Comparing health-related quality of life between haemodialysis patients and a community sample in the United Arab Emirates

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Abstract

Background: Health-related quality of life (QOL) is affected by chronic health conditions. This study compared the QOL among patients undergoing haemodialysis treatment and community residents in the United Arab Emirates (UAE).

Method: A descriptive comparative survey design was used to study 161 haemodialysis patients and 350 persons from the community. Respondents from both samples completed a demographic questionnaire and the SF-36 tool. In addition, the haemodialysis group completed the dialysis version of the QOL Index tool, and the community group completed the standard version of the QOL Index tool.

Results: The average SF-36 score for the haemodialysis sample was significantly lower than that of the community sample (58.92 vs 75.02, $p<0.001$). However, the average QOL Index scores were not significantly different between the two samples (23.18 [haemodialysis sample] and 23.57 [community sample]). In both samples, the SF-36 and QOL Index scores were associated with a number of socio-demographic variables.

Conclusion: This study demonstrates the utility of standardised QOL tools in a Middle-Eastern, multicultural environment on chronically ill and healthy persons. While some findings were found to be consistent with those of earlier studies, other findings were not. This might be attributed to cultural factors as well as sample size.

Keywords

Community sample, haemodialysis, health, quality of life, United Arab Emirates, SF-36, Quality of Life Index.

Introduction

Patients undergoing haemodialysis treatment, like many people with a chronic illness, endure considerable physical, psychosocial and financial difficulties that negatively impact their health-related quality of life (QOL). Findings from earlier studies suggest as many as 87% of dialysis patients have fatigue, up to 75% have skin itching and nearly 20% report they suffer from depression (Al-Mutary, Bonner & Douglas, 2013; Lopes *et al.*, 2003). Haemodialysis treatment is also associated with high prevalence of morbidity and mortality risks. People receiving chronic haemodialysis usually exhibit many physical and psychological symptoms (Carvalho *et al.*, 2013). How QOL differs between those with chronic conditions and the general community is not well understood.

Several studies have used standardised tools to examine QOL differences between patients receiving dialysis and well persons residing in the community (Molsted, Prescott, Heaf, & Eidemak, 2007; Vasilieva, 2006). Most studies have relied on the use of one of the standardised QOL tools and only a handful of studies have used two or more tools. Questions about the adequacy of the standardised tools in different cultures prompted researchers to use two or more tools in assessing QOL. For example, Huang, Wu, and Frangakis (2006) compared the psychometric properties and factor structures of the SF-36 and the World Health Organization Quality of Life (WHOQOL-BREF) tool in a sample of 11,440 Taiwanese residents. They found that the SF-36 and WHOQOL-BREF appear to measure different constructs: the SF-36 measures health-related QOL, while the

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WHOQOL-BREF measures global QOL. Neto and colleagues (2000) compared the QOL using the SF-36 and Kidney Disease Questionnaire in 80 patients commencing a chronic dialysis program in Brazil and found significant correlations between all the SF-36 dimensions with those of the Kidney Disease Questionnaire.

This study's primary aim was to compare the health-related QOL of patients receiving chronic dialysis with healthy persons living in the community in the United Arab Emirates (UAE). A second aim was to examine the acceptability and utility in UAE of the two standardised QOL tools (SF-36, the QOL Index tools) used to establish QOL. This paper only reports on the findings of the primary aim. A separate publication by Ayoub, Nelson and Wood (2013) has reported on the second aim. The findings related to QOL of the haemodialysis group have been reported in Ayoub and Hijjazi (2013) and are represented here for comparative purposes.

Design and methods

A descriptive comparative survey design was adopted. The study used two samples: a haemodialysis sample and a community sample. All the 191 patients aged 18 years and older who were receiving haemodialysis for at least three months at the Sheikh Khalifa Medical City (SKMC) were invited to participate in the study. A total of 161 (84.3%) patients agreed and formed the haemodialysis sample. The community sample was a convenient sample of 350 healthy participants aged 18 years and older recruited by the study team at different public places in Abu Dhabi city including workplaces and shopping centres. All respondents completed baseline socio-demographic information, the two health-related QOL tools, and some questions about the cultural relevancy of the tools.

