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Empirics of Public Health Expenditure and Per Capita Income in Nigeria

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ABSTRACT

Mismanagement of resources allocated to health sector, poor health care system, low household income and amongst others led to the worsen of economy in developing countries (Nigeria inclusive). Given the above, this paper is out to investigate the impact of public health expenditure on economic development proxies by per capita income and as well analyze the trend of public health expenditure and per capita income in Nigeria. The study used annual time series data spanning between 1990 and 2019. Data were extracted from CBN statistical Bulletin database edition 2019 and Nigeria Budget Statement as well as World Bank, World Development Indicator. Auto-regressive distributed lag (ARDL) approach was used as estimation technique along side with trend analysis. Results of the study showed that public expenditure on health (PHE) and education (PEE) exhibits negative effect on per capita income (PCI) at 1% and 10% significant level respectively. While human capital (HC) atshort-run lag two and long run had positive influence on PCI at 1% each, but shown insignificant influence in the short-run (-1). Premised on the findings of this study, it is therefore concluded that public health expenditure exhibits indirect influence on economic development in Nigeria. While the study recommends that Nigerian government should pay more attention to health and educational sectors towards monitoring and judicious spent of voted budget to productive capital investments andinfrastructures for possible enhancementof productive sector performance of the economy and afterwards improve household's income in the country.

KEYWORDS: ARDL, Per capita income, Public health expenditure, Nigeria

1. INTRODUCTION

Mismanagement of resources allocated to health sector, poor health care system, low household income, insufficient government's allocation shares of budgets to the health sector and amongst others led to the worsen of economy in developing countries (Nigeria inclusive). Thus, public health expenditure is an essential public goods expenses incurred by the government in a bid to meet health care needs of human components in the economy that forms the labour components of the productive system. According to Olayinka, Bakare, Aremu and Abiodun (2017) and Yusuff, (2018), labour is a factor of production which involves the physical and mental wellbeing of an individual that is often employed in developing countries more than capital is been used. This is due to the fact that capital intensive production (that is high use of machinery) is much more expensive than labour intensive (Badamassi & Deyi, 2017).

Further, the increase in the rate of non-healthy individuals in the community increases workforce loss and reduces productivity in developing countries whose economic growth and economies are based on factors of production to which human being are formed as important component. Thus, creates more significant impact and losses on the production power as compared to those in the developed countries which mostly employ the use of capital intensive means of production (Esen & Kecili, 2021). On the basis of this, developing countries cannot fully take advantage of the cheap labour factor to the extent required. They fall behind even more disadvantaged than an already disadvantageous situation (Oni, 2014). Therefore, health status of the society, labour markets and health expenditure are more important for developing countries (Nigeria inclusive).

There is a strong economic case for government to increase public health expenditures. According to Ndaguba and Hlotywa (2021) in their study increase in health expenditure significant influence the gross domestic product of the country. The idea supporting this relationship is the fact that increases in public spending are an inevitable consequence of economic growth (Dhirif, 2017).

Yaqub, Ojapinwa & Yussuff (2012) also gesticulates that huge public fund to health care provision would improve health of the citizenry so that they cancontribute meaningfully to economic growth and development. This means that the share amount of public spending rises with an increase in the rate of output growth (Kurt, 2015). As an indication of commitment towards improving the performance of the health sector in its fiscal operation, the Nigerian government took the responsibility of providing good healthcare facility by increasing her expenditure on health (Shafuda & De, 2017). Available data shows that on the average, about 2.1% to 5.8% of total government expenditure was allocated to the health sector between 2000 and 2019 (Shafuda & De, 2020). The country's public expenditure on health as a percentage of GDP is about 4.1% against 4.6% African average and 6.3% in developed countries (Olarinde & Bello, 2014).

The main objective of government in expending its resources on the economy is to achieve certain macroeconomic objectives that will stimulate economic growth (Ercelik, 2018). To achieve this broad goal, governments certainly need productive and active workforce so that any investment centered at enhancing human factor for productive sector will in turn enhance economic growth (Piabuo & Tieguhong, 2017). Bloom, Canning and Sevilla (2004) opined that public health expenditure plays a major role for sustainable economic growth as health is an integral part of economic development which enhances the productivity of workers by increasing their physical strengths and capacities In lieu of this, every country devote huge public fund to health care provision believing this would improve the health of the citizenry so that they can contribute meaningfully to economic growth and development (Yaqub, Ojapinwa & Yussuff, 2012). Ibe and Olulu-Briggs (2015) also claimed that one of the vital public services provided by governments across the globe is health care, which makes countries spends developed countries spend a high proportion of their gross domestic product on health care because they believe that their resident health can serve as a major driver for economic activities and development.

The contributions of health expenditure to economic development emanates from health led growth hypothesis of Mushkin (1962) which claimed positive relationship between health expenditure and economic growth (Bousallem, Bousallem & Taiba, 2014). It considers health to be capital; therefore investments on health can lead to an increase in labour productivity,, thus increase in incomes and subsequent increase in the wellbeing of the population. Bloom and Canning (2000 cited in Piabuo and Tieguhong, 2017) highlighted that when labour is healthy, their incentive to develop new skills and knowledge is higher because they expect to enjoy long term benefits. However, when the labour force is characterized by workers with poor health, they turn to have an adverse effect on productivity; this explains the disparity in development in different regions of the world (Cole & Neumayer, 2006). Therefore, examining empirically the effect of public health expenditure on economic development of a country became imperative.

Extant literature on public health expenditure and economic development proxied by per capita income are few in developing countries (Nigeria inclusive) (e.g. Ndagada & Hlotywa, 2021), while we have numerous studies on public health expenditure and economic growth (e.g. Kurt, 2015; Olayiwola, Bakare-Aremu & Abiodun, 2017; Piabus & Tieguhong, 2017; Ibe & Olulu-Briggs, 2015; Badamassi & Deyi, 2017; Oni, 2014; and Esen & Kensili, 2021. Other studies assesses government spending on human capital and human development, healthcare expenditure and child mortality rate and as well public health expenditure and governance, and health outcome (e.g.Shafuda & De, 2020; Dhirif, 2017 and Shafuda & De, 2017; and Riayati & Junaidah, 2016) respectively, with different contextual and methodological views. However, majority of these studies majorly in developing countries (Nigeria inclusive) focused on contributions of public health expenditure towards reduction of child mortality and /to economic growth enhancement without any recourse on how economy can be developed through increase in per capita income of an individual from labor and capital perspectives. On this premises, the paper is out to investigate the impact of public health expenditure on economic development proxied by per capita income and as well analyze the trend of public health expenditure and per capita income of Nigeria

Further, among of the significances of this study is to help government track how public health expenditure affect the economic development/household income in the country so as to take necessary actions where applicable. Again, the study will also help policy makers in formulating appropriate health policy towards enhancement of developing economy in Nigeria

2. LITERATURE REVIEW

This section presents essentially the conceptual clarifications, theoretical underpinning and empirical evidences of the study. They are;

Conceptual Clarifications

Public expenditure on health refers to expenditure on health care incurred from public funds. Thus, public capita formation on health includes publicly financed investment in health facilities plus capital transfer to the private sector for hospital construction and equipment. Health spending measures the final consumption of health care goods and services. That is, current health expenditure including personal health care, curative care, rehabilitative care, long-term care, ancillary services and medical goods; and collective services. Further, public health expenditure consists of recurrent and capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds. Public health expenditure can also be described as expenditure by state, regional and local Government bodies and social security schemes on health sector. Public capital formation on health includes publicly-financed investment in health facilities plus capital transfers to the private sector for hospital construction and equipment.

