

## NIGERIA: THE ROLE OF NUTRITION AS CENTRAL TO PUBLIC HEALTH'S FOCUS ON PRENATAL CARE, CHILDHOOD GROWTH AND DEVELOPMENT

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### ABSTRACT

Understanding the role of nutrition is important to public health's focus on prenatal care and childhood growth and development. The adage "you are what you eat" remains true today for individuals, families, communities and even nations. Generally, food influences energy levels, physical performance and overall well-being of individuals, as dietary pattern can provide or drain away energy, while also dictating body's functioning patterns. These depend on age, sex, weight, allergic disposition, past behaviours and perhaps, even ones mother's lifestyle before birth. Because no one can achieve complete physical, mental, and social well-being in an otherwise unhealthy environment, this descriptive research focuses on the link between health and income at the level of individuals, the individual's biological environment, and the broader societal milieu. This will help develop a better understanding of the important environmental and socioeconomic factors that influence people's personal nutritional choices and by extension, their health.

**Keywords:** Nutrition, Protein Deficiencies, Prenatal Care, Malnutrition, Stunted Growth, and Wasting

### INTRODUCTION

Some topics in public health have overarching impacts on many dimensions of well-being. Nutrition is one of these especially important topics (Skolnik, 2021). As research studies have shown, nutritional status has profound relationship with health status (Nnakwe, 2018); a healthy diet is essential to child development and growth and to overall human flourishing (Birn *et al.*, 2017). High rates of malnutrition (often referred to as "disease of the poor" (Conrad and Leiter, 2013), pose significant public health and development challenges for low-income countries (LIC), Nigeria included (Birn *et al.*, 2017). Malnutrition in childhood and pregnancy has many adverse consequences for child survival and long-term well-being (White *et al.*, 2013). It also has far-reaching consequences for human capital because it increases healthcare costs and economic productivity, while also slowing economic growth that can perpetuate a cycle of poverty and ill-health, while jeopardizing the growth of young children, their proper mental and physical development, and their health as adults (USAID, 2018; Skolnik, 2021; Wilner *et al.*, 1978). Nutrition, particularly of children, pre-pregnant and pregnant women, plays an important role in human resource development everywhere (Skolnik, 2012). Therefore, these consequences of malnutrition should be of concern for policy makers who could work to develop and implement better policies that would help address these problems in Nigeria, which has the highest number

of children under five years with a chronic malnutrition, experience stunting (being below the fifth percentile of the WHO low height-for-age distribution) in sub-Saharan Africa at more than 11.7 million, according to the most recent Demographic and Health Survey (DHS) (National Population Commission and ICF International, 2014; USAID, 2018; WHO, 1998).

According to the World Bank (1994), a 1990 Demographic and Health Survey findings and studies, suggested that improper infant and child feeding practices, along with widespread diarrhea disease, were major sources of malnutrition in Nigeria. Furthermore, the survey findings revealed that three important micronutrient deficiency disorders (iodine deficiency disorder, vitamin A deficiency, and iron deficiency anemia) were also common at least in certain parts of the country (World Bank, 1994).

A more recent report by UNICEF (2019), shows that the situation has not improved much, with 5 in 10 children under the age of five are malnourished; and 3 in 10 children aged 6 to 23 months live on poor diet. Likewise, a National Nutrition and Health Survey (NNHS) conducted in 2018 with the main objective to assess the current nutrition status of the population (especially children age 0-59 months and women of childbearing age (15-49 years) at state, zonal, and national levels, found that the prevalence of underweight among children aged 0-59 months, was 19.9 percent (95% CI: 21.5- 23.4), just at the



margin of the 20 percent threshold for serious situation that it has been since 2014, higher than the global estimate of 15 percent, but consistent with the rates in the West and Central Africa region (22%). The prevalence of stunting was 32.0 percent (95% CI :30.7-33.4) and, has remained the largest burden of malnutrition with stagnated rates of above 30 percent since 2014, and with many states in the northwest and northeast recording levels above 40 percent- the WHO critical levels. According to the report, stunting indicates a long-term nutritional problem in the country and at similar levels to that of sub-Saharan region (37 percent) with serious and perhaps irreversible consequences.

On infant and young child feeding practices, the same UNICEF report shows that more than 80 percent of newborns do not receive milk and colostrum on time, that is, within one hour of birth; and that only 27 percent of 0-5 months old infants are breastfed exclusively, and so, most are introduced to complementary foods before the age of six months; earlier than the WHO/UNICEF's recommendations that mothers exclusively breastfeed their children, therefore predisposing their children to unsanitary feeding conditions and, vulnerability to illness.

As the Nigeria Federal Ministry of Health (2006) notes, nutrition and nutrition-related disorders remain a persistent public health problem in the country; with Protein-energy malnutrition (PEM) being the most common and most serious form of malnutrition. Because of this nutritional problem therefore, this study will attempt to:

1. Provide an overview of the most important matters concerning undernutrition and overnutrition in Nigeria.
2. Broach the determinants of nutritional status of children in Nigeria, bearing in mind the framework developed by UNICEF in 1998 which was designed to highlight the determinants of undernutrition (UNICEF, 1998).
3. Discuss efforts by the Federal Ministry of Health and Social Services, with the assistance of UN agencies, as well as agencies of foreign governments in partnership with nongovernmental organizations (NGOs) that are working on various action programs like breastfeeding promotion, dealing with the nutritional problems of low-income groups, and integration of nutrition into health programs with the help of community nutrition mobilizers.

