



# An assessment of the Impact of Good Governance on Health Outcome among Selected African Countries

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## Authors' contributions

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## ABSTRACT

Good governance is an essential component that drives better health outcome and education output required as a catalyst that will stimulate economic growth, and this constitutes a vital social objective as a result of good level of human capital development. The study evaluated the impact of good governance on health outcome among selected African countries using panel data from 2000 to 2020. The Panel unit root tests indicated that real gross domestic product, health outcome, and indicators of good governance are stationary at level while health expenditure and foreign aid are stationary at first difference. The Generalized Method of Moment (GMM) results show that indicators of good governance have positive and statistically significant effects on health outcome in the selected African Countries. Real gross domestic product has a positive and a statistically significant effect on health outcome in the selected African Countries Life expectancy has a positive and statistically significant effect on health outcome in the selected African Countries. Health expenditure has a positive and statistically significant effect on health outcome in the selected countries. Foreign

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aid has a positive and statistically significant effect on health outcome in the selected African Countries. The study recommends that African Countries should ensure that indicators of good governance such as political stability, accountability and voice, and control of corruption are moving smoothly without any interruption, by so doing economic growth of African countries will increase.

*Keywords: Good Governance; health; economic growth; African countries.*

**JEL Classification:** O17, I10, O40, N17.

## 1. INTRODUCTION

Good governance is an essential component that drives better health outcome and education output required as a catalyst that will stimulate economic growth, and this constitutes a vital social objective as a result of good level of human capital development due to increase in workers' skills, productivity, and quality of life that is required to bring about desired change Hamid [1]. Furthermore, efficient governance opens the door to high productivity and human capital accumulation, both of which are key determinants of economic growth. As a result, the relationship between good governance, economic progress, and human capital accumulation via education output and health outcome may be established Amadi [2]. Similarly, the topic under consideration has been a source of contention for many decades. The notion of 'governance' was first proposed and actively debated in the disciplines of public administration, political science, and economics in the 1980s Grindle [3]. The ultimate consumption of health products and services is measured by the health, which is a measure of the supply to the economy. Improved health typically boosts productivity, which has a positive impact on economic growth and development Arora [4]. Expenditures on medical services and products, public health and preventative initiatives, and administrative costs are all included in this category. While health outcomes include all investment in health services, family planning and nutrition as well as emergency help allocated for health, drinking water and sanitation are excluded WHO (2017). Furthermore, health funding is an essential part of total health systems. Indicators provided by national health accounts are based on information gathered in an internationally recognized framework and quickly offer superior results. In the management of a health system, these accounts summarize the funding and expenditure flows documented, from funding sources and agents through the allocation of funds among providers and activities of health systems, and this usually results in

greater service delivery for economic growth. Similarly, "public health investment" refers to expenditures on health care borne by the government. State, regional, and municipal governments, as well as social security programs, use public revenues. For decades, academics and policymakers have sought to identify the most important determinants of health from a social and economic perspective. Consistent increases in income per capita have been found to have a significant impact on the health of the population. In order to attain the Millennium Development Goals (MDGs), economic growth alone will not be sufficient. Under-five mortality can be reduced by only a small percentage point increase in income, according to Badamasi & Deyi, [5]. Even with high economic growth rates, there is only a small reduction in under-five mortality, as defined by the change in under-five mortality (U5M) in response to a 1% increase in income. Estimates for U5M decrease from 2000 to 2015 show a 25 percent drop, which is less than the 67 percent objective of the MDGs. In other words, economic development alone is not sufficient to "create" excellent health or achieve the MDGs.

It will be a valuable addition to the body of knowledge if this study looks at how democracy in the domain of good governance correlates with health outcomes, education outcomes, and economic progress in chosen African nations. According to World Governance Indicators Index WGI (2021), chosen African nations will be examined for good governance indicators such as government effectiveness, political stability and rule of law as well as voice and accountability and control of corruption. For example, in Sub-Saharan Africa, Mădălina [6] used just the corruption perception index as an indication of governance; in Europe and Malawi, Doucouliagos, Hennessy & Mallick, (2019) utilized only the corruption perception index as an indicator of governance. The main objective of this paper is to analyse the impact of good governance on health outcome among selected African countries and specifically to analyse the

impact of Political stability, Corruption control, Voice and accountability, and governance effectiveness on health outcome among selected African countries. The rest of the paper is organised as follows: literature review which is the second part of the paper, methodology in which the objectives of the paper could be achieved and is the third part of the paper, part four of the paper is presentation and analysis of the empirical findings and the final section concludes the paper.

