Original Article

Quality of Life in Living Kidney Donors: A Single-Center Experience at the King Abdulaziz Medical City

Basil Mohammed Alhussain¹, Abdulaziz K. Alqubaisi¹, Aamir Omair¹, Wael A. O’hali², Khalid O. Abdullah², Abdulrahman R. Altamimi¹²

¹College of Medicine, King Saud bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia, ²Department of Surgery, Division of Transplant, King Abdulaziz Medical City, Riyadh, Saudi Arabia

ABSTRACT. Chronic kidney disease (CKD) results in irreversible decline in renal function, which ultimately progresses to end-stage renal disease (ESRD). Transplantation is the treatment of choice for ESRD, and this is possible only if donor kidneys are available. Several doubts can appear in the minds of donors and among general public regarding the quality of life (QOL) after donation which can affect the willingness to donate. Therefore, we aimed to assess the QOL in living kidney donors in King Abdulaziz Medical City, Riyadh, Saudi Arabia using the kidney disease QOL instrument short form (KDQOL-SF). This was a cross-sectional survey of living kidney donors between 18 and 65 years of age who donated their kidneys between 2008 and 2014 and was conducted in the hepatobiliary and transplantation department of our hospital. The study measured 17 domains in KDQOL-SF. Each domain score is up to 100; the higher the score in each domain, the better the QOL. Data will be entered and analyzed using Statistical Package for the Social Sciences version 21.0. The descriptive statistics will be presented as frequency and percentage for the categorical variables (e.g., gender and income) and the mean ± SD for numerical variables (e.g., QOL score). The study included 60 donors who donated during the study period between 2008 and 2014. Males were 49 (82%) with the age (mean ± standard deviation) as 32 ± 6.5 years. The donors reported an “overall-mean-score” of 86.7 ± 14.6. Four domains had lower scores between 60 and 80: “sleep” (61.8 ± 13.8), “emotional-well-being” (71.6 ± 11.1), “quality-of-social-interaction,” and “energy/fatigue.” The other 13 domains had scores >80. The two highest domains: “role-physical” (97.9 ± 13.3) and “effect-of-kidney-disease” (97.4 ± 8). Comparing males and females scores, work status was higher in males with

Correspondence to:
Dr. Basil Mohammed Alhussain,
College of Medicine,
King Saud bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia.
E-mail: alhussainba@ngha.med.sa

P = 0.03. Our findings suggest that donors have a good QOL which may result in more donations. It is important to improve the standard of care for donors to enable them to live their life to the fullest.
Introduction

Chronic kidney disease (CKD) results in irreversible decline in renal function, which ultimately progresses to end-stage renal disease (ESRD)\(^1\) and the patient is to be initiated on renal replacement therapy usually hemodialysis.\(^2,3\) In 2008, the overall prevalence of CKD in Saudi Arabia was reported to be between 5% and 6%.\(^4\) A meta-analysis concluded that the burden of CKD is an ever-rising problem on the horizon of public health that affects health systems in terms of cost and people in terms of suffering.\(^5,6\)

Transplantation is always to be considered for ESRD patients, unless there are contraindications,\(^7\) since it is the treatment of choice for advanced ESRD, and is the most cost-effective treatment.\(^8,9\) Worldwide, a large number of patients have undergone renal transplantation procedures.\(^10\) Organs are obtained from deceased donors or from living donors who volunteered to donate (usually family members). By the end of year 2013, a total of 5820 living donor and 2563 deceased donor renal transplantations have been performed inside the Kingdom of Saudi Arabia.\(^11\) Kidney function can be restored back to normal by transplantation and can correct all the metabolic abnormalities of CKD but the transplantation requires long-term immunosuppression that increases the risk of infections.\(^8,12\) Living volunteer donors should be compatible for human leukocyte antigens, physically fit, and preferably be of the same major ABO blood group.\(^13\)

After transplantation, on comparing the mortality rates with patients on chronic dialysis after adjustments of risks such as diabetes mellitus, cardiovascular comorbidities, and age, transplantation results in an improved lifestyle and life expectancy.\(^9\) Thus, kidney transplantation improves both patient survival and quality of life (QOL).\(^14\)

