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Implication of Government Health Expenditure for Human Capital Development in Nigeria

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Abstract

The relationship between government health expenditure and human capital development has been widely discussed. It is a known fact that the more the health sector is funded, the more healthy people would be and this would enable them to invest in themselves and increase human capital. However, the health sector's funding in Nigeria is low and has not helped to improve the development of human capital. It is for this reason that this study examined the impact of government health expenditure on human capital development spanning 1999 to 2023. The data for the annual time series were obtained from the Central Bank of Nigeria Statistical Bulletin 2023, and World Development Indicator 2023. The study adopted the vector error correction model (VECM) as an appropriate method of analysis. The results however found that government health expenditure and out-of-pocket expenditure have positive and significant impact on human capital development. Similarly, physician per capita and inflation rate are insignificant and negative with human capital development, meaning these two variables cause decline in human capital development during the period covered in the study. The results of the analysis made this study to recommend that there is the need for the government to increase health sector's funding to aid the building of state-of-the-art health facilities that would help the development of human capital in Nigeria.

Keywords: Government Health Expenditure, Out-of-Pocket Expenditure, Human Capital Development.

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Introduction

Human capital is an essential element required to increase productivity and well-being. It is needed to control physical capital. The human capital theory of Schultz sees human capital as a factor that may likely limit the growth of an economy if it does not increase progressively as physical capital increases (African Development Bank Group, 2018). Human capital is said to develop when there's an avenue for improvement in education, skills, ideas and total well-being of individuals and this process of improvement requires financial commitments of the government and individuals. Globally, health expenditure has contributed to human capital development (HCD). Health implies the absence of illness. It deals with the mental, physical, and psychological well-being of individuals (World Health Organizations, 2023).

Health is a basic need of life and is one of the primary keys to development. When we say health, we mean quality health which is also a driving force upon which other human capitals like education, skills, ideas, rely on (Maduka, Madichie & Ekesiobi, 2016). The United Nations included good health and well-being as the third goal in the sustainable development goals because a healthy nation is a wealthy nation. Health is wealth and no amount spent on health is considered extravagant or a waste. A decrease in health expenditure leads to an increase in non- healthy individuals who will cause a reduction in workforce and productivity in developing countries like Nigeria whose economic growth is based on labour and creates more losses on production power and output as compared to developed economies (Kurt, 2015).

There seems to be a broad view that an increase in government health expenditure can lead to increase in human capital and their productivity. Government expenditure on health in Nigeria has been so low to address infrastructural issues that can encourage investment in human capital. Other problems that can be attributed to causes of low human capital development include high out-of-pocket expenditure. This is because individuals spend more than necessary to cater for their health and as such could not have enough money to invest in human capital development. High inflation rate has also been adjudged to be one of the causes of low human capital development, as people's purchasing power are eroded, thereby, making it difficult to invest in the development of human capital (Adeshina et al., 2020). Similarly, owing to poor salaries, dilapidated health infrastructure, bad state of Nigerian health sector, the number of physicians available per 1000 people has decreased over the years, as many have migrated to other countries of the world in search of better working conditions. This has however led to avoidable deaths and low human capital development. The emigration of health workers depletes human capital supply within their home country, limits the capacity to provide quality care and other health care

services effectively. It also requires the government to spend more in training new health workers (World Bank, 2023).

With an HDI value of 0.51 in 2021, Nigeria was categorised as low in human capital development, ranking 152 out of 188. The country remains behind other countries in health, education, and income, with the largest disparities in income and education due to insufficient health-care spending. Governments at different levels have implemented efforts to ensure that Nigeria's human development index improves, including investing in education and training. Some of these measures include, increasing government health expenditure, introduction of insurance scheme, amongst others. Despite these measures put in place, the human development index remains low (World Bank, 2023).

