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Improving Kidney Care Through Dialysis Access: Priority Setting and Ethical Consideration

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Abstract:

Chronic Kidney Disease is an important cause of world-wide morbidity and mortality and a global health problem. The quality of life of people living with chronic kidney disease is often compromised because of several barriers to accessing dialysis treatment in low-income settings. Aside from death, there is the challenge of cost of treatment, reduction in the quality of life of patients and caregivers. It was estimated that at least 2.3 to 3.2 million people die annually around the world because of either an inability to access dialysis treatment in the first place or an inability to sustain treatment and these progress to end-stage renal disease (ESRD). Therefore, this study is designed to discuss how dialysis access can be improved through setting right priorities as a nation thereby improving kidney care. The study specifically identified issues about dialysis access; discussed how access to dialysis will improve kidney care; and considered ethical consideration associated with dialysis access provision. A service has to be accessible before it can be utilized. It is suggested that distance to healthcare services influences their accessibility and utilization especially in Nigeria. Dialysis access is also influenced by affordability, resources, availability, number of hospitals rendering dialysis services, proximity to service provider and these can be improved through setting right priorities as a nation thereby improving kidney care. In conclusion, cost of patient care of CKD is beyond the reach of Nigerians who mostly pay out of pocket for

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health service. There is an urgent need for the government to prioritize, subsidized and include CKD care under the national insurance scheme.

Keywords: Chronic Kidney Disease, Dialysis Access, Improve Kidney Care, Priority Setting, and Ethical Consideration,

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Introduction

Chronic Kidney Disease is an important cause of world-wide morbidity and mortality, and a global health problem. The death toll from the disease is 2 million yearly and it has an estimated prevalence of 14.3% (Lv & Zhang, 2019). In 2017, CKD resulted in 1.2 million deaths and was the 12th leading cause of death worldwide. (Carney, 2020) In addition, 7.6% of all cerebro-vascular disease deaths (1.4 million) could be attributed to impaired kidney function (Carney, 2020). Chronic kidney disease (CKD) may progress to end-stage renal disease (ESRD) if not or poorly treated, which requires ongoing dialysis or a kidney transplant in order for the patient to stay alive. Around 850 million people are currently suffering from different types of kidney disorders, while one in ten adults worldwide have CKD (International Society of Nephrology, 2019; Li, Garcia-Garcia et al., 2020).

The rate at which people are affected with CKD is becoming alarming and will double if nothing is done drastically. Alawode & Adewole (2021) estimated that with the exponential increase in the burden of CKD worldwide, patients with CKD or end stage renal disease will increase and it will affect the limited resources of poor countries like Nigeria. An example of the devastating effect of CKD can be seen in the increased death toll from 956,200 deaths in 1990 to 1.5 million deaths in 2015 (Akpan, et al., 2015). In 2021 the death from CKD now stood at about 2 million. The Nigerian Association of Nephrology (Nigerian Association of Nephrology, 2020) says 20 million Nigerians have kidney diseases. Aside from death, there is the challenge of cost of treatment, reduction in the quality of life of patients and caregivers.

In Nigeria, many patients with CKD and their caregivers are having problems navigating multiple health and social care settings for help (Akpomuvie, 2010). The available facilities seem ill-equipped to offer the medical and psychological assistance needed to relieve patients with CKD (Nigerian Association of Nephrology, 2020). There are frequent cases of CKD patient's suffering and experiencing physical and psychological distress, tiredness, anger, depression, sense of helplessness, guilt, isolation, loss of freedom, chronic fears, difficulties with dating, marriage problems, job loss and no working coping strategy. This widespread problem creates a huge burden for the patient as well as their caregivers who are usually not prepared enough to carry this new role.

