
Human Capital Development and Poverty in Nigeria

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ABSTRACT

This study investigated the impact of human capital development on poverty level in Nigeria. The authors utilized annual time series data sourced from Central Bank of Nigeria (CBN) Statistical Bulletin, UNESCO data update and World Development Indicators which covered the period of 1990 to 2023. These data were analyzed using Autoregressive distributive lag (ARDL) model with poverty rate (POV) being the dependent variable while government expenditure on education (GEE), government expenditure on health (GEH), school enrollment rate (SER), life expectancy rate (LER), literacy rate (LIR) and mortality rate (MOR) were the independent variables. Based on the objective of the study, the results revealed that government's expenditure on education and health cannot directly influence or impact poverty level, but can affect poverty level indirectly through some sub-component factors and linkages. These sub-component factors or linkages are the human indices; namely literacy rate, life expectancy rate and mortality rate. Consequently, all the human indices i.e literacy rate, life expectancy rate and mortality rate conformed to apriori expectation and were statistically significant in affecting poverty level in Nigeria within the study period. From the foregoing, the study posits that an increase in government's expenditure on education and health will directly influence poverty level if such policies are complemented with well-established institutional frameworks to monitor and ensure that such expended funds are not diverted by corrupt public office holders, but spent judiciously on its intended purpose.

KEYWORDS: Human Capital Development, Poverty, Education, Health, Ardl

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INTRODUCTION

There is no disputing the fact that the most valuable asset in both developed and developing countries are humans. However, many developing countries including those of Sub-Saharan Africa and West Africa are yet to reach their maximum capacity in spending on the component of human capital that may contribute towards mitigating poverty level in their environments. Evidences from mere observation indicate that this can be attributed to poor government expenditure in terms of health and education to enhance human capital development (HCD). It will suffice to note that there is no country of the world that desires a high poverty level alongside the reduction of sustainable investment in human capital development. Therefore, the role of human capital development in poverty eradication and economic emancipation cannot be overemphasized as economists Domar (2016), Grossman, Gupta and Chakroborty (2014), identified human capital development to be a key factor responsible for a country's socioeconomic and political transformation vis-à-vis eradication of poverty level.

It is no news that the issue of poverty eradication ranks as the first of the eight-point millennium goals, and by its declaration; the United Nation gave a challenge to the world to half poverty level by 2015. Interestingly, the global poverty level halved worldwide in 20 years from 43% in 1990 to 21% in 2010, as most of the nations of the world that had pervasive poverty level made significant improvements in poverty eradication (World Bank, 2018). For instance, the rate fell in China, which had a high proportion of its population in 77% living under less than a dollar a day in 1980 to significantly drop to 14% in 2008, India another country with a huge population and high poverty rate had also witnessed tremendous improvements in bringing down the level of poverty. Despite these improvements witnessed in some climes, the world still faces a big challenge of inequality and poverty. The poorest 40% of the world population still accounts for only 5% of the global income (Jaiyeoba, 2015). A much more interesting scenario is the situation in Sub-Sahara Africa, where the poverty rate is still at 77%, perhaps it remains the only continent in the world where the poverty rate is going up (Odo, Eze, and Onyeisi, 2020). Nigeria, being the most populous black nation with 44% of West Africa's population, no doubt contributes significantly to this phenomenon.

Reports by the World Development Indicators (WDI) in 2020 revealed that the most impoverished states in Nigeria are predominately in the north-east and north-west; Yobe, Borno, Kebbi, Katsina, Bauchi, Jigawa, Gombe, Taraba, Kano, Niger, and Adamawa. Due to this pervasive nature of Nigeria's poverty trend, developing human capital will be very vital since the world is transitioning into a knowledge-powered space. With the wave of automation and artificial intelligence threatening labour intensive jobs, Nigeria need to improve the quality of education and expand access, if it hopes to compete in the increasingly competitive world. In this regard, education and another complementary sector denoted as health; are essential needs for rapid growth and development towards the eradication of poverty. This is so because, health determines the overall structure of wellbeing of a person, and education is fundamental to human development, psychological wellbeing and reasoning which transmits into a rewarding life. Hence, both are fundamental to human capabilities in terms of creativity, innovations and productivity which are prerequisites for poverty reduction and economic development (Todaro & Smith, 2011).