## BACKGROUND

Nigeria is the most populous country in Africa, with an estimated 186 million people in 2016 (UNICEF, 2017). Given a high fertility rate of about 4.38 children per women, the population is growing at an annual rate of 2.6 percent, worsening overcrowding conditions. At this rate, by 2050, Nigeria's population could be reaching a staggering 440 million, which will make it the third most populous nation in the world, after China and India (Population Reference Bureau, 2013). A scarcity of resources and land in rural areas has resulted in Nigeria having one of the highest urban growth rates in the world at 4.1 percent (Nigeria Federal Ministry of Health, 2014).

Currently, Nigeria ranks 145th out of 157 countries in progress toward meeting the Sustainable Development Goals (SDGs) (UNICEF, 2017). According to the most recent Demographic and Health Survey in Nigeria (2013), the lifetime risk of maternal death related to pregnancy or childbearing is 1 in 30 women. One in every 15 Nigerian children will die before age 1 year, and 1 in every 8 will not survive to their fifth birthday (0-59 months) (National Population Commission and ICF International, 2014).

As the World Bank (2017) notes, Nigeria's economy is the largest in Africa and is well-positioned to play a leading role in the global economy. Despite a strong economic growth in the mid-1980s to early 1990s however, poverty has remained significant, with increasing inequality and regional disparities. Poverty in Nigeria, in addition to its overwhelming rural and regional characteristics, is also strongly influenced by education, age, and the nature of employment. Those without education account for most of the poor and an overwhelming large fraction of the extreme poor: 79 percent of the urban extreme poor and 95% of the rural population had only primary schooling or less (World Bank, 1996). Overall, it is estimated that 69 percent of Nigerians now live below the relative poverty line (US \$1.25 per day), which is a significant increase from 27 percent in the mid-1980s (World Bank, 1996). Nigeria's economy is largely dependent on its expansive oil and gas reserves (World Bank, 1994). The sharp decline in oil prices beginning in 2014 posed major challenges to the country's finances (World Bank, 2020). However, with a renewed focus on economic diversification and promoting growth in the private sector, GDP grew by 0.6 percent in the second quarter of 2017, driven also by growth in agriculture. Agriculture (over 85 percent yams, cassava, and grains) employs over two-thirds of the labor force and generates about 40 percent of





the country's total GDP (World Bank, 1994; World Bank, 2017; and Central Bank of Nigeria, 2013). Cocoa, oil palm, rubber, groundnuts, and cotton - the principal cash crops - account for less than 10 percent of crop-based GDP (World Bank, 1994).

Agricultural food crop products in Nigeria, such as yams and cassava, are starchy food products and not so much as food products rich in diversity, including fruits, vegetables, and legumes. This means low intakes of multiple micro-nutrients among women of reproductive age and diets with low dietary diversity among children. Agriculture is a critical component of food systems in which food supply chains and food environments can shape diets and nutrition outcomes (HLPE, 2017). Therefore, it is important for Nigerian farmers to focus their attention equally on what the Food and Agriculture Organization (FAO) (2014) called “‘nutrition-sensitive agriculture,’ which is, a food-based approach to agricultural development that prioritizes nutrient-rich foods, dietary diversity, and food fortification at the center of the fight against malnutrition and micronutrient deficiencies.”

## MATERNAL HEALTH

The health of pregnant women and children is traditionally one of the highest priorities of public health. In a society concerned with the welfare of its population, everyone should be guaranteed adequate conditions for the best possible start in life (Schneider, 2021). The health of the mother is especially important to the health of the child (World Bank, 1994). The nutritional status of the mother before she conceives establishes the quality of the environment in which the fetus will develop and is a key determinant in the life of the newborn (McKinney, 2018). The mother's nutritional health also affects her ability to breast-feed the infant and provide postnatal nurturing. The inter-conceptional period before the woman becomes pregnant again is vital to the health of both the mother and the next baby she will conceive. If the woman becomes pregnant too soon after her previous pregnancy or does not have sufficient food intake before she becomes pregnant, she will not be able to replenish her depleted body stores, putting both the mother and the fetus at risk (McKinney, 2018). Health care professionals who work with women of childbearing age have the potential to influence the entire society by focusing on ways to improve the health of the mother. This is a global challenge, especially for low-to-middle-income countries (LMIC), and women in many

parts of the world lack access to quality prenatal care and education.

## PRECONCEPTION HEALTH CARE

Preconception healthcare is the medical care a woman or man receives from the doctor or other health professionals that focuses on the parts of health that have been shown to increase the chance of having a healthy baby (CDC, 2006). The preconceptional period is the time before a woman becomes pregnant (McKinney, 2018). Women who are trying to become pregnant are more likely to be aware of their food intake and the importance of nutrition to the success of their eventual pregnancy. However, most women are pregnant for six to eight weeks before they know it. As (McKinney, 2018) notes, this early pregnancy period is especially important in fetal development, and women who have health problems, nutritional deficiencies, or who consume alcohol or illicit drugs, have a much higher risk of poor pregnancy outcomes. Hence, health messages directed at women in the preconceptional period need to focus on information about the importance of a healthy diet before becoming pregnant so any future baby will be healthy (McKinney, 2018).

The role of good nutrition is further supported by scientific research, which has shown that good nutrition is important for male and female fertility (Housman and Odum, 2020). A balanced diet including regular servings of fruits, vegetables, whole grains, lean meats, and dairy products will optimize the preconception period (Alexander *et al.*, 2017). While the recommendation that women should also get at least 1000 milligrams of calcium daily (that is, three 8-ounce glasses of milk) in the preconception period is generally accepted, in Nigeria such recommendation is good for women who leave in some large cities where upscale supermarkets like Spar, ShopRite Super Market, and Goodies are located and carry fresh, pasteurized milk, in addition to a great deal of food variety. However, the absence of such luxury leaves women in the rural areas to settle for condensed evaporated milk, which is generally found in small shops, known as convenience stores in those areas.

