

# Comparison of quality of life between haemodialysis and renal transplant patients



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## SUMMARY

- Quality of life is an important concern in health care and the allocation of health care resources. It changes following any major changes in people's lives, for example becoming unemployed, having acquired higher education or becoming chronically ill.
- The purpose of this study was to determine and compare quality of life in haemodialysis and kidney transplantation patients referred to hospital.
- The study used a descriptive-analytic design, and was undertaken in the haemodialysis unit of a university hospital and a nephrology clinic.
- 213 subjects were included in the sample. They were divided into two groups: renal transplant patients and chronic haemodialysis patients. The groups were matched for age, sex, and level of education.
- Quality of life data were collected using the SF-36 questionnaire for evaluation of quality of life and a visual analogue scale to rate overall quality of life.
- Results indicated that renal transplant patients had better overall healthy thinking and physical condition ( $p < 0.001$ ) and ability to undertake daily activities ( $p < 0.001$ ) and emotional status ( $p < 0.001$ ) than haemodialysis patients. The results showed that, overall, quality of life was better for renal transplantation patients than haemodialysis patients ( $p < 0.001$ ).
- In general, quality of life improved after successful kidney transplantation compared to dialysis.

## INTRODUCTION

Quality of life is a broad concept encompassing many factors related directly and indirectly to health status (World Health Organization, 1948). It is of particular importance in trials comparing treatments with similar or no impact on disease progression and survival. However, the term quality of life is often used vaguely and without clear definition (Gill & Feinstein, 1994). Health economic studies may use quality of life as an indicator of the benefit and utility of certain interventions (such as medical and surgical therapies). Moreover,

research on quality of life is also an issue in clinical practice (Patrick & Chiang, 2000).

Many serious medical conditions are associated with increased poor physical and mental health. One such condition is chronic renal disease, which has increased substantially in recent years (Testa & Simonson, 1996). Chronic kidney disease is now recognised as a significant and rapidly growing global health burden (Valderrabano et al., 2001). In recent decades, kidney replacement therapy such as haemodialysis, peritoneal dialysis, and kidney transplantation have lengthened the life of many patients with end-stage renal disease (Reimer et al., 2000).

End-stage renal disease and its treatment profoundly affect health related quality of life not only for the patient but the family also. Although renal replacement therapy ameliorates some of the symptoms of end-stage renal disease they may not be completely alleviated. Moreover, with treatment often comes significant life style changes, all of which impact on quality of life (Franke et al., 2003). Quality of life of patients with end renal disease is influenced by the disease itself and by the type of replacement therapy (Oberbaue et al., 2003). Dialysis must be repeated frequently and continued life-long until death or transplant (Laupacis et al., 1996; Naughton et al., 1996).

Transplantation is a highly successful treatment modality, but it is not a curative procedure. Transplantation can alter quality of life in many ways, both positively and negatively (Fallon et al., 1997). However, this is often at a personal cost, for example transplant patients have to face the side effects of immunosuppressive drugs, noncompliance, and rejection of the transplanted organ, psychosocial stress and excessive financial burdens (Hariharan et al., 2000). There is also a risk of graft rejection this may mean a return to dialysis and/or re-graft, with attendant health and cost implications (Aulakh et al., 2003). This also has an emotional toll on families.

A study which followed pre-transplant patients for up to two years post-transplant found employment rates increased by 50% with a functioning transplant (Evans et al., 1985). On the other hand, more than a third of the haemodialysis group and a sixth of the transplantation group reported that they had accompanying chronic physical disorders. The national kidney dialysis and kidney transplant study found that while 79.1% of transplant recipients had almost normal physical function, only approximately half of dialysis patients reported being able to function at the same level (Afayin et al., 2003).

Renal transplantation is a chronic condition that involves the total human environment for supportive care and self care (American Nurses Association, 1995). It not only affects the patients but also the family and society. Nursing as a discipline aims to address actual and potential patient health problems and nurses must be able to educate patients about self care skills (Wolfgang et al., 2004).

With advanced and improved renal replacement therapy, such as haemodialysis and renal transplantation, patients' survival rates have increased and quality of life has become an increasingly important parameter quality of life in haemodialysis and renal transplantation patient has been studied extensively in recent decades (Bullinger, 1991).

