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Research Article

**QUALITY OF LIFE AND MENTAL HEALTH STATUS OF  
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Salehal@ngha.med.sa**Article Received:** October 2020**Accepted:** November 2020**Published:** December 2020**Abstract:**

*Quality of Life and Mental Health Status of Living Kidney Donors at KAMC-J is a Cross-sectional Descriptive Observational study conducted in King Abdul-Aziz Medical City – Jeddah, Kidney transplant Center (Ward 13). The aim of the study is to assess the effect of kidney donation on the mental health and Quality of Life (QOL) of living kidney donors. Main objectives of the study is to estimate the difference in quality of life of living kidney donors pre and post donation and to estimate the difference in the mental health status of living kidney donors pre and post donation. Data collection instruments used in this study are Short Form 36 (SF36) Questionnaire and Hospital Anxiety & Depression Scale HADS Questionnaire. The sample of the study included all adult living kidney donors at KAMC-J which accounts for 5 donors who are recruited from November 2018 to April 2019 in two separate occasions (Pre-donation, Post-donation) to calculate the difference. The results of the study are, Physical & Mental health status are decreased (Physical functioning, pain control, anxiety level) post- donation compared with their status prior to the donation. However, all participants are within normal range of general population. Long term health consequences, according to the literature, is observed in a small number of donors, associated with the recipient health, post-donation. The overall short term's physical functioning is affected negatively, correlating with the literature. Pain, in short term, is significantly increased as expressed by the donors, post donation, also correlating with the literature. Anxiety, according to Health Anxiety & Depression Scale HADS, is significantly increased in donors post operatively. Risk factors for Anxiety should be identified to help the donors adapt easily into their new status of living. Long term Quality of life (3, 6- & 12-months post donation) should be assessed to ensure the physical & mental wellbeing of the donor.*

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## INTRODUCTION:

Living kidney donation have become a significant and very successful renal replacement therapy for end stage renal disease. For Now, Kidney transplantations from the United states and Germany are more than 45% and 19.5% respectively, from a living donor with a constant increasing rate. The Netherlands has the highest number of live kidney donor transplantations in Europe spread over eight kidney transplant centers, with an annual living donation rate of 31.0 per million population in 2013. The good medical results and outcomes have contributed for the increase in interest and demand in living kidney donation. However, it is an invasive procedure that has to be done on a healthy person to benefit a patient. Because of this undesired situation, there's a medical and psychological and ethical assessment that has to be done for the donor pre-donation and post-donation to ensure that the donor has the least possible long-term adverse effects. Living kidney donation has been shown to have very mild to none negative impact on the donor's quality of life (QOL). Multiple Studies have shown that donors QOL remains normal to the general population or even better after the kidney donation. Other measurements of well-being such as mental health status and level of coping with the of the recipient needing a kidney, have not been looked at adequately which was surprising since QOL, mental health, and coping with the undesired situation are important factors to influence the overall well-being. While other studies opposed this finding. However, In the last studies, mental health was studied without using standardized instruments. In order to contribute to the limited data on mental health status, we studied living kidney donors using instruments that are both standardized, validated.

## METHODOLOGY:

In a cross-sectional study, Short Form 36 Health Survey (SF-36) and Hospital Anxiety and Depression Scale (HADS) were Given to the Donors pre-donation and post-donation. The SF-36 questionnaire consists of eight scales yielding two summary measures: physical and mental health. The physical health measure includes four scales of physical functioning (ten items), role-physical (four items), bodily pain (two items), and general health (five items). The mental health measure is composed of

