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Quality of life in dialysis versus kidney transplantation

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Abstract

Introduction: The compromised health-related quality of life (HRQOL) of patient with end-stage renal disease (ESRD) is now well documented. One of the main points when treating patients with ESRD, whose cure is not a realistic goal, is maximizing functioning and well-being, which refer to the ability to perform various daily activities and functions and to more subjective internal states such as symptoms and feelings.
Aim: Is to study the difference in QOL between dialysis patients and living renal transplant recipients using SF-36 Health survey and factors affecting QOL.
Setting and participant: Seventy patients were included in our study 34 of them were males and 36 females. They were divided into 3groups: Group Ia: 30 hemodialysis patients of at least 6 months duration on dialysis, Group Ib: 10 continuous ambulatory peritoneal dialysis (CAPD) and Group II: 30 recipients of living renal transplants of ≥ 6 months duration. SF-36 questionnaire was filled by all patients; it includes eight subscales which can also be combined into two component summary scores, A physical component summary PCS {general heath (GH), physical function (PF), role-physical (RP), bodily pain (BP)} and a mental component summary MCS {role-emotional (RE), vitality (VT), mental health (MH), and social function (MH)}. Data were analyzed from this questionnaire to determine the QOL for all patients and were correlated also with clinical and laboratory parameters.
Results: Among hemodialysis patients, PCS, PF and VT parameters were better in young subjects and MH was positively correlated with the hemoglobin level. Patients without co-morbid conditions had significantly better QOL in PF and RP parameters. QOL was significantly better in employed than unemployed persons regarding PF, RP, VT, SF, GH and PCS.
As regard CAPD patients without co-morbid conditions had significantly better QOL than those with co-morbid condition regarding RP, GH, SF and PCS. Among recipients of renal transplantation, there was a significant positive correlation between hemoglobin level and QOL parameters PCS, MCS, VT, SF and MH and a significant negative correlation between age of transplanted recipients and PF and VT was recorded. Finally in comparison of the three studied groups there was significant difference between the studied groups as regard PF parameter of SF-36 health survey which was higher in transplanted group than HD and CAPD.
Conclusion: In hemodialysis patients the best quality of life was to males young aged with high hemoglobin level and no co-morbid conditions. In CAPD the best quality of life was to young aged and no co-morbid conditions. In renal transplant the best quality of life was to young age and high hemoglobin level. Finally there was no difference in QOL with three forms of renal replacement therapy.

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Introduction

Quality of life has been defined by the World Health Organization as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns. Health-related quality of life (HRQOL) includes physical, social, psychological, and therapy-related components. The compromised HRQOL of patient with end-stage renal disease (ESRD) is now well documented [1]. One of the main points when treating patients with ESRD, whose cure is not a realistic goal, is maximizing functioning and well-being, which refer to the ability to perform various daily activities and functions and to more subjective internal states such as symptoms and feelings [2]. While previous interest focused mostly on medical and technical aspects of renal replacement therapy, psychosocial aspects, such as quality of life, are recently being explored as one of the main outcomes of treatment. QOL assessment helps to plan the individual treatment

strategies, to determine the efficacy of medical interventions, and to evaluate the quality of medical care [3]. Recent studies showed an association between QOL assessments and morbidity and mortality in end-stage renal disease patients, suggesting that the measures matter [4]. Fukuhara et al have suggested, nephrologists must look not only at biological outcomes but also at the patient's perceptions of their quality of life to properly assess patient status. Thus, the use of measuring HRQOL as a primary outcome of various interventions in ESRD treatment regimens is increasingly being accepted [5]. Previous studies from various countries have been performed to find factors that affect the quality of life of patients with ESRD. Although there are some inconsistencies between their results, overall physical factors such as levels of hemoglobin, albumin, and normalized whole body urea clearance or protein catabolic rate; psychosocial factors such as marital status, depression, and anxiety levels; together with sociodemographic and clinical factors such as age, gender, duration of renal disease and dialysis, co-morbid physical illness (e.g., diabetes), all seem to have significant effects [6]. HRQOL may also be affected by the clinical manifestations of the disease, the side effects of treatment and relationships of the patients with family members and care providers [7]. The measurement of health-related quality of life (HRQOL) has become increasingly common in recent years as an important indicator of health and well-being. Health related quality of life outcome data are frequently used to determine healthcare effectiveness, including medication and procedural treatment effects as well as resource allocation and policy development [8].

Out of many methods used to assess QOL, the SF-36 Questionnaire has become an extensively used generic measure throughout the world [9]. It is considered the most valid, reliable, comprehensive, brief and potentially useful for individual patient applications [10]. The Reliability, validity and sensitivity of the test have been shown in patients with chronic renal failure and there is growing experience using this questionnaire to collect information from renal patients. The SF-36 is a generic instrument that includes 36 items assessing eight dimensions of functioning and well- being [11].

