



Received on 23 August, 2013; received in revised form, 12 October, 2013; accepted, 26 December, 2013; published 01 January, 2014

INTERPRETATION OF QUALITY OF LIFE OUTCOMES AMONGST END STAGE RENAL DISEASE PATIENTS IN SELECTED HOSPITALS OF MALAYSIA

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Keywords:

Health related quality of life (HRQoL), End stage renal disease (ESRD), Haemodialysis (HD), Continuous ambulatory peritoneal dialysis (CAPD), Short form-36 (SF-36), revised illness perception questionnaire (IPQ-R), physical health component summary (PCS), mental health component summary (MCS)

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ABSTRACT: The concept of Health-related quality of life takes into account about patient well-being as expressed by both physical and psychological domains of health. The relevance of this concept in end stage renal disease patients has been well established and can be used for routine treatment of patients with renal failure. It is of deemed interest to compare health and wellness of end stage renal disease adult patients undergoing Haemodialysis and Continuous ambulatory peritoneal dialysis in selected hospitals of Malaysia and to study the relationship between disease symptoms experienced by patients with their quality of life. The study was conducted in two government hospitals of Malaysia. The study involved 220 renal impairment patients and their recruitment is based on standard inclusion criteria. Medical outcome study 36-item short form was used to evaluate Health-related quality of life. The symptoms were tested as per the standard revised illness perception questionnaire. Statistical analysis of the completed study shows that there are significant differences in quality of life among patients with variable age groups and working status. These findings are evident from geriatric patients who were found to have increased risk of co-morbidities and decreased quality of life. Employed patients and unemployed patients receiving pension had better economic status and were able to support treatment cost as compared to unemployed patients without pension. The Physical and mental component summary of Continuous ambulatory peritoneal dialysis patients were found to be better than Haemodialysis patients. Hence, the treating physician should give wise counselling to the patients on choice of dialysis modality and measures to minimize the symptoms experienced by them so as to improve their quality of life.

INTRODUCTION: End Stage Renal Disease (ESRD) also called stage -5 Chronic Kidney Disease (CKD) is characterized by structural or functional kidney abnormalities with relentless decrease in glomerular filtration rate (GFR) that persists for more than 3 months¹.

The kidneys have deteriorated to the point that they are no longer capable of sustaining life. CKD is a direct consequence of poorly managed hypertension and diabetes mellitus and is a serious health problem that afflicts people all over the world. A patient who develops ESRD has two treatment options i.e. Renal Replacement Therapy (RRT) either by the way of dialysis or the transplantation of failed kidneys.

Different types of RRT include Haemodialysis (HD) and Peritoneal Dialysis (PD) which could be intermittent or continuous based on their modality.

<p>QUICK RESPONSE CODE</p> 	<p>DOI: 10.13040/IJPSR.0975-8232.5(1).60-69</p> <hr/> <p>Article can be accessed online on: www.ijpsr.com</p> <hr/> <p>DOI link: http://dx.doi.org/10.13040/IJPSR.0975-8232.5(1).60-69</p>
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ESRD can be detected through three simple tests of blood pressure, urine albumin level and serum creatinine level ².

Health Related Quality of Life (HRQoL) refers to the collective perception of the effect of a disease or its treatment on one's health and overall quality of life. It includes physical, psychological and social dimensions of health as assessed by the patient. It is clearly influenced by the individual's beliefs, life experiences, personality and expectations ³.

HRQoL has emerged as a conceptualization of health that can be measured and used as a quality indicator ⁴. HRQoL studies can provide comprehensive and sensitive methods for communicating information on the burden of the disease and effectiveness of treatment if they are designed and implemented well in healthcare sector ⁵. There is growing recognition of HRQoL issues in ESRD patients undergoing Haemodialysis (HD) and Continuous Ambulatory Peritoneal Dialysis (CAPD). Impaired HRQoL, dependence on others and poor rehabilitation etc, all contributes to physical and emotional disabilities that may persist even in well-dialyzed ESRD patients ^{6,7}.

Quality of life (QOL) Model as proposed by Wilson and Cleary (1995) is widely used as a theoretical framework as the domains that will be considered are the physiological domain (health status), psychological domain (psychological status), social domain (social status) and economic domain (ability to work) ⁸.

