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Quality of life in hepatitis c virus seropositive hemodialysis patients

Abstract

Background: Health-related quality of life (HRQOL) is a multidimensional concept that reflects a patient's perceived well-being. It was well demonstrated that HCV had a negative impact on (HRQOL). The aim of this study was to assess HRQOL in hepatitis C Virus (HCV) seropositive hemodialysis Egyptian patients and highlight possible factors affecting it.

Patients and methods: 200 ESRD patients on regular hemodialysis at Ain Shams University hospitals and National Institute of Nephrology and Urology were included in this study and divided into 2 equal groups of HCV Ab seronegative and seropositive. Both groups were subjected to full medical history taking and examination. Laboratory investigations included hemoglobin level, pre dialysis blood urea, creatinine, calcium, phosphorus, PTH, ALT, AST, albumin and viral markers. Dialysis adequacy using Kt/v. HRQOL was measured through Short Form 36 (SF-36). In each dimension the respondent receives a score from 0 to 100. The higher score, the better the health.

Results: Our study showed that HCV seropositive hemodialysis patients had compromised HRQOL in comparison to HCV seronegative patients which was found in most of SF-36 subscales with higher scores for employed patients compared to the unemployed and those with higher haemoglobin levels. High pre dialysis serum creatinine, dry weight and serum albumin had significant positive correlation with SF-36 scale scores. Elevated liver enzymes and dialysis adequacy had no significant correlation with SF-36 scale scores. A significant negative correlation was present between serum phosphate and PTH on overall HRQOL.

Conclusion: HCV infection impairs HRQOL, in many aspects in hemodialysis patients. Better HRQOL is associated with male gender, younger age, employment, higher hemoglobin, higher pre dialysis serum creatinine and higher serum albumin. Prevention of HCV transmission by proper infection control measures reduces the economic burden and complications in hemodialysis.

Keywords: hemodialysis, hepatitis c virus, HRQOL, sf-36

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Abbreviations: HRQOL, health-related quality of life; HCV, hepatitis c virus; ESRD, end-stage renal disease; QOL, quality of life; PF, physical functioning; RP, role-physical; BP, bodily pain; SF, social functioning; GH, general health; RE, role-emotional; MH, mental health; DOPPS, dialysis outcomes and practice patterns study

Introduction

Health-related quality of life (HRQOL) is a multidimensional concept that reflects a patient's perceived well-being and functioning in physical, psychological and social domains of health.[1] End-stage renal disease (ESRD) is a chronic restrictive illness that affects many aspects of patient's life. Moreover, ESRD has become worldwide public health problem[2] causing a high level of disability in different domains of the patients' lives, leading to impaired quality of life (QoL).[3] Although there have been many advances in the treatment of end- stage renal disease (ESRD), mortality rates for ESRD patients remain several times higher than those of age-matched controls, and patients with ESRD continue to have significant impairments in quality of life (QOL), quality of life is related with morbidity and mortality in hemodialysis patients, and it is suggested that QOL should be considered in the regular monitoring of dialysis patients.[4] Hemodialysis patients infected with HCV often have poor short-term clinical outcome, greater mortality, greater hospitalization rate, more significant protein-energy malnutrition and worse health - related quality of life.[5]

The prevalence of HCV infection in patients undergoing dialysis is persistently greater than that in the general population, being endemic in hemodialysis units around the world predominantly in Mediterranean and developing countries of the Middle and Far East.[6] It was well demonstrated that HCV had a negative impact on health-related quality of life (HRQOL). Why quality of life decreases in HCV infected patients is incompletely understood.[4] The aim of this study was is to assess health related quality of life (HRQoL) in hepatitis C Virus (HCV) seropositive hemodialysis Egyptian patients.

Patients and methods

This study was carried out at dialysis units at Ain Shams University hospitals and National Institute of Nephrology and Urology. Two hundred patients were included in this study.

Patients were divided into 2 groups

Group I: (HCV Ab negative group).Consists of 100 patients with ESRD, undergoing regular hemodialysis of at least 6months duration, 4 hours each session, three times/week. HD therapy was performed with a low flux biocompatible membrane, using AV fistula and bicarbonate dialysis solution.

Group II: (HCV Ab positive group). Consists of 100 patients with ESRD, under regular hemodialysis of at least 6months duration, 4 hours each session, three times/week. HD therapy was performed with a low flux biocompatible membrane, using AV fistula and bicarbonate dialysis solution.

Exclusion criteria

i. Age below 18years or above 60years.

ii. Signs of advanced liver disease (ascites, jaundice, bleeding tendency…etc.).

iii. History of other chronic diseases (Ischemic heart disease, chronic pulmonary disease, cerebrovascular disease…etc.).

iv. Previous or simultaneous malignancies.

v. Severe anemia (Hemoglobin less than 9gm/dl).

vi. Major surgery in last 6months.

vii. Non cooperative patients.

