



NIGER DELTA UNIVERSITY

WILBERFORCE ISLAND, BAYELSA STATE.

65th Inaugural Lecture

Title:

**THE HUMAN KIDNEYS:
CASUALTY OF SOCIETAL MALADIES;
AN SOS DISTRESS CALL**

By

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NIGER DELTA UNIVERSITY

Wilberforce Island, Bayelsa State, Nigeria

Motto

Creativity, Excellence, Service

Vision

To be a centre of excellence defined by well articulated programme that will produce creative and innovative minds

Mission

To strive to maintain an international reputation for high quality scholarship, research and academic excellence for the promotion of the socio-cultural and economic well-being of mankind

NIGER DELTA UNIVERSITY ANTHEM (THE BRIGHTEST STAR)

Like the brightest star we are, to lead the way
To good education that is all our due,
The dream of our fathers like the seed has grown;
Niger Delta University is here to stay.

In all that we do, let us bring to mind
Our duty as staff and students of N.D.U
Ev'rywhere to promote peace towards mankind.
Creativity, Excellence and Service

Let us build on this noble foundation
And with love, let our dedication increase,
To rise and uphold this noble vision
Ev'ry passing moment let our zeal never decrease.

CHORUS
Rejoice, great people old and new, rejoice
For the good fruit through us is shown;
Be glad in our worthy contribution
To the growth of humanity (x2)

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DEDICATION

This inaugural lecture is dedicated to the memory of all my patients I have lost from kidney disease and its complications

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PROTOCOL

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The Pastorate, Leaders and Members of Shepherd Vine
Christian Centre

Members of the Full Gospel Businessmen's Fellowship
International, Nigeria

Royal Fathers and Traditional Rulers

Distinguished Guests

Gentlemen of the Press

Ladies and gentlemen

PREAMBLE

I am very delighted to present the 65th inaugural lecture of this highly esteemed University. This is the third Inaugural Lecture in the Department of Internal Medicine and the seventh in the history of the Faculty of Clinical Sciences in this institution. It is also important to note that this is the first Inaugural Lecture to be delivered in nephrology, an important sub-specialty in internal medicine.

The delivery of an inaugural lecture is an important milestone in the academic career of a professor. In this auspicious occasion, the academic shares outcome of past academic research and introduces new ideas to a diverse crowd comprising academic and non-academic persons.

Vice-Chancellor sir, nephrology is a very important aspect of medicine that deals with the study of the kidneys in their healthy and diseased states. A doctor that specializes in that specialty is called a nephrologist. In Nigeria, it takes a minimum of 6 years of astute clinical study and research work after obtaining the basic medical degree, to qualify as a nephrologist.

My Academic Journey

I was fortunate to have been born into an academically-inclined family. Thanks to my parents who believed in the power of education for a child and invested all available resources in ensuring we obtain the best education. They also instilled in us good moral values and godly fear. At the age of 9, I graduated top of my class with a distinction at the first school leaving certificate examination.

However, shortly after I gained admission into secondary school I took ill with a medical condition and had my first major encounter with medical and health professionals. Amongst several medications I received, I was placed on daily injections spanning weeks. This marked a major turning point in my life. It was then that I made a resolution (though I was still very young) to become a medical doctor as I felt it would give me the opportunity to take direct responsibility for my health from a well-informed perspective. It was against this backdrop that the passion to become a medical doctor was birthed and subsequently driven in a path that took another sixteen years to actualize. I was also encouraged by the attitude of my teachers towards me, particularly during my elementary school days. They all helped to foster this vision which has become a reality.

The desire to become a specialist doctor drove me into an additional six- year medical residency programme after bagging the basic medical degree. While I was a senior registrar in the University of Benin Teaching Hospital, I had the opportunity to co-author a paper with one of my consultants, Prof Efosa Oviasu. For me, this became an eye-opener into the world of academic research. I had the opportunity to present some of the findings of our study in the World Congress of Nephrology in Canada in 2011. After I qualified as a Fellow later that year, I joined the services of the Federal Medical Centre, Yenagoa and started practicing as a medical consultant. However, I could not contain the burning desire to move full-time into the space of academia and research. Consequently, I resigned my full-time employment with the hospital in

2012 and took up a Lecturer 1 position in the Niger Delta University.

In the past thirteen years in the University, I have devoted myself to teaching, scholarly work and community service, while supplementally practicing as an honorary consultant at the Niger Delta University Teaching Hospital, Okolobiri.

Mr Vice-Chancellor sir, my research focus, these years, has mainly been on chronic kidney disease and risk factors, preventive nephrology and public health. The burden of kidney disease is increasingly becoming enormous and is fraught with management challenges, particularly in resource-poor settings like ours. This makes it imperative to integrate preventive care. It is against the backdrop of this initiative that I enrolled for a PhD programme in Public Health (Health System Management) in the University of Port Harcourt which I completed earlier this year. This is in addition to an earlier Master degree I had obtained in Public Health from the University of Benin. I must say that the knowledge I have acquired from these additional programmes of learning (though, aside my primary specialty) enable me to view patient care through the lens of a wider, health-system approach. Additionally, the intercourse between the specialties has helped me to further appreciate the role of multi-disciplinary and multi-sectorial collaboration in the management of complex medical conundrum, such as kidney disease.

I am therefore here to present a lecture that is domiciled in internal medicine but interlaced with aspects of public

health with the hope that an integrated management approach would be able to stem the menace of kidney disease in our environment.

The theme of my lecture is: **THE HUMAN KIDNEYS:
CASUALTY OF SOCIETAL MALADIES; AN SOS
DISTRESS CALL**

INTRODUCTION TO NEPHROLOGY

In order for us to have a proper understanding of this lecture, permit me to introduce the fundamental aspects of nephrology bordering on kidney structure and function

Structure of the Human kidneys

The human kidneys are a pair of organs that are shaped like beans, each about the size of a fist, 10 -12 cm long and weighing about 150 grams in the adult. They are positioned posteriorly (at the back) on each side of the vertebral column in the abdominal cavity. The urinary tract is made up of the kidneys, ureters, bladder and urethra. The kidney forms the urine, which exits the body through the urethra after passing through tube-like structures called the ureters.

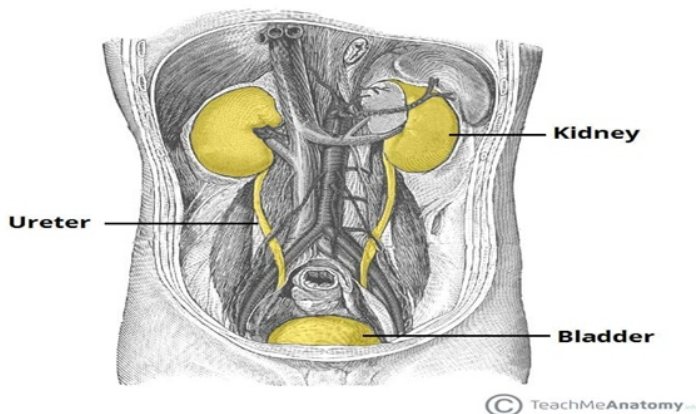


Figure 1. *Overview of The Urinary Tract*

Source: TeachMeSeriesLtd (2025)

The basic functioning unit of the kidney is called a nephron. The glomerulus is a ball-shaped network of small blood vessels within each nephron. In health, each adult kidney has up to about a million nephrons.

The kidneys as vital body organs

The kidneys have a critical role in health and perform a lot of vital functions in the body. They tell a lot about our current and future health status. It is therefore not surprising that they were programmed by God to receive approximately a quarter of the total amount of blood pumped by the heart. No other organ in the body receives up to that proportion, not even the brain!

Symbolically in the past, the kidneys were regarded as spiritual or emotional organs, especially within certain cultures. In the Bible, the kidneys were depicted to represent the inner depths of one's emotion, feelings, thoughts and character as found in the King James Version (KJV) Bible, 2002, Psalms 139:13, 14. They were thought of being a reflection of an individual's true nature and intention or "the soul." To some extent, this may be metaphoric, alluding to the deep anatomic location of the organ.

Overtime, with the evolution of medical knowledge, the anatomical and physiologic roles of the kidneys have become clear and defined. The basic functions of the kidney, as it is known today, include:

1. Excretion of waste products generated in the body from metabolic processes
2. Formation of urine and maintenance of fluid and electrolyte balance
3. Maintenance of normal PH for body function

4. Regulation of blood pressure
5. Secretion of erythropoietin, an important body hormone that helps in formation of red blood cells
6. Metabolism of vitamin D. It produces a hormone called calcitriol which aids in the absorption of calcium into the blood from the guts. Calcitriol is required for maintenance of healthy bones

Vulnerability of the kidneys to insults

The kidneys are vulnerable organs due to their high blood flow and their important role of filtration of waste products which expose them to high concentration of toxins, making them susceptible to various forms of injury.

Categories of kidney (renal) disease

There are two major categories of kidney disease. These are:

1. Acute kidney injury (AKI)
2. Chronic kidney disease (CKD)

Acute Kidney Injury: This refers to a sudden reduction in kidney function manifesting as a rise in level of serum creatinine, decline in glomerular filtration rate (GFR), or drop in urinary output, which may lead to accumulation of waste products of metabolism and dysregulation of extracellular volume and electrolytes. The GFR gives a measure of how well the kidneys function by estimating the quantity of blood that passes through the glomerulus. Acute Kidney injury results from a sudden insult that

quickly impairs kidney function but it is usually reversible, lasting less than 3 months.

Factors in our society that may predispose to AKI:

1. Increasing prevalence of NCDs such as diabetes, hypertension and obesity
2. Use of certain medications or pain killers such as Nonsteroidal anti-inflammatory drugs (NSAIDs)
3. Habits such as smoking
4. Factors related to the environment: sanitation, availability of clean and potable water and access to healthcare services

Chronic Kidney Disease: A patient is said to have CKD if there are abnormalities of kidney function or structure that have been present for more than three months. The definition of CKD includes all persons with “markers of kidney damage” or those with GFR of less than 60 ml/min/1.73m² lasting beyond 3 months. “Markers of kidney damage” connote protein in the urine (proteinuria), blood in the urine (haematuria), and other abnormalities (Stevens, 2013).

We will be focusing more on CKD because of its long-term impact, and it is a disease of public health importance. It is also more common than AKI in the general population (Francis et al., 2024). Although CKD is initially asymptomatic, it has dire health consequences and complications. The disease is often irreversible, resulting in kidney failure and death.

Usually, CKD may arise from established causes or

underlying medical conditions such as hypertension and diabetes. In some cases, risk factors may be identified that may increase the likelihood of the disease occurring such as physical (or structural), environmental, genetic and social factors. The interplay of a number of these factors is complex and dynamic.

Causes of CKD include:

1. Hypertension
2. Diabetes
3. Infections such as HIV, hepatitis, schistosomiasis, malaria
4. Sickle cell disease
5. Nephrotoxic medications
6. Obstruction from the urinary tract such as kidney stones, and enlarged prostate (in men)
7. Connective tissue diseases

Risk factors for CKD include:

1. Obesity
2. Race (more in blacks)
3. Age (more in older persons)
4. Low birth weight
5. Socio-economic status (higher among low socio-economic class)
6. Smoking
7. Family history of CKD

Addressing environmental and social risk factors (otherwise known as social determinants of health) represent a huge potential prospect for possible intervention to reduce the prevalence of kidney disease in the society. Some of these factors may be responsible for

an excess risk of CKD in our setting.

Stages of CKD

There are 5 main stages of CKD as shown in Table 1 below:

Table 1. Stages of Chronic Kidney Disease

Stages of chronic kidney disease		% of kidney function	Symptom/implication
STAGE 1	Kidney damage with normal kidney function	 100-90%	People in early-stage CKD may not know they have CKD as they often feel well and show no symptoms
STAGE 2	Kidney damage with mild loss of kidney function	 89-60%	
STAGE 3a	Mild to moderate loss of kidney function	 59-45%	People are often diagnosed with kidney disease in the mid-stage, with many people still asymptomatic as waste in the body builds and blood pressure rises
STAGE 3b	Moderate to severe loss of kidney function	 44-30%	
STAGE 4	Severe loss of kidney function	 29-15%	
STAGE 5	Kidney failure	 Less than 15%	- Patients with kidney failure require dialysis* or a kidney transplant to stay alive - A proportion of people with kidney failure will not receive either dialysis or transplant, instead undergoing conservative care

Source: Stevens (2013)

End stage kidney disease (ESKD) is the last stage of CKD in which kidney function has deteriorated to the point that the kidneys can no longer perform their normal function by themselves.

