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Brief Report / Kısa Araştırma

Psychiatric Evaluation of Organ Donor Candidates in a University Hospital and Their Anxiety, Depression and Quality of Life Levels

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ABSTRACT

Psychiatric evaluation of organ donor candidates in a university hospital and their anxiety, depression and quality of life levels

Objective: The aim of this study was to conduct a psychiatric evaluation of organ donor candidates and to investigate their levels of anxiety, depression and quality of life.

Material and Methods: This study was performed between May 2015 and February 2016. It included 102 volunteers. The socio-demographic Data Collection Form, DSM-IV Clinical Interview Form – Clinical Version Structured for Axis Diagnoses (SCID-I/CV), Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI), Symptom Checklist (SCL-90-R), and SF-36 Quality of Life Survey (SF-36) were administered to the patients.

Results: The average age of the applicants was found to be 41.64±12.02, 42.2% (n=43) being male and 57.8% (n=59) being female. When it comes to the degree of affinity between potential donors and recipients, 57.8% (n=59) were first-degree relatives, 19.6% (n=20) were spouses, and 22.5% (n=23) were other relatives and/or close relations. By dividing donor candidates into groups by the degree of their affinity to recipients, there were statistically significant differences revealed between BDI, BAI and SCL-90-R total scores and interpersonal sensitivity subscale scores.

Conclusion: As compared to the global average, the number of living donors is higher than cadaver donors; and donor candidates mostly comprise spouses and first-degree relatives. Therefore, family members and first-degree relatives who are affected directly or indirectly by the transplant process are exposed to social and psychological effects more as the donor candidates/donors. It is of crucial importance to evaluate the psychosocial states of donors, in addition to recipients, in order to manage the long-lasting transplant process, a treatment- and care- demanding one in a more appropriate way.

Keywords: Anxiety, depression, donor selection, organ transplant, quality of life

ÖZET

Bir üniversite hastanesine başvuran organ nakli verici adaylarının psikiyatrik değerlendirmeleri, anksiyete, depresyon ve yaşam kalitesi düzeyleri

Amaç: Çalışmamızda organ nakli verici adaylarının psikiyatrik değerlendirmeleri, anksiyete, depresyon ve yaşam kalitesi düzeyleri araştırılması amaçlanmıştır.

Yöntem: Araştırma Mayıs 2015-Şubat 2016 tarihleri arasında yürütülmüştür. Toplam 102 gönüllü çalışmaya dahil edilmiştir. Hastalara Sosyodemografik veri formu, DSM-IV Eksen Tanıları İçin Yapılandırılmış Klinik Görüşme Ölçeği-Klinik Versiyonu(SCID-I/CV) ölçeği, Beck Anksiyete Ölçeği (BAÖ), Beck Depresyon Ölçeği (BDÖ), Belirti Tarama Listesi (SCL-90-R), SF-36 Yaşam Kalitesi Ölçeği (SF-36) uygulanmıştır.

Bulgular: Başvuranların yaş ortalaması 41.64±12.02 olup, %42.2'si (n=43) erkek, %57.8'i (n=59) kadındı. Verici adaylarının alıcılara olan yakınlık dereceleri; %57.8'i (n=59) 1. derece akraba, %19.6'sı (n=20) eş, %22.5'i (n=23) diğer akraba ve tanıdık idi. Yakınlık derecelerine göre yapılan gruplandırmada; BDÖ, BAÖ ve SCL-90-R toplam puanı ile kişilerarası duyarlılık ortalaması gruplar arasında anlamlı düzeyde farklılık vardı.

Sonuç: Dünya ortalamasına göre ülkemizde canlı verici sayısı kadavra vericiye göre daha fazla olup, genellikle verici adayları eş, birinci derece akraba gibi yakın aile içindeki bireylerden oluşmaktadır. Bu sebeple; nakil sürecinden doğrudan ve dolaylı olarak etkilenen aile içi ve yakın akrabalar verici adayı/verici olarak daha fazla ruhsal ve sosyal yönden etkilenebilmektedirler. Nakil süreci gibi uzun bir tedavi ve bakım gerektiren bir durumu iyi yönetebilmek için alıcı yanında vericilerin de psikososyal durumlarını değerlendirerek bu sürece dahil etmek gerekmektedir.