All patients underwent

A. Thorough medical history and clinical examination including: age, gender, marital status, employment and occupation, social status, etiology of ESRD, duration of dialysis, dialysis dosage, vascular access and dry weight.

B. B-The data collection for this study was approved by the Ethics Committee and all subjects provided written informed consent before participating in this study.

Laboratory investigations: Blood samples were taken for determination of the following:

a. Hemoglobin, pre dialysis blood urea, serum creatinine.

b. Calcium, phosphorus, parathyroid hormone, ALT, AST, Albumin.

c. Viral markers: HCV Ab, HBs Ag, HIV Ab.

d. Dialysis adequacy as measured by single pool Kt/v

Health-related quality of life measurement:

It was measured through Short Form 36 (questionnaire). SF-36 Questionnaire was filled by all patients, data were analyzed from this questionnaire to determine the QOL for all patients. SF-36 questionnaire is a generic instrument that includes 36 items assessing 8 scales of functioning ability and health well-being of individuals. The 8 multi-item scales are as follows:

(1) Physical Functioning (PF) is a 10-questions 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 4 items scale that evaluates the extent to which physical capabilities limit activity. (3) Bodily Pain (BP) is a 2 items 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 5 items scale that evaluates general health in terms of personal perception. (5) Vitality (VT) is a 4 items scale that evaluates feeling of energy and fatigue. (6) Social Functioning (SF) is a 2 items 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 4weeks. (7) Role-Emotional (RE) is 3 items scales that evaluate, the extent, if any, to which emotional factors interfere with work or other activities. (8) Mental Health (MH) is a 5-items scale that evaluates feelings principally of anxiety and depression.

In each dimension the respondent receives a score from 0 to 100. The higher the score, the better the health. D-SF-36 eight subscales can also be combined into 2 component summary scores, a physical component summary PCS (general health, physical function, role-physical, bodily pain) and a mental component summary MCS (role– emotional, vitality, mental health, and social function) (Table 1).

Regarding clinical and laboratory data:

a. The duration of hemodialysis is significantly higher in group 2.

b. The dry weight is significantly higher in group 1.

c. The hemoglobin level in group 2 is significantly higher than group 1.

d. ALT and AST in group 2 is significantly higher than group 1.

e. Albumin in group 2 is significantly lower than group 1.

f. Kt/v is significantly higher in group 1 (Table 2).

Males showed significant better quality of life than females in the same group with significantly higher scores in the following quality of life domains: physical functioning, role emotional, social functioning, general health, physical component summary and mental component summary (Table 3).

There was significant higher score in role emotional, bodily pains and physical component summary in males than females of this group (Table 4).

Employed patients had significantly better quality of life than unemployed patients in the same group with significantly higher score in physical functioning, vitality, social functioning, general health, physical component Summary and mental component summary (Table 5).

There is no significant difference in quality of life between employed and unemployed patients but there is only significant higher score in physical function in employed patients (Table 6).

In group I

a) QOL was affected by age with a significant –ve correlation between age and PF, P=0.05 and a significant +ve correlation between age and MH, P= 0.036.

b) There was also a significant + ve correlation between Hgb level and PF, VT, MH, GH, QoL, PCS and MCS P= 0.034, 0.015, 0.027, 0.002, 0.01, 0.004, and 0.018 respectively.

Citation: Anwar W, Ezzat H, Mohab A. Quality of life in hepatitis c virus seropositive hemodialysis patients. *Urol Nephrol Open Access J.* 2015;2(4):119–130. DOI: 10.15406/unoaj.2015.02.00048

c) There was also a significant + ve correlation between pre dialysis serum creatinine and PF, MH, GH, QoL, PCS and MCS P= .00, 0.042, 0.001, 0.04, 0.018, and 0.047 respectively.

d) There was no effect of serum albumin, PTH or Kt/v on QOL.

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

PF, physical functioning; RP, role physical; RE, role emotional; VT, vitality; MH, mental health; SF, social functioning; BP, bodily pains; GH, general health; QOL, quality of life; PCS, physical component summary; MCS, mental component summary (Table 7).

**Correlation is significant at the 0.01 level (2-tailed).

PF, physical functioning; RP, role physical; RE, role emotional; VT, vitality; MH, mental health; SF, social functioning; BP, bodily pains; GH, general health; QOL, quality of life; PCS, physical component summary; MCS, mental component summary (Table 8).