Furthermore, most previous studies on human capital development in Nigeria focused on its impact on economic growth and development, demonstrating how health expenditure affects both human capital development and economic growth. One of the major issues is that the empirical linkage between government expenditure on health and human capital development in Nigeria is not yet clear, as there are mixed findings on the relationship which might be due to different methodologies or variables employed, or timeframe and locations covered. Findings from the empirical review also showed that out-of-pocket expenditure and physician per capita have not been used to examine the relationship, owing to the fact that health expenditure is mostly funded privately, and that physician per capita is essential in handling healthcare services professionally. It is therefore imperative to fill the gap discovered by including out-of-pocket expenditure, physician per capita and other variables like government health expenditure and inflation to study the impact of health expenditure on human capital development in Nigeria. Based on these, the following questions were formulated to guide to study:

i. What is the impact of government health expenditure on human capital development in Nigeria?

ii. To what extent does out-of-pocket expenditure impact human capital development in Nigeria?

iii. What impact does physician per capita has on human capital development in Nigeria?

Literature Review

Conceptual Issues

According to Bassey et al. (2022), the effect of public health expenditure is justified by its effect on the individual's health outcome and the impact on the general economic growth. Aranda (2010) argues that the expectation of better health status is a major driver of health spending, and that health investment determines one's state of health. These health investments give room for health training programmes in order to allow for the development of skills of health workers. The desire for health itself drives the need for healthcare. Conversely, HCD, via a broadly defined process of human capital generation, improves people's abilities, knowledge, productivity, and innovation. It contributes to development as well (Aluko & Aluko, 2012). Similar to this, the Human Development Index (HDI) measures long-term advancement in the three fundamental domains of human development – the ability to live a life that is secure and healthy, get an education, and have a respectable level of living (United Nations Development Programme, 2015). The HDI represents a shift from the prior emphasis on per capita income to a more comprehensive understanding of development.

Theoretical Framework

Human Capital Development Theory

Several scholars, including Jacob Mincer, Theodore Schultz, and Gary Becker, established and popularised the human capital theory of development (Becker, 1964). The theory points out that individuals gain by acquiring information, skills, and competence by increasing their work options, but it also boosts the nation's economy as a whole.

This study is based on Gary Becker's theory of human capital, which states that investing in education and training can increase a person's productivity and earning potential. In other words, people tend to invest in themselves to adapt to changes in their environments so as to be more productive. As such, investments in human capital raise labour productivity and they are embodied in the person investing. As part of its strength, it recognises the importance of health in skill development, as such provides a framework for understanding the link between health expenditure and human capital development. However, investment in human capital can be smooth and possible with infrastructural development.

Empirical Literature Review

Agu et al. (2024) examined the effect of government expenditure on human capital index in Nigeria. The study adopted an ex-post-facto research design, covering the period between 2001 and 2021. Multiple regression technique was used for the data analysis and it was revealed that government expenditure on administration has a significant negative effect on human development index in Nigeria while economic services government expenditure and government expenditure on social community services had positive effect on human development index of Nigeria.

Olopade et al. (2023) investigated how public expenditure and economic growth could be used to boost Nigeria's human capital development. The data was studied from 1981 to 2021, and the Dynamic Ordinary Least Squares (DOLS) regression approach was applied. According to the study's findings, public spending on various components of human capital development has a direct impact on Nigerian economic growth. Additionally, expenditures in health and education have a positive and significant impact on Nigeria's economic growth.

Ugochukwu et al. (2023) explored the impact of government expenditure on HCD in Nigeria and autoregressive distributed lag (ARDL) model. The results showed that there existed a long-run dynamic relationship between the government expenditure and HCD, and also that education expenditure (second lag), per capita income and school enrollment, all had positive and significant impacts on HCD while health expenditure and poverty rate impacted negatively and insignificantly on HCD. Based on the findings, the study strongly recommended that the federal government should boost spending in the health and education sectors and also ensure effectiveness and efficiency in its spending to including policies and programmes such as scholarship and health insurance schemes since these will contribute to HCD in Nigeria.

In Nigeria, Bassey et al. (2022) conducted a study on the relationship between government spending and HCD. The government's spending on education had a major long- and short-term impact on HCD, according to the study, which used the ARDL technique of analysis. Furthermore, empirical findings showed that health spending only had a consistent favourable impact on HCD over the long term. Using the ordinary least square model (OLS), Muhammad et al. (2022) investigated the impact of government expenditure on HCD and Nigeria's economic growth. The findings suggested increasing funding for the health and education sectors after it was discovered that government spending on health had a favourable but insignificant effect on HCD.

