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REVIEW



Africa and the Nexus of poverty, malnutrition and diseases

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ABSTRACT

This review examines the nexus of poverty, malnutrition and diseases in Africa, the challenges, implications and their mitigation. The paper takes a critical look at available literatures on the primary causes, modes, implications and solutions to the problems of poverty, malnutrition and diseases in Africa continent. Poverty and malnutrition are outcomes of uncontrolled rapid population growth, inefficient agricultural and industrial practices, high debt profile of many African countries due to poor governance and corruption, diseases such as AIDS epidemic, malaria, Ebola virus and COVID-19 pandemic, poor and inadequate health infrastructure and armed conflicts. African poverty scenario entails non-availability of basic human needs which makes many Africans to be very poor. Despite abundance of natural resources, the gross domestic product per capita of many African countries is among the lowest of list of nations of the world. According United Nation in 2009, 22 of 24 nations among the “Low Human Development” nations of the world on the UN’s Human Development Index were found in sub-Saharan Africa. Out of the 50 countries on the United Nation list of least developed countries, 34 of them were in Africa. According to FAO data over 200 million people in sub-Saharan Africa were undernourished in 2014-2016. The prevalence of undernourishment in sub-Saharan Africa rose from 181 million in 2010 to 222 million in 2016. In 2016, Africa had the highest prevalence of undernourishment in the world and estimated to be 20% of the population. While this was alarming in Eastern Africa where one-third of the population is suspected to be undernourished. In a similar data, World Bank also found that sub-Saharan Africa Poverty and Equity Data was 47% with over 500 million people in abject poverty in 2012. Poverty is the major cause of hunger and malnutrition in Africa while hunger and malnutrition escalated the problem of diseases in African continent. Poverty has continued to torment Africa as a result of poor and harmful economic policies, conflict and war, environmental factors like drought and climate change and population growth, poor leadership and greed. With the advent of COVID-19, the problem of poverty, malnutrition and diseases has been escalated and in many African countries people find it difficult to make ends meet.

KEYWORDS

Africa; diseases; malnutrition; nexus; poverty

Introduction

Sub-Saharan Africa is engrossed by chronic hunger as a result of extreme poverty. According to FAO chronic hunger exists when people could not get daily energy intake for an extended period of time and they obtained below what they would need for a healthy and active life. The daily energy lower limit for a person is 1,800 calories (Adeyeye et al., 2017). Poverty is evidenced in Africa and it is becoming difficult for people to get basic human needs in many African countries. Several African countries are poor with gross domestic product (GDP) per capita falls at the bottom of list of nations of the world. According to Food and Agriculture Organization (FAO), 37 countries in the world in which 28 of them are in Africa depended on food aid in 2017. Also, according to United Nations, 22 of 24 countries classified as “Low Human Development” nations in the world on the

UN’s Human Development Index in 2009 are sub-Saharan African countries while 34 of the 50 countries on the UN list of least developed nations are in Africa (Adeyeye, et al., 2017, World Bank 2006; FAO 2013; WHO, Climate Change and Health, 2012).

According to FAO around 795 million people of the 7.3 billion people in the world reside in Africa. It has been observed that one in nine hungry people in Africa suffered from chronic undernourishment in 2014-2015 (FAO, Food and Agriculture Organization 2015). An estimate of over 10 million people is undernourished in developed countries (FAO, Food and Agriculture Organization, 2015, Adeyeye et al., 2017). Above 226 million people are starving in Africa while the most affected countries by extreme poverty and hunger in Africa are found south of the Sahara. It has been estimated that one in four people suffers from hunger which showed that the world’s hungry people is highest in sub-

Saharan Africa (FAO, Food and Agriculture Organization, 2015, Adeyeye, et al., 2017).

FAO (2013) revealed that 40% to 50% of people in the sub-Saharan countries live below the poverty line with a daily income average below \$1.25. This shows that sub-Saharan Africa countries and southern Asian countries are the poorest countries in the world (FAO, Food and Agriculture Organization, 2015, Adeyeye, et al., 2017).

It has been estimated that children, pregnant women and the elderly are more vulnerable to malnutrition. Half of the over 10 million child deaths recorded each year in Africa are as a result of malnutrition. WHO has also reported that one out of three people in African countries are affected by vitamin and mineral deficiencies (FAO 2013; WHO, Climate Change and Health, 2012).

The problems associated with poverty and malnutrition are being tackled by African countries. Nigeria and Ghana are focusing on reducing through different microfinance programmes like trader money, market money and so on where traders and market women are given soft loans without collateral and interest for petty trading.

In spite of recent economic development and growth worldwide even among some of the poorest countries in Africa, hunger and poverty are still affecting millions of people. In recent time, Ebola epidemic coupled with COVID-19 pandemic has made several African countries to be food insecure due to prolong lockdown, loss of jobs, inability of farmers to go farmer, high level of insecurity, poor agricultural production, corruption and maladministration.

This review assesses Africa and the nexus of poverty, malnutrition and diseases, the challenges, implications and their mitigation. The paper takes a critical look at available literatures on the primary causes, modes, implications and solutions to the problems of poverty, malnutrition and diseases in Africa.

Current status of knowledge on poverty, malnutrition and diseases

According to Food and Agriculture Organization (FAO), 37 countries in the world in which 28 of them are in Africa depended on food aid in 2017. Also, according to United Nations, 22 of 24 countries classified as “Low Human Development” nations in the world on the UN’s Human Development Index in 2009 are sub-Saharan African countries while 34 of the 50 countries on the UN list of least developed nations are in Africa (World Bank 2006; FAO 2013; WHO, Climate Change and Health, 2012, Adeyeye, et al., 2017).

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In Africa, the effects of malnutrition are more pronounced on the vulnerable groups like children, pregnant women and the elderly (World Food Programme 2000 &

2018). In spite of the millennium development goals (MDG) adopted by United Nations to alleviate poverty and hunger by half by 2015, major setbacks were recorded in Africa. FAO (2002) reported that out of 800 million hungry people globally, over 204 million reside in sub-Saharan Africa. The same report showed a pathetic situation in Africa as the population of hungry people increased from 170.4 million in 1990 to 204 million in 2002 (FAO 2002). This scenario was attributed to poverty, illiteracy, ignorance, rapid increase in population, climate change, policy and corruption. However, the current COVID-19 pandemic has complicated the problem of poverty, hunger and diseases in Africa as urgent actions are needed from governments from African nations, WHO and United Nations to avert unprecedented human disaster.

Poverty and its consequences

Poverty is a situation where a person or community do not have financial resources to provide essential requirements for a minimum standard of living. Poverty includes low income or lack of employment to provide for basic human needs. Poverty may also include poor and improper housing, lack of clean water, healthy food, and medical care.

The World Bank defines poverty based on three standard human development indicators: life expectancy from birth, the infant mortality rate, and gross primary school enrollment. Although, most definitions of poverty are directly attached to income, however, income provides only a partial picture, as it does not capture broader living standards or human development.

African countries could be identified with different types of poverty based on the social, economic and political perspectives.

1. Absolute poverty.
2. Relative Poverty.
3. Situational Poverty.
4. Generational Poverty.
5. Rural Poverty.
6. Urban Poverty.
7. **Absolute poverty:** This is called extreme poverty or abject poverty; it is a situation where there is scarcity of basic food, clean water, health, shelter, education and information. People in absolute poverty are faced by extreme difficulty to live and very high infant mortality from common and preventable diseases like malaria, cholera and water-contamination related diseases.

Most of African countries are swimming in absolute poverty with “a dollar a day”. However, the World Bank has reset it to \$1.90 a day in October 2015. Absolute poverty is characterized by malnutrition, illiteracy, disease, unclean surroundings, high infant mortality, and low life expectancy.

