

PUBLIC HEALTH EXPENDITURE AND HEALTH OUTCOME: A STUDY OF INFANT MORTALITY RATE IN KOGI STATE

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Abstract

The study examined public health expenditure and infant mortality rate in Kogi State using time series data that spanned the period of 1986 to 2020 sourced from State Bureau of Statistics, Lokoja. The study used Autogressive Distributed Lag (ARDL) estimation technique Based on the result, it was revealed increase in Public Health Recurrent Spending led decrease in Infant Mortality Rate (IMR) in Kogi State. This revealed that Public Health Recurrent Spending has negative impact on Infant Mortality Rate (IMR) in Nigeria. Hence, Public Health Recurrent Spending had significant negative impact on Infant Mortality Rate in Kogi State within the study period. The increase in Public Health Capital Spending led to decrease in Infant Mortality Rate (IMR) in Kogi State. This implied that Public Health Capital Spending had significant negative impact on Infant Mortality Rate (IMR) in Kogi State. Hence, Public Health Capital Spending had significant negative impact on Infant Mortality Rate in Kogi State within the study period. The study based on the findings recommended that government should ensure there is substantial increase in government expenditure on health in order to achieve the desired level of infant mortality rate in Kogi State. This can be achieved through increase in both public recurrent and capital expenditure on health in Nigeria. Finally, government should design a long term policy framework to enhance proper utilization of public health expenditure in terms of both recurrent and capital towards reducing infant mortality rate to the barest minimum level in Kogi State

Key Words: Public, health, expenditure, infant and mortality rate

Introduction

Infant mortality in Nigeria has always been on the rise and poses a threat of infant death before the age of one year. Indeed, infant mortality in Nigeria has become high in the European region (Hug & Sharrow, 2017). Although, in recent times, the nations of Nigeria had achieved a significant

increase in infant survival rates since the setting of Sustainable Development Goals (SDGs). Infant mortality in Nigeria is considered the highest among all the international regions. Thus, various socio-economic factors were considered responsible for the high infant mortality rate in Nigeria. Issa and Ouattara (2015) noted that some of the reasons commonly seen in existing researches include; the level of education of women, per capita income, general environmental cleanliness and health expenditure. Presently, the aim of public health expenditure is to ensure a healthy life and support the benefit for all countries set to achieve reduction in infant mortality rate by 2030. Hence, the objective of ensuring a healthy life and supporting well-being for all at all ages (Blanc, 2015). Particularly, a significant increase in health funding is expected to ensure decrease in infant mortality rate for livelihoods (Kumar & Vivekadhish, 2016).

Public health expenditure has also been considered in extant studies as one of the main drivers for achieving reduction in infant mortality being one of the vital essential elements of the sustainable development goals (Blanc, 2015). Public health expenditure is one of the main drivers of health plan. This is because health plans through appropriate health funding aids the qualification of the health system to maintain and expand the human benefit. Thus, without funding, trained and appropriate health professionals and medical equipment through public health funding, health promotion or disease prevention would not take place (World Health Organization (WHO), 2019). Financing the health system will not only lead to life migration, general employment, migration policy and social stability and will contribute to economic growth and production (WHO, 2017). To this end, public health expenditure is supposed to enhance reduction in infant mortality rate in Kogi State. However, despite increase in public health expenditure in this state in Nigeria, Kogi State recorded shocking magnitude due to high child deaths (Elem & Nyeche, 2016). In order to address the issue of high infant mortality rate in Kogi State, the Sustainable Development Goals (SDGs) as an exertion through the United Nations set up after the Millennium Development Goals (MDGs) timeline in 2015 was saddled with the target to ensure development in infants' health and promote reduction in infant mortality rate by 2030. Despite this measure, Kogi State records on the daily basis high loss of children's lives due to complications during pregnancy (Nwokocha, 2018). In Kogi State, 176,000 deaths of infants are recorded annually (World Health Organization, 2018).

