

CHALLENGES OF RENAL REPLACEMENT THERAPY IN NIGERIA: SOLUTIONS FROM MEDICAL STUDENTS' PERSPECTIVES

A.S. Adetunji¹ and T.S. Fatokun¹

1. Alexander Brown Hall, College of Medicine, University of Ibadan, Ibadan, Oyo State, Nigeria.

Correspondence:

Dr. A.S. Adetunji

Alexander Brown Hall,
College of Medicine,
University of Ibadan,
Ibadan, Oyo State
Email: demmybacus@gmail.com

Submission Date: 2nd March, 2023

Date of Acceptance: 30th Oct., 2023

Publication Date: 1st Nov., 2023

ABSTRACT

Introduction: During our posting at the Renal Unit, Department of Medicine, University College Hospital, Ibadan, we observed numerous difficulties encountered by patients requiring renal replacement therapy and the family members/caregivers of these patients. These are broadly categorized into patients' related challenges, institutional inadequacies, infrastructural challenges, policy, and funding issues.

Perspective: Patients' challenges are poor health-seeking habits culminating in late diagnosis in advanced uremic state and poor economic status resulting in catastrophic out-of-pocket spending. Institutional and infrastructural challenges include epileptic power supply in the dialysis unit, a lack of necessary materials needed for dialysis, among others. Policy issues included the absence of an organ donor system and regulations guiding them. More importantly, there is insufficient support from the government concerning patients with end-stage kidney disease.

Conclusion: Tackling the management of end-stage kidney disease would require paying attention to and addressing these challenges.

Keywords: Stroke, Renal replacement therapy, Challenges, Solutions, Nigeria.

INTRODUCTION

Chronic Kidney Disease (CKD) is defined as a glomerular filtration rate (GFR) <60 mL/min/1.73 m² for ≥ 3 months. It is a global public health problem that causes significant cardiovascular morbidity and could lead to premature death.¹ CKD prevalence is increasing and it is estimated that it accounts for 10% of mortality worldwide, affecting over 800 million people.²

Non-communicable diseases, such as hypertension and diabetes, are the major causes of CKD worldwide.² In recent times, diabetes, obesity, and hypertension have assumed epidemic proportions, not only in developed countries but also in developing countries,³ and they also pose a great risk of complications in those who are already affected by CKD.⁴ Furthermore, in developing countries, infections are also important causes of CKD.⁵ Therefore, the incidence and prevalence of CKD are expected to escalate in the next few years, although it is doubtful if the low-income and middle-income countries will be able to cope with it. CKD is receiving a lot of attention now because of the enormous cost of treatment and the economics of sustainable policy to stem the tide of this disabling disease.

THE BURDEN OF END STAGE RENAL DISEASE (ESRD) IN NIGERIA

Studies in Nigeria have shown that CKD prevalence ranges between 1.6% and 12.4%.⁶ The wide disparity

in the reported prevalence is due to differences in the definition of CKD and the inconsistent data gathering and the near absence of a renal registry where data could be interrogated. The prevalence of CKD using various equations are as follows: Cockcroft–Gault, 4.4% and 26%, Modification of Diet in Renal Disease (MDRD) 12.3%-14.2%, and Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI), 11.4%.⁷ Some studies, especially community studies, use only the presence of proteinuria or increased serum creatinine at a defined value for epidemiologic study of CKD.

The observed risk factors in these studies whose prevalence was mentioned above include advanced age, family history of renal disease, low-income occupation, traditional medication use, low haemoglobin, obesity, diabetes mellitus, hypertension.⁷ The increased prevalence of End-Stage Renal Disease (ESRD) among blacks, irrespective of location, suggests that ESRD may be more prevalent in Africa than in other countries. Again, hypertension takes a more aggressive course in blacks than in Caucasians⁸, making hypertension to be the most important cause of not only cardiovascular disease but also kidney disease in the adult populations.⁹ Sadly, access to renal replacement therapy (RRT) in Nigeria, one of the largest countries in Africa, is limited, hence the high mortality rates ranging from about 40 to 50%.⁶

Agaba et al in their study on the management of chronic kidney disease and end stage renal disease in Nigeria noted that patients with CKD not treated either by dialysis or kidney transplantation, have a high mortality rate and only 20 percent of the patients had the expected number of thrice weekly dialysis and many others are infrequently dialysed contributing to increased mortality.⁵ Even so, many patients who are dialysis dependent in Nigeria may not be adequately dialysed because of either a suboptimal dialysis dose to meet the patients' dialysis needs or other logistics reasons, as it was also stated that none of these patients in the study by Agaba et al met the Kidney Disease Outcomes Quality Initiative (KDOQI) standards for Kt/V urea.^{5,10,11,12} This inadequate dialysis session would invariably result in a poor quality of life. Despite the reduced cost of dialysis in Nigeria, the overwhelming majority of patients cannot afford to have a three times weekly dialysis session.⁵

