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Beyond Donor Aid and Scarce Public Sector Financing: Mobilising Impact Investment to Address Out-of-Pocket Expenditures in Nigerian Chronic Kidney Disease Care

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Abstract

In Nigeria, the primary method of financing the management of Chronic Kidney Disease (CKD) is through Out-of-Pocket (OOP) expenditure. This crisis has reached a critical level, requiring urgent attention for both policymakers and scholars to identify a lasting solution to the catastrophic financial burden that patients and family members undergo. Against this backdrop, this study employs desk-based research and targeted interviews to explore the best possible alternative CKD financing in Nigeria. The desk-research findings identified impact investment as a credible alternative to addressing this financial burden. However, considering that impact investors credibility is high in investing in projects with social impact, the new norm in impact investing is for projects to yield the dual benefits of social impact and moderate financial returns. Based on this, interviews were conducted to determine the best possible investment in the areas of kidney replacement therapy that impact investors will invest in to garner both financial returns and social impact. Interview insights confirm that such dual benefits are possible when impact investment is directed towards five critical areas: community-based preventive projects; supply chains and pharmaceutical projects; low-cost dialysis projects; training and workforce development projects; and health technology innovation projects. In conclusion, the study emphasised the need to embrace impact investment in these areas to alleviate substantially the economic strain on CKD patients as well as broaden and strengthen Nigeria's healthcare financing landscape.

Keywords: CKD, Impact investing, healthcare financing, OOP, Nigeria

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1. Introduction

Chronic Kidney Disease (CKD) is acknowledged as a significant public health challenge globally (Chen *et al*. 2024; Ogieuhi *et al*. 2024). As CKD advances to end-stage renal disease (ESRD), numerous patients seek kidney replacement therapy (KRT), encompassing haemodialysis, peritoneal dialysis, kidney transplantation, or conservative management to prolong life (Chen *et al*. 2024). In 2010, approximately 2.6 million individuals with ESRD underwent KRT, with projections indicating an increase to 5.4 million by 2030 (Liyanage *et al*., 2015). In 2017, the prevalence of CKD rose, affecting approximately 843.6 million individuals worldwide (Jager *et al*. 2019). The prevalence of CKD in sub-Saharan Africa exceeds the global average, with a concerning incidence among younger adults, ranging from 12% to 23% (Patrice *et al*. 2020).

The disease represents a significant global health challenge, silently affecting many Nigerians who lack access to affordable lifesaving renal replacement therapies available for the past three decades (Lang *et al*. 2022). The actual prevalence of kidney disease in Nigeria is not well established, as most available statistics on prevalence and incidence derive from institutional studies (Ibitoba, 2022). Community-based studies in Nigeria estimate the prevalence of CKD in adults to be between 19% and 30%, while the prevalence in paediatric populations is approximately 15 per million individuals (Oluyombo *et al*. 2013; Chukwuonye *et al*. 2018; Odetunde *et al*. 2014). Hospital-based studies indicate that ESRD constitutes 6-12% of medical admissions (Wachukwu *et al*. 2016; Ulasi and Ijoma, 2010). The cases of CKD in Nigeria predominantly impacts young individuals during their economically productive years, thereby imposing a considerable burden on the national economy (Olanrewaju *et al*. 2020; Ulasi *et al*. 2013).

The management of CKD and ESRD significantly depends on out-of-pocket (OOP) payments, rendering treatment for renal failure unaffordable for numerous patients. Arodiwe *et al*. (2023) reported a significant prevalence of catastrophic health expenditure among patients with CKD, with costs uniformly distributed across socioeconomic strata. The majority of patients financed their treatment OOP, utilising personal resources or borrowed funds. Agaba and Tzamaloukas (2012) noted that the elevated mortality rates in ESRD patients undergoing haemodialysis are primarily attributable to dependence on OOP payments, as a limited number of patients and their families cannot afford thrice-weekly dialysis. In low-resource settings, the

management of ESRD is infrequent, which significantly limits access to regular haemodialysis (Okoye and Mamven, 2022; Essue *et al*., 2018) necessary for patients to attain adequate Kt/V urea levels as per KDOQI standards.

This study advocates for a novel approach to health insurance for chronic kidney disease, moving beyond the current partial coverage to a comprehensive model. This study's focus shallowly aligns with the advocacy of Odubanjo *et al*. (2011) asking for CKD funding to be from either public or foundation resources. They argue that this approach is the most effective means of ensuring appropriate treatment for ESRD, as such interventions possess a higher social value, yielding benefits that surpass associated costs, and are preferable to those with lower social value (Fawsitt *et al*. 2017). In contrast to Odubanjo *et al*. (2011), Kipfer (2020), referencing Cohen (2020), contended that the nature and magnitude of contemporary health, social, and environmental issues render public finances and philanthropic contributions inadequate to address their extent and complexity. It was on this backdrop that the authors insight for this paper originated as they tried to look beyond donor aid and public sector financing in addressing financial barriers to renal care.

Impact investing is seemingly a plausible option worth exploring since it's cardinal goal is generating measurable social and environmental benefits in addition to financial returns (O'Donahoe *et al*. 2010). Broadly, it addresses environmental and social challenges across sectors including agriculture, conservation, renewable energy, and microfinance, while ensuring access to affordable basic services such as education, healthcare, and housing. The unique selling proposition of impact investing lies in its ability to benefit all stakeholders: first, it assists governments in addressing pressing social issues; second, generates double-bottom line returns for investors; and thirdly, actively contributes to improvements in the social sector (Acevedo and Wu 2018; Cohen 2018). The fulfilment of the UN sustainable development goals (SDGs) by 2030 is posited to be partially reliant on the robustness of the impact investing ecosystem; hence Phillips and Johnson (2019) asserted that this ecosystem has been optimistic, with estimates indicating a potential influx of new capital ranging from $400 billion to $1 trillion by 2020, thereby exceeding the financial contributions of philanthropy. Against this backdrop, this paper examines the potential of impact investing to mitigate catastrophic spending among renal patients, aiming to propose an alternative healthcare financing mechanism that ensures CKD sustainable care beyond the current OOP expenses, donor aid and scarce public sector financing.