In a study done in Portugal, the transition in QOL for ESRD recipients before and after the transplantation was significant and was not worse for the donors.\(^15\) There are many studies concentrating on recipients and their QOL before and after kidney transplantation; however, the QOL of the kidney donors was not sufficiently covered in the reports from Saudi Arabia.\(^16,17\) Fear of potential and unfavorable impact in terms of QOL may be the reason behind the shortage of donors. If the knowledge can be spread among the public that good QOL can be maintained by people after organ donation, number of kidney donations might get increased, which in turn will enhance the survival and QOL in ESRD patients.\(^18\) This study was undertaken to evaluate the QOL among living kidney donors using the kidney disease QOL short form (KDQOL-SF) v1.3 survey.\(^19\) We aimed to compare the QOL among donors after the donation and after the acute complications subsided with the results of controls using a verified tool.

Subjects, Materials, and Methods

A cross-sectional quantitative study design was performed at King Abdulaziz Medical City (KAMC), Riyadh, Saudi Arabia among Saudi adults between the ages of 18–65 years who donated their kidneys between 2008 and 2014. People with comorbid conditions such as heart diseases, diabetes, and hypertension and surgical complications were excluded.

The data were collected using the KDQOL-SFT™ 1.3, which is a reliable, multidimensional, and validated questionnaire. The outcome variable is the QOL score. The scores are transformed to a 0–100 range and the higher the value the better the QOL. It will be filled out by patients with the help of the investigators in the Hepatobiliary and Transplantation Clinic in KAMC. The instrument assesses activities of daily living, sleep, and health. The questionnaire will be used in the Arabic language after forward translation to Arabic and then backward translation to English. The English version will be compared to identify weak areas of translation which was to be corrected before the study is conducted. After this, the questionnaire will be pilot-tested on a group of 10 donors who are not part of the survey before finalization to identify unclear questions.
The data collected were analyzed using the IBM SPSS Statistics for Windows, version 21.0 (IBM Corp., Armonk, NY, USA).

### Results

The study included 60 persons who donated their kidneys between 2008 and 2014. Males were 49 (82%), and the mean age was 32 ± 6.5 years. Related donors were the majority constituting 93% (n = 56). The donors reported an “overall-mean-score” of 86.7 ± 14.6 (Table 1). Four domains had lower scores between 60 and 80: “sleep” (61.8 ± 13.8), “emotional-well-being” (71.6 ± 11.1), “quality-of-social-interaction”, and “energy/fatigue” (Tables 1 and 2). The other 13 domains had scores >80. The two highest domains were “role-physical” (97.9 ± 13.3) and “effect-of-kidney-disease” (97.4 ± 8) (Tables 1 and 2). In comparing the scores by gender, there was a significant difference in terms of the work status; males (92.9 ± 20.4) had a higher score as compared to females (72.7 ± 26.1) with P = 0.03. The other significant difference was in terms of income, where individuals with incomes greater than 10,000 Saudi Arabian Riyals (SAR) had higher scores in terms of symptom/problems list domain, with P = 0.01.

### Discussion

The decision to donate a kidney while still alive is not an easy one to make. The uncertainties are many, and one might expect the results of this decision to have long-term effects; however, as our results have showed, there are only a few negative effects that remain with the donors after the donation. The process may be stressful for the donor, but the

| Domains (items)                  | Mean±SD  | Minimum | Maximum | Internal consistency reliability |
|----------------------------------|----------|---------|---------|---------------------------------|
| Overall health rating (1)        | 86.7±14.6| 50      | 100     | NA (Only One Qs)               |
| Symptoms/problems (12)           | 95.3±7.0 | 70.5    | 100     | 0.67                            |
| Effects of kidney disease (8)    | 97.4±8.0 | 43.8    | 100     | 0.84                            |
| Burden of kidney disease (4)     | 94.6±16.5| 0       | 100     | 0.89                            |
| Work status (2)                  | 89.2±22.7| 0       | 100     | 0.26                            |
| Cognitive function (3)           | 92.9±15.1| 6.7     | 100     | 0.79                            |
| Quality of social interaction (3)| 76.1±19.2| 6.7     | 100     | 0.23                            |
| Sleep (4)                        | 61.8±13.8| 15.8    | 77.5    | 0.52                            |
| Social support (2)               | 88.6±17.8| 33.3    | 100     | 0.54                            |

