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The Comparison of Quality of Life among Peritoneal and Hemodialysis Patients

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ABSTRACT

End stage renal disease (ESRD) is a condition with an irreversible loss of renal function. The two major treatment options are transplantation and dialysis; hemodialysis (HD) or peritoneal dialysis (PD). In this study, we aimed to evaluate the effect of HD vs. PD on quality of life (QOL) in these patients. This cross sectional study recruited 140 PD and HD patients in the range of 15-65 years old from two main dialysis centers of Shiraz University of Medical Sciences, Iran. After obtaining some demographic data, patients were asked to complete the the Kidney Disease Quality of Life- Short Form (KDQOL-SF) questionnaire. Statistical analyses were performed using the SPSS 20.0 for Windows. Of the 140 participants in this study, 68 (48.57%) were on HD and 72 (51.43%) were on PD. PD patients had better score in sleep, kidney disease effect, social functioning, pain, etc. were differed significantly from HD patients. Overall QOL score had better for PD patients (p = 0.008). This study provides evidence that QOL in PD is better than HD patients. These results could become in use particularly in the planning of health care policies and patient management.

Key words: ESRD, Hemodialysis, Peritoneal dialysis, Quality of life

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INTRODUCTION

End stage renal disease (ESRD) is known as a disease in which an irreversible loss of renal function occurs sufficient enough to permanently make the patient in need of renal replacement therapy in order to prevent uremia [1]. The two major treatment options are transplantation and dialysis (HD or PD), [2]. Since access to kidney transplants is limited, most patients suffering from ESRD must decide between HD, regularly performed at a dialysis center, and PD, mostly performed at home [3-5]. Evaluations of HD and PD therapy for patients with ESRD usually have relied on discrepancies in morbidity and mortality of these two treatment modalities [6, 7].

It should be considered that ESRD is a clinical condition with serious impacts on the patients' quality of life (QOL), negatively influencing their social, financial and psychological health [8]. One of the critical objectives of treating patients with ESRD, whose cure is not a realistic purpose, is to increase function and well-being of the patients to an optimal level [9]. Therefore, it has been believed that patients' QOL and satisfaction with care are essential domains to assess therapy that should be valued better and noticed more [10-14] . This is because these domains have relatively been accompanied with a range of various medical outcomes, including compliance with care, morbidity, and mortality [15, 16]. So far, previous studies showed that ESRD patients undergoing HD or PD treatment experience QOL deficits, while the affected areas were found to be different [17].

Patients' health-related QOL in these two treatments was stated as being comparable and controversial [8-23]. Results are mixed with some investigations reporting that HD leads to better physical health, sleep and sexual relationships for patients [18]. These findings were mostly belonged to the first two years of dialysis and over time [19]. Nonetheless, complications such as nocturnal distress and inability to sleep during the nights leading up to dialysis have been found in HD patients, as well [20]. In contrast, compromised physical health in PD patients has been reported to be related to lower levels of albumin and health related adverse symptoms such as peritonitis [21, 22].

Overall, findings of previous studies have been inconsistent, with various studies reporting different results. Issues that often have been considered in misinterpreting these results relate to limitations with patient sampling for the different modalities, the discrepancies in co morbidities in patients selecting HD and PD, difficulties with utilization of PD and HD in different geographic areas, and etc [23]. In this study, we aimed to evaluate the effect of HD vs. PD on QOL in ESRD patients who attend Shiraz University of Medical Sciences.

MATERIALS AND METHODS

Study population

This cross sectional study recruited PD and HD patients in the range of 15-65 years old who had been identified from two main dialysis centers of Shiraz University of Medical Sciences (Namazee and Ali-Asghar Hospitals), Iran. Inclusion criteria included being on the same dialysis modality for at least 3 month. Exclusion criteria included having less than 2 times dialysis per week for HD patients and not being fluent in Persian language. All patients at each center meeting the inclusion criteria were recruited using a convenient sampling method. This allowed us to reach the desired sample size 140 patients, which provided 80% power a 5% error. After obtaining some demographic data such as age, education, gender, marital status, occupational status, place of residence, etc, patients were asked to complete the survey instruments. Informed consent was obtained from all individual participants included in the study.

