Government Health Spending and its Effect on Income Disparities in Nigeria (2010-2024)

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A b s t r a c t

Government Health Spending and Its Effect on Income Disparities in Nigeria (2010-2024). To achieve the study broad objective the study made use of secondary data gathered from publications of Central Bank of Nigeria's Statistical bulletins and National Bureau for Statistics. Cointegration and causality. Study variables are Gini coefficient, Government Health Spending and inflation rate, unemployment rate as control variables. This study uses an ex-post facto research design and applies the Ordinary Least Squares (OLS) method for data analysis to estimate the variables coefficients. On the individual variable's responses, Government health spending has a negative but statistically insignificant effect on income inequality in Nigeria. Similarly, the unemployment rate shows a positive but insignificant impact on income inequality, while the inflation rate exerts a negative yet insignificant influence on income inequality in the country. The study therefore recommends among others that Government should Redirect government health spending to pro-poor, rural, and underserved areas to improve equity and effectiveness.

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Background to the Study

Public investment in education has long been recognized as one of the fundamental drivers of national economic growth, poverty reduction, and social development (Barro, 2013; Psacharopoulos & Patrinos, 2018). In Nigeria, a country marked by significant economic disparities, the role of education in mitigating these disparities is a topic of growing interest (Adebayo & Ogunrinola, 2020). Nigeria, Africa's most populous nation, faces numerous challenges related to economic inequality, social injustice, and unequal access to opportunities (World Bank, 2022). Public investment in education, therefore, is increasingly seen as a critical tool to promote equity, alleviate poverty, and create a more inclusive economy (UNESCO, 2021; Okafor & Ugwuegbe, 2019). This study examines the relationship between public investment in education and its effect on economic disparities in Nigeria.

The World Health Organization (WHO) underscores the importance of equitable health financing in reducing health inequities. A report highlighted that children in poorer countries are 13 times more likely to die before age five compared to those in wealthier nations, emphasizing the need for increased government health expenditure to address these disparities (World Health Organization, 2021; Financial Times, 2020). In Africa, the relationship between government health spending and income inequality is complex. While some countries have made strides in increasing health budgets, many still fall short of the Abuja Declaration's 2001 target, The Abuja Declaration, made in 2001, recommended that African Union member countries dedicate at least 15% of their annual budgets to the health sector. However, a report by the Overseas Development Institute (ODI) revealed that nearly half of the countries in sub-Saharan Africa spend less than 7% of their budgets on health, falling well short of this target. (ODI, 2020). This underfunding often results in inequitable distribution of health services, with wealthier individuals and urban populations having better access to quality care. A study published in the *Bulletin of the World Health Organization* found that in several African countries, the richest quintile received a disproportionately higher share of public health subsidies compared to the poorest quintile (Okwero et al., 2017). Nigeria presents a stark example of how inadequate government health spending exacerbates income inequality. The country's government health expenditure stands at a mere 0.5% of its GDP, one of the lowest globally. This translates to approximately $14 per capita, with less than 20% allocated to primary care (Nairametrics, 2021).

In contrast, countries like Botswana allocate over 70% of their health budgets domestically, leading to lower out-of-pocket expenses for their citizens. In Nigeria, however, out-of-pocket expenses account for nearly 75% of total health spending, pushing many Nigerians into poverty due to catastrophic health expenditures. (Nairametrics) The income disparity in Nigeria is stark, with the Gini index averaging approximately 0.49, This points to a serious level of income inequality, where the richest 20% of the population take home 42% of the country's income, while the poorest 20% have to make do with just 7%. This economic divide is mirrored in health outcomes, where the affluent have better access to healthcare services, leading to improved health indicators compared to the disadvantaged groups. (Dejusticia, 2022)

Despite numerous reforms and international commitments, such as the Abuja Declaration, Nigeria continues to face persistent challenges in adequately funding its health sector. The government consistently allocates less than 5% of its annual budget to health, far below the 15% target agreed upon by African Union countries (Overseas Development Institute [ODI], 2023). As a result, the Nigerian healthcare system remains underfunded, poorly equipped, and inaccessible to a significant portion of the population, particularly those in lower-income brackets. A major consequence of this underinvestment is the overwhelming reliance on out-of-pocket (OOP) health expenditures, which account for approximately 75% of total health spending in Nigeria (Nairametrics, 2024). This financing structure disproportionately affects the poor, pushing many into deeper poverty when they fall ill, while wealthier individuals are able to afford quality healthcare, often from private providers. These disparities contribute to a cycle of inequality in both income and health outcomes (Dejusticia, 2022).

