

Quality of Life in End Stage Renal Disease: A Multicentre Comparative Study

F Gayle¹, AK Soyibo¹, DT Gilbert¹, J Manzanares², EN Barton¹

ABSTRACT

Background: Quality of Life (QOL) in patients with End Stage Renal Disease (ESRD) is an important measure of dialysis adequacy. Health related QOL is an independent risk factor for mortality in ESRD. The Kidney Disease QOL questionnaire is a highly validated disease targeted instrument with global application. We sought to document QOL and the predictive factors in a cohort of patients with ESRD in Jamaica and Panama.

Methods: Two hundred patients were recruited consecutively from November 2006 – November 2007. Seventy patients were from a tertiary hospital based outpatient dialysis centre, the University Hospital of the West Indies (UHWI), and 40 patients from a private centre, Diabetes Association Renal Unit (DARU) both in Kingston, Jamaica. Ninety patients were consecutively recruited from a tertiary hospital based outpatient dialysis centre in Panama City, Panama. The Kidney Disease Quality of Life – Short Form Questionnaire was administered. Each QOL domain was scored from 0 – 100 with higher scores representing better rating.

Results: Mean age was 50 ± 4 years, with no difference between the cohorts. Panama, however, had significantly higher parameters than the Jamaican cohorts: mean haemoglobin (Hb) 12.4g/dL ($p = 0.004$), mean serum albumin 45g/dL ($p = 0.03$) and Urea Reduction Ratio (URR) 78% ($p = 0.004$). Diabetes Association Renal Unit recorded mean Hb 11.4 ± 1.3 g/dL, mean serum albumin 42.1 ± 2.3 g/dL and URR 72%. The University Hospital of the West Indies documented mean Hb 11.2 ± 2.4 g/dL, mean serum albumin 41 ± 4.5 g/dL and URR 68%.

All three cohorts had good overall QOL scores when compared with the reference population. Patients from Panama had higher overall QOL scores than Jamaican patients ($p = 0.02$). By centre, UHWI had higher overall QOL scores than DARU ($p = 0.04$). Burden of Kidney Disease domain recorded the lowest overall scores (Reference Population 49, DARU 19.0 ($p = 0.001$), UHWI 24.0 ($p = 0.002$), Panama 32.9 ($p = 0.03$)). Patient Satisfaction scores were also significantly reduced across all cohorts (Reference population 72, DARU 52, UHWI 54, Panama 58). The University Hospital of the West Indies had significantly decreased dialysis staff encouragement ($p = 0.003$). The Diabetes Association Renal Unit noted significant reductions in general health ($p = 0.04$), physical functioning ($p = 0.001$), physical role ($p = 0.001$) and emotional role ($p = 0.005$) domains. Panama had the lowest overall physical functioning ($p = 0.01$), pain ($p = 0.01$) and social support ($p = 0.04$) scores.

In the Panamanian cohort, age < 65 years ($p = 0.0004$), Hb > 11.1 g/dL ($p = 0.01$), albumin > 40 g/dL ($p = 0.01$), URR > 65% ($p = 0.03$), race ($p = 0.04$), at least high school educational attainment ($p = 0.01$) and household yearly salaries > US\$5000 ($p = 0.002$) predicted good QOL scores. These accounted for 55% of the variance. In the Jamaican cohort, however, younger age ($p = 0.02$), race ($p = 0.001$), higher URR ($p = 0.01$) and higher serum haemoglobin ($p = 0.001$) predicted higher QOL scores, accounting for only 40% of the variance. By modality, haemodialysis patients had significantly higher haemoglobin ($p = 0.003$) and albumin ($p = 0.002$) levels and ultimately higher overall QOL scores ($p = 0.01$).

Conclusion: Overall, QOL is good in patients with ESRD. Domains of highest concern include Burden of Kidney Disease and Patient Satisfaction. The role of spirituality, depression and nutritional markers (eg prealbumin) needs to be assessed. Quality of Life must therefore be routinely documented in ESRD patients and targeted interventions implemented.