1. **Relative Poverty:** This is obtained by comparing living standard of people with the economic standards of population living in the surroundings. Therefore it

Table 1. Poverty and average growth rate in some African countries

Country (1)	Period (2)	Poverty Head count Ratio (3)		Average Annual Change (4)	Average Annual GDP Growth Rate (5)		Growth Elasticity of Poverty (6) = (4)/(5)
		t_0	t_1		Total	Per Capita	
Benin	2006-2011	37.2	36.2	-0.2	4.43	0.78	-0.26
Burkina Faso	2003-2009	51.1	46.7	-0.7	6.68	3.12	-0.22
Ghana	1992-2006	51.7	28.5	-1.65	4.95	2.16	-0.76
Mali	2001-2010	55.6	43.6	-1.3	6.73	3.08	-0.42
Nigeria	2004-2010	48.4	46.0	-0.4	12.2	8.82	-0.04
Senegal	2001-2011	55.2	46.7	-0.85	4.32	1.24	-0.69
Sierra Leone	2003-2011	66.4	52.9	-1.68	6.73	3.25	-0.52
Togo	2006-2011	61.7	58.7	-3.0	4.19	1.02	-0.72

Source: World Bank: World development indicators data.

determines income inequality among the population e. g ability of families to afford basic necessities and luxuries e. g ability to send one children to the university.

2. **Situational Poverty:** This occurs in many African countries as a result of occurrence of adverse events such as environmental disaster, outbreak of diseases etc. This is worsening by inability of government to provide aid and necessary materials to assist the people.
3. **Generational Poverty:** This is a serious problem in Africa. This occurs when individuals and families from one generation to another handed over poverty to each other. This may be difficult and complex has people may be trapped and find escape difficult because they could not get opportunities that will help them to move out of poverty (Jensen 2009).
4. **Rural Poverty:** This is very common in the rural areas with less population and economic opportunities to escape poverty. African countries contain more rural areas which are characterized by less job opportunities, poor social amenities and services and poor quality education opportunities for the populace. Income generation of the people is based mostly on farming and other menial works available with the communities (Jolliffe 2004).
5. **Urban Poverty:** This occurs in urban centers with population over 50,000. Urban poor are faced with:
6. Limited and overstressed health and education facilities.
7. Overcrowding due to inadequate housing facilities.
8. Violence and crimes due to drug abuse and other vices.
9. Unemployment.

Poverty in combination with other socio-economic and political problems is the cause of food insecurity around the globe (FAO and Food and Agriculture Organization of the United Nations 2011). According to FAO and Food and Agriculture Organization of the United Nations (2011), poverty serves as the driving factor for non-availability of resources to procure food for the people (Table 1). The poverty is caused by non-availability of resources among poor people, poor and unequal income distribution, conflict, war and hunger.

It has been shown that over 30 percent of African children suffer from growth disorders like stunting as a result of chronic malnutrition. This could lead to physical and mental underdevelopments in children.

The highest infant mortality has been found in Sub-Saharan Africa with an average of one in 11 children dies before his fifth birthday. It is generally believed that three of the four countries with the highest infant mortality in the world are in Africa namely: Ethiopia, Nigeria and Kenya (FAO, Food and Agriculture Organization, 2015).

The highest number of child labor is seen in sub-Saharan Africa with 59 million children between the ages of 5 and 17 involve in child labor work instead of attending school (FAO, Food and Agriculture Organization, 2015).

Africa is wallowing in HIV/AIDS epidemic with over 25 million Africans infected with the HIV virus in which nearly 2.9 million are children.

Malnutrition and high infant mortality

Malnutrition is referred to deficiencies, excesses, or imbalances in a person's intake of energy and/or proteins. There are three forms of malnutrition

- **Undernutrition:** In this group are wasting (low weight-for-height), stunting (low height-for-age) and underweight (low weight-for-age);
- **micronutrient-related malnutrition:** In this group are micronutrient deficiencies (a lack of important vitamins and minerals) or micronutrient excess; and
- **overnutrition:** This includes: overweight, obesity and diet-related noncommunicable diseases (like heart disease, stroke, diabetes etc).

Different forms of malnutrition

Undernutrition. This could be divided into the following sub-forms, namely: wasting, stunting, underweight, and deficiencies in vitamins and minerals. Undernutrition predisposes children in particular and other vulnerable groups such as pregnant women and elderly to disease and death (FAO, Food and Agriculture Organization, 2015; WHO, Climate Change and Health, 2012).

Wasting: This involves low weight-for-height. It involves continuous and severe weight loss due to lack of enough food to eat or due to an infectious disease, like diarrhea which results into lose weight.

Stunting: This involves low height-for-age. It is due to chronic or recurrent undernutrition, as a result of poor

socioeconomic conditions, poor maternal health and nutrition, frequent illness. It prevents children from reaching their physical and cognitive potentials.

Underweight: This involves low weight-for-age. An under weighed child may be stunted, wasted, or both.

Micronutrient-related malnutrition. This involves inadequacies in intake of vitamins and minerals. Micronutrients are used by the body to produce enzymes, hormones, and other substances that are essential for proper growth and development.

Micronutrients such iodine, vitamin A, and iron are very important in global public health; among the most vulnerable groups such as children and pregnant women; their deficiency represents a major threat to the health and development.

Overweight and obesity. **Overweight and obesity:** This occurs when a person is too heavy for his or her height. Excessive weight or fat accumulation can impair health.

Overweight and obesity could be as a result of an imbalance between energy consumed that is taking too much energy foods and expended little energy expended. This occurs when people are eaten foods and drinks that are more energy-dense such as foods high in sugars and fats and doing less physical activities (FAO, Food and Agriculture Organization, 2015; WHO, Climate Change and Health, 2012).

Diet-related non-communicable diseases (NCDs). These include cardiovascular diseases like heart attacks and stroke, and are related to high blood pressure, some cancers and diabetes. Poor nutrition and unhealthy diets are factors predispose people to these diseases (FAO, Food and Agriculture Organization, 2015; WHO, Climate Change and Health, 2012).

Malnutrition could be as a result of poor or inadequate intake of vitamins, minerals and other nutrients the body requires to maintain healthy tissues, organ functions and boost immunity. Kwashiorkor and marasmus are common debilitating sicknesses that could be due to protein energy malnutrition (PEM). Marasmus is as result deficiency of protein and calories in the diets, while kwashiorkor is as a result of deficiency of protein but with adequate calories (World Bank 2006; WHO, Climate Change and Health).

Apart from PEM, infants could suffer from hiding hunger due to micronutrient deficiencies, which could jeopardize child's growth and development. The most common form of micronutrient deficiencies among the vulnerable group such as children, childbearing women and elderly in Africa are deficiencies of iron, iodine, zinc and vitamin A and as many as over 2 million people may be affected in Africa.

Infants are especially the most vulnerable group affected by malnutrition and diseases in Africa. Malnutrition is the precursor of physical and mental development delays and disorders as well as the principal cause of high death rates in many African countries.

- United Nations estimates revealed that over 165 million children globally are stunted as a result of chronic malnutrition. About three out of four of them in sub-Saharan Africa and South Asia. About 40% of children are affected in sub-Saharan Africa while 39% are in South Asia.
- Over 3 million infants below the age of 5 die each year in sub-Saharan Africa, almost half of the world's deaths among children.
- Globally, almost every second death among infant below five year is attributed to malnutrition which weakens their immune system and make them susceptible to pneumonia, malaria or diarrhea that could result to death.
- Child mortality rate in sub-Saharan Africa is the highest in the world and one in nine children die before the age of 5. It is one in every six children in Sierra Leone while countries like Nigeria and the Democratic Republic of the Congo also have high infant mortality rate.