Malaysia is the only country in Asia with national Registry showing that the number of dialysis patients has increased from 59 in 1980 to almost 15000 in 2006. The dialysis acceptance rate increased from 3 per million populations in 1980 to 116 per million populations in 2006 and the prevalence rate from 4 to 550 per million populations over the same period.

The more economically advanced states of Malaysia had much higher dialysis treatment rates as compared to the less economically advanced states. Eighty to 90% of new dialysis patients were accepted into centre Haemodialysis (HD) and the rest into the Continuous Ambulatory Peritoneal Dialysis (CAPD) programme.

The government provided about half of the funding for dialysis treatment. Patients older than 55 years accounted for the largest proportion of new patients on dialysis since the 1990s. Diabetes mellitus has been the main cause of ESRD and accounted for more than 50% of new ESRD since 2002.

Annual death rate averaged about 10% on HD and 15% on CAPD. The unadjusted five year patient survival on both HD and CAPD was about 80%. Fifty percent of dialysis patients reported very good median QOL index score.

About 70% of dialysis patients were about to work full or part time. There has been a very rapid growth of dialysis provision in Malaysia particularly in the older age groups. ESRD caused by diabetes mellitus, despite being a preventable and treatable cause of ESRD has increased and accounted for more than 50% of incident dialysis patients. Death and survival rates on dialysis are comparable to those from other countries ⁹.

The Malaysian National Registry also estimated that the prevalence of ESRD in 2007 will crop up at 680 per million populations ¹⁰. Gokal et al and Majkowicz et al have reported HRQoL of patients undergoing CAPD treatment is better than HD treatment ^{11, 12}. Griffin et al found that patients on HD treatment encountered more pain, felt uncomfortable and experienced serious adverse symptoms as compared to patients receiving CAPD ¹³.

The objective of the present study is to assess and compare Health-related quality of life (HRQoL) among end stage renal disease adult patients undergoing Haemodialysis and Continuous ambulatory peritoneal dialysis in selected hospitals of Malaysia and to study the relationship between disease symptoms experienced by patients with their quality of life.

MATERIALS AND METHODS:

Settings and Design: It is a cross-sectional, statistical and perspective study. The study was conducted at dialysis units of two government hospitals - Hospital Kuala Lumpur (setting A) and Hospital Serdang (setting B), Malaysia.

Study Approval & support: The medical research and ethics committee, a division under ministry of health (government of Malaysia) has approved the study. This study has been carried out at two government hospitals of Malaysia by the principal investigator, identification code (NMRR- National Medical Research Register project ID: 13-49-14614) to perform the proposed work was assigned by the medical research and ethics committee.

The study protocol was formally approved by ethics committee and the details of this project can be found at home page of www.nmrr.gov.my, under "Directory of medical research" and then by visiting page no.7, sl.no 130, research ID: 14614, NMRR ID: 13-49-14614 & so on to identify the information related to project. The hospital(s) administrative approval for carrying out the project was provided by consultant nephrologist and Head-Dept of nephrology.

Recruitment of study participants: We aimed at recruiting 250 adult patients (both male and female), however 30 patients were excluded as per exclusion criteria (as mentioned in table-1) and about 127 patients from setting A (Hospital kuala lumpur) and 93 patients from setting B (Hospital serdang) were recruited for the study.

The study participants signed a declaration of informed consent and were recruited based on the following inclusion criterias' viz - diagnosed as end stage renal disease patient, undergoing haemodialysis for at least 3 months, aged between 18 to 65 years, Malaysian nationality (Malays, Chinese and Indians) residing in Malaysia and those consented for the study voluntarily and without compulsion. HD patients were interviewed when they were undertaking treatment at hospitals. CAPD patients were interviewed whilst they are waiting in the clinic for review by nephrologists, nurses and paramedic professionals.

Questionnaire instruments:

Medical outcome study short form 36 (MOS SF-36) health survey - This questionnaire intends to assess the functioning and well-being so as to provide an overall impression of HRQoL. SF-36 is developed in the United States that comprises 8 domains (social functioning, physical functioning, physical role, emotional role, pain, mental health,

vitality and general health perception) and two component summary scales (physical health component summary-PCS and mental health component summary-MCS) to assess patients functioning and behaviour^{14, 15}. The approximate time required to answer all questions will be 15 minutes. The scoring method is based on totalling the responses of each item in the domain and converting them into a scoring algorithm to a scale 0 (poor health) to 100 (good health). A higher score indicates better functioning, less pain and greater well-being.

