociodemographic parameters such as sex, age, level of education, and marital status, and to evaluate subjective appreciations with questions concerning donor relationship to the recipient, the decision to donate, thought of getting ill easily, thought of offering others to donate. The Subjective evaluation questions are shown in Fig 1.

Beck Depression Inventory. This self-report inventory measures emotional, cognitive, somatic, and motivational components encountered in depression. Its aim is to establish the severity of depression symptoms objectively rather than making a diagnosis of depression. It consists of 21 symptom categories

Table 1. Sociodemographic Parameters (N = 208)

	N	(%)
Sex		
Female	123	59.10
Male	85	41.90
Age at study (y)	22–79; M = 48.74; SD = 11.78	
Relationship to the recipient		
Spouse	65	31.25
First degree	73	35.09
Second degree	43	20.68
Third or fourth degree	8	3.85
Other (emotionally related)	19	9.13
Time since donation (y)	1–11; M = 4.55; SD = 2.50	

Abbreviation: M, mean; SD, standard deviation.

offering 4 choices, and each item is scored on a scale value from 0–3. The total score is the overall depression score. Higher depression scores indicate greater severity of depression symptoms [7]. A validity and reliability study for Turkey has already been conducted [8].

BAI. This self-report inventory measures the frequency of anxiety symptoms experienced by individuals. It consists of 21 items and is scored from 0–3 on the basis of Likert scaling. A higher total score indicates the intensity of anxiety symptoms [9]. A validity and reliability study for Turkey has already been performed [10].

CLAS. The CLAS is a self-report inventory developed and launched by Lavalley et al [11] which has 5 items and an $\alpha = .87$. A good representative item is ‘I am very content with my life’, which has an item total correlation of $r = .76$. Forty-eight percent of respondents agreed or strongly agreed with this statement. The average life satisfaction may be more accurately described as neutral. The aim of this scale is to assess life satisfaction to better understand differences in subjective wellbeing [11]. A validity and reliability study for Turkey has already been performed [12].

We used SPSS version 16.0 (IBM, Armonk, NY, United States) for statistical data analysis, including descriptive statistics, bivariate correlations, and analysis of variance.

RESULTS

Descriptive Data

Two hundred and eight living kidney donors (123 women; 59.1%), aged between 22 and 79 years (48.74 ± 11.78), underwent a nephrectomy between 2006 and 2017 (4.55 ± 2.5 ; 1–11years). Sixty-five (31.25%) donors were spouses; 73 (35.09%) donors were first-degree relatives; 43

- Do you think that you get ill easily since the operation?
- How is your relationship with the recipient after the operation?
- How will you rate your experience of donation?
- Would you recommend other people to be donors?

Fig 1. Subjective evaluation questions.

(20.68%) were second-degree relatives; and 8 (3.85%) were third- or fourth-degree relatives of the kidney recipients. Nineteen donors (9.13%) were emotionally involved with the recipients. The descriptive data are presented in Table 1.

Mental Health Status and Level of Contentment with Life

The screening of anxiety and depression symptoms among donors reached average scores (BDI, $M = 5.27$, standard deviation [SD] = 5.54; BAI, $M = 5.94$, $SD = 5.84$). These scores were below the clinical cutoff scores (BDI: >16 ; BAI >15) of the population [8,10]. Individual analyses showed that only 9 donors reported moderate to severe or severe anxiety symptoms (3.8%) and 15 donors experienced moderate to severe and severe depression symptoms (7.2%). Thus, this screening revealed 23 (11.05%) donors considered to have mental health problems of clinical relevance. Donors estimated their CLAS in the average range 26.5 ± 6.40 . Almost 86% of respondents were satisfied with life (CLAS: >19). There were no significant differences in screening results with respect to donor sex (BDI, $t = -4.35$, $df = 206$, $P > .05$; BAI, $t = 1.2$, $df = 206$, $P > .05$; CLAS, $t = .86$, $df = 206$, $P > .05$).

Mental health status and level of contentment with life scores are summarized in Table 2.

