

THE DYNAMICS OF THE UNDERNOURISHED POPULATION IN NIGERIA COMPARED TO AFRICA

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Abstract: *The research investigates the dynamics of undernourishment population in Nigeria compared to the African continent between 2001 and 2021. It explores trends, causes, and challenges in reducing food insecurity, highlighting government policies, international interventions, demographic pressures, and the effects of conflicts and climate change. The study utilizes data from Our World in Data and the Food and Agriculture Organization (FAO), offering an in-depth look at the role of agricultural resources, infrastructural challenges, and policy interventions. The findings underscore the need for integrated, long-term strategies that address systemic vulnerabilities and enhance resilience across Nigeria and Africa, aiming for sustainable solutions to food insecurity.*

Key words: *dynamics, undernourishment, population, Nigeria, Africa*

INTRODUCTION

According to the Food and Agriculture Organization of the United Nations (FAO), undernourishment is defined as the state in which a person's usual food intake is insufficient to meet the minimum dietary energy requirements required to maintain an active and healthy life. This definition is based on an estimate of food availability, energy needs, and energy distribution within the population. [16]

Undernourished to date remains a key global public health problem that has constituted a long-time barrier to a healthy life and a constant threat to human capital development [5] Asia is the continent with the most malnourished children in the world, while Africa ranked second [11]. Recent data of malnourished children under 5 years of age in the continent showed that as much as 31 % are stunted, and 15.9% are underweight [6]. Nigeria presently faces the prevalent burden of undernourished in Africa with the largest population of malnourished about 25.05% [9]. However, the focus on mitigating undernourishment in low- and middle-income countries (LMICs) has increased significantly worldwide since the start of the twenty-first century [13]. Since 2014, the proportion of the undernourished population in low-income countries has steadily increased, with sub-Saharan Africa (sSA) seeing the largest increase from 17.6% in 2014 to 22.5% in 2022 and to about 25.06% in 2024 [6,9]. The current global food systems are antiquated, unstable, and frequently devoid of equity and inclusivity [2,8,10,14]. They fall short of guaranteeing sufficient and nourishing food to everyone, especially the marginalised in low- and middle-income nations, following fundamental human rights and within secure and long-lasting national borders. When the Sustainable Development Goals (SDGs) reach their target date of 2030, just six years from now, the main focus of current debates is how to solve global concerns and promote sustainable development through that time. The World Bank determines the percentage of undernourished people on the planet.

The Russia-Ukraine conflict, the COVID-19 pandemic aftermath, numerous violent conflicts, and climatic disasters worldwide are only a few of the dangerously overlapping global and local issues that are reflected in the world's 2023 GHI score. According to [6], certain countries have had food crises as a result of these occurrences, while other countries have fared better. In comparison with high-income countries, low- and middle-income countries have been particularly severely affected [9].

In 2023, there are multiple instances of starvation in many countries, and things are predicted to get worse throughout the course of the year. The information in this year's GHI score does not account for the circumstances in 2023. Early warning systems show an increase in various parts of the world. Afghanistan, Haiti, Nigeria, Somalia, South Sudan, Sudan, Yemen, and Burkina Faso and Mali in the Sahel are the nations that are most concerning for 2023. Economic downturns are a more ubiquitous issue than conflicts and climate change, which are major drivers of these crises. [1]. Beyond just a lack of calories, undernutrition can also indicate shortages in energy, protein, and/or vital vitamins and minerals. Undernutrition can arise from a variety of acute factors, including low food intake (quantity or quality), poor nutrient utilization in the body as a result of infections or other illnesses, or a combination of these in turn stem from a variety of underlying factors, such as the food security of the home, poor maternal health or childcare practices, or insufficient access to health services. clean water and hygienic environments

