HEALTH-CARE, OOP HEALTH EXPENDITURE AND POVERTY OF HOUSEHOLDS IN NIGERIA: ASSESSING THE LINKAGES

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Abstract

Out-of-pocket (OOP) payments for healthcare, the predominant form of private health financing, make up approximately 74.68% of the total healthcare funding in Nigeria, a figure higher than that of other sub-Saharan countries with lower GDPs. On the other hand, of the 14.97% government allocated to Nigeria's general health expenditure as of 2020, 82.7% was spent on salaries, wages and running offices, while only 10.9% was spent on the repairs and construction of the health care facilities, provision of drugs, and medical equipment across the health care facilities. These difficulties make individuals pay heavily for their healthcare; further causes a huge difference in the quality of healthcare services they receive as well as create income disparities between the poor and the rich. These snags hold profound implications in the accessibility, affordability and overall effectiveness of healthcare services and the reality of horizontal inequity putting pressure on low-income earners thereby exacerbating poverty and lower per capita income, amongst other changes. These other changes such as change in the position of individuals on the income distribution strata due to health care payments referred to as income reranking and the issue of individuals with different abilities to pay not being treated fairly creates economic implications referred to as vertical inequity. Consequently, in Nigeria – one of the most income unequal countries in the world, the poor people spend nine times more on health services than the wealthy. The solution to this problem may lie in the payment of income tax

recommended in this study titled Health-care, OOP health expenditure and poverty of households in Nigeria: accessing the linkages.

***Keywords**: Out-of-Pocket payments, catastrophic health expenditure, poverty, income risk protection*

Introduction

Health care is a very important aspect of an individual's well-being. Health means the general physical condition (condition of the body or mind) especially in terms of the presence or absence of illness, injuries or impediments. Without a good health condition, it is almost impossible to carry out any economic activity at the individual level or achieve sustainable long-term economic development at the national level since, individuals make a nation. This is in line with WHO's prioritization of health as a human right based on the principles of equity and community participation (WHO, 2011; 2006; 2015a; b).

Based on the above position, any nation stands a chance of reversing the negative health outcomes and health indices by increasing activities to strengthen health and health care capacities and services aimed to improve and provide conditions under which her in-dwellers can maintain healthy well-being, or prevent the deterioration of their health. Thus, health care services – public and/or private – such as provision of personal services to individual persons (vaccinations, behavioural counselling, health advice), accessible scientifically sound and socially acceptable health care service technologies, health campaigns – demand support and commitment of government, individuals, community, family at every stage and through to such health care service development aimed at achieving national, individual and community health-reliance and security. Consequently, Primary Health Care (PHC) principle and system 1978 declaration at the World Health Organisation conference called the Alma Ata Declaration and signed by 134 nation-members (which Nigeria is a part) following the need to ensure health-reliance and security (WHO 2008; 2018).

Post-PHC declaration: the challenge of finance issues and concern

In lieu of health-reliance and security, the primary health care – planned, evaluated delivery of basic health services cum extension into communities based on practical, scientifically sound, socially acceptable methods and, technology at a cost and accessible to individuals with active community participation – was accented by all 134 WHO-member states (Rifkin, 2018) including Nigeria. Following, in Nigeria, the local government oversee the operations of the primary health care facilities, provide basic health services, community health services, maintain hygiene and sanitation that constitutes the first element of a continuing health care process in bringing health care as close as possible to where people live, work in the spirit of heath-development. Central to this function is, the function to maintain a sustainable health condition and, good health development of the community through strategies that provide promotive, preventive, curative and rehabilitative health services emphasised on grass-root approach of universal and equitable health care for all that are all meant to address the health problems in the community (Olise, 2007).

In relation, post-PHC declaration, the case in Nigeria of health-security and reliance has not been optimal. Thus, the health sector in Nigeria was ranked 187th among 191 United Nations member states in 2000 (Reem, 2018). This situation did not improve as the World Health Organisation in 2017 and 2010, 2016 ranked the Nigerian health system at 187 out of 190 and 197 out of 200 countries surpassing only DRC, Central African Republic (CAR) and Myanmar (Enogholase, 2010; Umejei, 2016; Magarya, 2017). Similarly, Nigeria's overall health-life expectancy – a measure of key health outcomes – of 52.11 years is low and lags in comparison with similar economic countries such as Ghana (60.95 years), Ethiopia (62.96 years) and Kenya (61.8 years); obvious expression and manifestation of inadequate health service and underperformance on key health outcomes significantly. Invariably, maternal mortality of Nigeria at 2012 (WHO, 2015a; b) of 576 deaths per 100,000 live births – one of the highest in the world and 2.6 times the global average – now ranges from 596 to 1180 maternal deaths per 100,000 live births with a high maternal mortality ratio of 814 per 100,000 live births uncertainty interval that is, higher than the average

for sub-Saharan Africa (765 per 100,000 live births) (Nwosu and Ataguba, 2019).