Subjective Evaluations

Questions concerning subjective evaluations are presented in Fig 1. The results were as follows: 33 (15.9%) donors have the thoughts of getting ill easily after the operation. These donors were found to be more depressive (BDI: $t = 5.16$; $df = 206$; $P < .001$) and anxious (BDI: $t = 5.98$; $df = 206$; $P < .001$), and to have lower life satisfaction (BDI: $t = -3.80$; $df = 206$; $P < .001$). One hundred and thirty-four (64.4%) donors reported their relationship to the recipient to be unchanged or even improved (68; 32.7%) after the

Table 2. Mental Health Status and Level of Contentment With Life Scores

	N	(%)
BDI scores	$M = 5.27$; $SD = 5.54$; range:0-35	
BDI scores		
0-9	168	81.2%
9-16	31	15%
17-29	6	2.8%
30-63	3	1%
BAI scores	$M = 5.94$; $SD = 5.54$; range:0-36	
BAI scores		
0-7	142	68.3%
8-15	51	24.5%
16-25	11	5.3%
26-63	4	1.9%
CLAS scores	$M = 26.5$; $SD = 6.40$; range:6-35	
CLAS scores		
5-19	29	13.9%
20-35	179	86.1%

Abbreviations: M, mean; SD, standard deviation.

Table 3. Subjective Evaluation Questions and Results (N = 208)

		N	%
Do you think that you get ill easily after the operation?	yes	33	15.9
	no	175	84.1
How is your relationship with the recipient after the operation?	unchanged	134	64.4
	better	68	32.7
	worse	5	2.4
	other	1	0.5
How will you rate your experience of donation?	perfect	104	50.0
	good	51	24.5
	pleasant	48	23.1
	regretful	5	2.4
	Would you recommend other people to be donors?	yes	207
	no	1	0.5

operation, whereas 5 donors (2.4%) reported that it had worsened. The unchanged or even improved relationships were found to be related to lower depression scores ($t = -2.51$; $df = 71$; $P < .05$). Only 5 donors (2.4%) reported feeling regret over their experience of donation. The rest claimed that they did not regret the decision (97.6%). The five donors who claimed that they regretted their experience had higher scores of depression and lower life satisfaction ($P < .001$). With the exception of just one donor, 207 (99.5%) donors claimed that they would recommend being an organ donor to other people (Table 3).

Objective Evaluations

Respondents in the first latter year of operation reported higher depression ($M = 8.25$, $SD = 10.12$, $t = -2.18$, $df = 203$, $P < .05$) and lower life satisfaction ($M = 21.94$; $SD = 8.11$; $t = 3.09$, $df = 203$; $P < .05$) scores (Fig 2). Finally, postoperative complications were found to increase anxiety and lower satisfaction of life (BAI, $M = 8.67$, $SD = 9.04$, $t = -2.38$, $df = 206$, $P < .05$; CLAS, $M = 23.75$, $SD = 6.95$, $t = 2.24$, $df = 206$, $P < .05$).

Relationships between donors and recipients (biological or emotional) did not impact postoperative psychological outcomes or life satisfaction (BAI, $t = -1.17$, $df = 206$, $P > .05$; BDI, $t = .10$, $df = 206$, $P > .05$; CLAS, $t = -.77$, $df = 206$, $P > .05$). Analysis of variance and post hoc tests also showed no significant differences in BDI, BAI, or CLAS scores with respect to the degree of affinity between living kidney donors and their recipients ($P > .05$).

Furthermore, CLAS scores were correlated with anxiety and depression scores, showing that donors who reported more symptoms experienced lower life satisfaction (Table 4).

DISCUSSION

Eight hundred and fifty-eight of 962 kidney transplantation operations (89.18%) performed over the course of 11 years in our institute involved living donors. These data,