Ashuntantang (2017) added that there are several barriers to accessing dialysis treatment in low-income settings, including limited availability of staff, infrastructure, accessibility of services and the high cost of the treatment. Recent statistics from Liyanage et al., (2015) estimated that at least 2.3 to 3.2 million people die annually around the world because of either an inability to access dialysis treatment in the first place or an inability to sustain treatment. In order to improve kidney care in Nigeria, it is important to look at ways of providing access to dialysis facilities. This paper is therefore designed to discuss how dialysis access can be improved through setting right priorities as a nation thereby improving kidney care. This paper specifically:

1. identified issues about dialysis access;
2. discussed how access to dialysis will improve kidney care; and
3. considered ethical consideration associated with dialysis access provision.

Literature Review

Epidemiology of Chronic Kidney Diseases

Globally in 2017, there were 697·5 million cases of CKD (Bikbov et al., 2020). Chronic kidney disease (CKD) affects up to 15% of the adult population and is strongly associated with other non-communicable chronic diseases including diabetes (Nguyen et al., 2018). The pattern of

disease morbidity and mortality throughout the world is changing both in the developed and the emerging world. During the 20th century, infectious diseases were the major cause of death and disability. However, in this century, non-communicable, non-infectious diseases have become the major cause of mortality and morbidity around the world. This change is reflected in the type of diseases causing chronic kidney failure and in their presentation and progression.

Chronic kidney disease (CKD) has been recognized as a leading public health problem worldwide. The global estimated prevalence of CKD is 13.4% (11.7-15.1%), and patients with end-stage kidney disease (ESKD) needing renal replacement therapy are estimated between 4.902 and 7.083 million. Through its effect on cardiovascular risk and end stage kidney disease, CKD directly affects the global burden of morbidity and mortality worldwide (Lv & Zhang, 2019).

While there are five primary stages of kidney disease, the third stage can be broken into two sub-stages. Each stage is determined by measuring glomerular filtration rate (GFR), which is used to indicate how well the kidneys are functioning (Kidney Specialist of Southern Nevada, 2020). Stage 1 indicates a person with normal GFR at or above 90mL/min. The second stage is indicated by GFR between 60-89mL/min, which is when minor symptoms tend to start. In these stages, kidney disease can be caught before it has done any significant damage. It's stage 3 that defines the point at which mortality becomes a greater concern than the likelihood of developing end-stage renal disease. With kidney function reduced between 59-30mL/min, the previously minor symptoms of stage 2 become far more severe. From the end of stage 3, there are only 15-points of kidney function standing between entering stage 5, which indicates total kidney failure.

Signs and Symptoms of Chronic Kidney Disease

Signs and symptoms of chronic kidney disease develop over time if kidney damage progresses slowly. Signs and symptoms of kidney disease may include: nausea, vomiting, loss of appetite, fatigue and weakness, sleep problems, changes in how much you urinate, decreased mental sharpness, muscle twitches and cramps, swelling of feet and ankles, persistent itching, chest pain, if fluid builds up around the lining of the heart, shortness of breath, if fluid builds up in the lungs, and high blood pressure (hypertension) that's difficult to control. Signs and symptoms of kidney disease are often non-specific, meaning they can also be caused by other illnesses. Because kidneys are highly adaptable and able to compensate for lost function, signs and symptoms may not appear until irreversible damage has occurred.

Renal Dialysis

Dialysis which is one of the several treatment options of renal diseases. Dialysis is a process of removing some of a person's blood, cleaning it, and then returning it to the person's body. Dialysis treatments may be used for patients who have become ill and have acute renal failure (temporary loss of kidney function), or for fairly stable patients who have permanently lost kidney function (Tattersall et al., 2011). Dialysis cannot completely perform lost kidney function, but, to some extent, manages its activities by means of diffusion and ultrafiltration (Lee, 2017). It is done in chronic renal failure (CRF) when the glomerular filtration rate falls below 15 ml/min/1.73m2 (Tattersall et al., 2011).

