

# Changes in Health-Related Quality of Life in Greek Adult Patients 1 Year After Successful Renal Transplantation

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**Objectives:** This study was undertaken to compare and to evaluate the health-related quality of life (HRQOL) in Greek adult transplant recipients before and 1 year after successful renal transplantation (RT) and to examine which parameters had the greatest effects on their HRQOL. The SF-36 survey score was used.

**Materials and Methods:** Eighty-five Greek hemodialysis patients underwent RT at the Transplant Unit of Evangelismos General Hospital of Athens, including 44 men and 41 women (mean age, 43.8 years; range, 21-59 years). Thirty-nine patients had received a kidney from a living-related donor, and 46 from a cadaver. The scale scores of a Greek version of the SF-36 survey were compared between the transplant and the hemodialysis patients. We also examined the relationships of the scale scores with the patients' age and the type of donor.

**Results:** According to the SF-36 health survey, transplant recipients had better results for general health perception ( $P \leq .001$ ), role-physical functioning ( $P \leq .01$ ), role-emotional functioning ( $P \leq .01$ ), and vitality ( $P \leq .01$ ). In addition, the scale scores of physical functioning, general health, and vitality of the patients who were younger than 30 years old at the time of transplantation were significantly higher than those of the patients who were older than 30 years, while the scores of bodily pain, general health, and physical functioning were significantly lower in cadaveric graft recipients compared with living-related graft recipients.

**Conclusions:** The SF-36 health survey is a validated

and comprehensive instrument for evaluating renal transplant patients' HRQOL. Our data demonstrate an improvement in HRQOL in renal transplant patients from before to 1 year after successful RT. The data also confirm that the recipients' age at transplantation and the type of donor were important factors affecting the HRQOL.

**Key words:** *End-stage renal disease, Hemodialysis, Renal transplantation, Quality of life*

End-stage renal disease (ESRD) reduces the life-span of its victims, while renal transplantation (RT) has become the treatment of choice worldwide besides hemodialysis for the majority of these patients. The aim of RT is not only to improve renal function but also to enhance the patient's ability to enjoy as full a life as possible [1].

Health-related quality of life (HRQOL) has become a very important criterion in the evaluation of any type of medical treatment [2-4]. Especially in the field of RT, with the improvement of graft survival, HRQOL is well recognized as an important measure of outcome in transplant patients. Several determinations of HRQOL focus on physical status and symptoms, functional status, mental health, social functioning, and general health perceptions [5].

The Short Form Health Survey (SF-36) is a generic instrument containing 8 multi-item scales to evaluate the subjective HRQOL [6]. This questionnaire has become a worldwide generic measure owing to its validation, reliability, and conciseness [7]. A review of the literature shows many published studies reporting the results of its validation for different chronic conditions and healthy subjects, as well as its use in assessing the HRQOL in renal transplant patients [8-10].

However, the purpose of this single-center study was to evaluate the changes in HRQOL in Greek

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adult hemodialysis patients who underwent successful RT and the elements that affect it using a standardized and validated Greek version of the SF-36 survey. We compared the HRQOL of renal recipients 1 year after successful RT with those of the same patients before this procedure.

## Materials and Methods

### Patients

This cross-sectional study was conducted from January 2003 to June 2005 at the Transplant Unit, Evangelismos General Hospital of Athens, Greece. Completed questionnaires from 85 patients were studied. Forty-four men and 41 women (mean age, 43.8 years; range, 21 to 59 years) were evaluated before RT and 12 months after successful RT. Thirty-nine patients (45.9%) received a cadaveric graft, and 46 (54.1%) received a graft from a living-related donor. Chronic renal failure (CRF) was caused by hypertensive nephropathy in 31 patients (36.5%), glomerulonephritis in 25 patients (29.4%), chronic pyelonephritis in 19 patients (22.3%), and in 10 patients (8%), the cause was unknown. Information about the patients' age, sex, medical history, hemodialysis, time of RT, and instances of rejection were abstracted from medical records.

