Chronic Renal Failure from the English-speaking Caribbean: 2007 Data

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ABSTRACT

Aim: *Development of the renal registry to include patients at different stages of chronic kidney disease (CKD).*

Background: *The 2007 renal registry include cases at different stages of CKD based on the current guidelines according to the National Kidney Foundation (NKF) Kidney Disease Outcome Initiative (K/DOQI) staging. There was an increase in the number of participating countries, with the addition of Antigua and Barbuda, St Lucia and Turks and Caicos.*

Methods: *Data were collected using a questionnaire form. Data were stored and analysed in Words Excel for Windows or SPSS 12.0.*

Results: *Data were available for Antigua and Barbuda (n = 43), British Virgin Islands (n = 69), Cayman Islands (n = 45), Trinidad and Tobago (n = 564), Jamaica (n = 920), Turks and Caicos (n = 64), St Lucia (n = 51) and Bahamas (n = 121). The registry identified hypertension, diabetes mellitus and Chronic Glomerulonephritis (CGN) as the commonest causes of chronic kidney disease (CKD) and end-stage renal disease (ESRD) in these countries. The leading cause of death reported was listed as ischaemic heart disease/heart failure, sepsis and cerebrovascular accident.*

Conclusions: *The majority of patients with CKD and ESRD had hypertension, diabetes mellitus and CGN as the major causes. Collection of data for patients with CKD at different stages was met with some challenges, and resulted in underestimation of the true number of persons with CKD across these Caribbean countries. More emphasis will continue to be placed on improving data collection so the true incidence, prevalence and healthcare burden of CKD is known in the Caribbean. A web based programme is being developed to improve data collection.*

Fallo Renal Crónico en el Caribe Anglófono: Datos del 2007

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RESUMEN

Objetivo: *Desarrollar el registro renal incluyendo pacientes en diferentes etapas de la enfermedad crónica del riñón (ECR).*

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Antecedentes: *El registro renal 2007 incluye casos en diferentes etapas de la ECR, sobre la base de los lineamientos actuales de la estadificación según la iniciativa para los resultados de la enfermedad crónica renal (K/DOQI) propuesta por la Fundación Nacional del Riñón (NKF). Hubo un aumento en el número de países participantes, al añadirse Antigua y Barbuda, Santa Lucia e Islas Turcas y Caicos.*
Métodos: *Los datos fueron recogidos utilizando un cuestionario. Luego fueron almacenados y analizados usando Excel para Windows, o mediante SPSS 12.0.*
Resultados: *Hubo a disposición datos para Antigua y Barbuda (n = 43), Islas Vírgenes Británicas (n = 69), Islas Cayman (n = 45), Trinidad y Tobago (n = 564), Jamaica (n = 920), Islas Turcas y Caicos (n = 64), Santa Lucia (n = 51) y Bahamas (n = 121). El registro identificó la hipertensión, la diabetes mellitus y la glomerulonefritis crónica (GNC) como las causas más comunes de la enfermedad crónica del riñón (ECR) y la enfermedad renal terminal (ERT) en estos países. La principal causa de muerte según los reportes, fueron la cardiopatía isquémica/fallo cardíaco, la sepsis y el accidente cardiovascular.*
Conclusiones: *La mayoría de los pacientes con ECR y ERT sufrían de hipertensión, diabetes mellitus y GNC como causas mayores. La recogida de datos para los pacientes con ECR tuvo algunas dificultades, por lo que se subestimó el número real de personas con ECR en todos estos países caribeños. Se seguiría haciendo un mayor énfasis en mejorar la recogida de datos, de modo que la verdadera incidencia, prevalencia y carga de atención a la salud de la ECR sea conocida en el Caribe. Se halla en curso el desarrollo de un programa en la red de Internet, a fin de mejorar la recogida de datos.*

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INTRODUCTION

The Caribbean Renal registry was started in 2006 and involved six English-speaking Caribbean countries: Jamaica, Barbados, Trinidad and Tobago, Bahamas, The Cayman Islands and the British Virgin Islands (BVI). The registry identified the three commonest causes of chronic kidney disease (CKD) and end-stage renal disease (ESRD) in these countries as hypertension, diabetes mellitus and chronic glomerulonephritis [GN] (1). Also, the population identified in the 2006 registry were patients with ESRD on long term renal replacement therapy (RRT). Haemodialysis was the most common form of RRT throughout these countries, with renal transplant and peritoneal dialysis being infrequent.