Food security and availability in Africa

Food security is a situation when there is adequate and sufficient quantity of safe and nutritious food that meet dietary and food preferences of the people and physical and economic access to the food for an active and healthy life at all times (WFP 1996; FAO, Food and Agriculture Organization, 2015, Adeyeye, et al., 2017). In Africa, there has been problem of food insecurity in many African countries which happens as a result of poor distribution, climate change, poor agricultural policy and implementation and problem of pests and diseases. The scenario has been complicated by COVID-19 pandemic, African countries fragile economy, poor international response to food scarcity, poor agricultural production and storage techniques in African countries. The continuous problem of food insecurity especially in sub-Saharan Africa are linked to excessive food aid coupled with poor monitoring for sustainability and corruption (FAO, Food and Agriculture Organization, 2015). Food insecurity in Africa is more acute among certain groups such as women (particularly poor pregnant and lactating women), refugees from wars and conflicts, the sick, poor urban dwellers, the aged and the children (FAO and Food and Agriculture Organization of the United Nations 2011; FAO, Food and Agriculture Organization, 2015).

However, in order to reduce the problem of food insecurity and empower the local people, there is need to improve farming and climate prediction methods, giving of financial assistance to peasant farmers and to improve infrastructure, improved government policy and implementation couples with eradication of corruption along the entire system will lead sub-Saharan Africa toward sustainable and reliable food supply and secured food future (FAO, Food and Agriculture Organization, 2015, Adeyeye et al., 2017). It is noteworthy for African leaders to understand that providing enduring solutions to the myriads of challenges facing Africa's food production and supply chain will help Africa to be less dependency on foreign food aid and make Africa to be self-

sustained in food supply. The development of robust economic and political structures will lead many African countries to food secured future and improve the overall wellbeing of the people (Tunji et al. 2005; FAO, Food and Agriculture Organization, 2015, Adeyeye, et al., 2017).

Hunger in Africa

Africa is faced with unprecedented problems of hunger and famine which is escalating in three African countries and several million people are in the verge of starvation, malnutrition and pre-mature death. These three countries are suffering from the effects of war or terrorism. They are:

- **Nigeria:** Boko Haram militants have unleashed terror on Nigeria in the last ten years resulting in a refugee problem in north-eastern Nigeria. However, the recapture of affected areas by the Nigerian army in 2016 have revealed the scale of the refugee and hunger crisis among the people which is very enormous. This problem is escalated by increase in insecurity, armed banditry, problem of herdsmen, kidnapping, ethnic militia and armed robbery has affected agricultural production and economic activities in the entire country.
- **Somalia:** Somalia is located in the Horn of Africa. Somalia has been engulfed with decades of civil war and anarchy. This has devastated the country coupled with unprecedented drought and famine ravaging the nation. The complications could be seen especially with the adverse effects of the 2011-2012 famine.
- **South Sudan:** South Sudan got independence from the Republic of Sudan. Famine has been ravaging the north of South Sudan to the extent that the United Nations officially proclaimed a hunger emergency in the country on February 2, 2017. The country's civil war and conflicts has devastated the entire country leaves fields fallow and blocks aid deliveries for years.

Also, FAO in 2017 reported that 37 countries among which 28 are African countries depend on food aid. However, the United Nations does not have the resources to provide much-needed aid to these millions of hungry people. Famines are currently rampant in many countries in Africa and are characterized by acute food crises which may be as a result of drought or armed conflict. Famine is the worst form of food shortage. Famine is characterized by the following features according to the United Nations reports on Integrated Food Security Phase Classification.

- At least 20% of members of households are suffering from extreme food shortages,
- At least 30% of the entire population is suffering from acute malnutrition; and
- At least two out of every 10,000 people, or four children, die daily from food shortages.

In the last three decades, Africa has experienced one of the worst hunger crises as a result of the famine in East

Africa in 2011/12. In Somalia due to protracted war and conflict over 260,000 people were starved to death with inclusion of 133,000 children under the age of five.

Africa particularly sub-Saharan Africa still remains a hotbed of chronic hunger as a result of extreme poverty. Over 226.7 million people are hungry and starving in Africa. The primary cause of hunger in these countries is extreme poverty and hunger in Africa is more rampant in south of the Sahara when compared with other parts of Africa.

The causes of hunger and poverty in Africa

The causes of hunger and poverty in Africa are complex and interwoven. Many countries in Africa have millions of hectares of fertile soil suitable for agricultural production. Africa continent could provide enough food to feed her teeming population. But, there are many factors that militating against self-sufficiency and a victory in the fight against hunger in Africa:

- Unabated growth in population in sub-Saharan Africa without commensurate increase in food production to keep up with rapid growth in population.
- Un-competitiveness of African farming and production system with cheap food imports.
- The high debt profile of many African nations due to poor governance and corruption resulting in poverty and hunger.
- The problems of HIV/AIDS epidemic and malaria coupled with COVID-19 pandemic which seriously hampers farming and agricultural production in Africa and death of many breadwinners from their families.
- Africa in the last few decades has experienced and continues to experience several armed wars and conflicts which has resulted in the challenges of refugee and hunger.

Poor food distribution in many African countries is also found to aggravate lack of food in most areas of sub-Saharan Africa. About 30 per cent of infants, children, adolescents, adults and elderly in Africa are likely to suffer from one or more of the multiple forms of malnutrition, while almost half of the million deaths among children less than five years old each year in Africa are associated with malnutrition, while the other half is due to infections and other causes (World Health Organization 1999).

The present economic recession due to COVID-19 may likely affect many African countries with already disadvantaged population. Many people in Africa do not have access to diversified food choices and their dependence on incomes from cash crops such as Cocoa and Coffee with prices of these produce experiencing dramatic drops in the world market may create serious suffering, malnutrition and disease in many African countries (World Bank 2006). Looking the most vulnerable group to malnutrition such as children under the age of five in sub-Saharan Africa, there could be a repeat of poverty and malnutrition in years to come if adequate steps are not taken.

The World Bank reported an estimate of loss of 10 per cent of potential lifetime earnings by individuals suffering from malnutrition. Also in a similar report, the World Bank reported that several countries could lose 2-3 per cent of their GDP because of under nutrition in necessary actions are not taken (World Bank 2006). Malnutrition has been found to be a poverty indicator and could result to sub-optimal intellectual development in children (Brown and Pollit 1996).

Conflict

Africa in the last few decades has experienced and continues to experience several armed wars and conflicts which resulted in human misery, poverty, hunger and diseases. A World Bank study revealed that:

- In countries experiencing conflict and war over the past four decades, poverty rates are higher by 20 percent.
- Yearly violence and conflict in a country results in nearly one percent lagging poverty reduction.
- People affected by war or conflict are double chanced to be undernourished and 50 per cent chanced to be impoverished. While children from war or conflict areas are three times chanced to be out of school.
- Countries with poor governance including unabated human rights abuses, poor rule of law and endemic corruption have higher risks of civil war and extreme criminal violence than other developing countries (World Bank 2011b).

Environment

Environmental challenges are enormous in many African countries, problems of erosion, desertification, deforestation and drought are common in most of African countries which have complicated the issues of poverty and hunger due to reduced agricultural production and farmer's incomes. The challenges are as a result of human overbearing on land due to over-exploitation and over-used of the land. Erosion is due to poor drainage system while drought, water shortage and desertification in African countries are as a result of global warming due to the effects of human energy use outside of African continent (World Bank, 2011a). Deforestation on the other hand is caused by human activities ranging from people seeking new places to live, farm, or obtain firewood.

Population growth

Unprecedented and rapid population growth in Africa has resulted into poverty and malnutrition as increase food production could not match population growth in many African countries. For example, the population of Africa has grown from 221 million in 1950 to 1 billion in 2009. According to World Bank (2011a), Africa remains the poorest continent in the world with the highest rate of population growth. Uncontrolled population growth coupled with poor economic policies, armed conflict and war, environmental

degradation and poor per capita income growth have enhanced the problems of poverty and hunger in Africa.