Erasmus (2021) used an OLS regression model to empirically investigate the effect of public spending on HCD. The findings showed that while public education spending had a positive but insignificant impact, public health expenditure had a significant impact on HDI. The study therefore recommended that significant funds should be allocated to the health and education sector.

Railaite and Ciutene (2020) studied the impact of public health expenditure on health component of human capital in twenty-four European Union countries. They conducted a test using OLS, fixed and random effect panel data models. The findings showed that spending on public health had a significant and positive impact on increases in life expectancy. This suggests that higher health care costs will cause or contribute to longer life expectancies for people. Additionally, the result showed a long-term negative relationship between the rates of under-five mortality, newborn mortality, and fertility and government spending on health care.

Yang (2020) empirically examined, under various human capital levels across several developing nations, the link between national health expenditures and economic growth using the Threshold model. The findings demonstrated that, due to varying degrees of human capital, health spending and economic growth had a substantial relationship with HDI. Economic growth was influenced by the development of human capital, which increased with expenditure. Using vector auto regression (VAR), Shafuda and De (2020) examined government spending in Namibia and its effects on human capital and growth. Government spending on health and education was found to have a long-term beneficial impact on HDI. It illustrates how improving government spending will boost the health and education sectors.

A VAR model was employed in the Okafor et al. (2017) study, which examined the long-term association between government spending on health and education and HCD in Nigeria. However, it was found that the government's expenditures on health and education had no effect on the HDI. Conversely, the joint significance value suggests that the values of health and education spending are the most important determinants of HDI, but does not significantly affect HDI directly.

Kairo et al. (2017) empirically studied the relationship between government expenditure and human capital development in Nigeria. Data were collected over the period 1990-2014. ARDL was adopted for the estimation and the results demonstrated that both in the long and short run, government spending has remained positive but to a very large extent insignificant to human capital development in Nigeria.

The long- and short-term effects of federal government capital spending on HCD in Nigeria were empirically evaluated in the study by Nwokoye et al. (2017). To examine the impact, the ARDL was employed. The long-term association between HDI and government capital investment was demonstrated through the use of the bound test. The result of ARDL revealed that government spending on health had insignificant impact on HCD. In order to improve human capital development in Nigeria, the study suggested increasing capital spending on health and education. It also indicated that more efficient health spending in Nigeria could lead to HCD.

The Nigerian government's spending and HDI were examined by Ehimare et al. (2014). A country's level of HCD, which measures health and education, has an impact on its economic activity. A substantial decline in the efficiency of government spending has been observed from 1990 to 2011, according to data analysis that was carried out utilising data envelopment analysis including input-output variable return to scale. This led to poor output and quality in the Nigerian health and education sectors. The study suggested that as the delivery of healthcare and education affects human capital, efforts should be undertaken to improve these areas.

The work of Adelowokan (2012) looked at the impact of government expenditure on HCD in Nigeria, utilizing ARDL. The study discovered a negative and insignificant effect of government expenditure on HCD. The study recommended a more strategic allocation of funds across concerned sectors and a systematic review on the method of operation in the health sector.

Gap in the Literature

Having reviewed empirical studies on the subject matter, it was found that physician per capita and out-of-pocket expenditure have not received attention from previous studies despite their importance in enhancing human capital development. Out-of-pocket is added due to the fact that a significant portion of Nigeria's healthcare expenditure really emanates from the individuals rather than the government's financing. This high reliance on personal funds can affect healthcare accessibility, financial stability, and economic growth as a whole. Similarly, physician per capita is also critical since availability of medical practitioners has a significant contribution to human capital development through improvement in public health, prevention of disease burdens, as well as enhancing workforce productivity.