Instruments

The SF-36 is a general tool, developed for use with all populations irrespective of health or illness (Moons, 2004). It is a health-related QOL tool that mainly measures health or a person's functional ability (Andresen & Meyers, 2000). As such it measures impairment, disability and handicap as well as the ability to perform a task and the performance of tasks (Carr, Thompson, & Ktrwanf, 1996; Nicole & Harada, 1999). The SF-36 can be completed online or on paper. All 36 questions should be completed, but where there are missing data there are formulae for managing this. It is analysable as a total score and at a subscales level. In contrast, the QOL Index tool is available in generic and disease-specific versions. It is also completed manually. The final score is calculated as a proportion of the number of questions answered. Both versions have four subscales that can be calculated. The generic version is for use by persons who are presumed to be healthy. The disease-specific version is a customised version aimed at capturing variations attributed to the disease itself. Both QOL Index tools measure the patients' perceptions about their health and life in general, including their satisfaction with and the importance of sexuality, spirituality, relationships, and self-efficacy (Ferrans & Powers, 1993). For the purpose of this study, we used the dialysis version of the QOL Index for the dialysis sample and the general version for the community sample.

The SF-36 has a reported internal consistency, test re-test reliability, alternate form reliability, content, construct and discriminate validity (Ware, 1993). Power analysis has been constructed with the eight scales. Appropriate sample sizes could be selected for a variety of research designs with a variety of effect sizes. The scales have 68%, 90% and 95% confident intervals determined for the norms of the US population and the Arabic translation of the tool has been validated (Khoudri, Ali Zeggwagh, Abidi, Madani, & Abouqal, 2006).

The QOL Index has well established reliability and validity (Ferrans & Powers, 1992) and is available in the English and Arabic languages. Psychometric properties of the Arabic version of the QOL Index were established by Halabi (2006). The translated version of the Arabic QOL Index demonstrated a high degree of accuracy of translation and estimates of content validity. The results revealed high estimates of reliability for the generic version of 0.94–0.97, and the dialysis version 0.93.

Ethical consideration

Approvals were obtained from the Human Ethics Committee at Victoria University of Wellington and the SKMC Ethics Committee. Approvals to use the research tools were granted from their respective authors. Participants were given full privacy when answering the survey questions and were reassured that confidentiality would be maintained.

Data collection

An independent nurse approached all eligible haemodialysis patients at SKMC and provided them with an information letter explaining the study, and if interested they were given the survey tool. For the community sample, potential participants were selected at random and invited to read the information letter and, if interested, were then given a survey package containing the demographic survey, SF-36 tools and appropriate version of the QOL Index tool. The pack also contained a consent form to sign.

Data analysis

Data were analysed using the SPSS software for Windows version 19.0 (SPSS Statistics version 19.0 (IBM Corp., 2010). First, descriptive statistics were used to describe each sample and to obtain total and subscale scores of the QOL tools. Chi-square, *t*-test and ANOVA were then used to compare demographics, clinical and social variables as well as QOL scores between the two samples. Statistical significance was considered to be p equal to or <0.05.

Findings

Sample characteristics

A total of 350 responses were received. The return rates were 150 (93%) for the haemodialysis sample and 276 (76%) for the community sample. The demographic, clinical and social variables were reported in Ayoub, Nelson and Wood (2013).

There were statistically significant differences in all demographic, clinical and social variables between the two samples. Compared to the community sample, participants in the haemodialysis

sample were older (49.1 ±12.2 vs 40.5±11.3 years, p=0.001); less likely to have college education 35 (23.3%) vs 205 (76.8%), p=0.001 and less likely to be in full-time employment 56 (37.3%) vs 213 (79.8%), p=0.001. The prevalence of chronic conditions 80 (53.3%), vs 42 (15.4%), p=0.001 and stressful life events 45 (30%) vs 45 (16.9%), p=0.002 was higher among the haemodialysis sample. Despite these differences, analysis was undertaken to examine differences in QOL between the two groups.