Population growth in this region has contributed to the increase in undernourishment. The reduction of undernourishment has been particularly sluggish in West Africa, especially in Nigeria, which is responsible for a large share of the world's malnutrition [1]. Official statistics show that 959,000 children between the ages of 5 and 14 die from famine each year, and 850 million people worldwide—roughly 11% of the world's population—are chronically undernourished [3]. As a result, India has the highest rate of undernourished children and pregnant women worldwide. Many youths also receive insufficient food to maintain excellent health and conditions [15]. India's paradox lies in the fact that it produces enough food to feed itself, but its population is among the world's most undernourished. According to [12], there are already two billion undernourished people on the planet, which frequently contributes to concealed malnutrition. I.e. In contrast to consumers in the United States, who spent just 8.6% of their disposable personal income on food in 2020, and those in Europe, who spent 13% of their household budget on food, Nigerian official data from a household expenditure survey in 2019 showed that 56.5% of all household expenditures in the developing nation were allocated to food [7,12]. It is evident from these statistics that a higher proportion of disposable income in emerging nations is allocated towards food expenses. Undernourishment is defined as the proportion of the population whose average food intake falls short of providing the dietary energy levels required to sustain an active, normal, and healthy life. Data with a value of 2.5 might point to a prevalence of undernourishment of less than 2.5%.

MATERIALS AND METHODS

The main objective of this research is to highlight the situation of food insecurity, respectively undernourishment population in Nigeria compared to Africa. The research presented in this analysis is based on comprehensive data obtained from both secondary and tertiary sources. Specifically, it utilizes datasets and insights provided by *Our World in Data* and the *Food and Agriculture Organization of the United Nations (FAO)*, also relevant research articles selected from sources Web of Sciences, Scopus and Google Scholar. These sources offer a reliable and detailed picture of undernourishment trends, agricultural productivity, and the socio-economic factors affecting food security across Nigeria and the broad Africa continent. The integration of multiple data streams allows for a more nuanced understanding of the complex dynamics driving food insecurity in these regions, providing a solid foundation for analysis and recommendations.

RESEARCH RESULTS

The data illustrate the dynamics of the undernourished population in Nigeria and the entire African continent for the period 2001-2021. In this context, “undernourishment” refers to the proportion of people not consuming enough calories to meet their daily needs.

Table 1

Undernourished Population in Nigeria and Africa		
Specification	Nigeria	Africa
2001	8.8	21.8
2002	8.8	21.4
2003	8.5	21.1
2004	7.8	20.6
2005	7.0	19.2
2006	6.6	18.7
2007	6.4	18.7
2008	6.7	18.3
2009	7.5	17.8
2010	8.4	15.1
2011	9.2	14.8
2012	9.7	14.8
2013	9.6	15
2014	9.5	15.3
2015	9.3	15.8
2016	9.6	16.6
2017	10.1	16.5
2018	10.6	16.6
2019	12.4	17
2020	14.2	18.7
2021	15.9	19.4

Sources: Food and Agriculture Organization of the United Nations (2023)***

The results show the general trend of undernourishment in Africa. Across Africa, the undernourished population started the period (2001) with very high values, around 21.8%. After 2003, there was a gradual decline, reaching a low point around 2014 (15.3%), followed by a moderate increase, reaching 19.4% in 2021. This indicates an improvement in food access in the middle of the period, likely due to factors like economic policy stabilization or improvements in agricultural infrastructure and food security. However, after 2014, the rate of undernourishment began to rise again, suggesting challenges in maintaining progress, potentially due to factors like climate change, political instability, and economic hardships.

To narrow this scenario to Nigeria, the general trend of undernourishment situation in Nigeria evolved somewhat in parallel with the rest of Africa, but with much lower values. In 2001, the undernourishment rate was 8.8%, and this value remained constant until 2002. There was a significant drop until 2007 (6.4%), but after that year, the trend reversed, increasing to 15.9% in 2021. The increase in undernourishment in Nigeria starting in 2016, reaching a peak in 2021, could be explained by several factors such as food insecurity caused by internal conflicts, political instability, and global economic fluctuations that impacted the food market. Additionally, population growth plays a key role, adding more pressure on available resources.

Period of Decline

The results in Figure 1 observed that both in Nigeria and in Africa, there was a general trend of decline in undernourishment between 2003 and 2015. However, this decline was much steeper in Nigeria compared to the continent, indicating that, during these years, Nigeria managed to implement effective measures to improve food security. It could be due to government initiatives or

international aid directed towards agricultural infrastructure, farmer education programs, or the development of local markets.

