RESEARCH ARTICLE

Post-donation health-related quality of life, mood and life satisfaction in living-kidney donors; an explorative study from kidney transplant centre, Lahore Pakistan

Shujah Muhammad[1], Asad Bashir[2], Umar Farooq[3], Nadeem Bin Nusrat[4], Fiaz Ahmad Tauqeer[5], Saira Imtiaz[6]

Abstract

Objective: To explore post-donation life satisfaction, quality of life and mood status among kidney donors.

Method: The cross-sectional study was conducted from February 5 to July 10, 2021, at the Department of Kidney Transplant Surgery, Pakistan Kidney and Liver Institute and Research Centre, Lahore, Pakistan, and comprised living kidney donors who had donated a kidney at least 6 months before the interview date. Data was collected through telephonic interviews, and, in addition to demographics, the questionnaire comprised the World Health Organisation Quality of Life Brief Version scale, the Satisfaction with Life Scale, and the Patient Health Questionnaire and General Anxiety Disorder. Data was analysed using SPSS 20.

Results: Of the 41 subjects, 22(53.7%) were females and 19(46.3%) were males. The overall mean age was 41.10±9.648 years (range: 19-62 years). The most common donor-recipient relationship was brother-sister 10(34.1%) and wife-husband 10(24.4%). Among the donors, there was a significant positive correlation between quality of life and satisfaction with life (r=0.381, p=0.014). Quality of life had a negative correlation with anxiety (r=-0.429, p=0.005), and a negative but non-significant association with depression (r=-0.283, p=0.073). Anxiety and depression were highly positively correlated (r=0.681, p=0.000). Quality of life was significantly associated with donor age (p=0.029) with a negative effect (Beta=-0.588), while satisfaction with life had a positive relationship with age (Beta=0.147).

Conclusion: Higher life satisfaction among living kidney donors was associated with an improved quality of life, while increased anxiety levels were linked to a lower quality of life. Age was a critical determinant, with older donors reporting a lower quality of life.

Key Words: Quality of life, mood, life satisfaction, living kidney donors, explorative study, post-donation.

(JPMA 74: 706; 2024) **DOI: https://doi.org/10.47391/JPMA.100088**

Introduction

Kidney transplantation is one of the most commonly performed transplant surgeries globally, known to significantly enhance both patient survival and quality of life (QOL) compared to long-term dialysis. Altruism has emerged as the primary motivation for kidney donation, but in Pakistan, the shadows of illicit transplant procedures still persist, raising concerns within the healthcare and legal communities. The closely-knit familial dynamics in this region sometimes exert immense pressure on individuals to donate kidneys, making it essential to explore the multifaceted impact of kidney donation on the physical and mental wellbeing of donors. In Pakistan, an organ transplantation ordinance was passed in 2007, and since then the organ trade has markedly reduced, which was preliminary considered an incentive for donors. A study in Pakistan suggested that 88% of the donors had no improvement in their socioeconomic status (SES) post-donation[1] Studies have reported that donors suffered from psychological issues if the donation had been made as an act of trade compared to those having done it for altruistic reasons. Literature suggests that life satisfaction (LS) was more pronounced in kidney donors than in non-donors, but mood symptoms were slightly more prevalent in donors than non-donors[2-4]. In recent years, there has been a growing concern regarding the long-term health outcomes and QOL of living kidney donors (LKDs). Studies have shown that kidney donation (KD) does not increase mortality risk[5]. While deceased donors provide most organs, there is a growing need for LKDs due to the shortage of available organs[6]. Living KD involves major surgery and potential risks, but many donors are motivated by the desire to help others and improve their own health related QOL[7]. Research on the effects of KD on donors has produced mixed results. Some studies have suggested

1,4,6 Department of Urology, Pakistan Kidney and Liver Institute and Research Centre, 2,3,5 Department of Kidney Transplant Surgery, Pakistan Kidney and Liver Institute and Research Centre, Lahore, Pakistan.

Correspondence: Saira Imtiaz. Email: saira.khan@pkli.org.pk

ORCID ID. 0000-0003-1197-7565

Submission complete: 04-06-2023 **Review began**: 24-07-2023

Acceptance: 13-01-2024 **Review end:** 29-11-2023

that donors experience significant improvements in their QOL post-donation, while others have reported negative effects, such as fatigue, pain and anxiety[8,9]. While the benefits of KD for the recipient are well-documented, the effects of donation on the donor's mood and LS are still not fully understood.

