

Implication of Poverty on Health Status in Nigeria

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Abstract:-The study examined the implication of poverty on health status in Nigeria. The essentiality of the study was as a result of current growing rate of poverty that has greater implication on both life expectancy and infant mortality rates. Thus, the objectives of the study were to examine the impact of poverty on life expectancy in Nigeria and as well examine the impact of poverty on infant mortality rate in Nigeria. To achieve the stated objectives, secondary data on Nigeria from World Bank data bank were collected on poverty gap, life expectancy and infant mortality rate. The study used the ADF unit root test, co-integration and granger causality tests to analyze the collected data. The ADF unit root test of the series showed that the variables were stationary at first difference. Again, the results of Engle Granger co-integration test result showed that there is a long run relationship amongst the variables. Also, Pairwise Granger causality test result showed that poverty affects both life expectancy and infant mortality rate. The paper concluded that there is high rate of poverty in the Nigerian economy and this variably will have a negative effect on the health status which will in the long run affect economic growth. Based on the findings, study recommends that Nigerian government should implement welfare programmes and increase fiscal expenditures to create employment that will check the growing rate of poverty. Also, emphasis should be placed on the capital expenditure on health sector, in this will stimulate the rapid development of the sector.

Keywords: Poverty, Health Status, Income Inequality, Mortality and Life Expectancy.

I. INTRODUCTION

Nigeria is a large country which occupies about 923768 km² with a population of 190,632, 261 million estimated based in world fact book (C.I.A., 2018). Nigeria has a huge and vast availability of Natural resources which has generated more than \$500 billion, since its inception to crude oil exportation (Xavier & Subramanian, 2003). Yet achieving equitable distribution of income and alleviating poverty has always been some major development objectives. Hence, successive governments has engaged in various poverty reduction programmes such National Poverty Eradication Programme, Nigerian Economy Empowerment Developmental Strategy and Nigerian Millennium Goals amongst others.

With major economic reforms since the inception of democracy in 1999, Nigeria's economy has been experiencing growth in some of the sectors. Particularly, agriculture and telecommunication amongst others. But the growths is yet to translate into significant decline in poverty level as well as improved health care. This scenario corroborated the fact that

over 68% of Nigeria's 190 million still live in extreme poverty (Obayori, Udeorah & Aborh, 2018). Hence, both poverty and health are important measures of personal well-being and they are closely related. National poverty rates for the surveys conducted were 28.1 percent in 1980, 46.3% in 1985 and 67.2% in 2017. It can be seen that poverty gap has widen. The scourge of poverty gap goes beyond mere measurement of household expenditure or welfare. It has different dimensions and may include inadequate infrastructure, illiteracy, ignorance insecurity, social and political exclusion, inadequate access to government utilities and service which generally leads to poor health (World Bank, 2016; Edoumiekumo, Karimo & Tombofa, 2014). However, the situation worsened, in 2017, with total of dependency ratio raised to 88.2% death rates, 12.4 deaths/1000, maternal mortality ratio of 814 deaths/100,000 live births, total infant mortality rate of 69.8 deaths/1,000 live births with total life expectancy at birth, recorded at 53.8 years with total health expenditure 3.7% of GDP. (CIA, 2018).

Arising from above, the paper studied the implication of poverty on health status in Nigeria within the study period of 1980 to 2017. In particular, the objectives of the study are to: examine the impact of poverty gap on life expectancy in Nigeria and determine the impact of poverty-gap on infant mortality rate in Nigeria. The remaining parts of this paper discussed literature review, methodology, results and conclusion.

II. REVIEW OF LITERATURE

The correlation between poverty gap and health status is a strongly examined subject in Health Economics. Additionally, contemporary studies modeled the fluctuations of these correlations and question the existence of causal effect of income changes on health status (Gardner & Oswald, 2007).

According to the natural-circumstantial theory poverty could be caused by variables such as geographical location and the natural endowment of the individual's environment, unemployment, old age amongst others. Thus, poverty reduction can be attained without substantial changes in the larger economic, social and political environment.

Empirically, Benzeval and Webb (1995) adduced evidence from eight different countries in western Europe, North America and Australia, they observed one existing problem with existing studies of how low income, poverty, manual occupational class and how educational attainment are often treated as interchangeable phenomena. They aim to develop

an understanding of the causal nature of the relationship between socio-economic status and health. They observed that low income and poverty lead to poor health.