Worldwide, poverty level is built mainly on human capital development, especially in the area of education and health which are the vital and cogent parts of human capital development, but relative statistics have shown over the years that Nigeria with the efforts by the government through different platforms to ensure rapid economic growth through human capital development is still behind compared to other countries of the world (World Bank, 2018). Human capital development need is most evident in developing countries, where investment in education that makes up the knowledge-based economy is on the decline (Todaro & Smith, 2011). Successive Nigeria governments have undermined the need to invest substantially in the educational sector. Furthermore, due to the quest to develop human capital through health care service delivery, government in Nigeria had made frantic efforts at ensuring that there is an increase in the level of public expenditure on health. Hence, in 1970, recurrent expenditure on health was recorded as ₦12.48 million. This figure rose astronomically to ₦52.78 million and ₦132.02 million in 1980 and 1985 respectively. This trend continues as the expenditure rose steadily from 575.3 million in 1989 to ₦680.20 million in 1991 and further to 722.90 million and 980.20 million in 2007 and 2008 respectively. Public health expenditure was recorded as ₦90.20 billion in 2009, ₦99.10 billion in 2010 while ₦231.80b, ₦197.90b, ₦179.99b, ₦195.98b, ₦257.72b, ₦202.36b, ₦137.12b and ₦180.25 billion in 2014 to 2020 respectively (Central Bank of Nigeria, 2020). Despite the increase in public or government health expenditure, much impact had not been made in the area of reduction of infant mortality rate, infants under five and maternal mortality rate since 1970 till date (World Health Organization, 2022). Furthermore, in spite this increase in public health expenditure, the life expectancy ratio on the average had been on the decline in recent time in Nigeria.

It is worthy to note that in the quest to develop human capital, increasing government expenditure on education and health is essential. However, the reverse is the case in the Nigerian context as increase in government expenditure on education and health meant to enhance human capital development had not succeeded in mitigating or eradicating poverty. Hence, this study intends to examine the extent to which human capital development have impacted on poverty level in Nigeria.

LITERATURE REVIEW

Human Capital Development (HCD) encompass the physical and mental ability of an individual to work and contribute his or her quota to output level or any individual who is likely to be productive through employment at a later time by undergoing the prerequisite/relevant training and education at some point in time (Okojie, 1995). This process continues from childhood to old age and it is a necessary process for any society that desires to survive the contemporary complex world. Several development theories have highlighted the process of human capital accumulation through investment in education and training both in private and public sectors of the economy. In this regard, there is a popular assertion that "education can add to the value of production in the economy and also to the income of the person who has been educated (Todaro & Smith, 2011), but even with the same level of income, a person may benefit from education - in reading, communicating, arguing, in being able to choose in a more informed way, in being taken more seriously by others and so on than his uneducated counterpart".

The physical aspect or ability of individuals to work and contribute to productivity is concerned with the health component of HCD, while the mental capacity or ability of individuals to work is under the purview of the educational component. Hence, it will suffice to argue that HCD can be seen as the combination of one's mental and physical wellbeing, which can be used in generating value to contribute to output and productivity. There are also other components of HCD; literacy rate, life expectancy rate and mortality rate. These components, known as the human indices can be directly and indirectly linked to either the health or the educational aspect of an individual.

The concept of poverty is perceived differently by the poor themselves, politicians, planners, and academics. Poverty is a multi-dimension, socio-economic and cultural situation which transcends economic description and analysis (Okuneye, 2001). To all agencies, poverty is not seen as simply lack of income or consumption but it includes deprivation in health, education, nutrition, security, power and others. Adeleke (2012) defined poverty as a condition characterized by severe deprivation of basic human needs including food, sanitation facilities, education, information, lack of income and productive resources. From the foregoing definition, the measurement of poverty depends on the community's understanding of the concept. According to Kale (2010), poverty is measured using four approaches in the country by the Harmonized Living Standard Survey. These four approaches give rise to relative poverty, absolute poverty, Dollar per day poverty and subjective poverty.