Table 1 The demographic characteristics of patients included in the study are shown in the table

	HCV Negative	HCV Positive
- Age (years)	42.4±13	43.±10.7
- Gender:		
*Male	38 (38%)	68 (68%)
*Female	62 (62%)	32 (32%)
-Duration of HD (years)	4.24±2.53	7.6±5.69
- Dry weight (kg)	71.82±20	66.16±18.39

Table 2 Comparative study between the two patients groups regarding clinical data, laboratory investigations and quality of life parameters

HCVAb	N	Mean	Std. Deviation	Std. Error Mean	t-test for Equality of Means	
					t	PValue
Age Negative	100	42.4	13.0066	1.30066	-.367-	0.714
Positive	100	43.02	10.76937	1.07694		
Duration of HD Negative	100	4.242	2.53015	0.25301	-5.387-	0
Positive	100	7.6	5.69689	0.56969		
Dry Weight Negative	100	71.82	20.02896	2.0029	2.081	0.039
Positive	100	66.16	18.39341	1.83934		
Hgb Negative	100	10.248	1.13159	0.11316	-3.058-	0.003
Positive	100	10.806	1.43173	0.14317		
Urea Negative	100	98.44	30.6727	3.06727	-3.343-	0.001
Positive	100	117.48	47.98326	4.79833		
Creat. Negative	100	10.232	2.61923	0.26192	1.424	0.156
Positive	100	9.76	2.02978	0.20298		
ALT Negative	100	25.38	4.06955	0.40695	7.990-	0
Positive	100	34.48	10.63678	1.06368		
AST Negative	100	15.88	3.96775	0.39677	-11.82	0
Positive	100	25.98	7.56785	0.75678		
Albumin Negative	100	3.88	0.32035	0.03204	10.148	0
Positive	100	3.472	0.24291	0.02429		
Ca Negative	100	8.812	0.63394	0.06339	-1.260-	0.209

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Table continued...

HCVAb	N	Mean	Std. Deviation	Std. Error Mean	t-test for Equality of Means	
					t	PValue
Positive	100	8.916	0.52852	0.05285		
Phos. Negative	100	5.894	0.92887	0.09289	1.473	0.142
Positive	100	5.688	1.04517	0.10452		
PTH Negative	100	492.7	334.48886	33.44889	-1.930-	0.055
Positive	100	580.72	309.94167	30.99417		
Kt/v Negative	100	1.1255	0.19089	0.01919	2.134	0.034
Positive	100	1.0623	0.225	0.0225		
Physical Functioning Negative	100	55.5	22.47895	2.24789	-.195-	0.846
Positive	100	56.1	21.06483	2.10648		
Role Physical Negative	100	40	42.93523	4.29352	2.093	0.038
Positive	100	27.5	41.51488	4.15149		
Role Emotional Negative	100	53.332	43.93639	4.39364	5.269	0
Positive	100	22.666	38.1615	3.81615		
Vitality Negative	100	46.8	14.69419	1.46942	2.592	0.01
Positive	100	40.5	19.36492	1.93649		
Mental Health Negative	100	52.24	17.23347	1.72335	2.726	0.007
Positive	100	45.92	15.51258	1.55126		
Social Functioning Negative	100	58	24.45879	2.44588	2.102	0.037
Positive	100	51	22.59101	2.2591		
Bodily Pains Negative	100	49.15	26.24001	2.624	1.258	0.21
Positive	100	44.35	27.71523	2.77152		
General Health Negative	100	39.5	17.47292	1.74729	0.893	0.373
Positive	100	37.2	18.91395	1.89139		
Quality Of Life Negative	100	50.2524	16.95088	1.69509	3.758	0
Positive	100	40.9759	17.94395	1.79439		
Physical Component Negative	100	46.13	17.15638	1.71564	1.926	0.056
Summary	100	41.132	19.46517	1.94652		
Positive						
Physical Component Negative	100	46.13	17.15638	1.71564	1.926	0.056
Summary	100	41.132	19.46517	1.94652		
Positive						

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Table 3 Comparative study between males and females of HCV negative group regarding quality of life scores

	Sex	N	Mean	Std. Deviation	t	Sig. (2-Tailed)
Physical Functioning	Male	38	64.7368	21.77736	3.382	0.001
	Female	62	49.8387	21.13516		
Role Physical	Male	38	50	44.26578	1.845	0.068
	Female	62	33.871	41.26503		
Role Emotional	Male	38	64.9116	45.81417	2.098	0.038
	Female	62	46.2348	41.53436		
Vitality	Male	38	50.5263	16.9972	1.882	0.065
	Female	62	44.5161	12.69793		
Mental Health	Male	38	56.2105	17.17188	1.825	0.071
	Female	62	49.8065	16.95011		
Social Functioning	Male	38	69.0789	21.50127	3.776	0
	Female	62	51.2097	23.81513		
Bodily Pains	Male	38	51.9737	28.54085	0.841	0.402
	Female	62	47.4194	24.8065		
General Health	Male	38	47.6316	20.22632	3.546	0.001
	Female	62	34.5161	13.45026		
Quality Of Life	Male	38	57.443	18.7329	3.282	0.002
	Female	62	45.8453	14.19582		
Physical Component Summary	Male	38	52.9737	19.52509	3.033	0.004
	Female	62	41.9355	14.1211		
Mental component Summary	Male	38	58.1211	16.72149	4.264	0
	Female	62	45.2581	13.22258		