Education and malnutrition

African continent is the most backward in terms of formal education as level of illiteracy is still high in the continent. Education could be a viable way out of poverty and malnutrition in Africa. It has been suggested that enhancing the educational status of parents, particularly that of mothers, through training on nutrition, sanitation and common disease prevention methods will reduce malnutrition and related sicknesses and death. The mothers play significant role as the way to the child's stomach is through mother's mind as mothers also determine the quality, choices and quantity taken by the children. Education is a very important issue in sub-Saharan Africa where girl child access to formal education is hampered in many communities due to socio-cultural and religion belief of the people. In Africa, the problem of malnutrition is directly linked to poverty, quality of food intake, poor sanitation and reservoir of communicable diseases (World Bank 2006; World Bank, 2011a). African continent is bedeviled and relationship between education and poverty is interwoven in cycle of ignorance, disease and poverty. Education will be a veritable way to reduce highly large family sizes due to polygamous family system in sub-Saharan Africa. Good education could help in reduce the impact of certain cultural beliefs of large family size and realize that giving birth to a fewer number of children based on family income could assist in matching number of children with their limited resources to offer adequate and quality nutrition to the family (World Bank, 2011a).

Education could also help in solving the problem of ignorance and lack of education to malnutrition. This will help in understanding the importance of vitamins and minerals and cheap and available sources of these nutrients. Education will also remove ignorance about causes of disease and its consequences and help in personal and public hygienic conditions.

Climate change

In the last three decades, the climate change has become a serious issue to scientists and policy makers all over the world as it affects food and agricultural production and the world food security. Drought and variable in rainfall patterns in African continent will affect the supply of fresh water for the people. Inadequate safe water will compromise hygiene and increase people's risk to intestinal or diarrheal disease with over 2.2 million mortality people annually. It may also lead to reduced food production and adverse drought and famine (Arnell 2004,).

It was reported by World Health Organization that several of the major killer diseases like diarrheal diseases, malnutrition, malaria and dengue are highly climate-sensitive and could be worsen due to climate change. According to International Food Policy Research Institute (IFPRI) study on the Comprehensive Climate Change scenario studies for sub-Saharan Africa reported higher temperatures and mixed

precipitation changes for the 2050 period. The reports also suggested that there may be changes in yield and area growth, higher food prices and therefore lower affordability of food, lowered calorie intake and increase in childhood malnutrition in sub-Saharan Africa (Ringler et al. 2010).

Climate change could be a serious threat in the nearest future, especially in African continent that has more climate sensitive economies when compared to other continents of the world (Boko et al. 2007). African continent remains the most vulnerable regions to climate change due to multiple stresses coming from endemic poverty, weak economic institutions and recurrent droughts, wars and conflicts. This according to Boko et al. (2007) may result in climate-related risks which may impact African populations and economies significantly and leading to emergencies and significant allocations to emergencies.

Government policy, political zeal and corruption

It is a fact that achieving MDG 1 (eliminating hunger), MDG 4 (reducing child mortality) and MDG 5 (reducing maternal mortality) in African countries is directly related to tackling malnutrition. Eliminating malnutrition and its impacts on health, productivity and educational achievement is the sole way of meeting Africa's goals in human development. But due to underestimation, undermining and lukewarm attitude of many African governments will be the major challenges of achieving the MDG and in investing and ensuring alleviation of malnutrition.

African countries are the epicenters of corruption in the world and the resources are concentrated in the hands of a few greedy leaders. The fight against corruption has not generated a significant output in recent years. Misappropriation of state funds and corruption are the order of the day in Africa and this has led to conflicts, economic and political instability and wars with massive destruction of humans and physical infrastructure and resources which further impoverish the population and aggravate the burden and consequences of malnutrition and poverty with attendance refugee problem. The government policies and international interventions over past decades have produced little results in Sub-Sahara Africa's rural and agricultural development. Policies like structural adjustment programmes that were aimed to close budget gaps, created large human development particularly among the poor, and by directing national revenue and foreign aid to help African countries to improve agriculture and nutrition has failed to achieve the desired results due to endemic corruption (World Bank, 2011a).

Attempt to resolve Africa's food insecurity problem through "Freedom from Hunger Campaign", initiated by the FAO and other development agencies (FAO, Food and Agriculture Organization, 2015) in Sub-Sahara Africa could not produce desired results (FAO, Food and Agriculture Organization, 2015). The policy was to analyze the causes of food crises and malnutrition and to find sustainable solutions to the problems. But, after several decades introducing the policy little has been achieved. Successive governments in Africa had made many attempts to tackle the problem of

food security in the continent. These include the Lagos Plan of Action (1980-1985) and Regional Food Plan for Africa (1978-1990) which could not achieve set goals because of organizational and financial difficulties (Smith and Haddad 2000). But in the new millennium, several governments in Africa have signed the Maputo Declaration on Agriculture and Food Security in 2003 to increase public spending on agriculture (African Union 2003).

However, despite the commitment by these African countries to more spending on agriculture, hunger and malnutrition in most areas of the continent are more rampant. Most governments in Africa have not determined the extent of malnutrition, and have not taken the fight against malnutrition as a priority (König et al. 2004).

Socio-cultural and religious factors

Breastfeeding and weaning foods are considered with malnutrition in many African countries. Factors such as poor maternal education, young maternal age, marital status, non-availability of portable drinking water and poor lavatory and latrine system are linked to malnutrition in many African countries (El-Sayed et al. 2001).

Diseases and African continent

A disease is any condition that causes pain, dysfunction, distress, social problems, or death to the person afflicted, or spread to those in contact with the person (White 2014; Loscalzo, Kohane, and Barabasi 2007). Diseases may include injuries, disabilities, disorders, syndromes, infections, symptoms, strange behaviors, and altered functions of the affected person. Several factors which may be external factors like pathogens or by internal dysfunctions may be responsible diseases. Infections from microorganisms such as bacteria, fungi, viruses, nematodes etc and internal dysfunctions of the immune system can lead to different diseases (White 2014; Loscalzo, Kohane, and Barabasi 2007).

Diseases affect both physical and mental parts of human beings, however, contracting and living with a disease could change human perspective about life. There are four main types of disease: infectious diseases, deficiency diseases, hereditary diseases (includes genetic and non-genetic diseases), as well as physiological diseases. Diseases are also classified as communicable and non-communicable diseases (White 2014; Loscalzo, Kohane, and Barabasi 2007).

Africa has recorded the greatest mortality from preventable water-borne diseases particularly among infants and young children. The major cause of these diseases is the lack of safe drinking water (Viera 2011). However, much attention has been given to HIV/AIDS occurrence in Africa. An estimate of 3,000 Africans die each day of AIDS with additional 11,000 individuals infected daily. With less than 1% of infected people are actually treated.^[20] Malaria, tuberculosis, tapeworm and dysentery are very rampant now which claim more victims. Polio is gradually staging a comeback recently as a result of misinformation by anti-American Islamic groups in Nigeria. Other diseases native to Africa

like sleeping sickness, sickle cell anemia, cholera are still endemic in many parts of Africa (Loscalzo, Kohane, and Barabasi 2007; HIV and AIDS in East and Southern Africa regional overview, 2015).