Anahtar kelimeler: Anksiyete, depresyon, donör seçimi, organ nakli, yaşam kalitesi

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INTRODUCTION

Based on the increasing discrepancy between the number of patients in need of organ transplantation and cadaveric organs, living donor-organ transplantation for adults has been developed to address it. Although the use of living donors as an alternative source of liver grafts was introduced into clinical practice a relatively short time ago, this procedure has gained a tremendous amount of support by both the public and transplant community. However, there are numerous questions that remain unanswered regarding the overall safety and long-term complications associated with this procedure. Additionally, there are no regulatory rules and practice standards in the living donors arena. So, it seems that to ensure the health of the donor is not harmed by this process is the responsibility of the medical community (1).

The relationship between donor and recipient and the psychological motivation of potential donors are very important factors in transplantation. In fact, in one study, psychological contraindications were the second most frequent cause of rejection of donors (2). Therefore, psychiatric evaluations of the donor can seriously affect the transplant process. Additionally, certain authors have found a correlation between donors' quality of life and complications in the recipients (3,4), thereby supporting an association between the condition of the recipient and the well-being of the donor. As such, it could be argued that not only do recipients benefit from the procedure but the donors, too, by deriving psychological advantages (5).

Recently, transplantation surgeries aimed at transplanting from cadaver or living donors in cases of organ failure, such as that with the kidney, liver and bone marrow, have become one of the important alternative treatment methods, thanks to significantly increasing rates of success. During the transplant process, not only recipients, but also donors are mentally affected. In cases where organ donation is insufficient, just like the case in our country, relatives serve as substantial resources of transplantation. Extra benefits to be derived from transplanting organs from relatives are the increase in survival rates and much more suitable conditions for timing of surgery (6). Regarding the fact that prevailing social and cultural dynamics of our country make it much easier for recipients to find donors within their family (7) and that in such cases, donors act both as patient's relatives and as primary care providers, there may be more value in exploring donors' mental status and to what extent their quality of life is affected. There are a plethora of studies that have examined psychiatric properties both at the dawn of diseases and in the subsequent process of progressing symptoms. However, the number of studies dealing with the extent to which donors are affected by the transplant process is remarkably low. As donors are mostly family members or close relatives in our country, their existing psychiatric state and quality of life may indirectly affect the transplant process and transplant patients for whom they provide care.

Psychiatrists and other mental health professionals typically assist with evaluating and treating psychiatric and behavioral issues in transplant candidates, recipients and living organ donors (8). In the present study, we intend to evaluate the psychiatric condition of the donors prior to transplantation as well as their levels of anxiety, depression and quality of life.

METHOD

This study was conducted at Sisli Florence Nihgtingale Hospital between May 2015 and February 2016 consisting of the volunteers who were oriented by the Transplant Center of our hospital to the Psychiatry Outpatient Clinic as organ donor candidates, whose psychiatric examination was performed on the subject based on whether or not they were a donor candidate and if they acknowledged to take part in the research. Our study featured a mixed group of 102 donor candidates, formed by male and female candidates who applied to our hospital for liver, kidney, and bone marrow transplants. Verbal and written informed consent was taken from the cases and control group. Ethics committee approval for the study was obtained from the Ethical Review board of Istanbul Bilim University. Having a cross-sectional clinical nature, our study included volunteers aged between

18 and 65 that accepted to take part in the study and who were primary school graduates at a minimum. There was no one who was dropped out of the study. Cases of psychiatric medication and histories of psychiatric treatment were excluded. Medical and psychiatric histories of cases were evaluated according to the information received from relatives, volunteers themselves, and hospital records. When volunteers signed the consent form, they were then provided with the socio-demographic data collection form prepared by us to gather socio-demographical characteristics, psychiatric family history, psychiatric personal history, and frequency of smoking and alcohol use. Finally, in order to perform a psychiatric evaluation of donor candidates, the Socio-demographic Data Collection Form, DSM-IV Clinical Interview Form – Clinical Version Structured for Axis Diagnoses (SCID-I/CV), Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI), Symptom Checklist (SCL-90-R), and SF-36 Quality of Life Survey (SF-36) were administered.

