PUBLIC HEALTH EXPENDITURE AND POVERTY IN NIGERIA

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Abstract

The study examined public health expenditure and poverty in Nigeria from 1980 to 2015. The main objective of the study was to examine the impact of public health expenditure on poverty in Nigeria. The data for the study were sourced from CBN statistical bulletin and World Bank World Development Indicator. The Augmented Dickey-Fuller test and Autoregressive Distributed Lag model were used as the main analytical tools. The ADF unit test result revealed stationarity of the variables at order zero and one, which satisfied the requirement to employ the ARDL Bounds testing approach. The ARDL Bounds test revealed the existence of long run relationship among the variables. Moreover, the result revealed that government capital and recurrent expenditure on health have positive but insignificant relationship with poverty in Nigeria both in the short run and long run. Employment rate has a positive and insignificant relationship with poverty in the long run. While in the short run, employment rate has a positive and significant relationship with poverty in Nigeria. The study concluded that public health expenditure has not significantly contributed to the reduction of poverty in Nigeria. Therefore, government should increase its health care expenditure to assist people living below poverty line in Nigeria including the provision of free basic health care.

Key Words: Health, Expenditure, Poverty, Employment and ARDL.

Introduction

The importance of good health cannot be overemphasized. Health improvements affect morbidity and labour force productivity thereby affecting the speed of economic development. Therefore, it is important to minimize the risk of falling ill and to promote health in order to increase productivity and earning capacity. This explains why one of the United Nations' Sustainable

Development Goals (SDGs) aims at ensuring healthy lives and promotes well-being for all at all ages.

Moreover, it is a well known fact among economists that the health sector is one of the driving forces and the engine of growth and development. This is because the health sector itself is highly labour-intensive and appropriate investments in it can lead to the creation of direct and indirect jobs which, in the process, will reduce poverty . There can be no doubt that investment in the production of different categories of health personnel including doctors, nurses/midwives, pharmacists, other clinical staff and management support staff would go a long way in addressing the health problems of the poor along with those of the non-poor through the employment channel (Umo, 2012).

Good health is a bulwark against poverty since it can consistently boost productivity and earnings. Improvement in health leads to improvement in life expectancy which is a robust indicator of human development. It has been widely upheld that 'health is wealth'. The reverse implication is that poor health spells poverty and ultimately death. Hence, it follows that getting the health infrastructure in good state is critical for delivering good health to the populace.

Over the years, successive governments in Nigeria have made serious effort in budgeting allocation to the health sector. An observation of the federal government expenditure in Nigeria revealed that both capital and recurrent expenditure on health sector has continued to rise due to the huge receipts from production and sales of crude oil. For instance, in 1986, 1990, 2000 and 2006, total expenditure (i.e., capital and recurrent) on health shows continuous increase in trend of ₦360.4M, ₦658.1, ₦18181.8M and ₦105590.0M respectively (CBN, 2007). Crispin (2013) envisaged that higher public spending in important sectors including health sector is expected to result in higher contribution of the health sector to economic growth, reduction of unemployment and poverty.

However in spite of increases in public spending in the health sector, the Nigerian health system is in shambles. People are still dying of malaria, typhoid fever, polio, fibroid and other common ailments due to non-

availability of functional medical equipment in the health sector, making health care delivery to become a private affair and dependent on ability to pay for basic laboratory and physician services. These have exacerbated diseases and poverty burden (Obansa and Orimisan, 2013). The proportion of Nigerians living in poverty is increasing every year. For instance, poverty incidence which was 27% in 1980 increased to 46.3% in 1985. It further increased from 65.6% in 1996 to 69% in 2010 (NBS, 2010). Strictly speaking, in Nigeria, poverty is a real problem and is widespread. As a result, people lack good health care, food, clothes, education and the other basic amenities. In fact, a lot of people don't have access to qualified medical specialists. The effect is low life expectancy, high infant mortality rate, high maternal mortality and low access to sanitation.

It is against this background that this study examines the relationship between federal government spending on health and poverty in Nigeria from 1980-2015. Specifically, the study examined the relationship between recurrent expenditure on health and poverty in Nigeria; examined the relationship between capital expenditure on health and poverty in Nigeria, examined the relationship between employment rate and poverty in Nigeria. The paper has five-sections, namely introduction, literature review, methodology, results and discussion; and conclusion and recommendations.

Conceptual and Theoretical Literature

The Concept of Health

Health is the level of functional and metabolic efficiency of a living organism. The World Health organization in 2013 defined health in its broader sense in its 1948 constitution as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity ". In this sense, people are suffering from ill health when they fall short of 'complete wellbeing'. Health is considered as a fundamental human right and the achievement of the highest possible level of health is one of the most important world-wide social goals (Nguyen, 2011).

The Nigerian government in recent times established Basic Health Centers in all the local government areas of the country. Health care services include health prevention and treatment. The services are used to improve and maintain health status whether people are suffering from health problems or

not. However, access to basic health services of acceptable quality is still a problem to many poor people in Nigeria. Nigeria's health care expenditure can be broadly divided into public expenditure and private expenditure. The former is mainly expenditure from public revenue or the state, while the later is expenditure by the households and corporate agencies on health care delivery.