Health-related quality of life

The SF-36 total scores as well as the subscale scores for both samples are presented in Table 2. The potential SF-36 scores range from 0 to 100, with 100 reflecting the highest quality of life level according to the scale. A statistically significant mean total SF-36 score for the haemodialysis sample than the total score for the community sample (58.92±19.2 vs 75.02±16.3 respectively, p<0.001). There were statistical differences on six of the subscales. The haemodialysis sample scores were lower in physical function (54.67±27.8 vs 78.93±24.4, p<0.001), role — physical (47.00±44.7 vs 83.43±31.1, p<0.001) and role — emotional (55.33±46.3 vs 76.03±77.1, p<0.001) while the community sample scores were lower in body pain (18.07±19.8 vs 26.07±23.1, p<0.001), general health (45.25±12.3 vs 52.53±15.5, p<0.001) and vitality (52.33±11.6 vs 55.91±13.7, p=0.008). The highest mean score in the haemodialysis sample was in the mental health subscale (58.75±12.6) and the lowest score was in the body pain subscale (26.07±23.1). In the community sample, the highest mean score was in the role — physical subscale (83.43±31.1) and the lowest score was also in the body pain subscale (18.07±19.8).

Table 3 presents the comparison between the subscales and total scores of QOL Index results of both samples. The potential QOL Index scores for both versions of the QOL Index range from 0 to 30, with 30 reflecting the highest quality of life

Table 1: Comparison of the demographics of the dialysis and community samples

Variables	Dialysis n=150 (%)	Community n=267 (%)	p value
Gender			
Female	44 (29.3)	115 (43.1)	**0.005**
Male	106 (70.7)	152 (56.9)	
Ethnicity			
UAE National	42 (28.0)	32 (12.0)	**0.001**
Arab National	57 (38.0)	136 (50.9)	
South Asian	34 (22.7)	63 (23.6)	
Other	17 (11.3)	36 (13.5)	
Marital status			
Single	15 (10.0)	56 (21.0)	**0.001**
Married	113 (75.3)	199 (74.5)	
Divorced or widowed	22 (14.7)	12 (4.5)	
Religion			
Muslim	123 (82.0)	180 (67.4)	**0.001**
Christian	16 (10.7)	72 (27.0)	
Others	11 (7.3)	15 (5.6)	
Living arrangement			
Lives with family	100 (66.7)	196 (73.4)	**0.049**
Lives alone	12 (8.0)	29 (10.9)	
Other	38 (25.3)	42 (15.7)	
Employment			
Full time employment	56(37.3)	213(79.8)	**0.001**
Housekeeper, student, part time employed	44(29.3)	38(14.2)	
Retired and disabled	24(16.0)	4(1.5)	
Unemployed	26(17.3)	12(4.5)	
Level of education			
Did not attend school	32 (21.3)	6 (2.2)	**0.001**
Primary school education only	42 (28.0)	12 (4.5)	
Secondary school education	41 (27.3)	44 (16.5)	
Tertiary education	35 (23.3)	205 (76.8)	
Life events			
Yes	45(30.0)	45(16.9)	**0.002**
No	105(70.0)	222(83.1)	
Chronic illness			
Yes	80(53.3)	42(15.4)	**0.001**
No	70(47.7)	225(84.6)	
Age in years			
Mean ± SD	49.1 ±12.2	40.5±11.3	**0.001**
Range	19-86	18-69	
Years lived in UAE			
Mean ± SD	26.8 ± 14.2	15.70±13.3	**0.001**
Range	0-86	0.16-64	

according to the scale. In contrast with the SF-36 scores, the mean QOL total score was almost identical for both samples (23.18±5.1 vs 23.57±4.5, p=0.438). There were statistically significant differences on two subscales. The haemodialysis sample scored lower than the community sample on the health and functioning subscale (21.59 vs 23.30, p=0.003) and the community sample scored lower on the family subscale (24.82 vs 26.33, p=0.005).

Comparison of the significant values of the two tools

A comparison of SF-36 and QOL Index scores against demographic, social and health factors is presented in Tables 4 and 5.

