

**FOOD AND NUTRITION SECURITY SITUATION IN GHANA: NUTRITION
IMPLICATIONS FOR NATIONAL DEVELOPMENT****Koryo-Dabrah A^{1,2,*}, Ansong RS², Setorglo J³ and M Steiner-Asiedu²****Alice Koryo-Dabrah**

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ABSTRACT

Achieving food and nutrition security is fundamental to the Sustainable Development Goals (SDGs) due to its strong interdependence with economic growth and development. Eradicating hunger and all forms of malnutrition (SDG 2) remain high on the global agenda and is at the forefront of high panel deliberations because poor dietary intake has long term negative consequences on individuals and economic advancement. The goal to end hunger and malnutrition can be achieved when food and nutrition insecurity is properly tackled through investment in agriculture parallel to economic and social protection programmes. In Ghana, about 1.5 million of the population are estimated to be food insecure while undernutrition, overnutrition and micronutrient deficiencies persist across the life stages. Challenges to food and nutrition security in Ghana have been identified as: poverty, climate change, rapid urbanization and population growth, gender inequalities and poor infrastructure. Poor economic growth, health, education, hygiene and environmental exploitation are implications of these challenges. Addressing these implications sets long-term foundation for the development of the nation by prioritising policies that are nutrition sensitive which directly address the complexity of malnutrition. The level of food and nutrition insecurity in Ghana can be reduced through a national commitment towards addressing the four pillars of food security coupled with programmes that bring about resilience through sustainable systems. To this end, intervention programmes have been introduced by government to reduce the poverty burden on households. These programmes are in the form of social interventions, governmental flagship projects, and research-driven agricultural interventions to improve yield that withstand the effect of climate change. This review is aimed to present the food and nutrition security situation in Ghana and emphasise the challenges that exacerbate the problem while bringing to light the nutritional implications to national development. It is hoped that the recommendations from this review will help the government in achieving food and nutrition security in Ghana.

Key words: food security, nutrition security, gender, agriculture, health, education, economic development, Ghana



INTRODUCTION

Food security became a global concern in the 1940s and continues to receive global attention. The United Nations (UN) Standing Committee on Nutrition in 2013 introduced the concept food and nutrition security by recognising the linkages between food security and nutrition security. Despite the UN recognizing food security as a human right issue in 1948 [1], insufficient access to food continue to plague the world. The Food and Agriculture Organization (FAO) predicts a 70% increase in food production to feed 2.3 billion people by 2050 [2]. This has compelled the UN to aim to end hunger, and improve nutrition for all (SDG2) which is central to advancing the economic gains of any nation. The right to food is a major concern in Low and Middle Income Countries (LMIC) like Ghana, which is often abused due to several factors at national and regional levels and significantly at the individual level. In Ghana food and nutrition security exist primarily owing to availability, affordability and the nutritional quality of the diet in areas mostly affected [2].

Undoubtedly, agriculture is the dominant occupation in Ghana, employing over 50% of the workforce [3]. The total arable land is 136,000 km² covering 57% of total land space with the main staples being maize, millet, rice, cassava, yam, and plantain which account for 43% of land cultivated. Maize yield alone is 55% with an average production of 1.92mt/ha (1,920Kg/ha), rice is 6mt/ha (6,000Kg/ha) and cassava, 18.78mt/ha (18780Kg/ha). Crop production contributes 60% of the total energy consumption and depending on household size; yield is mostly insufficient to feed households and to generate income for non-food purposes. Yield per hectare of land is generally low due to inadequate investment in agriculture by farmers. Given the low productivity levels coupled with reliance on hand tools forces plots cultivated to be small- almost 60% of farms in Ghana are smaller than 1.2 hectares with average farm size less than 1.6 hectares. These constraints notwithstanding, agriculture contributes 54% towards GDP and employs 52% of the active labour force with 39% being women.

Output is further constrained by the fact that almost all farming is rain-fed. There are two major rain seasons lasting less than six months except in the Northern sector with one rainfall season throughout the year. Most farm land in Ghana is irrigable; however, only few hectares are fully irrigated and irrigation is known to increase farm yield twice as much compared to rainfed agriculture [3]. Agriculture is aimed to supply food and also as a means to generate income; however, several obstacles hinder adequate investment to increase production and productivity. The issue of food and nutrition security in Ghana is mostly in Northern Ghana where poverty exists, and among slum dwellers in the cities.

The objective of this review is to present the food and nutrition security situation in Ghana, emphasising the challenges that exacerbate the problem while bringing to light the nutritional implications to national development. Also, the review highlights some advances made by government and the way forward to achieving food and nutrition security.