2. Literature review: CKD Cost implications

Lang *et al*. (2022) provided a comprehensive analysis of the costs associated with KRT from the payer's perspective in Nigeria. They estimated that the annual cost for three sessions per week of haemodialysis amounts to $23,097.32, while the cost for a living donor kidney transplant (LDKT) is $37,271.00. If successful, LDKT will incur an annual recurring cost of $6,709, whereas a patient continuing with KRT under haemodialysis will incur an additional $22,394.32 each subsequent year. Agada-Amade (2024) examined the cost issue and reported that the estimated annual cost per patient for dialysis in LMICs ranges from approximately $3,424 to $47,971. They identified direct costs, particularly those related to medications and consumables, as the primary factors influencing the cost of haemodialysis. For transplant, the cost varies by country: approximately $32,000 in Nigeria, $21,530–$27,000 in Kenya, $20,000 in Ethiopia, $18,775 in Ghana, $10,530 in Cameroon, $10,000 in Tanzania, and $5,000–$6,000 in Uganda (Ayamba, 2020; Elrggal *et al*., 2021; Njamnshi *et al*., 2023; Gool, 2019).

Memirie *et al*. (2025) investigated OOP expenditure and financial risk related to CKD treatment in Ethiopia in 2023, reporting a mean annual OOP medical expenditure of $677 for outpatient visits and $5,312 for haemodialysis services. Patients attending private facilities experienced six times greater costs than those utilising government facilities, whereas dialysis care was 2 to 8 times more expensive than non-dialysis care (Memirie, *et al*. 2025). The wealthiest households expend approximately eight times more than the poorest households and exhibit a higher propensity to utilise private facilities, with 90% of patients in the lowest quintile accessing government facilities compared to 46% of the wealthiest patients. Medical tourism is increasingly adopted as affluent patients pursue kidney transplants overseas, driven by insufficient local facilities and resulting financial pressures. The financial crisis faced by households due to OOP payments that drive families into poverty, coupled with the wealthiest individuals seeking treatment abroad due to insufficient facilities, positions Africa as the region with the lowest rate of kidney transplants. (Refer to Figure 1).

Okpechi *et al*. (2024) conducted a cross-sectional survey across 148 countries to determine the proportion of countries offering public funding that is free at the point of delivery. The results indicate an increase from 27% in 2019 to 28% in 2023. The proportion decreased from 21% to 18% in upper middle-income countries and from 19% to 0% in low-income countries, while it increased in high-income countries from 40% to 55%. Okpechi *et al*. (2024) indicated that countries where haemodialysis was funded through private means and exclusively OOP did not exhibit global changes; however, there was an increase in Africa from 11% to 17%, as well as an increase in low-income countries from 13% to 19% (see table 1). The percentage of countries providing publicly funded peritoneal dialysis at no cost to patients rose from 23% to 28% worldwide. Globally, the percentage of countries utilising OOP payments for kidney transplants and medications decreased from 8% to 6%, with a reduction from 6% to 0% in Latin America and from 36% to 0% in the Middle East. Unfortunately, the costs associated with KRT and transplantation have not decreased in Africa, as most African countries continue to manage CKD through OOP expenditures.

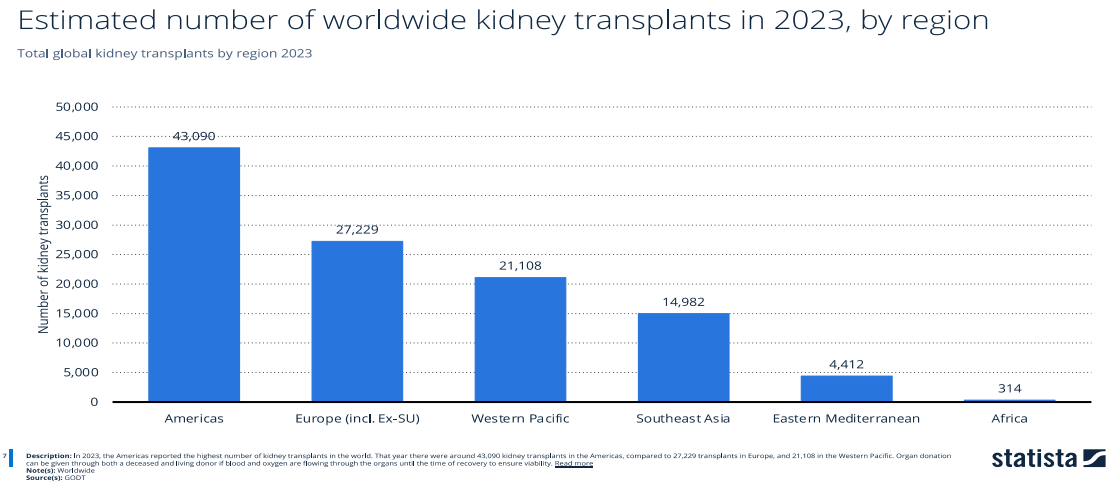

Figure 1: Estimated number of worldwide kidney transplant in 2023, by region.
Source: Statista, (2024)

Table 1: Funding strategy of healthcare system for kidney replacement treatment (and medications) in 2019 and 2023

Table 1 | Funding strategy of healthcare system for kidney replacement treatment (and medications) in 2019 and 2023