Measures

Patient Follow-up Form (Socio-demographic and Clinical Data collection Form): Having been filled in by the physician, this form included the questions relating to age, sex, marital status, educational background, working status, level of income, smoking, and alcohol and drug use.

DSM-IV Clinical Interview Form - Clinical Version Structured for Axis Diagnoses (SCID-I/CV): SCID-I is a clinical interview form that was developed by First et al. (9) in 1997 for DSM-IV Axis I disorders. The validity and reliability of the Turkish version SCID-I/CV was confirmed (10).

Beck Anxiety Inventory (BAI): This scale is a self-report inventory measuring the frequency of anxiety symptoms experienced by individuals. It consists of 21 items and is scored from 0 to 3 on the basis of Likert scaling. Higher total score indicates greater intensity of anxiety (11). The validity and reliability of the Turkish version had already been confirmed (12).

Beck Depression Inventory (BDI): This inventory measures emotional, cognitive, somatic, and motivational components encountered in depression. Its goal is not to diagnose depression but to establish the severity of depressive symptoms objectively. Each of the 21 symptom categories has four choices. Each item is scored on a scale value of 0 to 3. The obtained scores are then summed so as to obtain an overall depression score. Higher total scores indicate higher severity of depression (13). The validity and reliability for Turkey has already been verified (14).

Short Form 36 (SF-36) Quality of Life Survey: Having been developed and launched by the Rand Corporation (15) in order to measure quality of life, this survey is a self-report inventory with generic benchmark properties. It was initially created to measure quality of life in patients with physical disease. However, it has been successfully used for healthy subjects as well as those with psychiatric disorder. It has the ability to capture both negative and positive aspects of health status, and it is also very sensitive to minor changes in disability. Consisting of 36 items, SF-36 reveals eight dimensions of health, including physical functioning, role limitations (arising from physical and emotional issues), social role functioning, mental health, vitality (energy), bodily pain, and general health perceptions. This scale produces no raw score; it only yields a total score of the eight dimensions. Scores for each sub-section range from 0 to 100, with higher scores indicating better overall health status. A total score for the entire scale cannot be calculated. Validity and reliability study for the Turkish version of this survey was conducted by Kocyigit et al. (16).

Symptom Checklist (SCL-90-R): This is a self-report instrument whereby psychiatric symptoms are verified. It consists of 90 items and evaluates 9 distinct symptom dimensions (somatization, obsessive-compulsive disorder, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism, and a category of additional items which help clinicians

assess other aspect of symptoms). This instrument was developed by Derogatis et al. (17) to determine individuals' level of psychiatric symptoms and the areas into which they have proliferated. Validity and reliability of this scale has been demonstrated for various patient groups. It was assessed by Dag (18) for validity and reliability of its Turkish version. SCL-90-R is currently being used as a valid and reliable scale in our country in terms of psychopathology. With its 90 items incorporating psychiatric symptoms and complaints, the scale was structured to create evaluations for nine individual sub-tests. These sub-tests are somatization, obsessive compulsive symptoms, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism, and additional items. For each item included, one of the following choices is marked: "not at all (0)", "low (1)", "moderate (2)", "high (3)", and "extremely (4)", scoring ranges from 0 to 4 for each item. Subscale scores are obtained by summing up the scores marked divided by the number of items. Subscale scores also range from 0.00 to 4.00. In addition to this assessment, the major functionality of SCL-90-R manifests itself in the GSI (Global Symptom Index), PST (Positive Symptom Total), and PSDI (Positive Symptom Distress Index). Any GSI score lower than 1.00 indicates that symptoms are not at a psychopathological level, while any GSI score higher than 1.00 demonstrates the existence of a psychopathological state (19).