However, estimates of public expenditure are somewhat more reliable than estimates of private expenditure. Umo (2012) submitted that in Nigeria, as in most other African countries, human health indicators are very poor and these are reflections of grossly inadequate health infrastructure. Examples of health statistics reflecting poor health infrastructure include low life expectancy, high infant mortality rate, high maternal mortality, high rate of HIV pandemic, low access to sanitation and water sources. One of the factors that account for poor health status in Nigeria is that the health sector has one of the lowest annual budget allocations in relation to the GDP. For instance, public expenditure on health as a percentage of GDP in 1990 and 1998 was 1.0% and 0.8% respectively compared to countries with high human development (HUD) group including Norway, Sweden, Canada, Belgium, Australia and United States who devoted 3-8% of their GDP to health in both 1990 and 1998. Olakunde (2012) given the low level of government spending, changes in the price of oil in the world market, a low tax base, and other preponderant issues, it will be very difficult to provide the essential health care services to Nigerians. Hence, health care will always be at the peril of underfunding by the Nigerian government.

In 2014, the allocation to the health sector was N262.74 billion out of which N9.109 billion was for the construction/provision of hospitals/health centers, N115 million was on HIV/AIDS control, N213.321 million was on cancer control and N85.653 million on malaria control (Udoka and Anyingang, 2015). In the health sector, between 2012 and 2013, 150 cases of polio were reported in Nigeria. Nigeria and Germany signed an MOU to spend €35.0 million on the 5^{th} phase of the polio eradication programme (CBN, 2013). In terms of health personnel, the numbers of required professionals is grossly insufficient. For instance, the number of doctors who graduate from medical schools remained static (2,300) from 2002 to 2006. In some areas like

community health professionals, the number actually decreased from 9,000 in 2002 to 6,600 in 2006 (Umo, 2012). In the same vein, Eneji, Juliana and Onabe (2013) wrote that public expenditure has not provided adequate health infrastructure, especially in the rural areas . The sector lacks qualified healthcare personnel and regulations, as talented doctors, pharmacists, nurses and other health professionals continue to leave Nigeria to apply their services more profitably in other countries. Nigerians are being denied quality healthcare services, especially those in the rural areas. High profile individuals in Nigeria, especially the political class, continue to undertake medical tourism abroad, further widening the inequality of access in healthcare . It is very important to step-up investment in all components of health infrastructure including personnel to cope with the explosive population growth requiring medical services. The federal government has occasionally stated her commitment to prioritize health expenditure in terms of the threat and incidence of certain diseases such as HIV/AIDS and malaria, particularly, at the preventive level (Umo, 2012). Even with this, the people are still dying of common illnesses like malaria and others as a result of lack of infrastructure for which funds were allocated. Even with the allocation to the sector, there has not been a commensurate improvement in the health sector as citizens die due to ignorance of the danger of some illness as like cancer, inadequate or dysfunctional medical equipment.

Nigerian Health Policy

Health care policies are the statements of intentions and aspirations of government for the provision of normal, mental and physical development and functioning of the human health. It includes health protection measures; promotion of health; prevention of sickness; and curative and protective medicine in all its ramifications. Health care is a shared responsibility in Nigeria.

As reported by Ayanleye (2013), the federal government launched its Primary Health Care plan (PHC) in August 1987 as the cornerstone of the country's health policy. The policy was intended to affect the entire national population, with its main objectives including accelerated health care personnel development; improved collection and monitoring of health data; ensured availability of essential drugs in all areas of the country; implementation of an

Expanded Programme on Immunization (EPI); improved nutrition throughout the country; promotion of health awareness; development of a national family health program; and widespread promotion of oral rehydration therapy for treatment of diarrhoea disease in infants and children. The federal government further instituted a National Health Policy in 1988 with the primary objective of improving the health status of the people and allowing Nigerians have access to wholesome, productive, social and economic lives. The National Health Plan document released by Nigeria's Federal Ministry of Health proposed that: The goal of the National Health Policy shall be to establish a comprehensive healthcare system based on primary healthcare that is promotive of protective, preventive, restorative and rehabilitative, to every citizen of the country within the available resources so that individuals and communities are assured of productivity, social well – being and enjoyment of living. Unfortunately, the current situation is worse now than when that statement was made years earlier. Many of the citizens still do not have access to quality healthcare and many have died. The current policy framework was derived from the National Health Policy, the draft National Health Plan, the National Vision 2010 Report. The vision for health sector reform is to improve the health status of all Nigerians, and to attain a level of health care that would permit all Nigerians to live a socially and economically productive life. However the reality is the opposite as quality healthcare is still out of the grasp of the average Nigerian.