Challenges of Renal Replacement Therapy

Financial challenges

Yusuff *et al.* in their research findings on health insurance coverage analysis in Nigeria, stated that less than 5% of the population is covered by the National Health Insurance Authority (NHIA)¹³. Hence, a large proportion of this financial cost for renal replacement therapy options will be borne out of patients' or patient relatives' pockets. In Ibadan, there was a dismal finding of the general unaffordability of renal replacement therapy.¹⁴

Renal replacement therapy poses a huge financial burden. The cost of thrice weekly dialysis, for a lifetime, is unaffordable and not sustainable. In addition, the need for necessary routine investigations, buying of essential drugs, feeding, other treatments, and payment for the prolonged stay in the hospital wards add to the cost of treatment.

Also, a renal transplant, which is a relatively permanent treatment option, is also very expensive. The cost of pre-operative care, post-operative care, drugs, and investigations are very significant. Most people cannot afford this without incurring huge financial debts, especially without a robust health insurance system. For example, currently, a dialysis session costs, on average, about N35,000. When the cost of medications for possible co-morbidities such as hypertension, diabetes mellitus, and erythropoietin are added to this, it becomes difficult or impossible for most patients to pay for treatment.

Financial burden of haemodialysis care

Prior to renal transplantation, dialysis whether haemo- or peritoneal dialysis is the first line of treatment. A

2002 comparative study, analysing the impact of dialysis care modality on the cost of ongoing care of patients with end-stage renal disease, showed that there was a significant difference in the overall annual cost of dialysis care among patients having in-hospital, satellite, and home/self-care haemodialysis and Peritoneal dialysis.¹⁵ Haemodialysis and peritoneal dialysis require peritoneal or vascular access and these also add to the cost. The cost of vascular access-related care among patients treated with haemodialysis may be lower in patients with native arteriovenous fistula compared to those with other forms of access such as catheters, whether temporary or permanent. Besides, the quality of life and adequacy of dialysis are better with native arteriovenous fistula¹⁵.

Renal transplant cost and maintenance

A kidney or renal transplant is usually the treatment of choice for kidney failure or end-stage renal disease rather than a lifetime treatment option of dialysis which is usually not sustainable and largely inconvenient. Renal transplant is largely associated with a better quality of life, lower risk of death, lower treatment cost, and fewer dietary restrictions compared to incessant dialysis. A kidney for transplant can be gotten from a living donor or a cadaveric donor.

Transplant costs, when properly calculated, include: hospital visits, laboratory tests which may not be available in the country, medications, surgery amidst other procedures. Again, all these are often included in the out-of-pocket expenses for kidney transplants for patients without health insurance. A kidney transplant costs well over N14,000,000 for those without health insurance, including the expense of pre-transplant screening, donor matching, surgery, post-surgical care, and the first six months of medication^{16,17}. After that, immunosuppressive medications must be purchased separately.

There are also legal and ethical challenges to transplantation in Nigeria.¹⁸ Without a robust legal framework and regulations for transplantation, there are real risks of organ trading and other unethical practices. Nothing currently guarantees that a will authorizing donation of an organ after death will be respected by family members.

We noted that a successful transplant surgery does not necessarily translate to getting all benefits of a transplant. Some of the patients default on post-transplant follow up in the clinic and sometimes abandon their medications once they begin to feel well. We do remember a student who had a successful transplant and lived well for about two years, and then

stopped taking her medications. The transplanted kidney was rejected, and she had to be sustained on haemodialysis. Undoubtedly, the cost of medications is also a challenge. These medications may not be readily available even in the hospital meaning patients have to make personal arrangements to get them. The cost of post-transplant immunosuppressives may be up to N200,000-N300,000 per month and up to \$17,000 dollars annually according to American Kidney Fund.^{16,17} Some of the anti-rejection medications commonly used are Mycophenolate mofetil, tacrolimus, and prednisone.¹⁹

Psychological and social challenges encountered

There is immense psychological burden on many patients with CKD and their caregivers. As in many chronic and disabling conditions, many suffer depression and have low quality of life. All these culminate in the question, 'why me?'. Poor quality of life and job losses in some cases compound the problem of 'catastrophic spending'.^{20,21} Those who have to sell their belongings to keep up with the medical expenses may drop in socioeconomic status. Other family members might be financially constrained and held down from pursuing their careers or businesses. This may affect other family members including children who drop out of school for inability to pay fees. In addition, many live with grief and fear of the potential death of a loved one.