Aim: Is to study the difference in QOL between dialysis patients and living renal transplant recipients using SF-36 Health survey.

Materials and methods: Seventy patients were included in this study 34 males and 36females. They were divided into 2 groups:

Group I: Dialysis group subdivided into 2 subgroups:

Group Ia: Consists of 30 patients ESRD, 15 males and 15 females under regular hemodialysis of at least 6 months duration, four hours each session, three times / week. HD therapy was performed using a biocompatible polysulphone membrane, bicarbonate dialysate.

Group Ib: Consists of 10 patients under continuous ambulatory peritoneal dialysis (CAPD), 4 males and 6 females.

Group II: Included 30 recipients of living renal transplants of ≥ 6 months duration, 15 were males and 15 females.

All patients were subjected to thorough history and clinical examination with special emphasis on age, gender, etiology of ESRD, duration of dialysis, dialysis dosage, duration of renal transplantation, history of rejection episodes and current medical treatment. Blood samples were taken for determination of CBC, S. albumin, kidney and liver function tests.SF-36 Questionnaire was filled by all patients, data were analyzed from this questionnaire to determine the QOL for all patients based on a score from 0-100. The higher the score the better QOL.SF-36 questionnaire is a generic instrument that includes 36 items assessing eight scales of functioning ability and health well being of individuals.

The eight multi-item scales are as follows:

1. Physical Functioning (PF) is a ten-question scale that captures abilities to deal with the physical requirement of life, such as attending to personal needs, walking, and flexibility.
2. Role-Physical (RP) is a four-item scale that evaluates the extent to which physical capabilities limit activity.
3. Bodily Pain (BP) is a two-item scale that evaluates the perceived amount of pain experienced during the most recent 4 weeks and the extent to which that pain interfered with normal work activities.
4. General Health (GH) is a five-item scale that evaluates general health in terms of personal perception.
5. Vitality (VT) is a four-item scale that evaluates feeling of energy, and fatigue.
6. Social Functioning (SF) is a two item scale that evaluates the extent and amount of time, if any, that physical health or emotional problems interfered with family, friends, and other social interactions during the most recent 4 weeks.
7. Role-Emotional (RE) is a three item scale that evaluates the extent, if any, to which emotional factors interfere with work or other activities.
8. Mental Health (MH) is a five-item scale that evaluates feelings principally of anxiety and depression.

In each dimension the respondent receives a score from 0 to 100.

SCALE	*Number of items*	*Items*
Physical functioning	10	3,4,5,6,7,8,9,10,11,12
Role limitation due to physical health	4	13,14,15,16
Role limitations due to emotional problems	3	17,18,19
Energy/fatigue	4	23,27,29,31
Emotional well being	5	24,25,26,28,30
Social functioning	2	20,32
Pain	2	21,22
General health	5	1,33,34,35,36

An additional one item measure of self evaluation of current health compared to one year ago. The authors of the SF-36 have suggested that the eight subscales can also be combined into two component summary scores, A physical component summary PCS (general heath, physical function, role-physical, bodily pain) and a mental component summary MCS (role-emotional, vitality, mental health, and social function).

Data analysis:

Data were analyzed using a personal computer software package (statistica, varies, stat soft inc. USA. 1995) two tailed unpaired T-test was used for comparison between two groups regarding numerical parameters. One-way ANOVA is used to compare more than two groups. To test association between variable Pearson correlation Co-efficiency test was used. P value <0.05 was considered significant.

Results

Table 1 shows demographic characteristics of studied subjects.

Table 1. Demographic characteristics of study groups.

	Group I		*Group II (Tx)*
	Group Ia (H.D)	Group Ib (CAPD)	
- Age	46.26±14.46	51.4±25.77	39.6±14.33
- gender:			
* Male	15 (50%)	4 (40%)	15 (50%)
* Female	15 (50%)	6 (60%)	15 (50%)
- Etiology of ESRD:			
* HTN	9 (30%)	3 (30%)	12 (40%)
* D.M	4 (13.3%)	2 (20%)	5 (16.7%)
* Chronic G.N	4 (13.3%)	1 (10%)	6 (20%)
* Chronic pyelonephritis	3 (10%)	1 (10%)	1 (3.3%)
* Lupus nephritis	1 (3.3%)	---	1 (3.3%)
* Polycystic K.	2 (6.7%)	---	1 (3.3%)
* Unknown	7 (23.3%)	3 (30%)	4 (13.3%)
- Duration of Dx or Tx (years)	6.38±4.4	2.6±2.1	6.6±2.9

In hemodialysis patients QOL was affected by age with a significant negative correlation between age and PCS, PF and VT parameters, there was also a significant positive correlation between Hemoglobin level (HB) and MH, but there was no effect of serum albumin in HD patient's QOL as shown in table 2.

