

Quality of Life among End Stage Renal Disease Patients on Hemodialysis and Peritoneal Dialysis in the National Kidney and Transplant Institute

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Abstract

Background: The Philippine national health insurance's second highest pay-out goes towards dialysis treatment. The increasing number of patients developing End Stage Renal Disease (ESRD) requiring dialysis each year will result in an increasing subsidy by the government. Considering the huge expense of the government to support dialysis treatment, it is important to show that it results in a good Quality of Life (QOL).

Objectives: To determine the QOL of Hemodialysis (HD) and Peritoneal Dialysis (PD) patients using the World Health Organization Quality of Life (WHOQOL-BREF) instrument.

Materials and Methods: A cross-sectional study using the self-administered WHOQOL-BREF questionnaire evaluated randomly selected Filipino adult ESRD patients at the National Kidney and Transplant Institute's (NKTi) Chronic Hemodialysis (HD) Center and from the Chronic Ambulatory Peritoneal Dialysis (CAPD) clinic.

Results: There were 185 patients on HD and 225 patients on PD with mean age of 47 and male preponderance. Majority of HD patients were privately paying, while those on PD patients were all financially-subsidized by the Institute. Primary renal disease was due to hypertension. Most were on dialysis for more than 2 years (44.6%). PD patients had higher transformed scores in 3 domains compared with HD patients.

Conclusion: PD patients had a higher QOL in the psychological, social relationship and environmental domains; whereas physical domain was higher among HD patients.

Keywords: Chronic Kidney disease; Domains of quality of life; Questionnaire; WHOQOL-BREF

Introduction

The prevalence of Chronic Kidney Disease (CKD) is estimated to be 8-16% worldwide [1]. Globally, the number receiving Renal Replacement Therapy (RRT) is estimated at more than 1.4 million with the incidence growing by approximately 8% annually [2,3]. In the Philippines, there is an increasing number of Filipinos developing ESRD as reported in the 2016 Philippine Renal Disease Registry (PRDR); [4] 36,253 and 1,027 prevalent patients on HD and PD, respectively [4]. The expanded benefit of the national health insurance covers 90 sessions or 57% of adequate HD per year, amounting to US \$ 4,500.00 while coverage for 3 daily PD exchanges or 100% of adequate PD per year amounts to US \$ 5,192.00. This benefit has led to more Filipinos able to start dialysis and sustain the treatment. Dialysis currently represents the second highest benefit pay out in the last 2 years totaling about US \$ 153,846,153.00 per

year or PHP7,999,999,956.00 per year (Current exchange rate at US \$ 1.00=PhP52.00). The World Health Organization (WHO) defined Quality of Life (QOL) as an individuals' perceptions of their position in life in the context of the culture and value systems in which they live, including their relationship to goals and expectations, standards and concerns [5]. In a country where healthcare facilities and services are too costly, patients requiring dialysis represent a huge burden to a Filipino family. The impact of these financial stressors on the QOL of the patient needs to be integrated into the understanding of the impact of ESRD and its treatment [6].

Patients on dialysis experience many threats to their QOL both from symptoms of the disease itself and from the physical and mental burden of the dialysis treatment [7]. Thus careful assessment of the different domains on their QOL can help guide the provision for medical management to optimize their health experience [8].

How do they perceive their QOL? The idea of Health-Related Quality of Life (HRQOL) started in 1946, where the constitution of the WHO defined health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” [9].

The WHO Quality of Life (WHOQOL-BREF) is a subset of 26 items taken from the WHOQOL-100. This instrument has been used by many studies to assess the QOL in specific populations, such as living kidney donors, [10] individuals with Type 2 diabetes mellitus, [11] hypertension, [12] and patients with chronic hepatitis C infection [13].

The financial impact of dialysis on the national health insurance program should translate to a better over-all QOL for the dialysis patient.

The primary objective of this cross sectional study was to compare the QOL of patients on HD and PD in 4 domains of WHOQOL-BREF, namely: physical health, psychological health, social relationship, and environment. The secondary objective was to correlate demographic variables of HD and PD patients with the 4 domains of WHOQOL-BREF.

Methods and Patients

The National Kidney and Transplant Institute (NKTi) have 355 patients undergoing ≥ 2 HD sessions and 537 regular Chronic Ambulatory Peritoneal Dialysis (CAPD) patients. A total of 410 participants were randomly selected including 185 HD patients from the four shifts of HD and 225 regular PD patients at the CAPD Clinic in 2017. The study protocol was approved by the Research Ethics Committee and the Technical Review Board of the NKTi. Following careful explanation of the protocol. Each participant signed a written informed consent (Appendix A, B).

Included HD participants should be on dialysis treatment for $\geq 2x/week$ for at least 12 weeks. PD participants should have at least 3 exchanges per day for at least 12 weeks and those patients who attend regular monthly consultations at the NKTi-CAPD Clinic. Patients were excluded for the following reasons: they did not consent to participate, were younger than 18 years, have a cognitive impairment, acute kidney injury, history of previous kidney transplantation, history of malignancy, hospitalized at the time of study or hospitalized in the last 3 months.

