



PIONEER

MEDICAL JOURNAL

Vol. 4 No. 1 Jan. - Jun., 2024

ERRATUM:

This article was inadvertently republished under Volume 4, No. 1 (January-June 2024) following a redesign and restructuring of the journal website. The correct bibliographic designation for this article is Volume 9, No. 2 (July-December 2023), under which it was originally published. This correction affects only the volume, issue, and publication-period metadata. The article content, DOI, authorship, pagination, and publication date remain unchanged.

www.pioneermedicaljournal.com

ISSN: 2354 - 1954

Official Publication of The Medical and Dental Consultants' Association of Nigeria (**MDCAN**)
FMC, Umuahia Chapter.

Editor In-Chief
DR. CHIMEZIE GODSWILL OKWUONU

**PIONEER
MEDICAL
JOURNAL**

**FEDERAL MEDICAL
CENTRE (FMC),
UMUAHIA,
ABIA STATE, NIGERIA**

Clinical Review

HUMAN NUTRITION IN NIGERIA; A CONTEMPORARY UPDATE

Okwara¹ EC *, Ukairo DI²

¹Department of Chemical Pathology, Faculty of Basic Clinical Sciences, Imo State University, Owerri, Imo State, Nigeria

²Department of Biochemistry, School of Biological Sciences, Federal University of Technology, Owerri, Imo State, Nigeria

*corresponding author's address drokwarachidiebere@gmail.com

Phone No: +2348035521829

ABSTRACT

Nutrition is that science that deals with how food and nutrients affect health. In recent years, the availability of food in Nigeria has been adversely affected by myriads of problems such as poor political governance, insecurity which is worse in Northern Nigeria, economic down toll and climate change among others. All age groups are affected by malnutrition but extremes of ages are worse. Malnutrition ranges from under-nutrition to nutrient deficiencies and over-nutrition which significantly impact on the physiological and mental health and in turn the productivity of an individual. This review is intended to reawaken clinicians and policy makers to the growing trend of nutritional diseases in the wake of climate change, regional violence and worsening economy. There is need for government and other stake holders to take more intentional steps to reverse poor nutritional indices in Nigeria especially among venerable population.

Keywords : malnutrition, nutrient deficiency, under-nutrition, over-nutrition

Running title: Okwara and Ukairo – human nutrition in Nigeria

OVERVIEW OF NUTRITION

The World Health Organization (WHO) defines human nutrition as the relationship between food intake and the body's dietary needs ¹. Nutrition is that science that deals with how food and nutrients affect health.

Human nutrition is the process by which chemical substances contained in food are converted to body tissues and as well used to provide energy for the physical and mental activities that make up human living ². It is the ingestion and utilization of food and other nourishing material by

the body. Human nutrition is a key aspect of human health.

Human nutrition entails the following:

- the ingestion and digestion of food
- the absorption of nutrients from digested food
- the utilization of absorbed nutrients for growth, development, repair and maintenance
- the conversion of absorbed nutrients into body tissues
- the production of energy for physical and mental activities

The chemical compounds contained in food which the body utilizes for growth and development, repair, energy synthesis and maintenance of health, are called nutrients ³. They are substances required by the body to sustain basic functions and are optimally obtained by eating a balanced diet. Nutrients are defined by their chemical nature and their physiological role (which are derived from their chemical nature). Thus, there is a relationship between the physiologic role of nutrients and their chemical nature.

There are over 40 various kinds of nutrients contained in our food but they can be classified into 7 major groups ²:

- Proteins.
- Carbohydrates.
- Fats and oil.
- Vitamins.
- Minerals.
- Dietary fibre.
- Water.

Nutrients can also be classified as macronutrients and micronutrients. Macronutrients are nutrients required in large quantities. The macronutrients provide energy and the fluid medium for biochemical actions. They include proteins, carbohydrates, fats, fibers and water. Micronutrients are those which the body

requires in smaller quantities. They include vitamins and minerals.