The prevalence of infant mortality in Kogi State has become very disturbing as every birth procedure becomes a potential incidence, from the report above; there is at least one case of infant mortality in every 20 live births. This challenge may not be unconnected to the state's poor infant health care system despite increase in public health expenditure year on year (Joseph, 2018). It is against this backdrop the study intends to evaluate public health expenditure and infant mortality in Nigeria.

Literature Review

Conceptually, public health expenditure refers to expense on health care incurred by public funds. However, public funds are state, regional and local government bodies and social security schemes. Public health expenditure includes publicly financed investment in health facilities plus capital transfers to private sectors for hospital construction and equipment (World Health Organization, 2018). According to World Health Organization (2010), public health care expenditure consists of recurrent and capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and non-government organizations) and social (or compulsory) health insurance funds. Public health expenditure consists of the following; recurrent expenditure which refers to all payments other than for capital assets, including on goods and services, (wages and salaries, employer contributions), interest payments, subsidies and transfers. Capital expenditure refers to payments for acquisition of fixed capital assets, stock, land or intangible assets. A good example would be building of schools, hospitals or roads. However, it is important to note that much donor-funded "capital" expenditure, though referring to projects, includes spending on non-capital payments.

Public recurrent expenditure are all payments other than for capital assets, including on goods and services, (wages and salaries, employer contributions), interest payments, subsidies and transfers (Lawal, 2017). Public capital expenditure is the money spent by the government on the development of machinery, equipment, building, health facilities, education, etc. It also includes the expenditure incurred on acquiring fixed assets like land and investment by the government that gives profits or dividend in future (Hassan, 2019).

Infant mortality includes deaths that occur between birth and exact age 5 (Ouma, Bashar & Tuno, 2014). Generally, all deaths in childhood occur before age 5, thus the probability of dying by age

5 can be regarded as a good index of overall level of child mortality. Infant mortality rate is the probability for a child born in a specified year to die before reaching the age of five, if subjected to current age-specific mortality rates. It is usually expressed as number of deaths per 1,000 live births (Okolo, Adewunmi & Okonji, 2017). For the layman, infant mortality simply means the death of a child before his/her 5th birthday.

Empirically, Christopher (2018) examined the effects of public health spending on maternal mortality in Nigeria. It is informed by the escalating nature of maternal mortality outcomes in Nigeria. A panel data regression analysis was employed from the years 2003 to 2015 from selected 25 States in Nigeria. The study adopted instrumental variables strategy as a solution for possible endogeneity for its econometric analysis. After controlling for other relevant covariates like female per capita income, female literacy rate, and urbanization, we realized that public health expenditure is a vital factor in reducing incidences of maternal mortality in Nigeria.

Dhrifi (2018) investigated the effects of health expenditure on child mortality rates using a simultaneous-equation model for 93 developed and developing countries with data spanning from 1995 to 2013. He analyzes the relationship for developed and developing economies by comparing low, lower middle, upper-middle and high-income countries. The study employed the three-stage least squares (3SLS) technique to be able to solve the endogeneity problems by introducing instrumental variables. Results show that the explanatory variables differ according to the sample considered. Government health spending has a positive and very significant effect in reducing mortality rates for upper-middle and high-income countries but for low and lower-middle income countries, government health expenditure is not statistically significant. Higher health expenditure was found in the developed economies and low health spending in less developed economies. The insignificant spending in the less developed countries according to this study may indicate resources not being allocated effectively towards health care spending. The study also shows that in less developed countries, public expenditure on health has a greater effect on mortality rates than private health expenditure, while in developed countries private expenditure has a positive impact on child health status.

Novignon, Olakojo, and Nonvignon (2012) examined the impact of private healthcare expenditure on health status using data from 1995 to 2010, and from 44 sub-Saharan African countries. The researchers employed the fixed and random effect model based on the Hausman pre-test result. The result shows that healthcare expenditure has a positive relationship with health outcomes in the region. It shows that public health expenditure has a greater impact on health outcomes than private healthcare expenditure. The researchers conclude that healthcare expenditure improves life expectancy in sub-Saharan African countries.