## 2. LITERATURE REVIEW

### 2.1 Conceptual Framework

#### 2.1.1 Concept of governance

The term "governance" has been defined several times by various academics. Despite the many meanings, it appears that the term "governance" refers to the political sphere and political action as the essential role of every national government, regardless of which definition one uses. There is a difference between good governance and government, which we want to underline from the beginning. Because government and good governance aren't the same, despite their shared purposes. Good governance, on the other hand, refers to the conception, execution, and implementation of activities supported by shared aims of people and organizations, regardless of whether such organizations or individuals have official authority or policing capacity Rosenau (1992), Bingham et al. (2005). Furthermore, when it comes to government, it's all about bureaucracy, law and financial regulation, as well as coercion. Non-regulatory policy instruments, on the other hand, are increasingly being used as a means of promoting good governance. Through the employment of this policy tool, non-state actors in collaboration with governments can be encouraged to propose, create, and implement cooperative projects Jordan et al [7]. Overall, excellent governance is becoming more commonplace in our society. A substantial and ever-expanding body of research exists on the topic of government Aminuzzaman (2010). When used historically, such as in the fourteenth century, the term "good governance" denoted a technique, activity, or function of government Halfani et al. [8]. A nation's system of politics, as well as its administration and regulation of state activities, constitutes good governance for Landell et al. (1991), according to this definition.

#### 2.1.2 The interaction of health outcome and economic growth

There is a direct link between greater health and increased productivity in the economy. As people's well-being improves, so will the number of children enrolled in public schools. It's well established that health and education are important pillars of human capital development. The following is a breakdown of each of the concepts:

##### 2.1.2.1 Health

It is not enough to be free of sickness or disability for someone to be considered healthy according to World Health Organization WHO (2020). For example, life expectancy and newborn and child mortality rates, as well as disabilities-adjusted life expectancy, morbidity and illness burden statistics, are indices of health. When these steps are put in place, they will improve people's overall well-being.

##### 2.1.2.2 Health outcome

The assessment impact of an intervention on the health condition of a person or a group. Prior to and following treatment, the effect of care or intervention on the patient's health can be assessed using health outcomes of care Ceri Sedgley [9].

##### 2.1.2.3 Life expectancy

An organism's life expectancy may be estimated statistically by taking into account a variety of parameters, including the year of birth, present age, and the gender of the individual. Two approaches of defining life expectancy at birth (LEB) are routinely employed. Cohort The LEB can only be calculated for cohorts that were born so long ago that all of their members have passed away, and it measures the average lifespan of those born in a particular year. Health outcomes may be a snapshot of a person's current state of health. There are several ways to measure a change in a health condition through time, or to measure the health status of someone who has undergone an intervention Ceri Sedgley [9].

##### 2.1.2.4 Child mortality

The death of children under the age of five is known as child mortality. Among children under the age of five, the child mortality rate (also

known as the under-five mortality rate) is the likelihood, per 1,000 live births, of dying before the age of five years UNICEF (2019). It includes the deaths of new-borns and infants (the probability of death in the first year of life). The death of a child before their first birthday is known as infant mortality. The mortality rate for infants under the age of one is the number of deaths per 1,000 births. Under-five mortality has increased sharply in recent years, in part because neonatal mortality, defined as death occurring during the first 28 days of a child's life, has become an important indication of overall newborn health and well-being Andegiorgish et al (2020). Authorities in the field of public health have taken note of this and are taking action. One of the study's health outcomes is the death of children under the age of five.