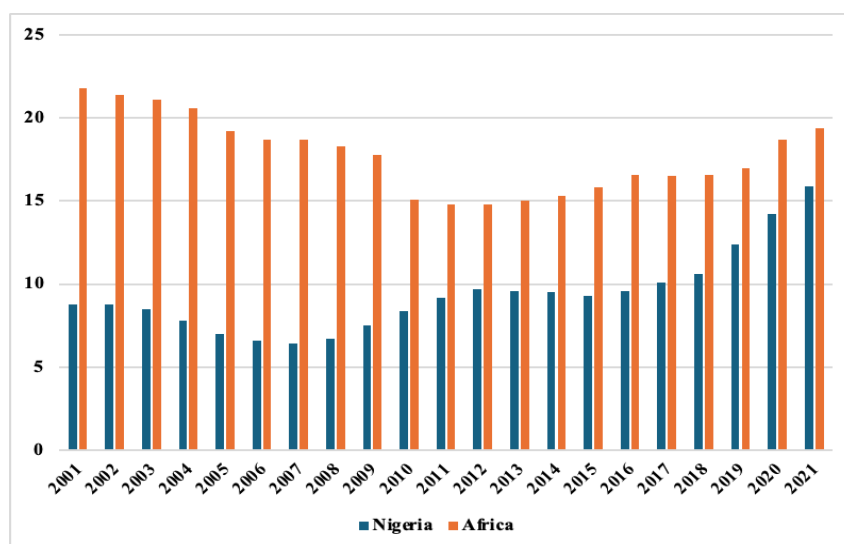


Figure 1. Comparison of between Nigeria and Africa

Sources: Food and Agriculture Organization of the United Nations (2023)***

Return to Growth

After 2015, undernourishment began to rise both in Nigeria and in the rest of Africa, but the rate of increase was more accelerated in Nigeria. This could be the result of exacerbating internal conflicts such as the *Boko Haram* insurgency, which has severely affected agricultural production in some regions especially the Northern part, and global economic challenges that affected the food supply. Population growth, too, has added significant pressure on the food supply, particularly without a proportional increase in food production.

Differences in Absolute Levels

Throughout the entire period, the values for Africa were consistently higher than those for Nigeria. This suggests that although Nigeria faced major problems, the overall situation on the continent was more challenging, with more severe difficulties in securing basic food supplies, particularly in regions like the Sahel or other areas affected by prolonged drought.

Potential Explanations for the Observed Evolution

Government Policies and International Interventions

The positive trend in the middle of the period can be attributed to effective government policies, supported by international interventions aimed at increasing agricultural production, improving storage and distribution infrastructure, and ensuring market access. The increase in undernourishment in recent years highlights structural vulnerabilities, such as inefficiency of these policies in the long term, insufficient funding for sustainable projects, and failures in environmental policies.[6]

Impact of Conflict and Political Instability

Nigeria has been affected by conflicts and internal political tensions, which have hindered agricultural development and led to the destruction of crops and migration of people from rural areas. Regions affected by insecurity, such as northeastern and northwest Nigeria, have faced great difficulties in accessing food resources, leading to higher rates of undernourishment.

Climate Change and Extreme Weather Events

Climate change has also had a major impact on food security, not just in Nigeria but across the entire continent. Droughts and floods have severely impacted agricultural production in many regions. The adaptation of farmers to climate change has not occurred at the necessary pace to

counteract the negative effects, leading to crop losses and implicitly an increase in undernourishment.

Population Growth

Another major challenge for Nigeria and Africa is rapid population growth. The increase in the number of inhabitants puts additional pressure on food resources and makes food availability a critical issue. Nigeria's population, one of the largest in Africa, has grown significantly, leading to a higher demand for food, without local production being able to keep pace. It can be concluded that the data indicates an interesting trend of declining undernourishment followed by its return, both in Nigeria and across Africa. In Nigeria, the reduction in undernourishment in the middle of the period could be considered a temporary success of government policies and international interventions. However, the return to high values in recent years suggests a combination of negative factors such as conflicts, climate change, and the lack of adequate agricultural infrastructure. Compared to the entire African continent, Nigeria recorded lower levels of undernourishment, which indicates that, at certain times, the country was more capable of ensuring food for its population. [15] However, both trends show that to maintain food security, integrated policies are needed, investments in agriculture, and long-term solutions capable of counteracting current vulnerabilities.