Table 4 Comparative study between males and females of HCV positive group regarding quality of life scores

	Sex	N	Mean	Std. Deviation	t	Sig. (2-Tailed)
Physical Functioning	Male	68	58.5294	19.9076	1.697	0.093
	Female	32	50.9375	22.80483		
Role Physical	Male	68	31.6176	43.32661	1.547	0.126
	Female	32	18.75	36.47801		
Role Emotional	Male	68	28.4306	41.63462	2.638	0.01
	Female	32	10.4163	26.00968		
Vitality	Male	68	42.0588	21.12923	1.335	0.186
	Female	32	37.1875	14.6979		
Mental Health	Male	68	47.0588	16.17985	1.071	0.287
	Female	32	43.5	13.92144		
Social Functioning	Male	68	51.8382	22.47145	0.539	0.591
	Female	32	49.2188	23.10074		
Bodily Pains	Male	68	48.6765	29.04728	2.552	0.013
	Female	32	35.1563	22.38715		
General Health	Male	68	38.5294	18.98662	1.025	0.308
	Female	32	34.375	18.74059		

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Table continued...

	Sex	N	Mean	Std. Deviation	t	Sig. (2-Tailed)
Quality Of Life	Male	68	43.1023	19.44459	1.987	0.05
	Female	32	36.4571	13.42059		
Physical Component Summary	Male	68	43.8824	21.04049	2.402	0.018
	Female	32	35.2875	14.18981		
Mental component Summary	Male	68	41.5861	19.60801	1.706	0.092

Table 5 Comparative study between employed and unemployed patients of HCV negative group regarding quality of life scores

		N	Mean	Std. Deviation	Minimum	Maximum	*P* Value
Physical Functioning	Employed	24	72.5000	21.61923	20.00	100.00	.000
	Unemployed	76	50.0000	20.30588	5.00	85.00	
	Total	100	55.5000	22.47895	5.00	100.00	
Role Physical	Employed	24	45.8333	45.24491	.00	100.00	.088
	Unemployed	76	36.4865	41.62561	.00	100.00	
	Total	100	40.0000	42.93523	.00	100.00	
Role Emotional	Employed	24	55.5550	48.81844	.00	100.00	.294
	Unemployed	76	51.3497	42.44747	.00	100.00	
	Total	100	53.3320	43.93639	.00	100.00	
Vitality	Employed	24	55.8333	17.91688	25.00	80.00	.002
	Unemployed	76	44.0541	12.48768	25.00	70.00	
	Total	100	46.8000	14.69419	25.00	80.00	
Mental Health	Employed	24	58.6667	18.60030	24.00	84.00	.079
	Unemployed	76	49.9459	16.52884	16.00	92.00	
	Total	100	52.2400	17.23347	16.00	92.00	
Social Functioning	Employed	24	69.7917	23.57823	25.00	100.00	.021
	Unemployed	76	54.0541	23.96024	12.50	100.00	
	Total	100	58.0000	24.45879	12.50	100.00	
Bodily Pains	Employed	24	56.8750	31.00009	.00	100.00	.106
	Unemployed	76	47.3649	24.26273	10.00	100.00	
	Total	100	49.1500	26.24001	.00	100.00	
General Health	Employed	24	55.0000	22.16539	15.00	90.00	.000
	Unemployed	76	34.7297	12.43867	5.00	60.00	
	Total	100	39.5000	17.47292	5.00	90.00	
Quality Of Life	Employed	24	59.1861	21.90983	30.44	88.39	.006
	Unemployed	76	47.0766	14.10860	25.44	69.50	
	Total	100	50.2524	16.95088	25.44	88.39	
Physical Component Summary	Employed	24	57.2083	22.02613	28.00	88.00	.001
	Unemployed	76	42.4459	13.85284	20.00	71.50	
	Total	100	46.1300	17.15638	20.00	88.00	
Mental component Summary	Employed	24	59.6833	18.32825	29.30	84.00	.001
	Unemployed	76	46.8270	13.87055	25.90	73.40	
	Total	100	50.1460	15.86200	25.90	84.00	

Table 6 Comparative study between employed and unemployed patients in HCV positive group

