

AN EVALUATION OF HEALTH-RELATED QUALITY OF LIFE IN CONTINUOUS AMBULATORY PERITONEAL DIALYSIS AND AUTOMATED PERITONEAL DIALYSIS MODALITIES

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OBJECTIVES

Health-related quality of life (HRQOL) is an important predictor of clinical outcomes for ESRD patients and therefore HRQOL has been suggested to be used as a valuable supplement to clinical outcome measures. HRQOL of patients undergoing ESRD treatment is affected by both medical and nonmedical factors.

However, there are only few studies on factors influencing HRQOL in peritoneal dialysis (PD) patients and amongst Asian ESRD patients. This study aims to compare and evaluate the health-related quality of life (HRQOL) in Asian end-stage renal disease (ESRD) patients treated with continuous ambulatory peritoneal dialysis (CAPD) and automated peritoneal dialysis (APD) in Singapore.

METHODS

Data used in this study were from two cross-sectional surveys conducted between 2009 and 2013. Participants were recruited from the PD centers of Singapore General Hospital and National University Hospital. The inclusion criteria were ESRD patients who has been on PD for at least 3 months and is at least 21-years-old. In both surveys, participants completed the Kidney Disease Quality of Life (KDQOL) instrument and questions assessing socio-demographic characteristics. Co-morbidities, clinical, and dialysis-related variables (i.e. vintage, dialysis adequacy, dependency status [self-cared/assisted]) were retrieved from medical records.

The 36-item KDQOL (KDQOL-36) was used to generate two generic summary scores (physical component summary [PCS], mental component summary [MCS]), three disease-specific scales (Symptoms, Effects, Burden), and two health utility scores (Short Form 6-Dimension [SF-6D] and EuroQol 5-Dimension [EQ-5D]). For all these scales, higher scores indicate better HRQOL. The HRQOL of patients treated with CAPD and APD measured by the above-mentioned scales was compared using separate linear regression models with adjustment of variables collected. The variables were also assessed for their contribution to the HRQOL by the multiple linear regression.

RESULTS

Of the 382 PD patients approached, 266 were eligible and agreed to participate: 145 on CAPD (mean age: 60.8 years; female: 54.5%) and 121 on APD (mean age: 57.4 years; female: 54.5%).

Table 1. Characteristics of patients

	N=266	CAPD (n=145)	APD (n=121)	p-value
Age, mean (SD)	59.3 (12.5)	60.8 (11.4)	57.4 (13.6)	0.03
Gender				0.99
Male	121 (45.5%)	66 (45.5%)	55 (45.5%)	
Female	145(54.5%)	79 (54.5%)	66 (54.5%)	
Ethnicity				0.86
Chinese	198(74.4%)	109(75.2%)	89(73.6%)	
Malay	47 (17.7%)	24 (16.5%)	23 (19.0%)	
Indian or others	21(7.9%)	12(8.3%)	9(7.4%)	
Educational level				0.02
Low (secondary/below)	215 (80.8%)	125 (86.2%)	90 (74.4%)	
High (tertiary/above)	51 (19.2%)	20 (13.8%)	31(25.6%)	
Marital status				0.99
Married	189 (71.1%)	103 (71.0%)	86 (71.1%)	
Other	77 (28.9%)	42 (29.0%)	35 (28.9%)	
Housing type				0.13
Private residence	31 (11.7%)	13(9.0%)	18(14.9%)	
Public residence	235 (88.3%)	132 (91.0%)	103(85.1%)	
CCI, mean (SD)	5.08 (1.67)	5.19(1.48)	4.95 (1.87)	0.24
Albumin (g/l) , mean (SD)	30.3 (5.6)	29.9 (5.2)	30.8 (6.0)	0.20
Haemoglobin (g/dl) , mean (SD)	10.9(1.69)	10.9(1.67)	11.0(1.71)	0.78
Dependency status				0.001
Self-cared	164 (61.6%)	102 (70.3%)	62(51.2%)	
Assisted	102 (38.4%)	43 (29.7%)	59 (48.8%)	
Dialysis vintage (Year)	3.55 (3.28)	4.50 (3.68)	2.42 (2.26)	<0.001
Dialysis adequacy				
Kt/V (per week)	2.33(0.88)	2.28(0.72)	2.40(1.04)	0.26