## METHODS

This research was a descriptive, cross-section and analytical study. Its purpose was to determine and comparison of quality of life in haemodialysis and renal transplantation patients.

### Sample

The study participants included 213 patients who were undergoing haemodialysis and were not on the waiting list for transplantation and patients who had received a renal transplant at least six months ago. Inclusion criteria were: age 17-45 years; educational level; haemodialysis or renal transplantation duration of about six months. Exclusion criteria were: any illness or malignancy, or patients who were on the waiting list for renal transplantation.

The first 114 patients were selected randomly from the haemodialysis unit records of the university hospital. They were asked to complete the research scales on the days that they came into hospital for dialysis. Similarly, the first 99 patients who had undergone renal transplantation six months previously were selected randomly from the clinic or nephrologist's office. They completed their scales on the days they came to either the clinic or nephrologist's office.

Comparison of quality of life between haemodialysis and renal transplantation patients was performed at three and six months after initial baseline, this included: assessment of physical status, mental status, activities of daily living, and social function.

### Data collection

The Short Form 36 (SF-36) questionnaire was used to assess quality of life annually for kidney transplantation and haemodialysis patients. The SF-36 is the most well known general health questionnaire, which was developed from the work of the Rand Corporation in the late 1970s and 1980s (Gill & Feinstein, 1994). Its use is reported in more than 2000 publications, and it is one of the most widely used quality of life instruments worldwide (Ware & Sherbourne, 1992; Hemingway et al., 1997).

The SF-36 questionnaire is a self administered survey that contains 36 items that take a few minutes to complete. It includes one multi-item scale that assesses eight health domains (Matas et al., 1998):

- limitations in physical activities because of health problems
- limitations in social or physical activities because of physical or emotional problems
- limitations in usual role activities because of physical health problems
- bodily pain
- general mental health
- limitations in usual role activities because of emotional problems
- vitality
- general health problems

Items are evaluated using either a subjective or an objective rating. All scales are scored from 0 (worst case) to 100 (best case) (Tomasz & Piort, 2003).

In addition to the SF-36, a visual analogue scale (0-5) was used to gather socio-demographic and health data (physical health and renal transplant and haemodialysis information expectation levels) using a 10-item multiple-choice questionnaire, which was constructed for this study (Matas et al., 1998).

### Data analysis

The Statistical Package for Social Sciences (SPSS) was used for statistical analysis in this study. In comparing the groups, the Chi-square test for categorical variables, and the t-test and co-variance analysis for continuous variables, were used. For determination of the variables, which predicted the level of general compliance, mental health, physical function and quality of life, logistic and multiple regression analysis was used for non-normally distributed continuous variables. Statistical significance was set at  $p < 0.05$ .

### Ethical considerations

The study protocol was approved by the university and local hospital medical ethics committee. In accordance with standard ethical procedures, patients were informed that participation was entirely voluntary and would not affect their future treatment. They were assured of full confidentiality and anonymity. The data collector was available to patients and their families to discuss the study and answer any concerns expressed.

## RESULTS AND DISCUSSION

### Sample

213 patients were included in the study (see table 1), of whom 122 (57%) were male and 91 (43%) were female. There were 114 patients (63 male, 51 female) in the haemodialysis group, whose mean age was 33.88 years (SD 10.72). In the renal transplantation group there were 99 patients (59 male, 40 female), whose mean age was 32.39 years (SD 9.5). The average age of patients in this study was significantly younger than those in Tomasz and Piort's (2003) study of quality of life in haemodialysis and renal transplantation patients, whose average age was 44 (SD 12) years. In this study, the two groups were similar in size and gender distribution and there were no significant differences between haemodialysis patients and renal transplantation patients regarding their age, gender, level of education, and their primary disease (see table 1). However, there was a statistically significant difference in marital status between the two groups ( $p < 0.001$ ), although the majority in both groups was married and unemployed. Although Tomasz and Piort's (2003) study did not reveal any demographic differences between haemodialysis and renal transplant subjects, the study by Blake et al. (2000) showed significant differences in age and marital status between the two groups.