Preconception health care is individualized care for both men and women that are designed to reduce maternal and fetal illness and mortality increase the success of conception when pregnancy is desired, and to provide contraceptive education to prevent undesired pregnancy (American Academy of Family Physicians, 2015). Ideally, a woman will be obtaining preconception health care before pregnancy and can transition into prenatal health



care once her pregnancy begins. To that end, the United States Centers for Disease Control and Prevention (CDC) encourages all women to develop a reproductive health plan and outlines steps that woman can take to be ready for healthy pregnancy (CDC, 2006).

### HEALTHY WOMEN AND HEALTHY BABIES

Preconception health is important for every woman - not just those planning pregnancy. It means taking control and choosing healthy habits. It means living well, being healthy, and feeling good about your life. Preconception health is about planning for the future and taking the steps to get there! Just as it is important for the woman, preconception health is a precious gift to babies. For babies, preconception health means their parents took steps to get healthy before pregnancy. Such babies are less likely to be born early (preterm) or have a low birth weight. They are more likely to be born without birth defects or other disabling conditions, as well as develop and grow healthfully. "Preconception health gives babies the best gift of all - the best chance for a healthy start in life" (CDC, 2006).

### TOTAL FERTILITY RATE

The total fertility rate (TFR) is the total number of children a woman would have by the end of her reproductive period if she experienced the currently prevailing age-specific fertility rates (ASFRs) throughout her childbearing life (ages 15- 49years): in other words, it is the average number of births per woman (World Bank, 1994). The TRF, according to the World Bank, is a commonly used indicator of reproductive health and population momentum and is also a proxy for the effectiveness of family planning services (World Bank, 1994). The primary strength of this summary measure is its independence of age structure, unlike the crude birth rate. Hence, it is useful for monitoring trends overtime and for making international comparisons (Merrill, 2010).

One of the special features of Nigeria's population policy is a series of quantitative targets, although achieving them in the time frame given will be extremely difficult and expensive (World Bank, 1994). For many of the targets, two numbers were given: one for 1995 and another for the year 2000. The 11 targets encompass the health aspects of reproduction, the determinants of fertility, program activities, and reproduction in fertility and population growth. For instance, the policy called for reducing the proportion of women marrying before age 18 by 50 percent by 1995, and for cutting the proportion who bear

more than four children by 80 percent by the year 2000. Among program variables, the policy set coverage targets for family planning services: 50 percent of all women of reproductive age by 1995 and 80 percent by 2000. As the World Bank noted, from the point of view of population change, however, the two most fundamental targets were those that called:

- a) the total fertility rate (TFR) which in the early 1990s was around 6.0, to fall to 4.0 by 2000, and
- b) the rate of population growth (estimated by the World Bank in 1990 to be around 2.9 percent to fall to 2.5 percent by 1995 and to 2.0 percent by 2000 (World Bank, 1994).

Although present fertility levels in Nigeria are still high by international standards, they are beginning to come down, more in some regions than others, however. For example, the Central Intelligence Agency, the World Factbook (2009) has total fertility rate in Nigeria at 4.38, down from 6.0 in the early 1990s. Levels of knowledge about contraception and where to obtain information and services are considerably lower in Nigeria than much of the world, even being far below the levels in some other African countries. While the situation is improving, some couples in the country still do not feel that it is the prerogative of an individual to make choices about fertility. Consequently, the practice of family planning (FP), whether traditional or modern methods, is still low (World Bank, 1994).

### PREGNANCY

Pregnancy is the gestational process, that is, the process of development of a fetus from fertilization until birth (Housman and Odum, 2020). Pregnancy lasts an average of 266 days from the time of fertilization or 280 days from the first day of the last menstrual period (often referred to as LMP). The gestation period is divided into three phases or trimesters of approximately 3 months each. Not all women have 28-day menstrual cycles, so due dates cannot be precisely determined (Alexander *et al.*, 2017).

In a succinct description of pregnancy process and the development of mothers, infants, and young children, Wilner *et al.* (1978), divided the process into several periods. These developmental periods are enumerated and defined as follows:

Prepregnant: all nonpregnant time during the mother's reproductive years.



1. Pregnant or Prenatal: from conception until the delivery of all products of conception, including the placenta.
2. Labor and Delivery: that portion of the prenatal period from the beginning of true labor until the delivery of all products of conception, including the placenta.
3. Puerperium: the six weeks following delivery.

The periods related to infants and children include:

4. Fetal: from conception until delivery
5. Early: from conception through the twentieth week.
6. Late: from the twentieth week to delivery.
7. Neonatal: from birth through the first seven days of life.
8. Late: from the eighth day of life through the twenty – eighth day.

Perinatal: From the twentieth week after conception through the first 28 days after birth, thus combining the late fetal and neonatal periods.

9. Infancy: from birth to the first birthday
10. Preschool: from the first birthday to the fifth birthday.

It is important to keep in mind that while developmental periods are convenient descriptive devices, they are artificial. Growth and development are continuous processes which always proceed, rather than in a series of arbitrary periods (Wilner *et al.*, 1978; Merson *et al.*, 2020).

### **RISKS ASSOCIATED WITH PREGNANCY**

During pregnancy, there are many conditions that can cause women to become ill or die, including hypertensive disorders of a pregnancy (Skolnik, 2021; WHO, 1988). With some type of pregnancies being riskier than others, higher-risk conditions include pregnancies of first-time mothers, mothers with multiple previous pregnancies (five or more pregnancies), very young or older mothers – the highest risk may be for young mothers in the 15-to 17-year-old age group, women already in poor health, and pregnancies that are terminated by unsafe abortions (National Research Council, 1989). In addition, a woman can be left with many permanent disabilities related to pregnancy, including uterine prolapse, and obstetric fistula (that is, an injury in the birth canal that allows leakage from the bladder or return into the vagina, leaving a woman permanently incontinent (Skolnik, 2021).