The undernourished population in both Nigeria and Africa as a whole has undergone significant changes between 2001 and 2021. Understanding these dynamics is crucial for identifying patterns, causes, and potential solutions to the ongoing challenge of food insecurity. This extended analysis will delve into various aspects, including government policies, international interventions, regional differences, demographic pressures, and the impact of conflicts, climate change, and resource availability on undernourishment. This is comparable to the findings of [15] that observed significant changes in undernourished data in Food Security Situation in Sub-Saharan Africa (SSA) in 2014 to 2022.

Undernourishment Trends in Nigeria and Africa

The data from 2001 to 2021 shows interesting patterns of undernourishment in both Nigeria and the African continent. Africa, as a whole, has consistently faced higher undernourishment rates compared to Nigeria, despite showing similar trends of decrease and subsequent increase in rates over time.

In 2001, Africa started with an undernourishment rate of approximately 21.8%, while Nigeria's rate was 8.8%. By 2007, both experienced a decline, with Nigeria reaching a low of 6.4%, and Africa dropping to around 18.3%. This period of improvement could be attributed to better economic conditions, increased international support, and more effective agricultural policies. However, from 2015 onwards, both regions experienced a troubling increase in undernourishment, with Nigeria reaching 15.9% in 2021, and Africa at 19.4%.

These trends suggest that, although there were improvements in the middle of the period, several factors ranging from political instability to climate challenges—reversed the progress. This dual pattern of improvement followed by regression highlights the need for consistent, long-term strategies to combat undernourishment.

Government Policies and Regional Agricultural Initiatives

Agricultural Support Programs

One of the most important aspects of the period in question was the variety of government support programs aimed at increasing agricultural productivity. In Nigeria, initiatives such as the *Growth Enhancement Support Scheme (GESS)* helped provide access to essential inputs like quality seeds and fertilizers to small-scale farmers. By subsidizing inputs, these programs aimed to enhance food production and improve food security. This was particularly important during the period from 2003 to 2013, which saw a marked reduction in the rates of undernourishment.

In addition, the *Nigerian Agricultural Transformation Agenda*, launched in 2011, played a significant role in modernizing agriculture through mechanization and knowledge transfer. These

efforts focused on turning subsistence farming into profitable businesses. However, the scope and sustainability of such programs were hampered by inadequate funding, bureaucratic inefficiencies, and the challenges of reaching remote areas.

Development of Rural Areas

The majority of Africa's population resides in rural areas where agricultural productivity is a key determinant of food security. Efforts to develop rural infrastructure—including roads to connect rural markets, improved irrigation systems, and better storage facilities—had a significant impact on reducing food losses and increasing market access. In Nigeria, certain regions benefited more than others from rural development programs. Regions with improved roads and irrigation infrastructure experienced a more consistent decline in undernourishment rates, while less developed areas were left behind.

Reforms aimed at land ownership were another critical element. Ensuring that farmers had ownership rights to the land they cultivated encouraged investment in land and agricultural production. Unfortunately, issues such as lack of clarity on property rights and corruption in land allocation continued to hinder the effectiveness of these policies.

Role of International Interventions

Humanitarian Aid and Food Security Programs

International organizations such as the *Food and Agriculture Organization (FAO)*, *World Food Programme (WFP)*, and numerous NGOs have played a major role in supporting food security efforts in Nigeria and Africa as a whole. During periods of severe drought, conflicts, or economic instability, these organizations provided emergency food aid, technical assistance, and capacity-building programs.

Between 2007 and 2015, food aid programs made a noticeable difference in reducing undernourishment. These programs provided vital food resources to vulnerable communities, particularly in conflict zones like northeastern Nigeria. However, the efficacy of food aid is often temporary, addressing symptoms rather than underlying causes. The reliance on food aid also highlights systemic problems in agricultural production and food distribution.