Health expenditure includes all expenditures for the provision of health services, family planning activities, nutrition activities and emergency aid designated for health, but it excludes the provision of drinking water and sanitation. Health financing is a critical component of health systems. National health accounts provide a large set of indicators based on information about expenditure collected within an internationally recognized framework. These accounts are a synthesis of the financing and spending flows recorded in a health system's operation, from funding sources and agents to the distribution of funds between providers and functions of health systems

Health is pondered to be one of the fundamental rights of human beings but the numerous pandemics and epidemics have made the deeper concern for re-thinking a number of health related issues across the globe. The world is now experiencing a huge toll on health as well as a massive death toll due to ignorance and lack of proper consideration of the various health related factors like energy, environment, public and private health expenditures, hygiene and sanitation. In many areas, health facilities have been found to be wanting, exacerbating the health related issues. Therefore, ensuring better health facilities for all people in order to build a safer world has now become a prime policy goal across the globe. In 2015 the United Nations (UN) had proposed the Sustainable Development Goals (SDGs) to be achieved by 2030, citing good health and well-being as among its principal targets, incorporating affordable and clean energy, pure water and sanitation to improve the health of people, no matter where they live as evidence in SDGs Goal 3, 6 and 7 (UN, 2015; WHO, 2018).

The role of health in influencing the nation's economic outcome of the nation has been severally understood at the micro level. For instance, it has been understood that healthier workers are likely to be able to work longer and be generally more productive than their less healthy counterpart, and consequently, able to secure higher earnings all things being equal. It is well known that illness and disease shorten the working lives of the people, thereby reducing the life time earnings. Better health also has a positive effect on the learning attitude and abilities of children and leads to better educational outcomes (school completion rates, higher means years of school achievement) and increases the efficiency of human capital formation by individuals and household (Lewis, 2004).

According to Duraisamy and Sathiyavan (1998) cited in Matthew, Adegboye & Fasina, 2015) the poor bear a disproportionately higher burden of illness, injury and disease than the rich. The poor suffer ill health due to a variety of causes, poor nutrition for instance, which reduces the ability to work and weaken their resistance to disease. Illness reduces the income earning ability of the poor and further increases dependency. Bourguignon (2004) examining theoretically the interaction between growth inequality and poverty also showed that both growth and changes in inequality contributes to changes in poverty. Hence, healthy people are strong enough to work, earn good income and afford better nutrition. When poor people get sick, they are often unable to afford treatment from clinics or hospital. Even when they can afford such treatment, they tend to sell off productive assets, or rely on borrowing. These tend to decrease their long-run earning capacity and the capacity to take advantage of any trickle-down labour market advantage usually offered by growing economies.

Economic development: development is a phenomenon which occurs over a long period time. Hence, economic development is a branch of economics that deals with macroeconomic causes of long term economic growth and in microeconomics, the incentive issued to individual households and firms, especially in developing countries. Economic development can also be described as the development of economic wealth of countries or region for the well-being of their inhabitants (Olokoyo, Taiwo & Akinjare, 2016). This may involve using mathematical method for dynamic system like differential equations and inter-temporal optimization or it may involve a mixture of quantitative and qualitative method. According to Todaro, (2009) economic development is an increase in living standards, improvement in self-esteem needs and freedom from oppression as well as a greater choice.

Economy development differs from economic growth. Whereas economic development is a policy intervention endeavor with aims of economic and social well-being of people, economic growth is a phenomenon of market productivity and rise in GDP (Abu, & Abdullah, (2010). Economic growth is necessary but insufficient condition for economic development. Seer (2001) stated that economic development is about outcome, that is, development occurs with reduction or elimination of poverty, inequality and unemployment with a growth of the economy. Thus, economic growth is the increase in the standard of living of a nations' population with sustained growth from a simple, low level income to a high-income economy. Economic development can also be referred to as the quantitative and qualitative changes in the economy.

Such Acts can involve multiple areas including development of human capital, critical infrastructure, regional competitiveness, social inclusion, health, safety, literacy and other initiatives. Economic development can also be considered as a static theory that documents the state of an economy at a certain time. According to Schumpeter (2003), the changes in this equilibrium, state to document in economic theory can only be caused by intervening factors coming from the outside. Mansell (2004) stated that economic development has been understood since the World war II to involve economic growth, the increases in per capital income and (if currently absent) the attainment of a standard of living equivalent to that of industrialized countries. The scope of economic development includes the process and policies by which a nation improves the economic, political, and social well-being of its people (Olokoyo, Taiwo & Akinwale, 2016). Economic development is a term that economists, politicians and others have used frequently in the 20th century. The concept, however, has been in existence in the west for centuries. Modernisation, Westernisation, and especially industrialization and other terms people have used while discussing economic development. Economic development has a direct relationship with the environment. Although, nobody is certain when the concept originated, most people agree that the development is closely bound up with the evolution of capitalism and the demise of federalism (Busari, 2012).

Theoretical Underpinning

Relevant theories as it relate to public health expenditure and economic development proxies by per capita income are discussed in the study. Some of the theories are Wagner's theory of public expenditure, Peacock and Wiseman theory of public expenditure and Neo-Classical growth model (Solow growth model) towards analyzing the contributions from labor and capital to economic development in the country as may be evidenced in per capita income increase of an individual. Details of the theories are;

Wagner's Theory of Public Expenditure

Wagner's law (Wagner, 1883) suggests that during the process of economic development, the share of public expenditure/GDP tends to expand. The reasons are varied and include but not limited to public functions to substitute private activities and the development results in an expansion of spending on culture and welfare, public intervention might be necessary to manage natural monopolies (Magazzino, 2011). Adolph Wagner's law of "increasing expansion of public and state activities" postulates that as real income increases, there is a long-run tendency for the share of public expenditure to increase relative to national income (Wagner, 1883). According to Wagner, relative growth of the government sector is an inherent characteristic of industrializing economies. He illustrates this with the examples of Great Britain, U.S.A, France, Germany and Japan. He came to the conclusion that as per capita income and output increases in industrializing nations, the public sectors of these nations necessarily grow as a proportion of total economic activity.

