

## Assessment of Quality of Life in Patients of End Stage Renal Disease on Different Modalities of Treatment

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### ABSTRACT

This study was conducted to measure quality of life of patients with end stage renal disease on different modalities of treatment.

A total of 30 diagnosed cases of end stage renal disease (ESRD) attending BPKIHS were included in the study. Group 1 included 10 patients on regular maintenance hemodialysis, group 2 included 10 patients on continuous ambulatory peritoneal dialysis (CAPD) and group 3 included 10 patients on regular conservative drugs. The inclusion criteria were all diagnosed cases of ESRD based on the guidelines given by K/DOQI, 2002. A detailed history relating to the disease condition as per the designed proforma was taken, which included demographic data and clinical characteristics of the patients. For assessment of quality of life, KDQOL-SF questionnaire was used. Strata 8.0 software program was used for the analysis of collected data.

Physical health was found to be the most severely affected domain of the KDQOL. The mean score for physical health was least in group 1 ( $33.36 \pm 16.14$ ). Mental health was better in group 2 ( $54.93 \pm 9.92$ ) than in group 1 ( $39.50 \pm 14.27$ ) ("p" value 0.01). Variables like haemoglobin, hematocrit and adequacy of dialysis have positive correlation with all the four domains of the KDQOL. There was a statistically significant correlation of physical health with mental health (p value 0.001), physical health with kidney disease issues (p value 0.001) and mental health with kidney disease issues (p value 0.007).

Our study has shown that patients of ESRD have a poor quality of life despite being in some form of dialysis and the most affected domain of the KDQOL scale is physical health. Patients on CAPD have better quality of life than patients on maintenance haemodialysis especially in terms of mental health. Variables like haemoglobin, hematocrit and adequacy of dialysis have a positive correlation with all the four domains of the KDQOL scale i.e. optimizing these variables improves the overall quality of life.

**Key Words:** dialysis, end stage renal disease, quality of life

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## INTRODUCTION

The signs and symptoms of end stage renal disease (ESRD) affect almost any organ systems of the body. The resulting physical and mental handicaps quite obviously affect the patient significantly in his/her daily living activities. And so what is more relevant to both the patients and the physicians is not only the measurement of biochemical parameters, hospitalization rates and mortality rates but also the overall assessment of the patient's quality of life.

A description of a person's quality of life (QOL) should not reflect the opinions of health professionals or family members. It is neither concerned with the objective measurement of the symptoms/disability. Quality of life (QOL) measures the individual's subjective perception of his functioning and well-being in his/her day-to-day living.

WHO has defined "QOL" as "individual's perceptions of their position in life in the context of the culture and value systems where they live and in relation to their goals, expectations, standards and concerns".<sup>1</sup>

It is believed to be a broad concept incorporating in a complex way an individual's physical health, psychological state, level of independence, social relationships, personal beliefs and his / her relations to the silent features of the environment.

Literature review does not yield any study on quality of life of patients of ESRD in Nepal, hence the present study is carried out to assess the quality of life of these patients.

## MATERIAL AND METHODS

A total of 30 diagnosed cases of ESRD attending BPKIHS (Nephrology OPD and/or Dialysis unit) were included in the study from March 2004 - March 2005 with the inclusion criteria being the diagnosed cases of end stage renal disease based on the guidelines given by K/DOQI, 2002.<sup>2</sup> Patients were excluded from the study if they were admitted in the ward for any acute medical illness e.g. acute renal failure, pulmonary edema etc, if they had neurological illness in the form of cognitive impairment or focal neurological deficit in the form of paresis/paralysis which is hampering daily living activities and if they had psychiatric illness with loss of perception power of self-assessment.

A detail history, examination findings and investigations relating to disease condition as per the designed proforma were taken, which included the demographic characteristics, clinical characteristics and laboratory parameters of the patients.

The following dialysis parameters were studied for patients who were on maintenance hemodialysis:

duration of dialysis, type of dialysis, serum albumin level, hemoglobin concentration, hematocrit level and adequacy of dialysis.