The two tools performed differently on some demographic variables. *Gender:* Male respondents in the community sample had significantly higher SF-36 scores than female respondents (77.4±15.6 vs 71.9±16.7, p=0.006), but there were no gender differences with the QOL Index scores. Although there was a seven point difference in the average scores on the SF-36 scores for males and females in the haemodialysis sample, this was not significantly different (60.7±19.6 vs 54.7±18.0, p=0.084). *Employment:* Full-time employment in the haemodialysis sample was also associated with higher statistically significant scores in relation to other employment status (64.1±20.2) compared to housekeeper and student, part-time (57.1±18.5), retired and disabled (48.7±17.7), and unemployed (60.4±16.2, p=0.009). *Ethnicity:* In the haemodialysis sample, significant differences were noted in the QOL Index scores only. The average QOL Index scores for UAE national patients (25.2±4.1) were the highest compared to patients from the other three ethnic groupings Arab national (22.2±5.4), South East Asian (22.6±5.2), and others (22.5±5.1, p=0.023). An association between ethnicity and average scores from the two tools was evident in the community sample. In the community sample, South Asian participants had higher scores on both the SF-36 and QOL Index (81.9±12.8, 26.0±3.2 respectively). *Age:* was not statistically correlated with SF-36 or QOL Index scores in the haemodialysis sample (p=0.105, 0.089 respectively), but there was a positive correlation between age and both tools in the community sample (p=0.045, 0.008 respectively).

There were also differences in the impact of social variables on the tools. *Living arrangements*: For the haemodialysis group, living with family (23.9±4.6) was associated with statistically significant better QOL Index scores compared to living alone

Table 2: Comparison between the SF-36 subscales and the total scores of both samples

SF-36 Scores (0-100)	Dialysis (n=150) M±SD	Community (n=264) M±SD	T score	P value
SF-36 Physical function	54.67±27.8	78.93±24.4	-8.88	**< 0.001**
SF-36 Role — physical	47.00±44.7	83.43±31.1	-8.86	**< 0.001**
SF-36 Body pain	26.07±23.1	18.07±19.8	3.63	**< 0.001**
SF-36 General health	52.53±15.5	45.25±12.3	4.99	**< 0.001**
SF-36 Vitality	55.91±13.7	52.33±11.6	2.66	**0.008**
SF-36 Social functioning	44.58±18.2	46.88±13.6	-1.36	0.176
SF-36 Role — emotional	55.33±46.3	77.03±35.1	-4.99	**< 0.001**
SF-36 Mental health	58.75±12.6	59.14±10.8	-0.37	0.710
SF-36 Total score	58.92±19.2	75.02±16.3	-8.64	**< 0.001**

Table 3: Comparison between QOL Index subscales and total scores of both samples

Quality of Life Index subscale scores (0-30)	Dialysis (n=150) M±SD	Community (n=267) M±SD	T score	P value
Health and functioning	21.59±5.9	23.30±4.8	-3.04	**0.003**
Social and economic	23.13±5.4	22.32±4.9	1.57	0.118
Psychological/Spiritual	24.26±6.2	24.32±5.1	-0.90	0.928
Family	26.33±4.5	24.82±5.6	2.82	**0.005**
Quality of Life Index total score	**23.18±5.1**	**23.57±4.5**	**-0.78**	**0.438**

(22.8±7.5) or having other living arrangements (21.4±5.0, p=0.038). However, having other living arrangements (80.6±15.6) was significantly correlated with the SF-36 QOL scores compared with living with family (73.5±16.6) or living alone (77.0±13.6, p=0.031) for the community sample. *Life events:* No statistical association was noted between major life events in the last 12 months and SF-36 or QOL Index scores for haemodialysis patients. For the community group, a negative impact was noted in the SF-36 scores only (69.2±17.1 compared to 76.2±15.9, p=0.008). *Living and travelling in UAE:* The length of time respondents lived in the UAE and the last time they travelled outside the UAE did not statistically correlate with the total scores of the SF-36 in both samples. But the longer length of time living in UAE was positively correlated with total scores on the QOL Index in the haemodialysis sample (p=0.003).