vitality (four items), social functioning (two items), role-emotional (three items), and mental health (five items). These subscales can be condensed into two components; the physical component score (PCS) and the mental component score (MCS). Total scores for the PCS and MCS may range from 0 to 100 with higher scores representing a better health status. Reliability and validity of the SF-36 are internationally well established. The instrument has been widely used as an outcome measure in clinical research in the field of transplantation. A final item, termed self-reported health transition, is answered by the donor but is not included in the scoring process. The SF-36 offers a choice of recall format at a standard (four weeks) or acute (one week) time frame. Likert scales with yes/no options are used to assess psychological well-being & Mental function on this 36-item questionnaire. And for the Hospital anxiety and depression scale, The questionnaire comprises seven questions for anxiety and seven questions for depression. Although the anxiety and depression questions are interspersed within the questionnaire, it is vital that these are scored separately. Cut-off scores are available for quantification, for example a score of 8 or more for anxiety has a specificity of 0.78 and a sensitivity of 0.9, and for depression 0.79 specificity and 0.83 sensitivity. and a score less than 7 is indicate non-case, while mild is 8-10, moderate 11-14, and severe 15-21. Psychometric quality of the HADS-D is good with respect to reliability and validity.

## RESULTS:

Statistical Package for Social Sciences SPSS 23 is used for Data Analysis. Comparison between SF-36 values & Hospital Anxiety and depression Scale HADS pre- and post- kidney donation using Related-Sample Wilcoxon-Signed Rank Test with 95% Confidence Interval and the statistical significance cut-point of  $p < 0.05$ . Z-score statistics was calculated to identify the trend of each item post-donation.

Five donors were included in this study, 4 of them are males and 1 female with the mean age 36.6 (standard Deviation SD  $\pm 6.88$ ). 80% of the participants have bachelor's degree while 20% have graduate from secondary school as demonstrated in table 1.

**Table 1****Descriptive Statistics for Sociodemographic Variables among Kidney Donors**

Variables	Total number of participants (n=5)
<b>Gender (%)</b>	
Males	4 (80)
Females	1 (20)
<b>Mean Age in Years (SD)*</b>	36.6 ( $\pm$ 6.88)
<b>Education Level (%)</b>	
Secondary School	1 (20)
Bachelor's degree	4 (80)

\* SD: Standard Deviation

**Table 2****Subjects' Quality of Life Using Shor-form 36 (SF-36) and Hospital Anxiety and Depression Scale Pre-Kidney Donation**