The presentation of CKD describes an inverted pyramid where a disproportionately larger number of patients are in the earlier stages of the disease as compared to the later stages. (Coresh et al., 2007)

CKD and the Iceberg phenomenon

The iceberg phenomenon describes a situation in which a large proportion of a problem or condition is unreported or concealed from general view. The explanation in the context of clinical medicine is that the tip of the iceberg represents clinical cases that doctors see, while the larger submerged part represents undiagnosed, latent, or asymptomatic cases. The hidden mass of disease is represented by this vast submerged, unseen area. In the community, this is an opportunity for public health stakeholders' intervention. as the undetected prevalence usually exceeds cases being seen. In such instances, screening and prompt detection may help to unveil it. This is demonstrated in CKD where for every patient with ESKD, there are more than 200 with overt disease and almost 5,000 with covert (latent) disease (Coresh et al., 2007)

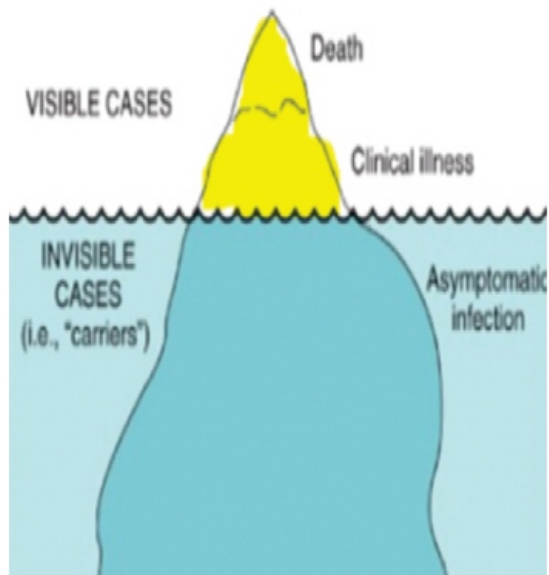


Figure 2. The Iceberg Phenomenon
Source: Google

Following the establishment of CKD, the disease progresses naturally, with each stage denoting a deterioration from the one before it, until ESKD is reached and in the absence of appropriate intervention, death ensues. The disease therefore has an incalculable health and social impact. The rate of CKD progression is determined by effect of the underlying cause, presence of risk factors and comorbidities, the management being rendered, together with other factors.

One third of patients with CKD will ultimately progress to ESKD over ten years and have to receive dialysis or kidney transplantation (Baek et al., 2012). The phenomenon implies that opportunity to prevent established kidney disease can be harnessed through early screening and detection. If that is done, the course of progression may be naturally retarded by adequate management. Unfortunately, our healthcare system seems to focus mostly only on the advanced stages of the disease, where only little can be done.

The table below shows normal eGFR as related to age. It is important to know your kidney numbers

Table 2: Average eGFR Related to Age

Age (years)	Average eGFR (mls/min)
20–29	116
30–39	107
40–49	99
50–59	93
60–69	85
70+	75

eGFR= estimated glomerular filtration rate

Source: NKF Education Team (2022)

Clinical features and complications of CKD

Often referred to as a "silent killer," CKD may not manifest any symptoms until renal function has become severely compromised. It usually manifests with symptoms as the disease advances (beyond GFR < 45ml/min).

The common symptoms and signs are listed below:

- Excessive urination at night (nocturia)
- Anorexia, nausea & vomiting
- Body weakness and fatigue
- Muscle cramps
- Pruritus (itching)
- Dyspnoea (Difficulty with breathing)
- Oedema (Body swelling)
- Pallor (due to anaemia)
- Elevated blood pressure
- Fluid overload (causing congestion in lungs and vessels)
- Excoriation marks (from excessive itching)
- Pigmentary changes of the skin
- Peripheral neuropathy (nerve problem causing pain, numbness or weakness)

Descriptions of terms used

Markers of kidney disease include: proteinuria, (or albuminuria), haematuria, electrolyte disorders, and structural or histologic abnormalities detected by imaging or microscopy respectively.

Proteinuria: This refers to the presence of protein in the urine and may be indicative of renal disease. The presence of albumin, a small molecular weight protein, in the urine is called albuminuria. Proteinuria, when present in

significant amount may cause frothiness of the urine (urine foams excessively)

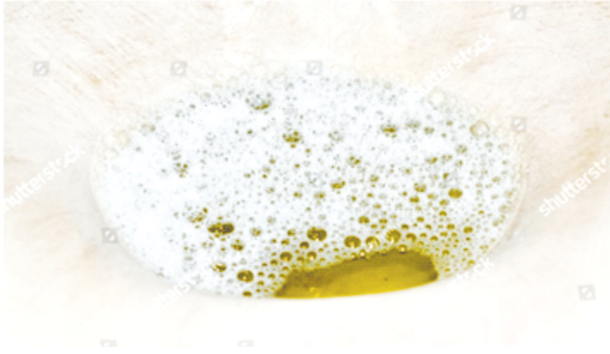


Figure 3: Frothiness of the urine possibly signifying proteinuria
Source: Google

Haematuria: Refers to the presence of blood in the urine. This may be gross or microscopic. Gross haematuria is visible to the naked eye but microscopic haematuria is only seen with a microscope.

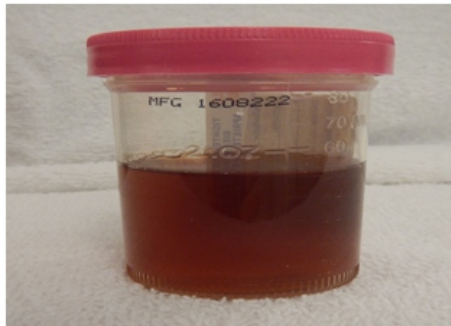


Figure 4. Gross haematuria (blood in the urine)
Source: Google

Dialysis: This may refer to a medical procedure performed on individuals with kidney failure; when the kidneys are unable to carry out their usual function such as excretion of waste products and excessive body fluid. Dialysis takes over the role of filtering blood that the kidneys usually do in health.

Nephrologist: A nephrologist is a medical doctor who is trained in the diagnosis and treatment of kidney conditions

Nephrology: A specialty in internal medicine (or child health) that focuses on the study of the kidneys in both healthy and diseased states, including treatment of the diseases and preservation of kidney health.

Casualty: A thing badly affected by an event or situation

Society : The aggregate of individuals living together in a more or less ordered community eg the Nigerian society.

Malady

The word 'malady' here is used with great intent. Malady may refer to a disease, ailment, a serious problem or even an unwholesome or disordered condition such as poverty, homelessness and other social problems. The use in this context would therefore span from a disease to a disordered state. Although kidney diseases commonly arise from known or established medical conditions, there are other ills *or maladies* in the society that can cause the disease to thrive or increase in prevalence or severity. Kidney failure could be thought of as being a product of many things, including prevalent medical conditions as well as other things that are wrong with the society, including societal and health system related issues.

Kidney Disease in Ancient Times

Mr Vice-Chancellor sir, and my esteemed audience, Kidney diseases are not new but have been present with us as far back as ancient or pre-historic times. What is perhaps new is the changing epidemiology, diagnostic methods and approach to treatment of kidney disease. What seems to be changing is the impact of ever changing societal, socio-economic and environmental factors.

Documented evidence of signs of inflammation in skeletal remains, especially around the urinary tract gives credence to the existence of kidney disease in ancient times. Hippocrates (460 – 370 BC) is regarded as the Father of Clinical Nephrology (and Medicine). The basic principle of kidney function—the maintenance of the volume and composition of bodily fluids, or homeostasis—is said to have been first propounded by him. He also made allusions to kidney stones, renal failure, infections of the kidney and a procedure of purging, which is analogous to the present day's renal replacement therapy (or dialysis). In his writing, he captured the prognosis of kidney disease which he lamented was “long-standing and fatal.” According to him, “Diseases of the kidney and of the bladder are difficult to cure in the aged”. [Aphorism VI, Marketos, 1994). When cough and redness of the eyes succeed vomiting, the indication is bad”, [Aphorism VII) referring to the uremic state. (Diamandopoulos, 1999).

Also, the Holy Scriptures referred to someone in a fluid loaded state. “The man with the dropsy” had generalized oedema (swelling of the body) which may be a symptom of a kidney condition called “nephrotic syndrome. The

narrative is in the KJV Bible, 2022, Luke 14:1-6.

Accumulation of fluid which may result in a state akin to drowning in one's own fluid is a common complication of kidney disease. Dr Richard Bright (1789-1858), often referred to as 'the Godfather of Nephrology' was credited for discovery of a disease characterized by dropsy associated with albuminuria which was named after him then but later called as 'nephritis, or glomerulonephritis.' Nephritis is an inflammation of the kidneys resulting from infections, toxins, auto-immune conditions, etc and is thought to be a leading cause of CKD in Nigeria, and other developing countries, especially among the younger population.

The Enormity of CKD

Chronic kidney disease is a non-communicable disease (NCD) that has been earmarked as an emergency public health concern. To describe the enormity of CKD, several other terms have been used in the literature such as:

1. A global public health problem (Levey, 2007)
2. A ravaging crisis (Abba, 2024)
3. An epidemic (Abba, 2024)

An epidemic may be defined as an unexpected increase in the number of disease cases in a specific geographical area. Many countries in sub-Saharan Africa (SSA), including Nigeria have reported a dramatic upsurge in kidney disease (ElHafeez et al., 2018). In fact, it is believed that CKD may be quietly assuming pandemic proportions (Jager et al., 2019; Bridges M&C Team, 2024). A pandemic would describe a disease that is

prevalent over a whole country or the entire world.

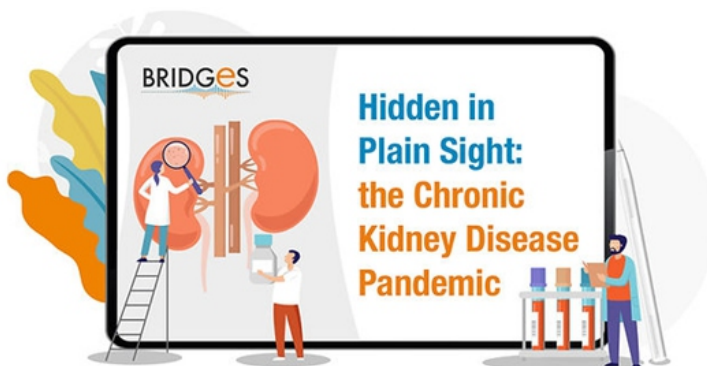


Figure 5. The Chronic Kidney Disease Pandemic
(Bridges M&C Team, 2024)

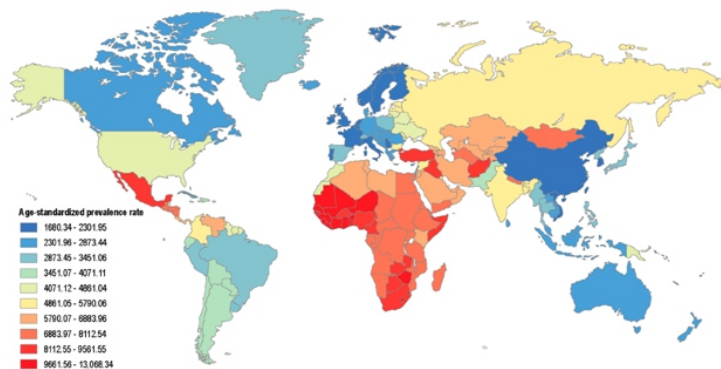
Kidney disease is of concern globally where it is estimated that 10% of the total population of the world (approximately 850 million persons) suffer from some form of it (Jager et al, 2019). This is over 20 times the prevalence of cancer (42 million) or people living with HIV/AIDS worldwide (36.7 million). While CKD accounts for about 82% of this proportion, AKI and kidney failure constitutes the remainder (Francis et al, 2024).

According to a report on the Global Burden of Disease (GBD), the global prevalence of CKD rose by 33% between 1990 and 2017 (Bikbov et al., 2017).

Presently, kidney disease is the third fastest-growing cause of death globally and the only NCD to exhibit a

continuous rise in age-adjusted deaths (Wang et al, 2016). Even in developed countries, the burden of CKD is high. For example, CKD is currently the 9th leading cause of death in the United States. [Centre for Disease Control (CDC), 2023]. It has been projected that CKD will become the fifth largest cause of death worldwide by 2040 (Foreman et al., 2016).