The theory reflected the growing importance of government activities and expenditure as an inevitable feature of a "progressive". According to Wagner, there is an inherent tendency for the activities of different layers of a government (e.g. Central and State governments) to increase both intensively and extensively. Prevailing public expenditure reflects the requirement of a given historical situation.

Any change in the public expenditure reflects the underlying changes in the economic structure and development. He justified public expenditure in terms of objective criteria, such as population or transportation needs. It was applicable only to modern progressive governments which were interested in expanding public sector of the economy for its overall benefits, and public expenditure would grow faster than output. This general tendency of expanding state activities had a definite long-term trend, though in the short-run, financial difficulties could come in its way. "But in the long-fun the desire for development of a progressive people will always overcome these financial difficulties (Musgrave and Peacock, 1958).

Peacock and Wiseman Theory of Public Expenditure

Wiseman in their well-known 1961 monograph the growth of public expenditure in the United Kingdom explained theirhypothesis according to which government expenditure tendsto evolve in a step-like pattern, coinciding with social upheavals,notably wars. However, in a further article (Peacock and Wiseman, 1979) they suggested two complementary approaches to theempirical analysis of the public expenditure growth, the first beingrepresented by factor analysis at the general econometric level,and the second by the development of models of group behaviorleading to explanations in terms of the changing relationships ofsocial groups through time.In a more recent work, Peacock and Scott (2000) underlined how an examination of the relevant articles reveals ignorance both ofWagner's definition of "state activity" and of his insistence thathe was not engaged in prediction.

They founded their analysis upon a political theory of public expenditure determination, namely that governments like to spend more money but citizens do not like to pay more taxes, and that governments need to pay some attention to the wishes of their citizens. Thus they opened up public expenditure to the influence of the ballot box. Peacock and Wiseman make the following assumptions about the nature of the state: (i) decisions about public expenditure are taken politically, and so can be influenced through the ballot box or by whatever media citizens can bring pressure to bear upon the government, (ii) political choices about the use of resources differ from choices made through the market system, and (iii) citizen can have ideas about desirable public expenditure which are quite different from and incompatible with their ideas about tolerable burden of taxation. Peacock and Wiseman viewed the voter as an individual who enjoyed the benefits of public goods and sources but who disliked paying taxes. Thus the government when deciding upon the expenditure side of its budget keeps a close watch on the voters' reactions to the implied taxation.

The Neoclassical Growth Model (Solow-Swan Growth Model)

This theory was put forth by Robert Solow and Trevor Swan in 1956 to explain how economic growth comprises three factors,that is, labor, capital and technology can be enhanced through production that exhibits constant return to scale, if all input increase by a certain multiple, thus, output will also increase by the same multiple. Again, the model is an economic model of long run economic growth by assessing capital accumulation, labour and increases in productivity called technological progress. Solow growth model was the first neoclassical growth model that built upon the Keynesian Harrod-Domar model which also is the basis for modern theory of economic growth that bring out saving and investment. Thus, an increase in saving and investment generates capital stock, full employment, national income and product for the country.

The solow neoclassical growth model made use of a standard aggregate production function in which

$$Y_t = A_t K_t^{\alpha} L_t^{1-\alpha}, 0 < \alpha < 1 \qquad (1)$$

In this case, Y, K, L and A represents gross domestic product, stock of capital,labor and productivity of labor respectively, thus, assumed to grow at an exogenous rates 'n' and 'g'.

The number of effective unit of labor (L_t) grows at rate n+g for developed countries. These rates have been estimated at about 2% per year for developing countries, it may be smaller or larger depending on whether they are stagnating or catching up with the developed countries. In the equation (i) above, α represent the elasticity of output with respect to capital (the percentage increase in GDP as a result of a 1% increase in human and physical capital). It is usually measured statistically as the share of capital in a country's national income accounts.

Further, the steady-state capital labor ratio is related positively to the rate of saving and negatively to the rate of population growth. The central predictions of the Solow model concern the impact of saving and population growth on real income. This steady-state income per capital along side with production function taking the natural logs, can be related in equation (2)

$$L_n(Y^t / L^t) = \ln A_0 + g + \alpha/(1-\alpha)\ln(s) - \alpha(1-\alpha)\ln(n+g+\partial) \quad (2)$$

Based on the fact that the model assumes that factors are paid their marginal products, it predicts the magnitudes alongside the signs of the coefficients on savings and population growth. In the case of competitive markets being assumed, the growth rate of the economy can be seen as a weighted sum of growth rate of efficiency parameter gA(sometimes refers to as technical progress of the labor force gL and of the capital stock gK. The weights of labor and capital in gross domestic product (GDP) are given thus; $gY = gA + aLgL + aKgK$ (3)

The Solow growth model assumes that the marginal product of capital decreases with the amount of capital in the economy, in the long run, as the economy accumulates more and more capital, gK, approaches zero and the growth rate is determined by technical progress and growth in the labor force. However, in the short run an economy that accumulates capital faster will enjoy a higher level of output.

Stylized Fact on Nigerian Health Sector

In this sub section, we make an in-depth analysis of different forms of ailments/infirmity occasioned by health outcomes affecting an individual if par adventure low short fall of public health expenditure which in turn affecting health sector budgetary allocation in the country. Given the above, here are the fact. Firstly, Nigeria is one of the developing countries faced with the "double burden" of persisted high prevalence of communicable diseases and rising prevalence of non-communicable diseases as such, health indicators such as maternal and infant mortality are worse than the Sub-Saharan African average and Nigeria is not on track to achieving most of the health-related MDGs by 2015 (Ibe & Olulu-Brigg, 2015).

Therefore, as an indication of commitment towards improving the performance of the health sector in its fiscal operation, the Nigerian government took the responsibility of providing good healthcare facility by increasing her expenditure on health. Available data shows that on the average, about 2.1% to 5.8% of total government expenditure was allocated to the health sector between 2000 and 2019. The country's public expenditure on health as a percentage of GDP is about 4.1% against 4.6% African average and 6.3% in developed countries (Olarinde & Bello, 2014). However, the multiplier effect of increasing government health expenditure in Nigeria is still marginally low and the level of its impact on economic growth is transitorily small. This is particularly worrisome given the hypothesized relationship between public expenditure and economic growth by the Wagner (1883) theory.Nigeria's overall health performance was still ranked 187th among the 191 Member States by the World Health Organization (WHO) as of 2017. Available statistics from World Bank (2017) reveal that although infant mortality fell from 140 in the 1970s to 87.8 and 80.4 per 1000 birth in 2008 and 2011 respectively, the rate is still higher than the regional average for Sub Saharan Africa of 70.2 and 65.8 for 2008 and 2011 and 57.3 in 2010 for all developing countries. Life expectancy is about 49.8 years compared with 53.5 years for Sub Saharan Africa, 65.4 years for developing countries in 2007, and the country only managed to achieve marginal improvement with a value of 51.7 in 2011 (Olayiwola, Bakare-Aremu & Abiodun, 2017). Also, the maternal mortality ratio of 1,500 - 2,000 per 100,000 live births is among the highest in the world.