P value	Maximum	Minimum	Std. Deviation	Mean	N		
	95	35	19.24604	64.1176	34	Employed	
0.006	95	20	20.90047	51.9697	66	Unemployed	Physical Functioning
	95	20	21.06483	56.1	100	Total	
	100	0	40.10903	29.4118	34	Employed	
0.743	100	0	42.48954	26.5152	66	Unemployed	Role Physical
	100	0	41.51488	27.5	100	Total	
	100	0	40.00317	29.4106	34	Employed	
0.206	100	0	37.00768	19.1915	66	Unemployed	Role Emotional
	100	0	38.1615	22.666	100	Total	
	80	15	16.60058	43.2353	34	Employed	
0.313	90	0	20.62316	39.0909	66	Unemployed	Vitality
	90	0	19.36492	40.5	100	Total	
	80	28	14.65662	49.1765	34	Employed	
0.133	84	8	15.78126	44.2424	66	Unemployed	Mental Health
	84	8	15.51258	45.92	100	Total	
	100	12.5	25.46362	52.2059	34	Employed	
0.704	100	0	21.14166	50.3788	66	Unemployed	Social Functioning
	100	0	22.59101	51	100	Total	
	100	0	32.21889	47.0588	34	Employed	
0.486	90	0	25.2408	42.9545	66	Unemployed	Bodily Pains
	100	0	27.71523	44.35	100	Total	
	75	5	21.10157	41.7647	34	Employed	
0.083	70	0	17.38633	34.8485	66	Unemployed	General Health
	75	0	18.91395	37.2	100	Total	
	82.22	17.06	19.61574	43.8475	34	Employed	
0.253	85.44	11.72	16.98601	39.4965	66	Unemployed	Quality Of Life
	85.44	11.72	17.94395	40.9759	100	Total	
	87	14	21.42325	45.1176	34	Employed	
0.143	87	13	18.20672	39.0788	66	Unemployed	Physical Component Summary
	87	13	19.46517	41.132	100	Total	
	84	18.2	18.81543	43.9151	34	Employed	
0.097	86.8	12.2	17.52176	37.5507	66	Unemployed	Mental component Summary
	86.8	12.2	18.13179	39.7146	100	Total	

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Table 7 Correlations between QoL domains and clinical, laboratory data in both groups

MCS	PCS	QoL	GH	BP	SF	MH	VT	RE	RP	PF		
0.115	-0.032	0.039	0.02	-0.109	0.168	.210*	0.093	-0.013	0.069	-0.197	Pearson Correlation	
0.254	0.755	0.698	0.847	0.28	0.095	0.036	0.358	0.898	0.497	0.05	Sig. (2-tailed)	Age
100	100	100	100	100	100	100	100	100	100	100	N	
.252*	0.14	0.183	0	-0.157	.254*	0.019	0.128	.249*	.259**	0.132	Pearson Correlation	
0.012	0.166	0.069	0.998	0.119	0.011	0.851	0.206	0.012	0.009	0.189	Sig. (2-tailed)	Duration of HD
100	100	100	100	100	100	100	100	100	100	100	N	
0.176	0.002	0.104	0.133	-0.007	.345**	.241*	0.112	-0.076	-0.109	0.051	Pearson Correlation	
0.079	0.984	0.304	0.188	0.942	0	0.016	0.267	0.451	0.28	0.613	Sig. (2-tailed)	Dry Weight
100	100	100	100	100	100	100	100	100	100	100	N	
.236*	.287**	.257**	.307**	0.095	0.088	.222*	.244*	0.096	0.188	.213*	Pearson Correlation	
0.018	0.004	0.01	0.002	0.349	0.383	0.027	0.015	0.344	0.061	0.034	Sig. (2-tailed)	Hgb
100	100	100	100	100	100	100	100	100	100	100	N	
0.073	0.155	0.12	0.097	0.015	-0.082	0.076	0.141	0.086	0.048	.285**	Pearson Correlation	
0.473	0.124	0.235	0.339	0.885	0.416	0.451	0.162	0.393	0.636	0.004	Sig. (2-tailed)	Urea
100	100	100	100	100	100	100	100	100	100	100	N	
.199*	.236*	.206*	.315**	0.082	0.119	.204*	.294**	0.019	-0.09	.537**	Pearson Correlation	
0.047	0.018	0.04	0.001	0.417	0.237	0.042	0.003	0.851	0.373	0	Sig. (2-tailed)	Creat
100	100	100	100	100	100	100	100	100	100	100	N	
0.019	0.099	0.053	0.152	0.072	-0.023	-0.08	-0.067	0.032	0.123	-0.024	Pearson Correlation	
0.854	0.328	0.599	0.131	0.476	0.818	0.431	0.506	0.749	0.222	0.811	Sig. (2-tailed)	ALT
100	100	100	100	100	100	100	100	100	100	100	N	
-0.124	-0.084	-0.12	0.014	0.002	-0.081	-0.085	-0.098	-0.129	-0.069	-0.14	Pearson Correlation	
0.218	0.406	0.233	0.892	0.985	0.423	0.402	0.33	0.201	0.493	0.166	Sig. (2-tailed)	AST
100	100	100	100	100	100	100	100	100	100	100	N	
0.024	-0.034	-0.081	0.195	-0.127	0.088	-0.056	0.008	-0.077	-0.129	0.098	Pearson Correlation	
0.81	0.734	0.425	0.052	0.208	0.382	0.579	0.939	0.449	0.203	0.331	Sig. (2-tailed)	Albumin
100	100	100	100	100	100	100	100	100	100	100	N	