Revised Illness perception questionnaire (IPQ-R) – The illness perception was assessed with a well validated IPQ-R developed by Moss-Morris et al¹⁶. Illness perception is an essential concept since the patients' beliefs provides guidance to them to react towards symptoms, diagnosis and other information associated with the disease. This questionnaire assesses nine components of illness representation in 3 sections.

However in this study, only the 1st section was considered that forms a subscale identity. Participants are asked yes/no questions about 18 different symptoms and whether they believe these symptoms to be related to their treatment or disease are identified¹⁷. Scores of 2 points for response "Yes" and 1 point for "No" is used during the interview. A few items were added based on symptoms usually experienced by ESRD patients

Pilot study - This questionnaire tool has been tested by a panel of experts for its content reliability and validity. Also it was examined on a group of 25 ESRD patients undergoing dialysis to check the clarity of the statements. Corrections were done accordingly. Reliability was tested using SPSS software (statistical package for social sciences) version 17.0 with reliability analysis test of Cronbach's Alpha which yielded that the tool has an Alpha value of 0.71.

On the other hand, the 8 domains of SF-36 tool for HRQoL outcome were tested using same method and cronbach's alpha values were found within the range of 0.62-0.92. Also validity was tested using construct validity and content validity. Cronbach's alpha reliability coefficient normally ranges between 0 and 1.

The closer the coefficient near to 1.0 the greater is the internal consistency of the items (variables) in the scale¹⁸.

Statistical analysis used: Simple statistical random sampling method were used based on patient socio-demographics and validated questionnaires (short form-SF 36 and revised illness perception questionnaire-IPQ-R) were used for interviewing and collecting information related to their quality of life and symptoms of end stage renal disease. Scoring is done using a standard scoring algorithm from scale 0 (poor health) to 100 (good health).

The Statistical Package for Social Science (SPSS) Version 17.0 was used for performing the statistical analysis which included measures of central tendency and dispersion (arithmetic mean and standard deviation) were used for descriptive statistics.

Two tailed Student's T-test was used to compare means of HRQoL of different groups as two variables are tested. One-way analysis of variance (one way ANOVA) was used to compare means of HRQoL of different groups. Two tailed Pearson correlation test was used to study the relation between HRQoL and other demo graphic variables.

RESULTS: The total number of ESRD patients recruited during the study phase was 220 of which 50.5% were male and 49.5% are female participants. 30 patients were excluded as per exclusion criteria as mentioned in table-1. The proportion of geriatric patients greater than 60 years of age was 35.9%. The majority of patients were Malay Islam (53.6%), married (15.9%) and unemployed without pension (49.1%). About two-third of the patients were on HD (66.8%) and the remaining were on CAPD (33.2%) treatment.

The majority of patients (42.7%) were on dialysis for <36 months, 41.8% for 36-120 months (3-10 years) and the remaining 15.5% for >120 months (refer table-3). The pie charts represented as JPEG image (Figures 1-8) shows distribution of study participants based on their gender, ethnicity, religion, age, marital status, working status, type of dialysis and length of treatment.