Statistical Analysis

SPSS version 15.00 (SPSS Inc., Chicago, IL, United States) was employed to conduct the data analysis. Continuous variables were expressed in terms of average±standard deviation, whereas discrete variables were expressed in terms of numbers and percentage values. Whether or not continuous variables were distributed normally was determined by using the Kolmogorov-Smirnov test. In cases where continuous variables were non-normally distributed, Kruskal-Wallis testing was performed for multiple group comparisons while Bonferroni-adjusted Mann-Whitney U testing was utilized for post hoc (forward duo) comparisons. A value of less than 0.05 was accepted to be statistically significant.

RESULTS

In the study, 41.64±12.02 was the average age of the cases that participated 42.2% (n=43) being male and 57.8% (n=59) being female. In terms of educational background, subjects had the following distribution: 8% (n=8) were uneducated; 56.9% (n=52) were primary school graduates; 21.6% (n=22) were high school graduates; and 13.7% (n=14) were university graduates. When it came to marital status, 24.5% (n=25) of patients were single/widowed/divorced and 75.5% (n=77) were married. In terms of alcohol use, 74.5% (n=76) did not drink alcohol whereas 2% (n=2) drank alcohol every day, 8.8% (n=9) drank once a week, and 14.7% (n=15) drank once a month or less. With respect to smoking habits, 56.9% (n=58) were non-smokers, 7.8% (n=8) smoked 1-10 cigarettes/day, 14.7% (n=15) smoked 11-20 cigarettes/day and 20.6% (n=20.6) more than 20 cigarettes/day. Out of all subjects, 59.8% (n=61) were kidney donor candidates, 31.4% (n=32) were liver donor candidates, and 8.8% (n=9) were bone morrow donor candidates. The degree of affinity between donors and recipients was as follows: 57.8% (n=59) were first-degree relatives, 19.6% (n=20) were spouses, and 22.5% (n=23) were other relatives and/or close relations. Donor candidates produced an average BDI score of 3.14±4.08 and BAI score of 8.05±6.27.

In dividing donor candidates into groups by the degree of their affinity to recipients, there were statistically significant differences between BDI (spouse > first-degree relative > other relatives and close relations, F:7.16, $p<0.05$), BAI (spouse > first-degree relative > other relatives and close relations, F:18.14, $p<0.05$), and SCL-90 total scores and interpersonal sensitivity subscale scores (spouse > first-degree relative > other relatives and close relations, F:15.48, $p<0.05$). On the other hand, no statistically significant difference appeared in terms of average scores for the SF-36 scale ($p>0.05$) (Table 1).

Table 1: BDI, BAI, SCL-90, and SF-36 score averages vs. degree of affinity of donor candidates