This narrative has not changed over the seven-year period preceding 2015 for maternal mortality ratio according to WHO (2015a; b) and in fact over the past 20 years according to Nwaokoro, Ibe, Ihenachor, Emerole, Nwufo, Ebiriekwe and Onwuliri (2015). Hence, reports (Nwaokoro et al., 2015; Reem, 2018; Nwosu and Ataguba, 2019) of; infant deaths that account for one quarter of under-five mortality (that is, one in eight children dies before reaching their fifth birthday), over 700 newborns that die each day; 48 deaths per 1000 live births in Nigeria. Hence, Nigeria ranked seventh among ten African countries where newborns have the highest risk of dying (Reem, 2018).

Based on these and to stand a chance of reversing the negative health outcomes by increasing expenditure in health care the, African union member nations pledged to increase their health budget to at least 15% of the state's annual budget (African Union, 2001). According to the concern of this declaration called, the Abuja Declaration 2001, low government health spending over two decades preceding 2001 limited the expansion of highly cost-effective interventions, stunted health outcomes of Nigerian rural communities thereby, exposing large shares of her population to catastrophic health conditions and expenditures. Thus, the need to uncover the effect of OOP health expenditure on households' poverty.

Towards improved health-care and service delivery: public health expenditure in view

The downward performance of health outcomes in Nigeria have been attributed to inadequate health expenditures, funding and health care inequality especially with the primary health care systems. Despite pledging in Abuja 2001 African Union Declaration to commit 155 of her annual budgets to public health spending and extensive to be a role model to other member nations of the AU, Nigeria still lags behind the 15% target averaging at about 5.1% health sector allocation to total budget given the 2022 and the recent 2023 budget. Worrisome too and, in comparison to similar and/or lower income cum economic status' AU

colleagues such as; Rwanda (23.8%), Liberia (18.9%), Malawi (18.5%), Zambia (16%), Togo (15.4%), Madagascar (15.3%), Nigeria health sector budget and consistently reducing public health expenditure cum government health spending is nearly less than every country in the world – a reflection of under-prioritisation of the health sector (Nwanosike, Chukwuma, Nwanya, Ogbu, Raymond & Mbachu, 2022).

Evidently, total government health expenditure and spending as a proportion of the federal government expenditures on the average was about 3.5% in the 1970s, less than 2% in the 1980s and 1990s, in the 2000s to about 0.6% in 2016 and 5.1% in 2022 (FMOH, 2004; WHO, 2022; NBS, 2023). This implies a nasty 6.1% (US$ 11) health per capita (based on 2016 health budget) – well below regional and recommended benchmark – with the effect that 25% of households spend more than 10% of their household consumption on health (IMF, 2017; Ajikobi, 2018).

Nigeria's dwindling government health expenditure: case of shrinking life expectancy and health outcomes

Over the last two decades, Nigeria's health expenditure has frequently been described as insufficient, with average health budgetary provision barely exceeding 3% (World Health Organization [WHO], 2022; Abubakar et al., 2022). Between 2000 and 2019, government-funded health expenditure per capita was $11.2, while private expenditure was $49.8. Both, significantly lower than $86, approximate minimum required amount to, ensure universal health coverage for essential services. Similarly, public health expenditure as a share of gross domestic product (GDP) was low at 0.65%, less than the 4-5 percent of GDP suggested for achieving universal health coverage. This percentage of government health expenditure as a share of gross government expenditure, at 4.2 percent, remains far below the 15 percent target set in the Abuja Declaration in 2001 (Jowett, Brunal, Flores, Cylus, 2016).

Moreover, owing to volatile oil revenues resulting from fluctuations in global oil prices, both recurrent and capital expenditures have changed significantly over time. From 2000 to 2020, recurrent government spending on the health sector increased from 15.2 billion Naira, or less than 4 percent of the overall budget, to 369.4 billion Naira,

or less than 5 percent. However, the capital expenditure fluctuated and reached less than 195 billion Naira in 2020 (Central Bank of Nigeria [CBN], 2022). Avid to this implies that the Nigerian government has been spending more on healthcare goods and services than on health-related buildings and equipment expected to improve access to healthcare for the poor and lower catastrophic healthcare costs for households.

Amid shrinking health budgets, most public health institutions lack professional personnel and modern facilities to provide quality service to the general public. Inadequate funding and bureaucratic barriers threaten the few existing public health facilities (Awoyemi & Olaniyan, 2021). Despite the country's growing population, the Nigerian Bureau of Statistics reports that no new hospitals have been added to the approximately 3,500 secondary and tertiary health facilities since 2004. Invariably, given fewer health care facilities lower and unsatisfactory healthcare standard which deteriorates the health status of patients likely results leading to, complications that may support millions of premature deaths and contribute to an adverse health outcome for the country (Awoyemi & Olaniyan, 2021). Because of low public health expenditures, fewer health facilities and insufficient funding hindering the improvement of healthcare services and reducing the population's access to affordable healthcare, the production of lower-quality healthcare services invariably increases (Awoyemi, Makanju, Mpapalika, Ekpeyo, 2023).