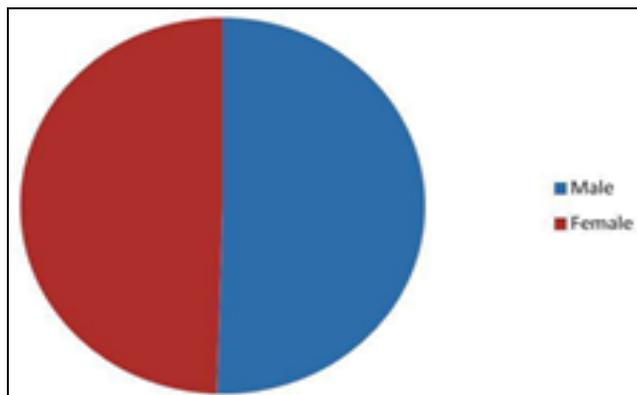


FIGURE 1: GENDER FREQUENCY

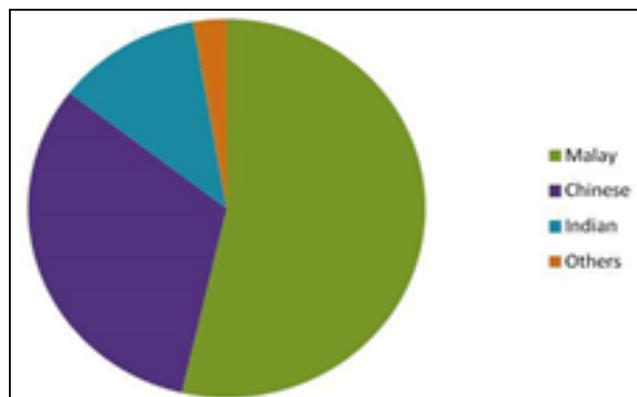


FIGURE 2: ETHNICITY FREQUENCY

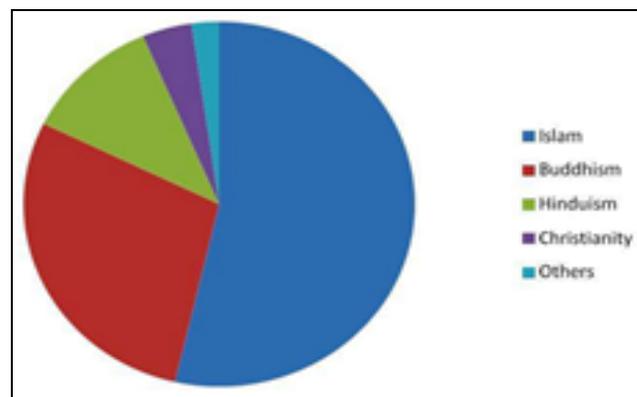


FIGURE 3: RELIGION FREQUENCY

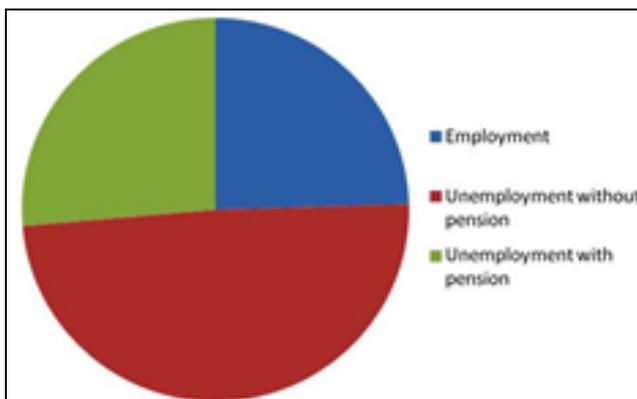


FIGURE 4: WORKING STATUS FREQUENCY

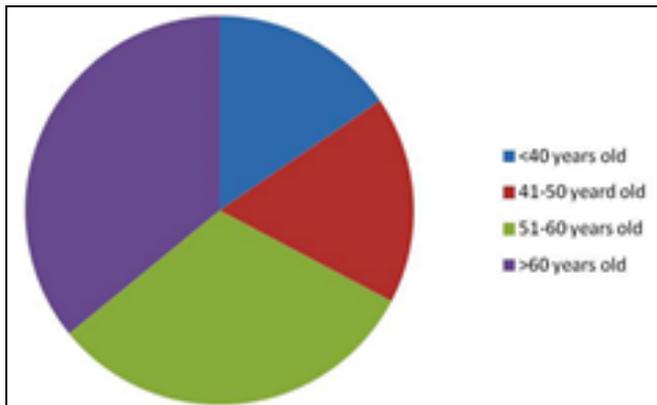


FIGURE 5: AGE FREQUENCY

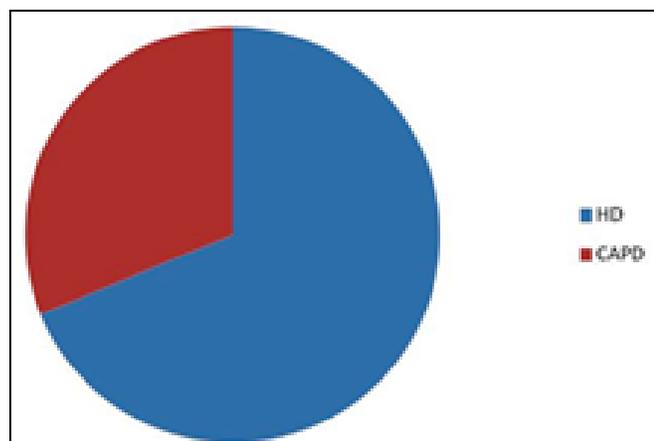


FIGURE 6: TYPE OF DIALYSIS FREQUENCY

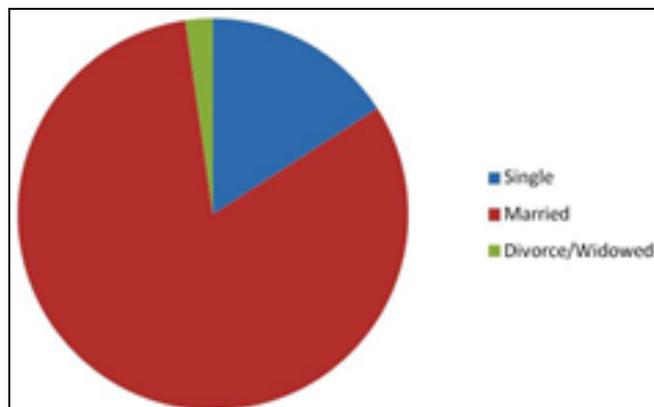


FIGURE 7: MARITAL STATUS FREQUENCY

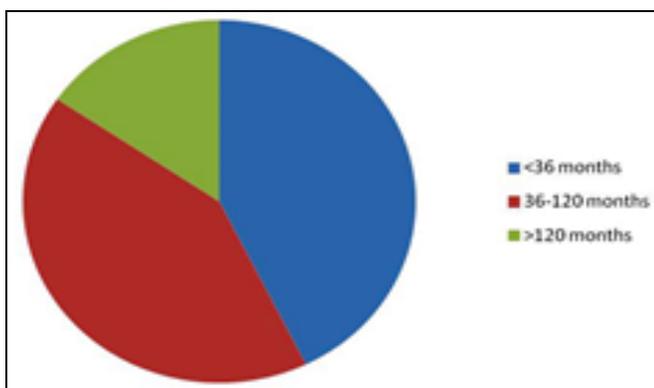


FIGURE 7: LENGTH OF TREATMENT FREQUENCY

TABLE 1: DETAILS OF SUBJECTS EXCLUDED FROM THE STUDY

Items	Setting A	Setting B
Refused participation	6	5
Pregnant female	1	-
Duration of dialysis lesser than three months	5	8
Physically handicapped	-	1
Communication Barrier	2	2

The reliability testing was assessed with cronbach alpha value and was found within the range as mentioned in table 2.

TABLE 2: VALIDITY AND RELIABILITY OF SF-36 DOMAINS

Domains	Cronbach's Alpha Value
Physical Functioning	0.879
Physical Role	0.642
Pain	0.899
Vitality	0.762
Emotional Role	0.855
General Health	0.747
Social Functioning	0.910
Mental Health	0.775

TABLE 3: SOCIODEMOGRAPHIC PROFILE OF ESRD PATIENTS

Variables	Frequency	Percentage
Gender		
Male	111	50.5
Female	109	49.5
Ethnicity		