Emerging and reemerging diseases and their impacts on Africa

In Africa, infectious diseases are emerging and reappearing with particular reference to those that have recently appeared in a population or have already existed but are rapidly increasing in incidence (Tables 2 and 3) or geographic range (Fenollar and Mediannikov 2018; Morse 1995). However, the advances in laboratory techniques such as molecular characterization through modern rapid, sensitive and accurate methods of microorganism detection have aided the diagnosis and identification of emerging infectious diseases (Fenollar and Mediannikov 2018). Factors such as microbial adaptation and change, human susceptibility to infection, climate and weather, changing ecosystems, human demographics and behavior, economic development and land use, international travel and commerce, technology and industry, breakdown of public health measures, poverty and social inequality, war and famine, lack of political will and intent to harm according to Fenollar and Mediannikov 2018 and Institute of Medicine 2003 are responsible for overwhelming effect of infectious diseases in developing countries particularly African countries. Currently, COVID-19, Ebola, HIV infection and malaria are infectious diseases of importance (Table 4) in Africa (Fenollar and Mediannikov 2018). Africa is characterized by poor surveillance which makes detection and control of most of these diseases difficult while poverty and poor healthcare system exacerbate Africa's health problems (Fenollar and Mediannikov, 2018). Most African nations have the lowest per-capita spending on health as well as lowest availability of medical doctors (Fenollar and Mediannikov 2018). In 2001, the Worldwatch Institute (<http://www.worldwatch.org/>) statistics revealed that in Africa continent an average of \$36 per person was spent on healthcare (Fenollar and Mediannikov 2018). According to Fenollar and Mediannikov 2018, "the aggregate of the spending included only \$6 in Niger, \$7 in Sierra Leone and \$15 in Nigeria compared to \$4800 in the United States". They also reported that 32% of the Africa's population is undernourished and five of the six countries with highest mortality of children under 5 years in the world are in Africa recording 10% under-5 mortality rate live births based on World Health Organization data. Fenollar and Mediannikov, 2018 also reported that half of all deaths in Africa are caused by infectious diseases when compared to only 2% in Europe.

Although, the impacts of diseases on African continent are enormous. Different African nations have continued to take proactive actions in curtail them and their impacts on their economies. Malaria has been the major killer and cause of high childhood mortality in Africa (AUC/OECD 2019, Howard 2020). Malaria has killed more people than all various diseases combined in African continent. HIV/AIDS

epidemic, malaria and diarrheal diseases have taken breadwinners from their families and rendered many children orphans (AUC/OECD 2019, Howard 2020).

Ebola virus epidemic

Ebola virus disease (also called "Ebola") was first described in 1976 in two simultaneous outbreaks in the Democratic Republic of the Congo and what is now South Sudan (WHO 1978). The Western African Ebola virus epidemic (2013–2016) was the most widespread outbreak of Ebola virus disease (EVD) in world history (Table 5), causing major loss of life and socio-economic disruption in the region, particularly in Guinea, Liberia, Sierra Leone and other parts of West African sub-region. The first cases occurred in Guinea in December 2013; which later, spread to neighboring countries, Liberia and Sierra Leone (WHO, 2014a). The disease caused high mortality, (WHO, 2014a, Case Fatality Rate for ebolavirus, 2015, WHO 2014b, WHO, 2015a), while the rate of 57–59% was reported among hospitalized patients (WHO, 2015a). As of 8 May 2016, a total of 28,646 suspected cases and 11,323 deaths was reported by the World Health Organization (WHO) and respective governments (WHO 2016) amounting to 39.5% mortality (Table 5), but the WHO believes that the figures quoted understates the magnitude of the outbreak (WHO 2019, Meltzer et al. 2014).

About 17,000 infected people survived the disease with several reports of post-recovery symptoms termed post-Ebola syndrome. However, in December, 2016, the WHO announced that a two-year trial of the rVSV-ZEBOV vaccine which appears to offer protection from the variant of EBOV responsible for the Western Africa outbreak and rVSV-ZEBOV vaccine has received regulatory approval in 2019 (Ervebo, 2019, FDA2019).

Several factors aided the spread of Western African Ebola virus epidemic (2013–2016). These include: extreme poverty, poor and nonfunctional healthcare systems, lack of trust in government, several years of armed conflict, and poor response of international agencies such as WHO which occurred for several months. Other factors such as poor media coverage, local burial customs of washing the body and inability to control human to human spread of Ebola virus particularly in densely populated cities helped in spreading the virus (WHO 2014c, Today Health 2014, Cooper 2014).

COVID-19 pandemic is an emerging disease that started in Wuhan City in Hubei Province of China in late 2019. According to WHO, it is an air-borne viral disease that has affected the entire world. It was expected that COVID-19 will hit African continent (Table 6) and economies extremely hard due to poor health infrastructure, inadequate health professionals, Africa's fragile economy and corruption (Africa Center for Strategic Studies 2020, Howard 2020, AUC/OECD 2019). World Bank biannual Africa's Pulse report stated that due to COVID-19 pandemic result, the economic growth in sub-Saharan Africa will decline from 2.4% in 2019 to between –2.1% and –5.1% in 2020, but this will depend on the success of measures taken to control

Table 2. Emerging and reemerging bacterial diseases in Africa in 21st century

Bacteria	Implications for Africa	Targets for prevention	References
<i>Rickettsia felis</i>	2002: Officially described Before 2010: Only one case reported in Africa 2010: Prevalence of about 4% of <i>R. felis</i> in blood samples of febrile individuals without malaria in Senegal (9/204) and Kenya (6/163) 2013: Confirmation of role of <i>R. felis</i> in fever in Senegal 2015: First detection in blood samples of febrile individuals in Gabon, reaching a prevalence of 39.7% (23/58) in rural area of Fougamou	Vector-control measures	(Socolovschi et al. 2010, Richards et al. 2010, Mediannikov et al. 2013, Mourembou et al. 2015)
<i>Tropheryma whipplei</i>	2001: Officially described 2010: (a) Prevalence of about 6.4% (13/204) in blood samples of febrile individuals without malaria in Senegal; (b) Main detected cause of fever in Sine-Saloum area in Senegal, in August 2010 (prevalence of 58.5% [17/29] in febrile individuals in village of Dielmo and 69% [9/13] in those of Ndiop) 2016: First detection in a febrile patient in Gabon	Sanitation facilities	(La Scola et al. 2001, Bassene et al. 2016, Kouna et al., 2016)
<i>Yersinia pestis</i> (plague)	Since 2000: Main outbreaks: Recurrent annual human infections and outbreaks in Madagascar, DRC, Uganda, United Republic of Tanzania (2000) DRC, Uganda, United Republic of Tanzania (2001) DRC, Malawi, Mozambique, Uganda, United Republic of Tanzania (2002) Algeria, DRC, Mozambique, Uganda (2003) DRC (2005) DRC (2006) Madagascar (2017): One of worst outbreak in world in past half century, 202 deaths Main outbreaks since 2000: Madagascar, Somalia (2000)	Reduce risk of wildlife-to-human transmission	(Bonds et al. 2018)
<i>Vibrio cholera</i> (cholera)	South Africa (2000–2001) Chad, Nigeria, Tanzania, West Africa (2001) Burundi, Côte d'Ivoire, DRC, Liberia, Malawi, Niger (2002) Mozambique (2002–2004): 17 265 cases, 102 deaths Benin, Côte d'Ivoire, DRC, Liberia, Mali, South Africa, Uganda, Zambia (2003) Cameroon, Chad, Zambia (2004) Niger (2004–2005) West Africa (2005) Angola and Republic of South Sudan (2006) West Africa (2008) Zimbabwe (2008–2009): largest outbreak, 98 585 cases, 4000 deaths Zimbabwe (2011) Central Africa, DRC, Sierra Leone, Republic of the Congo (2012) Republic of South Sudan (2014) DRC (2015) United Republic of Tanzania (2015–2018): 33 421 cases, 542 deaths Kenya, Zambia (2017) DRC, Mozambique, Somalia (2017–2018) Algeria (2018): Since mid-August 2018, 41 confirmed cases, two deaths, last reported sporadic cases in 1996 in this country (data provided by Algerian health authorities)	Appropriate water and sanitation facilities Oral cholera vaccination (transient protection about 3–5 years) To be alert during conflicts or natural disasters	(Mukandavire et al. 2011, Sands, Mundaca-Shah, and Dzau 2016)

DRC, Democratic Republic of the Congo.