Instrument

The Kidney Disease Quality of Life- Short Form (KDQOL-SF) questionnaire was applied to assess QOL. These questioner are self-reported measure developed to evaluate the functioning and well-being [24]. The KDQOL-SF questionnaire version 1.3 includes 43 kidney-disease based items as well as 36 items that provide a general core and an overall health rating item. The questionnaire consists of 80 items divided into 19 dimensions. This questionnaire consists of kidney-disease-targeted items (11 dimensions/43 items): symptom/problem list (twelve items), effects of kidney disease (eight items), burden of kidney disease (four items), work status (two items), cognitive function (three items), quality of social interaction (three items), sexual function (two items), sleep (four items), social support (two items), dialysis staff encouragement (two items), and patient satisfaction (one item). Moreover includes 36 items of health survey consisting of eight multi-item measures of physical and mental health status: physical functioning (ten items), role limitations caused by physical health problems (four items), role limitation caused by emotional health problem (three items), social functioning (two items), emotional well-being (five items), pain (two items), energy/fatigue (four items), and general health perception (five items). The scales range from 0 to 100, with a higher score representing better HRQOL [25]. The KDQOL-SF questionnaire has been adapted to Iranian and shown to be reliable and valid for the Iranian population [26].

Statistical Analysis

Descriptive statistical analyses were used to describe the study population in both HD and PD patients, Chi square, and paired T test analyses were performed in order to compare the demographic data of these two groups. Statistical comparisons on each scale included in the KDQOL and SF36 questionnaires were made by multivariate analysis of variance (MANOVA), using Wilks' lambda. A p- value of less than 0.05 was considered to be threshold for significance. Statistical analyses were performed using the SPSS 20.0 for Windows (SPSS, Inc, Chicago, Ill, USA).

RESULTS

Of the 140 participants (46.37 % female, 53.63% male) in this study, 68 (48.57%) were on HD and the rest of them (72 patients, 51.43%) were on PD. Demographic, socioeconomic profiles, and lab data of the 140 participants with mean age of 52.55 ± 12.27, completing KDQOL-SF questionnaires are shown on Table 1 and 2. Among them except occupation (p= 0.006) and dialysis sessions (p= 0.004) per week, it was showed that all variables did not

statistically different between the two groups.

Table 1. Demographic data

Characteristics	Patient groups		p-value
	Hemodialysis (n=68)	Peritoneal dialysis (n=72)	
Age (year),(Mean, SD)	54.86 ±12.07	52.40±12.14	0.062
Sex (Female), (n, %)	39(57.4)	36(50.0)	0.383
Marital status (n, %) Madrid Others	65(95.6)	64(88.9)	0.141
Body mass index (year),(Mean, SD)	24.46± 4.56	23.91±3.66	0.466
Married age (year),(Mean, SD)	19.83±5.10	21.63±4.96	0.083
Education (n, %) Illiterate Under diploma Diploma University education	 12(17.6) 28(41.2) 22(32.4) 6(8.8)	 7(9.7) 23(31.9) 30(41.7) 12(16.7)	0.177
Occupation (n, %) Student Housewife Employee Unemployed Retired	 3(4.5) 22(32.8) 1(1.5) 14(2.9) 28(40.3)	 3(4.2) 10(13.9) 12(16.7) 19(26.4) 28(38.9)	0.006

Table 2. Disease Related Data of HD and PD patients

Characteristics	Patient groups		p-value
	Hemodialysis (n=68)	Peritoneal dialysis (n=72)	
Renal failure reasons Hypertension Diabetes Lupus Polycystic kidney Glomerolonephritis Renal stone Others	 26(38.23) 22(32.35) 1(1.47) 2(2.94) 5(7.35) 3(4.41) 9(13.23)	 22(32.35) 31(45.58) 2(2.94) 6(8.82) 4(5.88) 4(5.88) 3(4.41)	0.091
Dialysis session in week 1time 2times 3times 4times	 Excluded 13(19.1) 49(72) 6(0.8)	 9(11.9) 9(11.9) 39(54.8) 15(21.4)	0.004
Co-morbid disease Diabetes Hypertension Neurology Peripheral disease Cardiovascular disease Thyroid dysfunction Psychiatry	 36(52.9) 39(57.4) 2(2.9) 3(4.4) 7(10.3) 3(4.4) 46(67.6)	 32(44.4) 27(37.5) 6(8.3) 0(0) 3(4.2) 1(1.4) 26(37.3)	 0.315 0.519 0.943 0.298 ~1 ~1 0.050
Disease time	44.37±37.46	42.71±33.67	0.799
Dialysis time	35.30±35.67	42.10±41.44	0.341
Hemoglobin	12.48±11.91	10.54±2.12	0.660
Albumin	4.03±1.10	3.5±1.00	0.061
Phosphorus	5.33±1.81	4.71±1.56	0.144
Dialysis adequacy (KT/V)	20.11±31.76	47.9±69.8	0.378
Pre dialysis BUN	65.61±42.61	69.30±36.05	0.592
Post dialysis BUN	48.12±43.28	55.65±36.59	0.286
Platelet	156.9±69.24	164.1±86.69	0.635
Cholesterol	146.41±46.27	150.45±54.64	0.694
Triglyceride	141.37±83.29	153.98±83.63	0.504
Creatinine	15.47±28.94	8.9±14.21	0.139
Blood sugar	112.73±46.81	128.16±52.68	0.131
Blood pressure	131.37±18.97	128.5±29.6	0.576