From: ¹Department of Medicine, The University of the West Indies, Kingston 7, Jamaica, West Indies, ²Complejo Hospitalario Metropolitano (Dr Aranalfo Arias Madrid Hospital, Panama).

Correspondence: Dr F Gayle, Department of Medicine, The University of the West Indies, Kingston 7, Jamaica, West Indies. E-mail: franny_1@hotmail.com

Calidad de Vida en la Etapa Terminal de la Enfermedad Renal: un Estudio Comparativo Multicéntrico

F Gayle¹, AK Soyibo¹, DT Gilbert¹, J Manzanares², EN Barton¹

RESUMEN

Antecedentes: La calidad de vida (CDV) en los pacientes con enfermedad renal en etapa terminal (ERET) es un importante indicador de la medida en que la diálisis es adecuada. La CDV relacionada con la salud es un factor de riesgo independiente con respecto a la mortalidad en la ERET. El Cuestionario de Calidad de Vida en la Enfermedad Renal (KDQOL-SF) es un instrumento dirigido a la enfermedad, altamente validado y con aplicación global. Buscamos documentar la CDV y los factores predictivos en una cohorte de pacientes con ERET en Jamaica y Panamá.

Métodos: Se reclutaron doscientos pacientes consecutivamente de noviembre 2006 a noviembre 2007. Setenta pacientes provenían de un centro de diálisis para pacientes externos con base en un hospital terciario (HUWI) y 40 pacientes provenían de una Unidad Renal de la Asociación de Diabetes (DARU), ambas en Kingston, Jamaica. Otros noventa pacientes fueron reclutados consecutivamente de un centro de diálisis con base en un hospital de Ciudad Panamá. Se administró el Cuestionario de Calidad de Vida en la Enfermedad Renal (KDQOL-SF). Cada dominio de la CDV fue evaluado con una puntuación de 0 – 100, representando las puntuaciones más altas los mejores índices.

Resultados: La edad promedio fue de 50 ± 4 años, sin diferencias entre las cohortes. Sin embargo, Panamá tuvo parámetros significativamente más altos que las cohortes jamaicanas. El promedio de hemoglobina (Hb) fue 12.4g/dL ($p = 0.004$), el promedio de albúmina sérica 45g/dL ($p = 0.03$) y hubo una relación de reducción de la urea (URR) del 78% ($p = 0.004$). La Unidad Renal de Asociación de Diabetes registró un promedio de Hb de 11.4 ± 1.3 g/dL, y un promedio de albúmina sérica de 42.1 ± 2.3 g/dL en tanto que la URR fue 72%. El Hospital Universitario de West Indies documentó un promedio de Hb igual a 11.2 ± 2.4 g/dL, una albúmina sérica promedio de 41 ± 4.5 g/dL, y una URR de 68%. Las tres cohortes tuvieron buenas puntuaciones generales de CDV cuando se les comparó con la población de referencia. Los pacientes de Panamá tuvieron puntuaciones de CDV más altas que los pacientes jamaicanos ($p = 0.02$). En cuanto a centros, HUWI tuvo puntuaciones generales de CDV más altas que DARU ($p = 0.04$). El dominio de la sobrecarga de la enfermedad renal registró las puntuaciones generales más bajas (población de referencia 49, DARU 19.0 ($p = 0.001$), UHWI 24.0 ($p = 0.002$), Panamá 32.9 ($p = 0.03$)). Las puntuaciones con respecto a la satisfacción del paciente estuvieron también significativamente reducidas en todas las cohortes (población de referencia 72, DARU 52, HUWI 54, Panamá 58). El Hospital Universitario de West Indies tuvo una disminución significativa del estímulo del personal de diálisis ($p = 0.003$). La Unidad Renal de la Asociación de Diabetes registró reducciones significativas en los dominios de la salud general ($p = 0.04$), el funcionamiento físico ($p = 0.001$), el rol físico ($p = 0.001$) y el rol emocional ($p = 0.005$). Panamá tuvo las puntuaciones más bajas en relación con el funcionamiento físico general ($p = 0.01$), el dolor ($p = 0.01$) y el apoyo social ($p = 0.04$).