There are two major types of dialysis:

1. Haemodialysis: blood is run through an external filter and the clean blood is returned to the body. It is usually done at a chronic renal dialysis unit three times a week. It is

usually done for patient with no residual function. This is the most common type. In hemodialysis, the wastes and excess water are removed by using an external filter called a dialyzer, which contains a semi permeable membrane. The separation of wastes is done by creating a counter-current flow gradient, where blood flow is in one direction and the fluid of the dialyzer is in the opposite direction.

The basic principle involved in dialysis is the movement or diffusion of solute particles across a semi- permeable membrane (diffusion). Metabolic waste products, such as urea and creatinine diffuse down the concentration gradient from the circulation into the dialysate (sodium bicarbonate (NaHCO3), sodium chloride (NaCl), acid concentrate, and de-ionized water). During their diffusion into the dialysate, the size of particles, in turn, determines the rate of diffusion across the membrane. The larger the size of the solute particle, the slower is the rate of diffusion across the membrane (Vadakedath & Kandi 2017).

2. **Peritoneal Dialysis:** It uses the lining of the abdominal cavity (the space in your body that holds organs like the stomach, intestines, and liver) to filter your blood. It is prescribed for younger patients because of its flexibility and can be performed at home. Peritoneal dialysis uses the peritoneum as a natural semi permeable membrane and removes waste and water into the dialysate (the material or fluid that passes through the membrane of the dialysis).

Main Body

Dialysis Access

Most of the world population has no access to renal replacement therapy (RRT), including dialysis. Although CKD is a growing problem in Nigeria, due to the lack of a national CKD register, the national prevalence rate is not known (National Population Commission, 2005). Hospital-based data estimates that CKD patients accounted for 10% to 12% of hospital admissions. A service has to be accessible before it can be utilized. Studies have suggested that distance to healthcare services influences their accessibility and utilization especially in developing countries. Access to healthcare is not limited to physical accessibility but is also influenced by affordability, Resources, Availability, number of hospitals rendering dialysis services, proximity to service provider and the level of awareness of the existing healthcare services (Oviasu et al., 2016).

1. **Affordability:** Affordability is the degree to which needed things are obtainable for those who need it at the moment of need, at a cost that does not expose them to the risk of serious negative consequences, such as not being able to satisfy other basic human needs. Health care financing is important in developing health system that respond and fulfil the health needs of the population. In fact the health care in Nigeria is financed by tax revenue, out-of-pocket payments, donor funding, and health insurance. However, achieving successful health care financing system continues to be a challenge in Nigeria (Olakunde, 2012). Access to affordable healthcare continues to be a challenge for most Nigerians due to high levels of poverty and significant reliance on out of pocket payments. Hence, health insurance was initiated to prevent financial hardship and to reduce out of pocket payment in the process of accessing health care. Since national health insurance scheme (NHIS) was launched in 2005, only 5% of Nigerians have health insurance and 70% still finance their healthcare through Out-Of-Pocket (OOP) expenditure (Alawode et al., 2021).

There is no free medical care for kidney related disease in Nigeria. It is mainly out - of - pocket payment but unfortunately, anywhere in the world, kidney care is expensive, but the difference is that the government takes absolute care of the treatment and takes the burden off the patient by paying for dialysis and transplant but unfortunately we don't have that arrangement in Nigeria. Adejumo (2020) submitted that NHIS does not cover all aspects of renal care in Nigeria; only six sessions are covered yearly. This is grossly inadequate in sustaining life of CKD patients.

In Nigeria, like most countries in Sub-Saharan Africa, most patients with end stage renal disease cannot afford renal replacement therapy (RRT). There is lack of governmental support for chronic dialysis and most patients have to pay out of pocket to survive or seek help on social media platforms to improve their quality of life **(Adejumo et al., 2020).** A report from Income Inequality Skewed Wealth (2016) showed that the minimum yearly income needed to sustain a living that provides the basic needs in Nigeria stands at $1016 per year in urban areas (₦355,600 per year or ₦29,633 per month) and $758 per year in rural areas (₦265,300 per year or ₦22,108 per month). However, 74% of Nigerians live below this income level. Out of this, about 40% live under the poverty line, i.e., live on less $1.25 per day which translates to ₦13,125 per month and ₦157,500 per annum. What the average Nigerian is expected to earn to cater for his basic needs is far below what he earns.