Empirical Evidences

Extant literature on public health expenditure and economic development proxied by per capita income are few in developing countries (Nigeria inclusive) (e.g. Ndagada & Hlotywa, 2021), while we have numerous studies on public health expenditure and economic growth (e.g. Kurt, 2015; Olayiwola, Bakare-Aremu & Abiodun, 2017; Piabus & Tieguhong, 2017; Ibe & Olulu-Briggs, 2015; Badamassi & Deyi, 2017; Oni, 2014; and Esen & Kensili, 2021. Other studies assesses government spending on human capital and human development, healthcare expenditure and child mortality rate and as well public health expenditure and governance, and health outcome (e.g.Shafuda & De, 2020; Dhirif, 2017 and Shafuda & De, 2017; and Riayati & Junaidah, 2016) respectively. Details of the studies are presented thus; Kurt (2015) examined government health expenditures and economic growth of Turkeyv.

The study used monthly data between 2006:M01 and 2013:M10 and analyzed data using ordinary least square regression method. The results obtained the direct impact of government health expenditures on economic growth in Turkey is positive and significant and its indirect impact is negative and significant. The study therefore concluded that government health sector is slightly more efficient in ensuring growth.

In this case it can clearly be seen that there is a requirement to improve and further develop the health sector in Turkey Olayiwola, Bakare-Aremu and Abiodun (2017) studied the connection between public health expenditure and economic growth in Nigeria. The study employed data of the period 1985-2015 analyzed using Johansen co-integration and Granger causality. The study found evidence of a long-run relationship between public health expenditure and economic growth. The granger-causality test results indicated no relationship between public health expenditure and GDP. The study concluded that though there is no causal relationship between public health expenditure and GDP.

Shafuda and De (2020) examined the impacts of government spending on human capital on human development in Namibia using time series data from 1980 to 2015. The study employed Johansen co-integration approach revealed significant long-run inverse relationship of government spending on healthcare with fertility rate, infant mortality rate and under-5 mortality rate. Result also showed significant long-run positive relationship of government spending on education with literacy rate, net primary and gross tertiary enrolment rate. The study therefore concluded that findings are in favour of continuation of expansionary government expenditure policy to achieve faster economic growth in Namibia.

Dhirif (2017) investigates the effects of health-care expenditure on child mortality rates. Data of 93 developed and developing countries for period 1995–2012 were analyzed with ordinary least square. The result showed that health expenditure has a positive effect on reducing child mortality only for upper-middle-income and high-income countries. Result also revealed that health spending has insignificant impact on child health status low-income and lower-middle-income countries. The study therefore concluded that health spending has significant effect on child mortality in developed countries but insignificant in developing countries.

Piabuo and Tieguhong (2017) assessed health expenditure and economic growth of selected Africa countries. The study used data of 1995-2015 and analyzed data with panel ordinary least square (OLS), fully modified ordinary least square (FMOLS) and dynamic ordinary least square (DOLS) were used as econometric technique of analysis. Results showed that health expenditure has a positive and significant effect on economic growth in both samples. Result also showed a long-run relationship also exists between health expenditure and economic growth for both groups of countries. Therefore, the study therefore concluded that health expenditure is substantial factor of economic growth in African countries.

Ibe and Olulu-Briggs (2015) investigated the impact of public health expenditure on economic growth in Nigeria between 1981 and 2013. Data were analyzed with ordinary least square (OLS) multiple regression, equation estimation, Johansen co-integration and Granger Causality analytical techniques. Results indicate a significant and positive long run relationship between public health expenditures and economic growth. Result also showed unidirectional causality between economic growth and all public health variables in the model namely. The study concluded that there is the need for Nigerian policy makers to pay more attention to the health sector and increase its budgetary allocation.

Ndaguda and Hlotywa(2021) assessed the impact of public healthcare expenditure on economic development in South Africa between 1996 and 2016. The autoregressive distributed lag model, error-correction model which showed positive relationship between PHE and HDI in South Africa. Result also showed that relationship between CPI and economic development is insignificant, however CPI mediates PG. The study in addition indicated population growth and economic development has positive relationship but inflation has insignificant relationship with economic growth. Hence, the study concluded that public health expenditure influence economic development in South Africa.

Badamassi and Deyi (2017) examined the nexus between health care expenditure and economic growth in Sub-Saharan Africa. The study used data of the period 1995-2014 for thirty six sub Saharan African countries and analyzed data with system General Method of Moments (GMM) technique to estimate the results. The result revealed health expenditure has positive significant impact on the economic growth of the region. The study therefore concluded that it is necessary to develop effective and efficient health care programs, increase health expenditure, make an effective use of the young population and create better environment for foreign direct investment in order to foster economic growth in Sub-Saharan Africa.

Shafuda and De (2017) examined long run relationship between government spending, healthcare and mortality rate, life expectancy. The study used data for the period 1980 and 2015 analyzed data using Johansen co-integration, Vector error correction model and granger causality test. The study result revealed long run relationship between government spending on healthcare, fertility rate and infant mortality rate. Result also showed that no co-integration exist between government spending on healthcare and life expectancy and adult mortality rate. The study therefore concluded that investment in health via an expansionary government expenditure on health may be adopted in order to realize faster economic growth and better health outcome in Namibia

Riayati and Junaidah (2016) studied the impact of public health expenditure and governance on health outcomes in Malaysia. The study employed Autoregressive Distributed Lag (ARDL) co-integration framework for data of the period from 1984 to 2009. The result showed a stable, long-run relationship exists between health outcomes and their determinants, income level, public health expenditure, corruption and government stability. The results also reveal that public health expenditure and corruption affect long- and short run health outcomes in Malaysia. The study therefore concluded that ministries and other stakeholders in health services need to identify the needs and emphasize on the importance of health program to the society.

Oni (2014) evaluated the impact of health expenditure on economic growth in Nigeria. The study employed data of the period 1970-2010, and analyzed data with ordinary least square multiple regression method. Multiple regression analysis result showed that gross capital formation, total health expenditures and the labor force productivity are important determinants of economic growth in Nigeria while life expectancy rate has negative impact on growth for the period covered by the study. The study therefore concluded that government should encourage savings and investments in the economy, increase expenditures on health provisions, induce the level of labour productivity and place priority on the issues of security to lives and properties in Nigeria.

Esen and Kensili (2021) investigated the effect of health expenditure on economic growth in Turkey. The study employed time series data of Turkey over the period 1975–2018 and evaluated data using co-integration analysis and causality test. Results showed the existence of co-integration among all variables in the long term. Granger causality test results indicate unidirectional causality from health expenditure to economic growth in the short term. Therefore, the study concluded that investments in the health sector should be encouraged and the share allocated by the government for health expenditures from the budget should be increased in Turkey.