Many patients, especially those not on regular dialysis or treatment, have massive edema at this stage. This oedema affects their appearance and could negatively affect the patient and loved ones' emotional status. There were such patients who could not attend social functions or indeed venture out of their homes because of this apparent disfigurement. Such patients may harbour suicidal thoughts.

Some people believe they cannot survive on a single kidney. The issue of donating a kidney to relatives or loved ones could also split homes; the patient may feel betrayed by their family or loved ones when they refuse to donate their kidney.

Solutions to Challenges of Renal Replacement Therapy

We suggest the following solutions to tackle the challenges of renal replacement therapy in Nigeria, the government should appropriate funds to subsidize or cater to the care of patients with chronic illnesses, especially low-income earners. The National Health Insurance Authority (NHIA) should cover the cost of renal replacement therapy to reduce or eliminate the financial burden of this disease. Currently, the NHIA

covers only fees for acute kidney injury (AKI), and even then, only 6 dialysis sessions annually.²² This is a good start but definitely not enough and a far cry from what we understand the Nigerian Association of Nephrology (NAN) advocates for. NAN would like a comprehensive and easily accessible insurance cover for all patients requiring dialysis and transplantation. This could be done if the scope of contribution to the NHIA is expanded. The cost of renal replacement therapy can be reduced if the government or philanthropists in the society invest in producing materials needed for renal replacement therapy locally in the country. Non-governmental organizations could create a social support group for social, financial, emotional, and psychological help. This will include discussions and possible empowerment for the families of those suffering from end stage kidney disease.

A cadaveric donation scheme would reduce the problem of access to living donor organs. With appropriate legislation in place, organs could be harvested when patients are diagnosed brain dead. But this requires that the public and family members in particular be enlightened on how the donation of one or both kidneys of their departed relative could 'give life to another person'. The other major challenge would be a cold chain mechanism to preserve the organ and a laboratory infrastructure that facilitates quick and reliable tissue typing and biobanking. A cadaveric organ donation scheme will go a long way in reducing the time and difficulty in assessing live donors. We are far away from a mandatory cadaveric organ donation. This is a consent mechanism in which patients who are admitted into intensive care units, or their relatives would sign if they wanted or did not want their organs harvested for a transplant. The Lagos State Government is considering formulating a policy and legal framework for cadaveric kidney transplantation²³. Currently, the estimated cost of a renal transplant surgery in Nigeria is about 12-15 million naira¹⁷. There should also be a scheme to provide financial assistance to as many patients as possible that need renal transplants. Foundations and non-governmental organisations (NGOs) could be set up for this purpose like in some developed countries e.g. MOHAN Foundation in India, amidst others.²⁴

The populace must be enlightened on the fact that people can live with one functional kidney. Organ donor and transplant programs should be encouraged for the voluntary donation of kidneys. This must, however, be preceded by proper orientation of the public, the religious groups, and the traditional rulers who help propagate this in their domains.

CONCLUSION

The difficulties experienced by patients and loved ones of patients with end-stage renal diseases can be tackled by a multidisciplinary approach involving government, non-governmental organizations, social support groups, the public, and individuals. It requires immense efforts to educate the public on the need and support for adequate renal care. An enabling environment and policy are also very vital.

ACKNOWLEDGMENT

I thank Dr. Samuel Ajayi, Consultant, Nephrology Unit, UCH, Ibadan, Nigeria who challenged us with these thoughts on renal care during our posting in Renal Unit.