The Concept of Poverty

Poverty may be defined in either absolute or relative terms. In absolute terms, a person is poor when he or she cannot afford basic necessities of life such as food, clothing, shelter, basic education, etc. It is sometimes referred to as abject poverty. Supporting this, World Bank (2011), defined poverty as "the economic condition in which people lack sufficient income to obtain certain minimal levels of health services, food, housing, clothing and education which are necessities for standard of living". Todaro and Smith (2011) defined it as the situation of being unable or only barely able to meet the subsistence essentials of food, clothing, and shelter. Absolute concept of poverty in terms of interpretation compares two numbers for each person or group of people, the person's annual income and the poverty threshold or poverty line. Poverty line is the level of income required for basic subsistence. Using this measure,

the National Bureau of Statistics estimated that 54.4% of Nigerians were absolutely poor in 2004. International absolute poverty has been estimated at two levels: $1 a day and $2 a day. Based on this estimate, the World Bank has shown that poverty rate in Nigeria was 70.8% which translates into 106.2 million people (based on 150 million in 2007 population). At $2 per day, the poverty rate is 92.4% translating into 138.6 million Nigerians (using 2007 population) and about 154 million based on the current population of 167 million (Umo, 2012).

It is important to note that it is absolute poverty that economic development policy seeks to eliminate. It is indeed possible to end this type of poverty as experience in most developed countries has shown. In other words, it is possible to find a solution to end basic material deviation. This explains why United Nations-driven sustainable development goals (SDGs) aim at bringing poverty to an end in all its forms everywhere. That is, **by 2030 eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day and 1.2 by 2030; reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.**

In relative terms, we can say that some households are poor in comparison with others. Generally, poverty is concerned with the relationship between the minimum needs of man and his inability to satisfy these needs.

According to Obadan (1996) among economists, poverty has often been defined as a system of low income or low consumption. This is always used for measuring poverty line. The variables that determine the poverty line are values of income or consumption necessary to purchase the minimum standard of nutrition and other necessities. Therefore, people are counted as poor when their measured standard of living in terms of income or consumption is below the poverty line. The poverty line is a measure that separates the poor from the non-poor. It is important to know that poverty has both income and non-income dimensions. The point being made here is that, apart from income, other factors also determine the poverty line. To this effect, Chambers (1996) has argued that poverty refers to the bulk of physical resources, assets and income. But it includes more than being income-poor. The various definitions

of poverty have been summarized by Conway (2009) in this way; Poverty is lack of shelter. Poverty is being sick and not being able to see a doctor. Poverty is not being able to go to school and not being able to read. Poverty is not having a job, fear for the future and living one day at a time. Poverty is losing a child to illness brought about by unclean water. Poverty is powerlessness, lack of representation and freedom.

Poverty has effects on the national economy and individuals respectively. One of the adverse effects of poverty is that it leads to low standards of living. The poor and their families cannot afford good meals, descent housing, good education or medical care. They therefore, see themselves as nuisance to society. Another effect of poverty is that it leads to a high crime rate. The poor may resort to stealing, prostitution and kidnapping. Since a larger proportion of the poor have low level of human capital, which affect their productivity. The overall effect will be a decline in GDP. Finally, the high incidence of poverty in Nigeria today has adversely affected the revenue base of the government. The poor are the unemployed, the young, the aged and the handicapped persons. Consequently, they do not pay taxes to the government rather; they depend on government for their livelihood. This development has adversely affected government's revenue thereby slowing the pace of rapid economic growth and development (Gbosi, 2012).

Cultural Theory of Poverty: This theory has its origins in the work of the American anthropologist who studied poor communities in Mexico and Puerto Rico in the 1950s and 1960s. Lewis (1968) argued that in the Third World societies the poor have a distinctive culture with attitudes, norms and values which differ from those of the mainstream culture. This culture of poverty includes attitudes of resignation and fatalism which lead the poor to accept their fate rather than attempting to improve their lot. This can be seen as their failure. The culture of poverty emphasizes immediate gratification and a concern with the present. This makes difficult for the poor to plan or save for the future, join trade unions, political organizations and community groups which might help them to improve their situation. The theory believes that this way of life was passed on from generation to generation. Children learn the culture from an early age. It helps them to cope with day to day life in poverty, but means they are ill-equipped to take advantage of opportunities such as education which might help them to escape from poverty. In this way, the

poverty of parents is passed on to children. Therefore, people inherit poverty and their actions including lack of education, and laziness reinforce poverty. However, this theory has failed to recognize that the degree of resignation and hopelessness exhibited by the poor is a consequence rather than a cause of being poor. Hence, the structure of the economy should also be examined.

Structural/Economic Theory of Poverty

This theory explains that poverty emanates from the way the economy is structured. Many of those who support social democratic theories see the existence of poverty as a part of the inequality created by the labour market in the capitalist economic systems. They point out that most of the groups in poverty are either excluded from the labour market – for example unemployed people, people over retirement age and people unable to work because of sickness or disability – or they are in a weak position in the labour market and thus tend to be restricted to low paid, often casual and insecure work . Therefore, employment level and the nature of income distribution are among the factors that encourage poverty. This line of argument was developed by Townsend (1979), Townsend, Corrigan and Kowarzik (1987), Townsend argued that poverty is closely related to class. The majority of the poor occupy unskilled or semi-skilled jobs. Hence, people are poor not because they are not hard working but do not have the opportunity to work. He is made poor as a result of the economic system that denied him his share of the income and inequitable distribution of income. For Townsend, poverty will only be tackled effectively by radical social policies. The state must redistribute resources from the rich to the poor and direct investment towards social priorities such as health, education and housing. This line of reasoning makes it clear that government must be actively involved in several activities to eliminate poverty. This is in tandem with Wagner's observation.