Table 3. The Data Obtained from KDQoL-SF Questionnaire

Measure	Patient groups		p-value
	Hemodialysis (n=68)	Peritoneal dialysis (n=72)	
Kidney disease –targeted scales (KDQOL)			
Symptom/problems	67.55±2.52	68.61±17.23	0.449
Effect of kidney disease	38.40±24.52	66.36±20.87	0.001
Burden of kidney disease	42.89±24.63	45.25±15.57	0.308
Work status	43.93±22.38	47.22±28.93	0.306
Cognitive Function	51.31±18.89	53.56±15.31	0.219
Quality of social interaction	53.70±21.20	53.42±13.49	0.680
Sexual Function	44.88±36.29	46.93±34.57	0.577
Sleep	54.29±18.83	60.19±21.25	0.039
Social support	62.36±19.46	52.31±20.22	0.022
Dialysis staff encouragement	95.07±11.78	93.92±9.80	0.533
Patient satisfaction	46.71±17.35	45.83±18.71	0.578
Item health survey scales (SF 36)			
Physical Function	24.66±27.35	33.79±25.58	0.045
Role physical	25.00±40.97	32.46±34.49	0.288
Pain	42.01±26.57	62.50±24.32	<0.001
General health	46.66±14.50	45.34±7.13	0.493
Emotional well being	66.90±18.54	64.06±17.27	0.352
Role-emotional	24.25±37.78	40.37±35.68	0.011
Social Function	51.51±22.94	61.11±18.71	0.008
Energy/Fatigue	54.40±25.58	63.54±19.36	0.031
Overall health rating (KDQOL) and (SF 36)	49.37±12.72	54.58±9.75	0.008

As shown on table 3, the results of the MANOVA tests were significantly different in three kidney-disease based items for QOL scores (wilk's lambda = 0.009, $p < 0.001$). Based on this analysis, PD patients had better score in sleep ($p = 0.001$), social support ($p = 0.022$), and kidney disease effect domains ($p = 0.039$).

Performance of PD patients in general health related items were also differed significantly from HD patients (wilk's lambda=0.032, $p \leq 0.001$). These items included physical functioning, social functioning, pain, energy/fatigue, and role limitation caused by emotional health problem ($p = 0.045$, 0.008, < 0.001, 0.031, and 0.011; respectively).

Overall health rating score, which was obtained by paired t test analysis, showed better outcomes for PD patients regarding QOL ($p = 0.008$).

DISCUSSION

The importance of dialysis care has increases worldwide since the prevalence of patients receiving renal replacement therapy and its related morbidity and mortality and high social and financial expenses have been grown over time [27]. There is limited prospective evidence analyzing the burden of both dialysis modalities (HD and PD) on QOL of these patients noting the high prevalence of CKD in Southern regions of Iran [28].

The findings of current study demonstrate that several QOL dimensions were significantly better for PD patients, especially sleep, social support, kidney disease effect, physical functioning, social functioning, pain, energy/fatigue, and role limitation caused by emotional health problem. However, other dimensions did not differ significantly among HD and PD patients.

Previous evidence indicated that comparison of QOL between HD and PD showed inconsistencies: some showed a better QOL for PD [29] while other patients have no significant difference [30]. These controversies may have caused by the administration of different QOL scales in clinically different patients. Liem et al. [31] carried out a systematic review on QOL of HD and PD, as well as transplant patients. They did not revealed statistically significant differences between dialysis modalities. Some other studies reported the higher rate of suicide in HD patients, while a considerable number of deaths caused by dietary violations could also be accounted for as suicide [32]. It has been concluded that depression may be associated to the HD treatment modality, as the patient has to be continually attached to the HD machine during dialysis and therefore experience considerable limitations in independent living [20, 22]. Facing psychosocial problems in HD patients can also be contributed to conflictions

between themselves and their medical careers and stressful conditions in the HD treatment modality such as repeated visits and prolonged waiting time in the dialysis unit [20].

