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Essentials of human nutrition and its effects on pregnancy due to early/forced marriage

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Abstract

Background: Nutrition is vital to human existence and for the proper performance of all human body functions. Therefore, the body needs healthy, safe and rich food for healthy development across the life span. Food is critical for stronger immune systems, safer pregnancy and childbirth and lowering the risks of non-communicable diseases. The net effect of nutritional status on age at marriage and age at first birth is highly significant because there is strong connection between poverty and teenage pregnancy in early marriages of girls in under-developed and developing countries.

Objectives: This narrative study highlighted the roles of healthy diets to individuals across different ages but with in-depth emphasis on pregnant women especially the adolescence, a critical stage in life with all its peculiarities.

Method: There were deep reviews of previous literatures on nutrition at the global, continental and national levels as it relates to pregnancy where references were made using Mendeley reference library.

Result: The study revealed the importance of adequate and healthy nutrition to life at all stages essentially during adolescence. Records showed that many pregnant women had anemia because of poor diets due to poverty and lack of adequate knowledge on dietary requirements during pregnancy. Pregnancy anemia in 5 African countries was 41.2% - 57.1% where Nigeria had (46.2%) while the globally range was 30 – 88% and the rate in African continent was 50%. Also, prevalence of anemia amongst women were 29.6% (95% UI 26.6%, 32.5%) in non-pregnant women of reproductive age (15-49), and 36.5% (95% UI 34.0%, 39.1%) in pregnant women.

Conclusion: Good nutritional status for the pregnant adolescent is important due to the competitive nature between the pregnant mother and the fetus she is carrying for nutrients. Therefore, efforts should be made to guarantee what needs for the optimal health because what one eats and how one eats plays pivotal role in the management of health problems and stressful situations.

Keywords: Nutrition, anemia, pregnancy, adolescent, early marriage

Introduction

As reported by Kent-Jones (2023) nutrition is the transformation of food substances into the body tissues in order to supply the energy needed for the numerous activities that make up the human body^[1]. The World Health Organization (WHO) in 2020 stated that a healthy diet is key to the protection of the body against lack of proper nutrition in all its forms, as well as preventing non-communicable diseases (NCDs) such as diabetes, heart disease, stroke, and cancer; while emphasizing that unhealthy diet is one of the prominent global risks to health^[2]. The consumption of good food constitutes a vital foundation to human and national development; this is the outcome of what we eat and drink^[3]. It is important to note that one of the rudimentary goal of WHO: "Health for All" where it aimed at ensuring that universally, people throughout their lives are able to secure and maintain sustainable level of health, has been threaten by the presence of hunger, starvation, and improper nutrition^[4].

On the average, the human body is composed of 6% minerals, carbohydrates, and other nutrients, 16% fat, 16% protein, and 62% water; these percentages vary for every individual person depending on diet and lifestyle hence it is important to eat a wide variety of foods from the five food groups to meet the nutritional needs of your body^[1,5].