	Publicly funded by government and free at the point of delivery				Solely private and out-of-pocket			
Kidney replacement treatment	**2019, %**	**2023, %**	**P value**	**No**	**2019, %**	**2023, %**	**P value**	**No**
Haemodialysis								
Overall	27	28	0.71	141.0	6	6	1.00	141
ISN regions:								
Africa	20	11	0.08	35.0	11	17	0.48	35
Eastern and Central Europe	31	50	0.18	16.0	13	6	0.32	16
Latin America	28	22	0.71	18.0	0	0	—	18
Middle East	18	18	1.00	11.0	0	0	—	11
NIS and Russia	43	29	0.32	7.0	0	0	—	7
North America and the Caribbean	29	14	0.32	7.0	14	14	1.00	7
North and East Asia	0	17	0.32	6.0	0	0		6
OSEA	13	13	1.00	15.0	7	0	0.32	15
South Asia	17	0	0.32	6.0	0	0	—	6
Western Europe	55	80	0.025*	20.0	0	0	—	20
World Bank groups:								
Low income	19	0	0.08	16.0	13	19	0.66	16
Lower middle income	17	11	0.16	36.0	6	6	1.00	36
Upper middle income	21	18	0.72	34.0	9	9	1.00	34
High income	40	55	0.046*	55.0	2	0	0.32	55
Peritoneal dialysis								
Overall	23	28	0.22	141	4	4	1.00	141
ISN regions:								
Africa	11	9	0.56	35	6	6	1.00	35
Eastern and Central Europe	38	38	1.00	16	13	6	0.32	16
Latin America	17	33	0.32	18	0	0	—	18
Middle East	36	27	0.56	11	0	0	—	11
NIS and Russia	43	29	0.32	7	0	0	—	7
North America and the Caribbean	0	14	0.32	7	0	0	—	7
North and East Asia	0	33	0.16	6	0	0	—	6
OSEA	20	7	0.16	15	0	7	0.32	15
South Asia	0	0		6	17	0	0.32	6
Western Europe	50	80	0.034*	20	0	5	0.32	20
World Bank groups:								
Low income	0	0		16	6	6	—	16
Lower middle income	11	6	0.32	36	3	3	1.00	36
Upper middle income	26	26	1.00	34	6	6	1.00	34
High income	36	53	0.039*	55	2	2	1.00	55
Kidney transplantation								
Overall	31	36	0.38	107	8	6	0.32	107
ISN regions:								
Africa	17	17	1.00	12	17	25	0.32	12
Eastern and Central Europe	44	38	0.66	16	13	13	1.00	16
Latin America	19	38	0.26	16	6	0	0.32	16
Middle East	27	27	1.00	11	36	0	0.046*	11
NIS and Russia	43	14	0.16	7	0	0	—	7
North America and the Caribbean	40	20	0.32	5	0	0	—	5
North and East Asia	0	50	0.08	6	0	0	—	6
OSEA	20	20	1.00	10	0	0	—	10
South Asia	17	0	0.32	6	0	0	—	6
Western Europe	56	78	0.10	18	0	6	0.32	18
World Bank groups:								
Low income	25	25	1.00	4	25	25	1.00	4
Lower middle income	13	8	0.56	24	13	8	0.32	24
Upper middle income	28	28	1.00	29	7	7	1.00	29
High income	42	54	0.13	50	6	2	0.32	50

*P<0.05.
ISN=International Society of Nephrology; NIS=Newly Independent States, as defined by the ISN; OSEA=Oceania and South East Asia; PMP=per million population.

Source: Okpechi *et al*. (2024)

From the foregoing, Table 1 indicates that regions such as the Middle East have successfully reduced transplant costs from 36% to 0%, demonstrating significant progress in expanding access and alleviating financial burdens on their citizens. In contrast, the data for the African region reveals minimal advancements, as the costs associated with kidney care, including dialysis, transplants, and medication, continue to be borne as OOP expenditures by patients. This highlights a critical issue: Africa's fiscal capacity is significantly limited, and current policies are ineffective in addressing this major concern. Consequently, while advocacy for government funding or inclusion in national insurance may be documented, its implementation is likely to be delayed due to a fragile system, competing health priorities, and constrained fiscal resources. It follows that there is a necessity to transition to alternative financing for kidney disease treatment, particularly for dialysis and transplantation, which demand ongoing and capital-intensive resources.

2.1. Impact Investing in Addressing Financial barriers in Healthcare

Impact investing is defined variably and is often used interchangeably with terms such as socially responsible investing (SRI), social investment, ethical investing, green investing, sustainable and responsible investing, and Environmental, Social and Governance (ESG) investing (Lestari and Frömmel, 2024). Vega *et al*. (2025) defines it as an investment aimed at achieving financial returns alongside measurable positive effects on environmental and social issues, with the primary objective of generating quantifiable impacts that facilitate significant advancements in addressing these challenges. It ensures that investors aim is to create a positive effect on the environment or society through their financial commitments (Global Impact Investing Network n.d.; O'Donahoe *et al*. 2010). This novel approach of financing project has gained prominence as a tool to help achieve the UN SDGs by 2030 (Phillips and Johnson, 2019), due to its capacity to leverage market efficiency to address issues and pursue SDG opportunities, such as serving as a tool for constructing houses, generating quality employment, addressing health issues, conserving land, producing nutritious food, implementing renewable energy, and fostering an improved world (Bouri 2025).

Impact investors distinguish themselves from conventional investors by not following conventional investing to maintain a primary focus on financial returns, instead prioritising social impact over financial returns when confronted with a tradeoff between the two (Glänzel and Scheuerle 2016; Roundy *et al*. 2017). This is because impact investment must exhibit three essential characteristics: the anticipation of a positive financial return throughout the investment's duration; a clear intention to generate social or environmental impact; and a commitment to measuring and tracking that impact. Investors cannot simply choose to invest in healthcare and label it as impact investment without demonstrating a genuine commitment to the intended impact. Investors in this category ensures they fulfil additional non-financial criteria, as they assert that enhancing corporate social responsibility will contribute to more sustainable development. Nga *et al*. (2010) posited that contemporary individuals are increasingly aware of their societal image and attentive to current market trends, suggesting a willingness to engage in risk-taking and invest in socially responsible funds, commonly referred to as impact investments. Riedl and Smeets (2017) investigated the motivations of investors in impact investment, revealing that impact investors expect lower returns compared to traditional investments. Consequently, they prioritise social preferences and are willing to sacrifice financial performance.