En la cohorte panameña, la edad < 65 años ($p = 0.0004$), la Hb > 11.1 g/dL ($p = 0.01$), la albúmina > 40 g/dL ($p = 0.01$), la URR $> 65\%$ ($p = 0.03$), la raza ($p = 0.04$), el grado de escolaridad de nivel secundario al menos ($p = 0.01$) y los ingresos salariales domésticos por año $> US\$5000$ ($p = 0.002$) arrojaron una buena predicción de la CDV. Estos representaban el 55% de la varianza. Sin embargo, en la cohorte jamaicana, una menor edad ($p = 0.02$), la raza ($p = 0.001$), una más alta URR ($p = 0.01$) y mayor hemoglobina sérica ($p = 0.001$) predijeron puntuaciones más altas de CDV, representando solamente 40% de la varianza. En cuanto a la modalidad, los pacientes de hemodiálisis tuvieron niveles de hemoglobina ($p = 0.003$) y albúmina ($p = 0.002$) significativamente más altos, y finalmente puntuaciones generales más alta de CDV ($p = 0.01$).

Conclusión: La CDV general es buena en los pacientes con ERET. Los dominios de mayor preocupación comprenden la recarga de la enfermedad renal y la satisfacción del paciente. El papel de la espiritualidad, la depresión y los marcadores nutricionales como la prealbúmina, necesitan ser evaluados. Por tanto, la calidad de vida tiene que ser documentada a modo de rutina entre los pacientes con ERET, y es necesario implementar intervenciones dirigidas.

INTRODUCTION

Quality of Life (QOL) in patients with End Stage Renal Disease (ESRD) has seen an expanded role as a measure of dialysis adequacy (1). Various instruments have been developed to allow standardized and reproducible assessment of the patient's health status perceptions beyond that usually possible by taking a conventional history (2). These QOL measures may be generic or disease-targeted in nature. The former being designed for applicability in the general population while the latter offers greater sensitivity to the unique characteristics of the disease process (3).

The Kidney Disease QOL (KDQOL) questionnaire comes highly validated with almost global application (4). It addresses such domains as effects of kidney disease on daily life, symptoms/problems, cognitive function, work status, sexual function, quality of social interaction, sleep, social support, patient satisfaction and dialysis staff encouragement (5).

It is now known that health-related QOL (hrQOL) is an independent risk factor for mortality in ESRD (6–9). Quantification of this relative risk of death has ranged from 1.25 – 2.02 for each 10-point reduction in such QOL domains as physical role and social functioning (10, 11).

Research has documented the traditional factors which predict good QOL; these include age < 65yrs (12), haemoglobin levels > 11.1 g/dL (13), female gender (14), urea reduction ratio (URR) > 65% (15), albumin levels > 40 g/dL (16), the absence of co-morbidities, for example diabetes mellitus and hypertension (17), higher socio-economic (18) and educational status (19). The influence of race on QOL has yielded valuable results. Black patients with ESRD in the United States of America (USA) [20] and Britain (21) have demonstrated higher QOL scores than matched Caucasian patients despite having negative predictors of QOL.

We sought to document QOL scores and their predictive factors in patients with ESRD in Jamaica and Panama. Both countries share commonalities: having populations of 2.6 million with 56.6% residing in an urban setting (22). Of note, approximately 40% of the people, in both countries, live below the poverty line (23). Religion is an important cultural medium in each society. Ninety per cent of Panamanians embrace the tenets of Catholicism (24), while Jamaica has the highest density of churches per square mile in the world (25). The predominant Christian groups are Protestants comprising approximately 70% of the population. Roman Catholics account for 2% of the population (26).

There are important distinctions between these countries which may have significant influence on QOL among its ESRD populations. Ninety per cent of Jamaicans are direct descendants of African slaves compared with eight per cent of Panamanians. In fact, eighty per cent of Panamanians are Hispanic in ethnicity (27).