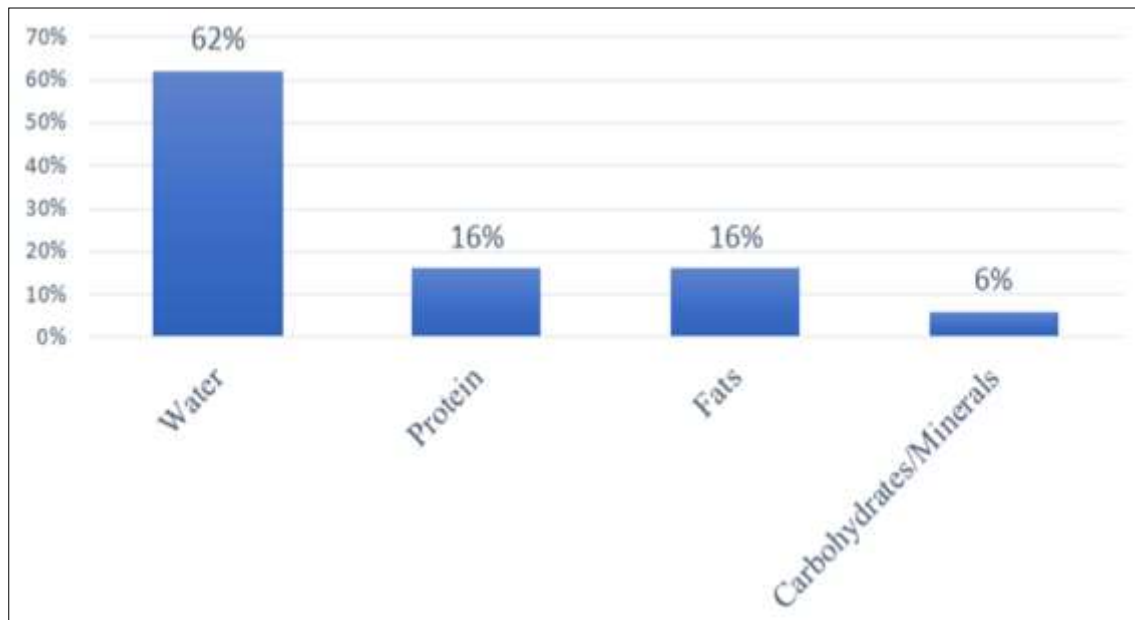


Fig 1: Food Composition in the body ^[1].

Human beings should always make sure that their body gets healthy foods because the food is not just meant to satiate hunger, but it plays vital roles in the body such as providing the needed energy, protein synthesis for growth and repairs of damaged tissues, for this reason, for that reason, it is important to eat foods that will have positive and beneficial impacts on the health status of the body ^[5]. Thus, it is important to note that healthy diet protect the body against many chronic and non-communicable diseases such as heart disease, diabetes and cancer as well as against opportunistic diseases such as HIV/AIDS, Malaria, SARS etc. Eating a variety of foods and consuming less salt, sugars and saturated and industrially-produced trans-fats, are essential for health and helps to manage these disease conditions and prevent complications ^[6].

As postulated by Morris (2023), nutrients are chemical substances required by the body to maintain an optimal homeostatic functions of the body when they are consumed in the right proportions (balanced diet) ^[7]. These nutrients from the foods we eat provide the foundational structure, function, and wholeness of the cells and tissues (such as muscles, bones), organs (such as skin) and systems (such as the digestive systems), therefore, food is scientifically beneficial to the body; though some aspects may need to be modified due to one's way of living ^[5]. Food could raise our energy, mood and quality of life, ultimately culminating in chronic diseases prevention and longevity ^[8].

A good nutrition which is the process of taking in food and using it for growth, metabolism, and repairs leading to normal and healthy life is only possible after it has gone through the stages of ingestion, digestion, absorption, transport, assimilation, and excretion in an appropriate order and right doses ^[9]. Hence, individual's nutritional status measured by body mass index (BMI) is a result of food intake and absorption and, it is influenced by the quality foods consumed and disease-related factors and this could be adjudged as good, fair or poor ^[10, 11].

To be able to achieve the above object, one needs to have a diet that contains different kinds of foods in the right quantities and proportions in order to meet the requirement for calories, proteins, minerals, vitamins and alternative nutrients ^[12]. According to the WHO (2020), it is important to consume foods such as fruits, vegetables, legumes (e.g. lentils and beans), and nuts and whole grains (e.g.

unprocessed maize, millet, oats, wheat and brown rice) for a healthy nutrition ^[6].

Poor nutrition and its consequences

In as much as a good nutrition is essential to keeping current and future generations of humans healthy throughout their lifespan, the NHS Scotland (2023) stated that poor nutrition is caused by not eating enough quality of food (under nutrition) or not eating them in the right proportion (balance diets) so, to give the body the nutrients it needs to keep the whole systems healthy, a good diet is a necessity ^[13, 14].

Supta (2013) opined that the groups of people who are vulnerable to poor nutrition include infants, pre-school age group, adolescents, the pregnancy women, obese persons, the underweight, those who refuse to eat food regularly, those who have food allergy, lactose intolerance, feeding problem and so on ^[15]. From the recent report by PATH (2023), it is vital to note that poor nutrition costs the world a fortune yearly in lost opportunities for economic growth and lost investments in human capital associated with preventable deaths in both children and adults as well, and the financial implication to the society is huge and could reach US\$5.7 trillion annually by 2030 and US\$10.5 trillion per year by 2050 ^[16].

Norman (2016) is of the opinion that "health" which is the state of complete physical, mental and social well-being and not merely the absence of disease or infirmity) as defined by the WHO is grossly undermined by effects of poor nutrition which may be devastating and detrimental to the victims of poor nutrition ^[17]. The Government of South Australia (2021) stated that poor nutrition can contribute to stress, tiredness, poor work performance, as well as pose risk of developing illnesses and health problems such as; overweight or obesity, tooth decay, anemia, high blood pressure, high cholesterol, heart disease and stroke, type-2 diabetes, osteoporosis, cancers, depression and eating disorders ^[10].

