

# The effect of hike in food price on non-communicable diseases: The impact of under-nutrition

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**ABSTRACT:** Over the past one year, there has been a drastic increase in the price of food globally particularly in developing countries like Nigeria owing to the country's high inflation rate, the Covid-19 pandemic, border closure, insecurity, poor storage facilities and other various socio-political reasons. This article evaluated the increase in price of food over the past one year and the potential impact on the incidence of non-communicable diseases. The hike in food price has reduced the access to the appropriate and adequate nutrients needed to meet the body's nutritional demands, thereby increasing the risk of malnutrition amongst the general populace. This could cause an increase the incidence of non-communicable diseases across Nigeria over time should the price of food remain high.

**Keywords:** Communicable diseases, food insecurity, food items, Nigeria, non-communicable diseases, nutrition, price.

Dear Editor,

Food insecurity is a global burden of public health concern as one-in-four people worldwide are moderately or severely food insecure (Roser and Ritchie, 2019). Majority of these people are located in low- and middle-income countries, where certain factors like violence, communal conflicts and political instability affect food insecurity. This is further compounded by the incidence of the COVID-19 pandemic. Also, the recent EndSARS protest in Nigeria aimed towards protesting police brutality led to the discovery of food palliatives in different warehouses all over the country and resultant mass looting of food items by the citizens. This highlights the level of poverty, unequal access in the distribution of food items and food insecurity in the country.

The prices of food items in Nigeria has skyrocketed over the last one year, with food inflation rising to over 20% in February, 2021 (Osae-Brown and Olurounbi, 2021) The closure of borders, protocols put in place to control COVID 19, violence in the North, poor storage facilities among other factors are responsible for the hike in the prices of food items. The prices of main staple foods such as rice, maize, beef, fish, fruits and vegetables have also

increased drastically (National Bureau of Statistics, n.d.). Hence, many families, particularly the low-income households, who are the net buyers of food can no longer afford most of these food items and have been forced to reduce the quality and quantity of their food ultimately leading to the consumption of food that is deficient in macronutrients (protein, energy and fat) and micronutrients (minerals and vitamins).

Over the last decade, there has been a significant change in the burden of disease in Nigeria from communicable diseases to non-communicable diseases (NCDs). In 2019, NCDs accounted for almost 29% of all deaths with cardiovascular diseases (11%), cancers (4%), chronic respiratory diseases (2%) and diabetes mellitus (1%) accounting for the highest causes of NCD-related deaths (WHO, 2021b). The World Health Organization (WHO) noted that by 2030, non-communicable diseases will be the most common cause of death in Africa, causing more deaths than communicable, perinatal, maternal, and nutritional diseases combined together (WHO, Non-communicable diseases and mental health n.d).

We examine the effect of the increased cost of several

food items on the potential increased incidence of Non-communicable Disease especially in low-middle income countries. While certain modifiable and non-modifiable risk factors are associated with the increased incidence of NCDs, we however take our perspective from an important aspect that is often neglected which is nutrition.

There is a growing body of evidence that shows how modifiable risk factors like nutrition and diet improves health outcomes and reduces the risk of developing Non-communicable Diseases by affecting inflammatory mediators. The absence of adequate nutrition can lead to certain health events like protein-energy malnutrition and micronutrient deficiency particularly in children.

The incidence of Diabetes Mellitus (DM) in Africa has increased by over 300 million cases since 1980 (WHO, Diabetes n.d.), and this can be attributed to increased urbanization, reduced physical activity and several other factors. Under-nutrition however also plays an important role in the pathogenesis of DM. It can play a role as the primary cause of DM being responsible for the progressive destruction of beta cells of the pancreas which results in beta cells failure and overt DM. Secondly, it can be an additional insult to the beta cells, thereby unmasking a latent diabetic state. In addition, a protein deprived beta cell from under-nutrition is more vulnerable to other beta-cytotoxic influences like toxins from diet, viruses among others. Destruction of the beta cells by these beta-cytotoxic influences can also lead to DM (Francis et al., 2017). The thrifty phenotype hypothesis by Hales et al. (2001) further supports this; it proposes the epidemiological associations between poor growth during fetal and infant life and the subsequent development of type 2 DM resulting from the effects of malnutrition in early life.