The registry data has been improved for 2007, in that not only cases of ESRD were included but also patients at different stages of CKD. Chronic kidney disease staging was according to the current staging guidelines by the National Kidney Foundation (NKF) Kidney Disease Outcome Initiative [K/DOQI] (2). Collection of data for patients with CKD at different stages was met with some challenges. There was also an increase in the number of participating countries, with the addition of Antigua and Barbuda, Turks and Caicos and St Lucia.

Another milestone in the registry was the identification of a national registry coordinator in some of the participating Caribbean countries. At the concluded Caribbean Health Research Council meeting in Suriname, the data for 2006 registry was presented and member representatives from the different Caribbean countries were informed and promised to form national registries to foster the growth of the Caribbean renal registry.

The questionnaire was also modified and included more information for those patients who had undergone transplant. It also made use of a coding system to identify patients without a breach of confidentiality. Efforts were also made on infection surveillance in the patients undergoing RRT. The questionnaire also focussed on details of morbidity and mortality.

METHODS

Data were collated on data collecting sheets and stored in either Words Excel or SPSS 12.0 and analysed using SPSS 12.0 for Windows and graphs generated with Words Excel for Windows. Electronic compilations were sent by some countries; others sent hard copies.

RESULTS

Data were available for eight English-speaking Caribbean countries: Antigua and Barbuda (n = 43), British Virgin Islands [Tortola] (n = 73), Cayman Islands (n = 45), Trinidad and Tobago (n = 564), Jamaica (n = 920), Turks and Caicos (n = 64) and Bahamas (n = 121). The number reported is believed to be an underestimation of the actual population with CKD (Table 1). The mean age, gender, ratio and BMI were calculated where available (Table 2).

Table 1: Number of patients reported on renal replacement therapy

Country	Haemodialysis	Peritoneal Dialysis	Transplant	Total number on RRT
Jamaica	536	32	8	576
Trinidad and Tobago	491	71	2	564
Turks and Caicos	64	0	0	64
Bahamas	121	–	–	121
Antigua and Barbuda	43	0	0	43
British Virgin Islands	33	1	2	36
Cayman Islands	45	0	–	45
St Lucia	51	0	0	51

Table 2: Table showing mean age, gender ratio and mean body mass index (BMI) for each country

Country	Mean Age (years)	Male: Female Ratio	MEAN BMI (m/kg²)
Jamaica	53.8	1:1.2	25.4
Trinidad and Tobago	52.5	1.4:1	–
Turks and Caicos	54.1	1.1:1	29.4
Bahamas	–	–	–
British Virgin Islands	57.7	2.6:1	–
Cayman Islands	–	–	–
Antigua and Barbuda	52.7	1.4:1	–
St Lucia	46.7	1.9: 1	–

Jamaica

Data collected for Jamaica comprised patients at different stages of CKD, including those on dialysis. There was a reported total number of patients with CKD of 968, of which 576 were receiving RRT. Figure I shows the demographic

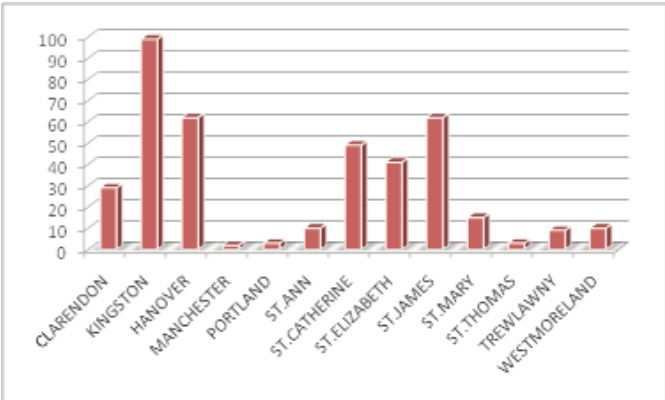

Fig. 1: Demographic distribution of patients in Jamaica

distribution of patients with CKD in Jamaica. There were 46.1% males and 53.9% females. The mean age was 53.8 (SD 18.7) years. The major causes of CKD were hypertension (35.2%), diabetes mellitus (29.7%), CGN (6.9%) and systemic lupus erythematosus [SLE] (6.9%) [Fig. 2]. The