The one health variable, the presence of *chronic illness* was associated with significantly lower QOL scores in the haemodialysis sample when SF-36 was used (51.5±17.9 vs 67.5±17.1, p<0.001) and there was a similar trend when QOL Index was used (22.5±5.3 vs 24.0±4.6, p=0.058). In the community sample, the presence of chronic illness was associated

Table 4: Associations between demographic variables and QOL tools for the dialysis sample

Variables	Dialysis sample			
	SF-36		QOL Index	
	Mean±SD	*T or F* *P* value	Mean±SD	*T or F* *P* value
Gender★				
Male	60.7±19.6	1.72	23.3±5.2	0.43
Female	54.7±18.0	0.084	22.9±4.7	0.671
Ethnicity★★				
UAE national	55.6±18.7	1.71	25.2±4.1	3.29
Arab national	57.2±19.4	0.168	22.2±5.4	**0.023**
South Asian	64.6±19.6		22.6±5.2	
Other	61.4±17.3		22.5±5.1	
Marital status★★				
Single	61.3±14.2	0.89	23.2±4.0	0.37
Married	59.6±19.6	0.413	23.4±5.1	0.690
Divorced or widowed	54.0±20.3		22.3±5.6	
Religion★★				
Muslim	58.3±19.5	0.79	23.4±5.0	0.75
Christian	64.6±17.5	0.457	22.6±5.4	0.472
Others	57.2±19.1		21.6±5.4	
Living arrangements★★	60.2±25.3			
Lives alone	57.9±18.1	0.44	22.8±7.5	3.34
Lives with family	61.3±20.4	0.644	23.9±4.6	**0.038**
Other			21.4±5.0	
Employment★★				
Full-time	64.1±20.2	4.04	23.1±5.3	0.47
Housekeeper, student, part-time	57.1±18.5	**0.009**	23.2±4.9	0.705
Retired, disabled	48.7±17.7		24.1±5.6	
Unemployed	60.4±16.2		22.5±4.6	
Level of education★★				
Did not attend school	50.8±19.7	2.57	23.0±4.0	0.14
Primary school	61.6±21.3	0.057	23.3±5.6	0.936
Secondary school	61.6±17.7		23.5±5.3	
Tertiary school	60.0±16.5		22.8±5.2	
Chronic illness★				
Yes	51.5±17.9	-5.57	22.5±5.3	-1.91
No	67.5±17.1	**<0.001**	24.0±4.6	0.058
Life event★				
Yes	54.8±18.0	-1.75	22.3±5.1	-1.34
No	60.7±19.6	0.083	23.5±5.0	0.184
Cause of kidney failure				
Yes	61.1±20.2	2.21	23.6±5.0	1.46
No	54.3±16.2	**0.029**	22.3±5.1	0.148

★ t-test ★★ one-way ANOVA

with significantly lower QOL scores on both tools (SF-36 67.7±20.7 vs 76.4±15.2, p=0.013; QOL Index 21.9±4.7 vs 23.9±4.4, p=0.011).

Discussion

The two QOL tools used in this research are both validated health-related QOL measures, for use in general and dialysis populations. Yet this research indicates they work differently. The findings, while limited because of the differences between the samples, raise important considerations for health-related QOL research when comparing dialysis or other populations with particular health issues and the general (presumed healthy) population. The attributes and focus of the tools is important and looking at these attributes is important in selecting and discussing particular findings.

Table 5: Associations between demographic variables and QOL tool for the community sample

Variables	Community sample			
	SF-36		QOL Index	
	Mean±SD	*T or F* *P* value	Mean±SD	*T or F* *P* value
Gender★				
Male	77.4±15.6	2.76	23.8±4.4	0.92
Female	71.9±16.7	**0.006**	23.3±4.6	0.360
Ethnicity★★	72.9±18.3	5.56	23.6±5.3	9.64
UAE national	72.1±16.9	**0.001**	22.6±4.5	**<0.001**
Arab national	81.9±12.8		26.0±3.2	
South Asian	75.9±15.4		22.9±3.9	
Other				
Marital status★★				
Single	72.4±14.6	1.094	22.3±4.2	3.96
Married	75.9±16.4	0.336	24.0±4.4	**0.020**
Divorced or widowed	72.8±20.7		22.0±6.6	
Religion★★				
Muslim	73.4±17.4	2.78	23.1±4.8	3.95
Christian	78.5±13.4	**0.064**	24.8±3.5	**0.020**
Others	77.8±13.3		24.0±4.1	
Living arrangements★★				
Lives alone	77.0±13.6	3.52	22.5±4.5	1.44
Lives with family	73.5±16.6	**0.031**	23.6±4.5	**0.238**
Other	80.6±15.6		24.3±4.2	
Employment★★				
Full-time	77.6±14.5	11.11	24.1±4.2	5.50
Housekeeper, student, part-time	63.3±18.7	**0.001**	21.3±4.8	**0.001**
Retired and disabled	56.6±20.9		19.4±7.5	
Unemployed	73.9±17.7		22.8±4.5	
Level of education★★				0.49
Did not attend school	66.9±28.2	8.68	22.1±6.2	0.687
Primary school	72.0±16.9	0.566	22.6±5.5	
Secondary school	75.5±15.6		23.9±4.6	
Tertiary school	75.3±16.0		23.6±4.4	
Chronic illness★				
Yes	67.7±20.7	-2.59	21.9±4.7	-2.57
No	76.4±15.2	**0.013**	23.9±4.4	**0.011**
Life event★				
Yes	69.2±17.1	-2.65	23.2±4.1	-0.68
No	76.2±15.9	**0.008**	23.7±4.6	**0.500**