#### 2.1.2.5 Maternal mortality

The World Health Organization WHO defines maternal death or mortality as "the death of a woman while pregnant or within 42 days of termination of pregnancy, regardless of the duration and location of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes." According to the Centers for Disease Control and Prevention, pregnancy-related fatalities include deaths that occur within the first year following the end of a pregnancy, regardless of the result. Both direct and indirect obstetric fatalities are included in the total number of maternal deaths. These are cases in which the pregnancy exacerbated an already-existing illness, resulting in death. The term "pregnancy-related fatalities" is used by the WHO to describe both direct and indirect deaths that occur within 42 days of the end of a pregnancy but more than a year afterward. Pregnancy-related fatalities, as defined by the CDC, include deaths that occur within one year after the end of a pregnancy, regardless of the pregnancy's outcome. This is an important metric of mortality in pregnancy. The American College of Obstetricians and Gynecologists (ACOG) defines pregnancy-associated death as any death occurring within one year after a pregnancy result, regardless of cause. For inquiries into whether or whether the pregnancy was a direct or indirect cause of death, it is necessary to identify pregnancy-related fatalities. Public and private health care facilities are available in any nation with a variable percentage of their respective share. For countries with poor and middle-income populations, public health

care spending is a big problem due to the reduced out-of-pocket costs associated with public health care. On the other hand, higher-income families can pick their own private health care providers and services, as it is assumed that the private sector will provide better service and outcomes than the public sector does. Due to high out-of-pocket costs, private health care institutions are unable to serve the poor [10].

## 2.2 Theoretical Literature

### 2.2.1 Human capital development theory

Paul Romer's Human Capital hypothesis (1986) highlights the importance of education in developing the cognitive abilities of employees. Schultz (1961) used the term "human capital" to describe the value of education. Education, health, and nutrition are just few of the examples of expenditures that may be made in this area. Investing in the future at the sacrifice of today's consumption increases future productivity. For human capital to grow, there must be a rise in investment and utilization over time, as well as a decrease in depreciation. Human capital theory advocates regard education as a productive investment in human beings, an investment that they believe is as valuable as or even more valuable than the investment in physical capital. Human capital investment in the United States is three times more than in physical capital, according to current understanding in the country. Human capital theorists have demonstrated that people in low-skilled jobs benefit from having a minimum level of reading. They go on to say that workers in high-skilled professions are more productive when given teaching that necessitates logical or analytical thinking or gives technical and specialized knowledge. According to research, increased educational opportunities lead to higher levels of human capital, which in turn boosts national productivity and economic growth. People in the job market have varying degrees of education, training, experience, and expectations, all of which are taken into account when assigning tasks. In comparison to someone with less education and training, "a more educated, better-trained person can give a greater amount of meaningful productive work." As a result of the widespread acceptance of human capital theory, a business relies heavily on the skills, knowledge, and abilities of its people as a major idea of value generation. Theodore W. Schultz (1961 in the American Economic Review) used the term "investment in human capital" in 1961 to

describe the increase in human potential that is critical to production in the 18th century. As a result of Gary Backer's novel prize-winning "human capital theory," the idea that different levels of education and training lead to different levels of wages and salaries was widely adopted. The greater one's level of education and training and, consequently, the greater one's chances of landing a better job (Blair, 2012). A tangible tool of production, human capital is defined by Gary Backer (1964). Education, training, and health care are all forms of human capital investment made by businesses. later in 1999, Thomas Davenport (1998) argued that "ability, knowledge and skill were the components of human capital," and that the knowledge encompassed IQ and intellect as well as particular and broad understanding of job. In the workplace, skill refers to a person's ability to perform a task, as well as his or her ability to perform it well. A person's talent is an intrinsic quality that may be honed through practice. The term "behavior" refers to a wide range of concepts, including expression, standard, ethics, and personal conviction. A person's potential to succeed depends on their willingness to put up the effort necessary to make use of their innate or personal resources, such as talent, experience, knowledge, and the capacity to work hard. Various kinds of education, training, migration, and health can contribute to human capital development, according to Becker (1964). As a result, employees are able to acquire new information, skills, and talents in a variety of methods. In order to reap the benefits of their investment in human capital, companies consider persons as an asset and hope that the money they put into them will be repaid in the future. Another way of saying this is that someone invests in their education or training with the hope that their newfound expertise will help them progress in their current position. As Ulrich (1998) observed, historically workers' and businesses' human resources have been considered as an expense that must be kept to a minimum. Human capital, on the other hand, is today considered a source of value rather than just a resource. According to Phillips (2005), the traditional conception of human capital has undergone a significant paradigm change. Moving from an activity-based to a result-based approach to human resource management makes it easier to link human capital development to overall corporate goals and better utilizes it in strategic decision-making. Human capital is considered as an asset and should be developed and integrated with multi-

dimensional technology, according to Vejchayanon (2005). A shift in human capital management paradigm from an activity-based to a result-based (which emphasizes results and total performance, such as impact on business, cost-benefit analysis, output focus, and performance effectiveness) paradigm affects human capital policy and practice by putting more emphasis on bottom-up management than on top-down management, but this shift is not without its own drawbacks (Phillip, 2005).