The age standardized global prevalence of CKD is shown in Figure 6 below:



CKD = Chronic Kidney Disease

Figure 6. Age Standardized Prevalence of CKD Across the Globe
Adapted from Xie et al., 2016

The factors contributing to increasing prevalence rate of CKD in developed countries may include growing elderly population, high prevalence rates of hypertension and diabetes and other medical conditions such as hypertension and diabetes. In developing countries, apart

from the afore-mentioned factors, infectious conditions are predominant, together with a myriad of other socio-economic and cultural factors.

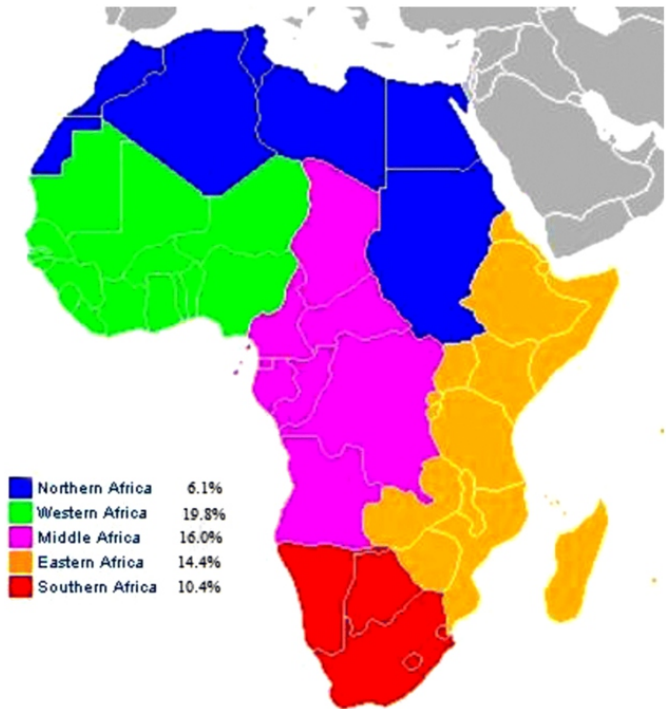


Figure 7. Prevalence of CKD in General Populations of Adults in African Regions

Source: Kaze et al (2018)

The figure above shows that the West African Region is more highly hit than the others (Kaze et al., 2018).

The exact incidence and prevalence of CKD in Nigeria is largely unknown as there is paucity of reports from community-based studies. However, it is believed that up to 25 million Nigerians are currently living with kidney disease (Osakwe, 2018). A recent study carried during the World Kidney Day (WKD) across locations in six geographical zones reported a pooled prevalence of 13.7% (Raji et al., 2023).

One of the earliest studies on CKD prevalence in Bayelsa state (Egbi et al., 2014) over a decade ago revealed that 8 out of 100 civil servants had CKD. More recent studies showed up to 1.5 times increase in this rate (Ndu et al., 2023).

Although between 5.3 and 10.5 million people require dialysis or transplantation, many do not receive these treatments due to a lack of resources or financial barriers [International Society of Nephrology (ISN), 2020]. In Nigeria alone, up to 230,000 individuals are in need of life-saving interventions such as dialysis or kidney transplants (Ojuroungbe, 2025).

Chronic kidney disease may occur as a chronic complication of other NCDs such as hypertension or diabetes or may be due to complications of communicable diseases (CDs) such as HIV or hepatitis. Non-communicable diseases have been on the increase in developing countries. These countries are currently witnessing a high prevalence of both CDs and NCDs, constituting a double burden of diseases (Li et al., 2022). In a hospital-based study by Egbi et al (2021) among

admitted cases in a tertiary hospital in Bayelsa State, over 68% were due to NCDs. The study also demonstrated a rising trend in the contribution of NCDs to the total toll of diseases from year 2013 to 2019. This may partly explain the increasing prevalence of CKD.

The following report by O'Neil (2022) in Nations Newspaper (paraphrased) succinctly captures the ravaging effect of CKD after a visit to some Nigerian hospitals: "an alarming escalation in kidney disease transcending all ages and not exactly conforming to what is already known about the disease. The concern is how the looming epidemic is appearing on the heels of an unprepared public health system across national and sub-national facilities, brain drain, and a poorly motivated workforce in the sector." According to the narrative. 'this situation surely spells doom for affected individuals, families, health systems and the entire population.'

To further buttress some of the above points, this is the narrative of a patient I am currently managing: He is a 39-year-old undergraduate, married with three children, who presented to our clinic with a history of recurrent body swelling which was first noticed about 18 months prior. There was an associated history of frothiness of the urine and reduction in urinary volume. Shortly before he came to see us, he developed generalized body weakness, abdominal pain, vomiting and started talking irrationally. He admitted to a history of use of alcohol and water-based herbal preparations. He is also said to have used marijuana and methamphetamine regularly but stopped when he became ill. There was no history of chronic use of

pain killers. Although there was a family history of hypertension, there was none for kidney disease. He had not been diagnosed with hypertension prior to illness but his blood pressure on presentation was severely elevated. He was also observed to be pale, in respiratory distress and lethargic. He had severe proteinuria, reduction in red cell count and eGFR in keeping with ESKD. His kidney scan showed that both kidneys were severely damaged. He was also seropositive for Hepatitis B virus. He had received 4 sessions of dialysis as at last review but would need subsequent sessions at a frequency of thrice weekly at an estimated direct cost of N150,000 per week. Apparently, that is the only way to sustain his life as the kidneys have stopped working. He would need special access to be created for the dialysis on the neck at a cost of N300,000. He would need some special injections (called erythropoietin) to raise the red cell count at least thrice weekly, at estimated cost of N21,000. He also needs to be placed on regular anti-hypertensives and other medications. Kidney transplant would be the definitive treatment but that could cost him close to 25 million and he would need to provide a compatible donor. But where would he raise this money??

My VC and distinguished audience, this seems to be the usual grim story, looking like a *déjà vu* experience but real. We see this over and over again, with increasing frequency as kidney doctors. Helpless young adults with kidney failure, unable to do anything because they are suddenly confronted with a situation that they are often not responsible for nor have the wherewithal to tackle. Informing them about their diagnosis is almost

tantamount to pronouncing a death sentence on them. There might be slight demographic, social or circumstantial variations among them, but it is almost always the same ending. Some patients resort to paramedics, herbalists, false prayer houses and prophets' help where they are sometimes given false hopes and further drained financially. This reminds us of the biblical story of the woman with the issue of blood, who was said to have suffered a lot from several physicians until she met Christ (KJV 2022, Mark 5:25-29).

“We are seeing more of these cases recently; it is on the increase; look around and you will see,” the Nation reporter was told by practitioners in the hospitals. The media reporter, indeed, looked around and what he found was truly very frightening: “Across health institutions in all geographical zones in Nigeria, in Bayelsa, Port Harcourt, Lagos, Abuja, Northern Nigeria, everywhere, the situation is grim. Many patients, including teenagers, and even children, are being diagnosed with kidney diseases. Unconfirmed reports suggest that up to 40 per cent of referrals to tertiary health centres across the country may be due to kidney-related ailments (O'Neil, 2022). Many people are not even aware they have the disease because routine medical screening is not common in this part of the world; people hardly go for medical checkups until they become very ill and unfortunately at that time, the disease, may have become established and more challenging to manage.

This is not the first time an alarm is being raised about the ravaging effect of kidney disease. Seven years ago, the

Nigerian Association of Nephrologists (NAN), a body comprising of specialists in kidney disease, strongly warned about the steady rise in kidney disease (Osakwe, 2018). Up to 25 million Nigerians (about 14 per cent of the estimated 180 million population) were reported to be suffering from kidney-related diseases then. It is likely that the situation is even worse today!

The Agony of CKD

The significant and potential life-altering and devastating effects of kidney disease cannot be over-emphasized. As it progresses, CKD virtually affects all body systems and adversely reduces the quality of life and the life span of the affected individual. The agony faced by patients living with ESKD, especially in a setting with little or no access to management, together with other constraints, is tremendous and may be difficult to describe.

Perhaps the pieces of poetry below can give a little glimpse of the travails of patients with this condition. The piece attempts to describes the agony faced by patients living with CKD viz:

"Silent Suffering"

*My kidneys once filtered with ease,
Now falter, failing with each disease.
The toxins build, a poisonous sea,
My body weakens, can't break free.
Fatigue wraps round me like a shroud,*

*Each day a struggle, a heavy cloud.
The pain is constant, a nagging guest,
My joints ache, my muscles protest.
Dialysis beckons, a life-saving treatment,*

*But oh, the burden, the constant quest.
The needle pricks, the machine beeps,
My life's a schedule, in endless sleeps.*

*I search for strength, a glimmer of hope,
A cure, a miracle, a scope.
But for now, I'll face this plight,
And fight, with all my might.*

This piece aims to capture the emotional and physical travails faced by patients living with CKD. The disease can cause immense physical pain, fatigue, and emotional distress, affecting every aspect of a person's life.

Apart from the clinical burden of disease, there is also the financial toll that it brings along. The financial burden of CKD on patients and affected families in Nigeria and other SSA countries is tremendous. Access to healthcare in these countries is limited, poverty is widespread and payment for healthcare is almost always out-of-pocket. The financial weight of CKD can be crushing, leading families to sell their assets, and struggle to make ends meet.

This is another piece of literature describing the financial toll the disease has on affected patients, families and friends:

*"Naira and Kobo, a Costly Toll"
Empty pockets, aching heart
In Nigeria's cities, where healthcare's a test,
In villages and towns, where healthcare's scarce,
A silent killer stalks, with a deadly glance.*

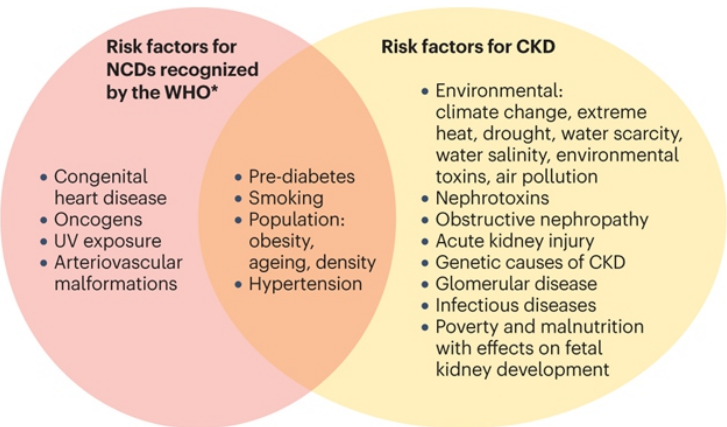
*Chronic kidney disease, a burden to bear,
A financial weight, that's crushing, beyond repair.*

*Chronic kidney disease, a financial unrest.
The naira and kobo, that once brought delight,
Now dwindled and scarce, in the dark of night.*

*The dialysis machine, a lifeline true,
But costly treatments, a family's income anew.
The medications, the tests, the hospital stays,
A never-ending cycle, of debt and financial sway.
Dialysis sessions, a costly, recurring fee,
Medications and tests, a financial spree.
The hospitals and clinics, where care is sought,
Demand payment upfront, with no room for thought.*

*The average Nigerian, with a meagre income too,
Must sacrifice and struggle, to make ends meet anew.
The financial burden, of CKD, is a weight so bold,
It crushes hopes and dreams, like a heavy, iron mold.
In Lagos, Kano, and Abuja and even Bayelsa, the stories unfold,
Of families selling assets, homes, lands
Others borrowing from friends and well-wishers
to pay for treatment to hold
The stress and anxiety, the worry and fear,
As Nigerians struggle, to pay for CKD care, year by year.”*

This poem highlights the huge financial burden of CKD in Nigeria, where access to healthcare is limited, and the cost of treatment is high. The financial weight of CKD can be crushing, leading families to sacrifice and struggle to make ends meet.



CKD = Chronic Kidney Disease

Figure 8. Risk factors for CKD and NCDs (in General)

Source: Francis et al., 2024

Chronic kidney disease and risk factors

Up to one-third and one-fifth of individuals with diabetes and hypertension respectively in developed countries have CKD. This suggests that emphasizing the control of diabetes and cardiovascular diseases in that setting may ameliorate the increasing CKD burden (CDC, 2023). However, glomerulonephritis (from infections, toxins, etc) account for a significant proportion of cases of ESKD in low and middle-income countries (LMICs) like Nigeria.