All renal transplant patients received immunosuppressive therapy with cyclosporine, a steroid, and mycophenolate mofetil. The patients who had experienced an episode of graft rejection or clinical depression treated with medication were excluded from the study. Only patients with a creatinine clearance rate less than 200 mmol<sup>-1</sup> and a creatinine level ≤ 1.5 mg/dL (normal range, 0.5-1.3 mg/dL) were approached.

### Quality of life

Multiple domains of objective and subjective data that may affect HRQOL were measured using the SF-36 survey, which contains 36 questions that assess 8 aspects of HRQOL: physical functioning, role-physical functioning, bodily pain, general health perception, vitality, social functioning, role-emotional functioning, and mental health.

These questionnaires were answered using a scale ranging from 1 to 100, with higher scores indicative of a better outcome. Both interview and questionnaire distributions were conducted by the same investigator who gave the same instructions, and all data were collected anonymously.

### Statistical analyses

All descriptive data of the SF-36 were reported as means ± standard deviation (SD). The data were analyzed by means of SPSS software (Statistical Package for the Social Sciences, version 12.01, SPSS Inc, Chicago, Ill, USA). The Mann-Whitney *U* and the chi-square tests were used for group comparison, and the Student *t* test was used to analyze normally distributed quantitative data. Values for *P* < .05 were considered statistically significant.

## Results

The mean SF-36 score in the hemodialysis patients before RT versus the same patients 1 year after RT was 55.8 versus 76.7 for physical functioning, 10.2 versus 61.7 for role-physical functioning, 45.5 versus 90.2 for bodily pain, 34.4 versus 84.0 for general health perception, 25.9 versus 83.0 for vitality, 30.9 versus 78.1 for social functioning, 39.6 versus 83.8 for role-emotional functioning, and 23.4 versus 68.4 for mental health (Table 1).

**Table 1.** Results of SF-36 survey before and 1 year after renal transplantation

Generic scales of the SF-36	Baseline - HP	1 year after RT	Baseline vs 1 year after RT
PF	55.8 ± 28.1	76.7 ± 17.0	
RPF	10.2 ± 44.7	61.7 ± 36.0	<i>P</i> ≤ .01
BP	45.5 ± 23.1	90.2 ± 15.1	
GH	34.4 ± 22.7	84.0 ± 23.2	<i>P</i> ≤ .001
VT	25.9 ± 3.0	83.0 ± 25.1	<i>P</i> ≤ .01
SF	30.9 ± 19.1	78.1 ± 29.6	
REF	39.6 ± 18.5	83.0 ± 13.2	<i>P</i> ≤ .01
MH	23.4 ± 45.8	68.4 ± 14.8	

RT, renal transplantation; HP, hemodialysis patients; PF, physical functioning; RPF, role-physical functioning; BP, bodily pain; GH, general health perception; VT, vitality; SF, social functioning; REF, role-emotional functioning; MH, mental health  
Values are presented as means ± SD.

The SF-36 showed significant differences in 4 dimensions after RT. Better results were noticed in general health perception (*P* ≤ .001), role-physical functioning (*P* ≤ .01), role-emotional functioning (*P* ≤ .01), and vitality (*P* ≤ .01) (Table 1). Transplant patients also reported less bodily pain, better physical and social functioning, and better mental health, but these differences were not significant (*P* = .065, *P* = .06, *P* = .062, and *P* = .07 respectively). No differences were found between men and women.

Within the transplant group, the following observations were of considerable interest (Table 2):

patients who were younger than 30 years old at the time of transplantation showed significantly better levels of physical functioning ( $P \leq .05$ ), general health ( $P \leq .05$ ), and vitality ( $P \leq .01$ ) 1 year after successful RT compared with those who were older than 30 years at the time of the procedure. In addition, cadaveric graft recipients showed significantly worse levels of bodily pain ( $P \leq .05$ ), general health ( $P \leq .01$ ), and physical functioning ( $P \leq .01$ ) compared with living-related graft recipients (Table 2).