Raeesi (2018) provided econometric evidence of a link between health expenditures and three health outcomes (infant mortality, under 5 mortality and life expectancy) within four different health care systems. Panel data were collected and grouped for 25 countries according to the health care system over a period of 15 years (2000-2015). The countries included in the study based on their different health care systems. The study classified the health systems into 4 different categories such as National Health Insurance System, Traditional Sickness Insurance, National Health Services, mixed systems. Multivariate regression model was used to investigate the effects of studied variables on health. The results showed that among various explanatory variables, health expenditure (public and private) had important effect on health outcomes. Based on the classification of countries with different health care systems, increase in the health expenditure also has a significant impact on improving health outcomes. The study concluded that, based on the different impacts of private and public health expenditure on health outcomes in each health care system, public sector should be more responsible in countries with National Health Service. In countries with mixed system, however, the private sector should be more responsible for the health care of the country.

Syeda (2013) investigated the linkage between health care expenditures (HCE), economic growth and health outcomes (i.e., life expectancy (LE), infant mortality and the share of elderly people) on South Asian Association for Regional Cooperation (SAARC) countries over the period of 1995–2010. Panel co-integration technique is used for analysis of short and long run relationship between the health care expenditures and health outcomes. The results show that there is a long-run relationship between health expenditures, economic growth and health outcomes in SAARC region. Life expectancy and share of elderly people in population have a negative relationship

related to health care expenditures. This implies that health care expenditures are not necessity but rather luxury goods in SAARC countries. On the other hand, there exists no significant relationship between infant mortality and health expenditures.

Tae and Shannon (2013) also empirically examined the relationship between public health expenditure and national health outcomes but they did so for developed countries. Data was collected from 17 OECD countries between 1973 and 2000. Two health outcome indicators were used for the study, namely: infant mortality rate and life expectancy at birth. To analyze cross-country panel data, a mixed-effect model was used. Based on the results, there exists statistically significant association between government health expenditure and public health outcomes. Particularly, the findings showed that a negative relationship exists between government health expenditure and infant mortality rate, and a positive relationship between government health expenditure and life expectancy at birth. This result implies that a higher level of public health expenditure significantly decreases infant mortality and increases life expectancy, controlling for other socio-economic conditions in the given countries. The results also reveal that public health expenditure is a very strong predictor for health outcomes. This study suggested that there should be increased government spending on medical goods and services in order to provide better overall good health for individuals.

Novignon and Lawanson (2017) sought to understand the relationship between the child health outcomes and health spending. The study employed panel data from 45 sub-Saharan African countries over the period 1995 -2011. Aside from the fact that the paper studied the relationship between the two main variables, the study went ahead and investigated the lagged effect of health care spending. This study also carried out a disaggregated analysis of the health spending into private and public spending in relation to the child health outcomes, which are infant mortality, under-five and neonatal mortality. The results of the study indicate that health expenditure had significant and positive influence on child health outcomes in Sub-Saharan African nations with elasticities of -0.11 for infant mortality, -0.15 under-five mortality and -0.08 neonatal mortality. From the analysis, there also exists a positive and significant lagged effect of health expenditure on child health. On the disaggregated level, public health expenditure was found to be more significant than private expenditure.

Ayoola (2012) examined the relationship between health care expenditure and economic growth in Nigeria from 1970 to 2009 using the multivariate co-integration technique and found the existence of one co-integrating vector asserting a long run relationship between economic growth, foreign aid, health expenditure, total savings and population. The study concluded that increased in health care expenditure led to increase in economic growth within the study period.

Imoughele (2013) empirically examined the determinants of government expenditure in health sector in Nigeria. Using the error correction techniques and time series data from 1986 to 2010, the results show that demand for health in Nigeria is price Inelastic. Further in their studies, they concluded that total population of children that falls within the age of 14 Years and below and health expenditure share in gross domestic product (proxy for government developmental policy on health) are the major determinants of health expenditure in Nigeria.

Oni (2014) evaluated the impact of health expenditure on economic growth in Nigeria. Most empirical studies in literature pay little or no attention to this area but majorly focus on how people achieve better health when there is economic growth. This could be as a result of the general consensus that economic growth leads to improved health status while the attention was not given to whether causality exists in the reverse direction. This study is carried out to breach this gap. Multiple regression analysis was employed and the result shows that gross capital formation, total health expenditures and the labour 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.