Despite a well-defined association of some of these risk factors with kidney disease, knowledge of CKD among those with these factors is low. A good proportion of my work was devoted to identifiable risk factors of CKD, particularly hypertension, diabetes and obesity, as well as other emerging non-traditional risk factors. These risk factors were shown to be prevalent in both urban and rural communities. For instance, in a study carried out among staff of a tertiary hospital in Bayelsa state, one out of every five persons had hypertension (Egbi et al., 2015) while a quarter of them were obese. Despite being workers in a hospital setting, almost two-thirds of the hypertensives were unaware of their diagnosis. In another study carried out among individuals on management for hypertension and diabetes in a tertiary hospital in Benin City by Egbi, Ofili & Oviasu, (2014), it was found out that only 11.9% of hypertensives were aware that they were at risk of CKD. Their health-related practices including regular checks of their health status were also observed to be poor.

In another rural community in Bayelsa State, up to a quarter had hypertension (Egbi et al., 2018), while in Edo State, 13.9% were found to be diabetic with two out of five persons having no prior awareness of the diagnosis (Egbi & Ahmed, 2023).

Even the obesity epidemic does not seem to be limited to urban settings. In a rural community in Bayelsa State, more than one third of respondents was found to be at least overweight (Egbi et al., 2018). It does appear therefore that obesity is very prevalent in our population, with rural communities not spared.

Many persons living in LMICs, have no access to kidney disease diagnosis, prevention or management. In fact, even in developed countries, up to 9 out of 10 affected persons are unaware of their diagnosis of CKD (Tuot, Plantinga, & Hsu, 2011, Gummidi et al., 2020; Centre for Disease control and Prevention, 2023).

It appears that several of the CKD risk factors in developing countries will not be addressed by targeting the major NCDs. This is because non-traditional causes of CKD, such as air pollution, exposure to toxins, smoking, alcohol, kidney stones and AKI are quickly evolving as important risk factors (Luyckx et al., 2017, Meena et al., 2025).

Many of these factors are artificially created and may therefore be regarded as *man-made maladies* in the **society**, that are largely preventable or modifiable.

The Kidneys As a Casualty of Societal Maladies

There are a lot of things in the society that directly or indirectly impact on our kidney health. The Kidneys can therefore be considered as a casualty of several societal ills. A few of them are cited below ranging from what the society offers us for consumption, beautification, residence and occupation, the environment in which we are nurtured and options of care when we are ill. Some of these factors are traditionally considered as social determinants of health and are discussed below:

What the Society Makes Available As Food

Eating processed foods, excess salt and sugar

We live in a changing world where probably due to our busy schedules, it becomes more convenient to regularly patronize restaurants and food outlets. Majority of these industrially prepared foods in the society are highly processed and contain artificial additives, flavours, added sugar, sodium, refined carbohydrates, unhealthy fats but have a low content of the desired fibres, protein, and essential nutrients. Examples of such products include soft drinks, canned beer, canned meat and vegetables, salted/ sugar nuts, hamburgers, flavoured yoghurt, and instant nodules. These foods are very currently rampant in our supermarkets and stores. A recent study showed that individuals who consumed ultra-processed foods had a 24% higher risk of developing kidney disease (Du et al., 2022). Consumption of red and processed meat has similarly been linked with kidney disease (Mirzababaei et al., 2024).

Diets rich in salt or sodium make the blood pressure go up while excess sugar contributes to obesity, leading to diabetes, hypertension and kidney disease. These factors, together with failure to consume adequate fluid are also believed to increase the incidence of kidney stones. In Nigeria, earlier reports suggested low prevalence of kidney stones compared with what obtained in developed countries but prevalence seems to be rising in recent years (Mbadiwe et al., 2025).

What the society provides for us to use

Poorly regulated access to Medicines

Although over-the-counter medications for pain, such as non-steroidal anti-inflammatory drugs (NSAIDs) and analgesics help to ameliorate pains and aches, they also have the potential of harming the kidneys, especially when used at high doses and frequently over a period of time. Unlike in developed climes, these drugs are freely accessible (even without a prescription) to all across-the-counter in our society with very little or no form of regulation. This is very disturbing as some of these drugs may lead to tubular and glomerular injuries of the kidneys.

Related to this is the widespread use of herbal medications of unproven efficacy and adverse effects as commonly practiced in Nigeria. This is a societal ill that thrives on a culture of ignorance, and untamed advertising with detrimental effects on health, including that of the kidneys.

According to a report by the WHO (2017), as much as 10 - 60 % of individuals in Nigeria use fake or counterfeit

medicines. These medicines find their way into the porous Nigerian market. Consumers of the products use them either because they are cheaper, or because they are not properly guided and so are unable to differentiate them from the original products. This indiscriminate use may also contribute to the toll of kidney disease in the country even though the condition is not yet adequately characterized.

Talking about harmful products to the kidneys, this is the popular story of 'my pikin teething mixture,' one of the most touching narratives about the dramatic effect of a drug on the body resulting in kidney failure and death.

The story appeared as headlines in most dailies sometimes in 2008. It was captioned in an ironic fashion in one of them as “When my pikin became a killer.”

My Pikin Mixture was a paracetamol- based syrup manufactured by Barewa Pharmaceuticals in Nigeria in November 2008, to treat teething pains among babies. However, the product was inadvertently (or advertently) adulterated with the chemical, diethylene glycol, which is normally used in brake fluid as an antifreeze. Diethylene glycol on conversion to a metabolite in the human body, is toxic to the kidneys and liver (the organs involved in metabolism). Over a hundred children between the ages of two months and seven years who were treated with the syrup became sick, with up to three out of every four dying, mainly from kidney failure. Not less than eighty-four children were reported to have died.

The manufacturer was subsequently shut down by the country's drug regulating agency, National Agency for Food and Drug Administration and Control (NAFDAC), ordering a ban in the distribution of the product. Unfortunately, at this point, the milk had already been spilled.

The narrative was that some staff of the Lagos-based company had bought the ingredients locally from an unregistered chemical dealer in the city slum. It appeared they did not know that they were being given ethylene glycol in place of propylene glycol which is the usual ingredient in the teething formula. The exact quantity of the adulterated syrup sold is unknown. A few persons, including staff of the pharmaceutical company, were arrested and sentenced to imprisonment, but the bottom line is that lives of many vulnerable but promising infants and young children had already been lost!



Figure 9. My Pikin Baby Teething Mixture

(Source: Google)

The smoke and the glass

Although heavy alcohol consumption has been linked with increased risk of worsening kidney function (Joo et al, 2020), the effect of lower amounts of alcohol on kidney function is still somewhat controversial (Chen et al., 2024).

Cigarette smoking, especially in excessive amounts, has been known to increase the risk of kidney disease and worsen its progression (Lang et al., 2024).

The initiative behind introducing the use of e-cigarettes (also called vaping) was to help as a replacement for combustible cigarette smokers who desired to quit smoking. However, the rapid uptake, especially among young people, has raised concerns about its appropriateness and limitations for use. Although it is considered by many to be a safer alternative to use of combustible cigarettes, it has been found to contain chemicals such as nicotine, aldehydes and metals. A

scoping review found a prevalence rate of 12% among different population groups in Nigeria (Adegbile et al., 2024).



Figure 10. A Young Lady Smoking E-cigarette

Source: Google

The society seems to be encouraging the use of these products as can be seen from the innovations and flavours being branded, advertisements specifically directed at the youths and limited information on risks available to the general public. Very recent reports show an independent association between the use of e-cigarette and kidney disease in a dose-dependent manner (Li, et al. 2025).

To preserve kidney health, it is therefore advised that the smoke be kept away and the glass down

Illicit Drug Use: A Note to the Psychiatrists

Psychiatrists are specialist doctors that help in management of mental and behavioral disorders, including substance abuse. Interaction with patients in

this category may provide an opportunity to assess and monitor patients at risk of CKD and refer as necessary. There are mixed reports on the effect of illicit substances such as cocaine, heroin, or methamphetamine on kidney function (Akkina et al., 2012; Mansoor et al, 2017).

Cannabis is one of the most commonly abused substances in Nigeria today. In a very recent study carried out among undergraduates in South East Nigeria, one out of every three students reported the use of cannabis (Ofomata & Nnabuihe, 2025). Although epidemiological studies have not clearly shown a causal link between cannabis use and CKD, a significant risk of CKD was reported among those who used cannabis weekly or daily, though those using lighter doses showed no increase in risk (Dellepiane et al., 2023). There may be need for longitudinal follow-up studies in our setting to determine exact risk.

Skin lightening (or whitening) creams

Frequently, skin lightening (or whitening products), especially the ones containing mercury and hydroquinone, are believed to carry a significant health risk to the kidneys, possibly resulting in CKD as suggested by some reports.

In a study among female medical undergraduates, Egbi & Kasia (2021) found out that two out of every five students used skin lightening products. Ladies who had light skin, and whose relatives used the products were more likely to use them while awareness of adverse effects was observed to be a deterrent to use.

A newspaper piece (Akinwotu, 2025) on proposed regulation on skin whitening creams by the Nigerian government appeared on National Public Radio (NPR), an online radio service with headquarter in the United States in February, 2025 is shown below:

Nigeria considers new regulations on dangerous skin whitening products

FEBRUARY 10, 2025:15 PM ET
HEARD ON [ALL THINGS CONSIDERED](#)



Emmanuel Akinwotu

4-Minute Listen
[TRANSCRIPT](#)

The Nigerian government issues new warnings against the dangers involved in using skin whitening products, in a country that has often been called the "world capital of skin bleaching"

Sponsor Message

MARY LOUISE KELLY, HOST:

Skin whitening is a major industry around the world, including in the U.S., but it is endemic in Nigeria, Africa's most populous country. It's rooted in colonial-era beauty standards that see brighter skin tones as more desirable. The effects can be severe, and many people who use these products are unable to stop, as NPR's Emmanuel Akinwotu reports.

SUSAN ANDERSON: I went through hell before I got myself again.

EMMANUEL AKINWOTU, BYLINE: Susan Anderson is a 52 year-old store assistant.

ANDERSON: I was helpless.

AKINWOTU: We met in the waiting room of a dermatology clinic in the capital, Abuja. Parts of her face looked seared with burns. Thick, dark patches of skin surrounded her eyes and covered her cheeks. Anderson started using skin whitening creams as a child, given to her by her stepmother.

Where We Live and Work

Heat exposure and harsh climatic conditions

Prolonged occupational heat exposure, marked physical exertion, climate change with increasing temperatures and altered precipitation patterns could predispose to kidney disease through the pathway of dehydration, urinary stasis, and increased urinary concentration.

Heat stroke could contribute to the incidence of kidney disease, especially in the North such as the North-Eastern States of Borno, Yobe and Jigawa. Dehydration could result in crystallization of kidney stones. It is likely that man-made activities in the society such as deforestation, increasing urbanization, greenhouse emissions from fossil fuel like methane from mining, and other industrial activities contribute to these harsh weather conditions.

Chronic kidney disease of unknown aetiology (CKDu) is being implicated in some of the settlements in the North such as Bade Community of Yobe State. Heavy metals are suspected to be largely responsible for the high incidence of kidney disease as in the case of CKDu of Sri Lanka (Babagana-Kyari et al., 2022)

Exposure to petrochemical substances

In petrochemical industries, contamination of the environment with heavy metals and particulate matter (microscopic particles of solid matter including dust and dirt (about 2.5–10 mm or smaller) or liquid droplets is common. Other potential contaminants in air include gases such as CO, NO, NO₂, SO₂, and volatile organic compounds (VOCs) as well as greenhouse gases such as

methane, N₂O, O₃ and CO₂. Some of these pollutants have been linked with an increased risk of developing CKD de novo in some recent reports (Liu et al., 2023), though evidence is still evolving.

Heavy metal exposure and automobile mechanics

Heavy metal contaminants (e.g., mercury, lead, arsenic and cadmium) have been shown to be harmful to the kidneys (Moody, Coca, & Sanders, 2018). Studies have also shown high levels of heavy metal exposure such as cadmium in occupations such as automobile mechanics (Adejumo et al., 2023). Hazardous occupational practice such as regularly washing the limbs with petrol and diesel or sucking the products by mouth is believed to be contributory. In addition to auto-mechanics, Ujah et al., (2024) also demonstrated high levels of heavy metals in the serum of smelters, petrol station attendants, artisan refinery workers and vulcanizers in a study carried out in yenagoa. The study also found an association between the level of these metals and kidney dysfunction.