Physical health, psychological wellbeing, social interactions and environmental factors are all evaluated as part of the World Health Organisation Quality of Life Brief Version (WHOQOL-BREF) scale[10]. It describes how people perceive their place in life concerning their objectives, expectations, standards and concerns as well as the culture and value systems in which they live. The QOL in 4 domains can be impacted by a variety of variables, including age, gender, rural or urban settings,[11,12] as well as health and disease status[13]. There is a need to comprehensively investigate the mental and emotional wellbeing of kidney donors in Pakistan. The current study was planned to explore post-donation life satisfaction, QOL and mood status among LKDs.

Subjects and Methods

The cross-sectional study was conducted from February 5 to July 10, 2021, at the Department of Kidney Transplant Surgery, Pakistan Kidney and Liver Institute and Research Centre (PKLI&RC), Lahore, Pakistan, which is a purpose-built transplant centre that provides pre-transplant evaluation and post-transplant care, and caters to patients from across the country.

After approval from the institutional ethics review board, sample size justification was ensured based on the specific aims of the study, inclusion and exclusion criteria [14], careful psychological assessment of participants, use of validated instruments, and the statistical methods employed.

The sample was raised using convenience purposive sampling technique from among LKDs with a minimum post-donation period of 6 months. At PKLI&RC, LKD nephrectomy is done either through hand-assisted retroperitoneoscopic (HARS), hand-assisted laparoscopic (HALS), or open surgeries. The usual hospital stay is 3 days. Psychological evaluation of potential donors is done as part of the standard pre-transplant procedure. Only those individuals who are deemed psychologically fit by the institutional psychologists were included in the current study. The pre-transplant evaluation process was thorough, and any hint of external pressure or coercion during the assessment resulted in the rejection of those individuals as potential donors. Only those who met all elements of the inclusion criteria were included, while the rest were excluded.

After taking informed consent, data was collected through telephonic interviews, and, in addition to demographics, the questionnaire comprised the WHOQOL-BREF, Satisfaction with Life Scale (SWLS), 9-item Patient Health Questionnaire (PHQ-9) and the General Anxiety Disorder (GAD) questionnaire. Telephone interviews were done to avoid unnecessary travel of the participants, and to ensure the observance of standard operating procedures (SOPs) related to the coronavirus deisease-2019.

The reliability of the questionnaires was assessed through a test-retest reliability check. All items exhibited Cronbach's alpha values ranging from 0.50 to 1.00, or intraclass correlation coefficient (ICC) values ranging from 0.55 to 1.00, indicating fair to excellent reliability (Table 1).

Table-1: Reliability check of WHOQOL-BREF, PHQ-9, GAD and SWSL Satisfaction with Life scales.

Scales	No. of items	Cronbach's Alpha
QOL (All domains)	26	0.764
Depression	9	0.809
Anxiety	7	0.728
Life Satisfaction	5	0.759

WHOQOL-BREF: World Health Organisation Quality of Life Brief Version, PHQ-9: Nine-item Patient Health Questionnaire, GAD: General Anxiety Disorder, SWLS: Satisfaction with Life Scale.

WHOQOL-BREF has 26 items, and it has been used in different languages[10,15,16]. Assessing health-related QOL, the scale has 4 domains; physical health, psychological health, social relationships, and environment. SWLS has 5 items, PHQ-9 has 9 items and GAD has 7 items[17-20]. All these tools were translated into Urdu based on the validated versions used in a prior study[21-24].

Data was analysed using SPSS 20. Data was analysed as frequencies and percentages, mean ± standard deviation, as appropriate. Quantitative data was analysed using bivariate correlation. Linear regression was applied to examine the relationships between independent and dependent variables. $P<0.05$ was considered significant.

Results

With a response rate of 100%, there were 41 subjects' 22(53.7%) females and 19(46.3%) males. The overall mean age was 41.10±9.648 years (range: 19-62 years). The most common donor-recipient relationship was brother-sister 10(34.1%) and wife-husband 10 (24.4%). The surgical procedure was HARS in 15(36.6%) cases, HALS in 24 (58.5%) and open surgery in 2 (4.9%). Complications post-donation was reported by 1 (2.4) patient and post-operative readmissions were required by 2(2.9%) patients

Table-2: Demographics and descriptive data (N=41).

.

