



Anxiety and depression among living kidney donors in tertiary care hospital of low resource country setting Nepal

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ABSTRACT

Introduction: Kidneys accounted for the majority of transplanted organs worldwide in 2018, according to the Global Observatory on Donation and Transplantation. Living kidney donors continue to have negative psychosocial effects after donation. We aimed to assess anxiety and depression among Nepalese living kidney donors. **Methods:** This was an observational, cross-sectional study conducted from May 2020 to January 2021. All patients who had undergone donor nephrectomy and had completed 6 months of post-donation period were included in the study. Anxiety and depression was assessed using the Hospital Anxiety and Depression Scale (HADS). Fischer exact and chi-square test was used to determine the association between variables and the level of significance was maintained at 5% with $p < 0.05$ considered statistically significant.

Results: A total of 147 kidney donors undergoing nephrectomies were included in the study. Among them 69.4% of participants were female and 55.8% of participants were aged 50 years or more. The prevalence of anxiety and depression among kidney donors was 27.9% and 6.2% respectively. Gender, earner, parental relations, occupation, and educational status were related to symptoms of anxiety among the living kidney donors. Similarly, earner was associated with symptoms of depression.

Conclusion: In addition to physical health measures, routine evaluations of kidney donors should include assessments of depression and other emotional disorders. The actual issue is to come up with effective treatments for depressive symptoms and to improve health outcomes following kidney donation.

1. Introduction

Organ transplantation is used to treat several disorders like end stage renal disease and cystic fibrosis, and it is often the only way to extend and improve the quality of a patient's life. Kidneys accounted for the majority of transplanted organs worldwide in 2018, according to the Global Observatory on Donation and Transplantation. Living donors provided 32,990 of the 90,306 kidneys transplanted that year [1]. Living kidney transplants have fewer postoperative complications, greater survival rates, and shorter waiting times than kidneys acquired from deceased donors [2,3]. Depending on the donor and recipient's mental health and personality variables, various aspects of the motivation to donate and expectations can be observed, such as the burden of

obligation, earning acceptance, developing a unique connection, desiring attention, retaining kidney ownership, and enhancing social participation [4].

Both the process of qualifying for living donation and the transplantation itself take a long time and are fraught with medical jargon and emotional strain for both the donor and the recipient. As a result, several psychopathological symptoms appear throughout the procedure and follow distinct trajectories. According to research, the experience of psychopathological symptoms may be influenced by the donor-recipient relationship, cultural variables, and both patients' personality features [5–8]. Anxiety and mood disorders impact 18.1% and 9.5% of adults in the United States each year, respectively, and have been linked to increased rates of impairment, non-compliance, acute illness, chronic

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illness exacerbations, and even death [9]. Living kidney donors continue to have negative psychosocial effects after donation [10–13]. If living kidney donors experience negative psychosocial effects, not only does this put the donor in a bad situation, but it also puts the transplant community at risk of losing supporters for living kidney donation. Our understanding of post-donation anxiety, despair, and regretting the donation, on the other hand, is still limited. Anxiety and depression are prevalent conditions in the general population. A nationwide cross-sectional study was conducted among a representative sample of 2100 Nepalese adults aged 18–65 years revealed that age and gender adjusted point prevalence for anxiety (16.1%), depression (4.2%), and combined comorbidity (5.9%), these factors were associated negatively with quality of life [14].

The increasing use of living donor kidneys in treatments has necessitated a more in-depth examination of the issues impacting the mental health of this population. There have been relatively few studies on this topic to date, and only a small percentage of them are prospective research. To the best of our knowledge, there is no study done among the Nepalese population to assess anxiety and depression among living kidney donors. These difficulties must be investigated to provide individualized treatment and reduce the psychological load on donors and recipients. Hence, we aim to assess anxiety and depression among patients who donate and receive kidneys from living donors. This study has been reported in line with the STROCSS criteria [15].

2. Methods

2.1. Study design and setting

This was an observational, cross-sectional study conducted at the Department of nephrology and transplantation at Tribhuvan University Teaching Hospital (TUTH), Kathmandu, Nepal from May 2020 to January 2021. Ethical clearance for the study was obtained from the Institutional Review Committee (IRC) of Institute of Medicine (IOM). (UIN no: researchregistry8053) Register Now - Research Registry.