### 2.3 Empirical Literature

Ojike, Ikpe, Uwajumogu, Odionye and Okwor [11] Investigates the impact of government education spending on human capital development in Nigeria for the period 2003q1 to 2021q4. The cointegration test shows the presence of a long-run relationship between government education spending and human capital development. Government education spending has a positive and significant effect on human capital development in both the short and long run. Based on the findings, the study recommends increased government spending on education to increase human capital development to a level that will adequately enhance the growth and development of the Nigerian economy. Afolabi [12] examined the impact of governance on sustainable development in West Africa from 2002-2016. The results of the study show that voice and accountability, political stability, government effectiveness and rule of law are positively related to development, with government effectiveness shown to have that largest impact, while regulatory quality and control of corruption are shown to be indirectly related to development in the short-run. However, in the long-run, all governance indicators are directly related to development in West African countries, with political stability and regulatory quality having the largest impact. Elbargathi and Al-Assaf [13] investigated the impact of political instability on the economic growth for the period of 1996-2016. The study examined the existence of the long-run relationship between different five political indicators and the growth of the economy. The Vector Error Correction Model (VECM), show the impact of different political instability indicators on economic growth. Moreover, the results show that there is a strong long-run relationship between the several political indicators upon the economic growth. The results also indicate that the control of the corruption and the rule of law indicators have the highest impact on the

economic growth, while the regulatory quality has the lowest. Alomaisi et al. [14] analysed the impact of governance on growth in Yemen, using multiple regression models found rule of law and political instability as the most important indicators of economic growth in Yemen, while other variables were declared not so significant. Habyarimana and Dushimayezu [15] who studied good governance, economic growth, and development in Rwanda, adopting similar method of investigation found the existence of pro-cyclical relationship between governance and economic development. The study emphasize that the level of economic growth and development not only depend on fixed capital formation and labour force, but also on good governance. Han, Khan and Zhuang (2014) examined whether countries with below average governance grow slower than countries with above average governance. The results of the study indicate that government effectiveness, political stability, control of corruption, and regulatory quality are more significantly positively correlated with economic growth than rule of law and voice and accountability. The results also indicate that the studied Asian countries above average governance grow faster than those with below average governance. Emara and Jhonsa [16] examined the interrelationship between the improvement in the quality of governance and the increase in per capita income. The findings of the study indicate there is a strongly positive and statistically significant causation from the quality of governance to per capita income. The results also prove a positive causation in the opposite direction. The study used their results to interpret the relationship between the studied variables for 22 MENA countries. They contend that one of their surprising results is that even though most of the studied MENA countries had low performance on all six indicators of governance, these MENA countries' income per capita is relatively higher than the rest of the countries in the sample. Yerrabati and Hawkes [17] investigated the governance and economic growth in south and East Asia and Pacific region, using meta-synthesized techniques based on 29 studies with 554 estimators. The findings showed that most governance indicators, other than government effectiveness and regulation have no important effect on growth. They also concluded that empirical research on governance and growth has failed to provide evidence of true effect of governance on growth. Bayar [18] investigated public governance and economic growth in the transnational economies of the European Union between 2002 and 2103, using

static panel analysis. The study revealed that all governance indicators except regulatory quality had a statistically positive impact on growth, and control of corruption and rule of law had the largest impact, while political stability had the lowest impact. In the same vein, Tarek and Ahmed [19], adopted the same methodology to investigate governance and economic performance in developing countries reported similar result, claiming that the institutional failure that characterize developing countries lead inevitably to destabilize their long-term economic growth and an improvement in governance would contribute greatly to their economic growth. In Another study by Aisen and Veiga [20] determine the impact of political instability on the growth. The study used the system-GMM estimator for linear dynamic panel data models on a sample covering 169 countries for the period of 1960-2004. The results show that political instability and lower GDP per capita are strongly associated. Political instability has negative effects on economic growth by reducing the rates of productivity growth, and lowering capital and human accumulation. Materu (2007) examined the issues surrounding equality in African higher education institutions and found that the dichotomy between political pressure on the government to expand access and institutions' goals to raise educational standards has resulted in a positive educational quality culture in African higher education institutions. Quality education includes, among other things, the ability to retain and develop human capital, as well as the ability to hold educational institutions more accountable for their quality assurance efforts. As a result, the author emphasized the need of excellent administration in the continent's higher education system.