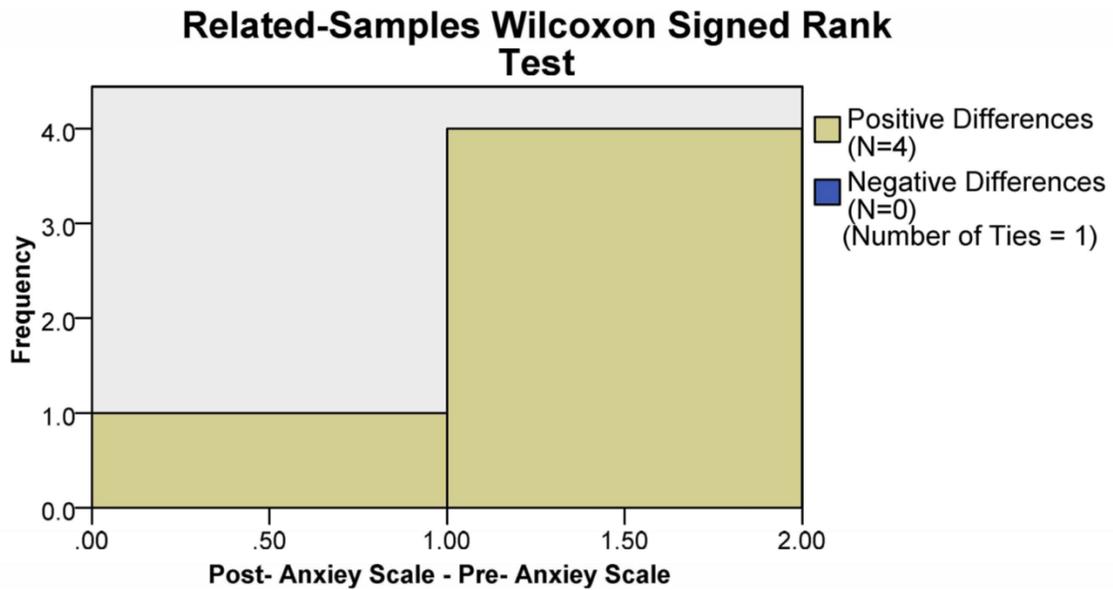
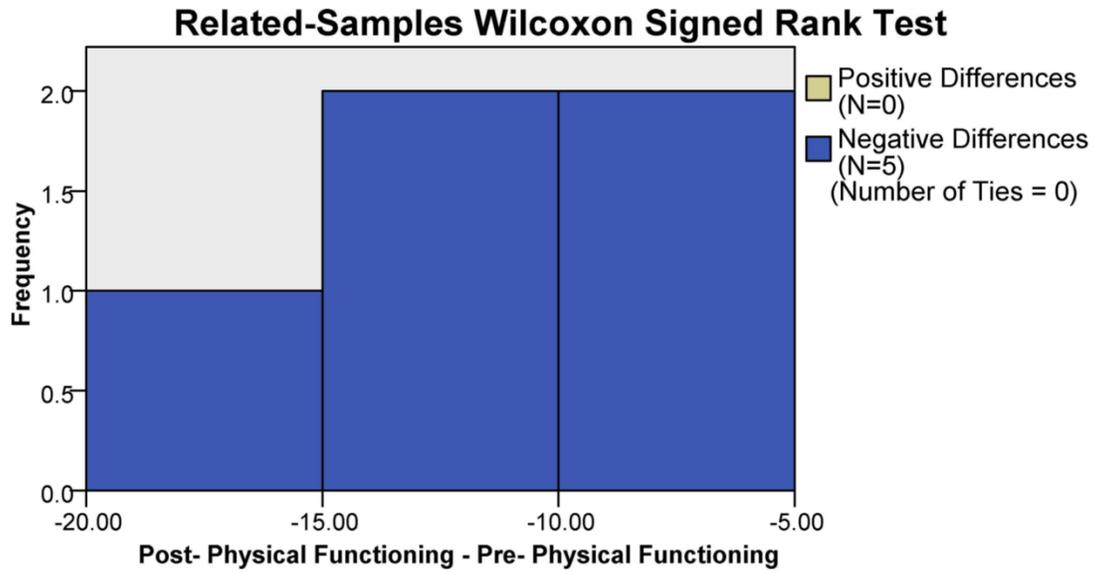
Variables	Total number of participants (n=5)		
	Mean	SD*	Range
<b>Shor-form 36 (SF-36)</b>			
Physical functioning	96	6.5	85-100
Role limitations due to physical health	100	0.0	0
Role limitations due to emotional problems	93.4	14.76	67-100
Energy/fatigue	79	7.42	70-90
Emotional well-being	83.2	9.55	72-96
Social functioning	97.6	5.37	88-100
Pain	100	0	0
General health	97	4.47	90-100
Health change	70	20.92	50-100
<b>Hospital Anxiety and Depression Scale</b>			
Anxiety Scale	2.6	2.19	0-6
Depression Scale	1.20	0.84	0-2