★ t-test ★★ one-way ANOVA

Table 6: Correlations between SF 36 and QOL Index and selected continuous variables

Variables	Dialysis group				Community group			
	SF-36		QOL Index		SF-36		QOL Index	
	r	*P* value	r	*P* value	r	*P* value	r	*P* value
Age in years	-0.133	0.105	0.139	0.089	0.105	**0.045**	0.163	**0.008**
Length of time living in UAE in years	-0.091	0.269	0.244	**0.003**	-0.097	**0.059**	-0.025	0.689

As anticipated, the community sample had higher average SF-36 total scores in comparison with the haemodialysis sample. However, the findings on the subscales varied considerably between the two samples. Firstly, the finding that the community sample had statistically significantly lower scores on the body pain (18.07 vs 26.07), general health (45.25 vs 52.53) and vitality (52.33 vs 55.91) subscales compared with the haemodialysis sample was unexpected, given that the community sample included relatively younger and healthier persons. In regard to body pain, we speculate this might be because haemodialysis patients have their pain managed or because they have higher pain thresholds, having adapted to their chronic illness. The results regarding general health and vitality may be a reflection that the haemodialysis sample were feeling well, despite their need for haemodialysis. While there are no specific programs targeting wellness for people on haemodialysis or with other chronic conditions in the UAE, the nature of haemodialysis treatment should contribute to people feeling better because the underlying goal is about improving wellness in the presence of illness. Muringai, Noble, McGowan and Channey (2008) argue nurses have a key role in helping patients with chronic disability achieve high-level wellness.

Secondly, the findings that the haemodialysis sample had on average lower scores on subscales physical function (54.67 vs 78.93), role — physical (47.00 vs 83.43), and role — emotional (55.33 vs 76.03) compared with the community sample indicate the physical impact of renal failure with its associated fatigue and reduced energy (Jhamb, Weisbord, Steel, & Unruh, 2008). Living with a chronic disease usually has an emotional impact due to the negative effect on education, employment, caregivers and everyday life (Belasco, Barbosa, Bettencourt, Diccini, & Sesso, 2006; Liem, Bosch, Arends, Heijenbrok-Kal, & Hunink, 2007).

The finding that there was no difference in the total scores between the two groups on the QOL Index indicates that this measure captures some different aspects of QOL. The QOL Index captures the importance of certain aspects of life and measures how satisfied are the candidates with them, whereas the SF-36 focuses more on functioning status of certain aspects of life. In line with the differences in physical functioning found on the SF-36, the community sample also scored higher on the QOL Index health and functioning scale (71.9 vs 77.6%). One speculation why the finding that the family subscale scores were higher in the haemodialysis sample compared with the community sample (87.7 vs 82.7) might be related to the strong family ties in Middle-Eastern culture where those who are ill tend to receive considerable family attention. The almost identical scores on the psychological/spiritual subscale are likely to be culturally related. Many of those who live in Islamic countries live by the values of the Holy Qu'ran, which includes being at peace with what they have been given. Ayoub, Nelson and Wood (2013) discuss the importance of examining the cultural relevance of tools before choosing these in research and clinical practice.

