Böbrek Naklinde Sağlık İlişkili Yaşam Kalitesi ve İlgili Parametreler

Health Related Quality of Life in Renal Transplantation and Related Parameters

Sibel Bek[1], Kuddusi Cengiz[2]

1 Kocaeli Üniversitesi Tıp Fakültesi, İç Hastalıkları Anabilim Dalı, Nefroloji Bilim Dalı, Kocaeli, Türkiye
2 Samsun Egitim ve Araştirma Hastanesi, Nefroloji Kliniği, Samsun, Türkiye

ÖZ

GİRİŞ ve AMAÇ: *Böbrek nakli son dönem böbrek yetmezliğinde (SDBY) en uygun ve iyi tedavi seklidir. Ancak başarılı böbrek transplantasyonundan sonra bile, hastaligin uzun vadeli etkileri ve komplikasyonlar sağlıkla ilişkili yaşam kalitesini (HRQoL) olumsuz etkilemektedir. Ek olarak immünosupresif tedavi ve yan etkileri, transplantasyonun kısa ve uzun dönem komplikasyonları hastalarin yasam kalitesini olumsuz etkilemektedir. Nakil hastalarında HRQoL ölçümleri, immünosupresif tedavi, hasta uyumu ve greft fonksiyonunun başarısını dolayli olarak göstermektedir. Bu çalışmanın temel amacı böbrek nakli hastalarında yasam kalitesini değerlendirmek ve etkileyen değişkenleri belirlemektir.*

YÖNTEM ve GEREÇLER: *Bu çalışma nefroloji bölümünde takipli 80 böbrek nakli hastası, 42 hemodiyaliz hastası ve 35 sağlıklı gönüllü çalışmaya dahil edildi. Hastalar kendilerince doldurulan 38 sorudan oluşan KDQoL- SF anketi ile değerlendirildi. Sağlıklı gönüllüler SF- 36 sağlık kalitesi anketi ile değerlendirildi.*

BULGULAR: *Yaşam kalitesi skorları ile genç yaş, yeterli sosyal destek, komorbid faktörler, son altı ay içinde hastaneye başvurular, kullanılan ilaç sayısı, serum albümin, hemoglobin düzeyleri ve diyaliz tedavisi süresi arasında istatistiksel olarak anlamlı bir ilişki buundu. İyi greft fonksiyonu HRQoL skorlarını etkileyen en önemli parametre olarak kabul edildi.*

TARTIŞMA ve SONUÇ: *Genç yaş, yeterli sosyal destek, daha yüksek albümin ve hemoglobin düzeyleri HRQoL skorlarının daha iyi olduğunu göstermektedir. Eşlik eden faktörlerin varlığı, hastaneye yatışlar, çoklu ilaç kullanımı, diyaliz tedavisinin daha uzun sürmesi, düşük HRQoL skorlarının negatif belirteçleridir. Nakil hastalarının takiplerine periyodik HRQoL değerlendirmesi dahil edilmelidir.*

Anahtar Kelimeler: *Saglik iliskili yasam kalitesi, Bobrek nakli, Nefroloji*

ABSTRACT

INTRODUCTION: *Renal transplantation is the optimal treatment in end-stage renal disease (ESRD). Even after succesfull renal transplantation, the health related quality of life (HRQoL) might be affected adversely by the long term complications of the primary disease. Additionally, immunosupressive treatment itself, adverse effects of the drugs have effect on HRQoLof patients, causing stress. HRQoL measurements in transplant patients are important in reflecting the success of immunosupressive treatment, patient compliance and graft function. The main objective of this study is to assess HRQoL in renal transplant patients and to determine the variables affecting it.*

METHODS: *This study was performed in nephrology department. 80 renal transplant patients, 42 hemodialysis patients and 35 healthy volunteers were included in the study. The patients were evaluated by KDQoL–SF questionnaire consisting of 38 questions answered by patients on their own. The healthy volunteers were evaluated with SF–36 health quality questionnaire.*