Proteins

Proteins constitute the major components of the dry weight of cells and tissues. Biochemical regulators of cellular function such as enzymes and some hormones are also made of proteins ². The sources of proteins include meat, fish, seafood, eggs, dairy products, beans and pod-bearing plants, etc. The major functions of proteins include building, repairing and maintaining healthy body tissues.

Carbohydrates

Carbohydrates are the major source of energy to the body, and they come mainly from tubers such as yam, cocoyam and cassava, grains, such as rice, maize, millet and wheat. Other food sources include fruit, root vegetables and dairy products. Apart from being a major source of energy, carbohydrates are part of structural components of cell membrane, glycoprotein hormones and endothelial surface secretions such as mucus.

Fats and oil

Fats are the other major source of energy apart from carbohydrates. They are the major form of long term energy store ². They also provide insulation to tissues such as nerves as well as insulation to vital organs and the whole body in general. Sources include meat, dairy products, nuts, seeds and edible oils. They reduce heat loss in very cold weather conditions and protect vital organs against mechanical shock. Fats are also a structural component of the cell membrane and are also involved in transporting fat-soluble vitamins such as vitamins A, D, E and K, the ADEK vitamins.

Vitamins

Vitamins participate in different body metabolism functioning as co-enzymes or cofactors in biochemical reactions. They are involved in maintaining healthy skin, healthy hair, healthy secretory surfaces, building bones and in the release and utilization of energy from nutrients. Vitamins can be classified into water-soluble and fat-soluble vitamins. The water-soluble vitamins include vitamin B₁, B₂, B₅, B₆, B₁₂, biotin, C, nicotinamide, etc while fat-soluble vitamins are the ADEK vitamins.

Minerals

Minerals are a group of essential nutrients which regulate many body functions such as fluid and electrolyte balance, muscle contraction and relaxation, nerve impulse transmission, tissue detoxification and free radical elimination as well as functioning as cofactors or part of co-enzymes in biochemical reactions, among others. They include sodium, potassium, magnesium, phosphate, manganese, selenium, cobalt, copper, zinc, chloride, etc. Some minerals are structural component of the body, such as calcium in bones and teeth.

Dietary fibre

This is the indigestible part of food found in plants. They are carbohydrates indigestible to humans. Fibres promote gastrointestinal health by attracting water into the gut lumen thus enhancing digestion and bowel movement. Dietary fibre can be classified into soluble and insoluble fibre.

Water

Water is the most abundant substance in human body constituting about 50 to 60 percent of body weight. It provides the fluid medium for biochemical activities. Water is an essential nutrient to maintain good health. The major functions of water include regulation of body temperature,

production of body fluids and secretions, transportation of nutrients, hormones and other blood components to areas of need and the removal of waste products.

MALNUTRITION IN NIGERIAN CHILDREN

According to a United Nations Children Education Fund (UNICEF) report in 2024, about 1 in 3 children under the age of 5 years in Nigeria experiences severe child food poverty due to conflict, climate crises, and inequity ⁴. Such children experiencing that level of food poverty have up to 50 per cent chance of suffering from life-threatening malnutrition ⁴. Globally, 1 in 4 children are living in severe child food poverty in their early childhood, amounting to about 181 million children under the age of 5 years ⁵.

Nigeria is among 20 countries that account for 65 per cent of these 181 million children living in severe child food poverty globally ⁴. The severe child malnutrition burden in Nigeria is to the tune of 11 million children ⁴. The national prevalence rate of stunted children in Nigeria among under-5 children is 32% making Nigeria the second highest burden of stunted children worldwide ⁶. Another 2 million children in Nigeria suffer severe acute malnutrition (SAM) ⁶. In general 43.6% of under-fives in Nigeria were reported in 2024 to suffer malnutrition ⁷. These figures are indeed very disturbing.