2. **Accessibility:** Accessibility mainly depends on the availability and affordability of the services (Raju et al., 2017). Accessibility connotes when services are directly and permanently accessible with no undue barriers of cost, language, culture, or geography, that is health services are close to the people, with a routine point of entry to the service network at primary care level (not at the specialist or hospital level) and the services may be provided in the home, the community, the workplace, or health facilities as appropriate. Recent statistics from Liyanage, et al., (2015) estimated that at least 2.3 to 3.2 million people die annually around the world because of either an inability to access dialysis treatment in the first place or an inability to sustain treatment.

   Access to health care services in Nigeria is poor. Akpomuvie, (2010) found out that more than 70% of Nigeria's population had no access to healthcare services. The result is a society where a citizen with no access to healthcare can be one step away from a healthcare crisis that could be fatal. The maternal mortality rate is a whopping 400,000 annually. Within the larger healthcare crisis Nigeria has, the rate of Kidney failure has increased in the last decade as the components of the healthcare system-hospitals, clinics, providers, pharmaceuticals, specialists-perform woefully, primarily because the funding component in a nation of 186 million (Central Intelligence Agency, 2016) has historically been grossly inadequate. In 2017, the government budgeted N304 billion (USD 810 million) for the healthcare sector out of a national budget of N7.2 trillion (USD 20 billion). The percentage of the national budget allotted to healthcare was a paltry 4% in a nation of myriad health-care challenges where a majority of the population has healthcare access difficulty issues.
3. **Proximity to Service Provider:** Eshemokha (2020) also reported that there are about 138 dialysis centers in Nigeria, some are functional and fully operational but few are not yet operational. Unfortunately, the centers are mainly located in the urban region. Accessibility both in terms of cost and physical access can have a significant impact on

the effectiveness of CKD management within the country. It can be argued that within Nigeria, population access to tertiary care, including specialized healthcare for chronic diseases, is limited as these services are located in large urban areas (Onoka et al., 2015).

4. **Resources:** According to the report of the Nephrologists' Association of Nigeria by Arogundade (2020), it was reported that over 25 million Nigerians have kidney problem and close to 100, 000 of them will require dialysis to stay alive and not all hospitals in Nigeria have dialysis machine or a dialysis center. He added that Nigeria cannot only boast of about 250 active nephrologists for its estimated 200 million populations. If our population is 200 million and we assume that about 10 percent of the population could have kidney disease, which translates to about 20 million, and out of this, we assume that the young middle age and the elderly population will cover about 60 percent of our population. So, if that translates to about 12 million, it means that we are supposed to have one nephrologist to take care of 100 out of this 12 million. This is a far cry from, at least, 120,000 nephrologists that should serve the entire population. He emphasized that there is need for more nephrologists in the country to improve the nephrologists-patient ratio, increase the survival rate among patients, more patients will have access to good care and they would not die untimely like we currently see. Arogundade (2021) suggested that in order to increase the number of nephrologists in Nigeria, we need to train more nephrologists and expose them to what obtains in the best of centers all over the globe.

Priority Setting

Priority setting is the complex and inherently political process of making decisions about how best to allocate limited resources to improve population health. It involves a diverse array of stakeholders, governments, health care providers, and the population whose motivations and actions are often imperfectly aligned. Effective priority setting addresses most appropriate programs and interventions to address population health needs (Terwindt, 2016). Obviously, resources are limited in quantity and availability everywhere, human wants/desires are unlimited and insatiable, resources to meet these wants/ desires are scarce. Hence the need to set priorities in the allocation of resources in the health sector so as to derive the best possible benefit.