Ibe (2015) investigated the impact of government expenditure in health sector on economic growth in Nigeria between 1981 and 2013. Data was sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and Annual reports of various issues. The stationarity of the variables were tested using the Augmented Dickey-Fuller (ADF) unit root test. The ordinary least square (OLS) multiple regression, equation estimation, Johansen multivariate cointegration and Granger Causality analytical techniques were the econometric methods used to analyze the data. Results indicate a significant and positive long run relationship between government expenditure in health

sectors and economic growth. There was a unidirectional causality between economic growth proxied by GDP and all public health variables in the model namely; Gross Capital Formation (GCF), Total Education Expenditure (TEE) and Total Health Expenditure (THE).

Bedir (2016) examined healthcare expenditure and economic growth in developing countries from 1995 to 2013, using Toda and Yamamoto granger causality test in selected emerging markets in Europe, Middle East, African and Asian countries. According to the analysis of the results, two way causality was found for the Czech Republic and Russian Federation. The evidence from the Egypt, Hungary, Korean Republic, South Africa, and the Philippines supports the health view over the income view, while the evidence from Greece, Poland, the United Arab Emirates, China, Indonesia, and the Korean Republic supports the income view over the health view. Thus, income is an important factor in explaining the difference in healthcare expenditures among countries.

Maduka, Chekwube and Chukwunonso (2016) examined healthcare expenditure, health outcomes, and economic growth nexus in Nigeria during the period 1970 to 2013. The study used Toda and Yamamoto (TY) causality analysis. The result revealed that government health expenditures do not directly influence economic growth, but indirectly through health outcomes such as mortality rate and life expectancy.

There is no research without a gap. Majority of previous studies in this area of research were carried out in other countries of the world. However, more informed policies on public health expenditure and maternal mortality may be obtained from carrying a study of this nature in the context of Kogi State. It is the aim of this study to fill this gap based on the literature reviewed considering Kogi State as one in Nigeria. Technically, most of the previous studies which are not specific utilized panel regression analysis while other utilized Ordinary Least Squares (OLS) estimation technique. Hence, to bring the modeling framework of this current study which is country specific, Autoregressive Distributed Lag (ARDL) technique of estimation would be utilized.

Looking at the available literature reviewed most of the studies such as Ayoola (2012), Imoughele (2013), Oni (2014), Ibe (2015), Bedir (2016) Maduka, Chekwube and Chukwunonso (2016) emphasized on public health expenditure and economic growth while little interest has been given

to the impact of public health expenditure on infant mortality Hence, this study shall attempt to add to the existing literatures in this area of study by investigating empirically the impact of public health expenditure on infant mortality in Kogi State.

Theoretical Framework

There are many theories of public spending. However, the study is anchored on Wagner’s theory of government expenditure which posited that government expenditure is a function of increase in industrialization and development. Wagner argued that advancement in industrialization process increases income, which invariably increases the per capita income of the people. The increase in per capita income invariably increases the share of government expenditure as total expenditure increases. The reason being that; as the society advance in development, social vices will also accompany the progress and this put an upward pressure government expenditure. The theory is also adopted because Wagner posited that during industrialization, most private sector activities will be replaced by public sector activities. This will increase the state administrative and defence function. Also, industrialization entails that government provide some basic necessities (which are cultural and welfare services) like education, old age pension or retirement public health, food subsidy, environmental protection, natural disaster aid and other welfare services.

Basically, the study adopts this theory of expenditure because as there is advancement in industrialization and development, the per capita income (Y) would increase and this would lead to increase in public health expenditure (PHS) gear towards reducing infant mortality rate (IMR).

This framework can be mathematically expressed as;

$$PHS = f(Y).....3.1$$

$$IMR = f(PHS).....3.2$$

Based on the functions in equation 3.1 and 3.2, it can be explained respectively that increase in per capita income leads to increase in public health expenditure while increase in public health expenditure is expected to lead to reduction in infant mortality rate.