Adolph Wagner's Theory of Increasing Government Activities (Expenditures)

Adolph Wagner propounded the theory of increasing government activities. According to Wagner's thesis, which he wrote in 1880's there are tendencies for the activities of all layers of government to increase both extensively and intensively. Therefore, there is tendency for government expenditure to increase. He noted that social progress is the reason for increase in the

activities of the government. He forecast an increase in the ratio of government expenditure as per capita income rises. Specifically, he observed a tendency for government expenditure to increase directly with the level of industrial output and therefore called for increased allowance for "social consideration" in the conduct of industry with anticipation of continuous expansion of the public sector. Policy makers and economic advisers employ Wagner's law as the basis for their decision any time there is need for important economic decision making on expenditure (Okoh, 2015). Representing Wagner's law functionally, GE = f (Y) where GE is government expenditure and Y is national output. Furthermore, an increase in government expenditure is expected to impact positively on an economy which is the prayer of Keynesian economics.

The Keynesian Theory

John M. Keynes (1936), a British economist and the father of macroeconomics argued that public expenditure is a fundamental determinant of economic growth. Keynes theory made it clear that fiscal policy instrument (i.e., government expenditure) is an important tool for achieving short-term stability and superior long run growth rate. To achieve stability in the economy, this theory prescribes government interventions in the economy through economic policy specifically fiscal policy. To the Keynesians, public expenditure will contribute positively to economic growth which, in turn, will reduce unemployment and poverty. For instance, government expenditure in the health sector will have multiplier effect on the economy. Government expenditure on health and education will raise the productivity of labour and increase the growth of national output which in turn, will reduce unemployment and poverty. To reduce or eliminate poverty in an economy, Hull (2009) argued that increasing employment is critical if the poor must earn income by offering their labour as their sole asset. Keynesians believe that poverty is the outcome of structural factors which could be economic or social or political. However, structural factors including poor levels of human capital and lack of business capital, infrastructure and public institutional capacity always act to increase poverty levels by way of causing involuntary unemployment. On the above arguments, therefore, government (spending) on the health sector is essential to reduce poverty through multiplier effect. That is, government spending through allocation and composition to health

sector and programmes has the objective of growth, employment and poverty reduction. Therefore, the Keynesian framework in which an increase in government expenditure results to increased consumption and economic growth thus leading to poverty reduction was adopted in this work.

Empirical Literature

Health is a good form of human capital formation and looking at the association between health/capability and poverty is very important. Moreover, Ilesanmi, Adebiyi and Fatiregun (2017) examined the contribution of household health care expenditure to poverty in Oyo State, South West Nigeria: specifically, a rural and urban comparison. They employed a comparative cross-sectional study using a tested and adapted version of the Living Standard Survey questionnaire to collect data on 5,696 household members from 1,434 household representatives. Representatives were selected using a multistage sampling method. The result revealed that health care was utilized by 1,006 (70.2%) of the 1,434 households studied. Of urban and rural households, 637(89.2%) and 369(51.3%) utilized health care services, respectively. Only 513(29.8%) were poor while 1519(88.2%) were poor after considering the cost of utilizing health care. Increase in poverty of 66.2% occurred because of health care utilization ($p<0.001$).

Odior (2015) examined the effect of public spending policy on the basic health services in the reduction of poverty and in achievement of millennium development goals in Nigeria. The study employed a dynamic CGE-MS method in analyzing the likely effects of an increased in public expenditure on health in Nigeria. The outcome showed that it will be very hard for Nigeria to attain the Millennium Development Goals target, in terms of health and reduction of poverty by the year 2015, because the policy measure in the analysis was unable to meet this goal. However, the simulated analysis showed that if government resources are redirected to public health systems, it will go a long way in determining the reduction of poverty in Nigeria.

According to Rashad and Sharaf (2015), healthcare payments could drive households with no health insurance coverage into financial catastrophe, which might lead them to cut spending on necessities, sell assets, or use credit. In extreme cases, healthcare payments could have devastating consequences

on the household economic status that would push them into extreme poverty. Using nationally representative surveys from three Arab countries, namely, Egypt, Jordan, and Palestine, this paper examines the incidence, intensity and distribution of catastrophic health payments, and assesses the poverty impact of out-of-pocket health payments (OOP). The OOP for healthcare were considered catastrophic if it exceeded 10% of a household's total expenditure or 40% of non-food expenditure. The poverty impact was evaluated using poverty head counts and poverty gaps before and after OOP. Results showed that OOP exacerbate households' living severely in Egypt, pushing more than one-fifth of the population into a financial catastrophe and 3% into extreme poverty in 2011. However, in Jordan and Palestine, the disruptive impact of OOP remains modest over time. In the three countries, the catastrophic health payment is the problem of the better off households. Poverty alleviation policies should help reduce the reliance on OOP to finance healthcare. Moving toward universal health coverage could also be a promising option to protect households from the catastrophic economic consequences of health care payments.