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Table 8 *Correlation is significant at the 0.05 level (2-tailed)

MCS	PCS	QoL	GH	BP	SF	MH	VT	RE	RP	PF		
0.066	0.053	0.084	0.065	0.074	0.092	0.073	0.018	0.068	0.128	-0.18	Pearson Correlation	
0.517	0.603	0.406	0.519	0.462	0.361	0.472	0.86	0.503	0.206	0.073	Sig. (2-tailed)	Age
100	100	100	100	100	100	100	100	100	100	100	N	
0.063	-0.076	-0.033	-0.044	-.207-*	0.011	-0.021	-0.099	0.175	0.032	-0.01	Pearson Correlation	
0.53	0.454	0.743	0.665	0.039	0.914	0.833	0.325	0.081	0.752	0.923	Sig. (2-tailed)	Duration of HD
100	100	100	100	100	100	100	100	100	100	100	N	
0.134	0.134	0.126	0.196	-0.015	0.121	0.068	.213*	0.041	0.154	-0.038	Pearson Correlation	
0.184	0.185	0.212	0.05	0.879	0.23	0.501	0.033	0.687	0.125	0.707	Sig. (2-tailed)	Dry Weight
100	100	100	100	100	100	100	100	100	100	100	N	
.476**	.488**	.506**	.225*	.321**	.296**	.471**	.305**	.499**	.493**	.380**	Pearson Correlation	
0	0	0	0.024	0.001	0.003	0	0.002	0	0	0	Sig. (2-tailed)	Hb
100	100	100	100	100	100	100	100	100	100	100	N	
.365**	.302**	.320**	.248*	.210*	.316**	0.068	.286**	.381**	.331**	-0.021	Pearson Correlation	
0	0.002	0.001	0.013	0.036	0.001	0.502	0.004	0	0.001	0.839	Sig. (2-tailed)	Urea
100	100	100	100	100	100	100	100	100	100	100	N	
0.02	0.075	0.018	0.162	0.136	-0.077	0.015	0.094	-0.04	-0.017	-0.029	Pearson Correlation	
0.845	0.458	0.856	0.107	0.178	0.444	0.884	0.355	0.69	0.864	0.775	Sig. (2-tailed)	Creat
100	100	100	100	100	100	100	100	100	100	100	N	
0.09	0.164	0.12	0.181	.269**	-0.065	0.081	-0.011	0.116	0.1	0.056	Pearson Correlation	
0.372	0.102	0.235	0.072	0.007	0.52	0.423	0.91	0.252	0.321	0.578	Sig. (2-tailed)	ALT
100	100	100	100	100	100	100	100	100	100	100	N	
0.067	0.137	0.072	.223*	0.174	-0.139	0.107	0.009	0.046	0.066	0.065	Pearson Correlation	
0.511	0.174	0.476	0.026	0.083	0.169	0.289	0.929	0.65	0.514	0.518	Sig. (2-tailed)	AST
100	100	100	100	100	100	100	100	100	100	100	N	
.313**	.226*	.278**	0.025	0.012	.272**	0.104	.269**	.345**	.297**	0.174	Pearson Correlation	
0.002	0.023	0.005	0.809	0.904	0.006	0.301	0.007	0	0.003	0.084	Sig. (2-tailed)	Albumin
100	100	100	100	100	100	100	100	100	100	100	N	

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Table continued...