Table 2. Correlation study between QOL Parameters in hemodialysis.

		ALB.	*Hb*	*AGE*	*PCS*	*MCS*	*PF*	*RP*	*RE*	*VT*	*MH*	*SF*	*BP*	*GH*
ALB.	Pearson	1	-.226	-.265	.113	.040	.166	.111	-.070	.122	.052	0.120	-.045	.192
	Sig.	.	.231	.156	.551	.833	.382	.559	.713	.521	.784	.527	.812	.311
HB	Pearson	-.226	1	.060	.076	.218	-.018	.143	.074	.308	.448*	.040	-.046	.201
	Sig.	.231	.	.751	.689	.247	.925	.450	.698	.098	.013	.835	.809	.286
AGE	Pearson	-.265	.060	1	-.367*	-.316	-.383*	-.286	-.165	-.445*	-.190	-.314	-.251	-.254
	Sig.	.156	.751	.	.046	.089	.037	.125	.384	.014	.315	.092	.181	.175

Hemodialysis males had a significantly better QOL than females regarding SF, GH and MCS parameters as shown in table 3.

Table 3. Comparative study between males and females in hemodialysis patients.

Gender		*No.*	*Mean*	±	*SD*	*T*	*P*
PF	Male	15	63.9933	±	23.50874	1.57	.12
	Female	15	50.7400	±	22.54360		
RP	Male	15	57.2200	±	43.40175	.91	.36
	Female	15	43.3333	±	39.49081		
RE	Male	15	68.8733	±	40.76284	1.67	.10
	Female	15	42.2133	±	46.23222		
VT	Male	15	53.4400	±	20.76617	1.79	.08
	Female	15	38.6667	±	24.23594		

MH	Male	15	57.4667	±	19.89209	1.78	.08
	Female	15	45.0667	±	18.04545		
SF	Male	15	73.3333	±	21.05831	2.01	.05*
	Female	15	55.8333	±	26.24858		
BP	Male	15	70.8333	±	28.99610	1.41	.16
	Female	15	51.6667	±	43.77975		
GH	Male	15	53.0000	±	19.71222	2.73	.01*
	Female	15	34.0000	±	18.34199		
PCS	Male	15	61.4593	±	21.26175	1.95	.06
	Female	15	44.9367	±	24.98025		
MCS	Male	15	63.2640	±	19.26242	2.23	.03*
	Female	15	45.4453	±	24.10807		

The presence of co-morbid conditions as ischemic heart disease (IHD), cardiomyopathy, left ventricular hypertrophy (LVH) and hepatitis, adversely affected HD patients QOL. Patients without co-morbid conditions had significantly better QOL in PF and RP parameters as shown in table 4.

Table 4. Comparative study between co-morbid and non co-morbid patients in hemodialysis.

Comorbidity		*No.*	*Mean*	±	*SD*	*t*	*P*
PF	No co-morbidity	15	66.2200	±	24.51321	2.18	.03*
	Co-Morbidity	15	48.5133	±	19.64982		
RP	No co-morbidity	15	66.6667	±	41.90409	2.32	.02*
	Co-Morbidity	15	33.8867	±	34.85613		
RE	No co-morbidity	15	51.0933	±	43.39728	-.53	.59
	Co-Morbidity	15	59.9933	±	47.47665		
VT	No co-morbidity	15	51.2200	±	20.98224	1.21	.23
	Co-Morbidity	15	40.8867	±	25.26021		
MH	No co-morbidity	15	53.7333	±	21.36575	.67	.50
	Co-Morbidity	15	48.8000	±	18.28036		
SF	No co-morbidity	15	66.6667	±	24.85074	.45	.65
	Co-Morbidity	15	62.5000	±	25.87746		
BP	No co-morbidity	15	60.8333	±	36.24897	-.05	.95
	Co-Morbidity	15	61.6667	±	40.49544		
GH	No co-morbidity	15	48.6667	±	18.46490	1.36	.18
	Co-Morbidity	15	38.3333	±	22.80873		
PCS	No co-morbidity	15	60.5987	±	23.53600	1.72	.09
	Co-Morbidity	15	45.7973	±	23.47374		
MCS	No co-morbidity	15	55.6740	±	23.86463		
	Co-Morbidity	15	53.0353	±	23.43249	.30	.76

QOL was significantly better in employed than unemployed persons regarding PF, RP, VT, SF, GH and PCS as shown in table 5.