QOL instrument

The QOL was measured using the WHOQOL-BREF questionnaire [9]. An English and/or validated Filipino (Tagalog) translated WHOQOL-BREF questionnaire (Appendix C) and was used depending on patient's preference.

Included were 26 questions, where 1 indicated low or negative perceptions and 5 indicated high or positive perceptions. Questions 1 and 2 assess an individual's overall perception of QOL and general health respectively. The remaining items are categorized under physical health (Domain 1), psychological health (Domain 2), social relationship (Domain 3), and environmental (Domain 4) domains. Each item is rated by a 5-point Likert scale, where higher scores denote a higher QOL. There were items in the questionnaire that were negatively phrased, thus scores in these items were reversed in the analysis. The mean raw scores of each item within each domain were then transformed to 0-100 scale in order to make the domains scores comparable with the WHOQOL-100. The transformation formula in WHOQOL-BREF Instrument Manual [9] was used. Transformed scores of each domain were used for statistical analyses in all domains.

A participant was given 15-20 minutes to answer the survey. A corresponding I.D. number was labelled on the participant's answered questionnaire.

Statistical analysis

Frequency (n) and percentages (%) were used to determine the number and distribution of patients on HD and PD, as well as their respective demographic profiles. Results of descriptive analyses are presented as mean \pm SD. Pearson's test for correlation was used to determine the level of agreement between the four domains of WHOQOL-BREF between the two groups. Independent T-test was used to compare the means between patients on HD and PD in relation to their perceived QOL. Levene's test was used to test for homogeneity of variances between two groups (Appendix D). Statistical analysis was computed using Statistical Package for the Social Science (SPSS) v.20.

Results

Demographic characteristics

Among 410 patients included in the study, majority were male (51%), 46.6% were married, 44.4% were at least high school graduates, and 22.9% obtained their financial sources from their spouse (Table 1). The mean age was 50 years and 44 years for HD and PD patients, respectively. Majority of HD patients were privately paying, while those on PD were all financially-subsidized by the Institute. The primary renal disease of both groups was primarily hypertensive nephrosclerosis (31%). Most of the respondents were on dialysis for more than 2 years (44.6%). Majority (61.6%) of those on HD were on dialysis thrice a week and 70.7% of PD patients were on 3 daily exchanges. Among the baseline characteristics of HD and PD patients, there were significant differences noted for age, status, and educational attainment, financial sources of expenses, classification and duration of dialysis. PD patients were significantly younger than HD patients. Majority of the respondents were high school graduate. HD patients had a significantly longer duration on dialysis. Among the laboratory values, patients had significantly higher hemoglobin levels and eGFR.

Correlation of QOL scores with baseline characteristics

Hemodialysis patients: Table 2A shows the comparison of WHOQOL-BREF domain scores among HD patients based on their baseline characteristics. Among HD patients, there were statistically significant differences between the QOL scores among the various age groups ($p=0.011$), sex ($p=0.018$), educational attainment ($p=0.00$), marital status ($p=0.003$), serum creatinine ($p=0.028$) and overall perception of general health.

Patients aged >60 years had a higher perception of general health (3.1 ± 0.9) than patients in the age group of 18-34 years (2.3 ± 1.1) and 35-59 years (2.9 ± 1.0). Males had a higher perception of general health *versus* females. Patients who obtained their finances from their children had significantly lower scores in all 4 domains compared to other groups. Respondents who were married or living together had significantly higher scores across all domains except social domain. It was also observed that patients who had an AVG had significantly higher QOL scores in all 4 domains compared to patients with temporary access, permanent catheter and AVF.

Among the clinical variables, patients with a serum creatinine of less than 5.0 mg/dl and eGFR of >8 ml/min had significantly higher scores in Q2 and Q1 respectively. There were no significant differences found in the QOL scores in all 4 domains for hemoglobin levels.

Table 1: Baseline Characteristic of Hemodialysis and Peritoneal Dialysis Patients.