With adjustments, significant differences were observed in KDQOL symptoms (difference: 7.0, $p<0.01$) and PCS (difference: 2.8, $p<0.05$) between CAPD and APD patients, suggesting that APD was associated with milder dialysis-related symptoms and better physical health.

Except for the modality, the following factors were shown to be significantly associated with HRQOL: young age (<45 years), Chinese ethnicity, high albumin level (≥ 37 g/l), and self-cared dialysis with better physical health; high albumin level with better mental health; Chinese ethnicity with less symptoms, and Chinese, higher albumin and self-cared dialysis with less dialysis-related effects. Factors significantly correlated with higher SF-6D included high albumin level, whereas those of higher EQ-5D included young age, Chinese ethnicity, high albumin, self-cared dialysis.

Independent variable (reference group)	Dependent variable						
	PCS	MCS	Symptoms	Effects	Burden	SF-6D	EQ-5D
Age group (young [<45 years])							
Middle-aged [45-60 years]	-5.49**	0.36	-7.00	-3.36	0.85	-0.036	-0.094*
Old [>60 years]	-2.71	2.84	1.32	7.46	6.15	-0.008	-0.019
Gender (male)							
Female	0.59	-1.03	0.28	3.32	2.13	-0.008	-0.004
Ethnicity (Chinese)							
Malay	-1.45	2.21	3.58	1.65	4.44	-0.002	-0.005
Indian or other	-4.74*	-2.05	-9.39*	-15.4**	-6.73	-0.031	-0.105*
Educational level (low [no/primary/secondary])							
High [tertiary/above]	-1.05	2.38	-2.16	-1.46	2.49	0.011	0.009
Marital status (other [single/widowed/separated/divorced])							
Married	1.16	-1.70	-1.64	-4.15	-3.73	-0.005	0.0005
Housing type (public residence)							
Private residence	1.02	0.37	1.17	-1.86	9.86	0.023	0.013
Co-morbidity (low CCI [<5])							
High CCI [≥ 5]	-0.88	-1.24	-2.02	-4.25	-10.2	-0.015	-0.027
Albumin level (low [<37g/l])							
High [≥ 37 g/l]	5.69**	4.82*	7.27	10.4*	0.69	0.089**	0.144**
Haemoglobin (low [<11g/dl])							
High [≥ 11 g/dl]	1.84	0.80	2.90	2.72	3.61	0.010	0.042
Modality (CAPD [continuous ambulatory PD])							
APD [automated PD]	2.84*	-0.52	7.02**	4.94	-3.68	0.012	0.040
Dependency status (assisted)							
Self-cared	5.29***	0.02	5.18	6.91*	-1.59	0.032	0.090**
Dialysis vintage (short [<3.5years])							
Long [≥ 3.5 years]	0.15	0.59	-1.17	0.95	-1.13	0.006	0.014
Dialysis adequacy (low Kt/V [<2.0/week])							
High Kt/V [≥ 2.0 /week])	-1.58	-2.69	-0.68	-2.30	-1.54	-0.036*	-0.063*

* $p<0.05$; ** $p<0.01$; *** $p<0.001$

CONCLUSIONS

APD patients experience better HRQOL in some domains than CAPD patients in Singapore, although generic utility measures are not sensitive to this treatment advantage. Important clinical and socio-demographics determinants of the HRQOL in PD patients in Singapore as demonstrated in this study can serve to guide selection and management of the local PD patients.

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Table 2. Regression coefficients in multiple linear regression analysis of HRQOL scores