Stunting, apart from causing an increased risk of death, leads to poor cognitive development, a depressed child academic performance and low productivity in adulthood ⁶. Cumulatively, these lead to economic losses estimated at 11% of Gross Domestic Product (GDP)⁶. Northern Nigerian states are the most affected with stunting and wasting ⁶. Stunting and wasting are consequences of prolonged protein energy malnutrition. Stunting means children with low acceptable height

for their age while wasting means having low acceptable body weight for their age.

Currently, only 17% of babies in Nigeria are exclusively breastfed during their first 6 months of life and this also contributes significantly to the high burden of malnutrition amongst under-fives in Nigeria ⁶. Only about 18% of children receive minimum acceptable diet in their first 2 years of life ⁶. Malnutrition directly or remotely causes 45% of all deaths of children under the age of 5 years ⁶.

Improving political governance, reducing or eliminating insecurity, providing Ready-To-Use-Therapeutic Food (RUTF) to malnourished children, supporting food processing companies through reduction of company taxes and increased access to company loans, fortifying foods, reducing food losses and wastages, promoting regenerative agricultural techniques, empowering rural women and youth as well as improving healthcare access and training of health care workers, are effective ways of eliminating malnutrition especially in children.

Malnutrition in Nigerian Adults

Nigeria's rising level of insecurity such as armed banditry, terror groups, farmer-herder clashes, communal and other conflicts, rising inflation, poor political governance, among others have been a threat to local farmers and businessmen and also to potential foreign investors in agriculture ^{8,9}. Conflicts have caused increased levels of internally displaced persons (IDP's), making IDP's abandon their natural habitat and farmlands to become 'refugees' in their homelands. This is worse in North East, North West and North Central Nigeria. These regions produce the bulk of the nation's food. One of the striking impacts of these internal displacements on the economy is worsening food shortage which continues to drive hunger. About 26.5 million people

in Nigeria is projected to have suffered from acute hunger in 2024 ¹⁰. This was a sharp increase from the 18.6 million people in the last quarter of 2023 ¹⁰. The conflict situation in the North Eastern Nigeria is frequent and has displaced about 2.2 million people from their homes and farmlands and left another 4.4 million with massive food insecurity in Yobe, Adamawa and Borno States ⁹.

Besides insecurity, the northern part of Nigeria is very prone to periodic droughts. This also impacts negatively on food security. The bulk percentage of the country's agricultural produce emanates from Northern Nigeria. The central and southern parts are prone to periodic massive flooding from the Niger and Benue Rivers. Although, the Nigerian government has embarked on various policies to mitigate the adverse effects of these disasters, the adverse effects on agricultural output and the vulnerability of the rural populace remain enormous and untoward ^{9,11}. Recent variations in rainfall have been a challenge to farmers and impacting negatively on food production in the Southern part of Nigeria.

In a systematic review of 51 studies among adolescents from 2013 to 2023, which included 78.4% from Southern Nigeria, 11.8% from Northern Nigeria and 9.8% from both regions. The prevalence of overweight was 0.8 - 31% and obesity was 0.1 - 14%, the prevalence of thinness, stunting and underweight was 3 - 31%, 0.4 - 41.6% and 0.3 - 73.3% respectively ¹².

Nutritional knowledge and dietary habits also affects the nutritional state of a person ¹³. In Lagos State, only 15.9% of respondents in a research were reported in 2023 to have good nutritional knowledge ¹³. In the same report, the dietary habits and estimated nutrient intake showed a deficiency of fiber, energy and most micro-nutrients except zinc, iron and vitamin A ¹³. Dietary carbohydrate, protein

and dietary sodium levels were elevated. The prevalence of overweight was 24.8% and obesity was 17.3%¹³.