Matthew, Adegboye and Fasina (2015) looked at government spending on health and its effect on health outcomes in Nigeria between 1979 and 2012. The study employed the Johansen Co-integration and the Vector Error Correction Model (VECM) econometric techniques to determine the long-run relationship between public spending on health and health outcomes in Nigeria. The study found out that public spending on health has a significant relationship with health outcomes in Nigeria. It was also discovered that environmental factors such as carbon dioxide emissions which was used in this study affects individuals' health.

Osundina, Ebere and Osundina (2014) disaggregated government spending to see the effect of government health expenditure on poverty in Nigeria using co-integtration and VEC methods of econometrics to analyze time series data of 43 years. The researchers found expenditure on health to be insignificant to poverty reduction in Nigeria.

Furthermore, the study of Osundina, Ebere and Osundina (2014) is not in tandem with the study of Awe (2013) who examined the impact government

expenditure on poverty reduction in Ekiti State, Nigeria, using chi-square test and found expenditure on health to have a significant and positive impact on poverty reduction in Ekiti State.

Eneji, Juliana and Onabe (2013) examined the relationship between healthcare expenditure, the health status and national productivity in Nigeria. They focused on the public healthcare expenditure from 1999-2012 for objective analysis. They used questionnaires to elicit responses. They discovered that the causal relationship is weak in the Nigeria scenario. If people are a country's principal asset, then their health status defines the course of development, and their health characteristics determine the nature and direction of sustainable human development.

Bales (2013) investigated the impact of ill health on labour supply, earned income, health expenditures and consumption and coping through adjustment to household asset holdings and unearned income by use of fixed effect Poisson regression for Vietnam. Bales found that illness reduced significantly labour days of households faced with illness and had insurance and households faced with onset of disability. However, the wage income for these households was not affected by reduced labour days. On the other hand, health shocks had significant effects on out-of-pocket health spending due to illness and disability, of which it was lower for households with health insurance. Household consumption per capita for food and non-food items remained at the same level implying a coping mechanism. Households smoothed consumption by borrowing, transfers, dis-saving and sale of assets. Reduced labour supply due to onset of disability significantly affected the poor. According to the study findings, the poor self-employed non-farm income was negatively affected by illness to uninsured adult and onset of disability, but positively affected by the death of an adult in the household possible due to adjustment to health shocks. The study by Bales for Vietnam, while showing the importance of increasing population under health insurance coverage is crucial for mitigating the effects of health shocks especially among the uninsured poor; is based on household survey which is subject to sampling and non-sampling errors.

Olakunde (2012) examined the different financing mechanisms that have been used in Nigeria, including the National Primary Health Care Development Fund proposed for increasing the resource allocation to primary health care. The study drew on available and relevant literature to provide an overview and the state of public health care financing in Nigeria. The researcher concluded by recommending the need for Nigeria to explore and strengthen other mechanisms of health system and shift focus from out-of-pocket payments, address the issues that have undermined public health care financing in Nigeria, improve on evidence-based planning, and prompt implementation of the National Health Bill when signed into law.

Asghar, Hussain and Rehman (2012) studied the long run impact of government spending in various sectors on poverty reduction in Pakistan for the period of 1972-2008 applying co-integration and Error Correction Mechanism (ECM). Poverty as the dependent variable was measured using headcount index while the independent variables were: government spending on health government spending on education; government spending on law; order and government spending on economic and community service and budget deficit. The study found that the coefficient for government spending on health was insignificant.

Olaniyan and Lawanson (2010) looked at Nigeria and used the National Health Accounts (NHA) framework to investigate the differences in the Northern and Southern regions patterns of health financial flows, and the implication for health outcomes in the regions. The study was based on the federal structure of governance in the country which has shaped both health financing and delivery in Nigeria with all the three tiers of government involved in health care delivery organization, management and financing. The study found that health care financing in both the North and South of Nigeria is heavily dependent on household and the proportional share by the household is disproportionately against the North because of the higher poverty incidence in the north. With lower health financial flows in the North, the health outcomes in this region remain relatively significantly poor. This raises equity concerns as those who are least able to pay are made to bear the greater burden. The current overburden of the household requires exploration of alternative financing mechanisms by the government. Public facilities are

the main users of the health funds in the country accounting for an average of more than 60% of all funds spent in the health sector. The dominance of the public providers is more prominent in the North, where more than 71% of health services are spent in public facilities, while both the public and private facilities in the South receive approximately equal share of the health spending in the region.

Akram and Khan (2007) carried out a research to measure the incidence of government spending on health in Pakistan at provincial, both rural and urban level; using the primary data of the Pakistan Social Standard Living Measures Survey (PSLM), 2004-05, and by employing the three-step Benefit Incidence Approach (BIA) methodology. The study reviewed the national policies emphasizing health services as well as the trend in access to and public sector spending on health care facilities in Pakistan. The study also explored the inequalities in resource distribution and service provision against the government health expenditures. The rural areas of Pakistan are the more disadvantaged in the provision of the health care facilities. The expenditures in health sectors are overall regressive in rural Pakistan as well as at provincial and regional levels. Mother and Child subhead is regressive in Punjab and General Hospitals and Clinics are regressive in all provinces. They discovered that only the Preventive Measures and health facilities sub-sector is progressive in Pakistan. Public health expenditures are pro-rich in Pakistan.