Methodology

Model Specification

Based on the human capital theory adopted as the theoretical framework, the vector error correction technique is employed because it helps to capture both short-term dynamics and long-term equilibrium by introducing an error correction term that adjusts discrepancies from the equilibrium path. The model of Railiate and Ciutene (2020), which examined the effect of public health spending on the health component of human capital, is modified and adjusted in this study. The functional formulation of their model is;

$$LEXP = f\ (RGDP, GGHE) \quad 1$$

Where, LEXP = Life expectancy at birth; RGDP = Real gross domestic product; GGHE = General government health expenditure. This study therefore modifies the study of Railiate and Ciutene (2020) to include variables such as human capital development, government expenditure on health, out-of-pocket expenditure, physicians per capita and inflation rate. The model can be specified functionally as;

$$HDI = f\ (GHE, OPE, PPC, INFR) \quad 2$$

Where, HDI = Human development index, proxy for human capital development; GHE = Government expenditure on health; OPE = Out-of-pocket expenditure; PPC = Physicians per capita; INFR = Inflation rate

Econometrically, equation 1 can be written as;

$$\mathrm{HDI}_t = \beta_0 + \beta_1 \mathrm{GHE}_{t-1} + \beta_2 \mathrm{OPE}_{t-1} + \beta_3 \mathrm{PPC}_{t-1} + \beta_4 \mathrm{INFR}_{t-1} + \mu_t \quad 3$$

Where, β_0 = constant term; $\beta_1 - \beta_4$ = slopes of the coefficient. To be able to interpret the coefficient values as elasticities, the model needs to be transformed into logarithms and this can be specified as;

$$\ln\mathrm{HDI}_t = \beta_0 + \beta_1 \ln\mathrm{GHE}_{t-1} + \beta_2 \ln\mathrm{OPE}_{t-1} + \beta_3 \ln\mathrm{PPC}_{t-1} + \beta_4 \ln\mathrm{INFR}_{t-1} + \mu_t \quad 4$$

Thus, the vector error correction model can be expressed as in equation 5.

$$InHDI_t = \beta_0 + \sum_{i=1}^{p} \beta_1 \ln\text{HDI}_{t-1} + \sum_{i=1}^{p} \beta_2 \ln\text{GHE}_{t-1} + \sum_{i=1}^{p} \beta_3 \ln\text{OPE}_{t-1} + \sum_{i=1}^{p} \beta_4 \ln\text{PPC}_{t-1} + \sum_{i=1}^{p} \beta_5 \ln\text{INFR}_{t-1} + \text{ECT}_{t-1} + \mu_t \quad 5$$

Estimation Techniques and Procedures

The study employs the tools of time series econometrics to explore the impact of health expenditure on human capital development in Nigeria. Specifically, the VECM method is used in this research work. The Vector Error Correction Model (VECM) is a statistical model that is relevant in analyzing long-run relationship between cointegrated time series variables, in addition to short-run dynamics. It is an extension of the Vector Autoregressive (VAR) model, which has been augmented with an error correction term in order to correct deviations from the long-run equilibrium. Augmented Dickey-Fuller (ADF) unit root test is used for the model's pre-test procedures. This is implemented to prevent erroneous regression. The Johansen cointegration test was used to perform the cointegration test. This is used to determine the variables' long-term relationship. The Johansen cointegration test can identify several cointegrating vectors and is susceptible to asymptotic features. As a result, it is better suited for multivariate analysis than Engle-Granger.

Nature and Sources of Data

Time series data are used in this research from 1999 to 2023. The data are collected from CBN Statistical Bulletin and World Bank Indicator database.