Poor nutrition and early/forced marriage.

Nwonu (2014) reported poverty, hunger or starvation as the legitimate reasons given by parents and children for the practice of child early marriage ^[18]. So, it is important to relate this topic on foods and nutrition to the health consequences of early marriage. Agege (2020) posited that

the causes of compelling the under-aged to early are gender inequality, unexpected pregnancy, broken homes, poverty, ignorance and customs/traditions ^[19]. Early marriage which is synonymous to forced marriage, is an age-long rehearses or a demonstration of compelling the young lady or kid into a relationship she knows little or nothing anything about its associated short- and long-term health, psychosocial, and economic consequences ^[20]. In addition, Ngunjiri (2020), stated that this practice could result in teenage pregnancy, and will greatly restricts a girl's opportunity to formal education, thus the poverty cycle keep on rotating in her family ^[21].

Though the consequences of early childbearing due to early/forced marriage and the nutritional status of pregnant women in Nigeria or any other African countries has not been quantified in previous studies, one is compelled to conclude that the net effect of age at marriage and age at first birth is significant. This could be inferred from the report from a study carried by Agege (2018) where it is stated that a greater number of the girls that got involved in marriage before they were matured for it, had husbands without a reasonable sources of income to adequately provide for their wives, meaning they are prone to poor antenatal and postnatal care due to financial constraints ^[22] consequently, anemia becomes one of the health challenges associated with pregnancy in early marriage due to poor access to quality foods and lack of adequate knowledge on healthy dietary requirements during pregnancy ^[19, 23].

As reported by Emry (2019), women participates in farming activities ranging from cultivation, harvesting, and processing but they do not benefit much compare to their male folks because of limited access to land, markets, farming technologies, fertilizer, credit, and training; these obviously culminate in a vicious cycle of multi-age poverty, poor health cares, and insufficient economic opportunities ^[24]. This has dire consequences such as food shortage, hunger and starvation, no wonder Agege (2020) averred that the effects of early marriage on food and nutrition are grave on the victims of this atrocious and obsolete practice ^[19]. This is why previous studies reported that one of the drawbacks of kid marriage to girls are higher rates of anemia and malnutrition when contrasted with those

who marry later in life ^[25].

This was attested to in a study by Agege (2020), which reported that marriage comes with the demands and numerous challenges such as coital satiation, domestic activities, raising of off-springs and other issues that need physical involvement, unfortunately, this would be too much burden for the married kids to bear because she is not physically and mentally matured, meaning the body systems could also be severely impeded by poor diets ^[19, 26]. Studies has revealed that adolescent girls who wedded below 15 years old have the high risk of maternal mortality and complications in pregnancy and childbirth, a leading cause of death amongst adolescent, leaving behind vulnerable and orphaned children in developing countries ^[27].

Effects of poor nutrition on pregnancy from early marriage

The WHO and Food and Agriculture Organization (FAO) (2014) postulated that poverty and lack of resources has affected an estimated 925 million people worldwide, this could result in malnutrition and its accompanied diseases because of lack of the essential components like iron in the foods. These lack of essential nutrients in the foods consumed by the pregnant women amongst the above population leads to micronutrients deficiency which is not good for them ^[28]. The British Nutrition Foundation (2023) recently advised that during pregnancy, the pregnant woman should look after herself and get lots of nutrients for self and the growing fetus for a best start in life; she should eat bread, rice, potato for energy, fruits and vegetables for minerals and vitamins, meat, fish, eggs and beans for growth of the baby and lots of milk and dairy foods for proper bones development ^[29]. Report from a global health observatory exercised conducted by the WHO in 2021 revealed that anemia were 29.6% (95% UI 26.6%, 32.5%) in non-pregnant women of reproductive age, and 36.5% (95% UI 34.0%, 39.1%) in pregnant women ^[30].

According to Ugwu (2020), across the African continent, anemia in pregnancy which is mainly caused by iron deficiency and it is a public health problem ^[31]. The prevalence rate of anemia in pregnancy among the 5 top African countries is shown in figure 2 below.