The management of chronic kidney disease involves repeated dialysis of three times weekly or renal transplantation. This comes with a huge economic and financial burden to both the patient and patients' relatives and government. Globally, about 1.4 million people are said to be receiving renal replacement therapy with a growing annual incidence estimated at about 8%. In the United States, about $32.8 billion representing 7.2% of total Medicare is spent on providing dialysis (Liyanage, et al., 2015). In Canada, over $1.8 billion is spent on dialysis each year, while about 2% of national health budgets across Europe go into dialysis. Elsewhere, the annual cost of dialysis per patient in Brazil, China, India, and Indonesia is estimated at US$ 7332, US$ 7500 US$ 5000, and US$ 6240, respectively (Klarenbach, et al., 2014). In Nigeria, there are no national data on the cost of hemodialysis and centers have their different charges depending on location and ownership (whether private or public) (Akpan, et.al., 2020). However, the estimated annual cost of HD in Nigeria is put at ₦1,889,450 (US$ 5,249) for twice-weekly dialysis and ₦2,760,450 (US$ 7,668) for thrice-weekly dialysis. Patients often pay out of pocket for the treatment and it represents a huge financial burden considering the present monthly minimum wage of ₦30,000 (US$ 80) for federal public sector workers at an

exchange rate of ₦375-1US$. When considered against the backdrop of limited health insurance coverage where just about 10% of the population is covered (Ojeh-Oziegbe & Okaka, 2013) sustainability becomes extremely difficult.

Currently, Nigeria is yet to prioritize the implementation of its National Health Act (NHA) passed in 2015, which provides for a 1% Consolidated Revenue Fund (CRF) - money set aside to provide basic health packages for all Nigerians. In fact, the health budget is approximately 4% of the annual proposed budget, which falls very short of the delineated target, since out-of-pocket health expenditure accounts for the biggest proportion of private health-related spending in Nigeria, the past spending pattern seen in government expenditure - and the current budget framework shows that government policies are not tailored at closing the disheartening gap that makes ordinary Nigerians bear the overwhelming cost of healthcare.

Kidney care is also not prioritize like others, for instance most nations have special agency like NHIS or funding for maternal and child health, HIV, Cancer etc, but nothing about kidney care. The most identified priority setting in kidney disease as documented by Tong, et al., (2015) were prevention of acute kidney injury, prevention of chronic kidney disease progression, fluid and diet restrictions, improving vascular access, kidney transplant survival, access to transplantation, patient education and psychosocial impact of chronic kidney disease.

Ethical Considerations associated with Dialysis Access Provision

Ethical issues as documented by Adejumo, et al (2020) include financial accessibility of dialysis services, poverty shocks, relocation, initiation of treatment can have disastrous consequences for the entire family unit, which is magnified in collectivist societies. Although transplantation is considered the most cost-effective solution in developing countries, leading to significantly better quality of life.

When resources are limited, quality of dialysis services may not be ideal because of rationing of services. For instance, many treatment facilities have no option but to provide suboptimal dialysis by decreasing the duration and frequency of dialysis to cut costs for the hospital and serve more patients in a shorter amount of time (Martin et al., 2020). An example a low income country where dialysis is offered to patients for 4 hours twice a week despite knowing that every patient will be under-dialyzed Such cost-cutting measures may lead to deleterious health effects and suboptimal outcomes and pose ethical dilemmas for clinicians involved in such decision-making processes (Abdelwahab & Shigidi 2015).

When dialysis expenditure is out of pocket, as it occurs in developing countries, paying for treatment means a deeper descent into poverty for already impoverished families. It has been well documented that families often sell property and secure debt to pay for treatment, especially in the earlier stages of kidney failure (Pancras, Shayo& Anaeli, 2018). Observations have shown similar findings: financial challenges imposed by dialysis often were overcome by taking extraordinary measures such as selling off livestock (which are essential for continued livelihood), taking loans, and renting out portions of the house). In one particularly stark situation, the maternal grandmother of the child on dialysis had to resort to begging on the streets to help her daughter cope with the additional financial burden on the family.