MCS	PCS	QoL	GH	BP	SF	MH	VT	RE	RP	PF		
-0.049	-0.006	-0.012	0.004	0.079	-0.107	-0.04	0.007	-0.008	0.017	-0.173	Pearson Correlation	
0.631	0.956	0.907	0.972	0.433	0.289	0.691	0.944	0.936	0.87	0.085	Sig. (2-tailed)	Ca
100	100	100	100	100	100	100	100	100	100	100	N	
-.207-*	-0.186	-.219-*	-0.064	-0.023	-0.18	-.201-*	-0.156	-0.159	-.206-*	-.221-*	Pearson Correlation	
0.038	0.063	0.029	0.53	0.817	0.073	0.045	0.12	0.115	0.039	0.027	Sig. (2-tailed)	Phos.
100	100	100	100	100	100	100	100	100	100	100	N	
-0.135	-0.113	-0.162	0.019	-0.003	-0.154	-0.137	-.247-*	-0.041	-0.008	-.293-**	Pearson Correlation	
0.182	0.262	0.108	0.852	0.973	0.126	0.174	0.013	0.689	0.938	0.003	Sig. (2-tailed)	PTH
100	100	100	100	100	100	100	100	100	100	100	N	
0.115	0.095	0.114	-0.017	-0.038	0.193	-0.072	0.048	0.128	0.13	.202*	Pearson Correlation	
0.255	0.347	0.258	0.864	0.708	0.055	0.478	0.636	0.204	0.196	0.043	Sig. (2-tailed)	Kt/v
100	100	100	100	100	100	100	100	100	100	100	N	

In group 2

a) QOL was not affected by age**.**

b) QOL was affected by dry weight with a significant +ve correlation between dry weight and VT and GH P=0.033 and 0.05 respectively.

c) There was a significant + ve correlation between Hgb level and PF, RP, RE, VT, MH, BP, PCS and MCS P=0.0, 0.0, 0.0, 0.0, 0.001, 0.024 respectively.

d) There was a significant + ve correlation between serum albumin level and PCS P=0.023.

e) There was a significant - ve correlation between phosphate PF, RP, MH and MCS.P=0.027, 0.039, 0.045 and 0.038 respectively.

f) QOL was affected by PTH with a significant -ve correlation between PTH and VT P=0.013**.**

g) QOL was not affected by pre dialysis serum creatinine**.**

h) Liver enzymes ALT and AST were higher in this group than HCV negative group but, they had no significant correlation with QoL.

Discussion

Quality of life is one of the important indicators of the effects of medical treatment. Hemodialysis patients experience various problems that may adversely influence their quality of life. Hepatitis C virus (HCV) infection is also an important problem in hemodialysis patients. This is the most important comorbid disease that can affect their quality of life.[7] A variety of instruments for measuring HRQOL exist, including those that are "generic" and those that are "disease-targeted".[8] The tool most commonly used to study HRQOL in people with renal disease is the SF-36.[9]

In this study, SF-36 Questionnaire was used to compare and study QOL among both HCV Ab negative and positive hemodialysis patients and the effect of different clinical and laboratory variables on their QOL. Our study showed that HCV seropositive hemodialysis patients had compromised health related quality of life in comparison to HCV seronegative patients which was found in most of SF-36 subscales particularly in role physical, role emotional, vitality, mental health and social functioning subscales and mental component summary.

In group 2, we demonstrated that the majority of the SF-36 subscales were lower in anti- HCV antibody positive HD patients compared with in anti-HCV antibody negative patients except physical functioning subscale which is comparable. In this group QOL was not affected by age, but affected by gender and males were found to have higher scores in role emotional, bodily pains and PCS compared to females. Afsar et al.,[4] demonstrated that the majority of the SF-36 subscales were lower in anti- HCV antibody positive HD patients compared with in anti-HCV antibody negative patients, with an independent association between anti-HCV antibody positivity and MCS of SF-36, but not with PCS, which was in agreement with our study.

The exact mechanisms regarding the relationship between anti-HCV seropositive hemodialysis patients and low MCS and depression remain not fully understood. Presence of depressive symptoms might be one of the explanations; both HCV and HD are implicated in an increased prevalence of depression, which negatively impacts HRQOL. It has been shown that HD patients with depression scored lower on all of the 8 SF-36 subscales than patients without depression. Depression may exist as a secondary phenomenon to HCV infection: it may take the form of a reactive depression related to the diagnosis or concerns over long-term health or may be linked to symptoms such as fatigue and cognitive impairment.[8] In HCV seronegative group, we found that male gender and younger age were associated with better

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quality of life with a significant negative correlation between age and physical functioning. Also, we found that males had higher scores in majority of the SF-36 subscales and overall QoL.

Anca Seica et al.,[10] found that age had a significant impact on health related QoL especially physical component summary of the SF36, but not on MCS and that women had lower QoL scores than men(which was in agreement with our study). Women on hemodialysis generally have lower QoL than men due to factors other than clinical ones including difficulty coping with kidney disease, more susceptibility to anaemia, anxiety and depressive symptoms with an association between psychological and social factors. In addition, women on hemodialysis usually continue performing their traditional roles of home making and child caring, unlike men, they cannot circumvent and thus are exposed to higher levels of physical and mental stress, resulting in lower QoL than men.[11]

In our study, we found that employed patients had significantly better quality of life than unemployed patients with significantly higher scores in physical functioning, vitality, social functioning, general health, PCS and MCS. In 2007 analysis of baseline data of 9,526 hemodialysis patients from 7 countries enrolled in phase I of the Dialysis Outcomes and Practice Patterns Study (DOPPS)[12] found that being unemployed (compared with employed) was independently and significantly associated with lower scores in all eight SF-36 scales, with larger differences being observed for role-emotional and role-physical, which was in agreement with our study.