RESULTS: *There was a statistically significant correlation between the quality of life scores and younger age, adequate social support, comorbid factors, hospital admissions within last six months, number of medications used, serum albumin, haemoglobin levels and the duration of dialysis treatment. Good graft function was considered to be the most important parameter influencing the HRQoL scores.*

DISCUSSION AND CONCLUSION: *Younger age, adequate social support, higher albumin and haemoglobin levels are positive predictives of better HRQoL scores. Presence of comorbid factors, hospital admissions, polypharmacy, longer duration of dialysis treatment are negative predictives of lower HRQoL scores. Periodic assesment of HRQoL should be included in the follow-up protocols of transplant patients.*

Keywords: *Health Related Quality of Life, Renal Transplantation, Nephrology*

INTRODUCTION

Health-related quality of life (HRQoL) has become an important outcome measure for patients with renal transplantation[1]. Successful renal transplantation provides better mortality and morbidity outcomes. In addition to routine clinical and laboratory follow-up, measurement of HRQoL is not done regularly. The aim of this study is to evaluate HRQoL of renal transplant patients and to compare with dialysis patients.

MATERIAL AND METHODS

Eighty renal transplant patients, 42 dialysis patients who were followed in nephrology department and 35 healthy controls were enrolled to the study. Patients with a history of malignancy, major surgical interventions, psychiatric illness except depression, multiple organ transplantation and hospitalization were excluded. Inclusion criteria were: three months or more post renal transplantation period, having estimated glomerular filtration rate(eGFR) greater than 60 ml/min, being 18 years old or older. Socio-demographic and clinical parameters: age, gender, duration in dialysis, educational status, marital status, social support, laboratory values and risk factors were compared among groups. The patients were evaluated with self-applied KDQoL-SF questionnaire consisting of 38 questions and informed consent was taken from each patient. The questionnaire which was translated into Turkish and published in 2007 was used by Yildirim et al and its reliability has been confirmed (Cronbach alpha coefficient: 0.84-0.91) with repeated similar results (1). SF-36 quality of life measurement scale was used for the healthy controls. The clinical and laboratory data were recruited from computer based records before and after renal transplantation and routine follow-up of dialysis patients. The project was evaluated and approved by ethical committee.

Short Form- 36 and KDQOL-Short Form:

The SF-36 form is one of the non-diseasespecificquestionnaires that measure the quality of life. Quality of life is self-evaluated in eight different domains in the questionnaire which includes 36 questions considering the last four weeks. Comorbidity was self-reported and reported as impairedfunctioninginthefollowingdomainsas physical functions (PF), limitation of role functions

(RP) – physical, bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role functioning- limitations due to emotional problems (RE) and mental health (MH). The score ranges from 0 (lowest quality of life) to 100 (highest) and the form was validated in many patients. Scores of the eight domains are aggregated to two summary scores, the physical (PF) and mental component (MH) (2,3).

KDQOL-SF is a survey that includes 43 disease-related sections, 36 of which were created in generic format and to measure the overall health status. The centre of the questionnaire is SF-36 with eight domains assessing the physical and mental state (4). Disease-specific questions: symptoms / problems (12 questions), burden of kidney disease on daily life (8 questions), burden of kidney disease (4 questions), working status (2 questions), cognitive functions (3 questions), quality of social relationships (3 questions), sexual functions (2 questions) and quality of sleep (4 questions). In addition, social support (2 questions), dialysis team support (2 questions) and questions assessing patient satisfaction (1 question) were also included. Each section is scored between 0 and 100. Questions evaluated on different domains can be calculated using the KDQOL-SF 1.3 scoring program. The KDQOL-SF questionnaire is translated from the original American version to Turkish in accordance with the Functional Assessment of Chronic Illness Therapy (FACIT) translation methodology. In the translation, modifications were made considering the daily activities of the Turkish patients.