Implications of the Study to Nursing Education and Practice

Nurses play an important role in the management of chronic kidney disease (CKD) patients at primary, secondary, tertiary levels of care. In other to perform their functions, it is pertinent that they have a good understanding of kidney functions and improving kidney care. Adequate knowledge of functions of the kidney and its care must be included in nursing

education and practice to facilitate efficient management of patients. Pathophysiology of CKD must be well understood as well as importance of treatment such as dialysis and nurses roles in treatment.

Nurses have five roles namely: care giver, communicator, advocator, counselor and educator. Nurses have the responsibility to help clients learn about their health and health procedures and explain the reasons routine care activities are carried out as well as strengthening the patients learning or behavior and evaluating the progress. In the treatment of hemodialysis in CKD patients, the role of the nurse as an educator is needed to provide education about treatment procedures, food intakes that must be consumed by patients to maintain their health.

Conclusion

Rationing of dialysis and transplantation is occurring either explicitly or implicitly. Priority setting is required to develop transparent, appropriate, and just local guidance to allocate resources fairly and to enhance equitable access to care. Having transparent guidelines in place for both priority setting at the level of policy making and rationing at the bedside would help to guide consistent and equitable decision making and policy implementation, and reduce the need for health care workers having to make ad hoc decisions on access to dialysis. Priority setting and rationing may be part of the solution, but this does not change the fact that care still will be denied to many patients in need. Other stakeholders must be engaged and held accountable as well. Universal access to quality primary care would reduce the need for future expensive care. Experts have been advocating for coverage of chronic kidney disease patient in the National Health Insurance Scheme, this will prevent the burden of out-of –pocket expenditure for test and management of kidney disease. Also, more chronic kidney disease screening centers across the country will help early diagnosis and improve outcome for patients, as well as more renal replacement therapy centers and increase public awareness by government and community -based organization.

Training and retention of more specialists (nephrologists' and nephrology nurse) will ensure patient can access quality care without having to travel to other countries. In addition, maintaining healthy kidneys requires that the individual adhere to preventive measures such as regular exercise, controlling sugar intakes, monitoring their blood pressure and limiting the intake of non-steroidal anti - inflammatory drugs.

Prevention is the key by adopting healthy lifestyle; it is cheaper to avoid kidney disease than to manage it. Cost of inpatient care of CKD is beyond the reach of Nigerians who mostly pay out of pocket for health service. There is an urgent need for the government to prioritize, subsidized and include CKD care under the national insurance scheme.

Recommendations

The Recommendations are clustered into major areas to address the full continuum of care:

1. Prevention of CKD in the general population should focus on actions that stimulate and facilitate the adoption of healthy lifestyles.
2. There should be a change in philosophy from market- and hospital-oriented care, to society- and patient-oriented care.
3. Clinical education and preventive programs need to be augmented to promote CKD recognition and close monitoring of progression in individuals at risk of CKD or with established CKD (to counteract lack of awareness and low detection rates of people with CKD among primary healthcare physicians)

4. Concerted, nationwide effort to implement integrated chronic disease management strategies, including improved coordination and communication regarding patients with CKD between primary and specialist care physicians to ensure timely access to appropriate clinical investigations and treatment
5. Patient autonomy and appropriate support in the choice of RRT, particularly home dialysis treatments such as PD and home hemodialysis, should be provided by all renal centers while ensuring timely access to transplantation
6. There is need to establish CKD registries or data linkages to other health information systems in order to capture the true rates of CKD and to better inform future healthcare planning and resource allocation regarding the growing burden of CKD
7. Health care worker should advocate with the government on behalf of the patients to subsidize and include CKD care under the national health insurance scheme.

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