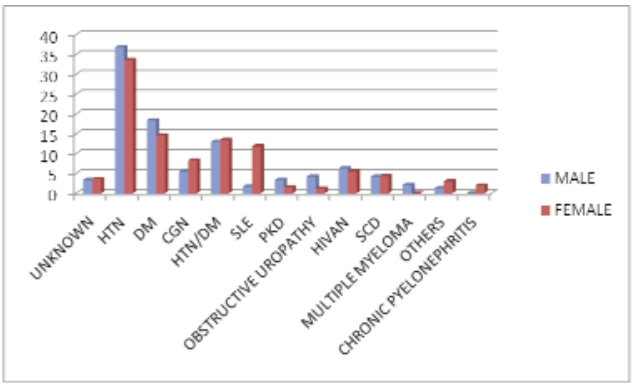

Fig. 2: Primary causes of chronic kidney disease in males and females in Jamaica

HPN = Hypertension; DM = Diabetes mellitus; CGN = Chronic glomerulonephritis; PKD = Polycystic kidney disease; SLE = Systemic lupus erythematosus; HIVAN = Human immunodeficency virus associated nephropathy; SCD = Sickle cell disease

mean weight was 69.9Kg (SD 14.9Kg), height of 1.66 m (SD 0.1 m) and BMI of 25.4 Kg/m². The mean haemoglobin was 9.35 g/dL (SD 2.90 g/dL), serum calcium of 2.24 mmol/L (SD 0.29 mmol/L), serum phosphorus 1.69 mmol/L (SD 0.37 mmol/L), serum parathyroid hormone level (PTH) 292.8 pmol/L (SD 438.8 pmol/L), albumin 39.0 g/dL (7.84 g/dL), LDL cholesterol 3.76 mmol/(SD 1.84 mmol/L) and HDL cholesterol 1.14 mmol/L (SD 0.51 mmol/L (Table 3). All

Table 3: Table showing mean value of different parameters between males and females in Jamaica.

Parameters	Male	Female
Age (years)	54.9 ± 18.7	52.9 ± 18.2
Height (cm)	175.0 ± 8.69	160.1 ± 9.0
Weight (Kg)	71.4 ±13.5	68.4 ± 16.1
BMI (Kg/m2	25.2 ± 3.6	27.5 ±6.29
Serum haemogloblin (g/dL)	9.51 ± 2.96	9.19 ± 2.84
Serum albumin (g/L)	38.6 ±8.0	39.4 ± 7.72
Serum calcium (mmol/L)	2.22 ± 0.31	2.68 ±0.27
Serum phosphorus (mmol/L)	1.76 ±0.85	1.64 ± 0.82
Calcium phosphate product (mmol²/L²)	3.91± 0.26	4.39 ± 0.22
Total cholesterol (mmol/L)	12.6 ±1.86	5.29 ±1.43
LDL (mmol/L	3.94 ± 2.24	3.58 ±1.36
HDL (mmol/L)	1.13 ± 0.57	1.16 ± 0.43
Triglycerides (mmol/L)	1.14 ± 0.62	1.23 ± 0.54

patients on renal replacement therapy (RRT) received haemodialysis (93.0%), peritoneal dialysis (5.6%) or kidney transplantation (1.4%). In the social history, 85.8% of the patients reported never having smoked before while 4.6% are currently smoking and 9.6% were ex-smokers. Of all the patients reported 8.5%, 19.9% and 28.7% reported positive family history of CKD, diabetes mellitus and hypertension respectively. Data were available for patients referred to the nephrologists (32.9%) and the dietician (13.9%) prior to diagnosis of ESRD. The most common access type for dialysis was the native arterio-venous (AV) fistula (52.1%), 16.7% had permanent catheters and 31.3% had temporary catheters. There were no reports of AV grafts. The number of deaths reported was 82 with some of the causes listed as ischaemic heart disease/heart failure (28.0%), infections/sepsis (21.9) and cerebrovascular accident [CVA] (17.1%).