The summary of empirical studies reviewed showed that majority of the studies majorly in developing countries (Nigeria inclusive) focused on the contributions of public health expenditure towards reduction of child mortality and /to economic growth enhancement without any recourse on how economy can be developed through increase in per capita income of an individual from labor and capital perspectives. On this note, this paper is out to examine the impact of public health expenditure on economic development proxy by per capita income in Nigeria.

3. METHODOLOGY

Theoretical Framework

This study centered on Harrod-Domar growth model developed by sir Roy Harrod and Prof. Domar in early 1950s. The theory is based on the dual role of investment of an economy and explained that investment creates income (demand effect) and augment the production process of the economy by increasing its capital stock (supply effect) as long as net investment is taking place, real income and output will continue to expand. This implies that investment expenditure will have influence on economic development. Therefore, given that public health expenditure constitutes investment in the health sector, it can be explained that public health expenditure will influence economic development.

Model Specification

This present study hinges on the model used by Ibe and Olulu-Brigg (2015) to analyze the impact of health expenditure on the growth of economy as earlier put forth by Solow-Swan (1956) theory. The theory explained how economic growth factor by labor, capital and technology advancement can be enhanced through production that exhibits constant return to scale. Thus, Solow-Swan model as further used by Ibe and Olulu-Brigg (2015) expressed economic growth proxied by (GDP) as a function of gross capital formation (GCF); human capital proxied as total health expenditure (THE) and total education expenditure (TEE). However, the model was functionally specified thus;

$$GDP = f(GCF, TEE, THE) \quad (4)$$

Explicitly: $GDP = \delta_0 + \delta_1 GCF + \delta_2 TEE + \delta_3 THE + \ell_t$ (5)

The model was further modified by using economic development proxied by per capita income (PCI) as against gross domestic product as a dependent variable, while human capital indicesincluded serves as intervene variable for economic value of worker's experience, training intelligence and skill apart from education and health that solidly contributed to economic development of the country.

$$PCI_t = \delta_0 + \delta_1 GEH_t + \delta_2 GEE_t + \delta_3 HC_t + \ell_t \quad (6)$$

A-priori, it is expected that; $\delta_1 > 0, \delta_2 > 0, \delta_3 > 0$

Where:PCI = per capita income; GEH= government expenditure on health; GEE = government expenditure on education; HC= human capital and U = error term in time t. While $\delta_1, \delta_2, \delta_3$ are parameter estimates influencing development economy, δ_0 represent constant intercept and ℓ_t is the stochastic error term which assumed to be normally distributed with zero mean and constant variance. Further, we also ensure that all variables are on the same rate or unit by taking the natural logarithm of equation (3). Thus, the model becomes:

$$PCI_t = \delta_0 + \delta_1 LGEH_t + \delta_2 LGEE_t + \delta_3 LHC_t + \ell_t \quad (7)$$

Estimation Techniques

Unit Root and Co-integration Tests

The use of unit root and cointegration tests became imperative in a bid to circumvent any inherent limitations from traditional modelling used in empirical analysis (Amin & Audu, 2007). In view of this, the study employs Augmented Dickey- Fuller (ADF) model to test the stationary property of the data set employed. Thus, test model equations are expressed as:

$$\Delta\lambda_t = \Im_0 + \Im_1 \lambda_{t-1} + \sum_{i=t}^{n} \psi \Delta\lambda_{t-1} + \Im_t \quad (8)$$

$$\Delta\lambda_t = \Im_0 + \Im_1 \lambda_{t-1} + \Im_1 t + \sum_{i=t}^{n} \psi \Delta\lambda_{t-1} + \Im_t \quad (9)$$

Where: time series variable is represented by λ_t and $\Im_1$ as time and residual respectively. If a series is stationary without any differencing it is designated as I (0), or integrated of order zero (0). On the other hand, a series that has stationary first differences is also designated I (1), or integrated of order one (1). Further, the study moved on to test for co-integration among the series to ascertain whether there exist long run relationships among the variables. In this study, the ARDL bound test approach to co-integration test was employed because it offers several desirable statistical features that overcome the limitations of other co-integration techniques (Pesaran et al., 2001); and has become increasingly popular among researchers in recent years (Jayaraman & Choong, 2009).

Trend Analysis and Auto-Regressive Distributed Lag (ARDL) Testing Procedures

Analysis of trend and pattern of public health expenditure and per capita income over the years in Nigeria were analyzed to know how trending the variables in questions are increasing and decreasing over the study period. Thereafter, the study used auto-regressive distributed lag (ARDL) technique put forth by Pesaran, Shin and Smith (1996, 1999 and 2001), to analyze the long and short runs estimates of the series . Thus, the use of ARDL bounds test approach to cointegration has been applied for the estimation of F-statistic, that determines whether a long run relationship exists among the data series (Pesaran et al., 2001), which applicable to this study. Further, the condition for the existence of co-integration is that the ARDL bounds test F-statistic value must be greater than upper critical bound value at 5% significance level. Operationally, the study estimated the short-run and long-run impact of the explanatory variables on per capita income in Nigeria.

The coefficient of the co-integration equation CointEq(-1) of the short-run result conventionally known as error correction term (ECT) is expected to be positive and significant to measure the speed of adjustment of the model back to long run equilibrium after disequilibrium which occurs in response to shocks (Ahmad, 2011). Hence, the greater the coefficients of the ECT, the higher the speed of adjustment of the model from short run to long run and vice versa. Afterwards, several diagnostic tests of the model adequacy were conducted such as Breusch-

Godfrey serial correlation LM test, Breusch-Pagan-Godfrey heteroskedasticity test, Jarque-Bera histogram normality test, and as wellCUSUM and CUSUM of square tests of stability for the study. In line with Pesaran et al., (2001) and Bahmani and Nasir (2004) modeling approach, the ARDL dynamic (ECM-ARDL) model for this study are given thus:

$$\Delta \mathrm{PCI}_{\mathrm{t}} = \partial_0 + \sum_{j=1}^{k} \partial_1 \Delta PCI_{t-j} + \sum_{j=1}^{k} \partial_2 \Delta LGEH_{t-j} + \sum_{j=1}^{k} \partial_3 \Delta LGEE_{t-j} +$$

$$\sum_{j=1}^{k} \partial_4 \Delta LHC_{t-j} + \upsilon_1 PCI_{t-1} + \upsilon_2 GEH_{t-1} + \upsilon_3 GEE_{t-1} + \upsilon_4 HC_{t-1} + \ell_t \ldots\ldots\ldots\ldots (10)$$

Where: Δ = First differencing operator, L= natural logarithm, t = time, t-1 = lag one (previous year), δ_0 = constant and ℓ_t = error term. The term summation signs (Σ) represent the short run dynamics with assumed mixed orders of integration of variables. However, the second part of the equation represents the long run dynamics, where the integration property is assumed to be I(1); β_1 to β_7; and also υ_1 to υ_7 are the coefficients to their respective variables.
Specifically, the long run ARDL model for this study is:

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After ascertaining the long run relationship, we used the following equation to estimate the short run coefficients:

$$\Delta \mathrm{PCI}_{\mathrm{t}} = \pi_0 + \sum_{j=1}^{k} \pi_1 \Delta PCI_{t-j} + \sum_{j=1}^{k} \pi_2 \Delta LGEH_{t-j} + \sum_{j=1}^{k} \pi_3 \Delta LGEE_{t-j} +$$

$$\sum_{j=1}^{k} \pi_4 \Delta LHC_{t-j} + \ell EC_{t-j} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (11)$$

Where: ℓEC_{t-j} is the error correction term, indicating the speed of adjustment reverse to long run in the model. EC is the residuals that are obtained from the estimated ARDL co-integration model.