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Like many countries in sub-Saharan Africa, it is obstetric hemorrhage, however, that is the leading cause of maternal mortality in Nigeria. This is followed by preeclampsia or eclampsia (pregnancy-related high blood pressure), sepsis and complications from unsafe abortions (World Health Organization, 2019). Unsafe abortions lead to significant morbidity and mortality for women. The conditions that can exacerbate pregnancy-related health risks include placental malaria, hepatitis, tuberculosis, malnutrition, and obesity, as well as certain mental health issues, such as depression (Skolnik, 2012). Some major health problems which have become increasingly important in Nigeria and one that women are biologically more susceptible to than men are, include sexually transmitted infections such as HIV virus (World Bank, 1994). That is so because women have a greater mucosal area that is exposed during sexual relations than men have (Skolnik, 2021). The higher rates at which new and unprotected sexual encounters occur in Nigeria appear to be important factors in HIV transmission.

### **PRENATAL CARE**

Once a woman learns she is pregnant, she needs to be evaluated and provided with appropriate guidance to assist her in staying healthy and delivering a healthy full-term baby. Nutritional assessment and advice, though like the preconceptional period, becomes more precise to meet the woman's particular status and needs, as well as ensure proper development of her unborn child (McKinney, 2018; Alexander *et al.*, 2017). Thus, prenatal care is the most public health-orientated kind of care that the medical profession provides (Schneider, 2021). Prenatal visits also offer an opportunity for healthcare providers to diagnose problems that need medical intervention. For example, bacterial infections of the genital tract increase a mother's risk of giving birth prematurely, and treatment with antibiotics can reduce that risk (Schneider, 2021).

In Nigeria, prenatal care is especially important for the women with the lowest socioeconomic status. Visits to a healthcare facility may be their only source of the education, services, and social support they need. Though the importance of prenatal care is well understood, there are barriers that discourage the pregnant women even those at highest risk from seeking prenatal care, these include residence, region, and mother's education, distance of travel to a healthcare facility, or community health centers which are typically operated in rural areas and staffed by skilled health attendants – accredited health professionals (midwives and nurses) who have the

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necessary training to proficiently manage normal pregnancies, childbirth, and the immediate postnatal period and to identify, manage, and refer complications in women and new-borns (WHO, 2004). In these rural areas the staffing seldom includes a doctor. The prenatal care of women is usually a major function of community health center nurses. After the baby is born, mothers some of whom have little, or no formal education are advised on good nutrition, personal hygiene, and child rearing practices.

In contrast, expectant mothers living in one or all the relatively advantaged urban centers and have higher education are more likely to seek prenatal care very early on at antenatal clinics which are operated by States' Ministries of Health as part of general hospitals (World Bank, 1994). These antenatal clinics are staffed by well trained and accredited nurses and midwives who provide not only the antenatal care, but also performed most of the deliveries in hospitals. Only if the childbirth has complications is an obstetrician or a general physician quickly called in (Roemer, 1993). The record of perinatal mortality, which may be attributed to the childbirth process, is generally much lower in cases where deliveries take place in antenatal clinic settings often with very limited resources and inadequate remunerations or recognition for their work, than those that occur at home attended mostly by traditional birth attendances (TBAs) (Roemer, 1993). They are often older women from the neighbourhood and work voluntarily. Hence, they are often referred to as "village mothers."

Following the Alma-Ata, USSR conference in 1978, various countries integrated traditional birth attendants into their maternal and child health programs (Birn et al., 2017; WHO, 1978). Unlike the professional nurses and midwives who are trained and accredited however, traditional birth attendants in Nigeria have no formal training or legal status but do practice in their own communities. In the rural villages in the country, most childbirths occur in the mother's home, under the care of the traditional birth attendant. Although they rarely provide antenatal care, after the baby is born however, the TBA follows a custom of going to the home of the newborn early in the morning at least for the first several days or weeks to help the mother, especially an adolescent mother, bathe and with head support feeds the baby who during this period is only capable of simple suck-swallow-breathe pattern during feeding (McKinney, 2017), on warm water and then hands her over to her mother to breastfeed shortly thereafter. This is a way of educating

the young mother on how to take care of her new-born in addition to breastfeeding.

## NUTRITION AND HEALTH

One aspect of maintaining good health that cannot be undervalued is the role of nutrition. Nutrition, to define it in a simple term, refers to food -to ingest substances that fuel metabolism, provide the substrate for growth, and maintain the function of tissues (Loeffler and Hart, 2020). Nutrition plays an important role in health. It is required for reconstitution of cells that are lost because of physiologic processes or because of inquiry caused by disease, for nourishment of a growing fetus or nursing infant, and for obtaining molecules that the body does not produce itself but are necessary for physiologic processes (Loeffler and Hart, 2020).

Nutritional needs vary between sexes, and by age and degree of physical activity. Special nutritional needs arise during pregnancy and lactation, as the fetus and nursing infants acquire their nutrition from their mothers. Infants and young children need relatively more calories, minerals, and vitamins than do adults, because their tissues are actively growing (Nnakwe, 2018; Skolnik, 2021; Alexander et al., 2017). A healthy diet is essential to child development and growth and to overall human flourishing. Feeding is foremost a family/household responsibility, yet it is profoundly shaped by national measures influencing food security as well as global factors affecting land tenure and food production processes (Birn *et al.*, 2017).