	Total N: 410 (%)	Hemodialysis N: 185 (%)	Peritoneal dialysis N: 225 (%)	p value
Age (in years)	47*	50*	44.1*	0.00
Gender				
Male	209 (51)	93 (50.3)	116 (51.6)	0.80
Female	201 (49)	92 (49.7)	109 (48.4)	
Status				
Single	60 (14.6)	23 (12.4)	37 (16.4)	0.00
Married	191 (46.6)	67 (36.2)	124 (55.1)	
Living as Married	116 (28.3)	72 (38.9)	44 (19.6)	
Separated	26 (6.3)	13 (7.0)	13 (5.8)	
Widowed	17 (4.1)	10 (5.4)	7 (3.1)	
Educational Attainment				
Elementary	63 (15.4)	28 (15.1)	35 (15.6)	0.009
High School	182 (44.4)	71 (38.4)	111 (49.3)	
College	111 (27.1)	59 (31.9)	52 (23.1)	
Vocational	29 (7.1)	7 (3.8)	22 (9.8)	
Others (Masters, Doctorate, Law)	15 (3.7)	14 (7.6)	1 (0.4)	
None	10 (2.4)	6 (3.2)	4 (1.78)	
Financial Sources for Expenses				
Pension	71 (17.3)	41 (22.2)	30 (12.2)	0.005
Savings	80 (19.5)	39 (21.1)	41 (18.2)	
Spouse	94 (22.9)	40 (21.6)	54 (24.0)	
Children	45 (11)	18 (9.73)	27 (12.0)	
Personal	35 (8.5)	20 (10.8)	15 (6.7)	
Others (Relatives, PCSO, Guarantee Letters)	85 (20.7)	27 (14.6)	58 (25.8)	
Classification				
Privately Paying	126 (30.7)	126 (68.1)	0	0.00
Subsidized by the Institute	284 (69.3)	59 (31.9)	225(100)	
Etiology of Renal Disease				
Chronic Glomerulonephritis	110 (26.8)	56 (30.3)	54 (24.0)	0.223
Diabetic Nephropathy	110 (26.8)	52 (28.1)	58 (25.8)	
Hypertensive Nephrosclerosis	127 (31)	55 (29.1)	72 (32.0)	
Obstructive Nephropathy	20 (4.9)	9 (7.0)	11 (4.9)	
Others (Chronic Pyelonephritis, NSAID, Urate, Did not mention)	43 (10.5)	13 (7.0)	30 (13.3)	
Duration of Dialysis				
3-6 months	70 (17.1)	12 (6.5)	58 (25.8)	0.00
7-11 months	73 (17.8)	22 (11.9)	51 (22.7)	
1-2 years	84 (20.5)	36 (19.5)	48 (21.3)	
More than 2 years	183 (44.6)	115 (62.2)	68 (30.2)	
Laboratory Results				
Hemoglobin (g/L)		10.29*(± 1.71)**	9.4*(± 1.82)**	0.00
Serum Creatinine (mg/dL)		11.4*(± 3.73)**	14.8*(± 20.17)**	0.59
eGFR		4.52*(± 1.87)**	3.94*(± 1.65)**	0.001

*Mean ** Standard Deviation

PCSO (Philippine Charity Sweepstakes Office); NSAID (Non Steroidal Anti-inflammatory Drug); AVF (Arterio-Venous Fistula); AVG (Arterio-Venous Graft)

Table 2A: Comparison of WHOQOL-BREF domain mean scores, standard deviations and significance based on demographic variables of hemodialysis patients.