Statistical Analysis:

All data were evaluated with SPSS 13.0. Spearman correlation analysis and Mann- Whitney U test were used since data was not in normal distribution. In the multi-group analysis, Kruskal-Wallis, Bonferroni multiple comparison test or Mann – Whitney U test wereusedfor binary comparisons. For significance, $p < 0.05$ value was taken into account.

RESULTS

The response rate to the questionnaire was 98% in patients with transplantation and 95% in hemodialysisgroup. In all groups the concept of

general health concept was perfect in 19%, average in 35.44% and very poor in 12.65%.

Socio-demographic findings:

40 (50%) of the patients included in the study were female and 40 (50%) were male. The number of male and females in the study were equal. The mean age of the patients was 39.85 ± 14.48 years. 83.5% of the participants were unemployed, 16.5% had a full-time job. Sociodemographic findings were summarised in Table 1.

Tablo 1- Sociodemographic findings				
Sociodemographic parameters	Transplants n(%)	Hemodialysis n (%)	Control n(%)	p degeri Control vs Tx, HD
Married	23 (%28.8)	9 (%21.4)	6 (%16.7)	p<0.001 vs Tx ,p=0.23 vs HD
Single	56 (%70)	29 (%69)	27 (%75)	p<0.001 vs Tx, p=0.40 vs HD
Illetarecy	0 (%0)	8 (%19.4)	0 (%0)	p<0.001 vs HD
Employed	70 (%87.5)	40 (%95.2)	22(%61.1)	p<0.05 vs Tx, p<0.05 vs HD
Unemployed	10(%12.5)	2 (%4.8)	14(% 38.9)	p=0.08 vs Tx, p<0.001 vs HD
Income monthly USD				
<500	54 (%67.25)	28 (%67.85)	31(%86.09)	p<0.05 vs Tx, p=0.03 vs HD
500-1000	26 (%32.5)	14(%33.3)	4(%11.1)	p<0.05 vs Tx, p<0.05 vs HD
>1000	0(%0)	0 (%0)	1(%2.77)	

Medical characteristics:

The follow-up duration of patients with kidney transplantation was between 6-168 months, and the mean transplant time was 19.27 ± 19.15 months. The time in dialysis before transplantation was calculated as 35.12 ± 32.46 months. In the dialysis group, the mean duration of dialysis was $42,76 \pm 36.01$ months. There was no significant difference between duration in dialysis in between transplant and dialysis patients according to Mann - Whitney U test (p> 0.05). In the renal transplant and dialysis group, 9.5% of the patients had no additional comorbid disease besides chronic kidney disease (CKD). 74.5% of the patients had hypertension (defined as systolic blood pressure of 130 to 139 mmHg or diastolic blood pressure of 80 to 89 mmHg), 3.8% depression, 6.9% congestive heart failure and 5.1% diabetes mellitus and hypertension together. 37.5% of the patients were not hospitalized while 62.5% were hospitalized in the last six months.

The patients were grouped according to their age and additional comorbid status. 74.1% of patients and control group were under 50 years old: low risk, 13.9% between 50 and 59 years old: intermediate risk, 12%>60 age: high risk group. All of the patients were on at least one or more medications. The mean number of drugs taken in the transplant group was 5.86 ± 1.85, 6.78 ± 1.90 in the dialysis patient group and 0.91 ± 1.42 in the control group. While 51% of the patients were taking five or less drugs, 48.1% were using six or more drugs. 40% of the transplanted patients had complications due to immunosuppressive therapy. All transplant patients had been taking standard immunosuppressive therapy like cyclosporin (or tacrolimus), azathioprine (or mycophenolate) and prednisolone.

Health related quality of life:

HRQoL of transplanted and dialysis patients was lower than control group. Compared to the healthy population, it was found that the scores of MH, ER and SF were comparable with lower scores in rest of the subunits. All subunits of HRQoL except MH was significantly higher in transplanted group compared with dialysis group (p <0.05). The mean values of the eight subunits of the quality of life scale for each patient and control group are shown in Table2.