	I. group (n=59)		II. group (n=20)		III. group (n=23)			
	Mean	SD	Mean	SD	Mean	SD	F*	p
BDI	2.86	3.95	5.01	5.11	2.26	2.95	7.16	0.02**
BAI	6.76	5.26	13.50	7.22	6.65	5.39	18.14	<0.01**
SCL-1	0.53	3.37	0.18	0.18	0.08	0.05	4.58	0.10
SCL-2	0.23	0.16	0.25	0.19	0.21	0.14	0.08	0.96
SCL-3	0.16	0.08	0.22	0.07	0.13	0.07	15.48	<0.01**
SCL-4	2.86	0.12	0.21	0.24	0.14	0.09	1.64	0.43
SCL-5	6.76	0.09	0.12	0.07	0.13	0.09	0.15	0.92
SCL-6	5.10	0.47	0.27	0.32	0.32	0.33	0.47	0.79
SCL-7	0.53	0.11	0.09	0.10	0.15	0.11	2.83	0.24
SCL-8	0.23	0.78	0.95	1.22	0.59	0.80	0.33	0.84
SCL-9	0.16	0.11	0.15	0.07	0.14	0.14	0.47	0.79
SCL-10	0.14	0.13	0.31	0.08	0.25	0.14	2.58	0.24
SCL-11	2.65	3.76	2.79	0.99	2.19	0.97	4.72	0.09
SF-36-1	0.34	2.33	28.10	2.74	28.47	2.17	0.37	0.82
SF-36-2	0.12	4.31	19.00	1.98	7.43	1.50	1.30	0.52
SF-36-3	0.57	1.07	2.40	0.50	2.17	0.57	2.34	0.31
SF-36-4	0.14	2.46	13.90	1.16	14.00	1.16	0.20	0.90
SF-36-5	0.26	2.30	14.80	1.98	14.78	2.39	0.18	0.91
SF-36-6	0.10	1.89	6.50	1.27	6.08	1.23	1.33	0.51
SF-36-7	28.15	1.10	5.35	0.93	5.13	1.01	1.80	0.40
SF-36-8	7.79	3.30	19.00	2.29	19.17	1.61	0.03	0.98

F: ANOVA test value, *Post hoc assessment Tukey test, **p<0.05, SD: Standard Deviation, I. group: First-degree relative; II.group: Spouse; III. group: Other relatives and relations
SCL-1: somatization, SCL-2: obsessive-compulsive, SCL-3: interpersonal sensitivity, SCL-4: depression, SCL-5: anxiety, SCL-6: hostility, SCL-7: phobic anxiety, SCL-8: paranoid ideation, SCL-9: psychoticism, SCL-10: additional, SCL-11: total, SF-36-1: physical function, SF-36-2: physical role limitation, SF-36-3: pain, SF-36-4: general health, SF-36-5: energy, SF-36-6: social function, SF-36-7: emotional role limitation, SF-36-8: mental health

Table 2: BDI, BAI, SCL-90, and SF-36 score averages of donor candidates vs. organ to be transplanted

	Kidney (n=61)		Liver (n=32)		Bone marrow (n=9)			
	Mean	SD	Mean	SD	Mean	SD	F*	p
BDI	3.42	3.95	2.25	3.03	4.44	7.23	3.18	0.20
BAI	10.31	6.38	4.81	4.60	4.33	3.60	31.93	<0.01**
SCL-1	0.56	3.31	0.07	0.05	0.07	0.06	13.31	<0.01**
SCL-2	0.24	0.17	0.19	0.13	0.33	0.20	3.54	0.17
SCL-3	0.17	0.08	0.13	0.08	0.20	0.09	5.27	0.07
SCL-4	0.17	0.18	0.13	0.10	0.11	0.08	1.09	0.57
SCL-5	0.12	0.08	0.13	0.10	0.10	0.09	1.32	0.51
SCL-6	0.33	0.47	0.31	0.32	0.33	0.36	0.19	0.90
SCL-7	0.11	0.11	0.16	0.11	0.12	0.11	2.81	0.24
SCL-8	0.76	1.02	0.40	0.54	0.74	0.86	4.56	0.10
SCL-9	0.15	0.11	0.14	0.08	0.10	0.07	1.32	0.51
SCL-10	0.28	0.11	0.25	0.14	0.25	0.09	1.90	0.38
SCL-11	2.94	3.68	1.94	0.89	2.39	0.87	5.99	0.04**
SF-36-1	28.05	2.52	28.37	3.89	28.77	1.48	0.55	0.75
SF-36-2	7.67	3.43	8.06	3.89	6.77	1.48	1.43	0.48
SF-36-3	2.44	0.95	2.12	0.83	2.22	0.44	6.21	0.04**
SF-36-4	13.47	1.90	13.96	2.40	14.11	1.16	4.70	0.09
SF-36-5	0.28	2.40	14.90	2.03	15.88	1.61	1.91	0.38
SF-36-6	2.94	1.45	6.18	2.08	5.88	1.05	5.30	0.07
SF-36-7	28.05	1.05	4.96	1.12	5.33	0.70	0.66	0.71
SF-36-8	7.67	2.81	18.78	3.11	19.44	1.33	0.30	0.86