This occupation may therefore be considered as a non-traditional risk factor for CKD. There is however need for large scale studies to determine actual causality between these practices and kidney disease.

When We Procreate:

Eventful pregnancies (such as hypertensive disorders of pregnancy: A note for the Obstetrician

Globally, up to 10% of pregnancies may be complicated by hypertensive disorders of pregnancy (Hutcheon, Lisonkova & Joseph (2011). Hypertensive disorders of pregnancy include gestational hypertension and

preeclampsia. Preeclampsia is a condition occurring in the later half of pregnancy characterized by body swelling and proteinuria. Preeclampsia may be associated with low socio-economic status (Silva et al., 2008) and poor maternal nutrition (Kinshella et al., 2022)

Preeclampsia is commonly associated with acute kidney injury. Also, studies show that women who had ever experienced preeclampsia had 2x risk of developing CKD later in life, compared with women who never had preeclampsia (Barrett et al., 2020; Kristensen et al. 2019). This risk is observed to be higher among obese women. Gestational hypertension (hypertension in pregnancy, without proteinuria) also seems to be associated with a higher risk of CKD but the strength of the relationship is less marked. Preeclampsia is therefore becoming more widely acknowledged as a CKD risk factor.

How We Grow:

Early childhood events: A note to the Paediatricians

Reports have shown a link between low birth weight, infants born small for gestational age, or preterm and future risk of CKD (Crump et al., 2019; Eriksson et al., 2018, Gjerde et al., 2020). The associations are more notable among younger individuals and this may be related to defective kidney development *in utero* and following birth with resultant reduction in nephron number, hyperfiltration, and likelihood of development of hypertension (Brenner et al., 1996; Luyckx, Cherney & Bello, 2013). Pre-eclampsia may also be associated with likelihood of kidney disease in offspring during childhood.

Another factor that may be implicated in early childhood predisposition to kidney disease in low resource poor setting is maternal protein malnutrition, which may result in foetal malnutrition. Since much of the development of the kidneys occurs during fetal life, the number of nephrons is determined during this critical period. Fetal malnutrition may adversely affect this development, resulting in a decrease in nephron number and kidney impairment, later in life (Barker et al., 2009). Also, any child with a documented history of AKI should be followed up into adulthood as it also connotes some risk of future kidney disease.

What we fail to do

Adequate rest and physical activity

Adequate rest at night is critical to one's overall well-being, including kidney health. The sleep-wake cycle helps to coordinate the workload of the kidneys over 24 hours. Unfortunately, societal demands place a lot of pressure on individuals, often depriving them of adequate rest as work often spills home. Every adult should sleep for a minimum of seven hours daily.

We are often at a desk at work, sofa at home, seated in the car but hardly adequately engaged in regular physical activities.

Socio-economic Maladies Negatively Impacting Kidney Health and Care in Nigeria

An interplay of socio-economic maladies such as poverty, low educational level, poor health-related attitude and seeking behavior, poor health care funding, weak health systems, and inadequate health workforce, amongst other

factors may contribute to the high burden of kidney disease in LMICs, including Nigeria, and make adequate care for the kidneys a mirage in several settings. Nigeria is currently confronted by a lot of socio-economic problems that negatively impact the healthcare system, including the delivery of services related to kidney care.

Poor attention to kidney disease

In spite of the troubling epidemiologic trend of kidney disease, many governments, including the Nigerian government are still yet to recognize kidney disease as a healthcare priority (Lunney et al., 2018). Chronic kidney disease has clearly not received the deserved attention in terms of priority of care and needed resource allocation from the government and other stakeholders of healthcare.

The table below is a comparison of HIV and CKD in terms of selected epidemiologic data including total number of individuals affected, patient awareness of diagnosis and availability of health programmes.

Table 3: Comparison of Certain Epidemiologic Data between CKD and HIV

	HIV	CKD
Estimated Community prevalence in Nigeria	Approx 1.3%	13.7%
Total number of persons affected worldwide	40.8 million	850 million
Global deaths	630,000	5000000– 11000000
Lack of awareness about diagnosis	High	Low
Cost of treatment	HIV medications are usually given free of cost. Such treatment is often covered by grants by foreign agencies	Treatment often borne by out-of-pocket expenditures by patient or relatives
Recommendation	Routine testing recommended Individuals 13-64 years to get tested at least once as part of routine healthcare while those at higher risk should be tested annually	No established national programme for routine kidney assessment or care

Adapted from the following sources:
 CKD = Chronic Kidney Disease
 (Luyckx et al., 2018)
 Raji et al., 2023
 UNAIDS/WHO estimates, 2025.

Lack of Locally Relevant Data

Many LMICs, including Nigeria, do not have a functional national renal registry or local data bank that has information on the burden of kidney disease and its risk factors. This makes it difficult for stakeholders to plan adequately for CKD control programmes.

Poor Healthcare Funding

Nigeria, like many LMICs has a low median health expenditure per capita per annum for health. Of the 47 countries in the WHO African Region, only five countries in 2020 met the recommended threshold of a minimum of US\$249 per capita per annum, while the remaining

majority spent less, with health expenditures ranging from US\$ 16.4 to US\$ 236.6 and notable disparities across the region (WHO African Region Health Expenditure Atlas 2023 | WHO | Regional Office for Africa, 2025). With a current healthcare expenditure of \$90.92 per capita per annum, Nigeria is one of the countries that is far from meeting this target with attendant consequences such as lower life expectancy and higher mortality rates among infants and under-fives and increased vulnerability to diseases including kidney disorders.

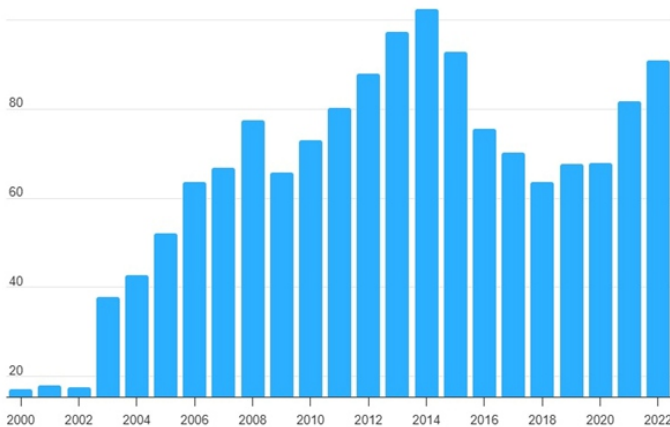


Figure 11. Nigeria Health Expenditure Per Capita Per Annum from Year 2000 – 2022
(WHO African Region Health Expenditure Atlas, 2023 | WHO | Regional Office for Africa, 2025)

Corruption in the Health sector

Nigeria is the 140th least corrupt out of 180 countries on the 2024 Transparency International Corruption Perceptions Index, ranking it among the most corrupt countries (Transparency International, 2025).

Corruption has become a cankerworm that has eroded deeply into the fabric of Nigerian society across all sectors and levels of governance and public service. Sadly, the health sector may be considered as one of the most corrupt, largely ascribed to weak governance structures and poor accountability. In the words of a former president, General Muhammadu Buhari (of blessed memory), “If we don't kill corruption,” corruption will kill us.”

In the health sector, corruption diverts resources from essential services. Practical examples of how corruption can affect kidney care (and indeed other aspects of healthcare) in Nigeria include:

1. Misappropriation of funds: Funds meant for health programmes or to procure certain equipment for healthcare are channeled for personal gain. Exaggerated or padded procurement prices or supply of sub-standard products are also common. For example, supply of faulty, used dialysis machines to government hospitals, where funds were released for brand new machines.
2. Lack of transparency and accountability on how funds are spent
3. Bribery and extortion. Some patients may be made to pay extra fees to jump the queue for certain appointments or care, implying inequity of healthcare
4. Dual practice and absenteeism from public work by certain health professionals, impact negatively on access to healthcare

Weak Health Systems

In Nigeria, the health systems have been weakened by lack of human resources and skilled workforce, lack of facilities, and a non-sustainable structure. The primary health care system, which is pivotal for the success of screening programmes, is largely dysfunctional in Nigeria. The deficiencies of the primary health systems make the follow-up of individuals with risk factors or early CKD difficult. One of the basic pillars of primary healthcare is an integrated approach to health care.

There is currently a dearth of medical personnel in Nigeria. This has caused further reduction in the health work force, particularly in specialties with already depleted personnel. A study carried out among final year undergraduate medical students by Egbi & Unuigbo (2014) revealed preference for surgical specialties as against medical specialties. In fact, none of the students in the study had any career interest in nephrology. If this trend continues against the backdrop of medical brain drain in the country, the little workforce left to the management of kidney disorders may become overwhelmed with the teeming number of patients presenting with kidney disease.

Insecurity

Nigeria currently faces various security challenges such as banditry, herdsmen / farmers' conflict, ethno-religious clashes, kidnapping and acts of terrorism such as the activities of Boko-haram. Some of these vices are more prominent in certain parts of the country, many of which are already underserved areas. This has the potential of

further worsening inequities of healthcare across the country, amidst increase in the wave of brain drain.

Socio-economic, Religious and Cultural Barriers

Kidney disease is more prevalent among those with low socio-economic status, poor income, little or no education and poor awareness of kidney disease and risk factors (Nicholas, Kalantar-Zadeh & Norris, 2015). Cultural beliefs that can predispose to kidney disease or affect management may include reliance on traditional healers and 'masseurs' at expense of orthodox care, and negative spiritual perception of care. Although spirituality and religiosity have been associated with better disease outcome in kidney disease, superstitious and misplaced beliefs are very common in our society and may be detrimental to health (Rumun, 2014). Examples of such situations include delay in seeking medical care for illness because of belief that spiritual forces are at work and refusal of medical care due to belief in faith healing even when still ill.

Poor Health Literacy

In Nigeria, poor health literacy is common and exacerbates the scourge of kidney disease. This is because it contributes to delay in diagnosis, inadequate self-care, poor uptake of treatment with higher risk of complications. A study carried out among people living with hypertension and diabetes in a tertiary hospital in Benin City, Nigeria by Egbi, Ofili & Oviasu, (2014) found out that only 11.9% of hypertensives knew that they were at increased risk for CKD. Their health-related attitude towards self-care was also reported to be poor, as only

16.5% had good self-practice (Egbi, Ofili & Oviasu, 2015)

Poverty

Poverty is contributory to the unprecedented rise in the incidence and prevalence of NCDs in this part of the world (Odunyemi et al., 2018).

In 2024, a third of the population in SSA, including Nigeria, was estimated to be living in extreme poverty, which could be defined as living (or surviving) on less than USD 2.15 per person per day (Statista Society Demographics, 2025). Up to 63% of persons living in the country are considered multi-dimensionally poor (National Bureau of Statistics, 2025)

Adequate management of CKD, a disease that places a huge financial toll on individuals, families and communities, in such setting is not just difficult, but almost impossible.

Limited access to care

Poverty, ignorance, limited access to healthcare and lack of a functional health insurance coverage for kidney care in Nigeria, and other LMICs make treatment for ESKD unaffordable and the diagnosis is almost akin to a receiving a death sentence. Even in settings with limited kidney care, patients with advanced disease rarely have access to the available treatment largely due to the high cost.

The cost of renal replacement therapy in Nigeria is highly prohibitive for most patients. This leads to a high drop-out

rate from dialysis as most patients cannot afford the high cost. The direct cost of haemodialysis is on the average of N50,000 to N60,000 per session in Government-owned facilities. Up to 61% of the patients in a dialysis centre in Bayelsa state could not afford hemodialysis beyond the few initial sessions in the first one week (O. G. Egbi & Egbi, 2018). Similarly, up to 80% of patients could not continue dialysis after three months in a study in South-West Nigeria (Ajayi et al., 2016). These findings are not surprising as most of the patients pay out-of-pocket. This could potentially lead to catastrophic health expenditure, and impoverishment of homes (Ipinnimo & Durowade, 2022). Patients being managed for ESKD typically requires three such sessions every week.

However, it is not all bad news. Recently, the Federal Government expanded healthcare access for kidney patients with subsidized dialysis, bringing down the direct cost of dialysis in Federal hospitals from an average of N50,000 to N12,000 per session. In this first phase, ten hospitals are involved but others would be included in subsequent phases. This is a product of advocacy by kidney specialists and other relevant stakeholders all over the country. Government at sub-national levels can take a cue from this.