Scheil-Adlung, et al (2006) conducted a comparative analysis on the impact of social health protection on access to health care, health expenditure and impoverishment for South Africa, Senegal and Kenya using 2003 household survey data. The health insurance coverage is low in these countries with South Africa having 12.3 per cent of population covered, Kenya the coverage is 9.1 per cent and Senegal 4.2 per cent and in all the three countries the lower income group has very few people covered. Applying a multiple logistic regression, the study established that insured households in Senegal are less likely to face catastrophic expenditure i.e. medical expenditure equal to or exceeding 40 per cent of a household's non-subsistence spending; than the uninsured. In South Africa catastrophic expenditure was prevented for the richest quintile while for Kenya there was no significant impact given the national health insurance caters mainly for the formally employed. For all the

three countries, residence in a rural area where most poor people reside increases likelihood of catastrophic expenditure. In Senegal children less than five years are more likely to face catastrophic expenditure while in Kenya that was not the case due free medical services for children under five years. Across the three countries the likelihood of descending into poverty due medical expenditure is between 1.5 per cent and 5.4 per cent of the households. The study also found that health related expenditure widens the poverty gap; in South Africa the poverty gap increased from 37 per cent of the poverty line to 41 per cent; in Kenya it increased from 25 per cent to 27 per cent; and in Senegal it increased from 54 per cent to 64 per cent.

Sinnathambu (2004) examined whether an increase in government expenditure on health has been accompanied by greater equality between the poor and non-poor in Thailand. In the period 1992-2000, real government expenditure grew on average 10 per cent per annum, the number of health services personnel and facilities increased and the rise was far greater than the growth in population or incomes per capita. However, in the distribution of public resources on health the bottom quintile of the population received disproportionately less government spending. The widening inequality between the poor and non-poor could partly be explained by large differences in the mix of health resources used by each province in the country over time and the associated costs involved. These phenomena imply that improving equity in public health care provision needs to be given higher priority in government spending.

In the study to find out changes in income of the poorest quintile as result of per capita income changes, Dollar and Kraay (2002) found that social spending on health and education not to be significantly related to economic growth which is positively related to changes in income of the poorest. Dollar and Kraay noted that social spending on health and education if effective and well-targeted to the poor may increase incomes of the poor despite their findings. The study explained that social spending on health and education in most developing countries, mainly benefit the middle class and the rich. In investigating the relationship between poverty and social spending, health and education are lumped together in most studies.

Methodology

The study is quantitative in nature. The ex-post facto research design was employed. The study employed time series data for the analysis. Data adopted in the study were generated from the Central Bank of Nigeria annual statistical bulletin of various issues and World Bank World Development Indicator.

Model Specification

This section specifies an econometrics model aimed at capturing the relationship between public health expenditure and poverty in Nigeria. The model for this study is anchored on the Keynesians framework which posits that government expenditure (fiscal policy-FP) principally influences income and output growth. That is, an increase in government expenditure will increase output and employment leading to reduction in poverty incidence. Put succinctly, A = f(FP); where A is output growth which in turn will reduce poverty and FP represents government expenditure (fiscal policy variables) - government expenditure on health. However, the model for the study and the apriori, expectations are specified as:

$$POVI_t = \alpha_0 + \alpha_1 GREH_t + \alpha_2 GCEH_t + \alpha_4 EMPR + E_t \quad 1$$

Where: POVI=Poverty Incidence, GREH = Government Recurrent Expenditure on Health, GCEH = Government Capital Expenditure on Health, EMPR= Employment Rate, α_0 = intercept Parameter, E= Error Term, α_1 - α_3 = Slope Parameters.

On the apriori, it is expected that; α_1, α_3 and $\alpha_2 < 0$.

Techniques of Data Analysis

The techniques that were employed to analyze our data are: unit root test via Augmented Dickey Fuller test (ADF) and Autoregressive Distributed Lag (ARDL). The ADF unit root test helps to ascertain stationarity of the variables, and the general form of the ADF is presented thus:

$$\Delta y_t = \alpha_0 + \alpha_1 y_{t-1} + \Sigma\alpha_1 \Delta y_i + \delta_t + U_t \quad 2$$