Thus, the average citizen's health has not improved; instead, it has remained consistently low. Between 2000 and 2019, the average life expectancy at birth in Nigeria was around 51 years. This was significantly less than the global average of 70 years during the same time period (World Health Organization [WHO], 2022). Infant and child mortality rates in Nigeria are among the world's highest. This demonstrates the need to improve the healthcare sector and outcomes. Health outcomes also influence economic growth. Poor health conditions reduce productivity and worsen economic performance, whereas better health has the opposite effect (Akinbode, Dipeolu,

Bolarinwa, Olukowi, 2021; Ogundari & Awokuse, 2018). Despite the importance of the health sector, most studies have assessed the relationship between health sector expenditures and economic growth, with only a few studies looking at the association between health expenditures and health outcomes. As a result, this research aims to look into the effects and linkages of out-of-pocket spending on health, healthy-wellbeing specifically life expectancy vis-à-vis national productivity.

Towards improved health-care and service delivery: public under-utilisation of primary health care services in view

Again, over the last two decades in violation of the Abuja declaration of improved government spending on health lack of; supply side factors such as accessibility, availability, quality, continuity and comprehensiveness of health services; has persisted. These are limiting; the expansion of highly cost-effective interventions, stunting health outcomes that is leading to abysmal performance of the health system/sector specifically affecting, rural/poor urban communities and individuals via exposing them to increased health share of household expenditure (Poureslami, MacLean, Spiege & Yassi, 2013). Coupled with demand side factor-issues of health beliefs, social, economic and, cultural structure; policies and initiatives to encourage PHC utilisation such as 'removal of user fees policy', subsidised maternal care, health promotion campaigns and primary health care initiatives is yet to address endangered health status of Nigeria cum national productivity (Richard, Anthony, Witter, Kelley, Sieleunou, Kafando & Meessen, 2013; Adedokun & Uthman, 2019).

As a result, maternal and child health challenges especially for those with low socioeconomic status still persist in Nigeria. Accordingly, maternal mortality rate (MMR) as at 2019 stands at 814 per live births and the life-time risk of a Nigerian woman dying during pregnancy, childbirth, postpartum or post-abortion is 1 in 22, in contrast to the lifetime risk in developed countries estimated at 1 in 4900 (WHO, 2022; Obiajuru, Irehie & Elo-Ilo, 2019).

This multi-health sector challenges of; health sector neglect, under-utilisation of PHC health services especially health inequality – a

systematic difference in health that could be avoided by reasonable means – is an infringement of equity in the accessibility and affordability of health care facilities. Consequently, women, children and especially the core poor die from avoidable health problems such as infectious diseases, malnutrition, polio, guinea worm, measles, complications at pregnancy and childbirth (Eneji, Juliana & Onabe, 2013). Further widening the inequality culminating to poor health status of citizenry is the, dearth of qualified healthcare personnel and regulations, continued migration of Nigeria's promising doctors, pharmacists, nurses and other health professionals to other nations. Thus, the masses are being denied quality healthcare services especially those in rural areas while high profile individuals especially the political class continue to fly abroad on regular basis in search of medical treatment.

Public health expenditure and households: Nigeria in view

Compelling low health-outcomes and extensive malnutrition is the immediate effect of poor and inadequate public health expenditure in Nigeria. For instance, life expectancy at 54 years (below the global average); maternal mortality of 608 per 1000 live births (twice as high as South Africa's 300/1000- and 10-times Egypt's 66/1000); infant mortality of 104 per 1000 live births are poor by all standards (local or international) (Anyanwu and Erhijakpor, 2018). Besides, one in eleven of all children who die in the world under the age of 5 occur in Nigeria. Again, only 3% of HIV positive mothers receive anti-retroviral treatment. Thus, for want of pills that cost a few naira, almost 58,000 Nigerian infants receive HIV from their mothers during childbirth (Omotosho and Ichoku, 2017). This is nasty as no country in the world including South Africa with its large HIV burden records such high population of positive HIV mother-to-baby infection during childbirth. Hence, babies receiving HIV from their mothers' burden estimated at around 180 million is, growing rapidly at 3.08% per annum in Nigeria (NBS, 2022).