F: ANOVA test value, *Post hoc assessment Tukey test, **p<0.05, SD: Standard Deviation
SCL-1: somatization, SCL-2: obsessive-compulsive, SCL-3: interpersonal sensitivity, SCL-4: depression, SCL-5: anxiety, SCL-6: hostility, SCL-7: phobic anxiety, SCL-8: paranoid ideation, SCL-9: psychoticism, SCL-10: additional, SCL-11: total, SF-36-1: physical function, SF-36-2: physical role limitation, SF-36-3: pain, SF-36-4: general health, SF-36-5: energy, SF-36-6: social function, SF-36-7: emotional role limitation, SF-36-8: mental health

When we divided the donor candidates into groups based on organ to be transplanted, there were statistically significant differences among groups in terms of BAI (kidney > liver > bone marrow, F:31.93, p<0.05), higher than those of the donors in the other group), SCL-90 total score (kidney > liver > bone marrow, F:5.99, p<0.04), and SCL-90 somatization subscale scores (kidney > liver > bone marrow, F:13.31, p<0.05). The SF-36 pain subscale score was (kidney > liver > bone marrow, F:6.21, p<0.05), whereas no statistically significant difference was observed among other subscale scores (p>0.05) (Table 2).

DISCUSSION

With the present study, the goal was to conduct a psychiatric evaluation of organ donor candidates who applied to our hospital as donor candidates and to investigate their levels of anxiety, depression and quality of life. A psychiatric evaluation should include a review of whether or not the donor had enough knowledge about the potential losses of organ donation and transplant rejection, whether or not their expectations about transplantation were realistic, whether or not there was any element of oppression for them, and whether or not there were any factors that damaged donor-recipient relationships after transplantation as well as an examination of the donor's ambivalence severity, decision-making ability, psychiatric history, psychological motivation in conscious or unconscious processes, and family-related dynamics (20).

It was confirmed that in the context of organ transplants in our country, donors are mostly first-degree relatives of recipients. Close relatives of the patients were found to have experienced certain psychiatric disorders, such as anxiety, after transplantation (21). Moreover, family members were reported to have had difficulties in normalizing their interactions either within or outside the family during the post-transplantation period (22). In one study, donors were categorized according to the following subgroups: parents donating for their children; and children donating for their parents, siblings, spouses, other relatives, and nonrelatives. In comparison with healthy controls, parents donating for their children were significantly less stressed beforehand, demonstrating fewer anxiety and depression symptoms. Adult children donating for their parents had the highest mental burden and the lowest emotional quality of life (23). In a comparison study, caregivers of continuous ambulatory peritoneal dialysis patients (CAPD) had significantly higher rates of anxiety and depression compared with the renal transplant group. Superb sleep quality rates for caregivers of renal transplants versus CAPD patients were 88.7% (n=47) and 61.7% (n=37), respectively. Poor sleep quality was significantly higher among caregivers of CAPD compared with those for renal transplant patients. Caregiver burden scores were significantly greater in caregivers of CAPD patients compared with renal transplant patients. This study indirectly indicated that renal transplants improved quality of life and decreased psychiatric symptoms among caregivers of end-stage renal disease patients (24). Similarly, the degree of affinity between donor candidates and recipients had the following distribution: 57.8% (n=59) were first-degree relatives, 19.6% (n=20) were spouses, and 22.5% (n=23) were other relatives or close relations. The fact that most donor candidates were first-degree relatives and spouses brought to mind the possibility that it might affect both the transplant process and donor-recipient relationship after transplantation. In the context of another study on the psychosocial impacts of kidney donation, out of 167 donors, 90% reported that they would make the same choice if faced with the same situation again, 15% reported that they believed the transplantation negatively affected their health status, and 23% reported that they incurred financial losses because of transplantation. Having a conflicting relationship with recipients before transplantation, the view that informing the donor before transplantation is not sufficient, and the belief that it leads to negative impacts on health and financial status were all found to be negatively associated with donor satisfaction. These findings suggest that the majority of donors are slightly ambivalent to the decision-making stage, feel at peace with their choices in the long run, and they do not face negative outcomes regarding their health status, financial gain or family relations (25). In parallel, our