Further compounding the issue is the urban-rural divide in the distribution of healthcare resources. Urban centers enjoy relatively better health infrastructure and access to services, while rural and remote areas remain grossly underserved. Consequently, the poorest segments of the population not only face financial barriers but also geographical ones, reducing their access to preventive and curative care (World Health Organization [WHO], 2022). Although prior studies have examined the broader impacts of health expenditures or income inequality separately, limited empirical research in Nigeria directly explores the causal link between government health spending and income disparities. This gap is significant because understanding how public health financing affects economic inequality is essential for designing policies that promote social equity and inclusive development. The core problem this research seeks to address is the extent to which insufficient and inequitable government health spending contributes to widening income disparities in Nigeria. Without a focused analysis of this relationship, policy interventions may continue to fall short in reducing both poverty and inequality in health access and outcomes.

Literature Review
Gini Coefficient
The Gini coefficient helps us understand how fairly money is shared among people in a country. A score of 0 means perfect fairness everyone earns the same. A score of 1 means total unfairness one person gets everything, and no one else earns anything. It's often shown as a percentage, so a Gini index of 0.45 means there's a 45% level of inequality (World Bank, 2023). This number is based on something called the Lorenz curve, which shows how income is shared across different groups in society. The further the curve is from a straight, equal line, the higher the Gini number, meaning more inequality. Policymakers and economists rely on the Gini coefficient to track inequality over time and to shape policies aimed at creating a fairer society.

Government Health Spending
Public health expenditure is the government's financial commitment to healthcare, covering things like hospitals, clinics, health awareness programs, and essential medical

infrastructure to support the well-being of its citizens. It plays a crucial role in improving population health outcomes, reducing disease burden, and ensuring equitable access to medical care (World Health Organization [WHO], 2023). This expenditure is often expressed as a percentage of GDP or total government spending.

Unemployment Rate
The unemployment rate shows the share of people who are willing and able to work but are currently without a job despite actively searching for one. It's a key indicator of how healthy the economy is and how well the job market is functioning (International Labour Organization [ILO], 2023). When unemployment is high, it usually points to economic challenges, while low unemployment typically reflects strong economic performance.

Inflation Rate
The inflation rate shows how quickly prices for goods and services are rising, which gradually reduces the value of money and what people can afford to buy over time. It is usually calculated annually using a price index such as the Consumer Price Index (CPI) (International Monetary Fund [IMF], 2023). Moderate inflation is a sign of a growing economy, but excessive inflation can reduce consumer confidence and investment.

Akintunde and Olaniran (2022). Financial development, public health expenditure, and health outcomes. Variables are Government health expenditure, financial development indicators, life expectancy, and inflation rate. Autoregressive Distributed Lag (ARDL) model with Bounds Testing. Findings show that in the short run, government health expenditure negatively affects life expectancy, while in the long run, it positively influences life expectancy. The effect of financial development on health outcomes depends on which financial indicator is being considered. However, inflation generally has a negative impact on health outcomes. The study Recommendations that Increase government spending on health and ensure a stable financial sector to improve health outcomes in Nigeria.

Samuel (2024). This study examines how public health spending affects infant and maternal mortality in Nigeria, using government health expenditure, infant mortality rate, and maternal mortality rate as the main variables. The analysis was carried out using the Autoregressive Distributed Lag (ARDL) model. The findings show that there is no Granger causality between government health spending and either infant or maternal mortality suggesting that changes in health spending do not directly lead to changes in these mortality rates, and the reverse is also true. However, past levels of infant mortality were found to significantly influence current levels, suggesting a persistent trend. Based on these results, the study suggests that the government should increase health spending as a key strategy to help lower infant and maternal death rates in Nigeria.

Ochiaka and Akuma (2021). This study examines how government health spending affects health outcomes in Nigeria. The key variables include total health care spending per person, the ratio of public health expenditure to GDP, life expectancy, and mortality

rates for infants, mothers, and adults. The analysis was conducted using descriptive statistics and correlation methods. The results show that higher health care spending is linked to longer life expectancy and lower rates of infant, maternal, and adult mortality. Based on these findings, the study recommends that the government raise its health sector budget to improve overall health outcomes, aligning with the World Health Organization's suggested benchmark of allocating at least 2.5% of the GDP to healthcare.