- i. Relative poverty: This is measured in terms of the living standard of the majority in a given society. Those living below the majority's living standard are said to be poor. It is computed by considering households with expenditure greater than two thirds of the total household per capital expenditure as non-poor, whereas those with below as poor (Abu, 2019). Accordingly, the relative poverty measurement gives room for sub-dividing poverty into-extreme poor (i.e. household with less than one third of total household per-capital expenditure and sometimes referred to as core-poor). Moderate poor (i.e. households with greater than one third of total household per capital expenditure but less than two third of total per capital expenditure) (Abu, 2019).
- ii. Absolute poverty: This is defined in accordance to basic need requirement. It includes households who cannot afford the minimal requirements necessary for food, clothing, health care and shelter. The absolute poverty measurement is sometimes known as food-energy-in-take measurement of poverty. It uses the per capital expenditure approach to compute the food expenditure that can give 3000 calorie per day based on the national food basket for the poorest 40 per cent (Ogwumike and Ekpeyong, 1995).
- iii. Dollar Poverty: This measure poverty in terms of World Bank's Purchasing Power Parity (PPP) index, simply known as dollar per day measurement. This approach defines poverty as living on less than One US dollar per day which is referred to as poverty line (Okuneye, 2001). This is the working definition of poverty in this study and the study use the annual rating (in percentage) of the total number of poor individuals in the economy as the measure of poverty in the analysis.
- iv. Subjective poverty: This refers to poverty defined based on individual opinion. This approach considers the respondents' opinion on whether they consider themselves to be poor or not (Obadan, 1997).

The theoretical framework adopted in this study is the endogenous growth theory which is credited to Frankel-Romer (Romer, 1990). This model was able to explain how knowledge or increased human capital contributes to the growth process of the economy - that is how factors of production can decrease poverty level and stimulate development through innovation and invention (i.e. through human capital development and scientific discovery). This model is further rooted and strengthened by the fact that human capital development determines the amount of poverty level in any economy. Hence, the functional link between human capital development and poverty level is showed as expressed in Equation [1]

$$[1].....Q = f(H)$$

Where; Q represents real output as proxy for poverty level and H represents human capital development.

The Frankel-Romer Second Model took a very different approach by accounting for technical progress. This time, they saw knowledge as part of capital K and also related technological progress to increase in capital/labour ratio. In other words, the model focused this time on the production of knowledge by research workers. They assumed that technological knowledge is labour-augmented, and that labour in turn enhances the productivity of technological knowledge.

The new production function is expressed in Equation [2]

$$[2].....Y = K^{\alpha} (AL)^{1-\alpha}$$

Where AL is knowledge (i.e. Human capital). Equation [2] shows that the rate of technological progress will be determined by the stock of human capital. In other words, an economy with a larger total stock of human capital will grow faster (Romer, 1990). The Frankel-Romer's second model shows how knowledge is a part of production process through contribution of new ideas to producing new goods.

REVIEW OF EMPIRICAL STUDIES

Hamisu (2022) examined "Human Capital Development, Poverty and Income Inequality in Nigeria (1985 - 2020)". The study used several tests and Error Correction Model to estimate the relationship between the variables. Empirical results showed that the ratio of human capital to government spending was positive at 5 per cent in the short term, in line with a previous expectation and the long-term relationship between human capital development, poverty and income inequality in Nigeria was negative.

Ewubare and Wokekoro (2021) in their study on "Human Capital Development and Poverty Reduction: The Nigerian Experience" emphasized a gender perspective in the paper by using tests such as descriptive analysis, unit root, bounds test for cointegration, ARDL, serial correlation, heteroskedasticity and granger causality. The results also showed that increase in Per capita income, investment on basic School Enrolment, improvement on life expectancy of male and female led to reduction in poverty level.

Asur, Wuliya, Nggada and Yusuf (2021) investigated "Human Resource Development and Poverty Reduction in Borno State". The study used the qualitative and theoretical methodology via reviews of relevant literatures. The study found that human resource development entails that people acquire meaningful and productive skills that enhances their capabilities to engage in productive activities that lead to earning of meaningful livelihood.

Oke, Oladeji and Olofin (2020) examined Education and the Challenge of Poverty Alleviation in Nigeria. Using Vector Autoregressive and Autoregressive Distributed Lag methods to examine the impact of education on poverty level and the interactive effect of education and economic growth on poverty level in Nigeria between 1985 and 2016, the results show that economic growth and education jointly reduce poverty. This result was not statistically significant and thus indicates that these variables have minimal impact on poverty level in Nigeria.

Chotib and Lucik (2020) examined “Optimization of Human Capital Development on Economic Growth and Poverty in East Java”. The analytical tool used in the study is the Vector Autoregression (VAR) to analyze in detail the relationship between human capital, economic growth and poverty. The results of this study indicate that human capital has an influence on economic growth and reduces the rate of poverty in East Java.