2.2. Study participants and eligibility criteria

All patients who had undergone donor nephrectomy and had completed 6 months of the post donation period in TUTH were included in the study. A formal registry of all the donors is maintained at our department; which includes the pre transplant demographics and personal information, relevant investigations and follows up. The donors who had valid contact information were contacted by telephone and requested to participate in the study. Donors whose contact information was not valid or could not be contacted were conveyed the message through their recipient, who regularly came to follow up at the outpatient service and those donors also get included after that. Donors had to be present at the department to be included in the study. Informed consent was taken from donors to use their data and to be included in the study.

Inclusion criteria: All patients who have gone donor nephrectomies and completed six months of post donation period were included in the study.

Exclusion Criteria: Donors whose data were not available and who were not willing to participate were excluded from the study.

2.3. Sampling method and sample size

All the donors who could be contacted and fit in inclusion criteria were included in the study. Hence, no sampling was done for the study.

2.4. Study tools and techniques

A structured questionnaire was used to collect the data from the donors. Data were collected through face-to-face interviews by the

authors. Written informed consent was taken from all the patients. The donors who could not be contacted were contacted with help of recipients. Data were collected in two parts. Part I included a semi structured questionnaire related to socio demographic information, medical history, examination, and transplant information. Similarly, part II included a semi structured questionnaire about various aspects of kidney donation, anxiety, and depression using the Hospital Anxiety and Depression Scale (HADS) which was developed by Zigmond and Snaith in 1983 AD. It was validated among Nepalese people by Risal et al., in 2015 [16]. It consists of 7 items each for anxiety and depression. The cut-off scores of 8 for anxiety have a specificity of 0.78 and a sensitivity of 0.9. Similarly, the cut-off score of 8 for depression has a specificity of 0.79 and a sensitivity of 0.83 [17].

2.5. Study variables

The variables were categorized under the heading of socio-demographic factors, personal factors, and other variables of the study. The age and sex of the patient were included under sociodemographic factors. Similarly, patients' comorbidities, smoking, and alcohol consumption habits were recorded under personal factors. Age at donation, duration from transplantation, relation with the recipient, occupation before donation, present occupation status, income, earning status, and graft status.

2.6. Statistical analysis

Data from pro forma sheets were transferred to data sheets of computer software program (IBM), statistical package for social sciences (SPSS) version 22 for windows. The proportion was used for categorical variables. Fischer exact and chi-square test was used to determine the association between two categorical variables. The level of significance was maintained at 5% with $p < 0.05$ considered statistically significant.

3. Results

3.1. Demographic characteristics

A total of 147 living kidney donors undergoing nephrectomies were included in the study. Among them 69.4% of participants were female and 55.8% of participants were aged 50 years or more. The number of participants below 45 years of age was 47.6%. Most 42.2% of the donors were parents. Among the donors, 79.6% of them were working properly while 12.9% were working with problems. The details of the socio-demographic characteristics of the study are shown in [Table 1](#).

3.2. Association of anxiety with independent variables

The prevalence of anxiety among living kidney donors was 27.9% ([Fig. 1](#)). About 32.4% of the female had symptoms of anxiety and gender was significantly associated with anxiety ($p = 0.05$). Similarly, earner, parental relations, occupation, and educational status were significantly associated. The details of the association of anxiety with independent variables are shown in [Table 2](#).

3.3. Association of depression with independent variables

The prevalence of depression among living kidney donors was 6.2%. The kidney donors who were earning were statistically significant. The details of the association of depression with independent variables are shown in [Table 3](#).

4. Discussion

This study evaluated the level of anxiety and depressive symptoms among living kidney donors. At our center, we analyzed 147 living

Table 1
Sociodemographic characteristics of the participants.