Additionally, despite budgetary constraints, the universal access to healthcare is entrenched in the Panamanian constitution (28). Patients with ESRD in public dialysis cen-

tres therefore receive dialysis and supporting pharmaceuticals free. The centre used in this study was one such facility. This contrasts with the Jamaican patients who were recruited from a private outpatient dialysis unit and a unit attached to a tertiary level public hospital where all costs incurred were to be borne by the patient. Patients are not refused care at the tertiary centre even if there is a difficulty paying.

SUBJECTS AND METHODS

Ethics approval for this cross-sectional study was obtained from the Ethics Committee of the Faculty of Medical Sciences: The University of the West Indies/the University Hospital of the West Indies. A total of two hundred patients were consecutively recruited from November 2006 to November 2007 daily from 8 am – 4 pm, except Sundays. Seventy patients were from a tertiary hospital based outpatient haemodialysis centre in Kingston, Jamaica, representing 75% of the patient population. Ninety patients were from a tertiary hospital based outpatient haemodialysis centre in Panama City, Panama, representing 30% of the patient population. Forty patients were from a privately owned haemodialysis centre in Kingston, Jamaica (DARU), representing 62% of the patient population at that centre.

The instrument was the self-administered Kidney Disease Quality of Life – Short Form Questionnaire which includes 43 disease targeted areas, a 36-item health survey and an overall health rating item. Internal consistency reliability estimates exceeded 0.8 and 0.78 respectively. Each scale was scored 0 – 100 with higher scores representing better rating.

The patients were classified based on modality of dialysis and such sociodemographic parameters as age, race, gender, marital status, educational attainment and economic class. Continuous variables were analyzed using SPSS version 15 while chi-square tests were used for categorical variables.

One sample *t*-test was used to compare the mean scores obtained for quality of life and health status variables between the sample and reference population.

Linear regression analysis was used to compare QOL between the groups, adjusting for baseline characteristics. Multilinear regression determined the significant predictors of QOL in each cohort.

RESULTS

Table 1 shows the baseline characteristics of each cohort. The Panamanian cohort was noted to have significantly higher mean haemoglobin levels (12.4g/dL, $p = 0.004$), mean serum albumin (45.0 g/dL, $p = 0.03$) and urea reduction ratios (78%, $p = 0.04$) than the Jamaican cohorts. Diabetes mellitus was the most prevalent co-morbidity among Panamanians (52%, $p = 0.003$) versus hypertension in the Jamaican cohort (62%, $p = 0.004$). Of note, 95% of the patients were haemodialysis patients. In Panama, haemodialysis is offered three times weekly for four hours per session. Erythropoetin is adminis-

Table 1: Baseline characteristics by cohort

Dialysis Centre	UHWI (n = 70)	DARU (n = 40)	Panama (n = 90)
Mean Age (yrs)	48 ± 7	52 ± 8	50 ± 4
Males (%)	50	60	9.4
Females (%)	50	40	60.6
Haemodialysis modality (%)	85	100	100
Mean haemoglobin (g/dL)	11.2 ± 2.4	11.4 ± 1.3	12.4 ± 1.6 (<i>p</i> = 0.004) CI 1.06, 3.20
Mean albumin (g/dL)	41.0 ± 4.5	42.1 ± 2.3	45.0 ± 1.4 (<i>p</i> = 0.03) CI 1, 10, 1.46
Urea Reduction Ratio (%)	68	72	78 (<i>p</i> = 0.04) CI 1.20, 2.1
Diabetes mellitus (%)	24	35	52 (<i>p</i> = 0.003) CI 1.6, 2.9
Hypertension (%)	62 (<i>p</i> = 0.004) CI 2.5, 4.1	45	37
Blacks (%)	100	100	1 (<i>p</i> = 0.005) CI 2.3, 7.3
Married (%)	52	53	48
Single (%)	47	44	51
Divorced (%)	1	3	1

tered three times weekly with each dialysis session. In the Jamaican patients at DARU, approximately 40% of patients follow a similar regime. Over 50% have haemodialysis twice weekly with erythropoetin one to two times weekly. At UHWI, approximately 20% of patients have dialysis three times weekly while the rest is twice weekly. Less than 10% have erythropoetin thrice weekly. In the majority, the use is sporadic.