Methodology

The dataset for this study will be obtained from the State Bureau of Statistics Lokoja (2020) for the period of 2003 to 2020. The variables of interest in the study were; Infant Mortality Rate (IMR) as the dependent variable while Public Health Recurrent Spending (PHRS), Public Health Capital

Spending (PHCS), Female Per Capita Income (FPCI), Female Literacy Rate (FLR) and Number of Skilled Birth Attendant (NSBA) were the independent variables. Microsoft excel software for windows was used for data entering and E-Views version 10 was used for the estimation.

The study employed the Autoregressive distributive lag (ARDL). ARDL is a least squares regression approach involving the lag of both the endogenous variable and exogenous variables. ARDL model is normally denoted using ARDL notion (p1 q1, q2, q3,qk). P denotes the number of lags of the endogenous variable and q1 is the number of the lags of the first exogenous variable, and qk is the lags of the kth exogenous variable. In building the ARDL model for the study, the functional, mathematical and stochastic forms of the model were presented in Equation 3.1 and 3.2 respectively.

$$IMR=F (PHRS, PHCS, FPCI, FLR, NSBA).....3.1$$

The ARDL model is used to examine the impact of public health expenditure on infant mortality in Kogi State. The ARDL model based on the linear model specification in Equation 3.2

$$\begin{aligned} \Delta LIMR_t = & \alpha_0 + \sum_{i=1}^p \delta_i \Delta LIMR_{t-1} + \sum_{k=0}^p \beta_k \Delta PHRS_{t-k} + \sum_{k=0}^p \epsilon_k \Delta LPHCS_{t-k} + \sum_{l=0}^p \gamma_l \Delta LFPCI_{t-l} \\ & + \sum_{m=0}^p \varphi_m \Delta LFLR_{t-m} + \sum_{n=0}^p \psi_n \Delta LNSBA_{t-n} + \lambda_1 LIMR_{t-1} + \lambda_2 PHRS_{t-1} \\ & + \lambda_3 LPHCS_{t-1} + \lambda_4 FPCI + \lambda_5 FLR_{t-1} + \lambda_6 NSBA_{t-1} + \mu_t - - - - - \\ & - - - - - 3.2 \end{aligned}$$

where; α_0 and μ_t is the autonomous component and white noise respectively. The expression with the signs of summation in the equation is error correction. The parameter coefficient denotes the short run effects while lambda (λ) is the corresponding relationship in the long run.

IMR= Infant Mortality Rate as the dependent variable

PHRS= Public Health Recurrent Spending

PHCS= Public Health Capital Spending

FPCI= Female Per Capita Income

FLR= Female Literacy Rate and

NSBA= Number of Skilled Birth Attendant as the independent variables.

Presentation and Analysis of Data

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

Table 1: Unit Root Test Results

Variables	ADF Statistic at level	ADF Statistic at first difference	Critical values of 5% at level	Critical values of 5% at first difference	P- values at level	P-values at first difference	Order of integratio n
IMR	-1.353872	-8.382392	2.960411	-2.963972	0.5736	0.0002	I(1)
PHRS	-1.493736	-6.398763	2.960411	-2.963972	0.0765	0.0000	I(1)
PHCS	-3.487392	-	-2.960411	-	0.0034	-	I(0)
FPCI	-2.349839	-5.483923	2.960411	-2.963972	0.3458	0.0000	I(1)
FLR	-1.587463	-7.493736	2.960411	-2.963972	0.2387	0.0012	I(1)
NSBA	-3.454839	-	-2.960411	-	0.0003	-	I(0)

Source: Researcher's Computation, 2022

The unit root test in Table 4.1 revealed that all the variables were not stationary at level, because their Augmented Dickey Fuller (*ADF*) Statistic values were less than the critical values at 5% level of significance. The variables were all stationary at first difference as their Augmented Dickey Fuller (*ADF*) Statistic values were greater than their critical values at 5% level of significance. All the variables have the same order of integration i.e. since they were all differenced once before they became stationary.