## 2.4 Literature Gap / Novelty

The countries were selected based their income (GNI). This will allow us to select many countries and categorize them into low-income, lower-middle income, upper-middle income and high income countries based on World Bank classification. Finally, there exist a gap in methodological literature concerning the impact of good governance, health outcome and education output on economic growth among selected African countries. Most of the studies relied on traditional fixed and random effect approaches in examining the relationship, while few studies used heterogeneous models like panel cointegration, VECM and ARDL. Hence, with presence of endogeneity of key explanatory

variables, these models could not exhaustively explain the relationship. In this study Generalized Method of Moment (GMM) model is the best option since it takes care of presence of endogeneity among selected African countries. The African countries under study are 54 but due to the availability of data, the study will only focused 45 African countries that have availability of data used at Department of Economic and Social Affairs of the United Nation, (2020) and World population Division, categorised the Africa continent into five regions namely:

- i. **North Africa:** This countries comprise of six (6) countries which are: Algeria, Egypt, Libya, Morocco, Sudan and Tunisia.
- ii. **East Africa:** This regions comprise of nineteen (19) which are: Burundi, Comoros, Djibouti, Ethiopia, Eritrea, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Réunion, Rwanda, Seychelles, Somalia, Eswatini, Tanzania, Uganda, Zambia, and Zimbabwe.
- iii. **Central Africa:** This countries comprise of eight (8) which are: Brazzaville, Chad, Cameroon, Central Africa, Congo Rep, São Tomé and Príncipe, Equatorial Guinea, Gabon, DR Congo.
- iv. **West Africa:** This countries comprise of seventeen (17) which are: Cote d. voire, Togo, Sierra-Leone, Burkina Faso, Guinea, Guinea-Bissau, Mali, Benin Republic, Ghana, Gambia, Cape Verde, Senegal, Nigeria, Niger, Mauritania, Liberia and Ivory Cost.
- v. **South Africa:** This countries comprise of five (5) which are: Botswana, Swaziland, Lesotho, Namibia, South Africa. The total African population size stood at about 1,325,663 billion [21].

### 3. METHODOLOGY

#### 3.1 Model Specification

The model of the paper is specified as

$$HOC = F(IGG, RGDP, LE, HEXP, FAID) \quad (1)$$

The following multivariate regression of the predictors of health outcomes was produced from this health production. Natural log of life expectancy at birth for the nation in year t is HOC. LE is the average life expectancy of a person at the time of his or her birth. The health of a population may be gauged by looking at its

life expectancy. Real GDP (gross domestic product per person) is calculated using the purchasing power parity (PPP) method. Four of the six good governance metrics from the Worldwide Governance Indicators are included in IGG such as Political stability, Corruption control, Voice and accountability, and governance effectiveness. HEXP is the government expenditure on health is measured government expenditure on health percentage to GDP. FAID is the foreign aid which is measured as the donor contributions to the public or private sector in dollars.

$$HOC_{ij,t} = \lambda HOC_{ij,t-1} + \beta_0 + \beta_1 IGG_{jt} + \beta_2 RGDP_{ij,t} + \beta_3 LE_{ijt} + \beta_4 HEXP_{ijt} + \beta_5 FAID_{ijt} + \phi_i + \alpha_t + \mu_{it} \quad (2)$$

#### 3.2 Generalize Method of Moment (GMM)

The system GMM estimation technique will be an appropriate technique to use in the presence of specific effects. Besides, it will be ideal to have an instrumental variable estimator that can correct for country-specific effects and the possibility of endogeneity of some of the independent variables. Moreover, the GMM estimation technique applies internal instruments within the model to avert endogeneity problems. Therefore, Arellano and Bond [22] proposed a dynamic panel estimation, which exploited the moment restrictions implied by the dynamic panel model. This technique applied past values of endogenous variables and lagged values of the exogenous variables as internal instruments. The difference GMM started by estimating the model in differences and included lagged values of the explained and the explanatory variables as internal instruments. First, the model specification started-off with a specification on level equation such as:

$$Y_{it} = \lambda Y_{it-1} + \gamma X_{it} + \eta_{it} + \mu_{it}, \quad (3)$$

Where Y (explained variable) is a function of its past values. The models added explanatory variables X which assumed to be weakly exogenous and firm-fixed effects. Second, after transforming the model 7 into the first difference, it becomes:

$$\Delta Y_{it} = \lambda \Delta Y_{it-1} + \gamma \Delta X_{it} + \Delta \mu_{it}, \quad (4)$$