Although about 3 out of 10 patients with ESKD in developed countries such as Europe and the United States, undergo renal transplantation, less than 1 in every 100 Nigerian patients attempts kidney transplant (Badmus et al., 2005; Bamgboye, 2006). In addition to high cost, inadequate infrastructure and resources, socio-

cultural beliefs about organ donation, poor awareness among the general public, manpower shortage, and lack of appropriate legislation are significant challenges limiting kidney transplantation in Nigeria and SSA in general. Even though these studies were carried out a long time again, only little seems to have changed over the years.

In Nigeria, available resources remain scarce; there are relatively few kidney treatment centres, few or non-existent transplantation programmes, reduced availability and access to dialytic therapies. This disparity of access to healthcare across countries is a huge concern. According to Dr Martin Luther King Jr., “Of all the forms of inequality, injustice in health is the most shocking and inhumane.”

Prioritizing treatment of advanced CKD over primary and secondary prevention in Nigeria may not deliver the expected outcome of stemming the tide of the disease. Preventive care should therefore be considered as the bedrock of kidney management in our setting.

The table below summarizes some of the critical facts related to kidney disease and data related to management in Nigeria:

Table 4. Summary of Kidney Disease Management Numbers in Nigeria

Variable	Number
Nigeria's population	200m
Nigerians living with kidney disease	25m
Number of Nephrologists	240
Centres offering dialysis	77 public, 56 private ^b
*Available dialysis machines	354
Cost of dialysis session without subsidy	N50,000
Average cost of dialysis machine	N30 million
Cost of kidney transplant	>N25 million
Teaching Hospitals that have done transplants	≥14
Doctors that have left Nigeria in last 7 years	>16,000 ^c
Number of doctors currently practicing in Nigeria	55,000 ^b
Monthly salary of a Resident doctor (Nigeria)	N300,000
Monthly Salary of resident doctor (USA)	> N3.8million

Sources : ^aIleyemi (2024)

^bOjuroungbe, 2025

^cOkoye & Mamven (2022)

Peculiarities of kidney disease in Nigeria

Out of the 850 million people with kidney disease globally (Jager et al., 2019), Nigeria as a country, bears a disproportionate share of the burden (3%).

Several years ago, Emeritus Prof Ojogwu, a seasoned and renowned nephrologist per excellence, gave his inaugural lecture in the University of Benin titled: “The Black Man's Kidneys: What is wrong with them?” Racial disparities in kidney disease have been a subject of concern with black adults thought to have a higher risk of developing kidney failure compared with whites (Assari, 2015).

Chronic kidney disease in blacks has the tendency to present earlier and to run a more dramatic course, compared with the Caucasians. For instance, the mean age of patients undergoing dialysis in a private centre in Yenagoa was 48.6 years (O. G. Egbi & Egbi, 2018)

This observation is believed to be partly related to genetic factors. Black individuals are thought to have a variation of the apolipoprotein L1 (APO L1) gene which is believed to have emerged in order to protect the body from the severe form of the African sleeping sickness, a parasitic infestation, relatively common in West Africa several years ago. The gene stirs up the immune system to elaborate a protein which dissolves the membrane of the parasite and destroys it. However, the parasite became resistant to this genetic effect, with time. In order to preserve immunity against the resistant strains of the parasite, new variants of the APO L1 gene emerged but not without certain drawbacks. Individuals with this

mutated gene in Africa, including Nigeria, are believed to be at an increased of kidney disease. In fact, the genetic predisposition is considered as one of the major factors contributing to the comparatively high prevalence of CKD in the African region (Grams et al., 2016, Hung et al., 2022). This is further complicated by the high prevalence of infections like HIV in the region, which acts as a “second hit,” initiating and worsening the progression of CKD (Hung et al., 2022).

In addition to this reported genetic predisposition among blacks, the disproportionate risk of CKD in the country, may be partially explained by the rapid epidemiological transition, which includes an increasing prevalence of NCDs, occurring on a background of high burden of infectious diseases as well as emerging non-traditional factors in the society, including environmental, socio-economic and cultural issues.

Chronic kidney disease patients present late to the nephrologists in most developing countries, including Nigeria, wherein complications of the disease are already advanced and largely irreversible (Adejumo et al., 2016). Apart from the general peculiarities in the country and the African continent, the Niger Delta region of Nigeria has additional challenges which may potentially impact on the kidneys.

Peculiarities in the Niger Delta Region of Nigeria

The Niger Delta is a vast, oil rich region, made up of six states in southern part of Nigeria. The region is home to 30 million Nigerians and 250 different ethnic groups. It has

over a hundred gas flaring sites across communities in the various states. Bayelsa state, with 2,616 oil wells, 232 oil facilities and 17-on shore stations, is one of the major oil hubs of the region (Bayelsa State Oil and Environmental Commission, 2023).

Despite the abundance of crude oil which significantly contributes to the economy of the nation, the area faces several challenges, such as environmental degradation (from crude oil spills and flaring of gas), socio-economic problems (including poverty, unemployment and basic infrastructural deficiencies) as well as conflict and instability in the political space due to resource control, militancy, ethnic clashes and rivalry. All these can be considered as man-made maladies that potentially exert an overall effect on health.

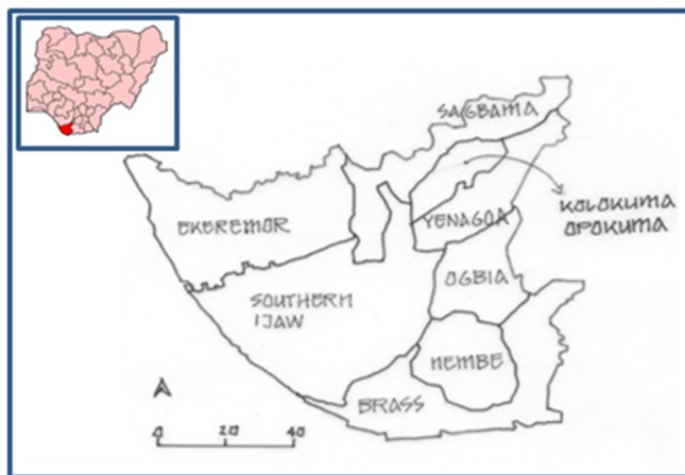


Figure 12. Map of Bayelsa State Showing the Eight Local Government Areas (LGAs) and the Capital Yenagoa

Source: Brisibe & Pepple, 2018

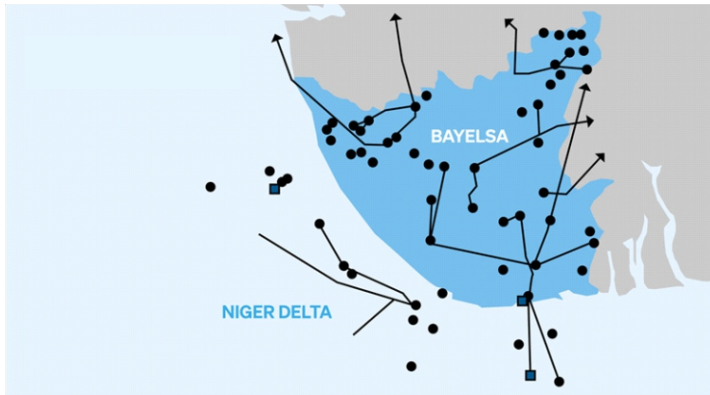


Figure 13. Map Showing Locations of the Various Oil Installations and Pipelines in Bayelsa State.

Source: Bayelsa State Oil and Environmental Commission, 2023

My VC and Distinguished Audience, I cannot conclude this lecture if I fail to speak to the effects of oil/gas pollution in the state which is significantly impacting the health of residents in host communities, apart from known effects on agriculture and other socio-economic activities. A recent research just concluded (not yet published) suggests that the kidneys may be yet another victim of this man-made avoidable malady. Unfortunately, the crude oil which was designed by Providence to be a blessing to this region and the nation has been exploited in a manner that it has become a curse! This brings us to a report of my findings.

Gas flaring in the Niger Delta and kidney disease

What was already known about the subject?

Communities that are situated in oil exploratory zones are

faced with the problem of environmental degradation of which air pollution, is part. Individuals living or working in such locations are exposed to hazardous substances that could negatively impact their health.

One of such hazards is the effect of flared gas. Gas flaring has remained a significant environmental, economic, and social challenge in Nigeria despite attempts in the past to end it. The gas can actually be harnessed for better use instead of wasting it.

Nigeria currently flares approximately 7 billion cubic meters (bcm) of gas annually, making it among the top nine flarer of gas worldwide [International Bank for Reconstruction and Development (IBRD) / The World Bank, 2024]. This is notable considering that gas flaring contributes to significant environmental degradation, health problems, as well as incalculable losses to the economy.

To corroborate the above facts, find below an editorial published by the daily post newspaper in June 17, 2025 titled: “24 hours Gas Flaring Destroying Our Soil, Water, Making Us Sick – Bayelsa Community.” (Onyesi, 2025).



Figure 14. A Gas Flaring Site at Obunagha Community, Gbarain Kingdom, in Yenagoa Local Government Area
Source: Inaugural Lecturer

The Okolobiri Community of Gbarain kingdom in Yenagoa Local Government Area of Bayelsa State has cried out over the 24-hour non-stop gas flaring in nearby Gbarain area.

The community is lamenting over the 24- hour, non-stop flaring of gas from the close-by Gbarain-Ubie Oil-and - Gas Processing Plant. They are worried that the continuous flaring has begun to affect the health of the people and is also polluting its land and water.

The ruler and members of the Community, accompanied by advocacy groups, who recently engaged journalists, claimed that the Community has been experiencing serious vibration because of the gas flare emanating from the site in the neighboring Obunagha Community. The flaring volume is said to be so high that it is affecting buildings in the Community.

According to one of them *“Although our people rely on the river water, unfortunately now we don't have water to drink because it is polluted by gas. There is currently no public portable water. Our health is being impacted; as we continuously breathe in the toxic gases.”*

The women leader also added her voice, lamenting that the volume of gas flaring has affected soil quality, crops and farming activities, resulting in hardship for women and children in the community.

This is what another member of the Community had to say: *“Due to the gas flaring, crops are not as productive as they used to be. It is the same thing with fishing; fishing efforts are not yielding much again. Even with the little catch, we discover that the fish has become tasteless.”*

Following the Community's outcry, the Environmental Defenders Network, EDEN, faulted the relevant monitoring agencies who it claimed failed to monitor the companies responsible for the flaring. According to EDEN, an open gas flaring plant is not supposed to be sited around residential areas, urging the Federal Ministry of Environment and relevant agencies of the state government to address the situation immediately.

Although there are established data linking gas flaring with medical conditions such as respiratory conditions and certain cancers, there are limited data on its association with kidney disease.

What did we do?

I assembled a research team with the aim of determining whether there was any association between gas flaring and chronic kidney disease in Bayelsa state. The research was sponsored by a grant from the Bayelsa Educational Trust Fund.

We selected four communities (one of which was actively flaring gas, three that were irregularly flaring) with a control community that has never flared gas. The communities were as follows:

1. Obunagha community (regularly and actively flares gas
2. Imiringi, Elebele and Otuasega communities: Flaring activities not regular
3. Azikoro village : Non-gas flaring

Recruitment of participants from each of the five communities was done in a scientifically valid way. Questionnaire were self-administered to document demographics, medical history and clinical examination findings of participants.

Blood sample was collected to determine kidney function, urinalysis done to check for renal abnormalities while a portable air monitor was used to determine concentration of gases and particulate matter in ambient air at strategic locations in the various communities.



Figure 15. The Kidney Screening Programme at Obunagha Community
Source: Inaugural Lecturer

What did we find?

A total of 778 participants (540 females), in the five communities completed the study. The mean age was least in Elebele (37.9 yrs) and highest in Otuasega (45.7 yrs). One in every four persons in the population studied had a history of hypertension while 7 out of 100 had a history of diabetes. Over four out of five participants reported using pain killers, while four out of ten used native herbs and consumed alcohol each.

Table 5. Kidney Function of Individuals in Gas Flaring Communities with Control

Community	Gas flaring status	Proportion of population with CKD (reduced eGFR)
Obunagha	Regularly flares gas	27.4%
Otuasega	Irregularly flares gas	10.9%
Imiringi	Irregularly flares gas	9.8%
Elebele	Irregularly flares gas	14.5%
Azikoro	Has never flared as	14.4%

CKD = chronic kidney disease

eGFR = estimated glomerular filtration rate

The prevalence of CKD was significantly higher in Obunagha, the actively gas flaring community compared with the non-gas flaring one (Azikoro village)

There was no observed significant difference between the irregularly gas flaring and non-gas flaring communities.