Remarkably, impact investing in the health sector has experienced considerable growth over the past decade. Hulse *et al*. (2020) conducted a comprehensive scoping review on impact investing within the health sector. They indicated that impact investing interventions prioritise prevention over treatment. Their study indicated that three impact investments concentrated on diabetes, two on mental health, and two on cancer, while the remaining investments addressed hypertension, asthma, long-term conditions, and mental health. They asserted that the impact investing initiatives in Canada, Kobe, Israel, Devon, and Fresno focused on health education to assist participants in mitigating their risk of hypertension, diabetic nephropathy, type 2 diabetes, and asthma. Their study clarified that the impact investing intervention in Canada included an online health planning learning platform, supported by dietitians and personal health coaches. It also provided membership to health and fitness centres and offered optimum points for groceries, retail and gas to incentivise and reward healthy behaviours (Heart & Stroke Foundation, 2020). The target outcomes of these investments were categorised as health-based, service-based, or participation-based.

Hulse *et al*. (2020) acknowledged the initiative for alternative innovative health financing but emphasised the necessity for enhanced replicability and sustainability. This can be achieved by reducing transaction costs, boosting private investment, selecting more suitable health outcomes, extending the duration and scale of interventions, and improving transparency, thereby strengthening the case for and expanding the application of impact investing. Hulse *et al*. (2020) citing Lam and Tansay, (2018) reported another impact investment in Fresno, which focusses on integrating education with in-home care initiatives to mitigate exposure to indoor environmental asthma triggers. The interventions comprised carpet cleaning, elimination of dust, mould, and pests, recommending behavioural modifications (such as cessation of smoking), and overseeing adherence to medication regimens (see Crowley, 2014; Clay, 2013). For Hulse *et al*. (2020), through the work of University of Oxford (2019) submitted that Kobe's impact investment involved a six-month initiative focused on health education and guidance for high-risk individuals who had either not participated in medical check-ups or had ceased treatment for colorectal cancer (University of Oxford, 2019). The Israel and Devon impact investing initiative focused on preventing type 2 diabetes by providing education on behavioural and lifestyle modifications, including exercise, diet, nutrition, and motivation (Hulse *et al*. 2020, citing West Bank, 2017).

Impact investment has equally been implemented in Nigeria's healthcare. The recent publication by Flying Doctors on impact investing and healthcare financing provided examples of impact investment within the healthcare sector.

Specifically, the Evercare Health Fund, was initially managed by the Abraaj Growth Markets Health Fund. Despite their focus on enhancing access to medical resources and addressing inefficient healthcare systems, they proceeded to establish a hospital, specifically the Evercare Hospital in Lagos, Nigeria.

Although, the impact investing movement in healthcare persists, yet there are prevailing misconceptions regarding the necessity of sacrificing financial returns. Questions arise about the ability of impact investing projects to attract funding (Oehmke, 2025, which remains the hallmark of any investment). Agyapong and Ewusi (2017) previously addressed a similar argument by asserting that the practice of impact investment does not necessitate sacrificing returns, despite some perceptions to the contrary. Recent observations indicate that impact investments can yield performance comparable to that of conventional investment types. This is because technological advancements have facilitated easy access to information regarding pro-social goods for consumers. Heeb *et al*. (2023) and Riedl and Smeets (2017) indicated that warm glow investors now view impact investment favourably, as they derive utility from the perception of contributing positively, which may lead them to forgo financial returns in favour of social impact. When investors prioritise this preference over financial returns, it becomes easier for impact investments with an impact mandate to secure funding from individual investors.

Overall, healthcare investment serves as a defensive strategy that balances portfolios, aiding in the protection of investors from substantial losses during market downturns. The healthcare sector is relatively insulated due to its essential nature. Additionally, it is a counter-cyclical sector, experiencing job growth more rapidly during recessions compared to normal periods. Diversification in sectors, along with geographical diversification, is advantageous given the current economic climate. Impressively, the African markets continue to exhibit double-digit interest rates, presenting an opportunity for impact investors who prioritise minimal financial returns. The viability of healthcare is compromised if market investors prioritise substantial financial returns over the social impact of improved health systems, thereby undermining the purpose of impact investment. Impact investment is a crucial model for private investment in healthcare in Africa, characterised by expectations of minimal financial return.

2.2 Financing Options for Impact Investment in healthcare

Anago (2024) examined diverse methods, instruments, and sources for mobilising capital aimed at sustainable development. In that study, numerous financing options were identified that impact investors can utilise to promote sustainable infrastructure development in sub-Saharan Africa. The list comprised federal allocations, multilateral finance (including concessional finance, grants, and catalytic/blended finance), institutional investments (such as pension funds, insurance, and sovereign wealth funds), private equity, debts (excluding multilateral finance, like bonds), Islamic finance (Sukuk), state internally generated revenue, crowding, and tax credits. This study focusses on healthcare rather than sustainable infrastructure, thereby limiting the financing tools to institutional investment and multilateral finance, as both are designed to contribute to social impact.

Institutional investors represent a viable source for healthcare financing. Insurance companies, pensions, and sovereign wealth funds (SWF) typically serve as the primary investment vehicles within the institutional investment category, allocating assets to infrastructure projects in healthcare and other sectors. The unique selling proposition for institutional investors lies in their substantial assets and a shift from a pessimistic stance to an interest in impact investing (Gao, Hao & Zie, 2022). This turnaround is significant as their investment outlook aligns with impact investing. While substantial financial returns are not always the primary objective, they tend to favour low-risk assets, making them open to investing in impact projects that offer stable financial returns. Institutional investors are increasingly diversifying their investment portfolios by transitioning from liquid assets to a significant increase in both non-listed and listed investment products that provide access to the infrastructure asset class and impact investments, thereby complementing existing direct investment avenues (Marzuki & Newell, 2020, p. 239).

Moreover, institutional investors are increasingly directing capital towards emerging market projects to secure more favourable deals and enhanced returns relative to their traditional investments in low-risk assets. This shift aligns with their objectives of geographical diversification and inflation hedging, thereby requiring more assertive portfolio target setting (Anago, 2021). These they do through private equity, private debt funding, and impact bonds (Finkelman and Huntington, 2017). This approach is to accommodate their lack of time and specialised skills necessary for conducting due diligence in screening potential impact investments and efficiently monitoring them to ensure societal contributions (Cumming and Johan, 2007). Consequently, private equity has emerged as a significant asset class for institutional investors, accompanied by an increasing trend towards impact investing practices supported by private equity firms.