Source: Fenollar and Mediannikov 2018.

the effects of the pandemic (World Bank 2020a, World Bank 2020b). This is assumed to result to economic recession of the magnitude that has not been experienced in the continent in the last twenty five years (Adesina 2020, Africa

Center for Strategic Studies 2020, AUC/OECD 2019, World Bank 2020a, World Bank 2020b).

The recession will be caused by the large contractions in economies of South Africa, Nigeria, and Angola due to over

Table 3. Emerging and reemerging viral diseases in Africa in 21st century

Viral diseases	Implications for Africa: Main outbreaks since 2000	Targets for prevention	References
Measles	Measles outbreaks occur every year throughout Africa DRC (2010>–2013): largest outbreak, 294 455 cases, 5045 deaths	Sustained vaccination in human population	(Fenollar and Mediannikov 2018)
Yellow fever virus	Nigeria (2000) Guinea, Liberia (2000–2001) Côte d'Ivoire (2001–2003) Senegal (2002–2003) Ghana, Guinea, Republic of South Sudan, Sierra Leone (2003) Burkina Faso, Liberia, Mali (2004) Burkina Faso, Côte d'Ivoire, Guinea, Republic of South Sudan, Senegal (2005) Côte d'Ivoire, Senegal, Togo (2006) Burkina Faso, Central African Republic, Guinea, Liberia (2008) Central African Republic, Guinea, Sierra Leone (2009) Côte d'Ivoire, DRC, Uganda (2010) Côte d'Ivoire, Senegal, Sierra Leone, Uganda (2011) Ghana (2012) Cameroon, Republic of South Sudan (2012–2013) Chad, DRC, Ethiopia (2013) DRC (2014) Angola and DRC (2015–2016): 7334 suspected cases, 962 cases confirmed (393 deaths) Uganda (2016) Nigeria (2017)	Sustained vaccination in human population	(Sands, Mundaca-Shah, and Dzau 2016 , Monath and Vasconcelos 2015, Kraemer et al. 2017)
Monkeypox	Central African Republic (2015–2016): 13 cases, fatality rate of 67% among children aged ≤ 10 years Nigeria (2017): 146 suspected cases and 42 laboratory-confirmed cases, with death of confirmed monkeypox patient with history of immunosuppression	Reduce risk of wildlife-to-human transmission	(Kalthan et al. 2016, Yinka-Ogunleye et al. 2018)
Ebola	Gabon and Republic of the Congo (2001–2003) Uganda (2007) DRC (2007, 2008–09, 2012, 2014, 2017) Guinea, Sierra Leone, Liberia (2013–2016): largest outbreak, 28 646 cases including 11 323 deaths DRC 2018: Équateur Province (northwest of DRC), 8 May–25 July 2018: 38 confirmed cases, 17 deaths; seven cases were healthcare workers, two of whom died North Kivu Province (eastern DRC), 1 August 2018—ongoing; as of 25 August 2018, 79 confirmed cases, 42 deaths DRC 2020-21	Reduce risk of wildlife-to-human transmission	(Rouquet et al., 2005 , Ebola Outbreak Epidemiology Team WHO 2018, Rojek, Horby, and Dunning 2017)
Rift Valley fever	Egypt (2003) Kenya and Somalia (2006–2007) Sudan and Tanzania (2007) Madagascar (2008–2009) Republic of South Africa (2010) Republic of Mauritania (2016) Republic of Niger (2016)	Sustained vaccination in animals; vector-control measures	(Hassan et al. 2011)
Zika virus Chikungunya virus	First outbreak detected: Cabo Verde (2015) Kenya (2004): largest outbreak (almost half a million) Several outbreaks in Guinea, Tanzania, Sudan, Gabon and Cameroon (2004–2007) DRC (2011)	Vector-control measures Vector-control measures	Gubler, Vasilakis, and Musso 2017 Wahid et al. 2017
Corona virus (COVID-19)	First outbreak in China December, 2019: Outbreak in Africa March (2020)	Reduce risk of human-to-human transmission	

DRC, Democratic Republic of the Congo.

Source: Fenollar and Mediannikov 2018.

Table 4. Leading causes of deaths in Africa (WHO's Global Health Estimates, 2012)

S/N	Diseases	Number of death per year
1	HIV/AIDS	1,108,000
2	Lower respiratory tract infections(target lungs and air ways	1,101,000
3	Diarrheal diseases	644,000
4	Malaria	568,000
5	Stroke	427,000
6	Pre term birth complications	393,000
7	Birth asphyxiation and trauma	356,000
8	Malnutrition	307,000
9	Coronary heart disease	293,000
10	Meningitis	260,000

Source: WHO, 2014a.

Table 5. Western African Ebola virus epidemic

	Cases	Deaths	Last update On 9 June 2016 by WHO	References
Liberia	10,675	4,809	Outbreak ended 9 June 2016	Brice, (2016)
Sierra Leone	14,124	3,956	Outbreak ended 9 June 2016	Brice, (2016)
Guinea	3,811	2,543	Outbreak ended 1 June 2016	WHO, 2014a
Nigeria	20	8	Outbreak ended 19 October 2014	WHO, 2014a
Mali	8	6	Outbreak ended 18 January 2015	WHO, 2015a
United States of America	4	1	Outbreak ended 21 December 2014	WHO 2014b
Italy	1	0	Outbreak ended 20 July 2015	WHO 2015b
United Kingdom	1	0	Outbreak ended 10 March 2015	WHO, 2014a
Senegal	1	0	Outbreak ended 17 October 2014	WHO, 2014a
Spain	1	0	Outbreak ended 2 December 2014	WHO 2014d
Total	28,646	11,323	as of 8 May 2016	

Source: WHO (2019).

dependences and other structural issues. This will also affect Africa's trade and reduce foreign financing flows to African countries. Although, Africa's trade with the rest of the world has shown good momentum in recent time (Africa Center for Strategic Studies 2020, World Bank 2020a, World Bank 2020b). In 2019, UNCTAD's Economic Development report on Africa stated that in the period of 2015–2017, Africa's total trade to the rest of the world was \$760 billion in current prices, and Africa's share of exports to the rest of the world ranged from 80% to 90% in 2000–2017 (IGC 2020, AUC/OECD 2019, AUC/OECD 2018, World Bank 2020a, World Bank 2020b).

But, intra-African trade which combines the average of intra-African exports and imports was estimated to be around 2% during the period 2015–2017 while the intra-African exports were 16.6% of total exports in 2017 which is much lower to 68.1% in Europe, 59.4% in Asia, 55.0% in America, and 7.0% in Oceania (IGC 2020, AUC/OECD 2019, AUC/OECD 2018).

- Studies on the income streams people under lockdowns in Africa could results in irreversible economic effects of containment measures implemented by many African countries due to fragility of many African countries, focusing on school, public transport, and workplace closures. The effects of workplace closures will create the highest economic costs and aggravate poverty and malnutrition especially among poor people of Africa (Adesina 2020, Africa Center for Strategic Studies 2020, IGC 2020, AUC/OECD 2019).
- The closure of workplaces could lead another 9.1% of the population in sub-Saharan Africa into extreme poverty as

a result of COVID-19, with about 65% of this increase resulting from the lockdowns (Adesina 2020, Africa Center for Strategic Studies 2020, IGC 2020, AUC/OECD 2019).