Joseph and Agada (2024). This study looks into how government spending on healthcare affects life expectancy in Nigeria. The variables analyzed include public health expenditure, life expectancy, and under-five mortality. The analysis used techniques called the Autoregressive Distributed Lag (ARDL) model and Granger causality test. The results showed that public health spending and life expectancy are connected over the long term. However, no direct causal link was found between the two. The study recommends that the Nigerian government step up efforts to increase public health expenditure to improve the overall health and well-being of its citizens.

Umaru, Rotimi and John (2022). The connection between government spending on health and health outcomes in Nigeria. Using the Vector Autoregressive (VAR) model and Johansen's cointegration test, the results show that government health spending is negatively associated with infant mortality. In other words, higher health expenditure leads to a reduction in infant deaths in Nigeria. The study recommends that the government increase its health budget to lower infant mortality rates and boost school enrollment. Overall, these findings highlight the important role of government health funding in improving health outcomes and, consequently, addressing income inequality in Nigeria. They emphasize the need for greater and more efficient investment in the health sector to enhance public health and reduce disparities.

Data and Methodology
The study will Government Health Spending and Its Effect on Income Disparities in Nigeria 2010-2024. to this end, the study will use annual time series data on Gini coefficient, education expenditure, and employment rate as the control variable and the ordinary least square method will be employed in carry out the analysis. Also, the Granger causality tests, trends and descriptive analysis of the variables. The study is based on Keynesian theory, specifically Keynes's idea of the multiplier effect of government spending on the economy.

$$Y = C + I + G(X-M) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

Where; Y = Output, C = Consumption, I = Investment, G = Government Expenditure, X-M = Net Export (Export minus Import). In order to capture the effects of public expenditure on income disparities in Nigeria, the study adopt the works of Olupona (2015) in the study of the impact of education on income inequality which agrees that the Gini index is an appropriate measure for inequality, and education, per-capita growth in gross domestic product, government expenditure, terms of trade, political stability, rule-

of-law index, and fertility rate are significant variables in the investigating the income inequality With reference to the preceding analysis, derived the following model:

$$Gini_{it} = \beta_0 + \beta_1\ tertiary\_enrollment_{it} + \beta_2\ gdppcg_{it} + \beta_3\ gov\_exp_{it} + \beta_4 terms\_of\_trade_{it} + \beta_5\ political\_stability_{it} + \beta_6\ rule\_of\_law_{it} + \beta_7\ fertility\_rate_{it} + \beta_8\ country\_dummy_{it} + \beta_9(tertiary\_enrollment_j) + \alpha_i + \ \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

This study modified the empirical work of Olupona (2015) to capture the influence of public investment in and income inequality in Nigeria. A multiple regression model is used with gini coefficient as the dependent variable proxy for income inequality, while Government Health Spending as independent variable, unemployment rate and inflation rate as control variables to account for broader economic conditions that may influence income inequality independently of education spending. The functional form of the model is given below:

GINI = f (HTH, UMP, INF)………………………………..…………………………….. (3)

Where:
GINI = GINI coefficient,
HTH = Government Health Spending,
UMP = Unemployment rate
INF= Inflation rate.

The stochastic form of the model is:
GINI = $\beta_0 + \beta_1 HTH_t + \beta_2 UMP_t + \beta_3 INF_t + U$………………………….………… (4)

Equation (4) above is transformed into log linear model as:
LnFOD = $\beta_0 + \beta_1 lnHTH + \beta_2 lnUMP + \beta_3 lnINF + U_t$………..………………………… (5)

Where:
Ln = Natural Logarithm,
β_0 = Intercept of the regression model;
B1- β_2 = Slopes of the regression model to be estimated and
U_t = error term.

The use of double log linear functional form is to convert the data to the same unit to avoid any econometric problem(s).

Results and Discussion
Trend Analysis Results
The data of the study would be analyzed using E-VIEW Econometric Software Version 10.0. The data collected for the study would first be subjected
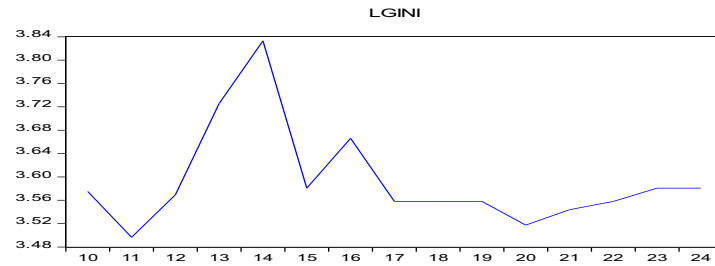
Fig. 1: Trend of Gini coefficent in Nigeria (2010 – 2024)
Source: Author's Computation 2025, using E-view 10.0