As a result, Nigeria records high crude birth rate of about 50 per 1000 and a crude death rate of 16 per 1000. Further, close look at Nigeria's health system shows that health spending is dominated by out-

of-pocket (OOP) expenditures since many health establishments in Nigeria particularly at the primary level are either understaffed, inadequately funded, in poor condition even in good economic times resulting in a loss of public confidence, increasing under-utilisation and OOP health expenditure. Consequently, though the government of Nigeria established the National Health Insurance Scheme (NHIS) in 1999 to address this issue only, 7.9 million (4.2% of population predominately federal government civil servants and their dependants) were covered as at 2016 (Health and Managed Care Association of Nigeria, 2017a; b). Thus, about 801 deaths are recorded daily from preventable diseases like pneumonia, diarrhea, measles, tetanus, malaria, diphtheria, tuberculosis, cholera and, polio (Nwanosike, Chukwuma, Nwanya, Ogbu, Raymond & Mbachu, 2022; Otaigbe & Ugwu, 2007).

This national health concern of reducing government public health expenditure is increasing OOP health spending approximated at 75.2% of total health expenditure in Nigeria and currently among the highest in the world. Besides given that 25% of households in Nigeria spend more than 10% of their household consumption on health (Reem, 2018); reduced government public health expenditure-effect on increasing OOP health spending may be improvising Nigeria households extensive to poverty and malnutrition. Thus, the need for this study

Financing health care across developing countries

Health care financing refers to the mobilisation of funds for planning, organising and implementing healthcare programmes and services. This process is multi-dimensional and includes government funding and individual payments/support. On the part of government internal revenue from; primary and secondary sources such as indirect and direct taxes, donor-funding, co-funding, voluntary pre-payment and mandate add to this funding process. Also, individual out-of-pocket (OOP) payment and mandatory health payments. However, important insights on health care and health care service studies across developing countries including Nigeria affirm health care financing to still be dominated by out-of-pocket (OOP) expenses and the comparative lack of pre-payment mechanisms like health insurance. Exposing individuals

to incurring large medical expenditures aside characterised economic consequences of larger individual medical expenditures during pandemic and extensive health-shocks and burden catastrophic on, health conditions and expenditures (WHO, 2006; Peters et al., 2002; Amakom & Ezenekwe, 2012; Salako, 1991; Oyekale, 2017).

Despite health public policies around health care and concerns to reshape health care, health care financing; advance bilateral, multilateral, non-government organisation (NGO) operations and donor-support on a parallel basis akin to expansion and strengthening of public health care (PHC) services such to protect households from catastrophic health conditions and expenditure referred to as; health management in Nigeria; is low (WHO, 2006; Peters et al., 2002; Amakom & Ezenekwe, 2012; Salako, 1991; Oyekale, 2017). Thus, tropical and developing countries are unable to secure; needed drugs, human resources and necessary infrastructure causing socio-economic health inequality, avoidable mortality and morbidity especially of lower socio-economic groups (WHO, 2011). In addition, the gap increases between various individuals and socially relevant groups in accessing health care services/facilities substantially supporting projects covering priority areas such as HIV/AIDS, reproductive health and family planning. In lieu, overall life expectancy/well-being and fulfilment consistently declines and; health systems development and capacity building are hampered. Further implication is under-utilisation of health care facilities. Given this systematic difference in health security and coupled with growing attention to race, religion and cultural reasoning linked to under-utilisation of health care facilities, health risks concerns continue to loom in Nigeria and other developing countries especially (Odeyemi & Nixon, 2013; Dormont, Martins, Pelgrin & Suhrcke, 2007).

Health care reforms

Irrespective of social status or influence, advancing health well-being of a nation particularly concentrated on those with poor health status, greater disease exposure/occurrence and lesser resources is important. Given poor/weak public health management, decaying and poor infrastructure, poor governance structure, poor service delivery and poor

health worker performance and expenditure such as unrealistic budgets and, record keeping the need arose for health policies (Kress, Su & Wang, 2016). These irregularities in the use of funds responsible for; prevention and treatment of communicable diseases, immunization, maternal and child health services, family planning, environmental health, public health education, disease surveillance, drug regulation, vaccine management, training of health professionals keeps the need rising for health policies, principles/frameworks in compliance to quality health service delivery; answer questions and justify actions and decisions to the maximum health benefit of households. These principles and frameworks oversee the operations of health care systems, inform provision of basic and advanced health services, community heath, hygiene and sanitation actions; immunization and public health education, decentralisation of the health sector and; the application of sanctions (Gyuse, Ayuk & Okeke, 2018; Adeyemo, 2005; Federal Ministry of Health, 2004; Brinkerhoff, 2004; Khemani, 2006; Bonilla-Chacin, 2014).