Partnerships for Sustainable Development

Partnerships between governments, NGOs, and private sector players aimed at enhancing agricultural productivity have contributed to addressing undernourishment issues. Initiatives like the *Alliance for a Green Revolution in Africa (AGRA)* worked to promote sustainable agriculture by increasing access to improved seed varieties, fertilizers, and training. These efforts were geared towards ensuring food availability, particularly in regions prone to food shortages.

While these initiatives saw some success in reducing undernourishment, there were challenges in terms of scalability, local adaptation, and cultural appropriateness. Limited funding and infrastructural constraints further hindered these programs from reaching their full potential.

Resource Availability and Agricultural Challenges

Agricultural Resources

Availability of resources such as fertile land, water, quality seeds, and fertilizers has been a key factor influencing undernourishment. In many parts of Nigeria, the availability of arable land has been compromised due to desertification, overuse, and unsustainable farming practices. Land degradation in the northern regions of Nigeria, exacerbated by desertification and unsustainable grazing, has led to reduced agricultural output and heightened food insecurity.

Water scarcity, compounded by poor irrigation infrastructure, further limited agricultural productivity. While certain areas benefited from improved irrigation systems, the majority of smallholder farmers remained reliant on inconsistent rainfall patterns. This dependency made food production vulnerable to climate variability, leading to lower crop yields during drought years.

Post-Harvest Losses and Logistic Infrastructures

One of the critical issues that have worsened food insecurity in Africa is the high level of

post-harvest losses. Inadequate storage facilities, poor handling techniques, and insufficient transportation infrastructure contribute to significant wastage of produce. For instance, Nigerian farmers often lack adequate storage facilities for perishable goods, leading to losses of up to 40% of some crops before they reach the market.

Addressing these losses requires substantial investments in rural infrastructure—such as roads, refrigeration, and storage facilities—as well as training farmers in better post-harvest handling techniques. Improving logistics and creating more robust supply chains are also crucial steps to ensure that food produced reaches the consumers in good condition, reducing both waste and the impact of seasonal shortages.

Regional Differences and Vulnerabilities

Differences between Rural and Urban Areas

Food security challenges differ significantly between rural and urban areas. Rural areas, while being the primary food producers, often have limited access to markets, inputs, and services. This is partly due to inadequate infrastructure and weak linkages between rural and urban centres. In contrast, urban areas tend to have better access to diverse food supplies, yet are often subject to higher food prices and depend heavily on market stability.

In Nigeria, urbanization has led to a growing number of people depending on purchased food rather than self-produced crops. Urban dwellers, especially those with low incomes, are vulnerable to fluctuations in food prices, making them more susceptible to food insecurity. Addressing these disparities requires targeted interventions that consider the unique challenges of both urban and rural populations.

Vulnerable Groups

Certain population segments—such as children, pregnant women, and the elderly—are particularly vulnerable to undernourishment. Child malnutrition remains a major issue in Nigeria, with significant impacts on physical and cognitive development. Nutrition-specific programs, such as school feeding initiatives and supplemental nutrition for pregnant women, have been crucial in mitigating some of these issues. However, these interventions are often sporadic and underfunded, limiting their long-term impact.

Impact of Climate Change on Food Security

Extreme Weather Events

Climate change has had a profound impact on food security in Nigeria and across Africa. Increased frequency of extreme weather events, such as droughts and floods, has disrupted agricultural production. In the Sahel region, including northern Nigeria, recurrent droughts have led to reduced crop yields and increased vulnerability to food insecurity.

Flooding, particularly in coastal and riverine areas, has also disrupted agricultural activities, displaced populations and destroying farmland. The unpredictability of rainfall patterns further complicates planting and harvesting schedules, making it challenging for farmers to plan their activities effectively.

Adaptation Strategies

In response to these challenges, some adaptation strategies have been implemented to help farmers cope with changing climatic conditions. These include the introduction of drought-resistant crops, rainwater harvesting techniques, and training farmers in climate-smart agricultural practices. Despite these efforts, the pace of adaptation has been insufficient to offset the negative impacts of climate change, largely due to limited funding, lack of technical expertise, and inadequate infrastructure.