NUTRITION AND FOOD INSECURITY IN GHANA

Globally, there has been a reduction in undernutrition from 14.5% in 2005 to 10.8% in 2017 and remained the same in 2018. The same trend was seen continentally in Africa during the same period, from 21.2% to 19.8% and regionally in sub-Saharan Africa from 24.3% in 2005 to 22.7 in 2017 and 22.8% in 2018 [4]. A similar trend is observed in Ghana with decreasing rate of undernutrition but increasing obesity. For instance, stunting, an indicator of chronic malnutrition has seen a decline since 2003 from 35% to 28% in 2008, and 19% in 2014 according to GDHS report. In 2017, stunting was estimated at 21% [5] and recently projected at 18.4% [6]. In spite of the decline in undernutrition, current rates are still unacceptable compared to global targets. The most affected part is Northern Ghana with 33% stunting more than the national prevalence [7] due to the level of food insecurity. A recent micronutrient survey reported anaemia and vitamin A deficiency to be 37% and 21%, respectively among children under five. Anaemia was 22% and 45% in non-pregnant and pregnant women, respectively [5]. The anaemia prevalence among children has seen a decline from 76% in 2003 to 66% (two-thirds of children) in 2014 according to GDHS report. However, the current prevalence is unacceptable. Among children 5-16 years, overweight and obesity was 47% [8] and a systematic review found overweight and obesity to be 25% and 17%, respectively in the adult population [9]. Ghana, like other LMICs is experiencing the triple burden of undernutrition, overnutrition and hidden hunger affecting all population sub-groups. The attributable cause is the inability of poor households to cultivate or purchase enough amounts of staples and animal source food to meet their dietary needs due to poverty. Additionally, some poor households and individuals also resort to cheap energy-dense nutrient-poor foods contributing to the burden of malnutrition. In Ghana, 5% (1.5 million) of the population experienced food insecurity in 2018 [10]. Of this, 34%, 15% and 10% lived in the Upper West, Upper East, and Northern Regions (now Savannah, North East and Northern Regions). Another two million people were at risk of food insecurity [10]. Aside from Northern Ghana, other regions of concern are the Brong Ahafo and Volta found in the middle belt of the country. These regions are mostly hit by poverty and rely on agriculture for livelihood.

CHALLENGES TO FOOD AND NUTRITION SECURITY IN GHANA

Ghana is experiencing the triple burden of malnutrition which has implications for human development and economic growth. The challenges to achieving food and nutrition security are enormous since the causes are multi-dimensional and complex in nature. The main challenges to food and nutrition security go beyond the pillars (availability, access, utilization and stability). These challenges include poverty, climate change, rapid urbanization and population growth, gender inequalities, food loss and poor infrastructure.



Poverty

Although Ghana was the first to reduce poverty by half in sub-Saharan Africa from 52.6% in 1999 to 21.4% in 2012 [11], people living in extreme poverty have increased from 2.2 million in 2013 to 2.4 million in 2017 [12]. Though there is disparity in the presentation of poverty, it is more prevalent in rural than in urban areas. Poverty is associated with lack of education, social exclusion, lack of access to quality healthcare among others, all of which threaten food security. Poverty partly results from poor agricultural performance and sometimes *vice-versa*. Poor rural households depend on agriculture for livelihood and often lack access to credit facilities to invest in modern technologies to increase production. The savannah communities in Ghana depend solely on agriculture for livelihood and are the poorest, and at the same time most vulnerable to shocks resulting from droughts leading to food and nutrition insecurity [13]. Poor farming households produce less food than they consume and rely on markets to purchase the rest [14], spending a greater percentage of their earnings on food and at risk of food price volatility. In Ghana, food prices are relatively stable; however, a slight increase is experienced during off-farm and dry season. Increase in food prices also results from high transportation costs owing to fuel price increases.

Climate change

Ghana is experiencing the effects of climate change with changing rainfall patterns and increases in temperature. Projections show that from 2020 through to 2080, the country will experience higher temperatures and is indeed happening now [15]. Communities which never experienced floods and droughts are now affected. This change is affecting food security in those regions. Desertification is also projected at 20,000 hectares per annum and sea surface temperature rise is likely to affect the fisheries industry [15].

Climate change threatens food security along two pathways. First, the occurrence and intensity in weather results in higher temperatures experienced now than formerly [16]. Events such as drying up of water bodies, rising sea levels, acidification of the ocean, land degradation and disruption of the ecosystem have affected crop production for food and foliage for livestock, leading to hunger and the burden of poverty. Secondly, the effect of these changes in weather patterns on food production increases vulnerability of poor individuals and households to food insecurity [16].