The most common chronic disease in both groups was hypertension, followed by glomerulonephritis and diabetes. Other diseases included rheumatism, heart failure and gastritis. This is consistent with other research that shows that diabetic glomerulonephritis and hypertension are the most common diseases (Harrison, 2005).

### Quality of life

The SF-36 scores revealed statistically significant differences ( $p < 0.05$ ) between the haemodialysis and the renal transplantation groups in all domains except social functioning, with the renal transplant patients reporting higher quality of life scores than haemodialysis

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patients in all domains (see table 2). This was particularly true for their physical and psychological status, but not for their social functioning. However, some significant differences in some aspects of social functioning were observed between the groups: bodily pain and discomfort, positive feeling, and activities of daily living. This is consistent with earlier research by Bermer et al. (1989) who reported better quality of life scores in transplant patients' quality of life in several domains. Reimer et al. (2000) reported that transplanted patients and healthy controls reported similar quality of life, which was significantly better than in dialysis patients.

Socio demographic variables		Haemodialysis patients	Kidney transplant patients
Mean age		33.88 (SD 10.7)	32.3 (SD 9.5)
Gender	Male	63 (55.3%)	59 (59.6%)
	Female	51 (44.7%)	40 (40.7%)
Educational level	Primer	34 (29.8%)	38 (38.4%)
	High school	35 (30.7%)	19 (19.2%)
	Vocational school	24 (21.1%)	29 (29.3%)
	College	21 (18.4%)	13 (13.1)
Marital status	Single	18 (16.2%)	32 (33.3%)
	Married	93 (83.8%)	64 (66.7%)
Employment status	Employed	22 (19.6%)	23 (23.5%)
	Unemployed	88 (78.6%)	71 (72.1%)
	Student	2 (1.8%)	4 (4.1%)
Primary disease	Hypertension	40 (35.1%)	23 (23.5%)
	Glomerulo-nephritis	18 (15.8%)	15 (15.3%)
	Diabetes	12 (10.5%)	6 (6.1%)
	Other disease	44 (38.6%)	54 (55.1%)

Table 1: Socio demographic data

Quality of life dimension	Haemodialysis patients	Kidney transplant patients	Significance (p)
Physical functioning	58.77	79.29	< 0.05
Role - physical	67.10	73.73	< 0.05
Role - emotional	51.75	63.13	< 0.05
Vitality	48.24	62.03	< 0.05
Social functioning	59.21	64.03	Not significant
Bodily pain	61.57	71.96	< 0.05
General health	32.89	50.50	< 0.05
Mental health	53.38	66.66	< 0.05

Table 2: Comparison of mean quality of life domains between haemodialysis and kidney transplantation patients

Using the SF-36, overall quality of life was rated more highly by the transplant patients (see figure 1). When assessing overall quality of life using visual analogue scores (VAS) there was a statically significant difference between the two groups ( $p < 0.001$ ). In the haemodialysis group the mean VAS was 2.84 (SD 1.04) compared to 3.22 (SD 0.85) in the renal transplant group. The overall VAS was 2.93 (SD 0.95). Comparison of overall quality of life by using VAS in both groups showed a significant difference between the groups. These findings are consistent with previous research which demonstrated that overall, kidney transplantation improved

to quality of life in end-stage renal disease patients (Franke et al., 2003) and transplant patients with functioning grafts had a better quality of life than patients treated with various dialysis techniques (Fisher et al., 1998). However, research in France and Japan with renal transplant patients reported lower physical and general health than the general population (Motzahn et al., 1997).



Figure 1. Overall quality of life

### CONCLUSIONS

In general, quality of life improved after successful kidney transplant compared to dialysis. Although initially expensive, renal transplantation is a cheaper renal replacement therapy in the long term and is associated with reduced mortality. The high cost of the operation and the lifelong immunosuppressive medications present a significant economic challenge for society. Although quality of life has been shown to improve following transplant, the intensive follow-up regimen influences renal transplant patients' daily and social activities and employment, and in turn, increases their economic burden (Lewis et al., 1990). Patients are concerned about possible rejection and have distress related to side effects of medications, economic burden, and their family (Taskapan et al., 2005).

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