Table 5. Comparative study between employed and unemployed patients in hemodialysis.

Employment		*No.*	*Mean*	±	*SD*	*t*	*P*
PF	Unemployed	17	49.4059	±	26.12285	-2.25	.03*
	Employed	13	67.7769	±	15.17938		
RP	Unemployed	17	34.3118	±	40.38474	-2.65	.013*
	Employed	13	71.1538	±	33.61261		
RE	Unemployed	17	54.8941	±	47.05459	-.08	.930
	Employed	13	56.3923	±	43.85047		
VT	Unemployed	17	36.6647	±	23.59261	-2.79	.009*
	Employed	13	58.3308	±	17.16020		
MH	Unemployed	17	45.0588	±	16.58490	-2.08	.046
	Employed	13	59.3846	±	21.09320		
SF	Unemployed	17	55.1471	±	25.41024	-2.58	0.01*
	Employed	13	76.9231	±	18.98886		
BP	Unemployed	17	52.2059	±	41.51320	-1.53	0.13
	Employed	13	73.0769	±	29.68855		
GH	Unemployed	17	34.1176	±	17.43159	-3.20	0.003*
	Employed	13	55.7992	±	19.45574		
PCS	Unemployed	17	42.6888	±	26.03607	-3.08	0.005*
	Employed	13	66.9408	±	12.69431		
MCS	Unemployed	17	47.9306	±	24.80845	-1.79	0.08
	Employed	13	62.7554	±	18.81111		

As regard CAPD patients there was significant negative correlation between age, PCS and RP as shown in table 6.

Table 6. Correlation study between QOL parameters in CAPD.

		ALB.	*Hb*	*AGE*	*PCS*	*MCS*	*PF*	*RP*	*RE*	*VT*	*MH*	*SF*	*BP*	*GH*
ALB.	Pearson C.	1	.083	.061	-.287	-.290	-.136	-.068	-.327	-.122	-.204	-.249	-.213	-.414
	p.	.	.819	.868	.421	.417	.709	.851	.357	.736	.571	.488	.554	.234
Hb	Pearson C.	.083	1	.559	-.371	.055	.006	-.428	.312	.049	.141	-.363	-.263	-.254
	P.	.819	.	.093	.292	.880	.986	.217	.381	.894	.698	.303	.463	.480
AGE	Pearson C.	.061	.559	1	-.660*	-.347	-.397	-.826**	.005	-.345	-.320	-.601	-.405	-.359
	P.	.868	.093	.	.038	.325	.256	.003	.988	.329	.368	.066	.245	.308

Comparative study between males and females revealed that QOL is equal in both males and females under CAPD as shown in table7.

Table 7. Comparative study between male and female patients in CAPD group.

Gender		*No.*	*Mean*	±	*SD*	*t*	*P*
PF	Male	4	47.5000	±	15.00000	-.01	.99
	Female	6	47.7083		35.37669		
RP	Male	4	37.5000	±	47.87136	-.37	.725
	Female	6	50.0000	±	54.77226		
RE	Male	4	66.6500	±	47.14046	-.20	.84
	Female	6	72.2000	±	38.97199		
VT	Male	4	56.2500	±	31.45764	.41	.692
	Female	6	48.3333	±	28.92519		
MH	Male	4	51.0000	±	17.39732	-.15	.87
	Female	6	526667	±	15.47471		
SF	Male	4	56.2500	±	12.50000	.30	.767
	Female	6	50.0100	±	38.71822		
BP	Male	4	87.5000	±	14.43376	1.35	.21
	Female	6	62.5000	±	34.46012		
GH	Male	4	35.0000	±	12.24745	-.89	.39
	Female	6	50.0000	±	31.46427		
PCS	Male	4	51.8750	±	16.47283	-.135	.89
	Female	6	54.6333	±	38.01291		
MCS	Male	4	57.5400	±	24.78759	.10	.91
	Female	6	55.8033	±	24.77969		

CAPD patients without co-morbid conditions had significantly better QOL than those with co-morbid condition regarding RP, GH, SF and PCS as shown in table 8.