Patients on peritoneal dialysis (CAPD) have an average of twenty hours of dialysis per week. Less than ten per cent of these patients used erythropoetin therapy.

The highest socio-economic parameters were documented in the DARU population: 78.1% of patients had attained at least a high school education compared with 45.7% (*p* = 0.02, CI 2.3, 3.7) and 48.5% (*p* = 0.02, CI 2.0, 3.5) at UHWI and Panama respectively (Table 2). Approximately

Table 2: Educational status distribution among ESRD patients by cohort

Educational Status (%)	DARU	UHWI	Panama
8 th grade or less	7.3	28.6	48.5
some high school or less	14.6	25.7	3
high school or less	46.3	25.7	24.2
vocational school/some college or less	14.6	10	3
college degree	14.6	4.3	15.2
professional/graduate degree	2.4	5.7	6.1

forty-two per cent of DARU patients had health insurance compared to 40% at UHWI (*p* = 0.7) and 3% of Panamanian patients (*p* = 0.002, CI 3.5, 7.8) [Table 3].

Table 3: Health insurance status of ESRD patients by cohorts

Health Insurance Status (in %)	DARU	UHWI	Panama
None	57.5	60	97
Government issued	2.5	15	3
Private	32.5	22	0
Combination	7.5	3	0

Thirty-eight per cent of DARU patients lived in households with salaries that exceeded US\$40 000 per annum compared with 10% (*p* = 0.03) and 1% (*p* = 0.002) of UHWI and Panamanian patients respectively (Table 4). All three cohorts had good overall QOL scores when compared with the KDQOL reference population, with Panamanian patients

Table 4: Economic status of ESRD patients by cohort.

Total Household Annual Income (in US\$)	DARU (in %)	UHWI (in %)	Panama (in %)
Don't Know	35.3	7	30
< \$5000	14.7	18	50
\$5001 – \$10 000	2.9	59	15
\$10 001 – \$20 000	8.8	2	4
\$20 001 – \$40 000	nil	4	nil
\$40 001 – \$75 000	8.8	5	nil
> \$75 000	29.4	5	1

having better overall QOL scores than Jamaican patients ($p = 0.02$). There was no statistical difference between DARU and UHWI in overall QOL scores. Patients from the DARU dialysis centre, however, had significantly better dialysis staff encouragement ($p = 0.002$) and work status ($p = 0.021$). Those from UHWI recorded higher emotional role ($p = 0.002$), physical role ($p = 0.0001$) and physical functioning ($p = 0.023$) scores. Each cohort recorded significantly worse burden of kidney disease scores than the KDQOL reference population score of 49.0; ranging from DARU 19.0 ($p = 0.001$), UHWI 24.0 ($p = 0.002$) and Panama 32.93 ($p = 0.03$). This trend was irrespective of comparative scores obtained in the other disease targeted domains as Effects of kidney disease and Energy/Fatigue. Panama had the worst pain scores (45.91 *cf* KDQOL reference 57.0; $p = 0.01$), with DARU exhibiting that trend in general health domain, (34.5 *cf* KDQOL reference score 43.0; $p = 0.04$) [Fig. 1].

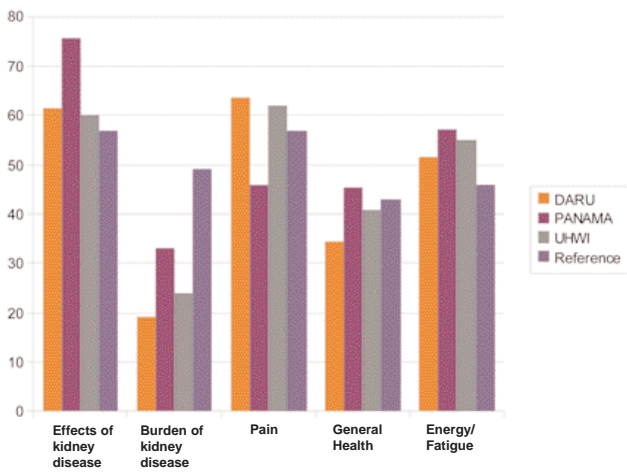


Fig. 1: Quality of Life scores for disease targeted areas and general health scores in all three cohorts compared to the KDQOL reference population.