Active gas flaring was associated with an increased odd of reduced kidney function. However, there was no significant association between the level of gaseous exposure in ambient air and reduced kidney function. In fact, the level of particulate matter had an inverse relationship with kidney disease.

Conclusion of the study: Individuals living in communities where gas is regularly flared, may be more prone to kidney disease. This effect seems independent of the level of gaseous or particulate matter. While particulate matter has been the major culprit in respiratory and cardiovascular health, there may be other pathways for pathogenesis of kidney disorders in patients exposed to gas flares.

There may be need to explore effects of other components in gas flare such as heavy metals and volatile organic compounds as well as contamination of water and soil by products of the flare. These substances can be absorbed into the blood stream with potential damage to the kidneys. There is a need for large-scale, longitudinal studies in this regard.

An SOS Distress Call

An SOS distress call is an urgent call or request for help to

rescue somebody or something from imminent danger. It owes its origin to an international recognized signal of distress in radio code especially by ships calling for help. SOS may represent a symbol of distress, conveying a sense of urgency and a critical need for help.

This lecture may be the government, considered as an SOS call from the kidneys to individuals, government, non-governmental agencies, policy makers and stakeholders in the healthcare industry to come to its rescue as it is a potential casualty of the various maladies that plague our society today, many of which are man-made. This call reminds me of the Biblical story of a call of distress from a macedonian man to Apostle Paul in his vision, asking him to come to their rescue (KJV, 2022, Acts 16:9).

It is a wake-up call considering the increasing burden of kidney disease, and other NCDs particularly among our teeming young economically productive population, coupled with the various societal maladies already identified.

Conclusion and Recommendations

The kidneys are particularly vulnerable to disease in the presence of medical conditions such as hypertension or diabetes. However, there are other factors which must be considered (some of which are evolving) particularly in LMICs, such as Nigeria. These include environmental, socio-economic, cultural and occupational conditions. Some of these factors are rampant in our society today and may be considered as *maladies* that contribute to the

burden of kidney disease.

Kidney disease in Nigeria is a huge concern as it is largely on the increase, ravaging individuals and populations, especially the relatively young and economically productive age group with high death rates. This may have a huge toll on the affected individuals, families, communities and the nation, further constraining the already dysfunctional health systems if the relevant stakeholders do not hurry to implement effective strategies for its control.

The most cost-effective ways to heed the distressed call of the “at-risk kidney” in our setting is through urgent public health initiatives that address emerging risk factors without losing control of the traditional risk factors. There is a need for concerted efforts by individuals, healthcare systems, government and other stakeholders to quickly tackle these issues decisively to prevent further casualties. The current guidelines of management may need to be updated to include some of these evolving risk factors.

We do hope that someday, no one in the prime of life in our beloved country would be lost to the scourge of kidney disease.

I therefore make the following urgent recommendations:

1. An immediate declaration of a state of emergency in the health sector at national and sub-national levels. Kidney disease among the young, should be placed on a high priority and alert list in Nigeria, going forward.

2. Immediate and regular sensitization of the general population about the growing burden of kidney disease. Media campaigns on kidney disease and risk factors should be launched immediately. The National Orientation Agency in conjunction with the Ministry of Health must rise to this important challenge. This should quickly take the place of inappropriate advert for unwholesome products or false claims, which is very rampant in the media space today. Sensitization should be done in rural communities using local languages.
3. There must be adequate opportunities provided for screening individuals, groups and communities considered as high risk. There is need to expand “the at-risk group| for screening based on evolving evidence of the role of other non-traditional risk factors for CKD. Mobile clinics and health fairs may be helpful in such communities through partnership with community leaders and can also be done as constituency projects of politicians.
4. Screening programmes and protocols for management of CKD must be clearly articulated in a national programme that would be duly legislated. The first step would be creation of a national kidney disease registry. There is need for serious advocacy with the three tiers of government, and stakeholders in the health sector.
5. It is important to immediately ensure that our primary health centres are strengthened. Every health centre in urban and rural communities should be equipped to carry out basic kidney

assessment and investigation (at least analysis of urine). Dipstix urinalysis will still be very handy for initial screening for kidney disease, despite its limitations, particularly in underserved areas and rural communities. Tertiary centres should have access to urine albumin creatinine ratio analysis. Those detected with early CKD may benefit from drugs that lower proteinuria, and other interventions

6. There is a need to urgently address the epidemic of brain drain among health care workers and medical specialists in Nigeria to ensure adequacy of workforce in key areas such as nephrology. This can be achieved by addressing the pull and push factors as well as use of other initiatives such as task sharing and task shifting.
7. Health literacy and empowerment must be promoted in the general population. Individuals at risk must learn to pro-actively care for and take responsibilities for their health. Patients with risk factors such as hypertension, diabetes, and obesity should be actively involved in their management. In fact, they should own their own care. Devices for self-monitoring of blood pressure and blood glucose should be made available on a massive scale. Promotion of adequate nutrition and antenatal care during pregnancy is also key.
8. Adoption of Lifestyle changes: Increasing dietary fibre and cutting down on salt intake sweetened beverages, red meat intake and ultra-processed foods, as well as regular exercise, good night rest and adequate hydration is

recommended. Adequate cups of water daily could keep the nephrologist away!

9. Avoidance of undue exposure to heavy metals eg use of personal protective devices for automobile engineers, mechanics and car battery repairers; and caution with the use of skin whitening products.
10. The Federal Government of Nigeria must ensure it achieves its target of eliminating gas flaring not later than 2030, (Olujobi et al., 2022). The plan is to reallocate flare gas to investors for commercial use through competitive bidding.
11. There is a need to regulate drug access and alternative remedies (especially nephrotoxic drugs) in the open market. Increased education, awareness and advocacy among youths on illicit drug use is necessary. This should be taught as a subject in primary and secondary schools.
12. Deliberately increasing the cost of tobacco products and alcoholic beverages by increasing the tariffs may serve as a deterrent to use, at least to some extent.
13. Tackling poverty, corruption, unemployment, lack of education, limited access to healthcare, healthcare disparities and inequities as well as other social determinants of health must be considered as top priority by the government.
14. I propose a further expansion of the NAN screening recommendation for CKD in Nigeria by Awobusuyi et al., (2023) to include other population such as the following:
 - Individuals at risk due to long-stay in certain

residential locations such as living in neighbourhood of oil and gas exploration site.

- Occupational exposures to potentially hazardous substances such as: gas flaring in petrochemical industries, agricultural workers, handlers of herbicides and pesticides and automobile engineers, car electricians, vulcanizers, smelters and petrol attendants.
- Living near or working at a mining or quarry site because of possible exposure to heavy metals
- Those living in very hot, humid and dry climates such as certain areas of Northern Nigeria.

15. I am also of the opinion that in view of the escalating rise in prevalence of kidney disease in Nigeria and the evolving risk factors, general population screening for adults should be a consideration in the nearest future. It may be cost effective to screen all adults > 30 years old. This age cut-off is proposed because the mean age of onset of CKD in Nigeria is reported to be from around the 3rd to 5th decade of life (Ovwasa et al., 2023)

Potential Areas for further Research

There is need for further research on the exact role of non-traditional kidney disease risk factors such as environmental pollution and exposure to heavy metals, pesticides, herbicides, beautification products, vaping and drug abuse as relates to our environment.

Development and validation of CKD risk prediction models (such as the one by Grams et al., 2023) in the Nigerian population may be needed. These equations can help individuals determine their risk of developing CKD and can be used in primary health centres.

My Modest Contributions to Knowledge and Other Productive Works

I have published several articles in the field of nephrology and hypertension in peer review journals of impact. These studies, many of which revolve around CKD and risk factors, (including hypertension, diabetes and obesity) have significantly added to the existing body of knowledge in nephrology internal medicine and public health. For instance, the article on prevalence of chronic kidney disease among civil servants in Bayelsa State, is one of the foremost articles on kidney disease in Bayelsa State, and has been cited severally in many local and international papers. The prevalence of CKD in that study carried out a decade ago was 7.8%. Many of our reports today show that CKD and risk factors for the disease are highly prevalent in both urban and rural communities, underscoring the need for early screening and intervention.

I am also privileged to have contributed to the authorship of medical textbooks. These books are unique because unlike the traditional medical textbooks, they are written by indigenous authors and they have a local content. Notable among them are:

1. Companion to Tropical Medicine
2. Practical Textbook of Dialysis.

Prof. Olutayo Alebiosu is the Editor of both books
I have had opportunity to present findings of my research at both local and international conferences, where I have engaged in fruitful discourse with scholars from other climes. Notable among the conferences are:

1. The World Congress of Nephrology in Vancouver, Canada April 8 -12, 2011 where I presented two papers namely:
 - A. Prevalence of Cognitive Impairment among Nigerian Patients with Chronic Kidney Disease: The study concluded that cognitive impairment was highly prevalent among Nigerian patients with chronic kidney disease (35.3%) and was worse with declining kidney function.
 - B. Knowledge, Attitude and Practice of Nigerian Hypertensive and Diabetic Patients towards Chronic Kidney Disease: The study revealed that most of the patients had poor knowledge of kidney disease. Less than a quarter were aware that they were at risk. This highlights the need for health education and literacy programmes.
2. The 8th Conference on Kidney Disease in Disadvantaged Populations with theme: Disparities in Renal Disease-Moving towards Solutions. Victoria BC, Canada 12th-14th April, 2011

I presented a paper titled ' Pattern of Cognitive Impairment among Chronic Kidney Disease Patients and

Effect of Acute Haemodialysis on Cognitive Functions in Endstage Renal Disease in a Sub-saharan African Setting. The study concluded that CKD patients have deficits in memory and psychomotor tasks and that haemodialysis, on the short term may improve cognitive function

3. International Society of Nephrology Forefront Symposium at Ann Arbor, Michigan, June 7 -10, 2012.

Presented an abstract on the Association between the Metabolic Syndrome and Chronic Kidney Disease. The study reported that CKD was common among those with the syndrome. The metabolic syndrome includes conditions such as hypertension, diabetes and obesity. Kidney disease was shown to have an incremental relationship with the number of components of the syndrome, suggesting that early detection and treatment of those with the syndrome may be a cost-effective approach to managing CKD.

I have contributed immensely to the management of kidney disease in Bayelsa State and by extension, Nigeria. I started the first ever dialysis centre in the state, domiciled in the Federal Medical Centre, Yenagoa, about 13 years ago. It was quite an arduous task because there was nothing on ground when we started. There were no experienced personnel, infrastructure or even dialysis machines. However, the centre today has four functional machines, several consultants, dialysis nurses and biomedical engineers. I am also glad to inform us that Bayelsa State now has its first fully Government-owned

Dialysis Centre, commissioned in February this year. I was also a major key player in the setting up of that centre and I still render services there. Apart from rendering services to patients, it also provides opportunity to train our medical students. My appreciation goes to the Government of Bayelsa State for this great feat.

I have been Editor-in-Chief of the Niger Delta Medical Journal (NDMJ) for the past 4 years. The NDMJ is the official journal of the Medical and Dental Consultant Association of Nigeria (MDCAN), NDUTH Chapter. During this period, I have added to the body of scientific knowledge by curating impactful research, ensuring rigorous peer review of submitted manuscripts and assisting young scholars to develop skills in academic writing. I am also a member of the University Journal Committee.

I am a member of the College of Health Sciences' Curriculum Review Committee, where I have been making meaningful contributions to the improvement in the quality of the medical educational programme in the university.

I am currently the Chairman of the Postgraduate Committee in the Faculty of Clinical Sciences. Since my appointment over a year ago, the PhD in Clinical Sciences Programme which had largely been in limbo has received a new lease on life. After a long period of stagnation due to certain constraints, we are poised to produce the first set of graduands this year. The PhD in Clinical Sciences Programme is specially designed for fellows and

members of postgraduate colleges in medicine and surgery who desire to have a doctoral degree. Currently, we have up to 80 students registered in the programme across all geographical zones, including professors and consultants in medicine. I am currently supervising five of the candidates.

I am also the Chairman of the Niger Delta University Teaching Hospital Grand Round Committee. We organize quarterly meetings for hospital staff aimed at improved patient care through dissemination of relevant knowledge from evidence-based research.



Figure 16. Bayelsa State Government – Owned
Haemodialysis Centre
Source: Inaugural Lecturer

As part of community service, I have been involved in several medical outreaches, particularly to vulnerable persons including prison inmates, pregnant women and underserved rural communities.