Suitability of the weather in cocoa growing areas of Ghana is predicted to reduce by 2050 [15], which will affect the livelihood of majority who depend on cocoa production for income, some of which is used to purchase food to complement that produced on subsistence basis. Maize and major root tuber production is estimated to reduce by 7% by 2050 [15] and this is likely to affect the employment of the working population.

Rapid urbanization and population growth

The urban population in Ghana has more than tripled over the past three decades [17]. Currently, the urban population is 56.7% with 3.4% annual growth rate. Rapid urbanization is causing the use of agriculture land for non-agricultural purposes such as building and mining, threatening food production. The ‘*galamsey*’ (illegal mining) menace in Ghana has destroyed many cocoa farms, forests and other lands for crop



production and rivers polluted with heavy metals destroying aquatic life and access to potable water.

Rural-urban migration has shifted poverty to urban centres where unemployment aggravates urban poverty and increases food insecurity. Youth unemployment is a major challenge in Ghana leading to the formation of unemployed youth groups. Rapid and unplanned urbanization causes an increase in people dwelling in slums and make-shift structures in urban centers. People living in such structures depend mainly on street foods which are energy dense and coupled with unsanitary conditions lead to increased rates of infection and hence, affect food utilization.

Gender inequalities

Women involved in agriculture in developing countries constitute almost half of the agricultural labour force [18]; however, social inequalities reduce their yield from farming. Analysis by FAO in 2010 on the state of food and agriculture showed 25% average difference in yield between men and women farmers. In Ethiopia, women produced 35% less than men whereas it was 23% in Kenya for maize and cowpeas. Differences exist in Ghana because females are unable to maintain the fertility of their lands. Females in developing countries mostly have less education and lack requisite skills to earn a decent income and also to access credit that are readily available to men. Again, due to low education and low wages women are most affected by increase in food prices. Women involved in agriculture are mainly small holder farmers due to social norms regarding land tenure and inheritance systems, which affect the size of land a woman can acquire. Women mostly raise small ruminants and birds and this increases their vulnerability to poverty since the market value of these animals is low [18]. Additionally, traditional norms limit the inclusion of women in decision making even about themselves and in the use of household resources. Women are most hit and affected by climate change due to lack of knowledge to adaptability and inequalities as well as constraints to products and services [16]. Nutritionally, women and girls are at a disadvantage, although they are responsible for food preparation in the home. Household distribution of food puts women at a disadvantage; for instance in Ghana, among women who were food insecure 59% were found to have at least one micronutrient deficiency [19], which reduces their work capacity to earn decent income in the case of iron deficiency. The consequences of poor nutrition of a woman before and during pregnancy and the first 1,000 days of a child have life-long effects [20].

The above international observations generally apply also to Ghana, where women are involved in food production, trading food produce from farm and other commodities as well as managing the home [21]. Gender equalities and the rights of women are fundamental to ensure food and nutrition security because of their role in food production, processing, cooking, feeding and caring for the family [21]. Factors such as availability of back-yard gardening, number of crops cultivated and income generated are key for women to attain household food security [21], placing female-headed households at risk of food insecurity [18].



Food loss and poor infrastructure

Annual food loss and wastage in Ghana is estimated at \$6 billion and this is projected to increase to \$1.5 trillion by 2030 in the wake of global target to reduce by half the amount of food loss and wastage (SDG 12.3) by 2030. These losses are due to insufficient and low capacity of agro-processing industries in the country. Another infrastructural challenge to food security is access to renewable energy to mechanise agriculture to improve productivity. Rural access to electricity in Ghana is limited compared to urban access which negatively affects agriculture mechanization and output. Although Ghana has higher road density than neighbouring countries, the poor nature of roads increases transportation costs [22] and in effect also raises prices. Adequate and easy access to markets would ensure food availability. Other infrastructural challenges contributing to food insecurity include limited farm markets, poor access to farming inputs and agricultural extension officers to provide technical assistance to farmers.

IMPLICATIONS FOR NATIONAL DEVELOPMENT

Food and nutrition issues are important since they have economic and social implications for the development of Ghana. Not surprising, it is highly prioritised on the global agenda because it is central to achieving the SDGs. Malnutrition is costly and the harm is irreversible. The implications of food and nutrition insecurity are discussed under economic growth, education, health and the environment.