Part of these declarations, policy, framework and health compliance principle/program whose cycle have been finalised or are been implemented currently in Nigeria includes; health for all attainment Alma Ata global Declaration of 1978; Basic Health Services Scheme (1975-1980); National Basic Health Services Scheme (NBHSS) of 1975; the PHC policy of the 3rd National Development Plan (1975-1980); the National Malaria Programme; the National Health Policy in 1988; the National Primary Health Care Development Agency established in 1992; the Ward Minimum Health Care Package (WMHCP) and Ward Health System (WHS) in 2000. Others especially between 2000 and 2020 are; the Minimum Health Care Package; Integrated Management of Childhood Illnesses (IMCI); Expanded Programme of Immunization (EPI); National Immunization Days (NIPDS), Integrated Maternal New-Born and Child Health (IMNCH) Services; comprehensive health sector macroeconomic framework called National Economic and Empowerment Development Strategy (NEEDS); the National Health Insurance Scheme (NHIS) and National Health Act 2014; the Primary Health Care Under One Roof (PHCUOR)

Initiative in 2011 (Anaemene, 2016; Gyuse, Ayuk & Okeke, 2018; FMOH, 2004; Lambo, 2015; Aregbeshola & Khan, 2017; Federal Government of Nigeria, 1970; 1975; 1981; Federation of Nigeria, 1962; FMOH, 2001; Government of Nigeria, 1946; Health Reform Foundation of Nigeria, 2006; Saka, 2012).

Unfortunately, despite the comprehensiveness, objectives, popularity in Nigeria of these policies, programs, initiatives; standard health indicators on health outcomes of Nigeria are very low. For instance, Nigeria moved down from its 152nd position in the human development index on the global scale in 2014 to 157th in 2018. Worrisome is that with an index of 0.532, Nigeria is 0.409 below the world index of 0.941 while life expectancy stands at an average of 55 years (UNDP, 2019; Awoyemi, Makanju, Mpapalika, Ekpeyo, 2023). More worrisome too is that despite an estimated population of over 200 million, only 7.9 million (4.2% of population predominately federal government civil servants and their dependants) were under coverage of the health insurance scheme as at 2016 (Health and Managed Care Association of Nigeria, 2017a; b). Compelling further, evidence shows that given certain socio-economic characteristic as the global poverty level of less than $1.25 a day where 62% of Nigerians live under, out-of-pocket payments reduce household economic power and participation in individual and community development (WHO, 2003; 2018; Chukwudozie, 2015).

Materials and methods

The methodological frame employed by the authors follows the health-economic growth framework described in the extended neoclassical models. Researchers following the extended neoclassical models reveal that the simplest channel through which health burden impacts the incidence of poverty is through household OOP expenditure. Because, a healthier population are expected to work more effectively, both physically and mentally, and also, adults with good childhood health expected to have more cognitive ability and capacity in lieu advance capital that enhances earnings (wealth).

Secondary data were used for this study. The data elements collected were out-of-pocket (OOP) health expenditure, National Productive Capacity (Imports of goods and services balance of payment [BoP, current US$]), Birth-rate crude (per 1000 people) (control), Poverty head count ratio at $6.85. The data on OOP health expenditure were sourced from World Health Organisation (WHO, 2023a; b) Data on Import of goods and services balance of payment were sourced from Nigeria Bureau of Statistics [NBS] (2022; 2023) and Central Bank of Nigeria [CBN] (2022; 2023). Data on birth-rate crude (per 1000 people) and poverty head count were sourced from World Bank (2022; 2023; 2024).

In effect, National Productive Capacity (NPC) is captured in this paper using imports of goods and services balance of payment (BoP, current US$) and, poverty incidence level captured using poverty head count ratio at $6.85. Thus, out-of-pocket (OOP) health expenditure, National Productive Capacity (Imports of goods and services balance of payment [BoP, current US$]), Birth-rate crude (per 1000 people) is modelled as a function of the Poverty incidence level. Also included is Birth-rate crude (per 1000 people) which measures a country's population growth rate (PGR) as control variable in the model. The inclusion of the PGR control variable helps to compare population dynamics in countries with different population sizes. Starting with generic to the specific, and by augmenting the extended version of the neoclassical health-growth model, equation 1 formulates the above theoretical specification into an aggregate function.

Thus, equation 1 can be specified, explicitly, in the following mathematical function:

$$PI_{i,t} = f(OOPHE, NPC, PGR)_{i,t} \ldots 2$$

Where:

PI = poverty incidence level
OOPHE = out-of-pocket health expenditure
NPC = national productive capacity
PGR = population growth rate

In transforming the mathematical function of equation 2 into an econometric model, some unique panel (robust fixed effects) equation

feature is added. First, a panel framework enables the incorporation of a country's specific unobservable characteristics thereby reducing biases in the estimated coefficients. Therefore, to account for time-invariant country-specific effects and the initial endowment associated with the 'steady-state growth', the earlier equation 2 is specified such that the poverty incidence in country i at time t in its general dynamic panel format takes the following function:

$PI_{k,i,t} = \phi_i OOPHE_{k=1,it} + \phi_2 NPC_{k=2,it} + \rho_1 PGR_{j=1,i,t} + \omega_P PI_{i,t=1} + \alpha_{i,t} + \epsilon_{i,t} + \mu \ldots 3$

Where:

α_{it} = country and period-specific effects.

k, j and p = number of explained variables associated with the four categories of income or poverty or developmental levels (high income bloc, upper-middle-income bloc, lower-middle-income bloc, and low-income bloc, respectively).