**Table 2.** SF-36 scale scores in renal transplant patients

Generic scales of the SF-36	Age at transplantation (years)		Donor	
	Age $\leq$ 30 (n = 28)	Age $>$ 30 (n = 57)	Cadaveric (n = 39)	Living-related (n = 46)
PF	74.3 $\pm$ 5.5*	68.9 $\pm$ 13.2	46.8 $\pm$ 8.5†	80.2 $\pm$ 15.4
RPF	56.1 $\pm$ 34.8	51.7 $\pm$ 36.0	51.9 $\pm$ 17.0	60.2 $\pm$ 5.5
BP	78.9 $\pm$ 6.9	80.2 $\pm$ 15.1	51.4 $\pm$ 21.2*	89.4 $\pm$ 17.9
GH	82.9 $\pm$ 7.1*	64.0 $\pm$ 23.2	6.0 $\pm$ 17.6†	85.1 $\pm$ 16.8
VT	77.4 $\pm$ 18.9†	63.0 $\pm$ 25.1	70.8 $\pm$ 18.4	76.8 $\pm$ 23.1
SF	58.7 $\pm$ 18.9	75.1 $\pm$ 29.6	56.4 $\pm$ 15.0	69.2 $\pm$ 13.8
REF	63.6 $\pm$ 11.5	77.0 $\pm$ 13.2	69.3 $\pm$ 11.7	74.3 $\pm$ 19.6
MH	75.9 $\pm$ 8.2	88.4 $\pm$ 14.8	75.0 $\pm$ 16.9	86.3 $\pm$ 12.0

PF, physical functioning; RPF, role-physical functioning; BP, bodily pain; GH, general health perception; VT, vitality; SF, social functioning; REF, role-emotional functioning; MH, mental health

Transplant patients were classified according to their age at the transplantation procedure and the type of the graft donor.

Values are presented as means  $\pm$  SD.

\* $P < .05$ , † $P < .01$

## Discussion

Outcome measures after a procedure like RT have traditionally addressed only operative and long-term survival and complication rates. HRQOL is gaining importance as an outcome measure, especially because of the intense resource use that transplantation demands. Better technology and therapies have produced longer survival rates after RT, and attention is shifting to the quality of those years.

In recent years, a considerable concern has been shown toward the HRQOL as an effective parameter in clinical investigations [9]. Many reports are available concerning the improvement of HRQOL in transplant patients [2, 4, 10]. Several methods for scoring the HRQOL also have been reported [2, 11]. We used the SF-36 survey consisting of 36 questions because we believe that this instrument allowed us to assess RT's influence on the patients' physical, social, and psychological status of well-being.

The results of this study showed that a higher HRQOL 1 year after RT was achieved, especially in

the dimensions of general health perception, role-physical functioning, role-emotional functioning, and vitality. These results are in accordance with the literature [2, 9, 12, 13]. Laupacis and colleagues [14] also reported improvement in almost all dimensions within 6 months of successful RT, according to the HRQOL of ESRD patients. However, the risk of graft rejection in patients with RT is highest within the first 6 postoperative months, hospital appointments are necessary every few days, and the patients are still adjusting to medication and its effects during this period [8].

Some scales of the SF-36 did not reveal a significant difference 1 year before and 1 year after RT; for example, physical functioning and mental health were not significantly improved after RT. This might be attributed to the fear of organ rejection that some recipients might have or to the fear of the effects on their appearance caused by surgery and immunosuppressive drugs. However, we must take into consideration that the transplant recipients were a select group with good clinical and demographic characteristics.

Waiser and coworkers [15] reported that the quality of life is dependent on the immunosuppressive regimen. However, RT patients, we found no association between the HRQOL and immunosuppressive therapy. Unlike 2 other studies, [16] we found that sex did not appear to have any significant effects on HRQOL.