Matthew (2020) investigated the relative impact of human capital formation on poverty level in Nigeria from 1981 to 2018 using time series data for thirty eight (38) years. The study used the ARDL bound estimation techniques to examine the existence of long run and short run dynamic relationship between human capital formation and poverty level in Nigeria. The results showed that a long run dynamic relationship existed between human capital formation and poverty level in Nigeria.

Okumoko, Tubo, Omeje, and Udoh (2018), focused on the impact of human capital development on industrial growth in Nigeria. Time series data spanning 1976 – 2016 on relevant variables were analyzed using both descriptive and econometric techniques. The results show that recurrent expenditure on education and health has a negative impact on industrial growth.

Fashina, Asaleye, Ogunjobi, and Lawal (2018), investigated the link between aid and human capital in reducing poverty level of Nigeria. The study used two models; the first model was used to test the validity of the medicine model in Nigeria; while the extended model was used to investigate the effect of aid and human capital shocks on growth using Engle-Granger and Vector Error Correction Model (VECM) estimation techniques respectively. The findings from the first model suggested that persistent increase in foreign aid flows beyond a particular point (the optimal point) may adversely affect growth thus confirming the proposition of the Medicine Model. Evidence from the study’s extended model indicated that growth in Nigeria is sensitive to human capital shock via education while the response from aid shock is short-lived in the long run.

Usman and Fadila (2018) investigated the impact of human capital (proxied by capital expenditures on education and health) on poverty level in Nigeria. In doing this, time series data from 1986 to 2016 were fitted into Cobb-Douglas production function using econometric techniques of ordinary least square multiple regression analytical method (OLS). Empirical results affirmed that time series properties have significant and positive relationship between health expenditures and poverty level; while significant but negative relationship exists between education expenditures and poverty level.

Ogunleye, Owolabi, Sanyaolu, and Lawal (2017), examined the impact of human capital development on the economy of Nigeria, using annual time series data from 1981 to 2015. The study used ordinary least square regression analysis. The empirical results show that human capital development has significant impact on poverty level (proxied by the gross domestic product). In line with theory, the human capital development indicators namely secondary school enrolment, tertiary school enrolment, total government expenditure on health and total government expenditure on education exhibit positive and statistically significant impact on poverty level of Nigeria, which implies that these indicators are indispensable in the achievement of growth in the Nigerian economy.

A careful observation of the available literatures reviewed in this area of research interest suggests that most of the previous studies such as; Usman & Fadila (2018), Ogunleye, Owolabi, Sanyaolu, and Lawal (2017) etc employed the estimation technique of Ordinary Least Squares (OLS). However, this study intends to employ the ARDL estimation technique because it is a more recent and sophisticated technique that yields valid and more realistic results. Also, most of the previous studies employed variables such as government expenditure on health and education, life expectancy rate, gross capital formation and school enrollment rate without considering other human capital development indices such as; literacy rate and mortality rate. The study filled this gap by introducing literacy rate and mortality rate to obtain a robust analysis and findings on the nexus between human capital development and poverty in Nigeria.

METHODOLOGY

The study utilized annual time series data which covered the period from 1990 to 2023. These data were sourced from Central Bank of Nigeria (CBN) Statistical Bulletin - 2023, UNESCO (2023) and World Development Indicator (WDI, 2023). The variables of interest include; Poverty Rate (POV) as proxy for poverty level, being the dependent variable while government expenditure on education (GEE), government expenditure on health (GEH), school enrollment rate (SER), life expectancy rate (LER), literacy rate (LIR) and mortality rate (MOR), were the independent variables.

Model Specification

The functional form of the model is presented in Equation 1 as;

$$[1] \dots \dots \text{POV} = f(\text{GEE}, \text{GEH}, \text{SER}, \text{LER}, \text{LIR}, \text{MOR})$$

Autoregressive Distributed Lag (ARDL) Model

The study employed the Autoregressive distributive lag (ARDL) model. ARDL is a least squares regression approach involving the lag of both the endogenous variable and exogenous variables. ARDL model is normally denoted using ARDL notion (p_1 q_1 , q_2 , q_3 , $\dots q_k$). P denotes the number of lags of the endogenous variable and q_1 is the number of the lags of the first exogenous variable, and q_k is the lags of the k^{th} exogenous variable.