Preston (1975) surveyed global patterns of GDP and life expectancy and found a non-linear relationship between income per head and life expectancy, at birth, life expectancy at age 5 and on the rate of infant mortality in developed countries. Flegg (1982) also found significant effects of income inequality on child mortality in developing countries. Waldmann (1992) using the same data demonstrate a direct effect of income inequality on child mortality at the micro-economic level. He found that, conditional on mean income, the share of income going to the poorest 20 percent of the population decreased infant mortality, but the share of income going to the top 5 percent increased infant mortality.

Deaton (2001) in their study showed that there is no relationship between income inequality and mortality at either provincial or metropolitan area level in Canada. Apata, Apata, Igbalajobi and Awoniyi, (2010) examined determinants of rural poverty in Nigeria using probit model on a sample of 500 smallholder farmers, found that access to education improved probability of existing poverty. Furthermore, they found that the key role of education in poverty reduction is further underscored by evidence from farmers' exposure to workshops and seminars.

Obayori, Udeorah and Aborh (2018) examined the impact of human capital investment on poverty reduction in Nigeria using secondary data were collected from CBN statistical bulletin and United Nations and World Bank reports. The econometric methods of unit test and GMM test were used to analyze the collected data on education expenditure, health expenditure and poverty level in Nigeria. Based on empirical results; the KPSS stationarity test showed that all the variables are stationary and the GMM result showed that both government expenditure in education and health were negatively and significantly related with poverty level were positively and significantly related.

III. METHODOLOGY

The study adopted a quasi-experimental research design for the purpose of determining variation in dependent variable as a result of changes in independent variables. The time series data for the study was obtained from World Bank data bank for the year 1980-2016. Thus, the data required are poverty gap (PVG), life expectancy rate (LER) and infant mortality rate (IMR). The econometrics methods of ADF unit root test, Engle Granger co-integration test and granger causality test were used for the analysis.

Unit Root Test

Unit root test involves testing the order of integration of the different series under study (Dickey and Fuller, 1979).

Therefore, a variable is considered to have a unit root, particularly first difference if the ADF critical value is greater than the variable critical value at 1%, 5% and 10%. Thus, the general form of ADF is estimated by the following regression

$$\Delta PVG_t = \theta_0 + \theta_1 \Delta PVG_{t-1} + U_t \quad (1)$$

Where: Y is a time series under consideration, t is a linear time trend, θ is the first difference operator, θ_0 is a constant, t-1 is the optimum number of lags in the independent variables and U is random error term.

Co-integration Test

Co-integration suggests that two or more variables have no long-run relationship. Co-integration is conducted based on the test proposed by Granger (1981). It's starting point in the vector auto regression (VAR) of order P given by

$$PVG_t = \mu + \Delta_1 PVG_{t-1} + \dots + \Delta_P PVG_{t-P} + U_t \quad (2)$$

Where:

PVG_t is an nx1 vector of variables that are integrated of order commonly denoted (1) and U_t is an nx1 vector of innovations.

The VAR model can be rewritten as

$$\Delta PVG_t = \mu + \eta_{Y,t-1} + \sum_i \tau_i \Delta PVG_{t-1} + U_t \quad (3)$$

The Granger Causality Test

Granger causality test shows the direction of effect between two variables. Such effect could be bidirectional, unidirectional and independence causality. The general form of granger causality is estimated by considering two variables PVG and LER in the following regressions:

$$PVG_t = \sum_{t=1}^n \Psi_1 LER_{t-1} + \sum_{t=1}^n \Omega_1 PVG_{t-1} + \epsilon_{1t} \quad (4)$$

Where it is assumed that the disturbances e_{1t} and e_{2t} are uncorrelated, the two variables case is called bilateral causality. Also, from the PVG and LER in the equations, unidirectional causality from PVG to LER exists if the set of lagged LER coefficients in (4) is not statistically different from zero

IV. RESULTS

The Unit Root Test

The test of stationary of the variables is required to stabilize the data before they are used for regression analysis in order to avoid spurious results.

Table 1: Augmented Dickey-Fuller Unit Root Test

Variables	ADF Test Statistic @ Level	ADF Test Critical Value @ 5% (level)	Order of Integration	ADF Test Statistic @ 1 st Difference	ADF Test Critical Value @ 5% (1 st Diff.)	Order of Integration
PVG	-2.21582	-2.94584	Not Stationary	-7.66705	-2.94584	1(1)
LER	-1.28499	-2.94584	Not Stationary	-5.79478	-2.95112	1(1)
IMR	-2.19920	-2.94584	Not Stationary	-7.86818	-2.94584	1(1)

Note: PVG, LER and IMR as earlier defined

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

The stationarity test result presented in Table 1 showed that at 5% level of significance, the variables were stationary at first difference as their respective ADF statistics were greater than 5 percent critical values. Thus, the subsequent results that were obtained were free from problem of spuriousity.