Parameters effecting health related quality of life:

Serum creatinine, hemoglobin (Hb), parathormone, uric acid and calcium levels were evaluated before and after transplantation (Table 3). It was seen that there was a significant difference between the calcium, uric acid, Hb values and HRQoL of the patients in the renal transplant group before and after the transplantation (p <0.00). This significant change was not found in parathormone levels before and after transplantation (p> 0.05). A significant correlation was found between transplantation and dialysis group's HRQoL and albumin, Hb, creatinine, phosphorus, and parathormone values (p <0.05). The difference was not significant for calcium between groups (p> 0.05). There was a positive correlation between presence of

social support, Hb, albumin and all subunits of HRQoL (p <0.00).

Table 2- Comparison of domains of HRQoL between hemodialysis, transplant and control group

SF-36 Domains	Hemodialysis	Transplant	Control
	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)
Physical Function (PF)	33.6(24.6-42.6)	62.5 (46.5-78.5) *p<0.0001 vs. HD*	82.2 (77.5-87.2) *p<0.0001 vs. HD* *p=0.0002 vsTx*
Physical Role (PR)	23.6 (18.6-30.6)	53.5(33.5-73.5) *p<0.0001 vs. HD*	87.8 (77.8-97.8) *p=0.0107 vs. HD* *p=0.045 vs Tx*
Body Pain (Body Pain)	48.6 (41.6-55.6)	70.2 (55.2-85.2) *p<0.0001 vs. HD*	77.5 (70.5-81.9) *p<0.0001 vs. HD* *p=0.089 vs. Tx*
General Health (GH)	31.6 (21.6-41.6)	54.3 (34.3-74.8) *p=0.35 vs HD*	69.5 (49.5-89.5) *p<0.0001 vs. HD* *p=0.073 vs. Tx*
Vitality (VT)	34.5 (24.5-44.5)	53.2(43.2-63.2) *p =0.22 vs HD*	58.4 (48.4-68.4) *p=0.058 vs. HD* *p=0.055 vs. Tx*
SocialFunction (SF)	41.9 (31.9-51.9)	75.2 (55.5-95.2) *p<0.0001 vs. HD*	88.0 (78.3-98.9) *p=0.0097 vs. HD* *p=0.0892 vs. Tx*
Emotional Role (ER)	31.0 (28.3-34.5)	68.8 (58.8-78.3) *p<0.0001 vs. HD*	82.5 (62.5-97.2) *p<0.0001 vs. HD* *p=0.23 vs. Tx*
Mental Health (MH)	69.1 (59.1-79.8)	70.8 (55.9-85.5) p = 0.62	75.4 (65.9-85.8) *p=0.45 vs HD* *p=0.067 vs. Tx*

Tablo3- Laboratory parameters before and after transplantation

Laboratory parameters	Pre-transplantation Median (min-max)	Post-transplantation Median (min-max)	p value
Uric acid mg/dl	*12 (5-43)*	*5.45 (1.7-18)*	<0.05
Haemoglobin g/dl	*12 (7.5-17)*	*13 (7-19)*	p=0.32
Albumin g/dl	*4.30 (2.8-5.2)*	*4.45 (3.0-5.0)*	p=0.14
Calcium mg/dl	*9.6 (7.5-12)*	*9.0 (7-11.5)*	p=0.259
Phosphorus mmol/L	*4.5 (1.5-8.2)*	*2.90 (1.35-7.40)*	<0.05
Parathormonepg/ml	*162 (2-2500)*	*130 (2-2100)*	p=0.405
Creatinine mg/dl	*10.60 (4.8-16)*	*1.19 (0.65-2.9)*	<0.001
Femur T Score		*-1.2 (-2.38- -2.4)*	
L1-2 T Score	*10.60 (4.8-16)*	*-1.0 (- 2.99- -1.20)*	<0.05

Positive correlation was seen between all subunits of HRQoL and Hb (r = 0.38, p <0.01), albumin (r = 0.30, p <0.01). The patients with Hb over 10 gr/dl and albumin over 3.5 gr/dl had higher HRQoL scores than the patients with lower levels. According to the annual BMD measurements of transplanted patients, 22.5% of the patients had T scores compatible with osteopenia (T score between -1 and - 2.5) and 8.8% of them with osteoporosis (T <-2.5).