We also analyzed which factors had the most effect on the SF-36 scale scores. The cross-sectional evaluation showed that age at the time of transplantation and the type of donor graft had a significant influence on the patients' HRQOL. The lower the patient's age, the higher the scale scores, especially in relation to physical functioning, general health, and vitality. Finally, the RT patients who received a living-related allograft had significantly better levels with regard to bodily pain, general health, and physical functioning compared with cadaveric graft recipients.

In conclusion, our results clearly indicate that the overall HRQOL of renal allograft recipients is significantly better than that of hemodialysis patients. General health perception, role-physical functioning, role-emotional functioning, and vitality were demonstrated to have a profound positive influence on patients' HRQOL after RT. The lower the patient's age at the time of transplantation, the higher the SF-36 scale scores. The type of the graft donor was also an important factor affecting HRQOL in RT patients.

## References

1. Welch G. Assessment of quality of life following renal failure. In: McGee HM, Bradley C, eds. *Quality of life following renal failure: psychosocial challenges accompanying high technology medicine*. Reading, Harwood Academic Publishers; 1994
2. Overbeck I, Bartels M, Decker O, Harms J, Hauss J, Fangmann J. Changes in quality of life after renal transplantation. *Transplant Proc* 2005; 37: 1618-1621
3. Franke GH, Reimer J, Philipp T, Heemann U. Aspects of quality of life through end-stage renal disease. *Qual Life Res* 2003; 12: 103-115
4. Olbrisch ME, Benedict SM, Ashe K, Levenson JL. Psychological assessment and care of organ transplant patients. *J Consult Clin Psychol* 2002; 70: 771-783
5. Kimmel PL. Just whose quality of life is it anyway? Controversies and consistencies in measurement of quality of life. *Kidney Int* 2000; 57 (Suppl 74): S113-S120
6. Ware JE. The SF-36 health survey. In: Spilker B, ed. *Quality of life and pharmacoeconomics in clinical trials*. Philadelphia, Lippincott-Raven; 1996, p 337
7. Stansferd SA, Roberts R, Foot SP. Assessing the validity of the SF-36 general health survey. *Qual Life Res* 1997; 6: 217-224
8. DeOreo PB. Hemodialysis patient-assessed functional health status predicts continued survival, hospitalization, and dialysis-attendance compliance. *Am J Kidney Dis* 1997; 30: 204-212
9. Shield CF III, McGrath MM, Goss TF. Assessment of health-related quality of life in kidney transplant patients receiving tacrolimus (FK-506)-based versus cyclosporine-based immunosuppression. FK506 Kidney Transplant Study Group. *Transplantation* 1997; 64: 1738-1743
10. Painter PL, Luetkemeier MJ, Moore GE, Dibble SL, Green GA, Myll JO, et al. Health-related fitness and quality of life in organ transplant recipients. *Transplantation* 1997; 27: 1796-1800
11. Russel JD, Beecroft ML, Ludwin D, Churchill DN. The quality of life in renal transplantation - a prospective study. *Transplantation*. 1992; 54: 656-660
12. Witzke O, Becker G, Franke GH, Binek M, Philipp T, Heemann U. Kidney transplantation improves quality of life. *Transplant Proc* 1997; 29: 1569-1570
13. Fujisawa M, Ichikawa Y, Yoshiya K, Isotani S, Higuchi A, Nagano S, et al. Assessment of health-related quality of life in renal transplant and hemodialysis patients using the SF-36 health survey. *Urology* 2000; 56: 201-206
14. Laupacis A, Pus N, Muirhead N, Wong C, Ferguson B, Keown P. Disease-specific questionnaire for patients with a renal transplant. *Nephron* 1993; 64: 226-231
15. Waiser J, Budde K, Schreiber M, Peibst O, Koch U, Bohler T, et al. The quality of life in end-stage renal disease care. *Transplant Int* 1998; 11 (Suppl 1): S42-S45
16. Jofre R, Lopez-Gomez JM, Moreno F, Sanz-Guajardo D, Valderrabano F. Changes in quality of life after renal transplantation. *Am J Kidney Dis* 1998; 32: 93-100