Variable		Physical	Psychological	Social	Environmental	Q1	Q2
Age	18-34	57.8 ± 16.1	64.5 ± 18.5	62.7 ± 19.2	57.3 ± 16.7	3.1 ± 0.9	2.3 ± 1.1
	35-59	53.5 ± 15.2	60.2 ± 15.6	59.1 ± 16.9	59.1 ± 12.9	3.4 ± 0.8	2.9 ± 1.0
	≥ 60	49.8 ± 15.0	58.4 ± 13.7	59.1 ± 18.1	58.9 ± 16.9	3.5 ± 1.0	3.1 ± 0.9
	p value	0.141	0.295	0.642	0.850	0.142	0.011
Sex	M	52.8 ± 17.3	62.2 ± 14.1	59.4 ± 17.2	57.6 ± 15.8	3.5 ± 0.8	3.0 ± 1.0
	F	53.5 ± 13.4	58.5 ± 16.8	59.7 ± 17.8	59.9 ± 12.9	3.3 ± 0.9	2.7 ± 1.0
	p value	0.745	0.101	0.885	0.272	0.080	0.018
Education	Elementary	55.6 ± 15.9	59.2 ± 14.2	58.3 ± 18.3	56.5 ± 12.33	3.4 ± 0.9	3.04 ± 1.1
	High School	52.6 ± 13.8	58.8 ± 13.3	57.5 ± 17.1	58.8 ± 14.3	3.5 ± 0.9	3.13 ± 1.0
	College	51.7 ± 17.2	60.9 ± 16.8	65.5 ± 17.3	57.3 ± 16.2	3.2 ± 0.8	2.4 ± 0.9
	Vocational	54.1 ± 10.4	61.9 ± 18.2	65.5 ± 17.6	58.9 ± 17.7	3.6 ± 0.5	3.4 ± 0.8
	Others (Masters, Doctorate, Law)	57.9 ± 17.8	72.3 ± 19.6	66.1 ± 18.3	66.9 ± 13.1	3.3 ± 0.8	2.5 ± 0.9
	None	50.6 ± 13.1	49.3 ± 10.7	55.6 ± 20.2	64.6 ± 11.5	2.8 ± 1.0	3.5 ± 0.5
p value	0.726	0.029	0.483	0.238	0.207	0.00	
Status	Single	55.9 ± 20.9	63.6 ± 23.3	61.9 ± 16.4	57.9 ± 18.5	2.9 ± 0.8	2.4 ± 1.0
	Married	53.4 ± 13.5	63.9 ± 12.3	61.7 ± 16.2	59.1 ± 13.4	3.4 ± 0.7	2.8 ± 1.0
	Living as Married	54.9 ± 12.86	58.4 ± 14.1	59.9 ± 17.2	60.9 ± 12.4	3.6 ± 0.9	3.2 ± 0.9
	Separated	48.0 ± 19.3	51.9 ± 14.7	44.2 ± 18.4	54.3 ± 17.7	3.2 ± 1.0	2.5 ± 0.9
	Widow	53.2 ± 15.4	54.2 ± 18.7	57.5 ± 22.0	48.8 ± 17.4	2.8 ± 0.9	2.6 ± 1.1
	p value	0.022	0.024	0.019	0.097	0.001	0.003
Finances for Expenses	Pension	52.0 ± 13.3	59.0 ± 11.9	57.7 ± 18.4	60.1 ± 14.3	3.6 ± 0.9	3.1 ± 0.8
	Savings	59.9 ± 13.7	64.9 ± 14.9	62.3 ± 16.5	62.9 ± 12.5	3.5 ± 0.9	3.0 ± 1.1
	Spouse	53.5 ± 13.6	60.9 ± 15.3	66.0 ± 16.2	60.4 ± 14.1	3.5 ± 0.8	2.8 ± 1.0
	Children	45.5 ± 16.8	54.4 ± 15.2	49.0 ± 15.6	50.3 ± 13.2	3.2 ± 0.6	2.8 ± 0.9
	Own	50.7 ± 13.8	65.8 ± 13.0	60.8 ± 13.3	59.5 ± 14.8	3.3 ± 0.7	2.5 ± 1.0
	Others (Relatives, PCSO, Guarantee Letters)	51.7 ± 20.2	54.9 ± 21.1	54.9 ± 19.2	53.5 ± 16.1	3.0 ± 0.9	2.7 ± 1.2