Gender

The finding that gender did not show any statistically significant relationship with the total scores of SF-36 in the haemodialysis sample was consistent with findings from a similar US-based study done by Kalantar-Zadeh *et al.* (2001) and included a total of 339 community haemodialysis patients from seven haemodialysis units in Los Angeles South/East Bay area. Other studies (Covic *et al.*, 2004; Kutner *et al.*, 2005; Morsch *et al.*, 2006) found that male dialysis patients had higher SF-36 scores. Previous studies attributed these differences to biological factors and biases in the provision of care according to gender (Mustard, Kuafert, & Kozyrskyj, 1998) or to potential differences in clinicians' attitudes toward female patients (Safran, Rogers, Tarlov, McHorney, & Ware, 1997).

Ethnicity

An association between ethnicity and average scores from the two tools was evident in the community sample. In the haemodialysis sample, significant differences were noted in the QOL Index scores only. It is not clear why ethnicity did not play a major part in reported SF-36 scores in the haemodialysis group. The average QOL Index scores for UAE national patients were the highest compared to patients from the other three ethnic groupings. One possible explanation for the ethnicity differences is that national patients typically receive higher levels of care and support from the health care system relative to the other three ethnic groups. This may, in part, suggest migrating to the UAE contributes to an improved QOL for this group of immigrants. Ayers, Thomson, Al-Hassiny, Rich and Newton (2008) have found that immigrants generally move out of their countries to improve their QOL. No studies were found in the literature comparing the QOL of UAE nationals, Arab nationals, South East Asia nationals and other nationalities.

Marital status

The finding that marital status had only a significant impact on the average QOL Index scores for the community sample is consistent with findings from some earlier studies (Bohlke *et al.*, 2008; Kao *et al.*, 2009). As anticipated, married community respondents had significantly higher QOL Index scores compared to their non-married counterparts. Findings from an earlier study suggested that the quality of marital relationship is a strong predictor of health outcomes than just being married alone, especially when people face great life challenges due to disease complications (Morgan, 2009).

Dialysis patients, like other chronically ill patients, require a great deal of social support. The degree of family support has been described as an important predictor of the QOL among other haemodialysis patients (Van, Duangpaeng, Deenan, &

Bonner, 2012). Typically, the spouse is the first line of support for the married patient; compared to family and friends for non-married patients. However, being married and presented with a chronic condition may negatively impact marital life.

Religion

Religious affiliation was not associated with significant differences in SF-36 or QOL Index scores for the haemodialysis group. This result differs from Ko *et al.* (2007) who found that religious beliefs have significant impact on a dialysis patient's ability to cope. For the community group, significant but small differences in the QOL Index scores were noted between the three religious groups. The Christian group had statistically higher scores and the Muslim group had the lowest scores. The authors of this paper could not locate previous research reported in the differences in quality of life between Christian groups and Muslim groups.

Living arrangements

In the haemodialysis group, living with family was associated with significantly better QOL Index scores compared to living alone or with friends. This could indicate that haemodialysis patients who have other living arrangement lack the required support from their family members. In the community group, significantly higher SF-36 scores were noted among respondents who reported living arrangements other than living alone or with family. In the UAE people who live with friends are usually young and not married, so they have more freedom from family responsibilities compared with married couples.

Employment

Similar to living with family, full-time employment for both samples was associated with higher average QOL scores on both tools with the exception that there was no difference for the haemodialysis sample on the QOL Index tool, where all scores were in a very similar range. It is likely that full-time employment improves one's socio-economic status and, therefore, contributes to better QOL.

Education

Findings from this study did not yield significant relationship between education level and QOL Index scores in both the haemodialysis and the community sample. However, haemodialysis patients who attended primary and secondary schools and tertiary education scored slightly significant higher scores than those who did not attend school on the SF-36 tool. These results concur with earlier studies where higher educational levels are correlated with a better QOL (Kao *et al.*, 2009; Manns *et al.*, 2003). Other studies went further, to suggest that higher levels of education positively promote healthy behaviours, and highly educated dialysis patients may volunteer to take some responsibilities of their own health and learn some strategies to cope with their disease and its symptoms, resulting in better QOL (Cruz *et al.*, 2011). The differences in the findings between the two tools could be related to the design and structure of the questions in both tools. The QOL Index tool has specific questions that ask the participants about their level of satisfaction and importance of their educational achievement, whereas the SF-36 does not have any direct questions related to the level of education.