Table 4.2: Bound Co-integration Test for Long Run Relationship

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.45	10%	1.89	2.89
K	6	5%	2.17	3.23
		1%	2.73	3.91

Source: Researcher's Computation, 2022

In Table 4.2, since the calculated F-statistic (4.45) is greater than the lower bound and upper bound critical values at 1%, 5% and 10% level of significance, the null hypothesis of no long-run relationship among the variables of the selected ARDL(1, 1, 1, 1, 2, 2, 2) is to be rejected. Thus, the variables employed in this study were co-integrated. Thus, there existed a long run relationship between public health expenditure and infant mortality in Kogi State.

In order to examine the public health expenditure and infant mortality in Kogi State, the study used the ARDL.

Table 4.3: Estimated ARDL Result

Dependent Variable: D(LNIMR)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.658743	1.598473	0.412108	0.7213
<i>Short Run Model</i>				
<i>D(LNIMR(-1))</i>	0.345769	0.024763	13.96313	0.0001
<i>D((LNPHRS(-1))</i>	-0.529584	0.084349	-6.278486	0.0278
<i>D(LNPHCS(-1))</i>	-0.474893	0.108732	-4.367556	0.0164
<i>D(LNFPCI(-1))</i>	-0.401348	0.064453	-6.226987	0.0019
<i>D(LNFLR(-1))</i>	-0.303933	0.075930	-4.002805	0.0034
<i>D(LNNSBA(-1))</i>	-0.587573	0.087432	-6.720343	0.0165
<i>ECT(-1)</i>	-0.644983	0.091562	-7.044221	0.0093
<i>Long Run Model</i>	0.328749	0.287564	1.143221	0.6213

<i>LNIMR</i>				
<i>LNPHRS</i>	-0.457853	0.085153	-5.376828	0.0042
<i>LNPHCS</i>	-0.538473	0.074532	-7.224722	0.0152
<i>LNFPCI</i>	-0.483456	0.053463	--9.042815	0.0061
<i>LNFLR</i>	-0.505678	0.064345	-7.858854	0.0004
<i>LNNSBA</i>	-0.393523	0.087315	-4.506935	0.0007
R-squared	0.815764	Durbin-Watson stat		1.745778
Adjusted R-squared	0.508695			
F-statistic	17.37483			
Prob(F-statistic)	0.000002			

The result of the short run and the long run models in table 4.3 revealed that the independent variables such as; Public Health Recurrent Spending (PHRS), Public Health Capital Spending (PHCS), Female Per Capita Income (FPCI), Female Literacy Rate (FLR) and Number of Skilled Birth Attendant (NSBA) explained about 82% of the total variations in Infant Mortality Rate while the remaining 18% unexplained is captured by the error term. Considering the prob(F-statistic) of 0.000002 the entire model is robust and is devoid of the presence of autocorrelation problem. The short run model accounts for the speed of adjustment to long run equilibrium of the variables employed. Hence, the speed of adjustment of the model to long run equilibrium is measured by the coefficient of the first lag of the error correction term (ECT (-1)). The error correction term (-0.64) has the right a priori sign and it is statistically significant. Hence, the result of the ECT (-1) showed that 64% of the deviation of the variables in the short run will be restored in the long run within one year.

Based on the long run model, Public Health Recurrent Spending (PHRS) has an estimated coefficient value of -0.46 meaning a 1% increase in Public Health Recurrent Spending led to 46% decrease in Infant Mortality Rate (IMR) in Kogi State. This revealed that Public Health Recurrent Spending has negative impact on Infant Mortality Rate (IMR) in Kogi State. Hence, Public Health Recurrent Spending had significant negative impact on Infant Mortality Rate in Kogi State within the study period. Also, Public Health Capital Spending (PHCS) has an estimated coefficient of -0.54 meaning a 1% increase in Public Health Capital Spending led to 55% decrease in Infant

Mortality Rate (IMR) in Kogi State. This implied that Public Health Capital Spending had significant negative impact on Infant Mortality Rate (IMR) in Kogi State. Hence, Public Health Capital Spending had significant negative impact on Infant Mortality Rate in Kogi State within the study period.