Sources of Data
This study used secondary data extracted from the statistical bulletin of the Central bank of Nigeria and the Nigeria Budget Statement for the period covered in the study, as well as the World Development Indicator. Data covered the period of thirty(30) years spanning from 1990 to 2019.

4. RESULTS AND DISCUSSION

Unit Root Test
Unit root test was carried out to ascertain the stationary property. That is,the predictability properties of the variables. The presence of a unit root implies that the time series under investigation is non-stationary; while the absence of unit root indicates that the series is stationary. Results of Augmented Dickey-Fuller (ADF) test unit root are presented in tables 4.1:

Table 1. Unit Root Test Result

Variables	ADF statistics	1% critical value	5% critical value	Order of Integration
PCI	-5.499781	-4.323979	-3.580623	I(1)
PEH	-3.608750	-4.309824	-3.574244	I(0)
PEE	-5.286693	-4.339330	-3.587527	I(1)
HC	-4.526718	-4.323979	-3.580623	I(1)

Note:*(**) connote significance at 1%, (5%) significant levels respectively
Source: Author's Computation (2021)

Table 1. revealed that only public expenditure on health is stationary at level. This implies that they are integrated of order zero I(0), reflecting that public health expenditure do not retain innovative shock passed on them more than the same period.

However other variables such as per capita income, public expenditure on education and human capital became stationary after first differencing order one I(1). Therefore, unit root test conducted in the study showed that series in the model are integrated of mixed order, that is, I(0) and I(1). Thus, call for the use of Auto-regressive distributed lag (ARDL) approach as estimation technique for the study.

Trend of Public Health Expenditure and Per Capita Income

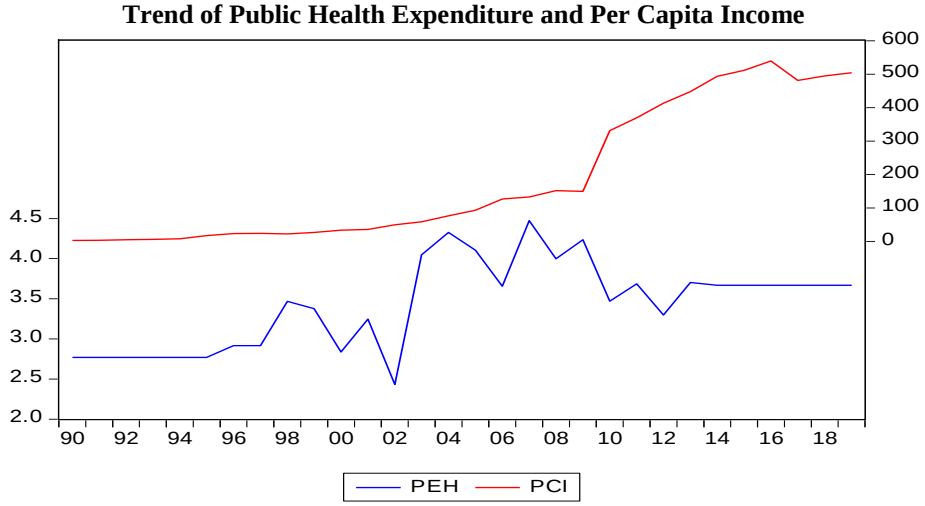


Figure 1: Trend of public health expenditure and per capita income of Nigeria

Figure 1, showed the trends of public health expenditure and per capita income for the period covered in this study (1990 to 2019). The figure showed a steady increase in public health expenditure between 1990 and 2008 but thereafter rise continuously between 2008-2019 although there was a slight disturbance around 2015 and 2016 which could be due to fall in world oil prices that prompt government to cut the budget. Fig.1 also showed that per capital income rise between 1990-1998, but decline between 1998-2002, thereafter it rise sharply between 2002-2004 then showed a downward trend between 2004 and 2019 which could be attributed to unemployment, fall in real wages and level of income. Observably, result showed that between 1990 and 2004, public expenditure on health and per capita income trend toward the same direction, but between 2004 and 2019 they move predominantly in opposite direction.

Table 2: ARDL Co-Integration Bound Test

F-Statistic	Lower Bound Critical Value	Upper Bound Critical Value
6.271110	3.23	4.35

Note:critical values are values at 5% significant level.
Source: Author's Computation (2021)

Table 2. reported ARDL co-integration bound test in terms of lower and upper bound critical values, as well as the F-statistics for the Wald test carried out to test the joint null hypothesis that the coefficients of the lagged level variables are zero,that is, no long run relationship exist between the variables. The result showed an F-statistics value of 6.271110 and bound critical values of 3.23 and 4.35 for lower and upper bounds respectively. Comparing the F-statistic to the critical values it was observed that the f-statistics is greater than the upper bound critical value (a condition for the rejection of the null hypothesis of no long run relationship). Thus the study rejects the null hypothesis in favor of the alternative hypothesis of presence of long run relationship between the variables.

Table 3: ARDL Short run and Long run form Estimation Result

Short run Estimation				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(PCI(-1))	0.425551	0.177948	2.391438	0.0340
D(PCI(-2))	-0.255756	0.149120	-1.715104	0.1120

D(PCI(-3))	0.291937	0.175791	1.660703	0.1227
D(PEH)	-1.075372*	0.288888	-3.722454	0.0029
D(PEH(-1))	0.591440	0.273182	2.165007	0.0513
D(PEE)	-0.375241	0.383506	-0.978447	0.3472
D(HC)	40.599502	27.945307	1.452820	0.1719
D(HC(-1))	-306.577086	60.194844	-5.093079	0.0003
D(HC(-2))	167.461950	33.008838	5.073246	0.0003
CointEq(-1)	-0.372475	0.164813	-2.259981	0.0432
Cointeq = PCI - (-3.9203*PEH -1.9645*PEE + 12.9543*HC + 0.7487)				
Long Run Estimation				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
PEH	-3.920333	2.554959	-1.534402	0.1509
PEE	-1.964544	1.441677	-1.362680	0.1980
HC	12.954290*	2.161413	5.993435	0.0001
C	0.748686	1.302481	0.574815	0.5760

Source: Author's Computation (2021)

Table 3, presents result of ARDL short run and long run relationship between public health expenditure and per capita income. Short run result shows coefficient and probability of -1.705372 and 0.0029 ($p < 0.05$) for D (PEH), which indicates when current level of public health expenditure increase (or decrease) by 1%, current level of per capita income decrease (or increase) significantly by about 1.71% on the short run. This implies that public health expenditure has negative significant effect on per capita income. Coefficient and probability of -0.375241 and 0.3472 ($p > 0.05$) for D (PEE) shows that when current level of public expenditure on education increases by 1%, current level of per capita income decrease insignificantly by 0.37% in the short run. This means that public expenditure on education has negative insignificant effect on per capita income on the short run. Coefficient and probability of 40.599502 and 0.1719 ($p > 0.05$) reveals that when current level of human capita income increase (decrease) by 1%, current level of per capita income increase (decrease) insignificantly by 40.5% on the short run. This implies that human capital exerts positive insignificant effect on per capita income of the country.