The adequacy of dialysis in hemodialysis patients was assessed by "Urea Reduction Ratio (URR)",

$$\text{URR} = \frac{(\text{Pre dialysis urea} - \text{Post dialysis urea})}{\text{Pre dialysis urea}} \times 100$$

[URR of <65% indicates poor adequacy of dialysis.]

## Instrument

For assessment of QOL, KDQOL-SF<sup>tm</sup> 1.3 questionnaires was used. This is developed by the KDQOL working group with support from the AMGEN.<sup>3</sup>

KDQOL-SF<sup>tm</sup> is a multidimensional, reliable and validated instrument specifically designed for dialysis patients. It has ESRD targeted areas (43 items) and has as its generic core the 36 items of the short form health survey (SF-36). It assesses the following parameters:

### ESRD targeted areas:

**MOS-SF-36 targeted areas:** These items are grouped into 4 main domains:

#### 1. Physical health (P.H):

- a. Physical functioning
- b. Work status
- c. Role limitation due to physical function
- d. General health
- e. Pain
- f. Energy/Fatigue
- g. Social function

#### 2. Mental health (M.H.):

- a. Emotional well-being
- b. Quality of social interaction
- c. Burden of kidney disease
- d. Social support
- e. Role limitation due to emotional function

#### 3. Kidney disease issues (K.D.I.):

- a. Cognitive function
- b. Symptoms / problems
- c. Effects of kidney disease
- d. Sexual function
- e. Sleep

#### 4. Patient satisfaction (P. S.):

- a. Patient satisfaction
- b. Staff encouragement

A time frame of 1 year with major emphasis on the past 4 weeks is indicated in the study.

Thus a proforma containing a total of 24 questions was used. The questionnaires were translated into the local Nepali language as per the guidelines given by the KDQOL working group. Informed consent was taken from the patient before the administration of the questionnaires. The KDQOL questionnaire was self-administered by the patients or in case of inability either interviewer assisted or interviewer administered forms were used. Patients were asked to recall their experience of the past four weeks.

Strata 8.0 software programme was used for the analysis of collected data. This program checked the recorded data and computed the mean scores of various variables and the mean scores of the 4 domains

of the KDQOL. One-way analysis of variance method (ANOVA) was used to compare the mean values in the three groups. 'F' values and 'p' values were calculated wherever needed. Pearson's correlation coefficient of the different variables with the four domains of the KDQOL was also assessed.

## RESULTS

Among the 30 patients of ESRD taken in our study, 10 patients were on regular maintenance haemodialysis, 10 patients were on regular continuous ambulatory peritoneal dialysis (CAPD) and 10 patients were on regular conservative drugs. They were respectively divided into group 1, group 2 and group 3.

The mean age of patients in the haemodialysis group

**Table 1.** Base line characteristics of the patients in the three groups

	Group			Total	ANOVA	
	1	2	3		F value	p value
Age(yrs)	48.3 ± 17.01	57.4 ± 8.82	51.9 ± 18.46		0.89	0.42
<b>Sex</b>						
Female	4(40%)	2(20%)	3(30%)	9(30%)		
Male	6(60%)	8(80%)	7(70%)	21(70%)		
<b>Marital Status</b>						
Married	8(80%)	10(100%)	9(90%)	27(90%)		
Unmarried	2(20%)	0	1(10%)	3(10%)		
<b>Etiology</b>						
Diabetes Mellitus	2(20%)	4(40%)	5(50%)	11(36.67%)		
Chronic Glomerulonephrities	6(60%)	2(20%)	2(20%)	10(33.33%)		
HTN	0(0%)	2(20%)	1(10%)	3(10%)		
ADPKD	1(10%)	1(10%)	1(10%)	3(10%)		
Obstructive Uropathy	0	1(10%)	1(10%)	2(6.67%)		
Renal T.B.(Post nephrectomy)	1(10%)	0	0	1(3.33%)		
<b>Lab parameters</b>						
Hb	8.33 ± 0.97	9.39 ± 1.85	8.04 ± 2.07		1.74	0.19
Hematocrit	26 ± 3.02	29.24 ± 5.79	27.97 ± 3.83		1.39	0.26
Albumin	3.02 ± 0.82	3.03 ± 0.44	2.91 ± 0.66		0.11	0.89
GFR	7.33 ± 2.94	7.44 ± 1.08	7.38 ± 2.07		0.01	0.99