Turks and Caicos

Of the total number of 64 patients on haemodialysis, there were 34 males (52.3%) and 31 females (47.7%). The mean age was 54.1 (SD 17.0). The major causes of CKD were hypertension (38.5%), diabetes mellitus (38.5%), CGN (9.2%) and SLE (4.6%). There was one reported case of sickle cell disease (SCD) but the other causes were unknown (Fig. 3). Data on island of residency was not made available. The mean weight was 80.1Kg (SD 20.7), height of 1.65m (SD 0.1 m) and BMI of 29.4Kg/m². The mean haemoglobin was 10.6 g/dL, serum calcium of 2.36 mmol/L (SD 0.28) and albumin was 36.1 g/dL. Serology for hepatitis B and C was available for 52 patients (80.0%), and were all negative for hepatitis B and C (HbsAg, Anti-HbsAg and Anti-HAC).

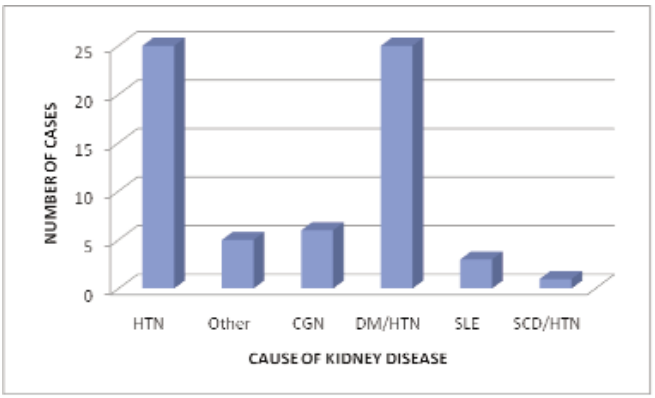

Fig. 3: Primary cause of kidney disease in Turks and Caicos

HTN = Hypertension; CGN = Chronic glomerulonephritis; DM = Diabetes mellitus; SLE = Systemic lupus erythematosus; SCD = Sickle cell disease

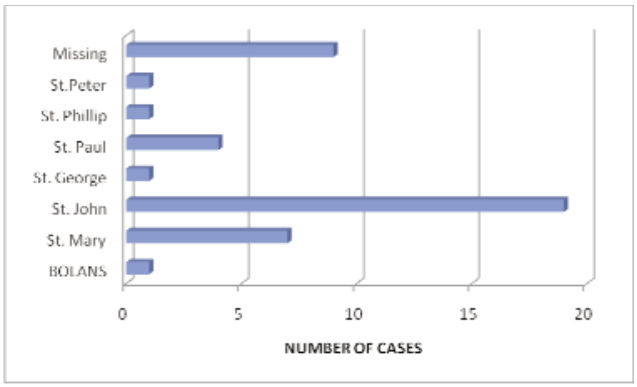

Fig. 4: Parish of residence of patients in Antigua and Barbuda

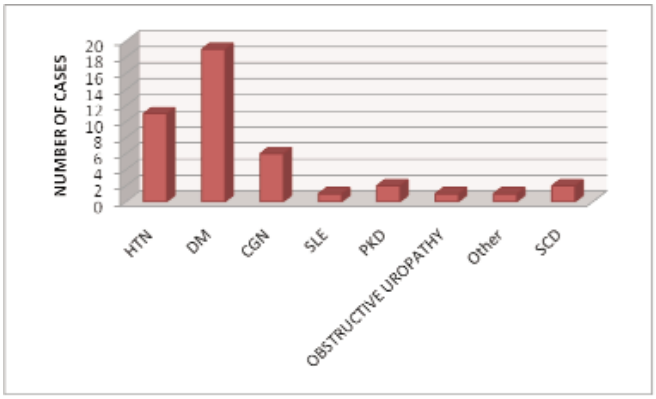

Fig. 5: Primary cause of CKD in Antigua and Barbuda

HTN = Hypertension; DM = Diabetes mellitus; CGN = Chronic glomerulonephritis; SLE = Systemic lupus erythematosus, SCD = Sickle cell disease.