Economic growth

Malnutrition retards economic growth and exacerbates poverty. Inadequate dietary intake is associated with higher economic burden. Malnutrition is said to cost \$3.5 trillion at the global level and retards efforts by developing countries to reduce poverty and improve livelihood [23]. The economic cost of undernutrition in West Africa is 6.4% of GDP. In Ghana, the burden of malnutrition makes the country suffer from the direct economic decline and causes budgetary allocations to fight malnutrition to divert resources from priority developmental investments.

The cost of hunger has a toll on healthcare expenditure with the Ghanaian economy losing US\$ 2.6 billion to poor nutrition among children [24]. The loss of human capital is attributed to morbidity and mortality related to malnutrition. About 37% of adults in Ghana are reported to have suffered stunted growth according to FAO report [24] and every 1% loss in adult height reduces productivity by 1.4% [25]. Therefore, any form of malnutrition among the Ghanaian agriculture workforce has the likelihood to reduce agricultural productivity which will further worsen poverty and food security.

About GH¢4.6 billion (US\$ 2.6 billion), 6.4% of GDP was estimated to be lost in 2012 owing to child undernutrition in Ghana [26]. The biggest cost is the decline in productivity due to undernutrition-related deaths. About 41% of manual workers were reported to have been stunted during childhood and this contributed to an annual loss of GH¢319 million (US\$177.5 million) [26]. The working hours lost due to work absenteeism related to undernutrition was 1, 077,706 hours which is 4.5% of GDP [26]. Loss of productivity related to undernutrition was GH¢ 4.3 billion (US\$ 2.4 billion) [26].



The cost of healthcare related to malnutrition is borne by households and a heavy burden on the national health insurance scheme. Treating undernutrition cost 10% or higher of a life-time earnings and the cost to a nation is 3-16% of GDP [23]. In Ghana, vitamin A deficiency among children was 20.8% and anaemia 36% [5]. Anaemia is reported to decrease GDP by 4% [23]. Iodine deficiency reduces IQ by 13 points [27]. Poor physical growth resulting from poor nutrition is associated with life-long predisposition to disease, increasing absenteeism from work, low labour productivity and reduced income. Investing in child nutrition increases school completion time and future earnings by 5-50% [28]. Escaping stunting decreases poverty in adulthood by 33% and increases Africa's GDP by 4-11% [28].

Also, at the household level, extra money is spent to treat malnutrition and in some instances pay funeral expenses in the case of death [23]. Again, economic activity is abandoned to care for malnourished individuals. Adults who were malnourished in childhood are at risk of non-communicable diseases which result in increased health costs.

Furthermore, Governments with weak economic structures are unable to provide shocks in times of increased economic crises and high food price volatility. Already there is a decline in the economic growth rate of Ghana [29]. Malnutrition could lead to reduction in investment in agriculture, education, healthcare and social protection.

Health

Food insecurity is associated with poor health outcomes and increased health cost both in children and adults. Food insecurity is associated with low dietary diversity which is linked to poor nutrient intakes. Restriction on macro and micro nutrient consumption can negatively affect physical growth and cognitive development in children, which has implications on educational attainment. Food insecurity is also linked to overweight/obesity. Poor families resort to cheap energy-dense foods high in sugar, fat and salt that are linked to obesity, which triggers other chronic disease conditions and increase risk factors. As a country policy on fortification of flour with iron, vegetable oil with vitamin A and salt with iodine to improve micronutrient status is enforced [5]. Strict measures are also required to regulate sugar and fat use in foods by food industry.

Education

Economic growth is dependent on the development of human capital through education and skills acquisition. Education improves productivity in several ways: increases efficiency in the labour force, accelerates knowledge acquisition and improves the use of technology and innovative thinking [30]. Education increases competitiveness and every additional year spent in school increases future wages by 10% [31]. Quality education cannot be translated into productivity and skills in the absence of good nutrition. During childhood, the quantity and quality of food consumed affects health and brain development. Stunting in children is associated with poor cognitive, physical and emotional development, reduced school performance and low wages later in life [23]. Also, children from food insecure households have high incidence of hospitalization due to poor health [32]. Household food insecurity leads to micronutrient deficiencies resulting in behavioural problems [33]. Adults who went to school stunted receive 20% less income than if they had not been stunted [16]. In



Ghana, the government is providing free basic and secondary education coupled with the provision of free school meals to address human capital development.