Variables	Number	Percentages (%)
Gender		
Male	45	30.6
Female	102	69.4
Current age in years		
Less than 50	82	55.8
50 and above	65	44.2
Age at transplant		
Less than 45	70	47.6
45 and above	77	52.4
Marital Status		
Ever married	141	95.9
Never	6	4.1
Educational Status		
Illiterate and primary	71	48.3
Secondary and above	76	51.7
Occupation		
Homemaker and unemployed	57	38.8
Service/Self employed	90	61.2
Relationship with recipient		
Parents	62	42.2
Spouse	50	34
Siblings	17	11.6
Others	18	12.2
Recipient status		
Working properly	117	79.6
Functioning with problems	19	12.9
Not functioning	11	7.5
Previous history of depression		
Yes	15	10.2
No	132	90.8

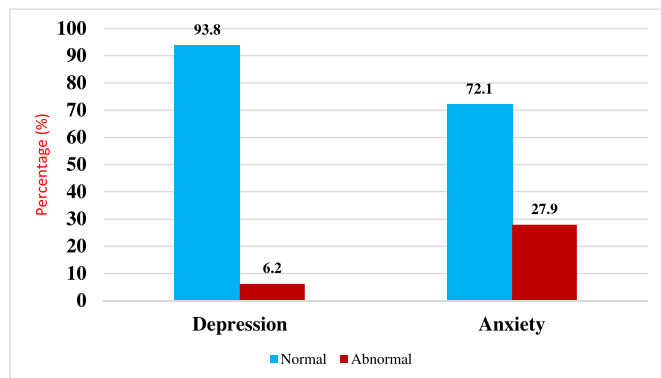


Fig. 1. Prevalence of anxiety, depression among kidney donor.

kidney donors who had undergone donor nephrectomy. The response rate of 23.3% was quite fair, however, it is slightly lower than in other studies [18–21]. The study was conducted during a pandemic, which is likely to contribute lower response rate because of lockdown and travel restrictions that might made it difficult for many donors to participate. A study conducted in India has a high response rate, this is probably attributed to the strict follow up protocol maintained for the donors [22]. A study from Iran revealed a distinct situation, with donor follow-up being scarce following successful transplant surgery [23]. The lack of follow-up may result in severe complications.

Our findings revealed that 27.9% of living kidney donors had anxiety which is similar to the German kidney donors (21%) [24], higher than the 6% of Australian donors [11], and significantly lower than the Portuguese (67%) living kidney donors who screen positive for anxiety [25]. Anxiety is more common in kidney donors than in the general population of Nepal, which is estimated to be 22.7% [26]. The reason for this could be due to health care facilities and quality of care to the living kidney donors. Also, the small sample size might have resulted in high anxiety among living kidney donors. The study in Germany had a sample

Table 2
Association of anxiety with other independent variables.

Variables	Anxiety	P value	
Gender	Normal Anxious symptoms		
Male	37 (82.2)	8 (17.8)	0.05 ^a
Female	69 (67.6)	33 (32.4)	
Marital Status			
Ever	101 (71.6)	40 (28.4)	0.5
Never	5 (83.3)	1 (16.7)	
Present age in years			
Less than 50	63 (76.8)	19 (23.2)	0.15
50 and above	43 (66.2)	22 (33.8)	
Age at transplant			
Less than 45	52 (74.3)	18 (25.7)	0.5
45 and above	54 (70.1)	23 (29.9)	
Relationship with recipient			
Parents	39 (62.9)	23 (37.1)	0.08
Spouse	40 (80)	10 (20)	
Cousin	15 (88.2)	2 (11.8)	
Others	12 (66.7)	6 (33.3)	
Recipient status			
Alive	102 (72.9)	38 (27.1)	0.3
Expired	4 (57.1)	3 (42.9)	
Earner			
Yes	75 (78.9)	20 (21.1)	0.01 ^a
No	31 (59.6)	21 (40.4)	
Parental relations			
Yes	39 (62.9)	23 (37.1)	0.03 ^a
No	67 (78.8)	18 (21.2)	
Education status			
Illiterate or Primary	42 (59.2)	29 (40.8)	0.001 ^a
Secondary and above	64 (84.2)	12 (15.8)	
Occupation			
Homemaker/unemployed	33 (57.9)	24 (42.1)	0.002 ^a
Service/Employed	73 (81.1)	17 (18.9)	

^a Statistically significant.

Table 3
Association of depression with other independent variables.