Conflicts, Instability, and Food Security

Impact of Internal Conflicts

Nigeria has been significantly affected by internal conflicts, such as the insurgency led by Boko Haram and cattle herds men conflict in the northeast. These conflicts have led to large-scale

displacement of communities, disrupted agricultural production, and exacerbated food insecurity. Farmers have been unable to access their land, leading to reduced agricultural productivity and an increased dependency on food aid.

The northeast region, in particular, has experienced severe food insecurity, with many households dependent on humanitarian assistance. The insecurity in this region has also disrupted supply chains, limiting the availability of food in local markets and driving up prices. Addressing the root causes of conflict—including poverty, marginalization, and lack of education—is essential to improving food security in conflict-affected areas.

Impact on Markets and Food Prices

Conflict has not only affected food production but also disrupted markets, leading to food price inflation. Insecurity along transportation routes has increased the cost of moving food from production areas to urban centers, leading to higher consumer prices. This disproportionately affects the urban poor, who spend a significant portion of their income on food.

Demographic Pressures and Urbanization

Population Growth and Food Demand

Africa's rapidly growing population has placed additional pressure on already strained food systems. In Nigeria, the population has been growing at an average rate of over 2.5% annually, leading to increased demand for food. The agricultural sector has struggled to keep pace with this demand due to limited arable land, declining soil fertility, and outdated farming techniques.

Managing population growth through policies aimed at family planning, coupled with efforts to increase agricultural productivity, is critical for improving food security. Additionally, investments in education, particularly for women, have been shown to have positive effects on reducing fertility rates and enhancing household food security.

Urbanization and Changing Food Patterns

Rapid urbanization in Nigeria has led to changes in dietary preferences and increased reliance on processed and imported foods. This shift has implications for food security, as urban populations become more dependent on food that is vulnerable to global market fluctuations. Moreover, the rising preference for convenience foods, which are often more expensive, can make it challenging for low-income urban families to meet their nutritional needs.

Urban agriculture has been promoted as one solution to address food insecurity in cities, providing fresh produce and enhancing resilience against food price shocks. However, issues such as limited space, access to water, and land tenure complications have limited the scale of urban agriculture in Nigerian cities.

Role of Education and Access to Information

Nutritional Education

Lack of awareness about balanced nutrition and healthy diets is another factor contributing to undernourishment. Educational programs focusing on nutrition and dietary diversity are crucial for improving food security, especially in rural communities where malnutrition rates are higher. Initiatives such as school feeding programs not only address child malnutrition but also serve as an educational platform for promoting balanced diets.

Access to Agricultural Information

Access to information about modern agricultural practices and market dynamics is essential for improving agricultural productivity and food security. Extension services, which are responsible for providing farmers with information on best practices, have often been under-resourced, particularly in remote areas. Strengthening extension services and utilizing technology—such as mobile platforms that provide weather forecasts, market prices, and farming advice—can help bridge the knowledge gap and support farmers in making informed decisions.

CONCLUSIONS

The analysis of undernourishment dynamics in Nigeria compared to Africa highlights both progress and ongoing challenges in the fight against food insecurity. From 2001 to 2021, significant improvements were made in reducing undernourishment, largely due to effective agricultural policies, international aid, and rural development initiatives. However, the reversal of these gains in recent years underscores the vulnerability of food systems to conflicts, climate change, population pressures, and inadequate infrastructure.

To ensure long-term food security in Nigeria and Africa, an integrated approach is needed—one that addresses the root causes of undernourishment, strengthens agricultural resilience, improves rural infrastructure, and ensures equitable access to resources for all segments of the population. Government policies must be consistent, inclusive, and supported by international partnerships that prioritize sustainable agricultural practices and the empowerment of local communities.

Additionally, investing in education—both in terms of nutrition and agricultural practices—is crucial for building the capacity of communities to achieve self-sufficiency in food production. Addressing conflicts, ensuring stability, and providing safety nets for vulnerable populations are also key components of a holistic strategy to reduce undernourishment and build resilient food systems.

The journey towards food security is complex and requires the collaboration of multiple stakeholders, including governments, international organizations, the private sector, and local communities. By learning from past successes and failures, Nigeria and Africa as a whole can work towards a future where undernourishment is significantly reduced, and all people have access to the nutritious food they need to thrive.

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