Furthermore, Mehta *et al*. (2020) observe that institutional investors utilise mutual funds to support this initiative by incorporating specific financial products in their portfolios, primarily emphasising the social dimensions of investment, thereby expanding their customer base. The authors argued that impact investing mutual funds exemplify a significant pro-social positioning strategy, because it integrates social, ethical, or environmental criteria into the investment decision-making process (Mehta *et al*. 2020).

Multilateral and bilateral financing agencies include multilateral development banks such as the World Bank, International Financial Corporation (IFC), Inter-American Development Bank (IDB), European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB), along with various national development and policy banks. The appeal of multilateral finance lies in its hybrid structure, combining grants and concessional funding. This aligns with the perspectives of Peng and Bai (2021), who argue that direct funding mechanisms, including grants and subsidies, are effective financial instruments for impact investing, regardless

of the investment vehicle. Furthermore, enhancing impact finance through concessional funding continues to be a primary objective. The multilateral angle is noteworthy due to its concessional financial attributes.

Relatedly, concessional finances can be categorised into two types: blended and catalytic finances. First, blended finance strategically utilises concessionary funding instruments to mobilise additional private finance for emerging countries, aiming to achieve measurable and non-financial development outcomes (Havemann, Negra & Werneck, 2020). Second, catalytic finance is a more cost-effective alternative, as it functions as development mandate capital (Anago 2022). This approach includes a concessionary subset of impact investing and philanthropic grant-making, which is appropriate for health sector projects where private sector involvement is limited due to low or nonexistent returns, perceived or actual risks, or ratings below investment grade (Bose, DeFrancia, and Uquillas 2020). In addition to the grant features, the funds serve as a crucial catalytic instrument for the health sector due to their investment capital characteristics, including debt, equity, guarantees, and other risk-accepting investments that offer concessionary returns compared to conventional investments. Leijonhufvud, *et al*. (2019) argues that catalytic finance approach generates positive impact and facilitates third-party investments that would otherwise be unfeasible.

Moreover, the distinctiveness of catalytic capital established to tackle urgent global challenges and allocate resources to sectors such as sustainable agriculture, renewable energy, microfinance, and essential services, is evident in its forms, origins, and applications, including housing, healthcare, and education (Leijonhufvud, *et al*. 2019). It manifests in various forms, referred to as the five P's. This means that the Price should be set to guarantee rates that remain below the market rate of return in relation to the anticipated risk. The Pledge serves to enhance credit through guarantees. The Position may also enhance credit via subordinated debt or equity. The Patience entails a willingness to accept extended or particularly uncertain timelines before exit. The Purpose involves openness to non-traditional terms that accommodate the investee's needs, including unconventional or absent collateral, self-liquidating structures, elevated transaction costs, and smaller investment sizes, aligning well with the framework of impact investing.

Also, its origin is derived from a variety of capital sources: one source offers capital with a development mandate, which includes concessional loans accepting below-market interest rates, concessional equity with asymmetrical returns, or grants with the expectation of redemption. The other source provides commercial capital, both public and private, without a development mandate, necessitating a market rate of return along with risk mitigations or partial guarantees. A catalytic capital practitioner is tasked with identifying suitable matching opportunities between the objectives of private capital and the requirements of development actors (Bose *et al*. 2020). Moreover, catalytic capital is utilised for impact investing, with the intention that it may facilitate innovation (Ogden, 2016) or, as noted by Clark *et al*. (2014), contribute to establishing a track record and demonstrating the capacity to achieve intended impacts and repay investors within the expected timeline without cost overruns. It can leverage additional investments in high-risk profiles, signal impact potential by sharing components of due diligence to alleviate potential investors' burdens, and safeguard the mission by exerting significant influence to incorporate social and environmental requirements and enhance accountability for impact. Therefore, impact investment through various sources of funding or investment vehicle has the potential to improve affordability and access to CKD treatment and management.

3. Methodology

This study employed a research methodology that combined desk-research with interview questions. The desk-based approach concentrated on the analysis of existing data, specifically open data, along with published articles, institutional documents, and other grey literature to address research questions that diverge from those posed in their original study (Hinds *et al*., 1997, as cited by Cheong *et al*., 2023; Ip *et al*., 2020). The inclusion of institutional publication and grey literatures is based on the understanding that numerous grey articles and data present narratives pertinent to the study objective that have not been previously analysed (Long-Sutehall, Sque, and Addington-Hall 2010). An independent researcher could, among other contributions, 'lend new strength to the body of those fundamental social knowledge' (Glaser, 1963:11, as cited by Cheong *et al*., 2023). This approach is also helpful in contexts where the subject matter is novel and the understanding among the population is limited. It requires desk-based research deployment to establish solid understanding that will guide "elusive population", which Fielding (2004), describes as challenges in access to information via interview due to the novelty of the knowledge. Admittedly, obtaining access to respondents knowledgeable about impact investing in healthcare remain challenging. The research-based guided us on key information that formed part of the interview questions to enable the respondents provide credible answers.

Data Collection and Analyses

The authors sent consent notes for interview requests to 25 respondents in January 2024 who work in the following sectors: academia (6), Ministry of Health (4), health insurance companies (4), public health experts (5), hospitals, and renal centres (6) after obtaining ethical exemption since they pose very minimal risk and typically involve information that ensures anonymity is maintained. The interviews were conducted from January 2024 to January 2025 due to participants accessibility challenge as many of these participants were hesitant in responding to interview consent letters. As of the 30th of January, 2025, only 17 participants (selected through purposive and consecutive sampling techniques, see Thewes et al. 2018; Ahmed, 2024) had completed the interview session. Afterwards, the interview data underwent anonymisation followed by thematic analysis as outlined by Braun and Clarke (2006). The processes included data familiarisation, initial code generation, theme identification, theme evaluation, theme definition and naming, and report generation. This study provided a thorough understanding of the data via desk research. The objective was to identify statements and phrases that conveyed significant information about impact investing in relation to CKD OOP. This methodology facilitated the generation of initial concepts,

which were later distilled into concise phrases representing similar groups or codes. This action was taken after reaching an agreement that these findings were the most significant ones identified. The coded data were systematically analysed for recurring patterns, and the findings were summarised as follows: Impact investment can be directed towards five areas to alleviate the financial burden of CKD patients. The areas encompass community-based preventive projects, training and workforce development, affordable dialysis, health technology, and supply chain and pharmaceuticals. Consequently, our interview questions were designed to obtain responses in these five principal thematic areas. Below are the responses to the interviews with the respondents depicted as "R" and their ascribed code numbers.