Measurement and Definition of Variables

Variables	Definition and Measurements	Sources of Data
Human Capital Development (HDI)	The Human Development Index (HDI) is a multidimensional measure of a nation's social and economic progress, and is derived from three fundamental dimensions: health (life expectancy at birth), education (average and expected years of schooling), and living standard (GNI per capita). The variable is measure in index.	World Development Indicator, 2023
Government Health Expenditure (GHE)	This refers to money spent by the government on the acquisition of goods and provision of services such as healthcare facilities and payment of salaries for health workers. GHE is measured in billions of naira	National Bureau of Statistics, various years

Out-of-pocket Expenditure (OPE)	Out-of-pocket expenditure refers to direct household payments for health care, such as payments to practitioners, pharmaceutical costs, and other health-related services. The variable is measured as a percentage of private health expenditure.	WDI, 2023
Physicians per capita	This includes the number of generalist and specialist medical practitioners, measured per 1000 of population.	WDI, 2023
Inflation Rate	This is the rate of increase in prices over a given period of time. The increase in the general price level of goods and services in a country is referred to as inflation. It is measured in percentage	Central Bank of Nigeria Statistical Bulletin, 2023

Presentation and Interpretation of Results

Augmented Dickey Fuller Unit Root Test

The unit root test is addressed in this subsection. The ADF unit root test was used to check for stationarity since time series data typically exhibit unit root. This test is required to ensure that the results are not misleading. As a result, Table 1 displays the outcome.

Table 1: *Summary of ADF Test*

Variables	ADF Statistics	Critical Value @5%	Order of Integration	Remarks
HDI	**-6.1698**	**-3.0049**	**I(1)**	**Stationary**
GHE	**-5.0663**	**-3.0049**	**I(1)**	**Stationary**
OPE	**-5.2830**	**-3.0049**	**I(1)**	**Stationary**
PPC	**-6.4962**	**-3.0049**	**I(1)**	**Stationary**
INF	**-3.9952**	**-3.0522**	**I(1)**	**Stationary**

Source: *Authors' compilation using Eviews Output 10*

The ADF test presented in Table 1 shows that all the variables are stationary at first difference. This is seen in the ADF statistics against the critical values at 5 percent, as the ADF values in absolute terms are greater than the critical values at 5 percent level. The null hypothesis that the variable has a unit root is thus rejected.

Consequently, it is determined that the variables are stationary and our estimates can produce consistent and unbiased results.

Cointegration Test

Testing for cointegration is the next step after confirming the stationarity status. The Johansen cointegration test was used in this investigation, and Table 2 shows the result.

Table 2: *Summary of Johansen Cointegration Test*

Hypothesized No of CE(s)	Eigenvalue	Trace statistic	Critical value @ 5%	Max-Eigen statistic	Critical value @ 5%
None*	0.7783	76.5840	69.8189	33.1439	23.8769
At most 1	0.5874	43.4402	47.8561	19.4754	27.5843
At most 2	0.4342	23.9648	29.7971	12.5208	21.1316
At most 3	0.3201	11.4339	15.4947	8.4885	14.2646
At most 4	0.1253	2.9454	3.8415	2.9454	3.8415

Source: *Eviews 10 Output*

Table 2 shows the Johansen cointegration result. This test was carried out because all of the variables were combined in order to determine whether or not there was a long-term link. The cointegrating equation(s) are determined using both trace and maximum eigen statistics. This long-term association can be observed by comparing the likelihood ratio to the critical values at the 5% level of significance. As a result, there is only one cointegrating equation, and the Trace and Max-Eigen statistics for the cointegrating equation exceed the critical levels at 5%. It is so inferred that there is a long-term link between the variables. Therefore, the null hypothesis of no cointegration is rejected.

VAR Lag Selection Criteria

The VAR lag order selection criteria help determine the optimal number of lags for the model. Table 3 presents the result for this test.

Table 3: *VAR Lag Order Selection Criteria*

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-4.9962	NA	1.58e-06	0.8330	1.0784	0.8981
1	74.3952	119.0871*	1.80e-08*	-3.6996*	-2.2270*	-3.3089*

Note: Asterisks (*) indicate the selected lag order based on the criterion.
Source: *Eviews 10 Output*

The results show that Lag 1 is selected as the optimal lag by all criteria (LR, FPE, AIC, SC, HQ) because it has the lowest values. This suggests that using one lag provides the best model fit

Vector Error Correction Model

After confirming the long-term relationship between the research model and the variables, the study runs the data using VEC model to provide the coefficients for the regression model's parameters.