The ARDL model based on the functional form presented above in equation 1 is represented as showed in Equation [2] below. In building the ARDL model for the study, it took the lead from the study by Usman and Fadila (2018) that employed OLS on variables such as; government expenditure on health and education, school enrollment, life expectancy rate. However, this study modified their model by adding other variables such as; literacy rate and mortality rate as presented below:

$$\begin{aligned}
 [2] \Delta LPOV_t = & \alpha_0 + \sum_{i=1}^p \delta_i \Delta LPOV_{t-i} + \sum_{k=0}^p \beta_k \Delta LGEE_{t-k} + \sum_{k=0}^p \epsilon_k \Delta LGEH_{t-k} \\
 & + \sum_{l=0}^p \gamma_l \Delta LSER_{t-l} + \sum_{m=0}^p \varphi_m \Delta LLER_{t-m} + \sum_{n=0}^p \Psi_n \Delta LLIR_{t-n} \\
 & + \sum_{k=0}^p \varrho_k \Delta LMOR_{t-k} + \lambda_1 LPOV_{t-1} + \lambda_2 GEE_{t-1} + \lambda_3 GEH_{t-1} + \lambda_4 SER_{t-1} \\
 & + \lambda_5 LER_{t-1} + \lambda_6 LIR_{t-1} + \lambda_7 MOR_{t-1} + \mu_t
 \end{aligned}$$

Where α_0 and μ_t is the autonomous component and white noise respectively. The expression with the signs of summation in the equation is error correction. The parameter coefficient denotes the short run effects while lambda (λ) is the corresponding relationship in the long run. Poverty Rate (POV) as proxy for poverty level served as the dependent variable while government expenditure on education (GEE), government expenditure on health (GEH), school enrollment rate (SER), life expectancy rate (LER), literacy rate (LIR) and mortality rate (MOR) were the independent variables.

PRESENTATION AND ANALYSIS OF RESULTS

Unit Root Test

To ascertain the order of integration of the variables, this test was carried out to account for the presence of unit roots (that is whether the variables are stationary or not) using the Augmented Dickey Fuller (ADF) test.

Table 1: Unit Root Test Results

Variables	ADF Statistic at level	ADF Statistic at first difference	Critical values of 5% at level	Critical values of 5% at first difference	P-values at level	P-values at first difference	Order of integration
POV	-1.35372	-8.38292	-2.96011	-2.96372	0.5736	0.0002	I(1)
GEE	-1.49336	-6.39863	-2.96011	-2.96372	0.0765	0.0000	I(1)
GEH	-3.48792	-	-2.96011	-	0.0034	-	I(0)
SER	-2.34939	-5.48323	2.96011	-2.96372	0.3458	0.0000	I(1)
LER	-1.58763	-7.49336	-2.96011	-2.96372	0.2387	0.0012	I(1)
LIR	-3.45439	-	-2.96011	-	0.0003	-	I(0)
MOR	-1.34524	-6.38982	2.96011	-2.96372	0.6847	0.0000	I(1)

Source: Authors' computation

The unit root test in Table 1 revealed that all the variables were not stationary at level, because their Augmented Dickey Fuller (ADF) Statistic values were less than the critical values at 5% level of significance. The variables were all stationary at first difference as their Augmented Dickey Fuller (ADF) Statistic values were greater than their critical values at 5% level of significance.

ARDL Bound Co-integration Test

Table 2: Bound Co-integration Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Sig.	I(0)	I(1)
F-statistic	3.84808	10%	1.99	2.94
K	6	5%	2.27	3.22
		1%	2.88	3.78

Source: Authors' computation

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From table 3, since the calculated F-statistic (3.84) is greater than all the lower bound and upper bound critical values at 1%, 5% and 10% level of significance, the null hypothesis of no long-run relationship among the variables of the selected ARDL (1, 1, 2, 0, 2, 2, 2) is to be rejected. Thus, the variables employed in this study are co-integrated.