p value	0.018	0.033	0.007	0.015	0.116	0.257	
Duration of Dialysis	3-6 months	52.7 ± 14.9	65.3 ± 15.5	59.2 ± 17.2	60.4 ± 12.6	3.4 ± 0.5	2.4 ± 0.9
	7-11 months	53.6 ± 15.1	59.3 ± 18.2	57.6 ± 16.2	58.9 ± 14.6	3.1 ± 0.9	2.7 ± 1.1
	1-2 years	55.8 ± 14.8	61.3 ± 11.9	59.5 ± 16.8	60.5 ± 12.3	3.6 ± 0.8	3.0 ± 0.8
	>2 years	52.3 ± 15.8	59.7 ± 16.1	60.0 ± 18.1	58.0 ± 15.3	3.4 ± 0.9	2.9 ± 1.0
	p value	0.712	0.658	0.943	0.811	0.299	0.349
Access	Temporary	43.4 ± 15.2	52.9 ± 14.8	53.9 ± 16.9	53.33 ± 15.4	3.2 ± 0.9	2.5 ± 1.2
	Permcath	48.1 ± 12.6	53.8 ± 13.4	47.7 ± 20.7	51.7 ± 12.5	3.3 ± 0.9	2.8 ± 1.1
	AVF	53.9 ± 15.4	61.3 ± 15.5	61.0 ± 17.5	59.3 ± 14.4	3.4 ± 0.9	2.9 ± 0.9
	AVG	61.1 ± 11.5	65.0 ± 15.9	62.0 ± 11.2	64.9 ± 11.6	3.4 ± 0.8	2.9 ± 1.0
	p value	0.003	0.035	0.039	0.030	0.590	0.363
Hemoglobin (g/dL)	<9.0	52.6 ± 14.7	59.7 ± 15.9	57.7 ± 17.6	56.8 ± 16.1	3.3 ± 0.8	2.9 ± 0.9
	9.0-11.0	52.2 ± 14.7	61.4 ± 16.1	59.6 ± 18.1	58.9 ± 14.4	3.4 ± 0.9	2.9 ± 1.0
	> 11.0	55.6 ± 16.1	59.0 ± 13.9	61.6 ± 16.6	60.6 ± 12.9	3.4 ± 0.9	2.8 ± 1.0
	p value	0.898	0.868	0.488	0.664	0.595	0.480
SCrea (mg/dL)	≤ 5.0	50.0 ± 27.8	57.9 ± 20.5	52.0 ± 14.2	54.6 ± 20.5	3.7 ± 0.9	3.3 ± 1.7
	5.1-10.0	53.2 ± 13.9	59.6 ± 12.3	60.7 ± 15.6	59.5 ± 13.5	3.5 ± 0.9	3.0 ± 0.9
	10.1-15.0	53.9 ± 15.3	62.6 ± 16.7	60.8 ± 18.8	59.9 ± 14.3	3.3 ± 0.7	2.7 ± 0.0
	15.1-20.0	50.7 ± 18.8	55.7 ± 19.4	53.2 ± 19.0	54.6 ± 16.7	3.0 ± 0.8	2.4 ± 1.0
	>20.0	55.9 ± 12.0	63.8 ± 15.7	62.5 ± 11.4	55.2 ± 12.6	3.1 ± 0.7	2.3 ± 1.0
	p value	0.875	0.356	0.280	0.483	0.122	0.028
eGFR (mL/min)	≤ 2.0	59.5 ± 4.12	69.4 ± 9.6	69.4 ± 31.5	72.9 ± 10.9	3.6 ± 0.5	3.0 ± 1.0
	2.1-4.0	52.0 ± 14.6	59.4 ± 17.6	57.9 ± 18.2	57.0 ± 15.5	3.1 ± 0.8	2.6 ± 1.0
	4.1-6.0	54.1 ± 14.6	61.0 ± 14.0	59.6 ± 16.8	59.9 ± 13.2	3.5 ± 0.9	3.0 ± 1.0
	6.1-8.0	52.1 ± 14.6	63.8 ± 12.4	63.8 ± 12.4	60.2 ± 13.4	3.7 ± 0.7	3.2 ± 0.9
	>8.0	57.8 ± 8.53	70.0 ± 12.3	64.3 ± 7.9	64.3 ± 7.1	3.8 ± 0.4	3.2 ± 0.4
	p value	0.776	0.752	0.355	0.241	0.009	0.156