In the past, both hunger and malnutrition were a matter of insufficient calories, protein, fresh fruits, and vegetables. Today, nearly 50% of child deaths still result from inadequate nutrition (UNICEF, 2014) and globally nearly 1 in 8 people (800 million, with over double that number hungry) are undernourished (FAO, 2015). Nigeria experiences a malnutrition burden among its under-five population. Poverty, urbanization, climate change, and poor eating choices are driving unhealthy diets. In Nigeria, 5 in 10 children under five are malnourished (stunted, wasted, or overweight); 3 in 10 aged 6 to 23 months live on poor diets (UNICEF, 2019).

In a UNICEF report – *The State of the World's Children 2019: Children, Food and Nutrition*, the agency warned that "an alarmingly high number of children worldwide are suffering the consequences of poor diets and a food system that is failing them." The report finds that at least 1 in 3 children under five – that is, some 200 million – is either undernourished or overweight. Almost 2 in 3





children between six months and two years of age are not fed food that supports their rapidly growing bodies and brains. This puts them at risk of brain development, weak learning, low immunity, increased infections and, in many cases, death.

The reports provide the most comprehensive assessment yet of 21st century child malnutrition in all forms. It describes a triple burden of malnutrition: undernutrition, hidden hunger caused by a lack of essential nutrients, and overweight among children under the age of five, noting that around the world:

1. 149 million children are stunted or too short for their age, including 13.1 million in Nigeria.
2. Some 50 million children are wasted, or too thin for their height, including about 2.9 million children in Nigeria.

The report warns against poor eating and feeding practices in the country which in many cases start from the earliest days of a child's life.

### **BREAST FEEDING**

Though health experts generally acknowledge that “breast milk is the gold standard; and that it is best for babies,” yet in Nigeria, only 27 percent of children under six months of age are exclusively breastfed and an increasing number of children are fed infant formula (World Bank, 1994). This is a sharp decline from the 88 percent of babies breastfed at age 12 – 13 months from about 1970s and early 1990s (Demographic and Health Survey, 1990); this is in part because as women – particularly women with higher education – entered employment and became generally more liberated in social relations, breastfeeding has become regarded as an inconvenience. A major influence was attributed to the advertising and general promotion of breast-milk substitutes by multinational corporations (Roemer, 1993). Unlike the United States as of 2011, where nearly half of 2,600 hospitals in a survey by the Centers for Disease Control and Prevention (CDC), had stopped giving formula samples to breast-feeding mothers, up from a quarter in 2007 (Belluck, 2012). Conversely, in some cases doctors and hospitals in urban areas in Nigeria recommend the use of formula particularly for babies born prematurely.

Breast-feeding decreases babies’ risk of ear infections, diarrhea, asthma, and other diseases, and may reduce risk of obesity and slightly improve I.Q., experts say. Therefore, this is not only better for the infant’s health, but

also simpler and more economical. Breast-feeding advocates say that unfortunately, easy access to formula affects mother’s choices. In that case, many children in Nigeria are missing out on the life-saving benefits of breast milk which the UNICEF (2019) report says, “is a baby's first vaccine and offers the best possible nutrition at the start of life.”

Weaning is the ending of breastfeeding or bottle-feeding and substitution of food for breast milk or infant formula (Nnakwe, 2018). As children begin transitioning to soft or solid foods between the ages of four- and six-months mark, the range that allows for differences in growth and development among babies (American Academy of Pediatrics, 2016), too many are introduced to the wrong kind of diet, according to the report. This related transition which Skolnik (2012) calls nutritional transition implies that countries frequently move from poorly balanced diets often deficient in nutrients, proteins, and calories to a diet of highly processed food, including fats, sugars, and salt. He argues the consequences of both under – and overnutrition will continue to affect the public's health well into the 2000s.

In Nigeria, malnutrition remains a major public health and child development and growth concern: 49 percent of children under five years of age are not growing well (UNICEF, 2019); (they are either wasted - characterized by the loss of muscle and adipose tissue (Merson et al., 2020) - stunted or overweight). The report also goes on to term these statistics as the second highest proportion after the Democratic Republic of Congo in the West and Central Africa region. This is partly because 34 percent of children between six months and two years of age are fed food that is not rich and micronutrient deficient (UNICEF, 2019).

### **MALNUTRITION**

Malnutrition is a poor nutritional status because of dietary intake either above or below the optimal level (Nnakwe, 2018). Malnutrition occurs when a person's diet does not supply the body with the right amount of the vitamins, minerals, and other nutrients required to maintain healthy organ function and tissues. It can also occur because of either undernutrition or overnutrition (Alexander et al. 2017; Merrill, 2010). Both factors can result in reproductive health problems in men and women (Merrill, 2010). Whereas, eating a variety of foods each day will ensure that the body gets enough vitamins, proteins, carbohydrates, and other nutrients. Malnutrition is a key determinant of both respiratory illnesses and diarrhea,





linked to just under half of child deaths (Black *et al.*, 2013). A lack of food because of poverty is a primary reason for undernutrition. On the other hand, overnutrition is a type of malnutrition in which nutrients supplied to the body are greater than required for normal growth, development, and metabolism. Overnutrition occurs from eating too much, not exercising, or taking too many vitamins (Merrill, 2010). Children, mainly infants and those under five years of age, are at an increased risk of undernutrition because of greater need for energy and nutrients during periods of rapid growth and development (Nnakwe, 2018). Protein-energy malnutrition (PEM) occurs throughout the life cycle, but it is more common during infancy and childhood and in the elderly (WHO, 1998).