Malnutrition in the Elderly in Nigeria

In the elderly, malnutrition is caused by the interplay of physiological changes, psychological, economic and social factors. Physiological changes causing malnutrition are those that impair food intake such as chronic diseases hampering appetite, dental challenges diminishing chewing and swallowing, age-related muscle wasting hindering ability to prepare meals and immobility. Psychosocial contributions to malnutrition include depression, loneliness, social isolation and cognitive deteriorations all of which will impair the ability to plan, prepare and take meals. Others contributors are financial poverty, reduced access to transportation affecting shopping and socio-cultural factors defective of support to the elderly.

Malnutrition in the elderly has been recognized as a challenging health problem that causes increased mortality, morbidity, physical decline which has wide range decline in activities of daily living and the quality of life of the elderly in general¹⁴. Malnutrition is common in the elderly and is reflected by either unintentional weight loss or low body mass index. Mineral deficiencies such as micronutrient deficiencies are more difficult to assess thus frequently overlooked in the elderly and other populations. Chronic diseases are common in the elderly. Diseases are also a common cause of malnutrition, therefore, the higher the age of the elderly the higher the risk of developing disease as well as the higher the risk of becoming malnourished^{14,15}. The aetiology of malnutrition is complex and multifactorial, thus the development of malnutrition in the elderly is probably facilitated by the ageing processes and associated physiological changes¹⁴.

Good dietary pattern is a major factor in determining the health of the elderly because bad dietary pattern affects almost all physiological systems, which could lead to varieties of diseases and premature death¹⁵.

Using the Mini-Nutritional Assessment tool which had 18 items (including dietary history, anthropometric measurements, and assessment of lifestyle habits, mobility, and medication, self-perception of nutrition and health and neuropsychological problems) to evaluate elderly people with average age of 72 ± 2.4 years in a rural community in Ondo State, 30% were found to be overweight, 15.9% were obese, and 20.2% were undernourished¹⁵. These indices were found to be worse among the female elderly¹⁵.

In 2021, in Kano state, among elderly people in a cross sectional hospital based study, the prevalence of malnutrition was 25.3% while the risk of malnutrition 56.6%¹⁵. In the same study, the prevalence of multi-morbidity was 74.4%¹⁵. Advanced age, underweight, lack of formal education, low monthly income, chronic respiratory diseases and physical inactivity were good predictors of malnutrition¹⁵.

Impact of Social Media on Nutrition

In a study of young adults, social media was found to be the preferred nutrition information source for 80% of the participants¹⁶. Instagram, YouTube and Facebook were the most used platforms¹⁶. Dietitians' social media accounts were the most trusted sources of new media information accounting for 76% of information sources. Social media users' dietary choices was moderately affected by social media (38%)¹⁶. Overall, social media can be a useful tool for nutrition experts in educating young people on a healthy diet.

Conversely, social media use is associated with obesity due to increased sedentary life from increased screen time and diminished physical activity. Social media also influences eating habits from poor diet choices due to negative influences of adverts of pastries and beverages. Altered sleep habits from social media use also cause over-nutrition. In two studies, more than half (56.9% and 59%) of young adults using social media were obese due to social media influence on diet choices, eating habits and sedentary habits.^{17,18}

Presently, social media has an unavoidable influence on our daily lives, especially among teenagers and young adults, and is a significant, but not always accurate source of information on practically every discussion. This includes information on health and nutrition, which can prove particularly damaging, especially to younger people when the information is not accurate.

When firm privacy protocols are put in place, social media can be a useful, cost-effective accompaniment to multi-factorial weight management programmes through quick and effective proper information dissemination. However, we need more research to better identify how to make the best use of social media as health promotion tool. Otherwise, the overall effect social media on nutrition may be adverse.

CONCLUSION

The burden of malnutrition is high and worrisome among all age brackets in Nigeria. This is worsened by insecurity, economic hardship, climate change and natural disasters among others. There is need to take coordinated deliberate actions to reverse the trend.