World Health Organization classified diabetes into three classes namely: Insulin-dependent, Insulin-independent and malnutrition-related diabetes (MRDM). MRDM was further classified into Fibro-calculeous pancreatic DM and Protein deficient DM (WHO Study Group on Diabetes Mellitus & World Health Organization, 1985). MRDM cases are mostly seen in the tropics including Africa. It is not yet certain whether malnutrition is a cause of the disease, but there is a strong link between Protein Energy Malnutrition and MRDM as it is an important feature of the disease, whether it is past or present (Abu-Bakare et al., 1986).

There has been an increase in the burden of cancer in Nigeria over the years, and it is one of the leading causes of morbidity and mortality in the country. It is estimated that over 100,000 new cases occur every year in Nigeria, and this rising incidence has been attributed to ageing population, physical inactivity and increasing adoption of unhealthy lifestyles such as tobacco use and alcohol intake among others (WHO, 2021a).

Malnutrition can cause impaired immune response (Rytter et al., 2014) and reduced antioxidant levels (Fechner et al., 2001) which can increase the risk of cancer in the long term. Nutritional status is one of the most important determinants of mortality and morbidity. They

are not mutually exclusive and the nature of their relationship is central to a myriad of health problems including cancers (Morgan, 1997). The hike in the prices of food items have caused a decrease in the quality of food consumed by Nigerians (Obayelu et al., 2021), as more families divert their income to purchase carbohydrate-rich foods, consuming meals low in micronutrients (vitamins and minerals) like fresh foods and vegetables, hence putting them at risk of coming down with micronutrients malnutrition (Popkin et al., 2020).

Antioxidants protect the body against free radicals that destroy cell membranes and cause injury to cells and increases the risk of cancer. Foods such as fresh fruits, vegetables and legumes are rich in antioxidants and the hike in prices of food have made it difficult for people to afford these micronutrient-rich meals. The deficiency of these antioxidants in meals can predispose people to have cancer (Parohan et al., 2019).

With the hike in prices of food items, more Nigerians at risk of food inaccessibility are expected to become malnourished and will have impaired immunity and reduced antioxidant levels in their bodies, ultimately increasing the risk of having cancer in future. Therefore, an increase in the incidence of cancers due to malnutrition can be envisaged if the current hike in the prices of food items continue for a long time without a concomitant increase in income and food security.

Under nutrition before and during pregnancy alters fetal development resulting in low birth weight and low birth weight is associated with cardiovascular diseases in adulthood. This is supported by a hypothesis proposed by David Baker, a British epidemiologist that adverse nutrition in early life including prenatally increases susceptibility to diseases like obesity, hypertension, hyperlipidemia and its complications like stroke and coronary heart disease (Edwards, 2017). Dutch adults who were exposed to famine in early gestation had an increased risk of obesity, more coronary heart disease, raised lipids and altered clotting compared to those who were not exposed (Painter et al., 2005).

#### Conclusion

We have shown the effects of how adequate nutrition can reduce the development and mortality rate of NCDs. Even with this, there is an existing knowledge gap highlighting the impact of food prices and its effect on malnutrition as a risk factor for the development on long-term Non-communicable Diseases especially those with high mortality rate in Nigeria. There is therefore a need for strategies involved in primary and primordial prevention to increase awareness and knowledge that local communities have concerning adequate nutrition. Primordial prevention and factors leading to food insecurity should also be improved by Government and other major stakeholders so that adequate nutrition can be available to people in low-income households. This process should involve community engagement and collaborations with academic institutions.

## CONFLICT OF INTERESTS

The authors declare that they have no conflict of interest.

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