Estimated Results of Short Run and Long-Run Models

Table 3: Estimated ARDL Model

Dependent Variable: D(POV)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.541775	1.486232	0.364529	0.7213
Short Run Model				
D(POV(-1))	0.211307	0.023240	9.092384	0.0002
D(GEE(-1))	0.482112	0.079131	6.092580	0.0043
D(GEH(-1))	0.542168	0.102511	5.288876	0.0055
D(SER(-1))	0.348470	0.054381	6.407937	0.0006
D(LER(-1))	0.374271	0.080461	4.651582	0.0094
D(LIR(-1))	0.097542	0.056443	1.728148	0.1076
D(MOR(-1))	-0.536825	0.631203	-0.850479	0.4105
ECT(-1)	-0.942059	0.411890	-2.287162	0.0396
Long Run Model				
POV	0.236191	0.251784	0.938071	0.3653
GEE	0.568151	0.088120	6.447469	0.0010
GEH	0.710387	0.098502	7.211904	0.0002
SER	0.541696	0.066938	8.092504	0.0000
LER	-0.454563	0.079429	-5.722885	0.0091
LIR	-0.366797	0.087315	-4.200847	0.0027
MOR	0.298656	0.059571	5.013446	0.0030
R-squared	0.723966	Durbin-Watson stat		1.959950
Adjusted R-squared	0.405465			
F-statistic	21.73043			
Prob(F-statistic)	0.000042			

Source: Authors' computation

The short run model accounts for the speed of adjustment to long run equilibrium of the variables employed. Hence, the speed of adjustment of the model to long run equilibrium is measured by the coefficient of the first lag of the error correction term (ECT (-1)). The error correction term (-0.94) has the right a-priori sign and it is statistically significant with a probability value of 0.0396. Hence, the result of the ECT (-1) showed that 94% of the deviation of the variables in the short run will be restored in the long run within one year.

Based on the long run model, government expenditure on education has an estimated coefficient of 0.568151, which implied that 1% increase in government expenditure on education (GEE) led to 57% increase in poverty rate (POV) as proxy for poverty level in Nigeria within the study period. This contradicts the apriori expectation and affirms the findings of Oke, Oladeji & Olofin (2020). However, this finding goes contrary to the findings of Owolabi, Sanyaolu & Lawal (2017), and Usman & Fadila (2018). The reasons for the inverse relationship between educational expenditures and poverty level in the Nigerian environment could be attributed to funds that are corruptly diverted in the educational ministries and parastatals, inadequate infrastructural facilities in the public educational outlets, Inadequate practical skills acquisition in public schools, and the fact the there are no jobs for the numerous graduates churned out annually from the tertiary institutions across the country. As long as these problems are persistent in the Nigerian environment, an increase in education spending will not achieve the goal of mitigating poverty level and the positive relationship between educational expenditure and poverty will continue to persist. Hence, government's expenditure on education is not statistically significant in influencing the poverty level in Nigeria within the study period.

The coefficient of government expenditure on health (GEH) is 0.710387, which implies that 1% increase in government expenditure on health (GEH) led to 71% increase in poverty rate (POV) as proxy for poverty level in Nigeria within the study period. This conforms to the findings of Okumoko, Tubo, Omeje, & Udoh (2018) and contradicts the results of Owolabi, Sanyaolu & Lawal (2017). Despite not conforming to apriori expectation, there is no doubt that this result reflects the realities of the Nigerian scenario. This is evidenced in the fact that the increasing trend of government health expenditure overtime has not translated into improvement in the quality and quantity of public health facilities. The issue of inadequate medical personnel still

persists, the few available medical personnel are aggrieved due to poor welfare and pay packages, and the overall problem of epileptic public medical system is prevalent in all corners of the country. Consequently, accessing public health care services becomes difficult and expensive for most Nigerians who tend to seek healthcare services from the readily available but expensive private healthcare facilities. This in-turn erodes their income, and aggravates their poverty situation, thereby justifying the positive relationship between government's health expenditure and poverty level in the country. From the foregoing, government's expenditure on health is not statistically significant in influencing the poverty level in Nigeria within the study period.

School enrollment rate (SER) has an estimated coefficient of 0.541696, which implies that 1% increase in School enrollment rate (SER) led to 54% increase in Poverty Rate (POV) as proxy for poverty level in Nigeria within the study period. Education is a capital investment whose returns and dividend comes at a much later time. An attempt to increase investment in education via increasing the school enrollment rate by both the government and individuals may divert attention and resources from poverty alleviating solutions. Thus, poverty may rise in the short run as increase in school enrolment is being pursued, thereby justifying the positive relationship that contradicts the apriori expectation. Thus, school enrolment rate is not statistically significant in influencing the poverty level in Nigeria within the study period. However, it will suffice to posit that at a much later date in the future when the fruits and dividends from increased school enrolment becomes clearly evident, poverty level and school enrolment will have the desired inverse relationship.