REFERENCES

1. Available at <https://www.emro.who.int/health-topics/nutrition/>

- introduction.html. Downloaded 26th Feb, 2025
2. FV Zohoori. Nutrition and diet. *Monogr Oral Sci.* 2020;28:1-13
3. Barbara Burlingame. What is a nutrient? *Journal of food composition and analysis.* 2001. 14:1
4. Available at <https://www.unicef.org/nigeria/press-releases>. downloaded on 26th Feb 2025
5. Available at <https://www.unicef.org/reports/child-food-poverty>. downloaded on 27th Feb 2025
6. Nutrition. UNICEF Nigeria <https://www.unicef.org/nigeria/nutrition>. downloaded on 27th Feb 2025
7. Phillips Edomwonyi Obasohan, Stephen J. Walters, Richard Jacques, KhaledKhatab. Socio-economic, demographic, and contextual predictors of malnutrition among children aged 6–59 months in Nigeria. *BMC Nutr*10, 1 (2024). <https://doi.org/10.1186/s40795-023-00813-x>
8. Akpogheli, E.O., Chiadika, E.O., Edo, G.I. *et al.* Malnutrition and food insecurity in northern Nigeria: an insight into the United Nations World Food Program (WFP) in Nigeria. *Discov Food*4, 165 (2024). <https://doi.org/10.1007/s44187-024-00249-7>
9. Yusuf A, Mohd S. Growth and fiscal effects of insecurity on the Nigerian economy. *Eur J Dev Res.* 2023;35:743–69. <https://doi.org/10.1057/s41287-022-00531-3>.
10. Wudil AH, Usman M, Rosak-Szyrocka J, Pilař L, Boye M. Reversing years for global food security: a review of the food security situation in Sub-Saharan Africa (SSA). *Int J Environ Res Public Health.* 2022;19:14836.

- <https://doi.org/10.3390/ijerph192214836>.
11. Nemine EL. Flood disasters in Nigeria: farmers and governments' mitigation efforts. *J Biol Agric Healthc*. 2015;5:150–5.
 12. Abubakar, H.A., Shahril, M.R. & Mat, S. Nutritional status and dietary intake among Nigerian adolescent: a systematic review. *BMC Public Health*24, 1764 (2024). <https://doi.org/10.1186/s12889-024-19219-w>
 13. Olatona FA, Adeniyi DB, Obrutu OE, Ogunyemi AO. Nutritional knowledge, dietary habits and nutritional status of adults living in urban Communities in Lagos State. *Afri Health Sci*. 2023 Mar;23(1):711-724.
 14. Kristina Norman, Ulrike Hab, Mattias Pirlich. Malnutrition in Older Adults—Recent Advances and Remaining Challenges. *Nutrients*. 2021;13:2764. doi: 10.3390/nu13082764
 15. Olanrewaju OI, Ebenezer OD, Bolajoko OO and Alebiosu IA. Prevalence of Malnutrition and Morbidity Pattern among Neglected Geriatric Population in Rural Area of Ondo State, Southwest, Nigeria. *OAJ Gerontol & Geriatric Med*. 2024; 8: 555732.
 16. Rea Stamatiou, Varvara-Stavroula Katsafadou, Theodora Mouratidou. The impact of social media on dietary choices, emotions around food consumption and body image in Greek adolescents and young adults. *Public Health Toxicol* 2022:A152.
 17. Ali Ibrahim. Wegdan Bani-Issa, Alounoud AlMarzouqi, Sharmsa Al-awar, Samah Ibrahim, Adam Ibrahim, Hajar Ibrahim, Heba Khalil, Dana N Abdelrahim. The influence of social media food marketing on body mass index among college students: public health and media perspectives. *Sec Health Communication*. 2025 ; 10
 18. Fouzia Tebbani, Rihem Doukhani, Rania Mostefa-Ezzegai, Hayet Oulamara. Impact of social media use on food habits, sleeping duration and weight status of Algerian university students. *Nutrition Clinique et Métabolisme*. 2025:118-124