Malay	118	53.6
Chinese	70	31.8
Indian	26	11.8
Others	6	2.7
Religion		
Islam	118	53.6
Buddhism	63	28.6
Hinduism	25	11.4
Christianity	9	4.1
Others	5	2.3
Age		
≤40 years (18-40 years)	34	15.5
40-50 years	38	17.3
51-60 years	69	31.4
≥60 years (60-65 years)	79	35.9
Marital Status		
Married	35	15.9
Single	180	81.8
Divorced/Widowed	5	2.3
Working status		
Employment	54	24.5
Unemployment without pension	108	49.1
Unemployment with pension	58	26.4
Type of dialysis		
HD	147	66.8
CAPD	73	33.2

Length of treatment		
< 36 months	94	42.7
36-120 months	92	41.8
>120 months	34	15.5

The type of symptoms experienced by the renal failure patients were represented in table-4. The most common symptoms were fatigue (81.8%), pain (68.6%), pruritis (58.6%), dizziness (58.2%), muscle cramp (56.4%), weakness (51.4%) and others as listed in order of frequency (refer **table**

4). These findings correlate with those symptoms reported by Murtagh *et al.*, who had performed systematic review of these symptoms¹⁹. Fatigue is the common disturbing symptom as complained by majority of the patients which influenced functional capacity²⁰. Patients are aware that all not symptoms they had experienced were associated with renal failure that affects them but however most of the patients believe that the main symptoms experienced by them were related to their disease.