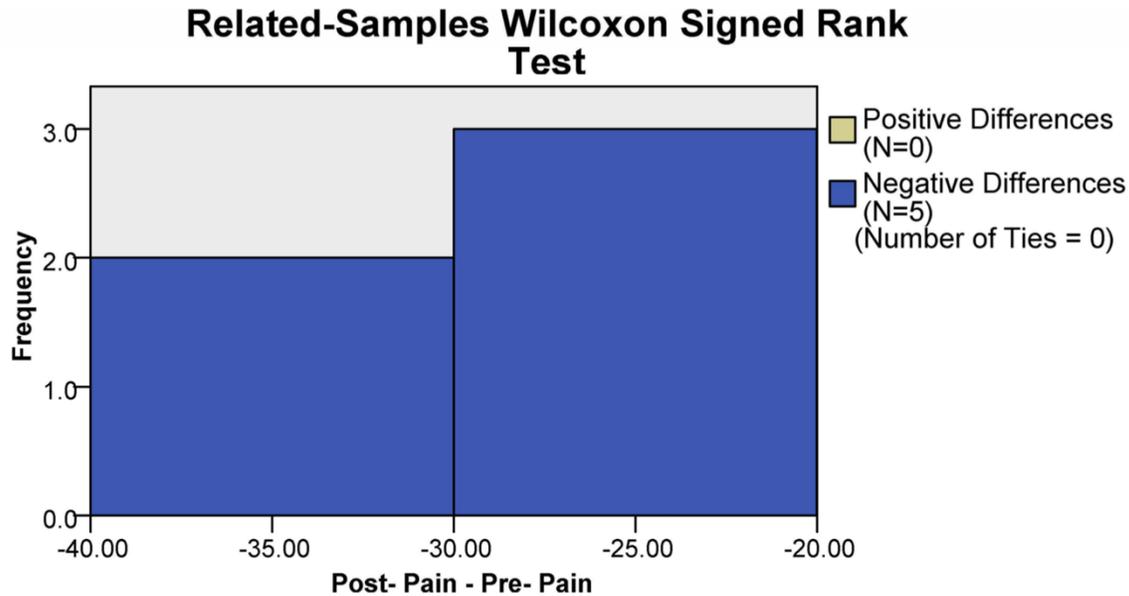
\* SD: Standard Deviation

10-7 = Normal

8-10 = Borderline abnormal (borderline case)

11-21 = Abnormal (case)





In table 2, pre-donation short form 36 SF36 the mean for physical functioning is 96 with standard deviation SD = 6.5 ranging from 85-100. Role limitations due to physical health's mean is 100 with standard deviation SD =0.0 with no range. Role limitations due to emotional problems mean is 93.4 with standard deviation of SD =14.76 ranging from 67-100. Energy/fatigue mean is 79 with standard deviation of SD =7.42 ranging from 70-90. Emotional well-being with the mean of 83.2 with standard deviation of SD =9.55 ranging from 72-96. Social functioning mean is 97.6 with standard deviation of SD =5.37 ranging from 88-100. Pain mean is 100 with no standard deviation (SD =0) and no range. General health mean is 97 with standard deviation SD =4.47 with the range of 90-100. Health change mean is 70 with standard deviation SD =20.92 with the range of 50-100. In Hospital Anxiety and Depression Scale HADS, Anxiety Scale mean is 2.6 with standard deviation SD =2.19 with the range of 0-6. Depression Scale mean is 1.20 with standard deviation SD =0.84 with the range of 0-2.

In table 3, post donation Short form 36 SF36 Physical functioning's mean is 82 with standard deviation SD =10.37 and the range of 65-90. In Role limitations due to physical health post donation's mean is 75 with standard deviation SD =30.62 and the range of 25-100. Role limitations due to emotional problems 100 with no standard deviation and no range. In Energy/fatigue, the mean is 70 with standard deviation SD =15.81 and the range of 45-85. Emotional well-being's mean 78.4 with standard deviation SD =14.03 and the range of 64-96. In Social functioning, the mean is 87.8 with standard deviation SD =15.11 and the range of 63-100. In Pain, the mean is 74 with standard deviation SD =5.48 and the range of 68-78. General health's mean 89 with standard deviation SD =13.88 and the range of 65-100. In Health change, the mean is 55 with standard deviation SD =11.18 and the range of 50-75. Hospital Anxiety and Depression Scale post donation results are as follows, Anxiety Scale mean of 3.4 with standard deviation SD =2.30 and the range of 1-7. While the Depression Scale's mean of 2.8 with standard deviation SD =1.90 and the range of 0-5.