Table 4: *VECM Result*

	Coefficient	Std. Error	t-Statistic	Prob.
CointEq1	-0.235574	0.177635	-3.326165	0.0081
D(HDI(-1))	0.115785	0.273595	0.423199	0.6732
D(GHE(-1))	0.100174	0.198088	4.505705	0.0043
D(OPE(-1))	0.010001	0.064455	3.155157	0.0070
D(PPC(-1))	-0.048468	0.043441	-1.115706	0.2675
D(INF(-1))	-0.053255	0.042058	-5.266242	0.0007
C	0.047637	0.010047	0.760130	0.4492
R-squared	0.728791	F-statistic	9.635711	
Adjusted R-squared	0.631107			
S.E. of regression	0.021268			
Durbin-Watson stat	1.926599			

Source: *Eviews 10 Output*

The constant (c) value of 0.0476 indicates that the regression line has a positive intercept, as can be seen in Table 4. This indicates that the HDI will have a value of 0.0476 if all the variables are kept fixed or constant (zero). The intercept therefore complies with the theoretical expectation as the a-priori expectation is that it might be either positive or negative. The result also shows that the lagged value of HDI has positive impact on its current value. The coefficient value is 0.1158 and it implies that 1 percent increase in the lagged value of HDI will increase its current value by 0.12%.

The coefficients of government expenditure on health (GHE) and out-of-pocket expenditure (OPE) are positive with values of 0.1002 for GHE and 0.0100 for OPE. This implies that, holding other things constant, 1 per cent increase in GHE and OPE will increase HDI by 0.10% and 0.01% respectively. On the other hand, physician per capita (PPC) and inflation rate (INF) have negative relationship with HDI. The coefficient values are -0.0485 for PPC and -0.0533 for INF, and it suggests that 1 per cent increase in PPC and INF on average, will decrease HDI by 0.05% and 0.05% respectively.

The error correction term (CointEq1) of -0.2356 with a p-value of 0.0081 indicates that approximately 23.56% of short-term deviations from the long-run equilibrium are corrected in each period. The negative sign confirms that the system adjusts back to equilibrium, and the low p-value (0.0081) suggests that the correction mechanism is statistically significant. The regression result shows a R^2 value of 0.7287, indicating a very strong and high explanatory power for the variables. That is to say, GHE, OPE, PPC, and INF in Nigeria account for 73% of the fluctuations in the HDI. However, only 27% of the variability can be explained by additional potential HDI drivers that the model does not account for. When confirming the overall significance of an estimated model, the F-statistic plays a crucial role. Based on the outcome, the F-statistic is 9.6357, which is greater than the F-tabulated (2.93) suggests that all of the variables are jointly statistically significant. Additionally, the DW value of 1.9266, which is approximately 2, suggests that there is no autocorrelation. As a result, the models' variables do not exhibit autocorrelation, and their predictive power is robust.

Diagnostic Tests

Table 5: *Key Findings from VEC Diagnostic Tests*

Tests	Statistic	Df	Prob.	Interpretation
VEC Residual Heteroskedasticity Test (Joint Test)	Chi-sq: 169.1677	150	0.1355	No significant heteroskedasticity
VEC Residual Serial Correlation LM Test				
Lag 1	LRE stat: 28.1129	25	0.3027	No serial correlation
Lag 2	LRE stat: 20.6200	25	0.7136	No serial correlation
Lags 1-2 (Overall Test)	LRE stat: 51.8112	50	0.4030	No serial correlation

Source: *Eviews 10 Output*

The purpose of the heteroscedasticity test is to determine whether or not each observation's error variance is constant or not. The probability value must be greater than the 0.05 level of significance in order to support the null hypothesis that there is no heteroscedasticity in the residuals. Thus, based on the information contained on Table 5, the probability value is equal to 0.1355. This indicates that the significance level of the probability F statistic exceeds 0.05 percent. As a result, the study accepts the null hypothesis, according to which the data may be trusted to be predictive because the model does not exhibit heteroscedasticity in the residuals.