Environmental

Hunger and food insecurity are arguably linked to sustainable environment to ensure continuous food production. It is not yet established whether in aggregate the poor destroy the environment more than the rich. Nevertheless, poverty leads to environmental degradation because poor communities over-exploit the environment for livelihood through deforestation and illegal mining [34]. Inappropriate activities such as waste disposal result in poor sanitary and unhygienic conditions affecting food safety and utilization [35]. These activities further contribute to the harsh effects of climate change. The use of either wood or charcoal for fuel by, especially rural households, has a toll on the environment contributing to climate change. Liquefied Petroleum Gas use is still low in Ghana although there have been improvements since the early 1990s, which initiated the Ghana LPG Promotion Programme [36]. Saving the environment impacts food production positively.

THE WAY FORWARD FOR GHANA

For Ghana to achieve food and nutrition security there must be commitment towards the four pillars; increasing food availability, increasing access to food, ensuring food stability, and improving conditions for food utilization.

Agriculture is known to be the bedrock to achieving food and nutrition security because it is key to improving the economic gains of the nation. In Ghana, some efforts are being made in this regard. The government's agriculture flagship programme 'planting for food and jobs' seeks to achieve the SDGs [37]. The programme is focused on cereals, soybean and vegetables with commitment to invest 10% of budget allocation with an expected annual growth of 6% [37]. In addition, 'rearing for food and jobs' and 'planting for export and rural development' aim to increase bioavailable micronutrients through animal food, and create jobs in rural Ghana. Other policies are to ensure year-round farming by constructing one dam per village in Northern Ghana to increase the size of irrigable land to boost food production. To reduce the effect of climate change and enhance food production, government has introduced green-house farming. The construction of cold storage facilities at all landing beaches is aimed at preserving fish catches during the bumper season and increasing protein source foods. Empowering women by closing the gender gap in agriculture to address gender-based inequalities rooted in traditional norms will increase food production and contribute gains against hunger. An area requiring urgent attention is investment in irrigation technology in other regions, combined with provision of energy in rural settings to increase mechanized food production. Prioritising climate change mitigation through policy and collaborative research to develop harsh climate resistant and nutrient-dense crops is significant.

Other strategies to increase food access include improving the living conditions of vulnerable groups through social protection, such as Livelihood Empowerment Against Poverty (LEAP) programme to cushion poor and vulnerable households against food



insecurity must be expanded to include other vulnerable groups. Again, major investments in building human capital through education, training and skills development to decrease poverty is high on government agenda. The Girls Iron Folic Tablet Supplementation (GIFTS) programme for adolescent girls to prevent anaemia is key to improve micronutrient status. Such policies combined with women empowerment has the potential to increase future earnings of women who are likely to invest in the education, health and nutrition of their families. The issue of rapid urbanization is being addressed through the Nations Builders Corps (NABCO) which is creating jobs for fresh graduates in all the Metropolitan/Municipal/District Assemblies in the country. It is a strategy to minimise unemployment and urbanization.

Minimising the challenge of food loss and wastage is being addressed through the government programme “one district one factory” where agro products such as tomato, potato, pineapple, cereals, cassava and others are processed to reduce spoilage and add value to increase nutrition while at the same time providing jobs for those working in such factories. There is also the creation of warehouses in each Metropolitan/Municipal/District Assembly to minimise post-harvest losses. These two programmes are aimed at ensuring stability of food supply.

Investing in healthcare is central to economic productivity and also improving food utilization. Reducing rates of malnutrition have been shown to increase GDP at the national level and impact households positively. Enforcing existing policies on supplementation and fortification of food to vulnerable groups is significant. There are on-going programmes to provide and increase access to portable water and improve sanitation by constructing toilet facilities in rural and urban slum communities by the District Assemblies. There is need to expand the National Health Insurance Scheme (NHIS) to cover more people to increase access to health care. Other strategies include community nutrition education to improve nutrition knowledge, attitude and practice and health promotion.

CONCLUSION

Achieving food and nutrition security in Ghana is directly linked to achieving Sustainable Development Goal (SDG) 2; end hunger, achieve food security, and improved nutrition and sustainable agriculture. Ending hunger and improving food security can be achieved by tackling the four pillars of food security which takes cognisance of the food system in Ghana. Special recognition is required to improve roads and markets to ensure food availability and accessibility. Cross collaboration is key among government institutions like agriculture, health, education, industry, research, the district and local assemblies to coordinate the agenda of food and nutrition security. In addition, strategies to achieving SDG 2 ought to be part of the national development plan and not seen as a household issue. Budgetary allocations should be made available to improve maternal and child health to improve labour output in the country. Agriculture should be improved through mechanization and modern approach to farming taking into account climate change.



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