- The closure of workplaces in sub-Saharan African countries due to COVID-19 will make the savings of about 30% of the population vanish (IGC 2020, Adesina 2020, Africa Center for Strategic Studies 2020).
- The poor infrastructure and poor social welfare prior to pre-COVID-19 in African countries will have little to mitigate the economic impact of COVID-19 and the lockdown measures on the people (Adesina 2020, Africa Center for Strategic Studies 2020, McKinsey 2020, AUC/OECD 2019).

However, to mitigate the impacts of COVID-19 on African countries the following measures could be used.

Immediate term: There is need for African governments to gear their efforts to prevent the spread of COVID-19 virus with the support of the international community and to invest in infrastructure for early-detection and treatment of infected people, and in deploying emergency relief measures to the victims and those in informal sector. There will be need for OECD and other major producers of medical products to stop the supply of banned products and any policy that will increase the costs of essential supplies to African countries (Africa Center for Strategic Studies 2020, ECA 2020, OECD, 2020, AUC/OECD 2019, McKinsey 2020, Primi 2020, World Bank 2020a, World Bank 2020b).

Short-term: African countries should channel their fiscal and monetary measures particularly liquidity to SMEs, households and informal workers who are the most

Table 6. COVID-19 in Africa: Confirmed cases by country and territory (as 10 April, 2021)

Country	Confirmed cases	Active confirmed cases	Recoveries	Death	References
South Africa	1,572,985	19,809	1,499,110	54,066	(Coronavirus update live 2021)
Morocco	508,530	5,132	494,415	8,983	(Coronavirus update live 2021)
Tunisia	296,343	40,172	246,001	10,170	(Coronavirus update live 2021)
Ethiopia	249,292	57,701	188,080	3,511	(Coronavirus update live 2021)
Egypt	219,774	41,512	165,348	12,914	(Coronavirus update live 2021)
Libya	174,752	11,692	160,113	2,947	(Coronavirus update live 2021)
Nigeria	164,588	7,949	154,578	2,061	(Coronavirus update live 2021)
Kenya	155,165	46,489	106,093	2,583	(Coronavirus update live 2021)
Algeria	120,562	33,334	84,038	3,190	(Coronavirus update live 2021)
Ghana	91,928	1,422	89,729	777	(Coronavirus update live 2021)
Zambia	91,251	750	89,256	1,245	(Coronavirus update live 2021)
Mozambique	69,597	6,383	62,408	806	(Coronavirus update live 2021)
Cameroon	64,809	6,049	57,821	939	(Coronavirus update live 2021)
Namibia	47,383	1,483	45,278	622	(Coronavirus update live 2021)
Ivory Coast	45,765	175	45,311	279	(Coronavirus update live 2021)
Botswana	45,855	3,826	41,338	691	(Coronavirus update live 2021)
Uganda	41,575	336	40,898	341	(Coronavirus update live 2021)
Zimbabwe	38,045	1,395	35,094	1,556	(Coronavirus update live 2021)
Senegal	40,022	139	38,786	1,097	(Coronavirus update live 2021)
Madagascar	34,775	6,541	27,646	588	(Coronavirus update live 2021)
Malawi	33,989	980	31,864	1,145	(Coronavirus update live 2021)
Sudan	32,695	3,984	26,411	2,300	(Coronavirus update live 2021)
Democratic Republic of the Congo	29,350	2,463	26,135	752	(Coronavirus update live 2021)
Angola	25,051	1,578	22,901	572	(Coronavirus update live 2021)
Rwanda	24,262	1,285	22,649	328	(Coronavirus update live 2021)
Gabon	22,433	3,221	19,074	138	(Coronavirus update live 2021)
Guinea	21,803	2,557	19,107	139	(Coronavirus update live 2021)
Cape Verde	21,784	2,624	18,959	201	(Coronavirus update live 2021)
Mayotte	19,849	16,716	2,964	169	(Coronavirus update live 2021)
Réunion	19,343	1,549	17,653	141	(Coronavirus update live 2021)
Eswatini	18,426	33	17,722	671	(Coronavirus update live 2021)
Mauritania	18,192	185	17,553	454	(Coronavirus update live 2021)
Burkina Faso	13,212	194	12,862	156	(Coronavirus update live 2021)
Somalia	13,459	7,177	5,593	689	(Coronavirus update live 2021)
Mali	13,504	5,240	7,804	460	(Coronavirus update live 2021)
Togo	12,698	2,065	10,512	121	(Coronavirus update live 2021)
Lesotho	10,723	4,140	6,267	316	(Coronavirus update live 2021)
Republic of the Congo	10,084	1,737	8,208	139	(Coronavirus update live 2021)
South Sudan	10,504	140	10,250	114	(Coronavirus update live 2021)
Djibouti	10,738	399	10,207	132	(Coronavirus update live 2021)
Equatorial Guinea	7,559	355	7,097	107	(Coronavirus update live 2021)
Benin	7,720	113	7,510	97	(Coronavirus update live 2021)
Central African Republic	6,175	978	5,112	85	(Coronavirus update live 2021)
Niger	5,143	140	4,812	191	(Coronavirus update live 2021)
Gambia	5,820	375	5,272	173	(Coronavirus update live 2021)
Chad	4,747	196	4,382	169	(Coronavirus update live 2021)
Seychelles	5,170	469	4,675	26	(Coronavirus update live 2021)
Sierra Leone	4,044	1,051	2,914	79	(Coronavirus update live 2021)
Comoros	3,826	35	3,645	146	(Coronavirus update live 2021)
Guinea-Bissau	3,721	450	3,205	66	(Coronavirus update live 2021)
Eritrea	3,597	181	3,406	10	(Coronavirus update live 2021)
Burundi	3,759	2,980	773	6	(Coronavirus update live 2021)
Liberia	2,097	72	1,940	85	(Coronavirus update live 2021)
São Tomé and Príncipe	2,292	30	2,227	35	(Coronavirus update live 2021)
Mauritius	1,205	193	996	16	(Coronavirus update live 2021)
Tanzania	509	305	183	21	(Coronavirus update live 2021)
Western Sahara	10	1	8	1	(Coronavirus update live 2021)
Saint Helena, Ascension and Tristan da Cunha	6	1	0	5	COVID-19 Response Level Escalated to Level 2 RED – Ascension Island Government 2021 ; Arriving Passenger Tests Positive for COVID-19, 2021
Total	4,522,489	358,480	4,044,193	119,816	

Source: "Coronavirus update (live)". Retrieved 19 April 2021.

vulnerable. Although Covid-19 has disrupted the African Continental Free Trade Area (AfCFTA) implementation and its implementation could be effected on 1 July 2020 as planned. African countries should re-strategize their national

plans to make goods and services available freely in order to establish a new implementation date as soon as possible (Africa Center for Strategic Studies [2020](#), ECA [2020](#), OECD, [2020](#), AUC/OECD [2018](#), McKinsey [2020](#), Primi [2020](#)).

Medium-to-long term: African countries need to strengthen their health care systems as well as extend health and social protection coverage to take care of the in partnership with the international community, governments should continue to strengthen health systems and extend health and social protection coverage to take care of victims of COVID-19 and those in informal sector (Africa Center for Strategic Studies 2020, OECD, 2020, McKinsey 2020, Primi 2020).

Covid-19 pandemic

The first COVID-19 case in Africa continent was recorded in Egypt on 14 February 2020. Since then, over 50 countries in Africa have reported COVID-19 cases. Although were initially confined to capital cities, however, cases are now widespread in several regions or provinces of different countries in Africa. As at 27 July, 2020, the number of confirmed COVID-19 cases had risen to 789 226 and caused 16 715 deaths (Table 6). The African countries with the highest number of infections at the time of writing this paper are South Africa, Egypt, Nigeria and Ghana. But due to under-reporting and variability of the accuracy of data collection, the full scope of the pandemic remains uncertain (Africa Center for Strategic Studies 2020, OECD, 2020, McKinsey 2020, Primi 2020, Simpson, 2020).