Female Per Capita Income (FPCI) has an estimated coefficient of -0.48 meaning that 1% increase in Female Per Capita Income led to 48% decreases in Infant Mortality Rate (IMR). This revealed that Female Per Capita Income has negative impact on Infant Mortality Rate (IMR) in Kogi State. Hence, Female Per Capita Income had significant negative impact on Infant Mortality Rate in Kogi State within the study period. Also, Female Literacy Rate (FLR) has an estimated coefficient of -0.51 meaning that 1% increase in Female Literacy Rate led to 51% decrease in Infant Mortality Rate (IMR). This revealed that Female Literacy Rate has negative impact on Infant Mortality Rate in Kogi State (IMR). Hence, Female Literacy Rate had significant negative impact on Infant Mortality Rate in Kogi State within the study period.

Number of Skilled Birth Attendant (NSBA) has an estimated coefficient of -0.39 meaning that 1% increase in Number of Skilled Birth Attendant led to 39% decrease in Infant Mortality Rate (IMR). This revealed that Number of Skilled Birth Attendant has negative impact on Infant Mortality Rate (IMR) in Kogi State. Hence, Number of Skilled Birth Attendant had significant negative impact on Infant Mortality Rate in Kogi State within the study period.

Discussion of Findings

The study examined public health expenditure and Infant Mortality Rate in Kogi State. Based on the long run result, it was revealed increase in Public Health Recurrent Spending led decrease in Infant Mortality Rate (IMR) in Kogi State. This revealed that Public Health Recurrent Spending has negative impact on Infant Mortality Rate (IMR) in Kogi State. Hence, Public Health Recurrent Spending had significant negative impact on Infant Mortality Rate in Kogi State within the study period. The increase in Public Health Capital Spending led to decrease in Infant Mortality Rate (IMR) in Kogi State. This implied that Public Health Capital Spending had significant negative impact on Infant Mortality Rate (IMR) in Kogi State. Hence, Public Health Capital Spending had significant negative impact on Infant Mortality Rate in Kogi State within the study period.

It was also revealed that increase in Female Per Capita Income led to decrease in Infant Mortality Rate (IMR). This revealed that Female Per Capita Income has negative impact on Infant Mortality Rate (IMR) in Kogi State. Hence, Female Per Capita Income had significant negative impact on Infant Mortality Rate in Kogi State within the study period. The increase in Female Literacy Rate led to decrease in Infant Mortality Rate (IMR). This revealed that Female Literacy Rate has negative impact on Infant Mortality Rate in Kogi State (IMR). Hence, Female Literacy Rate had significant negative impact on Infant Mortality Rate in Kogi State within the study period.

The increase in Number of Skilled Birth Attendant led to decrease in Infant Mortality Rate (IMR). This revealed that Number of Skilled Birth Attendant has negative impact on Infant Mortality Rate (IMR) in Kogi State. Hence, Number of Skilled Birth Attendant had significant negative impact on Infant Mortality Rate in Kogi State within the study period.

Conclusion

The study based on the findings concluded that increase in Public Health Recurrent Spending led to decrease in Infant Mortality Rate (IMR) in Kogi State. This implied that Public Health Recurrent Spending had negative impact on Infant Mortality Rate (IMR) in Kogi State. It was also concluded that increase in Public Health Capital Spending led to decrease in Infant Mortality Rate (IMR) in Kogi State. This implied that Public Health Capital Spending had significant negative impact on Infant Mortality Rate (IMR) in Kogi State. It was also concluded that increase in Female Per Capita Income led to decrease in Infant Mortality Rate (IMR). Finally, the study concluded that Number of Skilled Birth Attendant had significant negative impact on Infant Mortality Rate in Kogi State.

Recommendations

The study based on the findings recommended the following. These include;

Government should ensure there is substantial increase in government expenditure on health in order to achieve the desired level of infant mortality rate in the Kogi State. This can be achieved through increase in both public recurrent and capital expenditure on health in Kogi State.

Government should design a long term policy framework to enhance proper utilization of public health expenditure in terms of both recurrent and capital towards reducing infant mortality rate to the barest minimum level in Kogi State.

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