Variable	Mean±SD	Minimum	Maximum
Age in years	**41.10±9.648**	**19**	**62**
Variable	**Categories**	**Frequency (n)**	**Percentage %**
Gender			
	Male	19	46.3
	Female	22	53.7
Marital status			
	Unmarried	2	4.9
	Married	37	90.2
	Divorced	2	4.9
Relation of donor with recipient			
	Brother	14	34.1
	Sister	8	19.5
	Mother	3	7.3
	Father	4	9.8
	Son	1	2.4
	Wife	10	24.4
	Paternal aunt	1	2.4
Type of surgery			
	Open	2	4.9
	HARS	15	36.6
	HALS	24	58.5
Post-operative complications			
	Yes	1	2.4
	No	40	97.6
Outcome of kidney in recipient			
	Well	38	92.7
	Not Well	3	7.3
Post-operative readmissions			
	Yes	2	4.9
	No	39	95.1
Difficulty in sexual life post-donation			
	Yes	Nil	Nil
	No	1	100

SD: Standard deviation.

for were cholecystectomy and COVID-19 (Table 2).

Among WHOQOL-BREF domains, mean physical health score was 73.22±12.527, psychological health 69.34±12.216, social relationship 73.78±14.061 and environment 63.85±11.657. Mean PHQ-9 score was 3.66±4.270, mean GAD was 3.32±3.150 and mean SWLS score was 24.88±4.622 (Table 3).

Table-3: Quality-of-life (QOL), depression, anxiety and life satisfaction scores.

Factors affecting LKD	Minimum	Maximum	Mean	Std. Deviation
QOL Domain 1 Physical health	50	100	73.22	12.53
QOL Domain 2 Psychological	25	100	69.34	12.22
QOL Domain 3 Social relationship	50	100	73.78	14.06
QOL Domain 4 Environment	38	94	63.85	11.66
Total PHQ-9 score for depression	0	24	3.66	4.27
Total GAD for anxiety	0	11	3.32	3.15
Total SWLS score	14	31	24.88	4.62

PHQ-9: Nine-item Patient Health Questionnaire, GAD: General Anxiety Disorder, SWLS: Satisfaction with Life Scale.

Table-4: Correlations between quality of life (QOL) and psychological factors.

Correlation	Pearson Correlation
Quality of Life (QOL) with Satisfaction with Life (SWLS)	0.381*
QOL with Generalized Anxiety (GAD)	-0.429**
QOL with Depression (PHQ-9)	-0.283

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

PHQ-9: Nine-item Patient Health Questionnaire, GAD: General Anxiety Disorder, SWLS: Satisfaction with Life Scale.

Bivariate correlation analysis indicated a significant positive correlation between QOL and satisfaction with life (r=0.381, p=0.014). No significant correlation was found between satisfaction with life and anxiety (r=-0.181, p=0.257) or depression (r=-0.159, p=0.320). Quality of life had a negative correlation with anxiety (r=-0.429, p=0.005), and a negative but non-significant association with depression (r=-0.283, p=0.073) (Table 4). There was a highly significant positive correlation between anxiety and depression (r=0.681, p=0.0001).

Linear regression analysis showed QOL was significantly associated with donor age (p=0.029) with a negative effect (Beta=-0.588), while satisfaction with life had a positive relationship with age (Beta=0.147) (Table 5).

Table-5: Linear regression analysis.

Predictor	Unstandardised	Standardised	t-Value	p-Value
Constant	90.235		5.735	0.000
QOL	-0.785	-0.588	3.464	0.001
total PHQ-9	0.110	0.048	0.246	0.807
total GAD	-0.950	-0.310	-1.483	0.147
total SWLS	0.307	0.147	0.943	0.352

QOL: Quality of Life, PHQ-9: Nine-item Patient Health Questionnaire, GAD: General Anxiety Disorder, SWLS: Satisfaction with Life Scale.

Discussion

The current findings indicated that most donors experienced little change in their health-related QOL, mood or LS over time post-donation. Mean value of QOL domains showed that most of the respondents had good QOL in terms of physical health, moderately good QOL in terms of psychological health, good social relationships and moderately good QOL in terms of the environment [17]. Among other factors, most

respondents had non-minimal severity of depression [18], mild anxiety [19] and satisfaction with life [3] post-donation. A small proportion of donors reported poorer health-related QOL, mood, or LS. the results are in line with earlier studies[25,26]. The findings further support earlier results[27,28] that most respondents are likely to experience psychological advantages from donating a kidney, including feelings of fulfilment and compassion. The small proportion of donors who reported poorer outcomes may represent a group of donors who were particularly vulnerable to the demands of donation, such as those with pre-existing conditions. The finding that younger donors may be at greater risk of poorer outcomes was consistent with previous research[29] and underscores the need for careful donor selection and pre-donation counselling.