Table 8. Comparative study between co-morbid and non co-morbid patients in CAPD group.

comorbidity		*No.*	*Mean*	±	*SD*	*t*	*P*
PF	No co-morbidity	4	62.5000	±	28.72281	1.47	.18
	Co-morbidity	6	37.7083	±	24.42356		
RP	No co-morbidity	4	87.5000	±	25.00000	3.40	.009*
	Co-morbidity	6	16.6667	±	40.82483		
RE	No co-morbidity	4	66.6500	±	47.14046	-.20	.84
	Co-morbidity	6	72.2000	±	38.97199		
VT	No co-morbidity	4	68.7500	±	18.87459	1.72	.12
	Co-morbidity	6	40.0000	±	29.15476		
MH	No co-morbidity	4	60.0000	±	16.32993	1.42	.19
	Co-morbidity	6	46.6667	±	13.30664		
SF	No co-morbidity	4	75.0000	±	22.82177	2.44	.04*
	Co-morbidity	6	37.5100	±	24.98801		
BP	No co-morbidity	4	87.5000	±	14.43376	1.35	.21
	Co-morbidity	6	62.5000	±	34.46012		
GH	No co-morbidity	4	67.5000	±	23.27373	3.61	.007*
	Co-morbidity	6	28.3333	±	11.25463		
PCS	No co-morbidity	4	79.3750	±	20.32291	3.14	.01*
	Co-morbidity	6	36.3000	±	21.74891		
MCS	No co-morbidity	4	67.6000	±	24.39644	1.26	.24
	Co-morbidity	6	49.0967	±	21.51010		

Among CAPD patients, only one patient was employed (10%) and 9 patients (90%) was unemployed. However, it was evident that all QOL parameters were better in this employed person than others as shown in table 9.

Table 9. Comparative study between employed and unemployed patients in CAPD group.

Employment		*No.*	*Mean*	±	*SD*
PF	Unemployed	9	46.2500	±	29.07426
	Employed	1	60.0000		
RP	Unemployed	9	38.8889	±	48.59127
	Employed	1	100.0000		
RE	Unemployed	9	66.6444	±	40.82484
	Employed	1	100.0000		
VT	Unemployed	9	49.4444	±	29.41560
	Employed	1	70.0000		
MH	Unemployed	9	50.2222	±	15.11438
	Employed	1	68.0000		
SF	Unemployed	9	50.0067	±	30.60944
	Employed	1	75.0000		
BP	Unemployed	9	69.4444	±	30.04626
	Employed	1	100.0000		
GH	Unemployed	9	45.0000	±	27.04163
	Employed	1	35.0000		
PCS	Unemployed	9	51.2833	±	30.82806
	Employed	1	73.7500		
MCS	Unemployed	9	54.0811	±	23.43863
	Employed	1	78.2500		

Among recipients of renal transplantation, there was a significant positive correlation between Hb level and QOL parameters PCS, MCS, VT, SF and MH and a significant negative correlation between age of transplanted recipients and PF and VT was recorded as shown in table 10.

Table 10. Correlation study between QOL Parameters in recipients of renal transplantation.

		ALB.	*Hb*	*AGE*	*PCS*	*MCS*	*PF*	*RP*	*RE*	*VT*	*MH*	*SF*	*BP*	*GH*
ALB.	Pearson C.	1	.278	.538**	.118	.081	-.044	.051	-.073	.038	.237	.212	.239	.135
	P.	.	.138	.002	.534	.672	.819	.787	.703	.841	.208	.260	.204	.476
Hb	Pearson C.	.278	1	.198	.421*	.354	.321	.300	.022	.389*	.506**	.429*	.412*	.414*
	P.	.138	.	.293	.021	.055	.083	.107	.908	.033	.004	.018	.024	.023
AGE	Pearson C.	.538**	.198	1	-.323	-.279	-.415*	-.211	-.106	-.413*	-.321	-.215	-.289	-.240
	P.	.002	.293	.	.082	.136	.023	.262	.576	.023	.084	.253	.121	.202

Regarding effect of gender on QOL in renal transplanted recipients, it was found that both males and females had equal QOL as shown in table 11.

Table 11. Comparative study between male and female patients in transplanted group.

gender		*No.*	*Mean*	±	*SD*	*t*	*P*
PF	Male	15	68.8333	±	21.14716	-.43	.67
	Female	15	72.1133	±	20.56654		
RP	Male	15	53.3333	±	48.97764	-1.04	.30
	Female	15	70.0000	±	38.03194		
RE	Male	15	77.7667	±	37.09562	.47	.63
	Female	15	71.1267	±	39.55458		
VT	Male	15	49.0000	±	22.69361	-1.13	.26
	Female	15	57.3333	±	17.20327		
MH	Male	15	45.6000	±	19.81630	-1.41	.16
	Female	15	54.1333	±	12.36277		
SF	Male	15	51.6667	±	24.48882	-1.32	.19
	Female	15	64.1667	±	27.08562		
BP	Male	15	66.6667	±	32.27486	-.98	.33
	Female	15	77.5000	±	28.03060		
GH	Male	15	39.6667	±	26.08137	-.22	.82
	Female	15	41.6667	±	22.17356		
PCS	Male	15	57.1240	±	26.50675	-.89	.37
	Female	15	65.3200	±	23.56422		
MCS	Male	15	55.9987	±	20.67216	-.68	.49
	Female	15	61.2180	±	20.80896		

The presence of co-morbid conditions in renal transplanted recipients did not affect their QOL as shown in table 12.