**Table 3****Subjects' Quality of Life Using Shor-form 36 (SF-36) and Hospital Anxiety and Depression Scale Post-Kidney Donation**

Variables	Total number of participants (n=5)		
	Mean	SD*	Range
<b>Shor-form 36 (SF-36)</b>			
<i>Physical functioning</i>	82	10.37	65-90
<i>Role limitations due to physical health</i>	75	30.62	25-100
<i>Role limitations due to emotional problems</i>	100	0	0
<i>Energy/fatigue</i>	70	15.81	45-85
<i>Emotional well-being</i>	78.4	14.03	64-96
<i>Social functioning</i>	87.8	15.11	63-100
<i>Pain</i>	74	5.48	68-78
<i>General health</i>	89	13.88	65-100
<i>Health change</i>	55	11.18	50-75
<b>Hospital Anxiety and Depression Scale</b>			
<i>Anxiety Scale</i>	3.4	2.30	1-7
<i>Depression Scale</i>	2.8	1.90	0-5

\* SD: Standard Deviation  
 † 0-7 = Normal  
 8-10 = Borderline abnormal (borderline case)  
 11-21 = Abnormal (case)

In table 4, Comparison of Subjects' Quality of Life Using Short-form 36 (SF-36) and Hospital Anxiety and Depression Scale Pre- and Post-Kidney Donation (n=5), Physical Functioning has decreased from a mean of 96 and a median of 100 and the range of 85-100 to a mean of 82 and median of 85 and a range of 65-90 post donation with a significant p-value 0.041, and z-score of -2.041. In Role Limitations Due to Physical Health, a decrease was interpreted from a mean of 100 and a median of 100 to a mean of 75 and median of 75 with the range of 25-100 with a p-value of 0.102, z-score -1.633. Role Limitations Due to Emotional Problems, the numbers are slightly increased from a mean of 93.4 and a median of 100 and a range of 67-100 to a mean of 100 with a p-value 0.317, z-score of 1. Energy Level, the numbers are slightly decreased from a mean of 79 and a median of 80 and a range of 70-90 to a mean of 70 and a median 75 and a range of 45-85 with a p-value of 0.144, z-score -1.461. Emotional Well-Being are also decreased from a mean of 83.2 and median of 84 and a range of 72-96 to a mean of 78.4 and a median of 84 and a range of 64-96 with a p-value 0.357, z-score -0.921. Social Functioning is also decreased

from a mean of 97.6 and a median of 100 with the range of 88-100 to a mean of 87.8 and a median of 88 with the range of 63-100, with a p-value 0.102, z-score -1.633. Pain Control has significantly decreased from a mean of 100 to a mean of 74 and median of 78 with the range of 68-78, with significant p-value 0.038, z-score -2.070. General Health has slightly decreased from a mean of 97 and a median of 100 with the range of 90-100 to a mean of 89 and a median of 95 with the range of 65-100, with the p-value of 0.109, z-score -1.604. Health Change has negatively changed from a mean of 70 and a median of 75 with the range of 50-100 to a mean of 55 and a median of 50 with the range of 50-75, with a p-value of 0.083, z-score -1.732. Regarding Hospital Anxiety and Depression Scale, Anxiety Scale, increased from a mean of 2.6 and a median of 2 with the range of 0-6 to a mean of 3.4 and a median of 3 with the range of 1-7, and a significant p-value of 0.046, z-score 2. Depression Scale, has also increased from a mean of 1.2 and a median of 1 with the range of 0-2 to a mean of 2.8 and a median of 3 with the range of 0-5, with the p-value of 0.066, z-score 1.841.

Table 4

**Comparison of Subjects' Quality of Life Using Short-form 36 (SF-36) and Hospital Anxiety and Depression Scale Pre- and Post-Kidney Donation (n=5)**