ACKNOWLEDGEMENT

My utmost appreciation goes to the Almighty God, who is my *sine qua non*. Without Him, I am nothing. He is the essence of my life, the very fabric of my existence. There is nothing I have today that is not a gift from Him. I thank Him for taking me this far in life.

I am also grateful to my parents, Mr & Mrs Egbi, for the nurture, guidance and love they provided for me from my cradle days up till this very moment. My father was a civil servant in the Ministry of Agriculture and Natural Resources with a subsistence animal farm while my mother was a teacher. I deeply appreciate all the sacrifices they made in ensuring I get a good education despite the relatively lean resources at their disposal then. They were willing vessels in the hands of the Almighty in shaping my destiny. I am sure they can proudly say today that their investment was not futile.

I wish to appreciate my beautiful wife, Mrs Egwuye Ruth Egbi, for the love we share. Thank you for standing with me in every occasion, with this one not being an exception. I am grateful for all the support you gave to me while preparing for this event, and particularly for your understanding during the innumerable times the demand of work made me unavailable. My lovely son, Oghenenyore you came to fill a void in our life at a time when we needed you most. Your coming into our life after many years of great expectation was nothing short of a miracle and served as a major morale booster for me as I prepared for this lecture. I have also been blessed by wonderful siblings, with whom I grew up and navigated

life challenges, including Abraham, Helen, Edesiri, Oserume. My parents-in-law, Rev & Mrs Matthew Borngreat Agene have been very supportive in no little way, as also my siblings-in-law: Best, Mona, Chide, Dale, Edebo and Perfection. and several other relatives, too numerous to mention here.

I am also thankful to my teachers including those who taught me in my early formative years such as Mr Eson, my primary six school teacher, for his role in shaping me, and several others in my elementary and secondary school days. Prof Oviasu, Prof Unuigbe, and Prof Ojogwu, taught me nephrology initially as a medical student in the University of Benin and later as a resident doctor in the University of Benin Teaching Hospital, Benin City. I was inspired by their passion and dedication to work. While there, I also learnt a lot from Dr Okaka, Dr Chukwuonye, Dr Onwuchekwa, and Dr Okafor:- who were senior Registrars in the unit then. Dr. Okaka and Dr. Okafor are esteemed professors of nephrology today, I recognize the efforts of consultants and lecturers in the other units I rotated through as a resident doctor, including Prof Imarhiagbe, Prof Egbagbe, Prof Akoria, and Dr Odiase, to mention a few. I enjoyed a good working relationship with colleagues in Nephrology, including Dr Okoye, Dr Ahmed, Dr Odonmeta, and then later, Dr Adejumo, (who is a close friend and research partner) as well as with peers in other units including Dr Umuerrri (Cardiology), Dr Joseph (Dermatologist), Dr Ogholor (Gastroenterology) and Dr Adeoti (Pulmonology). Many of them today are either professors or distinguished medical consultants in their respective

fields today. The friendship and collaboration we share have continued to flourish all through these years. I am grateful to Prof Ibi Erekosima and Prof Emmanuel Agaba for all the encouragement I received from them at one time or the other.

I appreciate members of my old boys association from Immaculate Conception College, Benin City, as well as old friends from the University of Benin for standing by me.

I thank colleagues and members of the College of Health Sciences, Niger Delta University, including the Provost, Prof Isarel Jeremiah, Dean of Faculty of Clinical Sciences, Prof Eugene Ikeanyi and other Deans, particularly, the Dean of the Postgraduate school, Prof Mirabeau Tattfeng, with whom I work closely. Prof Mbachu Comfort of the Faculty of Education provided a lot of moral support and encouragement and for this, I am grateful. I thank all members of the Department of Internal Medicine in the University and its affiliated Hospital, for their unflinching support towards me, especially since I assumed the office of the Head of Department about four years ago. I also have colleagues from the Federal Medical Centre, Yenagoa here to felicitate with me. I am indeed grateful for your love and support.

I cannot fail to acknowledge those who have spiritually nurtured me. The scripture encourages us to count such persons worthy of double honour. I specially recognize the efforts of Apostle Godwin Ojuh of Life Renewal

Ministries, Benin City, who helped in moulding me and showing the path to go, as a young teenager, and since then, has remained a spiritual guide to me and my family. I am grateful to the Senior Pastors of Shepherd Vine Christian Centre, Rev Emmanuel Ogiemudia and Pastor Kemi Ogiemudia (his beloved wife) for being effective and reliable shepherds in the Lord's vineyard. I salute their doggedness in advancing the kingdom work. I appreciate my branch pastor, Pastor Akeem Adebajo and his lovely wife for their tender pastoral love and care. The Full Gospel Businessmen's Fellowship International, Nigeria has been a veritable platform for me to manifest my God-given talent. I appreciate every member of the fellowship present here.

I wish to acknowledge the efforts of traditional rulers, and royal fathers from my community, including His Majesty, Dr Matthew Ediri Egbi. Thank you for your love and the goodwill you have shown towards me and my family. May God continue to bless every son and daughter of the Ughievwen Kingdom of Delta State of Nigeria under your watch and may your tenure in office be a successful one.

My appreciation goes to all my undergraduate and postgraduate students, including the students undergoing the doctoral programme in clinical sciences in this university for allowing me to tutor, guide, supervise or mentor them.

My heart felt gratitude goes to every other person, too numerous to mention who has made my academic

ascension, a bit more seamless. Thank you for the prayers, the words of encouragement, the nudging, and even the reprimand or rebuke, that you gave to me at one time or the other.

Finally, I appreciate all the invitees and everyone that took time to listen to the lecture and make this moment unforgettable.

NDU 65TH INAUGURAL LECTURER



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ABOUT THE INAUGURAL LECTURER

Professor Oghenekaro Godwin Egbi was born on October 11, 1975 in Benin City in the defunct Bendel State of Nigeria to the family of Mr James Ewvirotakpo Egbi and Mrs Mary Egbi (Nee Baror) of Arhagba village and Otegbo village respectively, both in Ughelli South local government area of Delta State.

The young Oghenekaro had his elementary education at Ologbosere Primary School in Benin City from 1980 to 1985, with a distinction at the Primary School Certificate Examination and proceeded to the Immaculate Conception College from 1986 to 1992. He was subsequently admitted into the University of Benin, (UNIBEN) in 1993 and graduated in early 2002, bagging an MBBS degree in Medicine & Surgery. The programme had been unduly prolonged as a result of ASUU strike and other institutional bottle necks. Afterwards, he completed the one-year mandatory internship training at Federal Medical Centre, Owo, Ondo state and proceeded for another one-year NYSC engagement at Ushongo LG Health Centre in Benue State which he concluded in 2005. He worked briefly at St Thomas Hospital, Ihugh, Vandekeiya LGA, as a medical officer, during which period he passed the qualifying primary examination for the National Postgraduate Medical College, for entry into the residency programme. He was admitted into the residency training programme in Internal Medicine in the University of Benin Teaching Hospital (UBTH), Benin City, in December, 2005. He passed his membership examination after three years of intense studies, and after

another three years of hard work, he passed his part II examinations in the National Postgraduate Medical College (FMCP) and West African College of Physicians (FWACP) in Internal Medicine (Nephrology sub-specialty) qualifying as a fellow of both colleges in 2011. During the period of residency, he also enrolled for a part-time masters programme in public health in UNIBEN and was awarded an MPH degree on completion in 2010.

He worked for a few more months in UBTH after the fellowship award as a Senior Registrar and was subsequently appointed as Consultant Nephrologist at the Federal Medical Centre, Yenagoa (FMCY), in Bayelsa State in 2011. While there he set up the first dialysis centre in Bayelsa State in 2013. It was quite an uphill task as prior to that, there were no existing structures or infrastructure, very little man-power and lack of technical knowledge. This was later complemented by a private dialysis outfit established by him in 2014, when the demand for patient service began to outstrip the supply at the centre. This development meant a lot to patients on maintenance dialysis, who had no need to travel to neighbouring states to access care, as was the case prior to the establishment of the centres.

However, being an academic driven young man, he was not satisfied with practicing solely as a clinician. This made him take up an offer of appointment as Lecturer 1 in internal medicine in the Niger Delta University in February, 2012, while resigning from his full-time engagement with FMCY. In 2015, he was promoted to the rank of a Senior Lecturer and in another six years, he

was elevated to the position of a full Professor of Internal medicine & Nephrology.

Once again, driven by passion to improve research-driven patient care, and academic impact, he enrolled for a doctoral programme in University of Port Harcourt and bagged a PhD degree in Public Health (Health Systems Management) in March, 2025.

His research interests include chronic kidney disease and risk factors, hypertension, preventive nephrology and public health.

Prof Egbi is a prolific researcher and writer. He has about 45 publications, in peer review journals with over 80% of them credited to him as lead author. He has also contributed to chapters in some medical textbooks including

1. Practical Textbook of Dialysis for Healthcare Workers and Students (Ed. Professor Alebiosu Olutayo)
2. Companion to Tropical Medicine (Ed. Professor Alebiosu Olutayo)

He has served as reviewer for many local and international journals of repute.

He has also made scientific presentations in several important conferences including:

- I. World Congress of Nephrology, Vancouver, Canada in 2011 where he presented two papers namely:
 - a. Prevalence of Cognitive Impairment

- among patients with Chronic Kidney Disease in the University of Benin Teaching Hospital, Benin City, Nigeria
- b. Knowledge, Attitude and Practice of Hypertensive and Diabetic Subjects towards Chronic Kidney Disease in the University of Benin Teaching Hospital, Benin City, Nigeria
- ii. The 8th Conference on Kidney Disease in Disadvantaged Populations With Theme: Disparities in Renal Disease-Moving towards Solutions. Victoria BC, Canada 12th-14th April, 2011 where he presented a paper on: “Pattern of cognitive impairment among chronic kidney disease patients and effect of acute haemodialysis”
- iii. International Society of Nephrology (ISN) Forefront Symposium in the United Kingdom in 2013, where he presented an abstract on association of metabolic syndrome with chronic kidney disease

Prof Oghenekaro Egbi has been involved in several administrative positions in the University. He was appointed as Faculty Representative to Senate in 2020. Shortly afterwards, he became the Head of Department of Internal Medicine, a position he occupies till date.

He has served as the Editor-in-Chief of the Niger Delta Medical Journal (NDMJ), an official publication of the

Medical and Dental Consultant Association of the Niger Delta University Teaching Hospital in the past four years. He is also a member of the Niger Delta University Journal Committee.

He is currently serving in the College of Health Sciences Curriculum Review Committee where he is making important contributions to medical education

He is the Faculty Postgraduate Committee Chairman where he is actively coordinating and driving the relatively new PhD programme in Clinical Sciences and other postgraduate programmes.

Prof Egbi has also been involved in other assignments outside the four walls of the University. He served in the Nigerian University Commission (NUC) Accreditation Visitation Panel to the Department of Medicine at Afe Babalola University in December 2024. He was also involved in Postgraduate Accreditation Visit under the auspice of the West African College of Physicians to the Department of Internal Medicine & Nephrology subspecialty in Obafemi Awolowo University Teaching Hospital, Ile-Ife in May, 2025. He has been involved in external assessment of candidates being appraised for professorial cadre in other institutions. He has visited several medical schools at various times as external examiner for final undergraduate examination in Internal Medicine, including University of Benin, Benin City, Delta State University, Abraka and Rivers State University, Port Harcourt. He has also been involved in several community services, including health outreaches

to the prison, pregnant women, rural communities and other vulnerable population.

Prof Oghenekaro Egbi has received some recognition for hard work. Notable among them is an award as 2nd runner-up consultant in recognition of his exemplary service to the Niger Delta University Teaching Hospital in 2023. Recently, he attracted a grant from the Bayelsa Educational Trust Fund to the University to fund a key research project of relevance to the Niger Delta region.

He is a devout Christian and currently worships with the Shepherd Vice Christian Centre, Yenagoa. He is also involved with the Full Gospel Businessmen's Fellowship International, Nigeria, where he is currently a field representative. His personal life principles are godly fear, hardwork, humility, honesty and integrity.

He is married to Mrs Egwuye Ruth Egbi, (nee Agene), a lecturer in the Department of Computer Science in the International Institute of Tourism and Hospitality, Bayelsa State. she also doubles as a gospel record artist with the stage name “Ruthkaro.” They are blessed with a gorgeous son, Oghenenyore Theodore Egbi.

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