Chronic health problems

The presence of a chronic illness in the community group or an additional illness in the haemodialysis group was associated with lower SF-36 and QOL Index scores. This finding is consistent with earlier findings in the literature. Kidney failure has negative impacts on patients' physical, psycho-social and economic wellbeing (Cruz *et al.*, 2011). And comorbid medical conditions, especially diabetes mellitus, are strongly related to the worst QOL scores in ESRD patients on dialysis (Osthus *et al.*, 2012). Moreover, several health comorbidities had significant contributions to lower scores of QOL (Lopes *et al.*, 2007).

Age

The finding that age was not statistically correlated SF-36 or QOL Index scores in the haemodialysis sample is not consistent with earlier findings. Bohlke *et al.* (2008) found that higher SF-36 scores were associated with younger age. On the other hand, Valderrábano, Jofre and López-Gómez (2001) reported that older patients were more satisfied with their life on dialysis and accept their limitations better than younger patients. Similarly and in a study using QOL Index, Greene (2005) found that some of the QOL Index scores increased as age increased. This again suggests that older chronically ill patients tend to exhibit a greater level of comfort with their health and social status. A possible explanation for the positive correlation between age and both SF-36 and QOL Index scores is that as persons grow older they tend to achieve what they want in life, such as owning a house, having a well-established job, more financial security and family. In contrast, younger persons tend to be struggling with getting their lives together and encounter more stressors.

Conclusion

The QOL of community participants was higher than that of people receiving haemodialysis. The subscale analyses showed a different pattern. Health and functioning as well as family subscale scores were significantly lower in the haemodialysis sample compared with the community sample. Compared with other international studies, the scores for the haemodialysis sample in all subscales of the SF-36 were relatively lower. However, the total scores of the QOL Index and its subscales for the haemodialysis sample were higher. The lack of concurrence between the scores from the two tools indicates that the tools measure QOL differently.

Limitations of the study

Some design limitations exist that hinder the generalisability of the findings. First, respondents in both samples were largely from one city in the UAE and may not be representative of the UAE population. Second, the general population sample was a convenient sample. Third, respondents with limited reading skills were assisted by interviewers which might have introduced some bias in their responses. Finally, the sample size in both samples was relatively small to perform additional analysis to differentiate findings between more finite subgroups based on age, health status, haemodialysis frequency or socioeconomic variables.

Future research

This study has demonstrated the feasibility of using standardised QOL tools in studying chronically ill patients and contrasting them with well persons in the UAE. Future research using the same tools on a wider range of patients and well persons in this part of the world is needed to further study the applicability of such tools and inform researchers about the potential need for modifying tools to account for regional and cultural factors. In addition, using the tools on larger and more diverse populations in the region is needed to pinpoint the relationship between selected health and socio-economic factors and QOL.

Implications for practice and nursing care

Renal nurses work with the challenges of people who have very high mortality, morbidity and low QOL. To improve QOL, nurses need to participate actively in investigating new ways to improve the QOL for people receiving haemodialysis. The information gathered from this study highlights certain aspects of the QOL that are important for people living in the UAE. Nurses can incorporate asking about and ultimately measuring QOL in their clinical practice. Assessing QOL in these patients should give nurses additional insight into patients' stressors and limitations. Moreover, it will give nurses the opportunity to investigate patients' coping skills, which may help in the early identification of poor adaptation techniques and the possibility of learning new healthy coping strategies. Also, it gives nurses the opportunity to gain in-depth knowledge based on what is important in maintaining and improving the QOL of haemodialysis patients living in the UAE.

Sufficient income is an important factor in maintaining or improving the QOL in patients with long-term conditions in countries that have no social security systems in place. Nursing staff should collaborate with the health care policy makers to establish regulations that ensure people with long-term conditions have enough or sufficient monthly income to survive. Meeting the basic needs of these patients should take the first priority because they are not only exposed to the physical constraints of the disease but also the psychological and social restrictions. So providing people who require haemodialysis with full, free medical insurance and sufficient monthly income might have a remarkable improvement on their QOL.

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