Chronic undernutrition into early childhood has serious consequences: vitamin A deficiency, a major problem among the poor, and its blinding complication, xerophthalmia is linked to blindness (Sommer, 2013); iodine deficiency to growth failure and intellectual disability, and iron deficiency to learning, all with lifelong effects (Beard, 2008; Li and Eastman, 2012; and WHO, 2009). Early exposure to environmental contaminants, like air pollution, can also generate chronic problems, including lung disease, asthma, congenital, childhood or adolescent cancers (Merrill, 2010). Protein-energy malnourished children develop marasmus, which is associated with very low weight, weakness, and susceptibility to infections (WHO, 2000). Those with diets dominated by protein deficiency develop kwashiorkor: while they may appear to maintain a moderate weight, much of this is because of edema (fluid accumulation), often characterized by a swollen belly. Marasmus and kwashiorkor represent a spectrum of severe childhood malnutrition: children with kwashiorkor also lack sufficient caloric intake (White *et al.*, 2013).

To address the growing malnutrition crisis in all its forms, UNICEF (2019) is issuing an urgent appeal to governments, the private sector, donors, parents, families, and businesses to help children grow healthy by among other things:

1. Investing more resources in interventions aimed at preventing malnutrition among young children and supporting treatment when prevention fails.
2. Supporting nursing mothers to adequately feed and care for their children.
3. Empowering families, children, and young people to demand nutritious food, including by

improving nutrition education and using proven legislation – such as sugar taxes – to reduce demand for unhealthy foods.

4. Building healthy food environments for children and adolescents by using proven approaches, such as accurate and easy-to-understand labelling and stronger controls on the marketing of unhealthy foods.
5. Collecting, analyzing, and using good-quality data and evidence to guide action and track progress.

## NUTRITION AND FOOD SECURITY CONDITION

The World Food Summit of 1996 defined food security as existing “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life” (Food and Agriculture Organization of the United Nations, 2009). Food, together with water and shelter, is a basic human need shaped by factors at all levels. Addressing issues of food security – the availability of and access to enough (nutritious) food – has driven the work of UN agencies such as FAO and, increasingly, global agribusiness (Birn *et al.*, 2017).

The primary link between food security and health is through malnutrition (White *et al.*, 2013). The World Food Summit goal was to half the number of malnourished people between 1990 – 1991 and 2015 (Food and Agriculture Organization, 2011). Recent food and economic crisis have increased food price volatility and resulted in higher food prices, challenging the ability to reach the goal (White *et al.*, 2013).

Food production and consumption affect health in many other ways, influenced by national policies around land-use and environmental and safety regulations for example, pesticide residues and industrial chemical runoff in soil and waterways (e.g., petroleum in the soil of the Niger Delta region in Nigeria, mercury in North America's Great Lakes) lead to various cancers, organ diseases, and developmental problems (Birn, *et al.*, 2017). In addition, foodborne illnesses because of contamination in the production and distribution process kill 420,000 people and cause 600 million cases of illness each year (WHO, 2015).

For most people, particularly those who live in the rural areas of Nigeria however, the situation of food insecurity is dire. Food insecurity exists whenever the availability of nutritionally adequate and safe foods or the ability to







acquire acceptable foods in socially acceptable ways is limited or uncertain (Canada, 2016). Nigeria does not normally produce agricultural surpluses and have large pastoral and nomadic communities in the north, the impact of food deficits on the nutritional status of civilians are therefore severe. When adverse climate factors intervene, as often happens in drought-prone countries, Nigeria for example, the outcome may be catastrophic famine (Merson et al., 2020). In Nigeria however, hunger and poverty are more prevalent than acute hunger caused by famine, which is a widespread lack of access to food because of a disaster, drought, political conflict, or war that could cause a collapse in a country's food production and marketing systems (Nnakwe, 2018).

Together, one might describe the causes of malnutrition and food insecurity in Nigeria as multifarious and include poor infants and young children feeding practices, which contribute to high rates of illness and poor nutrition among children under two years; lack of access to quality health care, clean water and sanitation; armed conflict, particularly in the north-eastern region, irregular rainfall, high unemployment and poverty (Nigeria Federal Ministry of Health, Family Health Department, 2014; United States Agency for International Development (USAID), 2018). Given that chronic and seasonal food insecurity occurs throughout the country, and is exacerbated by volatile and rising food prices, the impact of conflict and other shocks have resulted in acute levels of food insecurity in the North-East region (FEWSNET, 2017).

To help Nigeria address this problem, the Swedish International Development Corporation Agency (SIDA) on 24th of December 2020 released SEK 10 million (\$1,186,000) to UNICEF to help prevent and treat severe acute malnutrition in children in north-east of Nigeria. "The contribution will boost interventions addressing wasting and fortifying conflict-affected children in the region against COVID-19 and other opportunistic infections. With 690,090 acutely malnourished children, the three north-east states of Adamawa, Borno, and Yobe constitute the greatest burden of the 2.7 million acutely malnourished children in Nigeria" (UNICEF, 2020). Measures to contain the COVID-19 pandemic have further created inequality in access to nutritious food and supplement which children and mothers urgently need. The result for many children is weaker immune systems, which puts them at greater risk of contracting COVID-19 and other infections. Even if children survive such infections, malnourished children surely have poorer outcomes in education and overall health.

Using community mobilizers, the SIDA grant will allow for swift identification, referral, and treatment of severe acute malnutrition cases in children in those three states. Frequent and increased micronutrient supplementation both at the community and referral center levels, will prevent and treat malnutrition in children, thereby providing them with a healthy start in life (UNICEF, 2020).

In a similar generous manner, on 29 March 2021, the government of Japan announced a grant of \$600,000.00 to help communities in Borno and Yobe states respond to worsening nutrition among conflict-affected children (UNICEF, 2021). With the COVID-19 pandemic and the attendant loss of livelihoods and food insecurity, thousands more children could be at risk of malnutrition-related death or stunting in the region this year (UNICEF, 2021). Also, the new grant will aid in the early detection and prompt treatment of children suffering from acute malnutrition and build a strong network of community nutrition responders who can ensure quick referrals of malnourished children to health facilities, where trained health workers will be able to help them (UNICEF, 2021).