was 48.3 years ( $\pm 17.01$ ) as compared to 57.4 years ( $\pm 8.82$ ) in the CAPD group and 51.9 years ( $\pm 18.46$ ) on drugs. However, there was no statistically significant difference among the three groups.

In all the three groups the number of male patients were more than the number of female patients and most of them were married.

In our study, Diabetes Mellitus was found to be the most common cause of ESRD, 11 patients, i.e. 36.67%, followed by chronic glomerulonephritis, 10 patients, i.e. 33.33%. Other causes were HTN 10 %, ADPKD 10%, and obstructive uropathy 6.67%.

There was equal distribution of mean Hb, hematocrit, albumin and GFR among the three groups.

Adequacy of dialysis in patients on maintenance hemodialysis was  $62.12 \pm 20.85$  which was less than the recommended value  $>65\%$  (as per the guidelines given by NKF). It was not assessed in group 2 and it was not applicable in group 3.

Physical health was the most severely affected domain of the KDQOL. However, there was no statistically significant difference among the three groups. The mean score for the physical health was least in group 1 ( $33.36 \pm 16.14$ ).

Mental health was better in group 2 ( $54.93 \pm 9.92$ ) than in group 1 ( $39.50 \pm 14.27$ ) and it was statistically significant, (p value 0.01). Kidney disease issues were similar in all the three groups. Patient's satisfaction with dialysis care was also similar in haemodialysis and CAPD patients.

We also assessed the Pearson's correlation coefficient of the different variables with the four domains of the KDQOL and also among the four domains the KDQOL.

Though it was not statistically significant, we found that there was a positive correlation of Hb / Hematocrit and adequacy of dialysis with all the four domains of the KDQOL.

We found a statistically significant correlation of physical health with mental health (p value 0.001), physical health with kidney disease issues (p value 0.001) and mental health with kidney disease issues (p value 0.007).

## DISCUSSION

Most of the studies done in patients of ESRD have evaluated the lab parameters, hospitalization rates and the mortality of these patients. However, in recent years, patient's quality of life is considered as one of the basic parameters to be evaluated to see the impact of the disease and the effects of renal replacement therapy.

The mean age of patients of ESRD in our study was lower than that in the developed world i.e. the mean age of ESRD patients in the developed countries is around 60-63 years.<sup>4-8</sup> The main reason for this difference is the failure to institute controlling and preventive measures in patients with early stages of chronic kidney disease (CKD) resulting in faster deterioration of renal function and progression to ESRD.

Most of the patients in our study were male (70%) and 90% of them were married.

This may not reflect the true distribution of ESRD in the general community as it was a hospital based study. However, it still shows that mostly male patients of ESRD seek the renal replacement therapy in the hospital either in the form of CAPD or haemodialysis. This may reflect the gender disparity in our society in terms of seeking the health care.

The most common etiology of ESRD found in our study was diabetes mellitus (36.67%) followed by chronic glomerulonephritis (33.33%). This is in accordance with the studies done in developing countries like India.<sup>4-8</sup> Other causes of ESRD found in our study were HTN/ADPKD/ Obstructive uropathy.