Life expectancy rate (LER) has an estimated coefficient of -0.454563, which implies that 1% increase in Life expectancy rate (LER) led to 45% decrease in Poverty Rate (POV) as proxy for poverty level in Nigeria within the study period. This conforms to apriori expectation and affirms the findings of Ewubare & Wokekoro (2021) because a higher life expectancy rate will imply a lower level of poverty and vice-versa. This finding is statistically significant and it indicates that life expectancy has a positive significant impact on poverty level in Nigeria within the study period.

Literacy rate (LIR) has an estimated coefficient of -0.366797, which implies that 1% increase in Literacy rate (LIR) led to 37% decrease in Poverty Rate (POV) as proxy for poverty level in Nigeria within the study period. It is a fact that a literate individual has the tendency to add value to production in the economy more than an illiterate, and also the possibility of earning higher income than the person who is not educated. Furthermore, even with the same level of income, a person may benefit from education - in reading, communicating, arguing, in being able to choose in a more informed way and so on. All these, no doubt limit the likelihood that a literate individual will fall into extreme poverty, thus justifying the inverse relationship between literacy rate and poverty level. From the result above, literacy rate has a positive significant impact on poverty level in Nigeria within the study period.

Lastly, mortality rate (MOR) has an estimated coefficient of 0.298656, which implies that 1% increase in mortality rate (MOR) led to approximately 30% increase in poverty rate (POV) as proxy for poverty level in Nigeria within the study period. This conforms to apriori expectation because high level of poverty causes hardship, suffering, misery which goes a long way in adversely affecting the physical, psychological, emotional and medical wellbeing of individuals. Such individuals will be easily susceptible to health challenges, ill health and health failures that may lead to eventual death. Thus, there is no disputing that mortality rate should be positively related to poverty level as revealed by this study. Consequently mortality rate has a positive significant impact on poverty level within the study period judging from its probability value of 0.0030.

Granger Causality Test Result

Table 4: Granger Causality Test Result

Null Hypothesis:	Obs	F-Statistic	Prob.
GEE does not Granger Cause POV	34	9.26350	0.0018
POV does not Granger Cause GEE		7.32679	0.0644
GEH does not Granger Cause POV	34	5.09211	0.0123
POV does not Granger Cause GEH		0.44816	0.6429
SER does not Granger Cause POV	34	0.63786	0.5352
POV does not Granger Cause SER		8.14950	0.0018
LER does not Granger Cause POV	34	9.14928	0.0012
POV does not Granger Cause LER		0.18546	0.8316
LIR does not Granger Cause POV	34	2.29987	0.1171
POV does not Granger Cause LIR		7.61290	0.0156
MOR does not Granger Cause POV	34	4.21268	0.0241
POV does not Granger Cause MOR		0.26520	0.7688

Source: Authors' computation

From table 5, the results of the granger causality test revealed that since the probability values of the F-Statistic displayed a mixed up of less than 0.05 and greater than 0.05, the study concluded that there was a uni-directional relationship between human capital development and poverty level in Nigeria.

CONCLUSION

The objective of this study was to examine how HCD via its sub-components can be used to contribute to productivity in order to earn income and ameliorate the poverty situation of individuals in the economy. The results or findings revealed that government's expenditure on education and health cannot directly influence or impact poverty level, but can affect poverty level indirectly through its sub-component factors and linkages. These sub-component factors or linkages are the human indices; namely literacy rate, life expectancy rate and mortality rate. Consequently, the findings of this study indicates that government expenditure on health and education did not conform to apriori expectation and do not significantly impact on poverty level within the study period. Conversely, all the human indices i.e literacy rate, life expectancy rate and mortality rate conformed to apriori expectation and were positively significant in affecting poverty level in Nigeria within the study period.

It is pertinent to state that an increase in government expenditure on education and health can directly influence poverty level if such policies are complemented with well established institutional frameworks to monitor and ensure that such increased funds are not diverted by corrupt public office holders, but spent judiciously on its intended purpose. By so doing, the education and health sectors will be adequately funded, strengthened and upgraded to the desired global standard. These will in-turn strengthen other sub-component human indices (i.e. literacy rate, life expectancy rate and mortality rate) and thus go a long way in suppressing poverty level among the populace in the country.

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