Similarly, VEC Residual Serial Correlation LM Test results show that for lags 1 and 2, there exists no serial correlation because all the p-values (0.3027, 0.7136, and

0.4030) are significantly larger than 0.05. The test for lags 1-2 also reveals that there is no serial correlation, and the model residuals are uncorrelated and aligned with the white noise assumption, which is necessary for valid estimation and inference.

Discussion of Findings

The result in Table 4 is further discussed under this section. Government health expenditure has positive impact with HCD and also statistically significant. This suggests that any attempt by the government to increase budgetary allocation to health sector for the provision of state-of-the-art healthcare facilities and for payment of good salaries for health workers would increase HCD, as people would have access to quality healthcare services. This conforms to the a priori expectation and also corroborate the findings of Ugochukwu et al. (2023); Bassey et al. (2022); Erasmus (2021). Similarly, the positive impact of out-of-pocket expenditure on HCD suggests that as people spend more money on their health, irrespective of the source of the money, they become healthier to contribute to the development of their country. The finding here supports the theoretical postulation that out-of-pocket expenditure must be positively related to HCD.

Furthermore, by implication, the negative impact of physician per capita simply means that as the number of physicians increase, HCD will reduce. This is because the increase suggests that many physicians are employed to treat the sick patients, and this affects the income of the patients which makes it difficult for them to have more money to invest in human development. In the real sense of it, increase in physician per capita should mean that more experts are employed to cater for the sick ones. This negative impact does not conform to the a priori expectation. Inflation rate also has negative impact on human capital development. This is expected based on high inflation rate in Nigeria. When prices of health-related goods and services are high, automatically, income of the people would be affected, which would lead to low HCD. In conclusion, the finding on government health expenditure in relation to HCD supports the findings of Bassey et al. (2022) but in contrast with that of Ugochukwu et al. (2023).

Conclusion and Policy Recommendations

The study investigates the impact of health expenditure on HCD in Nigeria between 1999 and 2023. The VECM model was employed to estimate the parameters and the findings revealed that positive relationship exists between GHE, OPE and HDI in Nigeria. The implication is that GHE and OPE are contributing greatly to the development of health sector which has helped to enhance HCD in Nigeria. The result however reveals a negative impact among PPC, INF and HDI in Nigeria. The

reason being that, high inflation rate erodes the purchasing power of people which in turn lowers human capital development in Nigeria. Similarly, the negative relationship between PPC and HCD might be as a result of inadequate physicians in our government hospitals which usually leads to high death rate.

The goodness of fit (R^2) measurement reveals that GHE, OPE, PPC, and INF account for almost 73% of the variations in HDI. This implies that the variables of the model can be used to predict economic situations. The post estimation tests conducted reveal that the results are reliable and that the model is correctly specified. It is therefore concluded that health expenditure can help in the development of human capital in Nigeria.

Based on the findings of this study, the following policy recommendations are made.

i. Government should increase health budgetary allocation so as to provide state-of-the-art health facilities that would contribute more to the development of human capital.

ii. Although, out-of-pocket expenditure has positive and significant impact on human capital development, government should subsidize health-related goods and services so that more ill persons can affordably access government hospitals. This would help patients have more money to invest in training and developing themselves.

iii. Government should ensure that the salaries of the physicians are increased, while better infrastructures are provided for them to effectively and efficiently deliver their services. This will reduce the number of medical practitioners leaving the country in pursuit of better conditions of service. It would also reduce death rates, and increase well-being of people.

iv. By fostering an environment that attracts investment, the government should make sure that a large volume of pharmaceuticals for medical conditions is produced in Nigeria. This would reduce the prices of health-related goods, and this means that more money will be available for human capital development.

References

Adelowokan, O. A. (2012). Growth effect of education and health expenditure in Nigeria: Critical issues and strategies for enhancing the use by the rural communities. *Journal of Public Health and Epidemiology, 4*(1), 5-13.

Adeshina, T., Alaje, C., & Idaeho, R. (2020). *Infrastructural development in Nigeria: Challenges for private sector participation and the way forward.* htpps://www.jacksonettiandedu.com

African Development Bank Group (2018). *Africa Infrastructure Development Index 2018*. https://www.afdb.org

Agu P.C., Inyiama O.I. & Ubesie, C.M. (2024) Effect of Government Expenditure on Human Capital Index in Nigeria. *European Journal of Accounting, Auditing and Finance Research, 12*(2), 18-33.