Notes: The values are mean scores, standard deviations (Mean ± SD). The figures in bold indicate significant p values (p<0.05).

Q1: Overall perception of quality of life (range score 1-5); Q2: Overall perception of general health (range score 1-5).

Table 2B: Comparison of WHOQOL-BREF domain mean Scores, standard deviations and significance based on demographic variables of peritoneal dialysis patients.

Variable		Physical	Psychological	Social	Environmental	Q1	Q2
Age	18-34	49.5 ± 12.9	54.3 ± 13.0	61.9 ± 23.1	51.4 ± 13.4	2.9 ± 1.0	2.6 ± 1.0
	35-59	43.8 ± 12.7	51.1 ± 17.0	50.8 ± 19.9	46.8 ± 15.6	2.9 ± 1.0	2.8 ± 1.0
	≥ 60	44.6 ± 18.3	52.9 ± 11.1	53.0 ± 20.6	48.1 ± 15.9	2.8 ± .1	2.6 ± 0.9
	p value	0.020	0.399	0.003	0.149	0.693	0.422
Sex	M	44.1 ± 15.9	49.5 ± 15.8	51.7 ± 23.3	47.6 ± 16.1	2.9 ± 0.9	2.8 ± 1.1
	F	47.2 ± 11.6	55.2 ± 13.8	56.3 ± 20.4	49.1 ± 19.6	2.7 ± 0.9	2.7 ± 0.9
	p value	0.106	0.005	0.094	0.465	0.082	0.299
Education	Elementary	47.5 ± 14.9	52.3 ± 18.7	64.0 ± 23.5	60.0 ± 16.7	3.1 ± 1.1	2.7 ± 1.1
	High school	44.7 ± 13.6	51.7 ± 15.6	52.1 ± 20.0	47.5 ± 16.0	2.8 ± 1.1	2.6 ± 0.9
	College	45.8 ± 13.9	51.3 ± 15.8	52.4 ± 21.0	46.8 ± 11.6	3.0 ± 0.7	2.8 ± 1.0
	Vocational	46.4 ± 15.2	54.4 ± 15.1	54.2 ± 22.2	51.3 ± 15.9	2.8 ± 1.0	2.8 ± 1.1
	Others (Masters, Doctorate, Law)	43	50	58	50	3	3
	None	44.6 ± 6.8	55.2 ± 16.1	52.1 ± 27.5	44.5 ± 13.4	3.5 ± 0.6	3.5 ± 0.6
	p value	0.923	0.963	0.098	0.552	0.505	0.655
Status	Single	47.1 ± 12.5	51.3 ± 13.6	55.4 ± 23.7	49.0 ± 14.3	2.8 ± 1.1	2.8 ± 1.1
	Married	44.4 ± 15.0	52.4 ± 15.9	52.4 ± 15.9	47.9 ± 14.9	3.0 ± 1.0	2.7 ± 1.0
	Living as married	46.5 ± 12.5	52.4 ± 13.4	52.8 ± 17.9	44.2 ± 16.0	2.7 ± 0.9	2.5 ± 0.9
	Separated	51.9 ± 14.2	52.2 ± 19.8	59.6 ± 16.6	55.3 ± 17.1	2.9 ± 0.9	2.7 ± 1.0
	Widow	42.8 ± 12.0	55.3 ± 12.6	46.4 ± 18.5	47.3 ± 14.4	2.4 ± 1.0	2.7 ± 0.8
	p value	0.537	0.874	0.855	0.523	0.324	0.804
	Finances for Expense	Pension	44.4 ± 16.3	48.9 ± 16.7	52.2 ± 21.9	47.3 ± 15.0	2.7 ± 1.0
Savings		44.3 ± 16.2	50.9 ± 17.8	54.1 ± 23.5	47.1 ± 14.1	3.0 ± 1.0	2.8 ± 1.0
Spouse		47.4 ± 13.4	53.5 ± 14.1	56.7 ± 20.7	49.2 ± 15.5	2.8 ± 0.9	2.5 ± 0.9
Children		43.5 ± 14.7	54.3 ± 14.6	51.9 ± 18.4	47.2 ± 14.7	2.9 ± 0.9	2.9 ± 0.9
Own		48.6 ± 11.9	51.7 ± 18.8	52.2 ± 19.8	49.2 ± 18.1	3.1 ± 1.2	3.1 ± 1.1
Others (Relatives, PCSO, Guarantee Letters)		45.0 ± 11.7	52.2 ± 15.9	54.2 ± 24.8	49.2 ± 14.4	2.9 ± 1.1	2.9 ± 1.1
p value		0.716	0.580	0.912	0.963	0.710	0.069
Duration of Dialysis	3-6 months	43.3 ± 12.1	49.5 ± 14.5	52.9 ± 20.7	44.0 ± 17.1	2.8 ± 1.0	2.7 ± 1.0
	7-11 months	46.6 ± 14.3	53.9 ± 17.1	54.2 ± 23.4	48.5 ± 15.8	2.8 ± 0.9	2.6 ± 1.1
	1-2 years	49.4 ± 15.6	55.6 ± 16.5	58.2 ± 23.9	51.1 ± 13.5	3.0 ± 0.9	2.8 ± 1.0
	>2 years	44.3 ± 11.3	50.2 ± 15.5	53.0 ± 22.0	49.9 ± 13.4	3.0 ± 1.0	2.8 ± 1.0
	p value	0.061	0.138	0.484	0.066	0.320	0.524
No of exchanges per day	3	45.6 ± 12.6	45.3 ± 12.2	55.5 ± 21.5	55.4 ± 21.5	2.8 ± 1.0	2.9 ± 1.0
	4	43.4 ± 13.1	45.9 ± 14.2	49.4 ± 21.8	50.3 ± 20.6	3.1 ± 1.0	3.0 ± .09
	Others	48.5 ± 12.3	50.0 ± 18.5	53.5 ± 28.1	56.2 ± 10.4	2.5 ± 0.7	2.4 ± 1.0
	p value	0.702	0.474	0.298	0.501	0.131	0.113
Episode of Peritonitis	None	46.2 ± 13.1	45.9 ± 14.1	54.8 ± 21.3	55.1 ± 15.7	2.9 ± 1.0	2.8 ± 1.0
	Once	45.5 ± 14.4	45.6 ± 14.5	52.2 ± 23.2	52.3 ± 13.3	2.9 ± 1.0	2.7 ± 1.0
	Twice	41.6 ± 9.2	43.5 ± 9.9	54.0 ± 23.7	47.2 ± 17.4	2.8 ± 0.9	2.5 ± 0.8
	More than twice	29	38	17	28	1	2
	p value	0.481	0.633	0.308	0.546	0.287	0.679
Catheter Reinsertion	None	45.8 ± 13.1	52.4 ± 15.9	54.0 ± 21.1	48.2 ± 15.4	2.9 ± 1.0	2.8 ± 1.1
	Once	44.3 ± 13.2	50.4 ± 14.1	52.1 ± 21.9	47.1 ± 15.5	2.5 ± 0.8	2.6 ± 0.9
	Twice	50.3 ± 17.5	53.3 ± 22.6	64.7 ± 22.6	55.0 ± 16.9	3.1 ± 1.1	2.9 ± 0.9
	More than twice	43	54	50	50	3	3
	p value	0.582	0.961	0.306	0.408	0.08	0.582
Hemoglobin (g/dL)	<9.0	45.5 ± 13.5	50.7 ± 16.2	54.1 ± 22.3	55.3 ± 22.8	3.0 ± 1.0	2.8 ± 1.0
	9.0-11.0	44.6 ± 14.5	52.9 ± 16.0	54.7 ± 21.6	54.7 ± 20.7	2.7 ± 0.9	2.6 ± 0.9
	>11.0	48.7 ± 13.4	50.5 ± 14.9	48.6 ± 23.1	50.0 ± 19.9	2.9 ± 0.8	2.8 ± 1.0
	p value	0.333	0.679	0.434	0.497	0.096	0.384