The Co-integration Results

The conception of co-integration as put forward by Granger (1981) and it entails the determination of the long-run associations among non-stationary time series. The requirement for applying the standard procedure of the co-integration test to any series is that the variables under study must be integrated of the same order or stationary. Thus, the study applied the Engle and Granger two-step technique.

Table 2: Engle Granger Co-integration Result

Variable	Coefficient	t-statistics	Prob	Critical Values
RESID(-1)	-0.639908	-4.06468	0.0003	0.05
Engle-Granger tau-stat.		-4.06468	0.0425	0.05

Source: Researcher's Computation from E- view 9.0

The result in Table 2 showed that at the 5% probability level of significance, Engle-Granger tau-statistics value was -4.06468 with corresponding prob, of 0.0425. Thus, the Engle-Granger cointegration tests reject the null hypothesis of no cointegration. This implies that cointegration exist among the

set of determining factors. Hence, there exists a long run equilibrium relationship between the explanatory variables in the model.

Granger Causality Test

Table 3: Pairwise Granger Causality Test Result

Null Hypothesis:	Obs	F-Statistic	Prob.
LER does not Granger Cause PVG	36	0.24596	0.6232
PVG does not Granger Cause LER		2.81515	0.1028
IMR does not Granger Cause PVG	36	4.90463	0.0338
PVG does not Granger Cause IMR		2.69142	0.1104

Source: Researcher's Computation from E- view 9.0

In order to find out the direction of the effect of socio-economic implication of poverty on health status, the Pairwise Granger Causality Test was conducted at 10% significant level. The results presented on Table 3 showed a bidirectional causality between the variables; infant mortality rate (IMR) and poverty gap. But there is a unidirectional causality between life expectancy rate (LER) and poverty gap (PVG). Meaning that infant mortality rate granger causes poverty and also poverty gap granger causes infant mortality rate. Again,

poverty gap granger causes life expectancy rate. Meaning that the poverty affects both infant mortality rate and life expectancy rate negatively.

Discussion of Findings

This section discusses the findings of the study based on the co-integration and granger causality results result in order to know whether or not the stated objectives were achieved.

The Socio-Economic Implication of Poverty on Life Expectancy Rate: The analysis of the empirical result showed that there is a long run relationship between poverty and life expectancy rate well as significant effect of poverty on life expectancy. The policy implication of the finding is that prevalence of poverty has negative effect on life expectancy as an indicator of health.

The Socio-Economic Implication of Poverty on Infant Mortality Rate: The analysis of the empirical result showed that there is a significant and long run relationship between poverty and infant mortality rate. The policy implication of the finding is that, prevalence of poverty, the citizen living under poverty lines in Nigeria will not be able to afford the cost of both public and private health care services. Thus, an increase infant mortality rate.

V. CONCLUSION

The study examined the socio-economic implication of poverty gap on health status in Nigeria. The essentiality of the study was as a result of current growing rate of poverty that has greater implication on both life expectancy and infant mortality rates. Thus, the objectives of the study were to examine the impact of poverty on life expectancy in Nigeria and as well examine the impact of poverty on infant mortality rate in Nigeria. To achieve the stated objectives, secondary data from World Bank data bank were collected on poverty gap, life expectancy and infant mortality rate in Nigeria. The study used the unit root test in order to establish the stationarity of the variables. The co-integration and granger causality tests were used to establish the long run relationship as well as direction of effect amongst the variables. The ADF stationarity test of the series showed that the variables were stationary at first difference. Again, the results of Engle Granger co-integration test showed that there is a long run relationship amongst the variables. Also, Pairwise Granger causality test result showed that poverty affect both life expectancy and infant mortality rate.

The study concludes that there is high rate of poverty in the Nigerian economy and this invariably have negative effect on the health status. Based on the findings of the study, it is

recommended that Nigeria government should implement welfare programmes that will help to check the growing rates of poverty in Nigeria. Also, emphasis should be placed on the capital expenditures on health sector as this will facilitate rapid development of the health sector.

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