However, the World Health Organization (WHO) has continued to warn that Africa could be the next epicenter of the Coronavirus. This scenario is complicated by poor health infrastructure, fragile economy and poor adherence to social distancing, use of noise masks and other precautionary measures that could slow down the trend of COVID-19 transmission as most African countries are now experiencing community transmission of the virus (OECD, 2020, McKinsey 2020, Primi 2020, Simpson, 2020).

Many African governments have starting implementing measures to encourage social distancing such as court trials and fines in some states in Nigeria, focusing on border and travel restrictions, school closures, and bans on large gatherings. Nigeria implemented a 28-day period of full lockdown while South Africa and Ghana implemented a 21-day period of full lockdown. Other African countries, like Senegal and Côte d'Ivoire, instituted curfews and partial lockdowns (Adesina 2020, OECD, 2020, Primi 2020, Simpson, 2020).

The COVID-19 pandemic will affect Africa's growth in terms domestic and external fronts, with a serious effect on the well-being of African people living in poverty. The most recent UN forecasts project shrinkage in GDP of many African countries in 2020 (World Bank 2020a, World Bank 2020b). According to the UN estimates, nearly 30 million more people could fall into poverty and acutely food-insecure people will increase significant (McKinsey 2020, Primi 2020, Simpson, 2020, World Bank 2020a, World Bank 2020b).

COVID-19 pandemic could affect three types of African countries that are facing food security crises (ECA 2020, McKinsey 2020, Simpson, 2020). These countries are:

- Countries already affected by food crises such as Niger, Mali, Burkina Faso, where 2.5 million children are

undernourished, will undoubtedly suffer the most (AUC 2020, AUDA-NEPAD 2020).

- Countries heavily dependent on food imports from developed countries such as Mauritania, Liberia, Sierra Leone, Gambia will suffer as a result of restrictions on movement and ban on air travel (AUC 2020, AUDA-NEPAD 2020, McKinsey 2020, Simpson, 2020).
- Countries with good agriculture production capacity such as Côte d'Ivoire, Senegal, Ghana, Cape Verde, and Nigeria may re-launch local production to meet local needs (AUC 2020, AUDA-NEPAD 2020, McKinsey 2020, Simpson, 2020).

Government priority actions to stem poverty and effects of COVID-19 pandemic in Africa. Build preparedness and early detection mechanisms to contain the contagion. The COVID-19 pandemic effects on Africa continent could high level of economic losses both in terms domestic and external fronts which have serious impact on the well-being of African people, increases poverty and vulnerability to malnutrition and diseases (Adesina 2020, Coulibaly and Madden 2020, World Bank 2020a, World Bank 2020b). African governments need to prioritize their actions to stem the tide of poverty, malnutrition and diseases (Adesina 2020, AUC 2020, AUDA-NEPAD 2020). These may include:

- Adopt, communicate and adopt target-specific control measures to reduce the spread of COVID-19 through frequent hand washing, case isolation, bans on public gatherings, lockdowns, etc (ECA 2020, World Bank 2020a, World Bank 2020b).
- Develop proactive measures to identify all suspected cases in order to ensure early detection of infection (Adesina 2020, AUC 2020, AUDA-NEPAD 2020, World Bank 2020a, World Bank 2020b).
- Digitalize through the use of mobile applications for contact tracing, while ensuring anonymity and user protection (Adesina 2020, World Bank 2020a, World Bank 2020b).
- Transparency in reporting the health statistics by working together with WHO and the African Centers for Disease Control and Prevention (Adesina 2020, AUC 2020, AUDA-NEPAD 2020).
- Prioritize government budget to take of emergency spending in healthcare systems and medical supplies (AUC 2020, AUDA-NEPAD 2020).

African governments should deploy emergency measures in highly informal sectors to take care priority needs.

Provide emergency relief: African governments should in particular provide face masks either imported or locally-made ones; emergency food distribution; emergency transportation; and make provision for other palliative measures that could reduce the impact of COVID-19 pandemic (Coulibaly and Madden 2020, AUC 2020, World Bank 2020a, World Bank 2020b).

Support public health services: African governments should ensure continuity of essential services by providing

daily clean water and community hand washing facilities; re-direct or converting some services and public buildings e.g. schools into public health and emergency isolation centers to reduce the pressure in surge of COVID-19 cases (Coulibaly and Madden 2020, AUC 2020, World Bank 2020a, World Bank 2020b).

Ensure income replacement: African governments should help by providing food aids and other palliative measures for workers and other informal group as well as providing employment to people affected by the lockdown (Coulibaly and Madden 2020, IIF 2020, AUC 2020).

Strengthen food chain security: African governments should encourage food crop production and provide the necessary farm inputs that will create accelerated food production to prevent food scarcity and increase basic price of food (Coulibaly and Madden 2020, IIF 2020, AUC 2020).

Mitigating the impacts of poverty, malnutrition and diseases in Africa

Efforts to curtail poverty, hunger, food insecurity and diseases in African continent could be reinforced to bring some breakthroughs. These are:

- Entrenching democracy in many African nation and creating greater political stability in countries engaging in armed conflict and civil war
- Improving Africa's economy through economic growth particularly in countries in sub-Saharan Africa
- Aggressive fight against HIV/AIDS, malaria, COVID-19 and other diseases
- Improved nutrition among many African countries through home grown school feeding programme in many countries in sub-Saharan Africa in reducing infant mortality rate
- Increasing the fight against hunger in Africa through the use of improved and genetically modified crops such as yellow flesh cassava, orange flesh sweet potatoes and cowpea in Nigeria and many African countries

In order to salvage Africa and reduce this problem to barest minimum; the following recommendations will be necessary:

- Improving policy formulation and creating collaboration between African countries in order to enhance political will and create synergies to reduce the problem of poverty, malnutrition and diseases in Africa.
- By instituting a holistic approach to fighting against corruption by government officials and all stakeholders to reduce costs of governance and policy effectiveness.
- Improving agricultural practices through adoption of large scale farming as against the current method of subsistence farming in Africa in order to increase food production.
- Provision of necessary farm inputs like fertilizers, use genetically modified crops or resistant crops and live-stock animals to improve yield and farm productivity.

- Farmers' access to improved transport system will enhance agricultural produce mobility and farmers' income.
- COVID-19 pandemic has affected and changed individual and collective perception as well as community engagement. Therefore, African countries and international communities should come to the aid of the people through provision of adequate health facilities and food supplements that can boost the immunity of the people as educating the people individual and public hygiene practices that could enhance their lives and prevent the continuous spreading of COVID-19.

Conclusion

In conclusion, the causes of poverty, malnutrition and diseases in African continent are uncontrolled rapid population growth, inefficient agricultural and industrial practices, high debt profile of many African countries due to poor governance and corruption, diseases such as AIDS epidemic, malaria, Ebola virus and COVID-19 pandemic, poor and inadequate health infrastructure and armed conflicts. The challenge has been reinforced by increasing drought, flooding and climate change resulting in a shift in crops and farming practices. However, on other hand, malnutrition is being addressed in many countries in Africa through school feeding programme for primary and secondary school children that provide a full balanced diet meal for each pupil every day to improve the nutrition of children. This will be cost-effective strategy to alleviate poverty and malnutrition. Mitigating factors against the problems of poverty, malnutrition and diseases in African continent include controlling population growth, efficiency of agricultural and industrial practices, reduction of high debt profile of many African countries, good governance, elimination of corruption, eradication of armed conflicts and provision of adequate and needed health infrastructure. Finally, African leaders need to prioritize the needs of their citizens in order to bring meaningful development to the continent and move Africa from being a beggar continent to a prosperous one.

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