Where: y is a time series, t is a linear time trend, Δ is the first difference operator, α_0 is a constant, n is the optimum number of lags in the independent variables and U is random error term. In order to examine the short-and long-term relations between the public expenditure on health and poverty in the model, Autoregressive Distributed Lag (ARDL) was used. The reason is that estimates provided by ARDL method avoid problems such as autocorrelation

and endogeneity, they are unbiased and efficient. Moreover, Autoregressive Distributed Lag (ARDL) is a long-established method of estimating co-integrating relationships, such as Engle-Granger (1987) or Johansen's (1991, 1995) method, or single equation methods such as Fully Modified OLS, or Dynamic OLS either require all variables to be I(1), or require prior knowledge and specification of which variables are I(0) and which are I(1). To do away with this problem, Pesaran and Shin (1999) and Smith (2001) showed that co-integrating systems can be estimated as ARDL models, with the advantage that the variables in the co-integrating relationship can be either I(0) or I(1), without needing to pre-specify which are I(0) or I(1). Pesaran and Shin also noted that unlike other methods of estimating co-integrating relationships, the ARDL representation does not require symmetry of lag lengths; each variable can have a different number of lag terms. Therefore, the ARDL model for this study is presented thus:

$$\Delta POVI_{t,j} = C_0 + C_1 POVI_{t-1,j} + C_2 GCEH + C_3 GREH_{t-1,j} + C_4 EMPR_{t-1,j} + \sum_{i=1}^{n1} a_{1i,j} \Delta POVI_{t-1,j} + \sum_{i=0}^{n2} a_{2i,j} \Delta GCEH_{t-1,j} + \sum_{i=0}^{n3} a_{3i,j} \Delta GREH_{t-1,j} + \sum_{i=0}^{n4} a_{4i,j} \Delta EMPR_{t-1,j} + \mu_t \quad 3$$

Results and Discussion

The empirical analysis focused mainly on estimation of the regression model and post estimate tests.

Unit Root Test Result

The test for the stationarity status of all variables in the model to establish their order of integration proceeds the ARDL bounds test, the reason for this is to be sure that the variables are stationary at level 1(0) and first difference 1(1) only but not second difference I(2) so as to avoid spurious regression results. Inferences in the bounds testing procedure through the computed F-statistics for bounds testing are based on the assumption that the variables are level 1(0) or first-difference 1(1) stationary. Therefore, the ADF method was used to test for the stationarity of the variables in the model. See Table 4.1 below.

Table 4.1: Augmented Dickey-Fuller Unit Root Test

Variables	ADF Test Statistic @ Level	ADF Test Critical Value @ 5% (level)	Order of Integration	ADF Test Statistic @ 1st Difference	ADF Test Critical Value @ 5% (1st Diff.)	Order of Integration
EMPR	-0.199828	-2.948404	Not Stationary	-8.074184	-2.951125	1(1)
GCEH	-0.604229	-2.957110	Not Stationary	-3.046488	-2.960411	1(1)
GREH	-3.352094	-1.955681	1(0) stationary	-	-	1(0)
POVI	-5.773296	-3.544284	1(0) stationary	-	-	1(0)

Note: EMPR, GCEH, GREH and POVI as earlier defined
Source: *Authors' Computed Result from (E-views 9.0)*

The stationarity test result presented in Table 4.1 showed that at 5% level of significance, the variables were stationary. For instance, GREH and POVI were stationary at level 1(0), i.e., GREH and POVI were stationary in their levels at 5% ADF test. While EMPR and GCEH were stationary at first differences 1(1). That is, they became stationary at first difference (integrated of order one). Given that the variables were integrated of order 1(0) and 1(1). The requirement to fit in an ARDL model to test for long run relationship is satisfied.

Table 4.2 ARDL Bounds Test for Co-integration

Model		**F-Statistic** = 6.778660
F(POVI, GCEH, GREH EMPR)		K = 3
Critical Values	Lower Bound	Upper Bound
10%	2.01	3.1
5%	2.45	3.63
1%	3.42	4.84

Source: *Authors' Computed Result from (E-views 9.0)*

Since the variables were integrated of order 1(0) and 1(1), and the sample size is small, Narayan (2004) critical values for small sample sizes ranging from 30 observations to 80 observations was adopted. From the ARDL bounds test result, it is clear that there is a long run relationship amongst the variables (POVI, GCEH, GREH and EMPR). This is because the computed F-statistic of about 6.78 is higher than the upper critical bounds at 1%, 5% and 10% critical values. This provided evidence to reject the null hypothesis of no co-integration at 1%, 5% and 10% significance level for the poverty model. It can therefore be concluded from the ARDL bounds test that there is a long-run relationship among the variables. Therefore, this study illustrate that health care expenditure has a long run relationship with poverty incidence in Nigeria. Following the establishment of long-run co-integration relationship among the variables, the long-run and short-run dynamic parameters for the variables were obtained.

Model Estimation Results

Error Correction Test Results

Table 4.3 Estimated ARDL Long Run Coefficients. Dependent Variable: GDP ARDL (3, 0, 0, 0)

Regressors	**Coefficient**	**t-Statistic**	**P-Value**
LOG(GCEH)	0.514055	0.147339	0.8840
LOG(GREH)	6.516756	1.965056	0.0598
EMPR	0.151495	1.515885	0.1412

Source: *Authors' Computed Result from (E-views 9.0)*

The estimated ARDL long run coefficients revealed that government capital expenditure on health has positive but insignificant relationship with poverty in Nigeria. Government recurrent expenditure on health has a positive and significant relationship with poverty. Employment rate has a positive and insignificant relationship with poverty. From the result, it can be deduced that government capital expenditure on health, recurrent expenditure on health and employment rate were wrongly signed (i.e., positive) based on economic theory. This does not conform to the apriori expectations. In addition, only recurrent expenditure on health was statistically significant at conventional level. Meaning that, a good staff welfare system in the health sector will reduce poverty in the long-run.