Long run result also shows coefficient and probability of -3.920333 and 0.1509 ($p > 0.05$) for PEE which indicates when public health expenditure increase (or decrease) by 1%, of per capita income decrease (or increase) insignificantly by about 3.92% on the long run run. This implies that public health expenditure has negative insignificant effect on per capita income. Coefficient and probability of -1.964544 for PEE shows that when public expenditure on education increases by 1%, per capita income decrease insignificantly by 1.96% in the long run. This means that public expenditure on education has negative insignificant effect on per capita income on the long run. Coefficient and probability of 12.954290 and 0.0001 ($p < 0.05$) reveals that when human capita income increase (decrease) by 1%, per capita income increase (decrease) significantly by 40.5% on the long run. This implies that human capital exerts positive significant effect on per capita income.

Table 4: Post Estimation Test Analysis

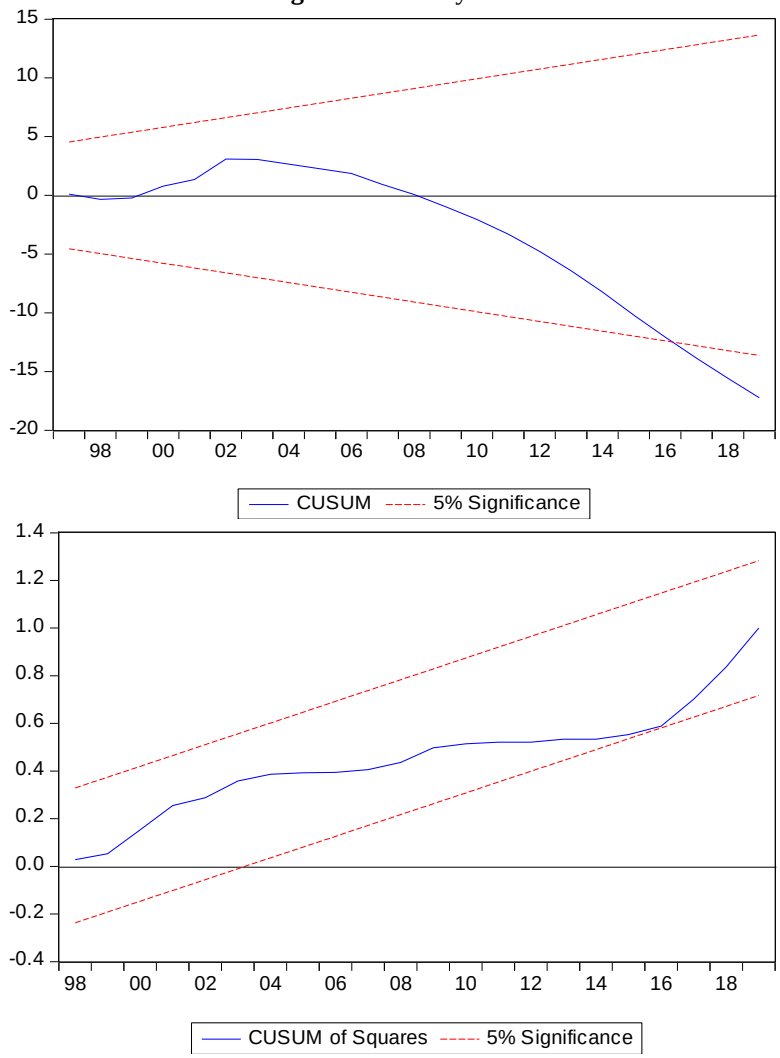
Normality Test		
Statistics	**Values**	**Probability**
Jarque-Bera Stat	1.440395	0.486656
Serial Correlation LM Test		
Statistics	**Values**	**Probability**
F-statistic	1.470747	0.2755
Heteroscedasticity Test		
Statistics	**Values**	**Probability**
Breusch-Pagan-Godfrey	0.806934	0.6477
ARCH	0.139477	0.7122
Harvey	1.325193	0.3163

Source: Author's Computation, (2021)

The Jarque-bera statistics value for error term of the estimated models stood at 1.440395 ($p > 0.05$). The result revealed that there is no enough evidence to reject the null that the error term of the estimated model is normally distributed, thus confirming that the error term normally distributed. Breusch-Godfrey serial correlation LM test result which stood at 1.470747 ($p > 0.05$), reflect that there is no evidence to reject the null hypothesis of no serial correlation between successive values of error terms of the estimated models. Hence there is no problem of serial autocorrelation in the estimated models. F-statistics and probability values of 0.806934 and 0.6477 for Breusch-Pagan-Godfrey, 0.139477 and 0.7122 for ARCH, 1.325193 and 0.3163 for Harvey heteroscedasticity reflect that there is no evidence to reject the null hypothesis of constant variance of the error term (homoscedasticity). Hence the test confirmed that there is no problem of heteroscedasticity in the error term of the estimated models.

Stability Test

Figure 4: Stability Test



The cumulative sum (CUSUM) and cumulative sum of squares (CUSUMQ) plots presented in figure 4, indicates stability in the coefficients over the sample period. Specifically indicated that the CUSUM plot of the model was stable within 5% critical bands for all period except little distortion shown in the latter period. Again, CUSUMQ plot of the model was stable within the 5% critical bands for all periods. This implies that the coefficient of the estimated model is stable.

Discussion of Findings of the Study

Result showed that at the levels of short and long runs, public expenditure on education and health remains unchanged and thus, per capita income of the country decreased at the expense of increase in public health expenditure.

This is in agreement with the findings of Kurt (2015) which claimed that public health expenditure has positive significant effect on economic growth, although they acknowledged that this influence was indirect in nature. However, the result refuted the submission of Piabo and Tieguhong (2017) that public health expenditure has positive significant effect on economic growth, although the study was conducted on selected African countries and used gross domestic product as measure of dependent variable. Further, the result also contradicts empirical studies of Ibe and Olulu Brigg (2015) which revealed positive long run relationship between public health expenditure and economic growth in Nigeria. Per capita income tends to decrease national income does not keep pace with the ever increasing population of the country. This could be because government expenditure incurred on health contributed lead to productive health research and infrastructures that could ensure good health outcome. As a result, health expenditure rather than improve contribution of human resources to productive sector, reduces their contribution due to poor health.