Analytical model specification

The fixed effects panel model is used to study causes of changes within an entity. Fixed effects model controls for individual characteristics of independent variables that may influence the dependent variable. Thus, assessing the net effects of the independent variable(s) on the dependent variable. It explores changes in an entity (dependent variable) over time vis-à-vis uncorrelated, different, unique independent entit(ies) with constant error term. It is given thus (Dougherty, 2011; Torres-Reyna, 2007; Green, 2008):

$$Y_{it} = \alpha_i + \beta_k X_{k,it} + \epsilon_{it} + v_i \ldots (1)$$

Where:

i = entity (income groups)

t = time (2000 to 2022)

α_i ($_i$ = 1, …, n) = intercept for each entity (n entity-specific intercept)

Y_{it} = dependent variable

$X_{k,it}$ = ith independent and control variable

β_k = coefficient for respective independent and control variable

ε_{it} = error term/idiosyncratic error with 0 mean and σ^2 variance

ν = overall constant that accounts for effects of population growth. The subscript i represents the cross-sectional units (countries) (i = 1, 2, …, ni and N = 58), k represents different income blocks (k = 1, 2, 3 and 4), and t represents time, years (t = 1, 2, …, T = 22).

The robust fixed effects specification was used to estimate the effects of out-of-pocket (OOP) health expenditure, National Productive Capacity (Imports of goods and services balance of payment [BoP, current US$]), controlled by Birth-rate crude (per 1000 people) on Poverty level/head count ratio at $6.85. The robust fixed effects model was adopted after the Hausman test for covariance, Breusch-Pagan Lagrange Multiplier (LM) test for random effects, Modified Wald test for groupwise Heteroskedascity all, demonstrated the robust fixed effects RFE approach fit in-line with Dougherty (2011), Torres-Reyna (2007), Green (2008).

The income grouping (ING) was used to measure the developmental levels of the cross-sectional units. It was categorized into 4 in line with the World Bank (2024); Low-income countries (with GNI per capita < US$1,045), Low-middle-income countries (with GNI per capita US$1,046 - US$4,095), Upper-middle-income countries (with GNI per capita US$4,096 - US$12,695) and Upper-income-countries (with GNI per capita > US$12,695) respectively.

Results and discussion

Contributor OOP health expenditure burden on overall Nigeria country wide poverty incidence

Table 1: Robust fixed effects results summary

VARIABLES	(1) Poverty Incidence
OOP Health Expenditure	2.169*
	(0.767)
National Prod. Capacity (Imports of goods and services BOP, current US$)	-4.31e-13
	(8.02e-13)
Birth rate crude per 1000 people	-0.197

	(0.241)
Constant	-22.69
	(23.98)
F (2,3)	54.04
Prob > F	0.0000
R-squared	0.680

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

According to aforementioned findings, poverty incidence level has been growing in a decreasing order throughout African countries (i.e. increasing to initial values). Overall, changes in poverty incidence level in Africa are dynamic in reaction to changes in out-of-pocket health expenditure. The import of goods and services BOP (a crucial national productive capacity measure) shows a negative relationship with poverty incidence level in Africa. This suggests that the impact of national productivity on poverty incidence is valid (manifest). According to table 1, a 1% decrease in national productive capacity increases poverty incidence level by 4.31e-13%, all other factors held constant. It suggests that poverty incidence level will be harmed if national production, productive capacity is skewed toward active labour market growth and participating at individual national levels.

In general, it is fair to claim that in Nigeria, national productivity capacity (NPC) exhibits a negative-run function with poverty incidence level. OOP health expenditure, on the other hand, exhibit positive-run function with poverty incidence. This is statistically significant at 10%. Thus, in the face of increased OOP health expenditure otherwise catastrophic, the resilience, wealth condition of individuals, families, and communities are strained.

The results in Table 1 also show the control variable birth-rate crude (per 1000 people) which measures population growth rate, PGR, have a negative relationship with poverty incidence level, PIL. It reveals that 1% increase in PGR raises PIL by 19%. The fact that PGR has a negative influence on poverty incidence level implies that population

growth relatively does increase health and overall household expenditure over time. On the other and, given subsisting variations, reducing the rate of child birth and improving the population's wealth or welfare would boost national productivity and output in Africa. This result is backed by economic-health theories that show that health quality is a positive function of Labor productivity.