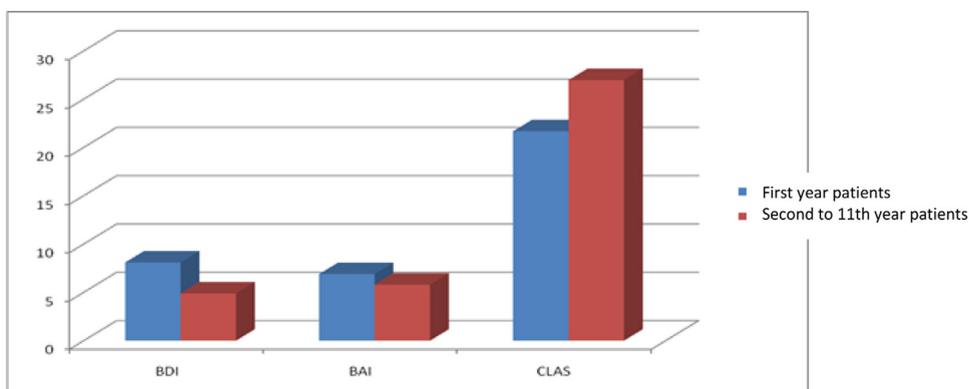


Fig 2. Scores of depression, anxiety, and level of contentment with life in the first year and the second through 11th years after the operation. BDI $P < .05$; CLAS $P < .05$.

presenting the percentage of living donors, are also relevant to the data of other institutions in Turkey. In conclusion, living donors are still the main source of kidneys for renal replacement treatment in Turkey [13,14].

In our study 208 of 405 of the donors contacted were able to complete the study in person. This really good response rate (51.35%), as most of them were coming from other cities, may show that the experience didn't affect the donors negatively.

Our results showed that psychological states or mental distress of living donors were similar to those of the normal population. Our donor subjects had depression and anxiety scores below the cut-off point. Only a few donors (11.05%) were considered to have mental health problems of clinical relevance. This may be interpreted as indicating that the procedure has no negative effect on donors' moods and does not increase anxiety symptoms. These findings were in accordance with the results of previous studies [15–17]. We also reported postdonation contentment with life status of donors. Almost 86% of respondents were satisfied with life.

In addition to results of mental state and life satisfaction, there were some striking results related to subjective evaluations. The majority of kidney donors in the study emphasized that they would definitely make the same decision again (97.6%), similar to findings in other studies [3,16]. Only 5 donors (2.4%) claimed that they regretted

their experience of donation and reported a higher score of depression and lower life satisfaction. Except for 1 donor, the other 207 (99.5%) claimed that they would advise other people to become donors.

Donors who thought about getting ill easily after the operation were found to be more depressive and anxious, with lower life satisfaction. This should be interpreted as indicating that those donors with somatic symptoms need to be evaluated further.

In keeping with findings from other studies [2,16,18,19], donors reported their relationship to the recipient to be unchanged or even improved after the operation. This was found to be related to lower depression scores.

The results of this study confirm that the majority of living kidney donors are comfortable with their decision to donate and do not experience negative consequences related to mood, anxiety, emotional well-being, family relationship, or personal health. Overall, these results suggest that the vast majority of donors have a positive experience, encouraging transplantation teams to continue performing living donor kidney transplantations.

It is important to note that the present results suggest that screening anxiety and mood during the first year after the operation procedure by reviewing psychometric data deserves further attention. To the best of our knowledge, this study is the first study in Turkey to assess the long-term mental effects of the donation process and to evaluate donors' contentment with life. On the other hand, one limitation of our study is its retrospective nature: this limitation must be kept in mind when interpreting our data. As this was a retrospective study, it was not possible to make a statement about the mental health status of the sample prior to donation.

In conclusion, our study demonstrated that living kidney donation is a safe procedure that does not have a negative impact on donors' life satisfaction and mental status. However, it is crucial to identify risk factors for psychosocial distress in donors, firstly to ensure that healthy individuals are not harmed and secondly to develop better ways to help

Table 4. Correlations of Psychopathological Symptoms and Life Satisfaction With Each Other and Sociodemographic Parameters

	Correlation (Pearson r, N = 208) with		
	BDI	BAI	CLAS
Sociodemographic parameters			
Age (y)	-.014	-.044	-.038
Time since donation (y)	-0.098	-0.026	0.032
Psychopathological symptoms			
Depression Scores (BDI)	1	0.580*	-0.482*
Anxiety Scores (BAI)	0.580*	1	-0.321*

Pearson Correlation: * $P < .01$.

them manage the transplantation process. The results of unvalidated additional survey questions in particular underlined the importance of follow-up with donors in the first year and that screening for donors' subjective experiences is useful in providing additional insight.

In future studies, we aim to investigate factors that predict contentment with life and mood states within recipient, donor, and control groups pre- and post-donation in a prospective study design. It is important to conduct extended follow-up studies of Turkish living kidney donors.

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