Table 4.4: Error Correction Representation for the Selected ARDL Model
ARDL(3, 0, O, 0)

Regressors	Coefficients	t-Statistic	P-Value
LOG(GCEH)	0.132322	0.148123	0.8833
LOG(GREH)	1.677465	1.306991	0.2022
EMPR	0.038996	2.148351	0.0408
ECM (-1)	-0.257408	-1.841389	0.0766
R-squared = 0.977850 Adjusted R-squared = 0.973749	Akaike info criterion = 5.074710	Schwarz criterion = 5.346803	Durbin-Watson stat = 1.986165

Source: *Authors' Computed Result from (E-views 9.0)*

Table 4.4 shows the result of the short-run dynamic coefficients associated with the long-run relationships obtained from the ECM equation. The Error Correction Term in the model has the right sign (i.e., negative) though statistically significant at 10%. This indicates adjustment to long-term equilibrium in the dynamic model. Put differently, it indicates it adjustment from short run equilibrium to long-run equilibrium in the dynamic model. This implies that deviations from the short-term poverty rate adjust quickly to long run equilibrium. The Durbin Watson (DW) value of 1.986165 which is approximately 2.0, suggests that the model is free from autocorrelation.

Moreover, the coefficient of government capital expenditure on health in the short- run has the wrong sign (i.e., positive) based on economic theory and statistically not significant at conventional level (i.e., 5%). Meaning that, the null hypothesis was not rejected. Thus, it was concluded that government capital expenditure on health has a positive relationship with poverty but has no significant impact on poverty in Nigeria.

Furthermore, the coefficient of government recurrent expenditure on health in the short- run has the wrong sign (i.e., positive) based on economic theory and statistically not significant at conventional level (i.e., 5%). Meaning that, the null hypothesis was not rejected. Thus, it was concluded that government recurrent expenditure on health has a positive relationship with poverty but has no significant impact on poverty in Nigeria. Meaning that, government capital and recurrent expenditure on health in the short run has not reduced

poverty in Nigeria. This is not far from reality because the health sector has one of the lowest annual budget allocations in Nigeria. However, this result is consistent with the outcome of the studies of Osundina, Ebere and Osundina (2014) that government expenditure on health has insignificant relationship with poverty in Nigeria.

In addition, employment rate in the short- run has the wrong sign (i.e., positive) based on economic theory but statistically significant at conventional level (i.e., 5%). Meaning that, the alternative hypothesis was not rejected. Thus, it was concluded that employment rate has a positive significant impact on poverty in Nigeria.

Post Estimate Tests

Post estimate tests were employed to examine the reliability of the estimated model for prediction or policy purposes. Specifically, Ramsey Reset Test, Breusch-Godfrey Serial Correlation LM Test, Heteroskedasticity Test: Breusch-Pagan-Godfrey and normality tests were applied. The post estimate tests revealed that the ARDL model passed all the diagnostic tests considered. The results of these tests are reported T able 4.5 below.

Table 4.5 Ramsey Test, Serial Correlation LM Test and Heteroskedasticity Test Results

Test	**F-Statistic**	**t-Statistic**	**Obs R-Square**	**Prob. Value**
Ramsey Reset Test	2.443140	1.563055	-	0.1301
Breusch-Godfrey Serial Correlation LM Test	0.595042	-	1.498643	0.5592
Heteroskedasticity Test: Breusch-Pagan-Godfrey	0.769231	-	4.974876	0.6009

Source: *Authors' Computed Result from (E-views 9.0)*

Conclusion and Recommendations

The study on public health expenditure and poverty in Nigeria from 1980-2015 is important to the Nigerian economy, because public expenditure plays an important role in the growth and development process. This work has used data on government capital expenditure on health, government recurrent expenditure on health, employment rate and poverty incidence from CBN Statistical Bulletin and World Bank World Development Indicator and the adoption of the ARDL method of econometrics to capture the short and long-run relationship between endogenous and exogenous variables. The results revealed that government capital and recurrent expenditure on health have positive but insignificant relationship with poverty in Nigeria both in the short run and long run. This finding is consistent with the studies of Osundina, Ebere and Osundina (2014) who disaggregated government spending to see the effect of government health expenditure on poverty in Nigeria using co-integration and VEC methods of econometrics to analyze time series data of 43 years and found expenditure on health to be insignificant to poverty reduction in Nigeria. Employment rate has a positive and insignificant relationship with poverty in the long run. While in the short run, employment rate has a positive and significant relationship with poverty in Nigeria. The study concluded that public health expenditure has not significantly contributed to the reduction of poverty in Nigeria. Therefore, government should increase its health care expenditure in the proportion to the number of people living below poverty line in Nigeria. Momentously, to protect people against poverty, free basic health care services are required. This is because the poor people need to be protected from health shocks.

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