An examination of fig. 1 showed that Gini coefficient in Nigeria is in upward and downward trend.
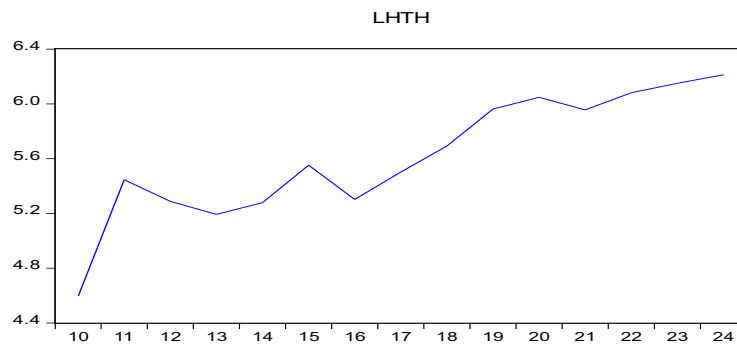

Fig. 2: Trend of Government health spending in Nigeria (2010 – 2024)
Source: Author's Computation 2025, using E-view 10.0

Fig. 2 showed that Government health spending is generally in swing upward trend, reaching its maximum in 2024. to 2904.182 billion in 2022.
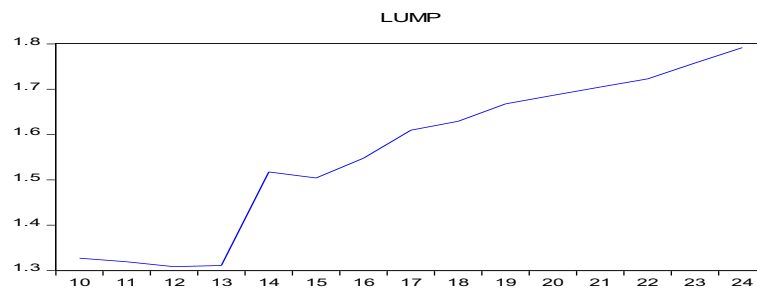
Fig. 3: Trend of Unemployment rate in Nigeria (1990 – 2022)
Source: Author's Computation 2025, using E-view 10.0

Fig. 3 showed that Unemployment rate in Nigeria is generally in swing upward trend, reaching its maximum in 2024.
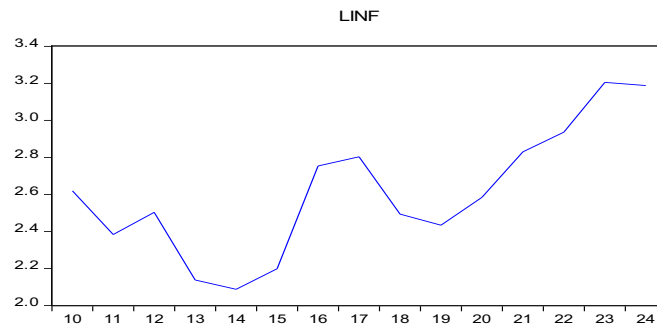
Fig. 4: Trend of inflation rate in Nigeria (1990 – 2022)
Source: Author's Computation 2025, using E-view 10.0

Figure 4 shows that the inflation rate generally fluctuates, rising and falling over time, and reaching its highest point in 2024.

Johansen Co-integration Test
Table 1: Johansen Co-integration Test Results

Date: 05/12/25   Time: 03:50
Sample (adjusted): 2012 2024
Included observations: 13 after adjustments
Trend assumption: Linear deterministic trend
Series: LGINI LHTH LUMP LINF
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.998583	149.0253	47.85613	0.0000
At most 1 *	0.961186	63.75307	29.79707	0.0000
At most 2 *	0.663590	21.51653	15.49471	0.0055
At most 3 *	0.432033	7.353988	3.841466	0.0067

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

The results in table 1 above show that the Eigenvalues are all below the 5% critical value at every level (see columns 2 and 4). This indicates that there are at most three cointegrating variables.