REFERENCES

1. **Levey AS**, Atkins R, Coresh J, *et al.* Chronic kidney disease as a global public health problem: Approaches and initiatives—a position statement from Kidney Disease Improving Global Outcomes. *Kidney Int.* 2007;72:247-259.
2. **Kovesdy CP.** Epidemiology of chronic kidney disease: an update 2022. *Kidney Int Suppl.* 2022;12(1):7.
3. **Erfanpoor S**, Etemad K, Kazempour S, *et al.* Diabetes, Hypertension, and Incidence of Chronic Kidney Disease: Is There any Multiplicative or Additive Interaction? *Int J Endocrinol Metab.* 2021;19(1):101061.
4. **Long AN**, Dagogo-Jack S. Comorbidities of diabetes and hypertension: mechanisms and approach to target organ protection. *J Clin Hypertens (Greenwich).* 2011;13(4):244-251.
5. **Agaba EI**, Tzamaloukas AH. The management of chronic kidney disease and end-stage renal disease in Nigeria. *Int Urol Nephrol.* 2012;44(2):653-654.
6. **Odubanjo MO**, Oluwasola AO, Kadiri S. The epidemiology of end-stage renal disease in Nigeria: the way forward. *Int Urol Nephrol.* 2011; 43(3): 785-792. doi:10.1007/S11255-011-9903-3
7. **Ijezie Chukwuonye I**, Samuel Ogah O, Ndukaife Anyabolu E, *et al.* Prevalence of chronic kidney disease in Nigeria: systematic review of population-based studies. *Int J Nephrol Renovasc Dis.* 2018;11:165.
8. **Fuchs FD.** Editorial Commentary Why Do Black Americans Have Higher Prevalence of Hypertension? An Enigma Still Unsolved. Published online 2011.
9. **Cappuccio FP**, Miller MA. Cardiovascular disease and hypertension in sub-Saharan Africa: burden, risk and interventions. *Intern Emerg Med.* 2016; 11(3):299-305.
10. **Uduagbamen P**, Uka A, Ogunmola M, *et al.* Adequacy of haemodialysis in two centres in Southwestern Nigeria: Determinants and clinical correlates. *Niger J Heal Sci.* 2019;19(1):14.
11. **Okoye O**, Mamven M. Global Dialysis Perspective: Nigeria. *Kidney360.* 2022;3(9):1607.
12. **Abene EE**, Gimba ZM, Bello RN, *et al.* Practice of Hemodialysis in a Resource-Poor Setting in Nigeria: A 2-Year Experience. *Niger Med J.* 2017;58(5):156. doi:10.4103/NMJ.NMJ_236_16
13. **Azeez YO**, Babatunde YO, Babatunde D, *et al.* Towards Universal Health Coverage: An Analysis of the Health Insurance Coverage in Nigeria. *Int J Heal Life Sci.* 2021 73. 2021;7(3):108727.
14. **Ajaji S**, Raji Y, Bello T, *et al.* Unaffordability of renal replacement therapy in Nigeria. *Hong Kong J Nephrol.* 2016;18:15-19.
15. **Lee H**, Manns B, Taub K, *et al.* Cost analysis of ongoing care of patients with end-stage renal disease: The impact of dialysis modality and dialysis access. *Am J Kidney Dis.* 2002;40(3):611-622.
16. Cost of a Kidney Transplant - 2023 Healthcare Costs. Accessed May 28, 2023. <https://health.costhelper.com/kidney-transplant.html>
17. **Lang JJ**, Lombardi CV, James IA, *et al.* A Payer's Perspective: A Comparison and Simulation of the Costs of Hemodialysis Versus Living Donor Kidney Transplant for Patients With End-Stage Renal Disease in Nigeria. *Transpl Int.* 2022;35.
18. **Ajaji SO**, Raji Y, Salako BL. Ethical and legal issues in renal transplantation in Nigeria. *Saudi J Kidney Dis Transpl.* 2016;27(1):125-128.
19. National Kidney Foundation. https://www.kidney.org/atoz/content/immuno_meds
20. **Adejumo OA**, Akinbodewa AA, Ogunleye A, *et al.* Cost implication of inpatient care of chronic kidney disease patients in a tertiary hospital in Southwest Nigeria. *Saudi J Kidney Dis Transpl.* 2020; 31(1):209-214.
21. **Adisa O.** Investigating determinants of catastrophic health spending among poorly insured elderly households in urban Nigeria. *Int J Equity Health.* 2015;14(1):1-11. doi:10.1186/S12939-015-0188-5/TABLES/7
22. **Temitayo Ayetoto-Oladehinde.** Pricy kidney care leaves prevention as way out for Nigeria's poor -. <https://businessday.ng/health/article/pricy-kidney-care-leaves-prevention-as-way-out-for-nigerias-poor/>. Published March 9, 2023.
23. oolaskanmi. Lasuth performs another successful kidney transplant – Lagos State Government. Published February 16, 2020. <https://lagosstate.gov.ng/blog/2020/02/16/lasuth-performs-another-successful-kidney-transplant/>

24. **Raktim Pratim Tamuli**, Smritimala Sarmah, Bishwajeet Saikia. Organ Donation- attitude and awareness among undergraduate students and postgraduates of North East India. *Natl Libr Med.*

2019;8(1). Accessed May 28, 2023. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6396593/pdf/JFMPC-8-130.pdf>