SCrea (mg/dL)	5.0-10.0	44.4 ± 13.3	53.0 ± 15.1	52.7 ± 23.0	49.5 ± 15.1	2.5 ± 0.9	3.0 ± 1.0
	10.1-15.0	46.8 ± 13.5	52.5 ± 16.0	55.1 ± 21.6	46.7 ± 15.9	2.9 ± 0.9	2.7 ± 1.0
	15.1-20.0	43.3 ± 14.0	44.0 ± 15.3	52.4 ± 23.1	50.8 ± 14.5	3.0 ± 1.1	2.1 ± 1.0
	>20.0	50.0 ± 0.0	60.4 ± 8.8	52.5 ± 17.6	47.2 ± 11.5	2.8 ± 0.9	2.6 ± 0.8
	p value	0.665	0.549	0.877	0.424	0.092	0.018
eGFR (mL/min)	≤ 2.0	49.7 ± 11.8	52.5 ± 11.6	58.3 ± 15.2	54.8 ± 7.2	2.8 ± 0.8	2.5 ± 0.6
	2.1-4.0	45.6 ± 12.2	51.7 ± 15.8	54.0 ± 20.8	48.2 ± 13.4	2.9 ± 1.0	2.7 ± 1.0
	4.1-6.0	45.9 ± 15.9	52.4 ± 17.4	53.8 ± 25.4	47.9 ± 19.4	2.9 ± 0.8	2.4 ± 0.9
	6.1-8.0	40.4 ± 11.4	50.5 ± 13.5	52.0 ± 22.8	44.7 ± 15.7	2.1 ± 1.1	1.8 ± 0.9
	>8.0	52.6 ± 15.8	58.3 ± 21.5	41.6 ± 23.5	53.1 ± 2.5	3.5 ± 1.2	3.0 ± 0.9
	p value	0.155	0.931	0.680	0.683	0.040	0.010

Notes: The values are mean scores, standard deviations (Mean ± SD). The figures in bold indicate significant p values (p<0.05).

Q1: Overall perception of quality of life (range score 1-5); Q2: Overall perception of general health (range score 1-5).

Peritoneal dialysis patients

Table 2B shows the comparison of WHOQOL-BREF domain scores among PD patients based on their baseline characteristics. Statistically significant differences were noted between QOL scores among various age groups and physical (p=0.020) and social domains (p=0.003). Female patients had significantly higher scores on the psychological domain compared with males. Among the clinical variables, patients with a serum creatinine of 5-10 mg/dl and eGFR of >8 ml/min had significantly higher scores on the overall perception of general health. There were no significant differences found in the QOL scores in all 4 domains for hemoglobin levels of PD patients.

QOL scores and correlations among various domains of the WHOQOL-BREF

There was a strong linear relationship observed between all four domains in HD patients (Table 3A,B).

Among PD patients, there was a strong positive correlation between physical and psychological (rs=0.535) and between physical and environment (rs=0.529) and a moderately positive correlation between physical and the social relationship domain (rs=0.425).

QOL in the 4 domains of HD compared to PD patients

HD patients had a significantly higher perception of QOL in the physical domain (15.3 ± 1.13) (Table 4) while PD patients had a higher perception of QOL in the psychological (15.9 ± 1.06), social relationship (21.9 ± 1.46) and environmental (15.1 ± 1.00) domains.

Discussion

In recent years there has been a continuous increase in the number of patients with ESRD who require long-term dialysis that impacts on a patient's QOL. A lot of health-related QOL studies have already been conducted in other countries [11-18] but only a few in our country, limited only to HD patients.

In this study, patients on HD had a higher QOL perception in the physical domain while PD patients had higher perception of QOL in the psychological, social relationship and environmental domains (Table 4). HD patients had a lower perception of QOL in the social and environmental domains probably due to their 3x a week sessions which may reduce their time for leisure and social activities. This is further supported by a previous study that reported restrictions imposed on patient's lives, and their dependence on HD may cause social isolation [15]. Their strict daily restrictions on diet and fluid intake are constant reminders of the impact of the disease that significantly affects social

Table 3A: Pearson correlations for the four domains in hemodialysis patients.

Domain	Psychological	Social Relationship	Environmental
Physical	0.607*	0.502*	0.696*
Psychological		0.572*	0.641*
Social Relationship			0.664*

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

Table 3B: Pearson correlations for the four domains in peritoneal dialysis patients.

Domain	Psychological	Social Relationship	Environmental
Physical	0.535*	0.425*	0.529*
Psychological		0.466*	0.613*
Social Relationship			0.421*

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

interactions causing problems with social interaction [16]. Surendra NK, et al. reported a similar finding that patients on PD were less limited in performing everyday life activities and was more able to socialize [17]. PD patients had a lower QOL in the physical domain probably due to their abdominal catheter and the intraperitoneal fluid. Another study has shown an opposite finding to our study, the QOL in aspects of physical functioning; physical role functioning, general health perception and physical category are significantly higher in the PD patients compared with HD patients [18].