Table 12. Comparative study between co-morbid and non co-morbid patients in transplanted group.

Comorbidity		*No.*	*Mean*	±	*SD*	*t*	*P*
PF	No co-morbidity	21	74.1429	±	20.89226	1.52	.13
	Co-morbidity	9	61.9111	±	17.99642		
RP	No co-morbidity	21	65.4762	±	42.92158	.72	.47
	Co-morbidity	9	52.7778	±	47.50731		
RE	No co-morbidity	21	74.6190	±	42.02169	.03	.97
	Co-morbidity	9	74.0444	±	27.79668		
VT	No co-morbidity	21	55.2381	±	21.87900	.85	.40
	Co-morbidity	9	48.3333	±	15.81139		
MH	No co-morbidity	21	53.1429	±	16.45079	1.68	.10
	Co-morbidity	9	42.2222	±	15.88850		
SF	No co-morbidity	21	60.7143	±	27.18160	.89	.38
	Co-morbidity	9	51.3889	±	23.75365		
BP	No co-morbidity	21	77.3810	±	28.94473	1.49	.14
	Co-morbidity	9	59.7222	±	31.11080		
GH	No co-morbidity	21	44.5238	±	24.99524	1.37	.18
	Co-morbidity	9	31.6667	±	19.03943		
PCS	No co-morbidity	21	65.3810	±	25.14086	1.41	.16
	Co-morbidity	9	51.5178	±	23.08161		
MCS	No co-morbidity	21	60.5867	±	22.19037		
	Co-morbidity	9	53.9922	±	16.30570	.80	.43

The highest rate of employment was recorded in renal transplanted recipients, as 17 out of 30 recipients (56.7%) were employed versus 13 out of 30 (43.3%) in HD patients and 1 out of 10 (10%) in CAPD patients. Furthermore employment status did not affect QOL in renal transplanted recipients, as both employed and unemployed personnel had equal QOL as shown in table 13.

Table 13. Comparative study between employed and unemp-loyed patients in transplanted group.

Employment		*No.*	*Mean*	±	*SD*	*t*	*P*
PF	Unemployed	13	64.2385	±	23.23455	-1.48	.15
	Employed	17	75.2412	±	17.48811		
RP	Unemployed	13	53.8462	±	46.59908	-.84	.40
	Employed	17	67.6471	±	42.17218		
RE	Unemployed	13	76.9154	±	39.40892	.30	.76
	Employed	17	72.5588	±	37.68554		
VT	Unemployed	13	48.4615	±	23.21858	-1.11	.27
	Employed	17	56.7647	±	17.49475		
MH	Unemployed	13	46.4615	±	17.24633	-.97	.34
	Employed	17	52.4706	±	16.48529		
SF	Unemployed	13	50.9615	±	27.69887	-1.28	.20
	Employed	17	63.2353	±	24.39526		
BP	Unemployed	13	65.3846	±	32.33687	-.1.06	.29
	Employed	17	77.2059	±	28.37916		
GH	Unemployed	13	36.5385	±	24.94867	-.82	.41
	Employed	17	43.8235	±	23.15231		
PCS	Unemployed	13	54.9992	±	29.35179	-1.20	.24
	Employed	17	65.9806	±	20.74767		
MCS	Unemployed	13	55.6938	±	22.23094		
	Employed	17	60.8371	±	19.56365	-.67	.50

In comparison of the three studied groups regarding items of SF-36 the PF parameter of SF-36 health survey was significantly higher as shown in table 14.

Table 14. Comparative study between the 3 groups as regard results of SF-36 health survey.