KDQOL-SF: Kidney disease quality of life instrument short form, SD: Standard deviation, NA: Not applicable.

| Domains (items)                  | Mean±SD  | Minimum | Maximum | Internal consistency reliability |
|----------------------------------|----------|---------|---------|---------------------------------|
| Physical functioning (10)        | 95.5±6.5 | 75      | 100     | 0.65                            |
| Role – Physical (4)              | 97.9±13.3| 0       | 100     | 0.94                            |
| Pain (2)                         | 90.8±17.6| 22.5    | 100     | 0.78                            |
| General health perception (5)    | 92.5±13.1| 45      | 100     | 0.69                            |
| Emotional well-being (5)         | 71.6±11.1| 40.2    | 80.6    | 0.67                            |
| Role – Emotional (3)             | 94.4±22.3| 0       | 100     | 0.96                            |
| Social function (2)              | 96±10.9  | 50      | 100     | 0.77                            |
| Energy/fatigue (4)               | 77.2±21  | 20      | 100     | 0.83                            |

KDQOL-SF: Kidney disease quality of life instrument short form, SD: Standard deviation.
benefit is undeniable to the recipient, and when weighing the benefits of the recipient to the harms of the donor, the benefit greatly outweighs the harm. The effects are below-satisfactory in only four out of 17 domains.

The four affected domains were, in ascending order, sleep quality (61.8 ± 13.8), emotional wellbeing (71.6 ± 11.1), quality of social interactions (76.1 ± 19.2), and energy and fatigue (77.2 ± 21). The affected domains, although affecting the donors, are not totally due to the donation itself. For example, sleep disturbances can be attributed to a multitude of causes which need not be a direct result of the donation of the kidney itself but could be attributed to numerous other causes, some of which are obvious like stress and anxiety, and some are not so obvious. This also happens to apply for sleep quality, emotional well-being and quality of social interactions, but not to energy and fatigue. Loss of energy and fatigability, on the other hand, are directly associated with CKD, but further questioning of the patients ascribed the aforementioned low energy and fatigability to mechanical and previously established musculoskeletal conditions, which in turn revokes donation as a cause of these symptoms.

In regard to the statistically significant difference, our results showed it to be in relation to work status and income. The work status domain showed that males had better results compared to females, but this can be due to two major limitations. The first limitation to cause this could be that males were simply more than females, with the males being well over four-fifths of the participants (49 males compared to 11 females), which gives a more insightful look in to males, whereas females are poorly represented. The other limitation is the nature of society itself, where a majority of females are still unemployed. This can explain the lower rate compared to males who remain socially the dominant breadwinners with the majority having paying jobs. This can soon change as more and more females are being employed and with the recent sociological changes in Saudi Arabia, but this is beyond the scope of this paper. Limitations of this study are the low number of participants (n = 60) and it was a single-center experience. We recommend further studies must be done on donors and their QOL.

All in all, the decision to donate your kidney during your lifetime remains a significant decision, with life-long implications to the donor, which can affect or change one’s mind from donating. The decision of our population to donate or not to donate is beyond our control, but it is our duty to provide relevant, evidence-based information regarding the effect of such decision on them in all possible aspects. One of the more important aspects to consider is the QOL after the donation, as many people express concerns regarding life after the donation, and unfortunately, the literature is lacking, especially for the Saudi population. This paper has focused on kidney donation specifically and included people who actually donated and measured their QOL after the donation, and we hope this will shed the proper light on the fact that kidney donation does not directly affect lifestyle negatively. We believe that our results would aid physicians in making evidence-based conversation with their patients and will also set the donors mind at ease when thinking about their lifestyle after the procedure.

**Conclusion**

Based on our findings, kidney donors had high scores in 13 domains of the KDQOL-SF v1.3 survey (score above 80 out of 100). Males had a significant difference regarding working status, and donors with income of more than 10,000 SAR had a significantly higher score regarding symptom/problems list. There was no other significant difference when comparing gender and income regarding QOL. Kidney donors have shown to have good QOL, and this knowledge if widespread can result in more donations. It is also important to improve the standard of care for donors to enable them to live their life to the fullest.

**Conflict of interest:** None declared.
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