Our findings indicate that older HD patients had a significantly higher perception of general health than younger HD patients. The study of Joshi U, et al. among older people have a better understanding of their limitations and therefore more satisfied with their general health despite the presence of the disease [19]. The significantly higher scores in social domain among young PD patients may be due to their having more energy to spend with personal relationships and social activities.

In our study, married HD patients had significantly higher scores across all domains. This finding supported that people with partners have better psychological, social and environmental QOL [20-22]. We expected education to affect perception of QOL of dialysis patients; however our results did not see any significant results. Our study is consistent with a study by Joshi U, et al. among 150 ESRD patients in

Table 4: Perception of quality of life between patients on hemodialysis and peritoneal dialysis in the four domains of WHOQOL-BREF.

	Patient Type	N	Mean	Std. Deviation	p value
Physical	Hemodialysis Patients	185	15.3	1.131	0.000
	Peritoneal Dialysis Patients	225	13.31	0.887	
Psychological	Hemodialysis Patients	185	15.5	1.146	0.000
	Peritoneal Dialysis Patients	225	15.9	1.061	
Social Relationship	Hemodialysis Patients	185	17.4	1.282	0.004
	Peritoneal Dialysis Patients	225	21.9	1.436	
Environmental	Hemodialysis Patients	185	14.4	1.058	0.000
	Peritoneal Dialysis Patients	225	15.1	1.008	

Table 5: QOL Study from Thailand and Taiwan.

	Theofilau P ^[15]		Nui SF, et al. ^[22]				
	HD	PD	HD	CAPD	Kidney Transplant		
N	84	60	80	80	80		
Age (%)	58.12 (16.11)	64.28(12.51)	54.7 (68.4)	50.8 (63.5)	43.3 (54.1)		
Sex (%)							
Male	55 (65.5)	31 (51.7)	32 (40)	34(42.5)	34(43.8)		
Female	32 (34.5)	29 (48.3)	48(60)	46(57.5)	45(56.2)		
Marital Status (%)							
Single	19 (22.6)	6 (10.0)	11(13.8)	12(15.0)	28(35.0)		
Married	58 (69.0)	49 (81.7)	64(80.0)	60(75.0)	50(62.5)		
Divorced	1 (1.2)	0	1(1.3)	3(3.8)	2(2.5)		
Widowed	6 (7.1)	4 (6.7)	4 (5.0)	5(6.3)	0		
Educational Level (%)							
Elementary	42 (50)	20 (33.3)	28(35.0)	24(30.0)	19 (23.8)		
Secondary	26 (31.0)	30 (50)	33(41.3)	40 (50.0)	41(51.3)		
University	16 (19.0)	10 (16.7)	19(23.7)	16(20.0)	20(25)		
WHOQOF BREF Domains (Mean ± SD)	Theofilau P ^[15]			Nui SF, et al. ^[22]			
	HD	PD	P value	HD	CAPD	Kidney Transplant	P value
Physical	12.71 ± 3.70	13.70 ± 2.96	0.08	11.9 ± 2.52*	11.61 ± 2.40*	14.34 ± 2.27*	0.001
Psychological	13.26 ± 3.65	13.36 ± 3.14	0.86	11.78 ± 2.56*	11.38 ± 2.53*	13.57 ± 2.36*	0.001
Social Relationships	12.89 ± 3.51*	14.03 ± 2.43*	0.02	12.98 ± 2.29	12.81 ± 2.27	14.01 ± 2.11	0.001
Environmental	13.0 ± 2.71*	14.52 ± 1.78*	0.00	13.22±.18	12.83 ± 2.04	14.19 ± 2.25	0.001

Nepal, which found no significant differences when relating QOL with educational level [19]. Our study observed significant results between education and psychological domain among HD patients.

Among HD patients, strong positive correlation was observed between four domains in this study given that a satisfaction with the physical domain may lead to satisfaction in the psychological, environmental and social domains. While among PD patients, the low item score on body image may be a factor limiting social interaction as there was a moderately positive correlation observed between the physical and social domains.

Comparing our study with that of Theofilau P of Thailand and Nui S of Taiwan (Table 5), most patients were married and completed secondary education except for kidney transplant patients. Filipinos were noted to be younger than the Thai and Taiwanese patients.

Moreover, the WHOQOL-BREF-QOL item scores of Filipinos were higher all four domains (Table 5). Thus, Filipino PD patients had a better quality of life compared with Thai and Taiwanese patients.

The higher financial benefit for PD compared to HD offered by the Philippine Health Insurance Corporation is justified since PD provides a better QOL compared to HD. The results from this study would encourage both patients and physicians to move to this more economical, less capital-intensive therapy.

Conclusion

Overall, this study supports that patients on CAPD had a higher perception of QOL in the psychological, social relationship and environmental domains while chronic HD patients had a higher perception of QOL in the physical domain. The limitation of this study is that dialysis adequacy was not assessed in either study group.

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