Between QOL and LS there was a positive relationship. LS in LKD improves after KD due to which QOL improves[26]. Whereas QOL with anxiety showed that anxiety levels increased and that decreased the QOL in respondents with poor results, indicating that anxiety has a negative impact on QOL. Finally, QOL with depression showed no correlation. One study found that donors reported high levels of satisfaction with their decision to donate, and experienced improved mental health and wellbeing[15], but among the respondents, good QOL and satisfactory LS was noted. However, not all studies have found positive effects of donation on the donor's mood and LS. Age is one factor that can have an impact on QOL across the 4 domains[11, 12], which was consistent with the current findings.

The current study has several limitations. First, the small sample size may have hindered the ability to identify substantial variations in donor outcomes. The lack of a particular statistical technique may be viewed as a constraint, affecting statistical power, even though we based our sample size on particular objectives and criteria. We acknowledge that there may have been an impact on precision even though we adhered to accepted protocols for cross-sectional studies [14]. To maintain openness and guide future studies, this is described in more detail. Second, self-report metrics were used, which could be biased or inaccurate. Finally, it was a single-centre study with limited generalisability of the findings.

Conclusion

Higher LS was associated with improved QOL, while elevated anxiety levels were linked to low QOL. Age played a pivotal role, with older donors experiencing a lower QOL.

Disclaimer: None.

Conflict of Interest: None.

Source of Funding: None.

References

1. Naqvi SAA, Ali B, Mazhar F, Zafar MN, Rizvi SAH. A socioeconomic survey of kidney vendors in Pakistan. Transpl Int 2007;20::934-9. doi.org/10.1111/j.1432-2277.2007.00529.x
2. Hanson CS, Chapman JR, Gill JS, Kanellis J, Wong G, Craig JC, et al. Identifying outcomes that are important to living kidney donors: A nominal group technique study. Clin J Am Soc Nephrol. 2018;13(6):916-926. doi:10.2215/CJN.13441217
3. Messersmith EE, Gross CR, Beil C A, Gillespie BW, Jacobs C, Taler SJ, et al. Satisfaction With Life Among Living Kidney Donors: A RELIVE Study of Long-Term Donor Outcomes. Transplantation.2014; 98: 1294–300. doi.org/10.1097/TP.0000000000000360
4. Matas AJ, Smith JM, Skeans MA, Thompson B, Gustafson SK, Stewart DE, et al. OPTN/SRTR 2013 Annual Data Report: kidney. Am J Transplant. 2015;15 Suppl 2:1–34. doi: 10.1111/ajt.13195
5. Muzaale AD, Massie AB, Wang MC, Montgomery RA, McBride MA, Wainright JL, et al. Risk of end-stage renal disease following live kidney donation. JAMA. 2014;311:579–86. doi: 10.1001/jama.2013.285141
6. Fehrman-Ekholm I, Elinder CG, Stenbeck M, Tydén G, Groth CG. Kidney donors live longer. Transplantation.1997;64:976-8. doi.org/10.1097/00007890-199710150-00007
7. Clemens KK, Thiessen-Philbrook HR, Parikh CR, Yang RC, Karley ML, Boudville N, et al. Psychosocial health of living kidney donors: a systematic review. Am J Transplant.2006;6:2965-77. doi.org/10.1111/j.1600-6143.2006.01567.x
8. Shi YX, Liu CX, Zhang HM, Huang YQ, Sun M, Wang WR, et al. Changes in the quality of life of living liver donors: a meta-analysis. Int J Nurs Stud. 2020;109. doi: 10.1016/j.ijnurstu.2020.103586
9. Organ Procurement and Transplantation Network. 2020.National Data. [online][cited 2023 March 15]. Available from: URL: https://optn.transplant.hrsa.gov/data/view-data-reports/national-data/.
10. World Health Organization. WHO-BREF: Introduction, administration, scoring and generic version of the assessment.Geneva: WHO;1996. [online][cited 2017 Aug 9]. Available from: URL: http://www.who.int/mental_health/media/en/76.pdf.
11. Apidechkul T. Comparison of quality of life and mental health among elderly people in rural and suburban areas, Thailand. Southeast Asian J Trop Med Public Health.2011; 42:1282–92.
12. Carta MG, Aguglia E, Caraci F, Dell'Osso L, Di Sciascio G, Drago F, et al. Quality of life and urban/rural living: preliminary results of a community survey in Italy. Clin Pract Epidemiol Ment Health.2012; 8:169–74. doi.org/10.2174/1745017901208010169
13. Bonomi AE, Patrick DL, Bushnell DM, Martin M. Validation of the United States version of the world health. Organization quality of life (WHOQOL) instrument. J Clin Epidemiol.2000; 53:1–12. doi.org/10.1016/s0895-4356(99)00123-7
14. Setia MS. Methodology Series Module 3: Cross-sectional Studies. Indian journal of dermatology,2016:61: 261–264. doi.org/10.4103/0019-5154.182410
15. Boulware LE, Ratner LE, Sosa JA, Cooper LA, LaVeist TA, Powe NR. Determinants of willingness to donate living related and cadaveric organs: identifying opportunities for intervention. Transplantation.2002; 73:1683-91. doi.org/10.1097/00007890-200205270-00029
16. Leung KF, Wong WW, Tay MSM, Chu MML, Ng SSW. Development and validation of the interview version of the Hong Kong Chinese WHOQOL- BREF. Qual Life Res. 2005; 14:1413–9.