		N	*Mean*	*Std. Deviation*	*Sig.*
PF	Hemodilysis	30	57.3667	23.6130	
	Transplant	30	70.4733	20.5638	.013*
	Peritoneal	10	47.6250	27.7542	
	Total	70	61.5921	24.1428	
RP	Hemodilysis	30	50.2767	41.3778	
	Transplant	30	61.6667	43.9108	.462
	Peritoneal	10	45.0000	49.7214	
	Total	70	54.4043	43.5384	
RE	Hemodilysis	30	55.5433	44.9203	
	Transplant	30	74.4467	37.8289	.203
	Peritoneal	10	69.9800	39.9092	
	Total	70	65.7071	41.6898	
VT	Hemodilysis	30	46.05333	23.4134	
	Transplant	30	53.1667	20.2350	.474
	Peritoneal	10	51.5000	28.4849	
	Total	70	49.8800	22.7984	
MH	Hemodilysis	30	51.2667	19.6976	
	Transplant	30	49.8667	16.7985	.930
	Peritoneal	10	52.0000	15.3188	
	Total	70	50.7714	17.6907	
SF	Hemodilysis	30	64.5833	25.0180	
	Transplant	30	57.9167	26.1551	.387
	Peritoneal	10	52.5060	29.9216	
	Total	70	60.0009	26.2014	
BP	Hemodilysis	30	61.2500	37.7649	
	Transplant	30	72.0833	30.2082	.409
	Peritoneal	10	72.5000	29.9305	
	Total	70	67.5000	33.6085	
GH	Hemodilysis	30	43.5000	21.0562	
	Transplant	30	40.6667	23.8072	
	Peritoneal	10	44.0000	25.6905	.866
	Total	70	42.3371	22.6460	

Hb%, employment%, serum albumin were significantly higher in transplanted patients as shown in table 15.

Table 15. Comparative study between the 3 groups.

	HD	*CAPD*	*Tx*	*P*
Hb%	8.8±1.6	8.7±1.9	10.9±1.7	0.001
Employment%	43.3%	10%	56.7%	0.036
S. Alb.	3.8±0.3	3.8±0.6	4.3±0.4	0.002

Discussion

In this study, SF-36 Questionnaire was used to compare, study QOL among hemodialysis, peritoneal dialysis and renal transplant patients. Also the effect of different variables on QOL as: Age, gender, employment, hemoglobin level, serum albumin level and the presence or absence of co-morbid conditions was assessed.

Transplant recipients demonstrated the best QOL scores. Our study showed that dialysis patients, both hemodialysis and peritoneal dialysis, had impaired self rated health status compared to renal transplant recipients. However, contrary to our hypothesis, the three patient groups did not significantly differ with regard to most SF-36 subscales. Physical function subscale of SF36 was significantly higher for transplant patients. This is in agreement with the study done by Sayin et al. 2007 who found no difference in QOL among different forms of renal replacement therapy [12].

Our study demonstrates that anemia, higher age, female gender, unemployment and the presence of Co-morbid conditions were factors associated with poorer self rated health in hemodilaysis patients. A positive significant correlation between hemoglobin level and MH and a significant negative correlation between age and PCS, PF and VT parameters were recorded. Anemia with decrease in the oxygen carrying capacity of blood can affect both physical and mental function [13]. Fatu and his

colleagues showed that higher age group had lowest score in PF and RP items [14], also higher QOL among HD males than HD females was previously documented by other investigators particularly in GH and SF [13] and in PF, BP, PCS and MCS [15].

The effect of the presence of associated comorbid conditions in HD patients on QOL was previously studied. Mingardi et al. showed negative impact of Co-morbid conditions on PF [16] and Attaly et al showed a negative impact on PCS. This study documented an adverse effect of the presence of Co-morbid conditions on PF and RP [17]. As regard employment status of HD patients Mingardi et al showed positive impact of employment status on PF, VT, GH scales and Attaly et al, showed a positive impact on PCS [16,17]. In accordance with our study that both physical and mental components are better in employed persons than unemployed.

In CAPD patients, higher age, presence of co-morbid conditions and unemployed patients, were associated with poorer self rated health. A negative correlation between age and RP, PCS was found in our study. This is in agreement with Mingardi who found a negative correlation between age and PF, BP, GH, VT, MH and that patients with Co-morbid conditions had lowest score PCS [18]. We observed a higher QOL among HD males than HD females in PF, BP, VT, MH. Our study documented an adverse effect of the presence of co-morbid conditions on RP, SF, GH, PCS. The higher QOL Among CAPD employed patients than unemployed patients was previously documented by other investigators who found that all QOL scales are higher in employed ones and the same results was documented in this study [18].

In transplanted patients, a positive correlation between Hb level and PF, MH, SF, VT, MCS, PCS was found in our study. This is in accordance with Pablo and his colleagues found a positive correlation between Hb level and PF, GH. The cause of low scores of MH in anemic patients may be due to decrease oxygenation of the brain [19]. Rosenberger and his colleagues showed that higher age group in transplant patients had lowest score in BP, GH, MCS, PF, VT, PCS, MH [20]. The effect of age on PF, VT, PCS, MH was documented in our study also. The effect of gender on transplanted patients was studied before by Fujisawa et al, who found that both transplanted males and females have equal QOL [21] and we demonstrated the same results. The morbidity effect on transplanted patients was studied by Rosenberger et al., who reported that there is no impact of Co- morbid conditions on transplanted patients [20] in agreement with our results. In this study employment status of transplanted patients didn't affect any of the QOL parameters, although, Rosenberger and his colleagues in 2005 found that transplanted employed patients had higher scores in MCS, MH, VT [20].