One study by Wu et al. about one year patients on HD and PD reported that despite similar health status of ESRD patients, these two modalities had various evaluations of several dimensions of disease-specific QOL. Patients on HD had higher score on sexual functioning than patients on PD, but patients on PD reported better QOL than patients on HD as measured in several dimensions such as ability to travel, financial concerns, limitations in eating and drinking, and dialysis access problems [18]. Korevaar et al. in the Netherlands stated a small diversity in patients' quality-adjusted life year scores in the first 2 years of dialysis, and this diversity favored HD over PD [33]. This study aimed to describe QOL within the context of dialysis care. As it was mentioned before, in this study patients receiving PD had better scores in several QOL domains. Still, regarding that dialysis is a lifelong treatment; these statistically significant outcomes could need more time to be observed in order to have better conception considering the clinically significant outcomes. At baseline, both study groups were similar in age, sex, race, several co morbidities, etc, but PD patients had higher sessions of dialysis per week than HD patients. A limitation is a questionnaire based study and some confounding factors may have been missed in the comparative analysis between PD and HD. Moreover, self-report scales were used in this study in order to assess psychiatric symptoms, but structured scales rated by clinicians would be more trustworthy. However, this study implicated on the growing investigations on QOL and its outcomes on decision making in clinical practice and heath policy especially in renal replacement therapy. Future studies should be considered in order to compare HD and PD patients by means of more sophisticated matching methods.

CONCLUSION

This study provides evidence that the overall scale of QOL is better for PD than HD patients. These results could become in use particularly in the planning of health care policies and patient management.

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REFERENCES

[1] Fauci AS. Harrison's principles of internal medicine: McGraw-Hill Medical New York; 2008.
[2] Smith KW, Avis NE, Assmann SF. Distinguishing between quality of life and health status in quality of life research: a meta-analysis. Qual Life Res. 1999;8:447–59.
[3] Xue JL, Everson SE, Constantini EG, Ebben JP, Chen SC, Agodoa LY, et al. Peritoneal and hemodialysis: II. Mortality risk associated with initial patient characteristics. Kidney Int. 2002;61:741–6.
[4] Winkelmayer WC, Glynn RJ, Mittleman MA, Levin R, Pliskin JS, Avorn J. Comparing mortality of elderly patients on hemodialysis versus peritoneal dialysis: A propensity score approach. J Am Soc Nephrol 2002;13:2353–62.
[5] Locatelli F, Marcelli D, Conte F, D'Amico M, Del Vecchio L, Limido A, et al. Survival and development of cardiovascular disease by modality of treatment in patients with end-stage renal disease. J Am Soc Nephrol. 2001;12:2411–7.
[6] Vonesh EF, Snyder JJ, Foley RN, Collins AJ. The differential impact of risk factors on mortality in hemodialysis and peritoneal dialysis. Kidney Int. 2004;66:2389–401.
[7] Jaar BG, Coresh J, Plantinga LC, Fink NF, Klag MJ, Levey AS, et al. Comparing the risk for death with peritoneal dialysis and hemodialysis in a national cohort of patients with chronic kidney disease. Ann Intern Med 2005;143:174–83.
[8] Christensen A, Ehlers S. Psychological Factors in End – Stage Renal Disease: An Emerging Context for Behavioral Medicine Research. J Consul Clinic Psychol 2002;70:712-24.
[9] Kutner NG, Jassal SV. Quality of life and rehabilitation of elderly dialysis patients. Semin Dial. 2002;15:107.
[10] Leggat JE. Adherence with dialysis: A focus on mortality risk. Semin Dial. 2005;18:137–41.
[11] Polascheck N. Living on dialysis: Concerns of clients in a renal setting. J Adv Nurs. 2003;41:44–52.
[12] Paniagua R, Amato D, Vonesh EF, Guo A, Mujais S. Healthrelated quality of life predicts outcomes but is not affected by peritoneal clearance: The ADEMEX trial. Kidney Int 2005;67:1093–104.