Again, in most African countries, political instability, government ineffectiveness, a lack of rule of law, political meddling, bad policy design, major corruption issues, and a government's lack of commitment to policy implementation is, affecting government effectiveness and a serious impediment to productivity (Mobosi, 2022). These have severely limited the poor's ability to participate in and profit from labour results amidst detrimental influence on overall economic gains by inhibiting some drivers of potential labour production development. This result is backed by economic-health theories that show that productive health cum quality is a positive function of poverty incidence such as the new growth theory and extended neoclassical growth theory (Mobosi, 2022). Besides today, foreign investors are increasingly relying on good governance with ease of doing business indicators to make investment decisions – in Africa, beyond – contributing to the checkered history of weak national productive capacity in Africa in comparison to other parts of the world.

Paradox of plenty of plenty and income inequality: consequence on OOP health expenditure and poverty incidence

Income inequality – a formidable force hindering growth – interlaces inadequate public health funding, creating a vicious cycle that hampers social cohesion and overall development. The consequences are tangible – poverty, social unrest, compromised health outcomes, weakened economic growth. In Nigeria, poor people spend about 9 times more on health costs than wealthy people. This is tragic and avid for elaborate study of Nigeria's tapestry healthcare system and healthcare challenges.

The Human Poverty Index (HPI) for Nigeria in 2020 was 38.8%, placing the country at the 75th position among 103 developing nations (Olarinde et al., 2020) and among the 20 poorest nations globally (Ogbeche, 2018). Presently, Nigeria is one of the countries with the

highest levels of inequality in the world as shown in Figure 1 below relative to other countries (World Bank, 2019) and has about 63% of its population categorized as multidimensionally poor (National Bureau of Statistics, 2022).

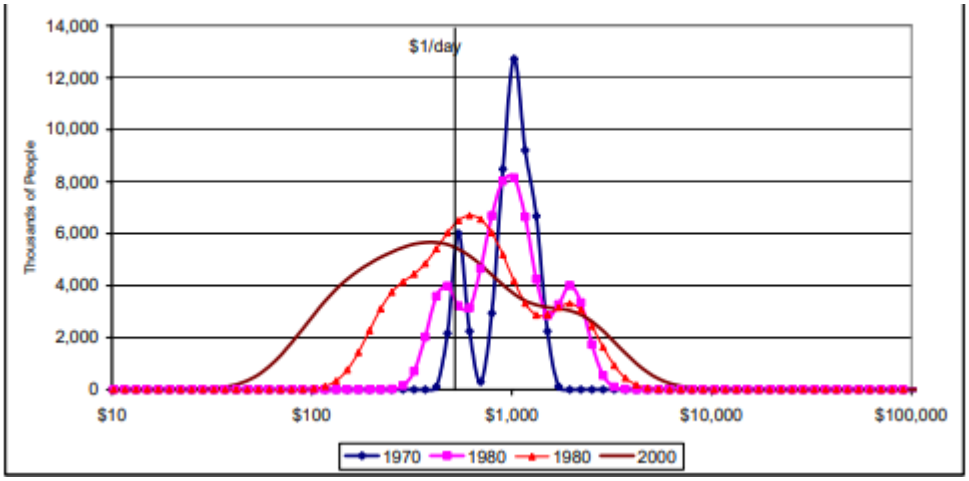

Figure 1: Distribution of income in Nigeria

Despite a continuous rise in government expenditure from N166.11 billion in 1985 to N501.01 billion in 2019, slightly dropping to N445.68 billion in 2021 (World Bank, 2022), and Nigeria's status as the 7th largest oil producer and exporter with the highest average real GDP growth rate of 7.0 in Africa, the nation grapples persistently with high rates of income inequality and abject poverty (Kaplan et al., 1996; Sala-iMartin, 2006; Ohimain, 2010; Chude and Chude 2013). This paradox is accentuated by Nigeria's Human Development Index (HDI), which stood at the 163rd position among 177 countries, a stark contrast to the 151st position in 2002. The decline places Nigeria among the lowest in providing basic human development indicators such as Health (Life Expectancy at Birth), Standard of Living (Income Index), and Education (Education Index) according to the World Bank (2022). The repercussions of this economic paradox extend deeply into the health sectors of developing nations. In Nigeria, where the health sector faces

challenges of both income inequality and inadequate funding, access to healthcare services becomes a precarious balancing act. The lack of sufficient funding, coupled with high income inequality among the populace and inefficiencies in government hospitals and clinics, has particularly impacted the health status of the population. Lower-income individuals, in particular, encounter obstacles in accessing medical care, leading to compromised health outcomes.

As this economic paradox becomes evident the story of catastrophic OOP condition, poverty, inequality and insufficient resources extends beyond statistics and academic discourse. On average, the Gini index, a measure of income inequality over the past five years, stood at approximately 0.49. To put this into perspective, the wealthiest individual in Nigeria can earn 8,000 times more in one day than what the poorest 10% of Nigerians typically spend on their basic consumption in an entire year. Analysis of the nation's income distribution by income quintile reveals that in 2018 the poorest 20% of the population shares only 7% of the total national income, in stark contrast to the top 20%, which commands 42% of the income share (World Bank, 2019). These statistics underscore the significant income disparities between the impoverished and affluent segments of the population.