4. Findings: Deploying Impact Investment in CKD

Community-based preventive programs

We enquired of our team of respondents (made up of top hospital management staff, Senior lecturers in universities, directors in ministry of health) regarding how a community-based preventative program may attract impact investment through a defined pathway that will produce social benefit and financial rewards; their responses were as follows:

"Investment that would enable direct focus on early detection through screening, treatment, management, and reduction of CKD in the community will be viable since the community lacks adequate primary healthcare. This can be in the form of a corporate wellness package, a community pharmacy with a preventive focus, a community micro-clinic franchise, telehealth CKD risk management, and any project that focuses on preventive health screening services for CKD. It can also be a mobile clinic in kekes, vans, or container kiosks that are movable and can travel to rural communities and underserved areas with the sole intention of offering affordable CKD screening in partnership with local markets, churches, and councils to attract more people for BP, urine, and blood screening and basic education. (R2, R3, R17)

The aforementioned indicates that information regarding CKD is crucial, and lifestyle is paramount; therefore, the respondents advocate for investment in a behavioural change initiative that encompasses the promotion of healthy lifestyles and the establishment of health and wellness centres, along with resources for educating about kidney-friendly products. These innovative concepts might be integrated into hospitals, establishing specialised clinics where patients can participate weekly in health education and lifestyle coaching. Some of the acquired knowledge may pertain to the preparation of kidney-friendly cuisine, the education of at-risk individuals, or the identification of alternative, cheap healthy food or supplement companies.

Overall, the respondents' interests encompass viability and scalability, efficiency, partnerships, and policy assistance. They believe that by utilising structured financing and outcome-oriented methods, impact investors can effectively aid in sustainable CKD prevention while achieving satisfactory returns in underfunded healthcare systems. Some contended that financial returns would be indirect rather than direct, as the investment is evaluated through the shared savings model and diminished healthcare expenses. Consequently, scalable health outcomes and cost avoidance constitute the financial returns. These methods illustrate the advantages of impact investing, since community-based CKD treatment can yield both social benefits and financial rewards when meticulously organised.

Training and Workforce Development

We enquired with our team of experts (made up of senior lecturers in universities, CKD patient and transplant patient) on which project they consider realistic for impact investors seeking to fund initiatives that assist healthcare worker training for chronic kidney disease care, while also providing substantial returns to investors. The responses are as follows:

"Health training centre projects are viable. Investors can support franchises solely focused on CKD protocols. The centre's returns will obviously be in the form of service contracts with health facilities or government-backed training vouchers with outcomes purely based on service delivery Key Perfomance Indicators or quality placements. Such placements could be placing workers in underserved areas. A good example will be where the training centre trains dialysis nurses for clinics, and the clinics repay the services from the proceeds that come from their revenues." (R3, R6, R13).

Other respondents' (Senior level academics) perspectives favour the digitalisation of the learning process. When aggregated, this is their collective statement:

"Digitalising the process through WhatsApp-based microlearning, mobile credentialing platforms, and white-labeled CLD curricula for insurance companies or corporate wellness programs offers high-reach, low-cost solutions. If a subscription fee is charged and licensing is obtained, it becomes monetised, which brings income. It can even be expanded to include training-for-placement platforms linking CKD-trained personnel to opportunities for employment. This could be a recurring service revenue that, when partnered with health ministries, NGOs allows rapid scaling through integration into national health workforce strategies or nursing programs that are in existence." (R5, R6,7, R14).

Although it is comprehensible that numerous aforementioned options may yield financial returns 3-10% lower than purely commercial enterprises, the consistent revenue streams, blended finance additionality such as de-risking, and quantifiable health system impact enhance the attractiveness of impact investors towards training-related investments, which bolster renal care capacity and ensure financial sustainability in resource-constrained environments. This investment is crucial due to the capacity scarcity in Nigeria.

Affordable dialysis and treatment funding

We requested our respondents (Director ministry of health, CKD patients, Staff of health insurance company) to elucidate how impact investing may facilitate inexpensive dialysis while concurrently yielding a return on capital. Their replies were innovative, engaging, and enlightening:

"I think low-cost dialysis centres or even modular centres under a PPP agreement will be impactful, with earnings

coming from user fees and tiered pricing. This approach will ensure affordability, as the cost is currently a significant factor. There could also be a subsidy from high-end private care or employer-sponsored plans." R2, R7, R9, R11, R12.

Impressively, one of the experts (Senior Lecturer) suggested a novel method for dialysis finance, incorporating the creation of a health wallet and collaboration with utility and telecommunications firms:

"For treatment funding, investors can leverage everyday utility and mobile recharge payments to accumulate health savings. This process allows a small fraction of airtime and electricity purchases to be allocated to a personal or transferable health wallet, only accessible upon diagnosis of CKD or other terminal illness. These impact investors will partner with utility and telecom companies like MTN, Airtel, or Glo and implore them to match the contributions as their social impact contribution, thereby creating a hybrid micro-savings and solidarity pool for their customers. This is unique, as it builds on its existing infrastructure, embraces funding of future health needs before being diagnosed, and ensures low-income populations inclusion as opposed to exclusion from formal health insurance schemes." R6

The experts responses urged impact investors to consider funding low-cost dialysis franchise models that focus on generating recurring income, facilitating tiered payment structures. Such models can also be extended to determine whether income can be generated from royalties and service fees by standardising care delivery across various locations. Conversely, the funding for affordable dialysis may be structured as leasing and concessional loans to clinics and hospitals in collaboration with the franchise, as this model possesses the potential for low risk and profits when supported by development banks or sovereign guarantees. Alternatively, funding may be supplied as blended capital through the utilisation of philanthropic resources. De-risking investment is frequently associated with performance; therefore, it may manifest as results-based financing (RBF). This method provides an appealing measure for the recovery of impact-aligned capital.