Despite having good scores for the quality of social interaction and social functioning domains, Panama saw significantly decreased social support scores (KDQOL reference score 69, Panama 52.8; $p = 0.04$, UHWI 68, DARU 65.4) [Fig. 2]. Diabetes Association Renal Unit and UHWI had significantly higher scores for work status (DARU 46.2; $p = 0.001$, UHWI 40.24; $p = 0.015$) than the reference population (KDQOL reference score: 25.0) and the Panamanian cohort. Physical functioning domain scores in DARU and Panamanian cohorts were significantly below that of the reference population. (KDQOL reference score 51.0 *cf* DARU 37.4; Panama 36.71) [Fig. 3]. Domains of emotional role were significantly reduced in both the DARU ($p = 0.005$) and Panamanian cohort ($p = 0.005$) [Fig. 4].

Patient satisfaction scores were significantly low across all three cohorts. Dialysis staff encouragement was better at the DARU than that of the reference population ($p = 0.010$) and the Panama ($p = 0.012$) dialysis centre [Fig. 4].

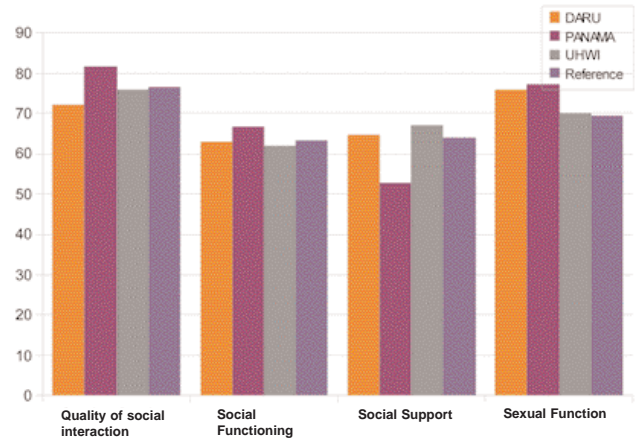


Fig. 2: Quality of Life scores in general health and disease targeted areas in all three cohorts compared to KDQOL reference population.

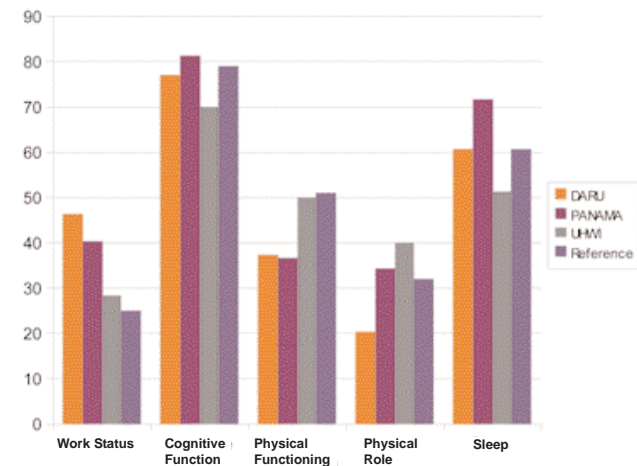


Fig. 3: Quality of Life Scores in disease targeted domains in all three cohorts compared with the KDQOL reference population.

In the Panamanian cohort, age < 65 years ($p = 0.0004$), Hb > 11.1 g/dL ($p = 0.01$), albumin > 40 g/dL ($p = 0.01$), URR > 65% ($p = 0.03$), race ($p = 0.04$), at least high school educational attainment ($p = 0.01$) and household yearly salaries > US\$5000 ($p = 0.002$) predicted good QOL scores. In the Jamaican cohort however, younger age ($p = 0.02$) race ($p = 0.001$), higher URR ($p = 0.01$) and higher serum haemoglobin ($p = 0.001$) predicted higher QOL scores. By modality of dialysis, haemodialysis patients had significantly higher haemoglobin ($p = 0.003$) and serum albumin ($p = 0.002$) levels and ultimately higher overall QOL scores ($p = 0.01$).