On the other hand, heavy reliance on out-of-pocket payments exacerbates income inequality and Nigeria's significant lower individual health premiums comparatively in the global health market. A challenge also influencing inadequate funding of domestic public general healthcare systems and services offered in the country inciting medical tourism potentially affecting the high-income populace. Thus, the private health sector is responsible for about 60% of healthcare service delivery while the public health sector account for 40%. In fact, as argued by previous reports, the public health sector is on the verge of collapse due to inefficiency, poor infrastructure and poor resources (Federal Ministry of Health, 2010). As of 2020, Nigeria's domestic general government health expenditure was at 14.97% of the total GDP. Of this, 4.2% was earmarked for health expenditure. One part of this, averaging at about 82.7% of the health budget was spent on salaries, wages and running offices, while the other share of barely 10.9% was

spent on the repairs and construction of health care facilities, provision of drugs and medical equipment across the health care facilities in Nigeria therefore making individuals pay heavily for their healthcare which further causes a huge difference in the quality of healthcare services they receive as well as creating income disparities between the poor and the rich.

The outcomes of this scenario as well as the quality of healthcare service system encompass mass migration of medical workers to other developed countries such as Canada, United Kingdom, United States of America amongst others. While Nigerian immigrants account for one of the highest numbers of healthcare workers in the United States and Canada (Ileyemi, 2023), within the country there is a ratio of 4 physician to 10,000 people (Fatunmole, 2022) far from the WHO-recommended of 600 patients to 1 doctor (Duru, 2022). Additionally, Nigeria has a total of 38,645 operational hospitals and clinics. This number combines private and public hospitals across the primary, secondary and tertiary levels of care with private clinics accounting for 26% operational hospitals and clinics while public hospitals and clinics account for 74% (Nigeria Health Facility Registry, 2022). What this implies is that, based on Nigeria's population, Nigeria has an average of 17 health care centres to 100,000 persons with Nassarawa State taking the lead and Lagos having the highest number of private hospitals (Taiwo, 2022).

These indicates some of the major effect outcomes as Nigeria's relatively low life expectancy rate at 55.75 years – compared to other countries such as South Africa 64.88, Gabon 67.03, and Botswana 69.86 (Course Sidekick, 2024). And also, high child and infant mortality which is currently at 54.740 for every 1000 birth as against some countries within the Sub-Saharan region with lower child and infant mortality rate such as Angola; 53.409, Botswana; 26.744, South Africa; 23.573 and Gabon with 31.049 deaths (United Nations, 2022). Additionally, delays in the timely transportation of emergency patients for proper medical care, and an increase in the presence of unqualified individuals (quacks) assuming roles as doctors or health practitioners. Regrettably, these elements may have resulted in numerous preventable deaths mostly

among lower income and rural residents. The fundamental origins of these difficulties can be linked to insufficient funding for the health sector and disparities in income, particularly impacting rural inhabitants who face challenges in accessing essential healthcare services due to financial constraints (Abu, 2024; Dominic, 2023; World Bank, 2022; Gizaw et al., 2022; Goddard & Patel, 2021; Oburota & Olaniyan, 2020; Aregbeshola & Khan, 2018; Schieber et al., 2006).

Conclusion and recommendation

Evidence suggests that increased allocation of public funds to the health sector leads to a decrease in OOP health expenditure as well as catastrophic OOP health spending. Such issues as OOP health payments that increase the level of poverty – an indicator of poor economic growth and health of Nigerian population – needs proper attention. This study shows the urgency in providing this financial risk protection which is currently absent among the high percentage of households in Nigeria. This critical policy concern, particularly in developing nations like Nigeria characterized by pronounced income inequality and predominant out-of-pocket (OOP) medical expenses due to limited health insurance and accessible health care financing choices. Contributing to the exacerbation of income inequality at both national and sectoral levels within the country these, aforementioned mix avails the recommendation that enhancements be made to the National Health Insurance Scheme (NHIS) operations to ensure expanded health care coverage for the impoverished. Furthermore, this study recommends that it is crucial to allocate sufficient funds in annual fiscal budgets, revenue collection, and social insurance to cover a broader spectrum of health care expenses, especially for those with lower incomes. Additionally, extending healthcare services to numerous rural communities across the country is essential. This extended healthcare service coverage can be sustainably implemented by providing substantial incentives for trained medical professionals to mitigate the efflux of healthcare workers from Nigeria, commonly referred to as "Japa". Lastly, one strategic approach to addressing emergency healthcare and healthcare gap in Nigeria should include effective health financing strategies through means such as income tax collection.

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