Finally our results should be interpreted cautiously. Since this study was done on seventy patients 10 of them were CAPD our sample may not be representative of whole ESRD population.

References

1. Hedayati SS, Bosworth H, Briley L, et al: Death or hospitalization of patients on chronic hemodialysis is associated with a physician-based diagnosis of depression. Kidney Int 2008; 74: 930–936.
2. Kutner NG and Jassal SV: Quality of life and rehabilitation of elderly dialysis patients. Semin Dial 2007;15:10.
3. Vasilieva IA: Quality of life in chronic hemodialysis patients in Russia. Hemodial Int 2007; 10:274.
4. Mingardi G, Cornalba L, Cortinovis E, et al.Health-related quality of life in dialysis patients: A report from an Italian study using the SF-36 Health Survey. Nephrol Dial Transplant 2008;14.
5. Fukuhara S, Yamazaki S, Hayashino Y et al.: Measuring health-related quality of life in patients with end-stage renal disease: why and how. Nat Clin Pract Nephrol 2007; 3: 352–353.
6. Kimmel PL and Patel SS: Quality of life in patients with chronic kidney disease: focus on end-stage renal disease treated with hemodialysis. Semin Nephrol 2007; 26:68.
7. Valderrabano F, Jofre R, and Lopez-Gomez JM: Quality of life in end-stage renal disease patients. Am J Kidney Dis 2008; 38:443.
8. Bryan S and Longworth, L.: Measuring health-related utility: Why the disparity between EQ-5D and SF-6D? The European Journal of Health Economics 2008; 6(3), 253–260.
9. Stansfeld SA, Roberts R, and Foot SP: Assessing the validity of the SF 36 general health survey. Qual. Life res.1997; 6: 217-224.
10. Shield SF, McGrath M, and Goss TF: The FK506 Kidney Transplant Study Group: Assessment of health related quality of life in kidney transplant patients receiving immunosuppression. Transplantation 2004; 64:1738-1743.
11. Khan IH, Garratt AM, Kumar A, et al: Patient's perception of health on renal replacement therapy: Evaluation using a new instrument. Nephrol Dial Transplant 2002; 10:684-689.
12. Sayin A, Mutluay R, and Sindel S: Quality of life in hemodialysis, peritoneal dialysis and transplantation patients. Transplantation Proceedings 2007; 39, 3047-3053
13. Stig Molsted, Mette Aadhal, Lone Schou, et al.: Self – rated Health and employment status in Hemodialysis patients: Scand.J. urol nephrol 2004; 238 : 174 – 178.
14. Fatiu A. Arogundade, Bahaa zayed, Maryam Daba, et al: correlation between karnofesky performance scale and short form Heath survey in patients on maintenance Hemodialysis. Journal of the national medical association 2004; 96: 1661-1667.
15. Chih Kang chiang, Yu-sen peng, Shou- shan chiang, et al: Health related Quality of life of Hemodialysis patients in Taiwan: A multicenter study. Blood purification 2004; 22: 490 – 498.
16. Mingardi G, Comalba L, Cortinovis E, et al: The DIA-QOL Group: Health-related quality of life in dialysis patients. A report from an Italian study using the SF-36 Health Survey. Nephrol Dial Transplant 1999; 14:1503-1510.
17. Attalya Frank, Gail K. Auslander, and Jashua Weissgarten: Quality of life of patients with End stage renal disease at various stages of the illness. Social work in Health Care 2003; 38 (2): 1-27.
18. Mingardi G: From the development to the clinical application of a questionnaire on the quality of life in dialysis. The experience of the ltalian. Collaborative DIAQOL Group. Nephrol Dial Transplant 1998; 13 (suppl. 1):S70-S75.
19. Pablo Rebollo, Francisco Ortega, Jose M.B Altar, Carmen Diaz-Corte, et al: Health Related Quality of life in ESRD Patients over 65 years. Geriatric Nephrology and urology 1998: 8:85-94.
20. Rosenberger J, van Dijk JP, Nagyova I, et al: Do dialysis- and transplantation-related medical factors affect perceived health status? Nephrol Dial Transplant 2005; 20 (10):2153-8.
21. Fujisawa M, Ichikawa Y, Yoshiya K et al.: Assessment of health-related quality of life in renal transplant and hemodialysis patients usng the SF-36 health survey. Urology 2000 Aug 1;56 (2):201-6.