An estimated 3.1 million people in the states of Borno, Yobe, and Adamawa received emergency food assistance or cash transfers in the first half of 2017 but, because much of the North-East region has been inaccessible to aid agencies, the number who needed assistance could be higher (FEWSNET, 2017).

## HEALTHFUL EATING AND NUTRITION

Nutrition, as noted previously, refers to food. Nutrition functions as the science that investigates the need for food and the role of food in the nourishing the body and fostering good health. To survive and stay healthy, the human body needs six basic nutrients, which fall into three types:

1. Macronutrients, which include carbohydrates, proteins, and fats, are needed in large amounts.
2. Micronutrients, which include vitamins and minerals, are needed in smaller amounts.
3. Water, a substance often overlooked as a nutrient, is indispensable for virtually every bodily function (Alexander et al., 2017).

## COMPONENTS OF A HEALTHY DIET

As health research have found, the following are several basic guidelines that should be part of any diet:



1. A primary focus on fruits, vegetable, and whole grains, as well as low-fat dairy products, seafood, legumes (beans, peas, and lentils), and nuts.
2. Reduced amounts of red and processed meats and fatty dairy products.
3. Small amounts of refined grains, sweetened foods, and drinks.
4. For adults who drink, moderate amount of alcohol is recommended (United States Department of Agriculture; and Department of Health and Human Services, 2015).

When considering an eating plan, it is important to think about how well the plan follows the guidelines listed above, as well as how well the plan fits your needs, and how likely you think you will be able to follow the plan.

The Nigerian Ministries of Health; Agriculture and Rural Development and Information; universities; the World Health Organization; Helen Keller International; International Institute of Tropical. Agriculture: and pediatric and nutrition societies, in 2000 collaborated to develop Food-based Dietary Guidelines for Nigeria and published its first edition in 2001, to provide guidance on the various dietary components that if followed, will provide balance and adequate nutrition, and promote health as well as prevent disease (Nigeria Ministry of Health, 2001).

The dietary guidelines' use of a bowl and a plate as a basic visual metaphor, apply to all healthy Nigerians and include recommendations for different population groups (see Figure 1). Given that these guidelines can hardly be followed by most Nigerians, the results therefore might

reveal only a modest adherence, and only by those who value health highly, who believe in the importance of diet in determining health, who feel responsible for determining their health, and above all, households that can afford it.

The Nigerian Food Guide is a food pyramid divided into five food groups. At the bottom are bread, grains, and tubers, followed by vegetables and fruits. Both groups are to be eaten at every meal. Eggs, fish, meat, and dairy are on the third level, and are to be eaten in moderation. Oils and fats should be eaten sparingly according to the pyramid, with confectionery limited to rare occasions. A glass of water is placed outside of the pyramid with the advice to always drink plenty of water. The diet is based on the following basic rules (FAO, 2020):

1. Total food intake should take into consideration a person's level of physical activity.
2. Individuals who do manual work need to consume more food than those who do sedentary work.
3. Decrease consumption of total fat, saturated fat, and cholesterol.
4. The diet should contain as wide a variety of fiber-rich foods (i.e., complex carbohydrates) as possible, e.g.: whole grains, cereals, legumes, roots/tubers, fruits, vegetables, fish, lean meat, and local unpasteurized cheese.
5. Limit intake of salt, bouillon cubes and sugar.
6. Liberal consumption of whatever fruit is in season is encouraged.



**Figure 1: Food-based Dietary Guidelines for Nigeria and The Nigerian Food Pyramid**  
Source: Food and Agriculture Organization, 2020. Rome: FAO

**TABLE 1 - USAID PROGRAMS: ACCELERATING PROGRESS IN NUTRITION**

Selected Projects and Programs Incorporating Nutrition in Nigeria		
Name	Dates	Description
Feed the Future: Nigeria Nestle Maize Improvement Activity	2017 – 2020	The Nigeria Nestle Maize Improvement Activity aims to reduce the levels of aflatoxins and other contaminants in maize and soybean produced by smallholder farmers.
Maternal and Child Survival Program (MCSP)	2014 – 2019	MCSP Nigeria's goal is to reduce newborn and maternal mortality by increasing the quality and use of key, evidence-based interventions at health facilities in Kogi and Ebonyi states. To do this, they are working on enhancing clinical governance and capacity building at the facility level and promoting the adoption of new innovations through national advocacy and phased implementation at state and facility levels. MCSP advocates for greater attention to barriers to optimal maternal and young child nutrition. It integrates nutrition and WASH counseling for pregnant women and caregivers of children under 5 years during antenatal visits, postpartum care, immunization clinics, and through SMS messaging. (Maternal and Child Survival Program, 2017)
Feed the Future Nigeria Livelihoods Project	2013 – 2018	Feed the Future, the U.S. government's global hunger and food security initiative, has an overarching mission to increase agricultural productivity and generate opportunities for economic growth and trade; increase resilience; boost the harvests and incomes of rural smallholder farmers; improve agricultural research and development; and provide proven technologies to more people. The Nigeria Livelihoods Project's goal is to reduce poverty and improve household nutrition in Nigeria; it is operating in Sokoto, Kebbi, Federal Capital Territory (Abuja), Adamawa, Borno and Yobe states.
Food for Peace (FFP)	Ongoing	USAID's Office of Food for Peace (FFP) partners with nongovernmental organizations and UN agencies to provide emergency food and nutrition assistance to conflict-affected populations in northeastern Nigeria. FFP is providing targeted cash transfers and food vouchers to displaced persons and hosts community members in Adamawa, Borno, Gombe, and Yobe States. This cash-based assistance is increasing household access to food while supporting local markets and contributing to dietary diversity. FFP targets the most vulnerable populations, including pregnant and lactating women, female-headed households, and households with children under 5. Where markets are not functioning, FFP supports the World Food Program (WFP) to distribute food procured in Nigerian and regional markets. FFP also supports complementary nutrition programming that helps families use locally available foods to meet nutritional requirements. Activities include radio messaging, small group meetings, and cooking demonstrations. FFP is also providing in-kind, ready-to-use therapeutic food for the treatment of severe acute malnutrition and supports capacity building in emergency response within the Government of Nigeria through its contribution to WFP (USAID, 2017).