Pairwise Granger Causality Test
Table 2: Pairwise Granger Causality Test Results

Pairwise Granger Causality Tests
Date: 05/12/25   Time: 03:54
Sample: 2010 2024
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
LHTH does not Granger Cause LGINI	13	1.53418	0.2729
LGINI does not Granger Cause LHTH		1.67675	0.2465
LUMP does not Granger Cause LGINI	13	14.8071	0.0020
LGINI does not Granger Cause LUMP		10.6987	0.0055
LINF does not Granger Cause LGINI	13	0.74678	0.5042
LGINI does not Granger Cause LINF		1.17828	0.3560
LUMP does not Granger Cause LHTH	13	5.12366	0.0369
LHTH does not Granger Cause LUMP		1.25043	0.3369
LINF does not Granger Cause LHTH	13	0.91117	0.4400
LHTH does not Granger Cause LINF		7.24798	0.0160
LINF does not Granger Cause LUMP	13	0.17788	0.8403
LUMP does not Granger Cause LINF		3.88077	0.0664

Source: Author's computation, 2025 using E-views 10.0 version

The results of granger causality test presented on table 2 revealed that the GINI and HTH does not granger cause each other; UMP and GINI granger cause each other having a bi-directional relationship. GINI and INF do not granger cause each other.

Regression Results
Table 3: Least Square Regression Results

Dependent Variable: LGINI
Method: Least Squares
Date: 05/12/25   Time: 04:09
Sample: 2010 2024
Included observations: 15

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LHTH	-0.154914	0.092371	-1.677081	0.1217
LUMP	0.423775	0.270513	1.566559	0.1455
LINF	-0.136164	0.080880	-1.683520	0.1204
C	4.157900	0.274863	15.12719	0.0000

R-squared	0.357179	Mean dependent var		3.593490
Adjusted R-squared	0.181864	S.D. dependent var		0.086244
S.E. of regression	0.078008	Akaike info criterion		-2.040823
Sum squared resid	0.066938	Schwarz criterion		-1.852010
Log likelihood	19.30617	Hannan-Quinn criter.		-2.042834
F-statistic	2.037356	Durbin-Watson stat		1.154002
Prob(F-statistic)	0.167053			

The results on table 3 above reveal the following. Holding other variables constant Government health spending will reduce income disparities by -0.154914%, the p-value is 0.1217 which means that public education expenditure has insignificant impact on income inequality in Nigeria. Holding other variables constant unemployment rate will increase income disparities by 0.423775%, the p-value is 0.1455 which means that unemployment rate has insignificant impact on income inequality in Nigeria. Holding other variables constant inflation rate will reduce income disparities by -0.136164%, the p-value is 0.1204 which means that inflation rate has insignificant impact on income inequality in Nigeria. The value of the coefficient of determination (R-square = 0.357179) indicates how much the changes in the explanatory variables (HTH, UMP, INF,) account for 35.71 percent of the changes in the GINI index. This suggests that the model is not a good fit, as reflected by the insignificant impact of the variables. Therefore, other factors not included in the model likely play a larger role in explaining the variation in income inequality.

Conclusion
It was expected at the beginning of this study that in the end, there would be negative and significant relationship between Government health spending and income inequality in Nigeria, the analysis found that the unemployment rate has a positive and significant

effect on income inequality in Nigeria, as does the inflation rate. However, the overall results for the period 2010 to 2024 are mixed. Government health spending showed a negative but statistically insignificant impact on income inequality, suggesting that current health investments may not be effectively reaching the poorest segments of the population. Additionally, the unemployment rate also showed a positive but insignificant impact, while inflation had a negative yet insignificant effect on income inequality. These findings imply that while some variables are linked to income inequality, their actual influence may be limited under current economic conditions. The finding of this study aligns with Ewubare and Nnamdi (2020) observed that rising unemployment accelerates income inequality in Nigeria. Their study pointed out the increasing gap in income levels across different Nigerian states and regions, suggesting that unemployment exacerbates income inequality. A meta-analysis by Akinbo and Saibu (2004) found that a reduced unemployment rate improves human development and consequently reduces poverty. As public capital spending increases, unemployment tends to decrease, and the human development index shows improvement, leading to a reduction in income inequality. This study in another have contradict A study by Oburota and Olaniyan (2020) found that both health care financing options, including out-of-pocket payments and health insurance contributions, were associated with worsening income inequality in Nigeria.

Recommendations
Based on these findings and conclusions, the following recommendations are offered:
  (i)   Redirect government health spending to pro-poor, rural, and underserved areas to improve equity and effectiveness.
  (ii) Foster job creation in labor-intensive sectors like agriculture, manufacturing, and construction, particularly for youth and women.
  (iii) Adopt monetary and fiscal policies that stabilize inflation without cutting social spending.

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