By gender, females had higher sexual functioning ($p = 0.0004$) and quality of social interaction ($p = 0.02$) while men had higher physical functioning scores ($p = 0.024$). Lower emotional well-being ($p = 0.025$), lower energy scores ($p = 0.001$) and worse pain scores ($p = 0.002$) were noted in patients who were married. These differences did not trans-

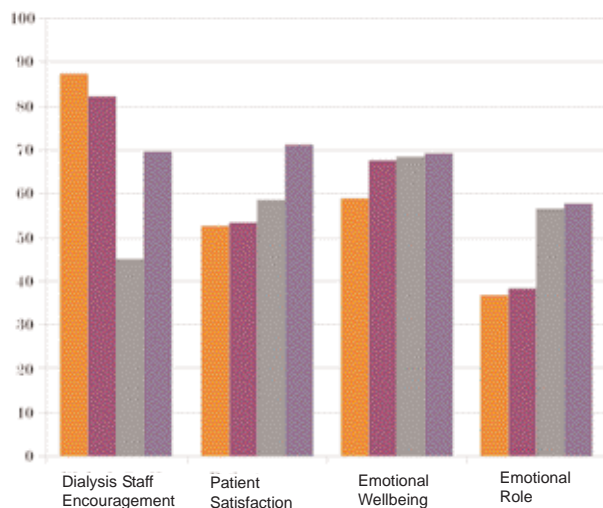


Fig. 4: Quality of Life scores in general health domains by cohort.

late to overall QOL disparities between the genders by cohort.

Higher income bracket (> US\$ 40 000/ annum) reported better quality of social interactions ($p = 0.001$) and energy scores ($p = 0.02$) in the Jamaican cohort only. Lower income brackets (< US\$5000/annum) had worse pain symptoms ($p = 0.01$) and burden of kidney disease scores ($p = 0.002$) overall.

Younger patients had higher emotional role ($p = 0.003$), physical functioning ($p = 0.002$) and energy scores ($p = 0.001$). There was no significant difference by centre.

In Jamaica, higher dialysis staff encouragement ($p = 0.032$) and patient satisfaction ($p = 0.004$) scores were noted in those with health insurance coverage.

The former having a significant association with private dialysis care ($p = 0.001$). Patient Satisfaction scores were not influenced by centre.

DISCUSSION

The KDQOL-SF questionnaire has proven to be a valid instrument in the study populations. The Clinical Practice Guidelines and Recommendations of Kidney Disease Outcomes and Quality Initiative in 2006 advocated the documentation of QOL every six months in all ESRD patients as another measure of dialysis adequacy (29). This is imperative as QOL in these patients is an independent predictor of morbidity and mortality (30). Targeted interventions have been noted to improve outcomes in this cohort (31).

The determinants of QOL are younger age, higher dialysis clearance, absence of co-morbidity, adequate nutritional status *eg* higher serum haemoglobin and albumin levels, and better socio-economic status. The role of these so called traditional factors in predicting higher QOL scores have been elucidated (32–35). In the Panamanian cohort, age < 65 years ($p = 0.0004$), Hb > 11.1 g/dL ($p = 0.01$), albumin

> 40 g/dL ($p = 0.01$), URR > 65% ($p = 0.03$), race ($p = 0.04$) and higher socioeconomic status ($p = 0.01$) predicted higher QOL scores. These factors accounted for 55% of the variance. In the Jamaican cohort however, younger age ($p = 0.02$), race ($p = 0.001$), higher URR ($p = 0.01$) and higher serum haemoglobin ($p = 0.001$) predicted higher scores, accounting for 40% of the variance. Gender or marital status did not predict good QOL in any cohort.