Aluko, Y.A., & Aluko, O. (2012). Human capital development; Nigeria's greatest challenge. *Journal of Management Policy and Practice, 13*(1), 162-177.

Aranda, P. (2010). The Determinants of Health and the Differences in Healthcare Expenditures among Countries. *Journal of Health Economics, 8*(5), 103-118.

Bassey, G. E., Ekong, U. M., & Ekpenyong, B. E. (2022). Government Expenditure and Human Capital Development in Nigeria. Royal Journal of Social Sciences Research, *1*(1), 1-21.

Becker, G.S. (1964). *Human capital: A theoretical and empirical analysis with special reference to education*. Colombia University Press.

Ehimare, O. A., Ogaga- Oghene, J. O., Obansiagbon E. I., & Okorie, U. E., (2014). T*he Nigerian* government expenditure on human capital development. An efficiency analysis. *European journal of business and social science,* 3(7), 1-13.

Erasmus, E. G. (2021). Public Expenditure and Human Capital Development in Nigeria. *Journal of Accounting and Financial Management, 7(2), 26-43*

Kairo, C. I., Mang. N. J., Okeke, A., & Aondo, D. C. (2017). Government expenditure and human capital development in Nigeria: An auto-regressive distributed lagged model approach (ARDL). *International Journal of Advanced Studies in Economics and Public Sector Management, 5*(1), 143–158.

Kurt, S. (2015). Government health expenditures and economic growth: A Feder-Ram approach for the case of Turkey. *International Journal of Economics and Financial Issues, 5*(2), 441-447.

Maduka, A. C., Madichie, C. V., & Ekesiobi, C. S. (2016). Health care expenditure, health outcomes and economic growth nexus in Nigeria: A Toda-Yamamoto causality approach. *Unified Journals of Economics and International Finance, 2*(1), 001-010.

Muhammed, S., Maureen, O. C., & Itodo, I. C. (2022). Government Expenditure on Human Capital Development and Its Impact on Economic Growth in Nigeria. *Indiana Journal of Humanities and Social Sciences,* 3(2), 56-61.

Nwokoye, E.S., Ogbonnaya, I.O., Ama, A.U. (2017). Does government human capital spending contribute to human capital development? – Evidence from Nigeria. *International Journal of Sciences and Research, 73*(8), 135-149.

Okafor, C. N., Ogbonna, K. S., & Okeke, C. I. (2017). Effect of government expenditure on human capital development in Nigeria. *International Journal of Banking and Finance Research,* 3(2), 1-14.

Olopade, Bosede C, Matthew O., Eseyin O., & Odularu. (2023). Public Expenditure and Human Capital Development in Nigeria. *UMYU Journal of Accounting and Finance Research, 5*(1), 1–11. https://doi.org/10.61143/umyu-jafr.5(1)2023.001

Railaite, R., & Ciutene, R. (2020). The impact of public health expenditure on health component of human capital. *Inzinerine Ekonomika-Engineering Economics, 31*(3), 371-379.

Shafuda, C. P., & De, U. K. (2020). Government expenditure on human capital and growth in Namibia: a time series analysis. *Journal of Economic Structures, 9*, 1-14.

Ugochukwu, P. I., Uzonwanne, M. C., Nwokoye, E. S., & Eze, E. E. (2023). Impact of government expenditure on human capital development in Nigeria. *Journal of Economic Studies, 20*(1), 153-171.

United Nations Development Programme (2015). *Overview of human development report 2015: Work for human development.* https://www.undp.org

World Bank (2023). *World Development Indicators.* https://www.worldbank.org/

World Health Organization (2023). *Health expenditure: Nutrition landscape information system.* www.who.int/data/nutrition/en/

Yang, X. (2020). Health expenditure, human capital, and economic growth: an empirical study of developing countries. *International journal of health economics and management*, *20*(2), 163-176.