[13] Rubin HR, Fink NE, Plantinga LC, Sadler JH, Powe NR. Patient ratings of dialysis care with peritoneal dialysis vs hemodialysis. JAMA. 2004;291:697–704.
[14] Mapes D, Lopes AA, Satayathum S, McCullough KP, Goodkin DA, Locatelli F, et al. Health-related quality of life as a predictor of mortality and hospitalization: The Dialysis Outcomes and Practice Patterns Study (DOPPS). Kidney Int 2003;64:339–49.
[15] Unruh ML, Weisbord SD, Kimmel PL. Health-related quality of life in nephrology research and clinical practice. Semin Dial. 2005;18:82–90.
[16] Kimmel PL, Peterson RA. Depression in end-stage renal disease patients treated with hemodialysis: Tools, correlates, outcomes, and needs. Semin Dial 2005;18:91–7.
[17] Griva K, Newman S. Quality of life in end-stage renal disease and treatments. In Special Issues in Health Psychology Edited by: Anagnostopoulos F, Karademas E. A Greek Perspective. Athens:Livani. 2007:97-130.
[18] Wu AW, Fink NE, Marsh-Manzi JV, Meyer KB, Finkelstein FO, Chapman MM, et al. Changes in quality of life during haemodialysis and peritoneal dialysis treatment: Generic and disease specific measures. J Am Soci Nephrol 2004;15:743-53.
[19] Mittal SK, Ahern L, Flaster E, Mittal V, Maesaka J, Fishbane S. Selfassessed quality of life in peritoneal dialysis patients. Am J Nephrol. 2001;21:215-20.
[20] Oikonomidou G, Zlatanos D, Vayopoulos H, Hatzidimitriou H. Depression in patients with chronic renal failure. Dialysis Living. 2005;14:22-32.
[21] Arnold R, Ranchor AV, Sanderman R, Kempen GI, Ormel J, Suurmeijer T. The relative contribution of domains of quality of life to overall quality of life for different chronic diseases. Qual Life Res. 2004;13:883-96.
[22] Oo TN, Roberts TL, Colling AJ. A comparison of peritonitis rates from the United States Renal Data System data-base: CAPD versus continuous cycling peritoneal dialysis patients. Am J Kid Dis 2005;45:372-80.
[23] Schulman G. Mortality and treatment modality of endstage renal disease. Ann Intern Med. 2005;143:227–8.
[24] Duarte PS, Ciconelli RM, Sesso R. Cultural adaptation and validation of the Kidney Disease and Quality of Life—Short Form (KDQOL-SF 1.3) in Brazil. Braz J Med Biol Res. 2005;38:261–70.
[25] Ware JE, Kosinski M, Keller SD. A 12-item short-form health survey. Med Care. 1996;34:220–3.
[26] Pakpour AH, Yekaninejad M, Molsted S, Harrison AP, Hashemi F, Saffari M. Translation, cultural adaptation assessment, and both validity and reliability testing of the Kidney Disease Quality of Life – Short Form version 1.3 for use with Iranian patientsnep. Nephrology 2011;16:106–12.
[27] Andrade MV, Junoy JP, Andrade EI, Acurcio FA, Sesso R, Queiroz OV, et al. Allocation of initial modality for renal replacement therapy in Brazil. Clin J Am Soc Nephrol. 2010;5:637–44.
[28] Khajehdehi P, Malekmakan L, Pakfetrat M, Roozbeh J, Sayadi M. Prevalence of Chronic Kidney Disease and Its Contributing Risk Factors in Southern Iran; A Cross-sectional Adult Population-based Study. Ir J Kid Dis 2014;8(2):109-15.
[29] Carmichael P, Popoola J, John I, Stevens PE, Carmichael AR. Assessment of quality of life in a single centre dialysis population using the KDQOL-SF questionnaire. Qual Life Res. 2000;9:195-205.
[30] Kutner NG, Zhang R, Barnhart H, Collins AJ. Health status and quality of life reported by incident patients after 1 year on haemodialysis or peritoneal dialysis. Nephrol Dial Transplant. 2005;20:2159-67.
[31] Liem YS, Bosch JL, Arends LR, Heijenbrok-Kal MH, Hunink MG. Quality of life assessed with theMedical Outcomes Study Short-Form 36-Item Health Survey of patients on renal replacement therapy: a systematic review and metaanalysis. Value Health. 2007;10:390–97.
[32] Gokal R. Health-related quality of life in end stage renal failure. Greek Nephrol. 2002;14:170-3.
[33] Korevaar JC, Feith GW, Dekker FW, van Manen JG, Boeschoten EW, Bossuyt PM, et al. Effect of starting with hemodialysis compared with peritoneal dialysis in patients new on dialysis treatment: a randomized controlled trial. Kidney Int 2003;64:2222–8.