Overall, investing in mobile or home dialysis devices with remote monitoring capabilities presents significant development potential, with the subscription model ensuring consistent revenue, particularly in public-private collaborations. Cross-subsidization may occur, when the expenses of dialysis for low-income patients are compensated by high-income patients, hence enhancing financial sustainability. The anticipated returns correspond with low-yield impact investments, which prioritise social impact over financial gain. However, their potential for long-term cost savings and alignment with Universal Health Coverage mandates renders them attractive to impact investors pursuing both inflation-protected revenue and quantifiable social outcomes in underserved markets.

Health Technology Innovation

To improve the discourse and our understanding of technology's capacity to alleviate the financial challenges of CKD, we enquired of our respondents (Officer in Health insurance company) regarding the kind of investments in digital health and technological innovations that could produce financial benefits. They provided the following responses:

"A mobile app that can identify CKD risk and includes tele-nephrology consultations could make money by being licensed to hospitals, used in corporate wellness programs, and through user subscriptions." While I must add that the risk they carry is weighty due to the nascent stage of AI, there is substantial potential for both innovation diffusion and impact." R10

Another participant (Senior Nurse in Renal Centre) articulated a similar viewpoint as previously mentioned:

"Invest in the development or licensing of an affordable home kit for urine and blood testing, equipped with the capability to connect to a mobile application via Bluetooth reader." This can function as an initial screening tool for chronic kidney disease to assess creatinine, glucose, and proteinuria levels. Income will derive from either the sale of the beginning kit or consistent revenue from test strips. R24

Other respondents (director in ministry of health, Senior lecturer in University) assert that remote monitoring is crucial for scaling and realising impact:

"Impact investors should consider the advancements in remote monitoring technologies and Internet of Things (IoT) solutions for hypertension management or home dialysis via software-as-a-service (SaaS) equipment leasing or contracts." It can also incorporate the treatment of post-transplant patients to diminish routine hospital admissions while enhancing frequent surveillance. R2, R3

Although the previously described impact investment solutions may not generate significant financial returns, they offer scalability and align with digital health strategy in low- and middle-income countries (LMICs). Utilising them may improve CKD by removing barriers to care while concurrently leveraging technology-driven business opportunities in marginalised groups. Envision a situation where impact investors direct capital towards AI-driven diagnostic screening applications targeting individuals in regions with scarce clinics or disadvantaged communities. The provision of these services already yields an impact, and financial returns may be obtained from donor-funded initiatives or institutional licensing to Health Maintenance Organisations (HMOs). This yields rewards that are both substantial and financial.

Supply chain and pharmaceutical access.

We asked our responders (director in ministry of health, Senior lecturer in University) to suggest projects that will yield both financial benefits and social impact inside pharmaceutical and diagnostic supply chains. Their responses include:

"Impact investors putting money into local production of generic drugs and dialysis supplies would lower costs significantly, as it would replace imports, especially in Nigeria where there is a high demand for these medications but limited

local production, even with supportive regulations." So, investing in local manufacturing and distribution of these products will improve service reliability and reduce the cost of treatment. (R2, R3).

Similarly, another respondent (Public health expert, Staff of Ministry of Health) proposed medicine production, citing the scarcity of such investment in Nigeria.

"We lack investment in the manufacturing of generic drugs and their packaging plants, particularly those focused on CKD medicine, as well as haemodialysis and peritoneal dialysis solutions (dialysate)." This could yield returns through bulk purchase agreements with NGOs or the government. It may interest you to know that peritoneal dialysis is not currently common in Nigeria, and investment in that sector by impact investors can combine equity stakes with volume guarantees and scale across states." R4, R7, R14

Another idea shared by the respondent(Staff of Renal Centres) is thus:

"I think a digital or e-pharmacy with drug distribution services for CKD medications could serve as a new channel for subscription revenue and volume-based margins. However, this service may also apply to other medications beyond just CKD. R10

The interview responses focus on manufacturing and distribution, asserting that there is potential for profitability in logistics companies supplying CKD items, which can deliver resources to rural dialysis clinics to improve access to renal services, rather than targeting urban areas like Abuja and Lagos. This distribution method may manifest as group purchasing or pooled procurement schemes. These companies assist small pharmacies and clinics in aggregating demand and achieving lower logistics costs and necessary medications. The likelihood of financial returns seems achievable through coordination fees or procurement margins. The respondents who supported investment in e-pharmacy for CKD patients are crucial, since this will offer a dependable alternative for these patients, particularly in terms of price comparison among different brands and products, as well as the reduction of counterfeit items. These enhancements may yield minimal financial benefits; yet, they significantly influence society by reducing costs, ensuring constant quality and availability, and enhancing compliance with CKD medication. A considerable proportion of patients terminate their treatment due to prohibitive management costs, which may lead to fatality. Therefore, if impact capital can rectify deficiencies in medical and delivery systems, guaranteeing equitable and sustainable access to renal care for individuals in disadvantaged areas, especially those dependent on OOP expenditures, it would represent a substantial achievement in tackling one of their challenges.

5. Discussion

From the aforementioned, it is clear that our respondents were thorough in their answers and addressed important points of the study, which focused on impact investment in five main areas: supply chain and pharmaceutical access; training and workforce development; affordable dialysis and treatment funding; health technology innovation; and community-based preventive programs. According to their responses, the study found that impact investors are able to expand, generate financial gains, and have a positive social influence in each of the projects mentioned. The study made the case, for example, that community-oriented strategies must include encouraging structured financing and outcome-driven projects in order to enable impact investors to contribute to sustainable CKD prevention, while earning respectable returns. This would enable the implementation of community-based preventive programs. Impressively, the main focus is not only on profits but also on cost avoidance, scalable health outcomes, and making sure that OOP drastically decreases. Impact investing will be advantageous in this way, enabling community-based CKD projects to yield both financial and social advantages.