The transformation in model 7 into the first difference eliminated the firm-specific effects ( $\eta_i$ ). However, there was a new endogeneity problem as a result of the correlation between the lagged

explained variable ( $Y_{it-1}$ ) and the different error term  $\mu_{it}$ , as well as the possibility that some independent variables were endogenous. As such, these problems were solved via higher-order lags of the explained variable such as  $Y_{it-2}$  as instruments for  $Y_{it-1}$  and higher-order lags for the explanatory variables such as  $X_{it-2}$  as instruments [22]. Additionally, the difference GMM estimators provided consistent and unbiased estimators when this moment conditions sustained and were valid:

#### 4. RESULTS AND DISCUSSION

##### 4.1 Descriptive Statistics

Table 1 indicates the result of descriptive statistics of the study, it indicates that the standard deviations of the variables employed are far away from their means except health outcome (8.040202). The Skewness of the distribution in the table shows positive values and less than one of real gross domestic product, health outcome, indicators of good governance, and foreign direct investment, this implies that these variables are normally distributed. The Skewness also indicated values of higher than one of health expenditure and foreign aid, it means that, these variables are not normally distributed. The Kurtosis from Table 1 shows that

health outcome, and indicators of good governance are normally distributed because their Kurtosis values are less than or equal to 3 while real gross domestic product, health expenditure, and foreign aid are not normally distributed because their Kurtosis values are greater than 3. The Jarque-Bera test for normality shows that real gross domestic product, health outcome, indicators of good governance, and health expenditure are normally distributed because their p-values are greater than 5% while education output, health expenditure and foreign aid are not normally distributed because their p-values are less than 5%[23-25].

##### 4.2 Panel Unit Root Test

###### 4.2.1 Levin Lin and Chu and Im Pesaran and Shin unit root test

The Table 2 present the panel unit root test of Levin Lin and Chu (LLC) and Im Pesaran and Shin (IPS) unit root test, the tests show that real gross domestic product, health outcome, and indicators of good governance are stationary at level or are integrated of order zero (I(0) process) while health expenditure and foreign aid are stationary at first difference or are integrated of order one (I(1) process).

**Table 1. Descriptive statistics**

Statistics	RGDP	HOC	IGG	HEXP	FAID
Mean	0.972364	60.19457	0.537901	5.731624	764.2447
Median	0.984077	59.58000	0.610000	5.290000	558.8300
Std. Dev.	0.748888	8.040202	0.566090	2.155551	7605624
Skewness	0.655883	0.180299	0.518138	1.869604	1.828824
Kurtosis	4.100514	2.475983	2.974604	9.937048	7.875153
Jarque-Bera	61.69120	8.513985	22.60951	1306.778	781.6038
Probability	0.247813	0.074165	0.931512	0.000000	0.000000
Observations	714	714	714	714	714

Source: Researcher computation using E-views 10.

**Table 2. Levin Lin and Chu and Im Pesaran and Shin unit root test**

Variables	Test at level		Test at first difference	
	LLC P-value	IPS P-value	LLC P-value	IPS P-value
RGDP	0.0003*	0.0007	-	-
HOC	0.0000	0.0000	-	-
IGG	0.0000	0.0000	-	-
HEXP	0.0747	0.8570	0.0000	0.0000
FAID	0.0913	0.3099	0.0000	0.0000

Source: Researcher computation using E-views 10



### 4.3 Panel Cointegration

Table 3 presents the result of Kao residual panel cointegration test. The result confirmed the presence of cointegration amongst the variables employed as the ADF t-statistics probability value is significant at 1%. Therefore, we reject the null hypothesis and conclude that there is long run relationship amongst the variables employed, because the p-value is less than 5% [26-28].