Variables	Pre-donation Values (n=5)			Post-donation Values (n=5)			p-value	z-score
	Mean	Median	Range	Mean	Median	Range		
<b>Short-form 36 (SF-36)</b>								
<i>Physical Functioning</i>	96	100	85-100	82	85	65-90	0.041	-2.041
<i>Role Limitations Due to Physical Health</i>	100	100	0	75	75	25-100	0.102	-1.633
<i>Role Limitations Due to Emotional Problems</i>	93.4	100	67-100	100	100	0	0.317	1
<i>Energy Level</i>	79	80	70-90	70	75	45-85	0.144	-1.461
<i>Emotional Well-Being</i>	83.2	84	72-96	78.4	84	64-96	0.357	-0.921
<i>Social Functioning</i>	97.6	100	88-100	87.8	88	63-100	0.102	-1.633
<i>Pain Control</i>	100	100	0	74	78	68-78	0.038	-2.070
<i>General Health</i>	97	100	90-100	89	95	65-100	0.109	-1.604
<i>Health Change</i>	70	75	50-100	55	50	50-75	0.083	-1.732
<b>Hospital Anxiety and Depression Scale</b>								
<i>Anxiety Scale</i>	2.6	2	0-6	3.4	3	1-7	0.046	2
<i>Depression Scale</i>	1.20	1	0-2	2.8	3	0-5	0.066	1.841

\* SD: Standard Deviation

| 0-7 = Normal

8-10 = Borderline abnormal (borderline case)

11-21 = Abnormal (case)

= Using Related-sample Wilcoxon-Signed Rank Test with 95% Confidence Interval

## DISCUSSION:

Our study demonstrates that living kidney donation is a safe procedure that did not change the donors' QOL for the worse. We also reported the post donation mental health status of donors. A limitation of our study was the small number of cases; another, the short time range after donation since effects of the donation may last for at least 6 months, which we were not able to report. Both limitations must be kept in mind when interpreting our data.

It is rather well known and confirmed by our data that QOL is not negatively affected by donating a kidney. All seven components of the SF-36 were not below national normative data.<sup>1,2,4,7</sup> However, we did not observe an increase in QOL, which has been reported in several earlier and a few more recent studies.<sup>3,5</sup> Our results showed that it is warranted to be cautious about placing too much emphasis on a potential gain in QOL, such as when anticipation of an increased QOL after donation is included in the information that donors receive during the evaluation process.

With respect to the mental health status after donation, our results showed a significantly greater proportion of individuals at risk than in the normal population. In an otherwise comparable sample of healthy controls examined with the same instrument, only 10% showed clinically relevant screening results<sup>22</sup> compared to the 20% we observed in our study. The use of the HADS is not equivalent to a clinical diagnosis of a mental illness. Hence, it is not a must to conclude from our findings that kidney donors suffer more often from particular mental health illnesses, nor could we reason that kidney

donation affects mental health positively and negatively. However, our results do indicate that there is a possibility that kidney donors have a greater risk of mental health problems after donation compared with healthy individuals, a tendency that deserves further attention.

Jenki et al, states that results regarding the incidence of morbidity and mortality following donation is contradictory. Variations like age, gender, BMI might explain the contradictory results. As donors are almost always the healthiest among the population, which might lead to an underestimation of long-term risks. The results were taken from nine previous studies in which long-term outcomes are compared between donors and selected non-donors with a follow-up of ten or more years. All studies were published within the period from 1992 to 2015, with the number of donors ranging from 30 to 2269 and the average follow-up period ranging from 10.9 to 23.7 years. However, we did not include any non-donor group in this study nor we study any characteristics or risk factors that might affect the outcome of kidney donation procedure either in short term or long term.

To sum up, the overall short term's physical functioning is affected negatively, correlating with the literature. Pain, in short term, is significantly increased as expressed by the donors, post donation, also correlating with the literature. Anxiety, according to Health Anxiety & Depression Scale HADS, is significantly increased in donors post operatively.

**CONCLUSION / RECOMMENDATION:**

Our study concludes that physical & Mental health status are generally decreased post- donation specifically in (Physical functioning, pain control, anxiety level) compared with their status prior to the donation. However, all participants are within normal range of general population. Long term health consequences, according to the literature, is observed in a small number of donors, associated with the recipient health, post-donation.

We recommend further investigations regarding the risk factors for Anxiety as it should be identified to help the donors adapt easily into their new status of living & long-term Quality of life (3-, 6- & 12-months post donation) should be assessed to ensure the physical & mental wellbeing of the donor.

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