Variables	Depression	P value	
Gender	Normal Depressive symptoms		
Male	44 (97.8)	1 (2.2)	0.1
Female	94 (92.2)	8 (7.8)	
Marital Status			
Ever	132 (93.6)	9 (6.4)	0.5
Never	6 (100)	0	
Present age in years			
Less than 50	77 (93.9)	5 (6.1)	0.9
50 and above	61 (93.8)	4 (6.2)	
Age at transplant			
Less than 45	65 (92.9)	5 (7.1)	0.6
45 and above	73 (94.8)	4 (5.2)	
Relationship with recipient			
Parents	58 (93.5)	4 (6.5)	0.5
Spouse	47 (94)	3 (6)	
Cousin	17 (100)	0	
Others	16 (88.9)	2 (11.1)	
Parental relation			
Yes	58 (93.5)	4 (6.5)	0.8
No	80 (94.1)	5 (5.9)	
Recipient status			
Alive	132 (94.3)	8 (5.7)	0.3
Expired	6 (85.7)	1 (14.3)	
Earner			
Yes	92 (96.8)	3 (3.2)	0.04 ^a
No	46 (88.5)	6 (11.5)	
Education status			
Illiterate or Primary	65 (91.5)	6 (8.5)	0.2
Secondary and above	73 (96.1)	3 (3.9)	
Occupation			
Homemaker/unemployed	52 (91.2)	5 (8.8)	0.2
Service/Employed	86 (95.6)	4 (4.4)	

^a Statistically significant.

size similar to ours and also similar findings but the rest of the studies had relatively lower sample sizes.

However, the prevalence of depression in the population of 116 Japanese donors was 41.4%, which was significantly greater than ours [27]. Interestingly, even while just 6.2% tested positive for depressive symptoms, 10.2% said that they were previously suffered from depression. This was in line with previous community studies, which revealed that half of the persons who experience their first episode of serious depression recover within three months [28,29] and that the other half did not experience another episode [29]. The fact that age was not linked to anxiety or depression must be considered in light of the conflicting literature. Younger donors had a higher quality of life, according to Isotani et al., whereas older donors have a lower quality of life in a variety of domains, according to other studies [18,30,31].

There was no statistical relationship between depression and gender, marital status, recipient relationship, age, parental relationship, recipient status, education status, or occupation. It was, however, linked to earner. Depression has been linked to graft failure [32], being female [32,33], poor treatment compliance [34,35], living alone [27], not having a regular income [27], being single [36,37], and disease comorbidity [37] in studies of kidney transplant patients. Larger sample sizes with better statistical power may be necessary to detect such differences.

There are certain limitations to our research. Because the study was done in a single center, the generalizability of our findings may be limited. Our participants' age, gender, and race, on the other hand, are representative of Nepal's general population. Due to the low incidence of these outcomes, we may lack the power to find new relationships between donor characteristics and anxiety or depression in multivariable regression, despite a sample size of 147 donors and a lower response rate. Finally, while the cross-sectional nature of our survey precludes the investigation of causative effects, the prevalence estimates and risk variables provide insight into the follow-up of living kidney donors and may assist identify those who require formal referral for mental health care.

5. Conclusion

Our study concluded that the prevalence of anxiety and depression among living kidney donors was 27.9% and 6.2% respectively. Gender, parental relations, occupation, and educational status were related to symptoms of anxiety among the donors of kidney. In addition to physical health measures, routine evaluations of kidney donors should include assessments of depression and other emotional disorders. The actual issue is to come up with effective treatments for depressive symptoms and to improve health outcomes following kidney donation.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Data availability statement

All the required information are in manuscript itself.

Sources of funding

No funding was received for the study.

Ethical approval

Ethical approval was taken from Institutional Review Committee of Institute of medicine.

Consent

Written informed consent was obtained from the participant for participation in this study.

Author contribution

NB, KP, and SS wrote the original manuscript, reviewed, and edited the original manuscript. NB, SS, and SP were involved in data collection. MPK and DSS were research supervisor.

Registration of research studies

1. Name of the registry: None
2. Unique Identifying number or registration ID: None
3. Hyperlink to your specific registration (must be publicly accessible and will be checked):

Guarantor

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Declaration of competing interest

Authors have no conflict of interest to declare.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2022.104119>.

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