HRQoLof transplant and dialysis patients were compared according to the presence of comorbidity, socioeconomic status, duration of dialysis treatment, number of drugs, hospitalizations, age, presence of social support, income. The difference was significant with Mann - Whitney U test (p <0.00). A negative correlation was found between the number of drugs taken by patients, the number of hospitalizations in the last six months and HRQoL (p <0.05). HRQoL of the patients hospitalized in the past six months was found significantly lower than the patients who were not. Negative correlation was

found for age (p <0.00, r=-0.46). Negative correlation was found between age and all subgroups of HRQoL: GH (p <0.001, r = - 0.26), BP (r = - 0.20, p < 0.05), PF (r = -0.46, p <0.01) except MH (p <0.001).

HRQoL	Hb	Alb	Ca	PTH	Crt	Age	Risk Score	Dialysis duration	Education	Social support	Post-transplant duration
PF	0.33**	0.29**	0.11	-0.01	-0.08	-0.46**	-0.36**	-0.01	0.27**	0.24**	0.33*
PR	0.28**	0.28**	0.02	-0.12	-0.02	-0.31**	-0.29**	-0.18	0.34**	0.32**	0.21*
BP	0.22*	0.19	0.20	-0.24*	-0.03	-0.20*	-0.15	-0.067	0.23*	0.22*	0.88**
GH	0.38**	0.30**	0.15	-0.11	-0.11	-0.26**	-0.24**	-0.26**	0.14	0.35**	0.40**
VT	0.32**	0.28**	0.03	-0.13	-0.05	-0.27**	-0.23**	-0.07	0.11	0.42**	0.14
SF	0.33**	0.31**	0.04	-0.13	-0.02	-0.23**	-0.28**	-0.02	0.12	0.36**	-0.36**
RE	0.18	0.19	0.03	-0.12	-0.01	-0.24**	-0.20*	0.026	0.14	0.20*	0.85**
MH	0.21*	0.15	0.04	-0.04	-0.04	-0.05	-0.12	-0.066	0.09	0.33**	0.13

Tablo 4- Correlation between domains of HRQoL and independent variables Spearman correlation numbers

** p<0.001, significant correlation
*p<0.05, significant correlation

There was no difference in GH of individuals according to gender (p> 0.05). There was significant correlation between income and only GH of patients (p <0.05). There was a negative correlation between the number of drugs (p <0.00, r = -0.499) and all subunits of HRQoL test. There was a negative correlation for PF, RF, GH and VT subunits of HRQoL with risk scores. There was a significant negative correlation between the presence of comorbid disease (especially hypertension and diabetes) and HRQoL except MH (R = -0.24, p <0.05). Duration of dialysis treatment was negatively correlated with GH and SF. Socially supported patients were mostly married, living with more than one person at home and had higher GH (p <0.01, R= 0.30), MH (p <0.05, R = 0.25) and VT (p <0.05, R= 0.22) scores in patient and control groups (p <0.05). HRQoL of married individuals in control, dialysis, transplant groups was higher than singles (p <0.05).

DISCUSSION

A significant correlation was found between HRQoL of 122 patients and age, socioeconomic status, comorbid factors, hospitalization days in the last six months, the number of drugs, albumin, Hb, duration of dialysis before transplantation, presence of social support and comorbidity. In our study, as shown in previous studies (5,6), it was seen thathealthy graft survival was the most importantfactoraffectingHRQoL in transplant

patients. In our study, no statistically significant difference was found between HRQoL and gender. In previous studies, it has been shown that there was a significant improvement in HRQoL of men after a successful transplant (6). It was shown that female transplant patients were more stressed and had lower scores of MH (6,7). Additionally, lower scores in overall HRQoL of females was reported as well (8-10) and no effect of gender on HRQoL (11).