TABLE 4: TYPES OF SYMPTOMS EXPERIENCED BY PATIENTS

Symptoms	Experienced symptoms		Symptoms related to illness	
	Frequency	Percentage	Frequency	Percentage
Fatigue	180	81.8	176	80.0
Weakness	113	51.4	113	51.4
Muscle cramps	124	56.4	110	50.0
Pruritis	129	58.6	119	54.1
Sleep difficulties	104	47.3	85	38.6
Stiff joints	83	37.7	74	33.6
Dizziness	128	58.2	98	44.5
Pain	151	68.6	132	60.0
Nausea	58	26.4	42	19.1
Numbness in leg	94	42.7	75	34.1
Weight loss	99	45.0	74	33.6
Wheeziness	37	16.8	24	10.9
Breathlessness	45	20.5	28	12.7
Headaches	94	42.7	69	31.3
Constipation	36	16.4	28	12.7
Stomach Upset	34	15.5	21	9.5
Sore eyes	53	24.1	22	10.0
Sore throat	27	12.3	17	7.7

The domains (based on SF-36 tool) of HRQoL that have been assessed during the study were physical functioning, physical role, vitality, pain, general health, emotional role, mental health, and social functioning.

The 8 components of HRQoL and the scores obtained from both types of dialysis patients were compared and represented in **table 5**. The responses to all items of HRQoL tool were summed up, yielding total mean score for each domain for HD and CAPD patients separately as shown in table 5.

It has been observed from table 5 that CAPD patients had higher mean scores for all eight components of HRQoL as compared to HD patients.

ANOVA analysis showed that there were significant differences in the PCS (F=12.675, P<0.001) and MCS (F=10.092, P>0.001) between the two treatment groups. Both PCS and MCS mean scores were found to be higher in CAPD patients (Refer to **table 6**).

The relationship between symptoms with PCS and MCS were assessed and shown in **table 7**. The Correlation coefficient (r) ranges from -1.0 to +1.0, the closer value of (r) indicates that two variables are related to each other and there were significant negative correlations between the symptoms experienced by patients with the PCS and MCS. Thus, greater the number of symptoms perceived by patients, the lower scores of PCS and MCS has been observed.

TABLE 5: COMPARISON OF SCORES OF SF-36 DOMAINS BETWEEN HD AND CAPD PATIENTS

Domains	HD		CAPD	
	Mean	SD	Mean	SD
Physical Functioning	63.50	25.437	69.86	26.705
Physical Role	30.95	33.147	48.63	38.840
Body Pain	66.73	29.766	77.19	26.712
General Health	37.24	18.609	45.21	22.935
Vitality	48.67	19.456	56.78	20.231
Social Functioning	64.29	27.643	70.38	26.883
Emotional Role	55.78	41.868	72.60	36.995
Mental Health	63.32	16.543	68.71	17.440

TABLE 6: CORRELATED PCS AND MCS SCORES BY TYPE OF TREATMENT MODALITY

Type Of Dialysis		N	Mean	SD	F	Sig.
PCS	HD	147	49.6088	20.24983	12.675	0.000***
	CAPD	73	60.2226	21.93429	-	-
MCS	HD	147	58.0154	20.32119	10.092	0.002
	CAPD	73	67.1182	19.37102	-	-

*** Correlation is significant as $p < 0.001$ level (sig. 2 tail) for PCS, F – Factor (between the subjects). Correlation is non-significant as $p > 0.001$ level (sig. 2 tail) for MCS.

TABLE 7: CORRELATION BETWEEN DISEASE SYMPTOMS WITH PCS AND MCS SCORES

		Symptoms
PCS	Pearson Correlation	-0.515**
	Sig. (2-tailed)	0.000
MCS	Pearson Correlation	-0.497**
	Sig. (2-tailed)	0.000

**Correlation is significant at the $p < 0.01$ level (sig. 2 tail)

The relationship between PCS and MCS were assessed and shown in **table 8**. There were significant positive correlations between the PCS and MCS of the study participants observed that those patients who had better physical functioning, less pain and greater energy had better mental health and social functioning. (Refer to table 8).