Serology for HIV was available for 53 patients (81.5%), 51 patients were negative (96.2%) and 2 were positive (3.8%). Of the 50 patients with available data for MRSA, 49 (98.0%) had no history of treatment for MRSA. No data was available for CMV status among the patients. All patients received HD, with no report of patients on PD or with kidney transplant. In the social history, 58.5% of the patients reported that they never smoked while 6.2% were currently smoking and 35.3% were ex-smokers. Of the 65 patients reported, 6 (9.2%), 37 (56.1%) and 42 (64.6%) reported positive family history of CKD, diabetes mellitus and hypertension respectively. Data were available for 53 patients in terms of referrals to nephrologists 33, 62.3% prior to diagnosis of ESRD and to the dietician, 35 (65.0%). The most common access type for dialysis was AV fistula 42.0%, 38.0% had AV graft, 8% had permanent catheters and 12.0% had temporary catheters. Hospitalization record was only available for 9 (13.6%) patients. The number of deaths reported was three with some of the causes listed as sepsis and CVA.

Antigua and Barbuda

The total number of patients reported was 43, with 25 males (58.1%) and 18 females (41.9%). The demographic distribution of the patients receiving dialysis is as shown in Fig. 4. The average age was 52.7 (SD 13.7). The major causes of CKD (Fig. 5) were hypertension (23.3%), diabetes mellitus (44.2%), CGN (14.0%) and autosomal dominant polycystic kidney disease [APKD] (4.7%). There were two reported cases of SCD, one reported case of SLE and one case of obstructive uropathy. The mean weight was 68.9 Kg (SD 15.7). No data was available for height hence the BMI was not calculated. The mean haemoglobin was 9.79 g/dL (SD 2.91 g/dL), serum calcium was 2.10 mmol/L (SD 0.27) and serum phosphorus of 1.84 mmol/L (SD 1.12), calcium phosphate product of 3.86 $mmol^2/L^2$ (SD 0.30) and albumin was 31.3 g/dL (SD 4.27). Serology for hepatitis B and C was available for 34 (79.1%) and 32 (74.4%) patients respectively, and were all negative for HbsAg and Anti-HbsAg. Anti-HAC was positive in one case. HIV serology was available for 32 patients (74.4%) and they were all negative. No data for methicillin resistant staphylococcus (MRSA), vancomycin resistant staphylococcus (VRSA) and cytomegalovirus (CMV) were available. Almost all the patients received HD (97.7%) with one report of a patient on PD but no kidney transplant; 85.7% of the patients reported never having smoked while 5.7% were currently smoking and 8.6% were ex-smokers. A positive family history of hypertension, diabetes mellitus and CKD was reported in 51.4%, 37.1% and 14.3% respectively. Of the 35 patients with available data, referrals to nephrologists prior to diagnosis of ESRD was seen in 4 (11.1%) and the dietician was seen by all 35 (100%). Data were not available for access type and hospitalization. The total number of deaths reported was 8, with causes listed as sepsis, pulmonary embolism, respiratory tract infection and uraemic pericarditis.

Trinidad and Tobago

The total number of patients reported was 564 on renal replacement therapy, with M:F ratio of 1.4:1. There were 491

patients (87.1%) on haemodialysis, 71 (12.6%) on peritoneal dialysis and only 2 (0.4%) cases of renal transplant. The average age was 52.5 years (SD 13.2). The major causes of CKD were hypertension (16.5%), diabetes mellitus (30.5%), CGN (3.4%) and SLE (3.4%). There were 196 (34.8%) cases with unknown cause for CKD. Data were not available for parish/county of residence, mean weight, height and laboratory parameters. There were two reported cases each with positive serology for hepatitis B and HIV and a case of positive serology for hepatitis C. Access types was reported for 282 patients and they were AV fistula (56.0%), permanent catheters (39.4%), grafts (2.8%) and temporary subclavian catheters (1.8%).