A negative correlation was found between the duration of dialysis and HRQoLlike in previous studies (8,12). When compared with previous studies, our patients were at the same age interval with Europen but younger than the American population. It was shown that there was negative correlation between age and quality of life (10). Younger patients benefit the most from the kidney transplantation and the improvement in HRQoL is the highest in this population. PF component as well as total quality of life scores are higher (13,14). Increasing age, presence of comorbid diseases and decreased functional capacity are major risk factorsfor low HRQoL (11).

In the data-based study of Dialysis Outcomes and Practice Patterns Study (DOPPS), a significant negative correlation was found between age andPFbut not with MH (15). In our study, a statistically significant negative correlation was found between age, presence of comorbid diseases and all subunits of HRQoL. Depression, diabetes

mellitus and hypertension had negative effect on HRQoL. Diagnosis of hypertension negatively affects PF, GH, perception of pain and social role for patients. Depression was associated with lower MH, VT and SF than others. Depression was reported to be the most important factor influencing MH and SF in transplanted and dialysis patients (16). Depression was found to be an important determinant of HRQoL for dialysis and renal transplant patients (17).

The literacy rates in our patients were similar tothegeneral population according to the data given by Turkey Site Statistics Authority 2007 data (18). The level of education has been shown to effect positively the patients' conception of health, improve treatment compliance, enable them to enjoy their social functions more and improve their quality of life (12,19). Germin-Petrović et al. showed better HRQoLwith higher educational level in hemodialysis patients (20). But homogeneous distribution of our transplant patients might have masked the effect of education on HRQoL scores.

In our study, it was found that there was a statistically significant positive correlation only between Hb and albumin values of the patients. Patients with hematocrit values above 33% have been shown to have lower cardiovascular mortality, hospitalization rates and higher quality of life (21). It has been also previously reported in many studies that albumin value is an indicator of mortality and morbidity of patients (22).

In our study, it was observed that the patients who were hospitalized in the last six months showed statistically significant low HRQoL scores in SF, PF, VT. The most common causes of hospitalization were infection, cardiovascular disease and acute kidney disease similar to previous reports (23). Hospitalization of patients even for short term adversely affects MH, VT, SR and especially PF scores of patients. It was reported that there was nearly a decrease of 10 points in PF and MH scores after each hospitalization (9,11). In a study previously conducted by Lopes et al., it was shown that marital status did not haveaneffect ontheHRQoL (12). In another study conducted in Turkey, it was shown that single patients had higher HRQoL scores compared with married patients (24).

In our study, no significant correlation was found between post-transplant time and quality of life. All previous studies have shown that there is no correlation between post-transplant time and HRQoL domains except GH (25). However, in order toanalyze this significance, patients' HRQoL should be assessed regularly (5).

When the HRQoL of transplant patients were assessed in chronological order, MH scores decreased in the first six weeks but this decline rapidly improved within the following first year. One year after kidney transplantation, a significant improvement was seen in MH and other components of HRQoL (6,25). For the most accurate evaluation, this period should be taken into consideration and, if necessary, patients should be re-evaluated at the end of the six-week periods.

CONCLUSION:

Younger age, adequate social support, higher albumin and haemoglobin levels are positive predictives of better HRQoLscores.Presence of comorbid factors, hospital admissions, polypharmacy, longer duration of dialysis treatment are negative predictives of lower HRQoL scores. Periodic assessment of HRQoL should be included in the follow-up protocols of transplant patients.

Main points:

Healthy graft survival is the most important factor improving HRQoL in transplant patients. Younger age, adequate social support, higher albumin and haemoglobin levels are positive predictors of better HRQoL scores. Presence of comorbid factors, hospital admissions, polypharmacy, longer duration of dialysis treatment are negative predictors of lower HRQoL scores. Periodic assessment of HRQoL should be included in the follow-up protocols of transplant patients.

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