Equally, the study looked at workforce development and training projects as an avenue for impact investors to promote scalability. Given the severe lack of qualified renal healthcare providers, which remains a major obstacle to efficient CKD management in Nigeria, this is essential; considering that there are less than 300 nephrologists available to treat CKD-related medical issues for more than 200 million Nigerians. The recommendations made by our respondents are therefore crucial because they will provide a wealth of attractive investment opportunities for impact investors to target and address the issue of healthcare workforce expansion, which is both a necessary condition for providing effective CKD care and a feasible impact investment that can yield financial returns. As the respondents suggested, there are numerous examples of how a result-based organising pattern might be used to fund training facilities, e-learning, and certification programs for primary care physicians, dialysis technicians, and nephrology nurses. Through government contracts, employer sponsorship, and course fees, these investments may yield modest financial returns, while also addressing the requirement for social impact through the extension of access to high-quality healthcare.

Of paramount importance is the fact that majority of CKD patients in Nigeria accept dialysis as a temporary, life-saving treatment, inexpensive dialysis and treatment funding are equally important. This inevitably implies that most patients need at least two to three sessions per week and a single session in Nigeria costs between N30,000 and N60,000, this treatment is regrettably unaffordable. Given that most of them lack the funds to get a kidney transplant, they continue to spend their lives in this manner for an extended period of time, which costs them 6 million naira a year. This amount is costly for OOP, and impact investing can help with the different options and opportunities that respondents provided. If appropriately funded and organised, impact investment can ideally lessen this financial burden. It would be possible to achieve modest but sustainable financial returns by using impact investing to create creative models for financing CKD treatment and inexpensive dialysis in low-resource settings. Along similar lines to the issues brought up by the respondents, the current, expensive, traditional dialysis infrastructure can be reorganised through the Lease-to-Own or Build-Operate-Transfer (BOT) alternatives under PPP. Given that short-term capital recovery is still a contributing factor to the high cost of

dialysis, the social impact of this project would enable investors to finance clinic growth in order to acquire the facilities and voluntarily accept slow capital recovery through lease payment or eventual transfer. Impressively, one respondent proposed a financing approach that requires collaboration with utility providers and customers to build up health funds in each person's wallet everytime they buy energy and airtime units. This concept is new and needs more analysis and application.

Beyond this, technology and health are currently intertwined, making the role of technology in healthcare extremely vital. As artificial intelligence (AI) advances, telemedicine, mobile diagnostics, and electronic health records make it easier than ever to detect problems, allowing for more organised and effective monitoring and better clinical results. Venture funding with an impact lens can therefore be drawn to investments in the areas that the respondents indicated, such as portable diagnostic kits for CKD early detection screening or AI-powered prediction tools. According to the respondents, impact investors in this area would not mind taking below-market financial returns in order to create devices that will enhance scalable, quantifiable health outcomes.

Equally significant is the pharmaceutical industry, as it has positioned itself as one sector of the spectrum with excellent investment returns despite requiring a significant capital outlay. The median gross profit margin for big pharmaceutical businesses is over 75% (Ledley *et al*. 2020). Given that up to 90% of the medications used in Africa are imported, which drives up prices and makes medical care even more costly and unavailable to Africans, investment in this industry is a great opportunity (Conway *et al*. 2019). Considering that a recurring issue in the treatment of CKD is the accessibility and cost of necessary supplies and drugs such erythropoietin, phosphate binders, and dialysis consumables, this strengthens the need for investment in pharmaceutical project because it has significant social impact because they are essential to the long-term sustainability of the CKD care ecosystem; even though their financial returns are low. Likewise, considering the low quality of medications now on the market and the growing number of cases of counterfeit medications in Nigeria, which IFC (2016) confirmed that significant number of medications on the market in Nigeria include fewer active components than are ideal, it presents a crucial chance to fortify the current pharmaceutical industry.

Lastly, investment in the pharmaceuticals business is essential and is intricately linked to the establishment of a flexible supply chain capable of distributing the original products. This is optimal for enhancing the accessibility of medical supplies. It is essential to acknowledge that Nigerian supply chains are fragmented and inefficient, and that the nation's primary logistics platform is dysfunctional. This industry possesses significant potential for expansion. Projects designed to address CKD in Nigeria have significant bankability for supply chain and pharmaceutical access interventions, since they provide measurable social impact alongside moderate financial returns. When it evolves into a last-mile delivery platform that ensures the timely distribution of CKD drugs and consumables, impact investors will perceive their investment as having made a significant difference.

6. Conclusion

This study examines strategies to alleviate the financial burden faced by CKD patients managing their health through OOP expenses. The inquiry led us to impact investment as a potential option because of its fundamental principle of accepting concessionary financial returns in exchange for demonstrable and intentional social benefits. This study's findings indicate that impact investors' involvement in community-based preventive programs, workforce development, treatment funding, technology, pharmaceuticals, and supply chains may lead to a significant transformation in CKD care. While anticipated financial returns may be modest and considerably inferior to those of commercial investments, there exists substantial value for money in the quantifiable social benefits, evidenced by lives saved, disabilities averted, and families shielded from catastrophic health costs.

Therefore, the government should establish a partnership framework, potentially through PPP to unite the private sector, development partners, and NGOs in order to optimise the process through which impact investment facilitates sustainable CKD care models that balance innovation, equity, and efficiency. It is essential for the government to consider the respondents' proposal to utilise everyday utility and mobile recharge payments to amass health savings by permitting small portions of airtime and electricity expenditures to be designated to a personal or transferable health wallet, accessible upon the diagnosis of CKD or other terminal illnesses. These proposals are both innovative and scalable.

Overall, this study posits that impact investors represent a viable alternative financing option capable of addressing the increasing incidence of CKD and facilitating access to financing that can alleviate the financial strain on patients and their families.

Data Availability: Data is available upon reasonable request.

Conflict of Interest: There are no competing interest that could torpedo this study.

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