TABLE 8: INTER-RELATIONSHIP BETWEEN PCS AND MCS SCORES IN ESRD PATIENTS

		PCS	MCS
PCS	Pearson Correlation	1	0.777
	Sig. (2-tailed)	-	0.000
MCS	Pearson Correlation	0.777	1
	Sig. (2-tailed)	0.000	-

Correlation is non-significant as $p > 0.001$ level (sig. 2 tail)

Relationship between HRQoL outcome and other variables: Vulnerability, uncertainty, fear and depression were cited as psychological effects.

HD participants demonstrated strong emotional reactions to dialysis including anger, sadness and an inability to face up to the limitations imposed by their disease. T-test and ANOVA analysis were used to examine whether there are significant difference of PCS and MCS scores mean among subgroups of the study sample.

T-test was performed to examine the difference of health related QoL mean score between male and female patients. There were no significance differences between male and female patients as shown in **table 9**.

One way ANOVA test was applied to test the differences of PCS and MCS score means of the study sample with various demographic variables like ethnicity, religion, marital status, age, working status and length of treatment.

The findings in **table 10** shows there were no significant differences of health related quality of life scores between patients with different ethnicity, religion, marital status and length of treatment. On the other hand there were significant differences of Health related QoL scores observed between study samples with different age groups and working status.

TABLE 9: COMPARISON OF PCS AND MCS SCORES WITH GENDER OF STUDY PARTICIPANTS

	Gender	N	Mean	Std. Deviation	F	Sig. (2 tailed)
PCS	Male	111	53.6543	20.21497	1.813	0.715
	Female	109	52.5975	22.56488	-	-
MCS	Male	111	61.0121	19.90613	2.005	0.986
	Female	109	61.0601	21.02941	-	-

Correlation is non-significant as $p > 0.001$ level (sig. 2 tail)

TABLE-10: COMPARISON OF PCS AND MCS SCORES WITH OTHER DEMOGRAPHIC VARIABLES

Demographic variables	Treatment groups	Degrees of freedom (df)		Between subject effect (f)		Significance level	
		PCS	MCS	PCS	MCS	PCS	MCS
Ethnicity	Between groups	1	1	0.134	0.000	0.715	0.986
	Within groups	218	218	-	-	-	-
Religion	Between groups	4	4	0.965	0.581	0.428	0.677
	Within groups	215	215	-	-	-	-
Marital status	Between groups	2	2	2.216	2.826	0.111	0.061
	Within groups	217	217	-	-	-	-
Length of treatment	Between groups	2	2	1.537	1.059	0.217	0.349
	Within groups	217	217	-	-	-	-
Age	Between groups	3	3	7.876	2.881	0.000***	0.037
	Within groups	216	216	-	-	-	-
Working status	Between groups	2	2	7.711	3.878	0.001***	0.022
	Within groups	217	217	-	-	-	-

Keys – For Age: *** Correlation is significant as $p < 0.001$ level (sig. 2 tail) for PCS. Correlation is non-significant as $p > 0.001$ level (sig. 2 tail) for MCS. **For Working status:** *** Correlation is significant as $p = 0.001$ level (sig. 2 tail) for PCS. Correlation is non-significant as $p > 0.001$ level (sig. 2 tail) for MCS.

DISCUSSION: The study findings showed that majority of ESRD patients enrolled for the study were Malay Islamic, followed by Chinese Buddhist and Indian Hindus. These findings were congruent with those reported by Norhayati Ibrahim, Norella Kong Chew Thong and Asmawati Desa (2011) who did health related QoL study on ESRD patients in Hospital UKM Malaysia²¹. According to renal registry in Hospital Sultan Aminah, Johor Bahru, Malaysia, Malays (194 p.m.p.) had higher ESRD incidence compared to Chinese (126 p.m.p.) and Indians (134 p.m.p.).

These findings can be explained by the majority races of population in Malaysia and their lifestyle or diet. 42.7 % of study sample have undergone dialysis for less than 3 years, followed by 3 to 10 years and then more than 10 years length of treatment. These findings are congruent with those reported by Norhayati Ibrahim et al (2011) which show that 50.7 % of patients undergo dialysis for less than 36 months, followed by 36-120 months (36.5%) and more than 120 months (12.8%).

Majority of study sample have undergone Haemodialysis (66.8%) as compared with Continuous Ambulatory Peritoneal Dialysis (33.2%). These findings were in line with 19th National Renal Registry that demonstrated that the majority (92%) of these patients were on haemodialysis (HD) treatment and 8% were on peritoneal dialysis (PD). Renal Registry by W J Liu, L S Hooi (2007) reported that haemodialysis was the commonest form of RRT (60.5% in 2003, 69.9% in 2004), followed by continuous ambulatory peritoneal dialysis (30.1% in 2003, 19.4% in 2004)²².