This situation affects adversely labour productivity, hence, the low level of output and income, decrease in economic development.The implications of this is that utilization of public health expenditure on health related capital investment and infrastructure can enhance productive sector performance which can promote economic development through improvement in the health status of the labour force since this will encourage human capital contribution to economic activities. Also, when there is adequate provision of public health expenditure to health related research and innovation, it can encourage locally produced health related infrastructures and equipment as well as improvement in medical skills among students which help enhances human capital contribution to development through improvement in health status.

5. CONCLUDING REMARKS AND POLICY RECOMMENDATIONS

This study x-rays the effect of public health expenditure on economic development in Nigeria. Data for the study were analyzed using Autoregressive Distributed Lag (ARDL) approach as estimation technique. Based on the findings of the study, it is concluded that public health expenditure exhibits indirect influence on economic development in Nigeria. This implies that public expenditure has remarkable influence on economic development of Nigeria. The implication of this is that government spending on health can be an effective fiscal policy instrument of government in determining and forecasting economic development. However, the public health expenditure may delay development or decrease level of development of the country. This is because benefit of public expenditure on economic development is not in the amount spent but in the composition and benefit of the items that the expenditure acquired for the country. To enhance development, public health expenditure should be incurred on long term health infrastructural facilities which could facilitate health sector performance and health outcome that can boost the human health and labour productivity which ensure increase in income and better well-being of the people. But in the case of Nigeria, public expenditure on health has not improved economic development because it does not facilitate increase in health infrastructure, hence the low level of income and poor well-being of the people.

Policy Recommendations

Arising from the findings of the study, we proffer the following policy recommendations:

A. That Nigerian government should pay more attention to health and educational sectors towards monitoring and judicious spent voted budget to productive capital investments and infrastructures which can enhance productive sector performance of the economy and afterwards improve household income in the country.
B. There is a need for government to ensure that expenditure on health is incurred on productive health research and innovation so as to facilitate better health outcome of the people which in turn enhance human capital contribution to economic development
C. Government should ensure that public expenditure on education is incurred on infrastructures that enhance skill acquisition among students in schools especially in the higher institutions in order to encourage development process

References

1. Aboubacar, B. and Xu, D.Y. (2017). The impact of health expenditure on the economic growth in Sub-Saharan Africa. Theoretical Economics Letters, 7, 615-622
2. Adebiyi, M.A. (2003). Public expenditure and human capital in Nigeria. Journal of Econometrics, 2(1), 68-82
3. Anyanwu, J.C., Andrew, E.O. & Erhijakpor, A. (2007). Health expenditures and health outcomes in Africa. African development bank economic research working paper series No 91
4. Badamassi, A. & Deyi, X. (2017). The impact of health expenditure on the economic growth in sub-saharan Africa. Theoretical Economics Letters, 7, 615-622

5. Bloom, D. E., Canning, D., & Sevilla, J. (2004). The effect of health on economic growth: A production function approach. World Development, 32(1), 1-13.
6. Bourguignon, F. (2004). "The poverty-growth-inequality triangle", Working Paper No. 125, ICRIER; New Delhi
7. Boussalem,F. Bousallem, K. & Taiba, H. (2014). The relationship between public spending on health and economic growth in Algebra. International journal of business and management, 2(3), 25-34
8. Cole, M.A. & Neumayer, E. (2006). The impact of poor health on total factor productivity. Journal of development studies, 42(6), 918–38
9. Dhirif, A. (2017). Health care expenditures, economic growth and infant mortality: evidence from developed and developing countries. CEPAL Review, 125, 69-92
10. Esen, E. & Kecili, M.C. (2021). Economic growth and health expenditure analysis for Turkey: evidence from time series. Journal of the Knowledge Economy, 1-15
11. Ibe, R.C. & Olulu-Briggs, O.V. (2015). Any nexus between public health expenditure and economic growth in Nigeria? International journal of banking and finance research, 1(8), 1-14
12. Kurt, S. (2015). Government health expenditures and economic growth: A Feder-Ram approach for the case of Turkey. International journal of economics and finance issues, 5(2), 441-447
13. Lewis, W. (2004). The power of productivity. Chicago: University of Chicago press.
14. Matthew, A.O., Adegboye, B.F. & Fasina, F.F. (2015). Public health expenditure and health outcomes in Nigeria. Retrieved from: https://ideas.repec.org › rss › jnljfe
15. Ndaguba, E.A. & Hlotywa, A. (2021). Public health expenditure and economic development: The case of South Africa between 1996 and 2016, Cogent Economics & Finance, 9(1), 1-15
16. Ogundipe, M. and B. Adeniyi (2011). "Health expenditure and Nigerian economic growth", Journal of Emerging Trends in Economics and Management Sciences, 2(2), 83-87
17. Olarinde, O., & Bello, A. (2014). Public healthcare expenditure and health sector performance in Nigeria: Implications for sustainable economic development. IOSR Journal of economics and finance, 39-55.
18. Olayiwola, S.O., Bakare-Aremu, T.A. & Abiodun, S.O. (2021). Public health expenditure and economic growth in Nigeria. African journal of economic review, 9(2), 130-150
19. Oni, L.B. (2014). Analysis of the growth impact of health expenditure in Nigeria. Journal of economics and finance, 3(1), 77-84
20. Piabuo, S.M. &Tieguhong, J.C. (2017). Health expenditure and economic growth- a review of the literature and an analysis between the economic community for central African states and selected African countries. Health economics review, 7(22), 1-13
21. Riayati, A. &Junaidah, H. (2016). Public health expenditure, governance and health outcomes in Malaysia. Journal of Ekonomi Malaysia, 50910, 29-40
22. Shafuda, C.P. & De, U.K. (2017). Upshot of public health expenditure on economic development. Munich Repec Archive, Paper No 101846. Retrieved from: https://mpra.ub.uni-muenchen.de/101846/
23. Shafuda, C.R.P. & De, U.K. (2020). Government expenditure on human capital and growth in Namibia: a time series analysis. Journal of economic structures, 9(21), 1-14
24. UN (2015). Sustainable development goals. General Assembly. Retrieved from: https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E
25. World Bank, (2017). World Development Indicators, 2017
26. Yaqub, J.O., Ojapinwa, T.V. and Yussuff, R.O. (2012). Public health expenditure and health outcome in Nigeria: the impact of governance. European scientific journal, 8(13), 189-201
27. Young, F. W. (2001). An explanation of the persistent doctor-mortality association. Journal of epidemiology and community health, 55, 80-84.
28. Yusuff, P. (2018). Impact of government health expenditure on economic growth in Nigeria from 1981 – 2016 (Masters' Thesis). Department of economics, University of Jos