In our study, there was a positive correlation between haemoglobin levels and the following SF-36 subscales: physical functioning, vitality, mental health, general health, physical component summary and mental component summary. In agreement with our study, Afsar et al.,[4] found positive correlation between haemoglobin levels and the following SF-36 subscales: physical functioning, role-physical limitation, bodily pain, general health perception, vitality, social functioning, role emotional and mental health subscales, PCS and MCS.

Moreover, interestingly, we found that haemoglobin levels were significantly higher in HCV seropositive patients than HCV seronegative which may be responsible for comparable physical functioning subscale between two groups. Similarly, Khurana et al.,[13] documented that hepatitis C patients tend to have higher baseline haemoglobin and decreased need for EPO therapy on dialysis. The possible explanation for these findings may be the release of hepatic EPO because of chronic hepatic inflammation secondary to HCV infection.

As in group 1, there was a significant positive correlation between haemoglobin level and the following SF-36 subscales: physical functioning, role physical, role emotional, vitality, mental health and bodily pains, and PCS and MCS, which was in agreement with Fabrizi et al.[8] In group 1 (and not in group 2), a significant positive correlation between pre dialysis serum creatinine and physical functioning, mental health, general health subscales, PCS and MCS. Feroze et al.,[14] showed that better QoL was associated with higher pre dialysis serum creatinine which was surrogate for larger muscle mass and/or greater meat intake. Similarly, Fabrizi et al.,[8] reported direct relationship between serum creatinine and SF-36 scale scores in hemodialysis population and the largest correlations were recorded in the general health, mental health, and bodily pain subscales.

Also, Spiegel et al.,[15] found that patients with low creatinine had a significantly lower adjusted SF-36 PCS score versus patients with higher levels of serum creatinine. In our study, there was no significant relation between dialysis adequacy, as measured by Kt/V and QOL. Our findings were similar to the findings of Fabrizi et al.,[8] Spiegel et al.[15] In contrast, Asfar et al.,[4] found that Kt/V was only correlated with the mental health subscale.

In our study, we found that QOL was affected by dry weight with a significant positive correlation between dry weight and vitality and general health subscales. Spiegel et al.,[15] documented highly significant independent correlations between dry weight and both PCS and MCS scores of the SF-36, similar to results of our study. Also**,** Kalantar- Zadeh et al.,[16] documented highly significant independent correlations between BMI and both PCS and MCS scores of the SF-36, which was in agreement with our study. In our study, there was a significant positive correlation between serum albumin level and role physical, role emotional, vitality, social functioning subscales, PCS and MCS.

Afsar et al.,[4] found that serum albumin was positively correlated with role physical limitation, bodily pain, general health perception, vitality, role emotional and mental health subscales, PCS and MCS, but other subscales were not related to the serum albumin level. Feroze et al.,[14] suggested that better QoL was associated with higher serum albumin levels, which were surrogates for greater meat intake and for higher visceral protein stores. In this study liver enzymes ALT and AST were significantly higher in HCV seropositive patients than seronegative patients but, they had no significant correlation with SF-36 subscales. In Afsar et al.,[4] found that HRQOL was not related to liver enzymes ALT, AST in HCV-infected HD patients, which was in agreement with our study.

In our study there was a significant negative correlation between phosphate and overall quality of life, physical functioning, role physical and mental health subscales and mental component. Also we found that QOL was affected by parathyroid hormone with a significant negative correlation between PTH and physical functioning and vitality subscales of SF-36. In contrast to us, Fabrizi et al.,[8] reported that mineral metabolism (such as parathyroid hormone, calcium/ phosphorus levels) had small effect sizes and correlations with HRQOL. Similarly, Tanaka et al.,[17] found a non-significant difference in mental health scores in patients with high versus low PTH levels.

Conclusion

HCV infection impairs quality of life, in many mental aspects in hemodialysis patients particularly in role physical, role emotional, vitality, mental health and social functioning subscales and mental component summary. Better quality of life is associated with male gender, younger age, employment, higher hemoglobin, higher pre dialysis serum creatinine and higher serum albumin.

Recommendations

A. Improving Hemoglobin level in hemodialysis patients which is associated with better quality of life.

B. Improving nutritional status and increasing body mass index.

C. Encouraging patients to join employments.

D. Prevention of hepatitis C transmission by proper Infection control measures reduces the economic burden and complications in hemodialysis.

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Conflict of interest

Author declares that there is no conflict of interest.

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