It is clear that other crucial factors exist which are determinants of good QOL in the patient populations. Newer nutritional biomarkers have been postulated in this regard. The use of serum prealbumin confers a more specific correlation with nutritional adequacy and more closely impacts QOL (36). Authors have reported similar use of body mass index (37) and near infrared body fat measures (37). Others such as markers of inflammation for *eg* CRP, have been reported to be poor hrQOL correlates (38).

The areas of spirituality and spiritualism have traditionally been omitted from conventional hrQOL instruments. Spirituality encompasses participation in organized religious groups as well as existential beliefs *ie* acknowledging the presence of a higher being or power (39). Spiritualism pays homage to such folklore as obeah: a system of healing or magic where requests are carried out using charms, poisons and shadow catching (40). In the Jamaican cohort, only 5% of patients thought this to be the aetiology of their illness. The others either had hopes of healing or thought that their journey with ESRD could be seen as an example of faith for onlookers. These sentiments were anecdotally reflected in the Panamanian cohort. It is not surprising as religion constitutes an important sociocultural phenomenon in both these countries.

Instruments such as The Intrinsic Religiosity Scale have been included in QOL surveys. High scores in this scale correlate strongly with good satisfaction with life scores (41). This translates to an independent, favourable effect on survival (42). These religiosity scales should be tailored to cultural norms, practices and beliefs and be used to document their predictive value for QOL in a Caribbean patient population.

The benefit of religious involvement may additionally be mediated through social support. The KDQOL-SF questionnaire makes the distinction between social functioning, interaction and support, the latter seeing a 10-point reduction in the Panamanian cohort. Social support speaks to the network of loved ones who care deeply for the patients' holistic well-being. By caring, the individual is allowed to verbalize his/her concerns or fears in a non-judgemental environment and receive feedback geared at improving the individual's present health status or perceptions. An important intervention would include a social support inventory, initially targeting the family unit. In all three cohorts, being married was associated with the lowest scores for social support ($p = 0.02$), emotional well-being ($p = 0.01$), emotional role ($p = 0.002$) and sexual function ($p = 0.03$). This merits

referral of patient and family members to counsellors and support groups to attain these basic components of happiness.

The domain of burden of kidney disease saw the largest reduction in scores compared with the reference population, ranging from 15 – 30. This held true even in patients with good social support, work status, socio-economic status or minimal symptoms of kidney disease. This burden is a significant risk factor for depression. Depression can be seen in 20 – 25% of ESRD patients (43) and is strongly linked to QOL and mortality (44, 45). Many Depression scales are available and the Becks Depression Inventory is a widely used instrument. It is recommended that a cut-off of 14–16 be used to have the most sensitivity and specificity at diagnosing a pervasive illness as depression in these patients (46). Although limited data exist on the optimum treatment of depression in ESRD, selective serotonin reuptake inhibitors are traditionally used (47). These are prescribed at low doses with titration upwards to clinical effect. Group and behaviour modification therapy are often used adjunctively (48).

Both the Jamaican and Panamanian cohorts documented good QOL scores. Race was noted to be a strong predictor of QOL with Blacks ($p = 0.002$) more so than in Latino-american ($p = 0.04$). Anthropologists postulate that the Middle Passage and slavery served as a means of natural selection where the desired trait was resilience (49). It is this resilience which allows for optimism and hope during difficult circumstances. Others suggest that the influence of race is actually mediated through social support and religious beliefs.

Clinicians are therefore encouraged to expand their concepts of dialysis adequacy to include QOL with all its facets. This should be assessed twice yearly. The role of newer nutritional and inflammatory markers must be elucidated in the Jamaican population. Spirituality has its place as a critical coping mechanism in many illnesses and thus QOL instruments used must therefore be adapted to ensure cultural relevance. The reductions in the domains of emotional role, physical functioning, burden of kidney disease predispose the patient population to a high incidence of depression. We therefore recommend the routine screening for depression in patients with ESRD.

Renal transplantation in ESRD represents the ultimate QOL intervention. Panama has an active transplant service, access to which is an entrenched benefit as in all other modalities of healthcare. Jamaica is moving towards establishing a culture of organ donation in its population. In time, renal transplantation will be more frequent than it is now.

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