**Table 3. Kao panel cointegration test**

ADF t-statistic	Probability
-2.764379	0.0029

Source: Researcher computation using E-views 10

### 4.4 Generalized Method of Moment (GMM)

Table 4 shows the Generalized Method of Moment (GMM) result of the estimated model in the study, the result indicates that the dependent variable (health outcome) at lag 1 has a positive and statistically significant, this implies that the dependent variable is largely depend on itself. Indicators of good governance show positive and statistically significant effects on health outcome in the selected African Countries, this implies that an increase in indicators of good governance by a single digit will result an increase in health outcome in the selected African Countries. Furthermore, real gross domestic product indicates positive and statistically significant effects on health outcome in the selected African Countries, this means that an increase in real gross domestic product by single digit will cause 9% an increase in health outcome in the selected African Countries, This conforms to the economic apriori expectation when there is increase in economic activities there will be an increase in

the health management of an individual. Life expectancy indicates positive and statistically significant effects on health outcome in the selected African Countries, by implication an increase in life expectancy by a single digit will result an increase in health outcome in the selected African Countries [29-31]. This conforms to the economic apriori expectation which assumed the existence of positive relationship between life expectancy and health outcome. Furthermore, health expenditure indicates positive and statistically significant effects on health outcome in the selected countries, this means that an increase in health expenditure by single digit will cause 1% an increase in health outcome in the selected African Countries, This conforms to the economic apriori expectation when government increases its expenditure on health there will be an increase in health outcome in the selected African Countries. Foreign aid indicates positive and statistically significant effects on health outcome in the selected African Countries, by implication an increase in foreign aid will result an increase in health outcome in the selected African Countries, this conforms to the economic apriori expectation which assumed the existence of positive relationship between foreign aid and health outcome. Furthermore, the J-statistic from Table 4 which test the over identification restriction in the model is close to zero and its corresponding p-value is far from zero, this means that the conditions of good fitness of the model are satisfied and we can conclude that the model is robust. The Arrelano and Bond serial correlation test shows that both AR (1) and AR (2) p-values' are greater 5%, this means that we cannot reject the null hypothesis and conclude that model has no serial correlation problem. In other word the model is free from serial correlation problem[32-35].

**Table 4. Generalized Method of Moment (GMM)**

Variables	Coefficient	Standard Error	T-statistics	P-Value
HOC(-1)	0.005320	0.001041	5.110822	0.0000
IGG	0.038393	0.009753	3.936460	0.0001
LRGDP	0.092170	0.017968	5.129607	0.0000
LE	0.005814	0.001249	4.654923	0.0000
HEXP	0.017690	0.003666	4.826140	0.0000
FAID	0.000101	2.358705	4.285255	0.0000
J-statistic				2.148312
Prob(J-statistic)				0.728916
Arellano-Bond Serial correlation test				
AR(1)				0.8250
AR(2)				0.9380

Source: Researcher computation using E-views 10

## 5. CONCLUSIONS AND RECOMMENDATIONS

The study examine the Impact of Good Governance on health Outcome among selected African Countries from 2000 to 2020, variables employed in the analysis include; real gross domestic product, health outcome, indicators of good governance, life expectancy, health expenditure and foreign aid. The study employed panel unit root test such as Im Pesaran and Shin, Levin Lin and Chu. The Panel unit root tests indicated that real gross domestic product, indicators of good governance, and foreign direct investment are stationary at level while health expenditure and foreign aid are stationary at first difference. The panel Cointegration test has confirmed the presence of cointegration amongst the variables employed. The Generalized Method of Moment (GMM) results show that indicators of good governance have positive and statistically significant effects on health outcome in the selected African Countries. Real gross domestic product has positive and statistically significant effects on health outcome in the selected African Countries Life expectancy has positive and statistically significant effects on health outcome in the selected African Countries. Health expenditure has positive and statistically significant effects on health outcome in the selected countries. Foreign aid indicates positive and statistically significant effects on health outcome in the selected African Countries. The J-statistic is close to zero and its corresponding p-value is far from zero, this means that the conditions of good fitness of the model are satisfied and we can conclude that the model is robust. The Arrelano and Bond serial correlation test shows that both AR (1) and AR (2) p-values' are greater 5%, this means that we cannot reject the null hypothesis and conclude that model has no serial correlation problem. In other word the model is free from serial correlation problem. The paper recommends that African Countries should ensure that indicators of good governance such as political stability, accountability and voice, and control of corruption are moving smoothly without any interruption, by so doing economic growth of African countries will increases.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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