Source: Reproduced by courtesy of United States Agency for International Development (USAID, 2018).

**COMBATING HUNGER AND MALNUTRITION**

A healthful diet is adequate, moderate, balanced, varied, and nutrient dense. The Food-based Dietary Guidelines for Nigeria provide guidelines for healthy eating. These recommendations place emphasis on balancing calories

and understanding which foods to increase and which to decrease. As noted previously, the causes of malnutrition and food insecurity in Nigeria are multifarious and include poor infant and young child feeding practices. Although chronic and seasonal food insecurity occurs throughout the country, and is exacerbated by volatile and rising food





prices, the impact of armed conflict and other shocks have resulted in acute levels of food insecurity in the Northeast region (FEWSNET, 2017). That means a reduced ability to access and use food.

The World Health Organization (WHO) describes three criteria for food security:

1. Consistently enough food.
2. Resources to ensure adequate access to nutritious foods.
3. The knowledge about nutrition basics, clean water, and basic sanitation required to use food (WHO website)

In Nigeria, many people face unemployment and poverty, which restrict their ability to acquire sufficient food. People in rural areas often lack access to a variety of foods and the means to travel to markets in relatively large towns to shop in outdoor markets for a variety of foods, fruits, and vegetables. Their best option might be to settle for whatever kind of foods are grown locally or sold in the village small markets. Even in smaller villages, those shabby selections may not exist. The U.S. government through its initiatives is also helping to reduce hunger in Nigeria (USAID, 2017).

As of January 2018, the following USAID programs shown in Table 1 were active in Nigeria with focus on nutrition. The U.S. government selected Nigeria as one of 12 ‘Feed the Future’ target countries for focused investment under the new U.S. Government Global Food Security Strategy (USAID, 2018).

Unfortunately, many people experience food insecurity, unreliable access to sufficient quantity and quality of food. As the United Nations (U.N.) Food and Agricultural Organization (FAO) notes, one in nine people – about 815 million people worldwide – are chronically undernourished, meaning they do not consume enough food for a healthy life (FAO, IFAD, UNICEF, WFP, and WHO, 2017). Most of the world's hungry people live in developing countries.

Some experts predict that world hunger will worsen as the population continues to grow, intensive agriculture and deforestation have depleted soil, and global warming has expanded areas too arid to support crops (White, 2021). It is not yet clear how climate change will impact food insecurity and developing countries, Nigeria included. For example, anthropogenically caused ocean warming and acidification decrease availability of seafood, a key source

of protein (McMichael, 2013). The likely consequences of continuing droughts are diminished agricultural output, food shortages, undernutrition, and loss of millions of sizable arable lands- and increased death and disease- in poor and already food-insecure areas (Smith et al., 2014).

In some parts of Nigeria, activists like mothers’ support groups and community nutrient mobilizers, with financial support from UNICEF, have started livestock and poultry farming, in-home community vegetable gardening, and exclusive breastfeeding initiatives. These are part of a dietary projects to address malnutrition in children aged 6-23 months (UNICEF, 2021).

### CONCLUSION

Nigeria's population size and complexity presents huge challenges to public health policymakers. Rapid population growth has significant effects on social and economic outlook. For example, poverty- one of the generally accepted determinants of health outcomes and health service use – is rampant, and inequalities in urban-rural and regional settings are large.

Family planning methods and practices for the prevention of unwanted pregnancies which have developed over the years with some successes and failures, need to be further strengthened. Pregnancy involves physiologic changes in the mother (Soma-Pillay, 2016). These changes happen in response to many factors such as hormonal changes, increase in the total blood volume, weight gain, and increase in the fetus size. These factors have a physiological and biomedical impact on all systems of the pregnant woman; musculoskeletal, endocrine, cardiovascular, respiratory, gastrointestinal systems, breast changes, and renal changes (Soma-Pillay, 2016; Wikipedia, 2021). Therefore, it is important to diagnose pregnancy as soon as possible so that supervision can be provided which will assure maintenance of good maternal health and will help to minimize the chance of pregnancy wastage.

Proper health supervision during pregnancy or prenatal care, is now accepted as important goal in public health work. In Nigeria, prenatal care is provided mainly at public hospital clinics for those who are unable to afford this service privately. These public clinics are administered through Local Government Area (LGA) health departments, which generally need good quality medical care provided by the professional staff.





An issue of high concern and importance is malnutrition. Hunger and malnutrition, which health experts consider as a sociobiologic phenomenon, are highlighted in this work. The extent and specific causes are not in dispute. The sites of most severe acute malnutrition in Nigeria are the northeast and northwest regions and rural areas. The long-term solutions to these problems reside in efforts to erase poverty, raise employment and education levels; thus lie outside consideration of nutrition alone. The government has a responsibility to initiate programs that will have direct impact for alleviation of malnutrition and not just rely on United Nations agencies, NGOs, agencies of foreign governments, and outside charitable donations to help solve its problems.

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