Adequacy of Dialysis in patients undergoing maintenance haemodialysis was calculated by URR

**Table 2. KDQOL domain scores in the three groups**

Domain	Group			One way ANOVA	
	1	2	3	F value	p value
Physical Health (PH)	$33.36 \pm 16.14$	$36.03 \pm 11.36$	$35.65 \pm 11.80$	0.12	0.88
Mental Health (MH)	$39.50 \pm 14.27$	$54.93 \pm 9.92$	$51.02 \pm 11.02$	4.56	0.01
Kidney Disease Issues (KDI)	$63.00 \pm 12.01$	$61.62 \pm 11.27$	$60.57 \pm 14.51$	0.09	0.91
Patient satisfaction with dialysis care (PS)	$69.78 \pm 17.41$	$62.91 \pm 9.56$	Not applicable	1.20	0.25

(Urea Reduction Ratio). A URR of >65% indicates a good adequacy of dialysis and is the recommended cut-off value. However, in our study, mean URR in patients undergoing maintenance haemodialysis was  $62.12 \pm 20.85\%$ , indicating a slightly poor adequacy of dialysis. In fact, in the western countries also, the delivered adequacy of dialysis is generally lower than the prescribed (recommended) one. There are many reasons for this, mainly less duration of haemodialysis sessions, poor blood flow rate through the dialyzer and inappropriate dialyzers. Improving the adequacy of dialysis has shown to improve the quality of life of patients with ESRD. This can be achieved by increasing the duration of haemodialysis sessions, by increasing the blood flow rate through the dialyzer (250–500 ml/min) and by increasing the surface area of the dialyzer. Some centers even use two dialyzers to improve the adequacy of dialysis.

Physical health was found to be the most severely affected domain of the KDQOL in all the three groups in our study. It was least in the haemodialysis groups (mean score  $33.36 \pm 16.14$ ) as compared to the CAPD group (mean score  $36.03 \pm 11.36$ ) and patient on drugs (mean score  $35.65 \pm 11.80$ ).

Mental Health was found to be better in CAPD patients in our study as compared to the haemodialysis patients (p value 0.01). This may be because of the greater degree of independence felt by patients on CAPD, less frequent hospital visits and less feeling of being dependent on the sophisticated machines.

The mean score for both the physical health and the mental health was better in patients on CAPD as compared to haemodialysis group,  $36.03 \pm 11.3$  vs  $33.36 \pm 16.14$  and  $54.93 \pm 9.91$  vs.  $39.50 \pm 14.27$  respectively.

In fact, other studies comparing haemodialysis with peritoneal dialysis have also shown a better QOL in patients on CAPD.<sup>9</sup>

CAPD seems to be preferable to haemodialysis in terms of physical health and mental health, however, other factors like rate of peritonitis and cost effectiveness

have to be taken into consideration before making the choice of renal replacement therapy.

Though it was not statistically significant, we found that there was a positive correlation of Hb / Hematocrit and adequacy of dialysis with all the four domains of the KDQOL. This means that optimizing Hb / Hematocrit and adequacy of dialysis gives a better QOL in patients of ESRD.

A statistically significant correlation of physical health with mental health, physical health with kidney disease issues, and mental health with kidney disease issues implies that physical health, mental health and kidney disease issue are interrelated directly. Patients having better physical health were also having a better mental health and a better score on kidney disease issues. This highlights the fact that a healthy body nurtures a healthy mind.

One of the major limitations of our study was that we have not compared the QOL of patients with ESRD with that of the general population and/or age/sex matched patients with some other chronic diseases. Hence this issue must be looked after in further studies. Besides, a larger population of ESRD patients should be taken and the quality of life should be periodically assessed i.e. before the initiation of dialysis and then after 3 monthly or 6 monthly during dialysis to see the influence of the type of renal replacement therapy on the patient's quality of life.

## CONCLUSION

Our study shows that patients of end stage renal disease have a poor quality of life (QOL), despite being in some form of renal replacement therapy and the most affected domain of the Kidney Disease Quality Of Life (KDQOL) scale is physical health. Patients in continuous ambulatory peritoneal dialysis (CAPD) have a better quality of life than patients on maintenance haemodialysis. Variables like Hb, haematocrit and adequacy of dialysis have a positive correlation with all the four domains of the Kidney Disease Quality Of Life (KDQOL) scale.

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