doi.org/10.1007/s11136-004-4772-1
17. PositivePsychology.com. Quality of Life Questionnaires & Assessments. [Online]. [cited 2023 Jan 25]. Available from: URL:https://positivepsychology.com/quality-of-life-questionnaires-assessments/
18. HIV.UW.edu. Mental Health Screening: PHQ-9. [Online] [cited 2023 Jan 25]. Available from:URL: https://www.hiv.uw.edu/page/mental-health-screening/phq-9
19. HIV.UW.edu. Mental Health Screening: GAD-7. [Online] [cited 2023 Jan 25]. Available from:URL: https://www.hiv.uw.edu/page/mental-health-screening/gad-7
20. NovoPsych. Well-being Assessments: Satisfaction With Life Scale (SWLS). [Online] [cited 2023 Jan 25]. Available from:URL:https://novopsych.com.au/assessments/well-being/satisfaction-with-life-scale-swls/
21. Lodhi F, Raza O, Montazeri A, Nedjat S, Yaseri M, Holakouie-Naieni K. Psychometric properties of the Urdu version of the World Health Organization's quality of life questionnaire (WHOQOL-BREF). Med J Islam Repub Iran. 2017; 31:129. doi.org/10.14196/mjiri.31.129
22. Ahmad S, Hussain S, Akhtar F, Shah FS. Urdu translation and validation of PHQ-9, a reliable identification, severity and treatment outcome tool for depression. J Pak Med Assoc. 2018;68:1166–70.
23. Ahmad S, Hussain S, Shah FS, Akhtar F. Urdu translation and validation of GAD-7: A screening and rating tool for anxiety symptoms in primary health care. J Pak Med Assoc. 2017; 67:1536–1540.
24. Barki N, Choudhry FR, Munawar Kh. The satisfaction with life scale: Psychometric properties in Pakistani population. Med J Islam Repub Iran. 2020 (25 Nov); 34:159.
25. Ibrahim HN, Foley R, Tan L, Rogers T, Bailey RF, Guo H, et al. Long-term consequences of kidney donation. N Engl J Med.2009;360:459-69. doi: 10.1056/NEJMoa0804883
26. Rodrigue JR, Schold JD, Morrissey P, Whiting J, Vella J, Kayler LK, et al. Mood, body image, fear of kidney failure, life satisfaction, and decisional stability following living kidney donation: findings from the KDOC study. Am J Transplant.2017;17:2922-31. doi: 10.1111/ajt.14385
27. Reese PP, Boudville N, Garg AX. Living kidney donation: outcomes, ethics, and uncertainty. Lancet.2015;385(9981):2003-13. doi: 10.1016/S0140-6736(14)62484-3
28. Mjøen G, Hallan S, Hartmann A, Foss A, Midtvedt K, Øyen O, et al. Long-term risks for kidney donors. Kidney Int.2014;86:162-167. doi: 10.1038/ki.2013.501
29. Pawłowski M, Fila-Witecka K, Rymaszewska JE., Łuc M, Kamińska D, Rymaszewska J. Quality of life, depression and anxiety in living donor kidney transplantation Transplant Rev. 2020; 34: 100572. https://doi.org/10.1016/j.trre.2020.100572.

Author's Contributions

SM: Conception, design, acquisition, analysis, interpretation of data, final approval.

AB, UF, NBN, FAT: Conception, design, acquisition, analysis, interpretation of data.

SI: Conception, design, acquisition, analysis, interpretation of data, final approval, agreement to be accountable for all aspect of the work.