British Virgin Islands

The total number of patients reported was 73, with 53 males (72.5%) and 20 females (27.5%). The average age was 57.7 (SD 16.6). The total number of patients receiving RRT was 36. The major causes of CKD were hypertension (28.0%), diabetes mellitus (56.0%), CGN (8.0%) and autosomal dominant polycystic kidney disease [ADPKD] (8.0%). The mean weight was 79.7 Kg (SD 22.3 Kg). No data was available for height hence the BMI was not calculated. The average haemoglobin was 11.7 g/dL (SD 1.10 g/dL), serum calcium: 9.56 mg/dL (SD 0.83 mg/dL), serum phosphorus: 5.52 mg/dL (SD 1.82 mg/dL), calcium phosphate product of 52.8 mg^2/gL^2 (SD 0.30 mg^2/gL^2) and albumin was 42.2 g/dL (SD 4.27 g/dL).

St Lucia

Data collected for St Lucia comprised patients on dialysis. The total number of patients reported with ESRD was 47. There were 66.0% males and 34.0% females. The mean age was 46.7 (SD 11.4) years. The major causes of CKD were hypertension (53.3%), diabetes mellitus/hypertension (25.5%) and chronic glomerulonephritis (6.4%). The mean weight was 70.9 Kg (SD 14.8 Kg). The mean haemoglobin was 9.40 g/dL (SD 1.78 g/dL), serum calcium: 2.11 mmol/L (SD 0.26 mmol/L), serum phosphorus: 1.69 mmol/L (SD 0.56 mmol/L), serum parathyroid hormone level: 2898.5 pg/ml, serum albumin 38.1 g/dL (4.24 g/dL). All patients on renal replacement therapy (RRT) received haemodialysis. The most common access type for dialysis was AV fistula 74.5%, while 23.4% had permanent catheters. There was no report of temporary catheters and one patient had an AV graft. There were no deaths reported.

Cayman Islands

The total number reported was 47. All patients received haemodialysis with no peritoneal dialysis. The number of patients who received kidney transplantation was not available.

Bahamas

The total number of persons diagnosed with ESRD on HD was reported as 121. The total number of reported deaths was 46. No other data was available.

DISCUSSION

The growing burden of chronic kidney disease in Jamaica and the Caribbean led to initiation of the Caribbean renal registry. The 2006 renal registry report was on patients with ESRD undergoing RRT. Data were collected from six English-speaking Caribbean countries. The 2007 report encompasses data collected from eight English-speaking Caribbean countries with patients on RRT and those pre-RRT.

There were challenges in the collation of data. There were limited data on patients' demographics, the timing of initiation of RRT, treatment modalities and switches between modalities of RRT. Mortality and morbidity data were particularly lacking, as there were no data available from some countries on the cause of death, hospital admissions and other co-morbid illnesses.

Jamaica and the British Virgin Islands had data available for patients at different stages of CKD. This is at best a least estimate. Morbidity and mortality figures were not calculated due to lack of available data. Survival of patients on haemodialysis, peritoneal dialysis and transplantation were not calculated.

The gender ratio for each country showed more males than females diagnosed with CKD and receiving RRT except for Jamaica were there were more women than men.

CONCLUSION

Hypertension, diabetes mellitus and CGN are the commonest cause of CKD in these eight participating countries. Systemic lupus erythematosus and sickle cell disease were also reported as causes of CKD but not by all the countries.

The number of patients reported with CKD/ESRD from the participating countries is thought to be a least estimate but a true reflection of the prevalence and incidence of CKD will be discovered as the registry continues. Development of a web-based registry will in no doubt improve data collection and improve consistency in the reporting.

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