study revealed statistically significant higher interpersonal sensitivity subscale scores as well as higher anxiety and depression scores in the spouse group versus the other groups of donor candidates. This gave rise to the possibility that most donor candidates formed by first-degree relatives and spouses brought might have facilitated the emergence of psychiatric symptoms. Moreover, kidney donor candidates generated higher symptom checklist total scores, somatization scores, and anxiety scores compared to other donors. This may be associated with the proposition that kidney transplantation patients more likely had certain chronic processes before transplantation, and, therefore, family members were likely affected more so by this long-lasting disease.

The transplant process may also affect the quality of life of both donor and recipient. The fact that donor candidates are mostly first-degree relatives of recipients in our country called to mind that quality of life scores would be much more affected among donors. As a matter of fact, intra-family donors were not able to go beyond the transplant process so quickly - they directly witnessed the compromised physical and mental integrity of the recipient, obviously possibly affecting the psychological balance and quality of life of donors. Reports suggest that the majority of living donors experience such levels of health-related quality of life (HRQOL) as similar to or exceeding that of the general population (26-28). Nevertheless, it has been consistently shown that select donors (<5%) experience significant psychological distress or retain highly negative attitudes about donation (29). In one study, potential donors who were overweight or obese, less educated, had prior psychiatric difficulties, were not white, or not first-degree relatives of the recipient represented groups at risk for poor HRQOL. New or enhanced efforts of predonation counseling and education, particularly weight loss counseling and post-donation monitoring efforts, could improve outcomes of these donors (30). Consistent with the exiting literature, our work showed that there was no significant difference in terms of the quality of life when donor candidates were grouped by degree of affinity, on the other hand, the quality of life-pain subscale score was higher for kidney donor candidates.

Limitations of this study can be expressed as our sample group having been pulled from only one center, insufficient size of the participant sample, and the data having been restricted with the information gathered from donor candidates and their relatives.

It was observed that donor candidates in our sample group were mostly close relatives of recipients, reflecting the general trend within Turkish society. In the face of intra-family individuals also carrying the weight of being care providers being affected by the transplant process, one can propose that when donors are first-degree relatives and spouses, it would be more likely for psychiatric symptoms to arise, leading to deterioration in their quality of life. Furthermore, the fact that kidney donor candidates had higher anxiety, somatization and psychiatric symptom total scores as well as higher quality of life-pain subscale scores versus other donor candidates may be associated with the proposition that family members may have remained affected for a longer period of time over the course of a long-lasting disease. For these reasons, it is of as much importance as recipients to conduct psychiatric evaluation of donors both before and after transplantation and to provide adequate psychosocial support and treatment where necessary.

Contribution Categories	**Name of Author**
Development of study idea	F.I., E.F., S.Z., S.K., B.A.
Methodological design of the study	F.I., E.F., S.Z., S.K., B.A.
Data acquisition and process	F.I., E.F., O.K., F.G., S.K., B.A.
Data analysis and interpretation	F.I., S.Z., O.K., F.G., E.F., A.C.
Literature review	F.I., S.Z., S.K., O.K., F.G., B.A., A.C.
Manuscript writing	F.I., E.F., S.Z., S.K., O.K., F.G., A.C.
Manuscript review and revisation	F.I., S.Z., S.K., B.A., A.C.

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