The present study revealed that the study sample undergo HD had lower health-related QoL scores for all the 8 domains compare with patients undergo CAPD. This finding was supported by Zhang and Liu (2001) who found that HD patients in China perceived a low level of QoL²³. Recently, Fukuhara et al. (2003) reached a similar finding²⁴. They found that HD patients in Japan, Europe and United States had much lower scores of health-related QoL than CAPD patients.

On the other hand Moreno and Valderrabano *et al.*, (1996) reported that the QoL of dialysis patients (HD = 96%, PD = 4%) in Spain were moderately impaired²⁵.

MCS in both HD and CAPD patients were higher than PCS explained that both ESRD patients undergo different dialysis modality have higher mental health than physical health. This finding was expected as the study was conducted in a Muslim community where social interaction and social support were present.

There were no significant differences between patients among different gender, ethnicity, marital status, length of treatment and religious groups. These findings were to some extent inconsistent with Suet-Ching (2001) who found that female patients had poorer QoL than males, and there were no difference among age groups²⁶.

The dialysis modality impacts the HRQoL of dialysis patients. Unfortunately, not all patients are given the freedom to choose their treatment modality. Many factors need to be considered in determining the treatment modality. Apart from identifying patients' medical and physical factors, psychosocial and economic factors are of paramount importance. All these factors have to be considered to ensure that patients can benefit from their treatment. The finding of this study strengthens the evidence that CAPD patients are more satisfied with their dialysis treatment than HD patients (Juergensen *et al.*, 2006)²⁷.

The HD patients are bound to the strict and structured schedule that requires them to attend hospitals or dialysis centers for their treatment or blood cleansing procedure 3 times a week, each session of 4 hours. This restricts their movement and activities. In CAPD, the exchange of dialysis solution is performed by 4-5 times a day depending on the patient's lifestyle and needs. However, since it can be done at home at work or while on holiday, it is much more flexible than HD. Even when the dialysis solution is in the peritoneal cavity, patients are free to carry out normal daily activities such as cooking, clerical duties and other light work. Hence, CAPD patients enjoy higher levels of involvement in both vocational and in community activities (Wolcott *et al.*, 1988) as compared to HD patients²⁸.

There was also a relationship between the symptoms experienced by patients with their PCS and MCS. Kimmel *et al.* (2003) also reported that the numbers of symptoms perceived by patients with ESRD were related to their quality of life²⁹. This study also supports the common sense model also known as self-regulation model, proposed by Leventhal *et al.*, (1984) and confirmed by previous studies on the perception of patients with chronic disease and their symptomatology can affect the way they cope and act³⁰.

The patients' interpretation of their disease relation to their own bodies has a strong influence on the activities of their daily lives. Irrelevant and inappropriate past experiences together with errors in interpreting issues will result in patients forming wrong perceptions of the disease encountered.

CONCLUSION: Patients who have undergone CAPD were found with higher mean score in all 8 domains (physical functioning, physical role, emotional role, mental health, social functioning, body pain and vitality) as compared with HD patients. HRQoL (in terms of Physical Component Summary and Mental Component Summary) of CAPD patients is better than that of their HD counterparts. Health-related QoL was significantly negatively correlated with symptoms experienced by a patient who means the greater number of symptoms experience by patients, the lower their HRQoL.

PCS was significantly positively correlated with MCS which shows that there is a close connection between mental and physical health. Patients more than 60 years of old age had lower health related mean score than younger age patient group. Patients who were employed had greater betterment of life than those who are retired. HRQoL was most probably affected by the choice of dialysis modality and symptoms experienced by the patients and prove to be an important indicator for adverse events.

ACKNOWLEDGEMENT: The author(s) would like to thank the patients, hospital(s) management and asia metropolitan university management for extending their support to carry out the study and ethics committee for providing approval to conduct the study.

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How to cite this article:

Ying SC and Krishnan M: Interpretation of quality of life outcomes amongst end stage renal disease patients in selected hospitals of Malaysia. *Int J Pharm Sci Res* 2014; 5(1): 60-69.doi: 10.13040/IJPSR.0975-8232.5(1).60-69

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