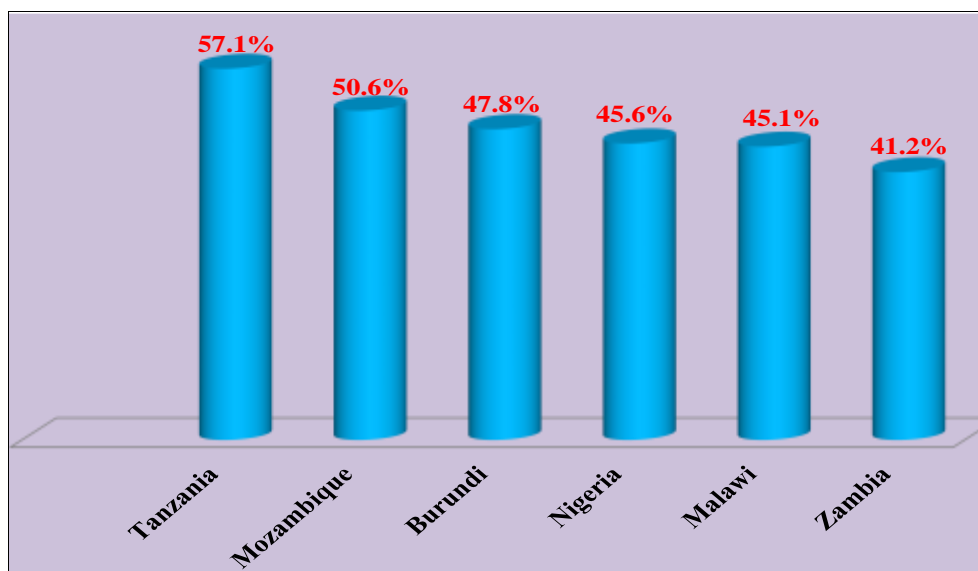


Fig 2: Prevalence of anemia among pregnant women in Africa ^[32, 31]

Studies has also shown that girls who got entangled in marital issues earlier in life may experience higher incidences of deficient red blood cells (anemia) and

malnourishment, causing low birth weight due to maternal-fetal competition for nutrients within since the adolescent mothers' bodies are yet to be fully matured ^[33, 34]. So, child

marriage could lead to under-nutrition and food insecurity vice versa, this is so because, pregnancy limits kid's opportunity to be gainfully employed, meaning they would not have enough money for some essential and basic needs over their lifetime, this will cause the married girls' increase in experiencing uncertain availability of safe and adequate food and long-time dearth of funds ^[35].

Tojeta (2006) quipped that poor nutritional status for the adolescents and pregnant women is a result of poor consumption of appropriate foods, predisposing them to anemia which has serious high health implications such as maternal mortality and morbidity and the prevalent rate during juvenile pregnancies globally, is 55.9% ^[36]. According to Cedar-Sinai (2023), there are four kinds of anemia among women of child-bearing age and they are: anemia of pregnancy, iron deficiency anemia, vitamin B-12 deficiency, and folate deficiency and any of the above may cause growth retardation among the sufferers and their products of pregnancy ^[37]. However, previous studies established that the most common anemia during pregnancy are iron deficiency anemia (approximately 75%) and folate deficiency megaloblastic anemia, which are more common in women with inadequate diets and did not acquire prenatal iron and folate supplements ^[38].

According to the CDC criteria, among the indigent pregnant women in the United States of America during trimesters of pregnancy, 8% were observed to be anemic when they

registered in the antenatal clinic in the first trimester, 12% in the second trimester, and 34% in the third trimester and this happens as the pregnancy gets matured with much demands on the nutritional status of the teenager ^[39]. A study by Phyllis (2019) reported that anemia is one of the most common public health concerns in developing countries because of its adverse effects on the adolescents and pregnant women ^[40]. It is extremely important to know that anemia is an important issue for adolescent girls, particularly if they become pregnant because the teenage girls often enter pregnancy with less stored nutrients due to high level of metabolic activities, thus the inability to withstand the demands exerted by pregnancy ^[41].

According to Dallman (1992) during adolescence, there is a spurt in growth and onset of menstruation this results in elevated demand for iron for expansion of blood volume to meet up with the body's requirements and when there is pregnancy at the early stage of life, the demand is exaggerated and it is at times a difficult experience for the teenager ^[42]. It also been noted that the rate of death amongst women within reproductive is higher among the teenagers, aged less than 16 years, which is four times more than women who are in their 20s, and it is an issue among the their neonates too, which high as 50% among them ^[43]. The statistics in the figure below is revelation of global prevalence of anemia in pregnancy.

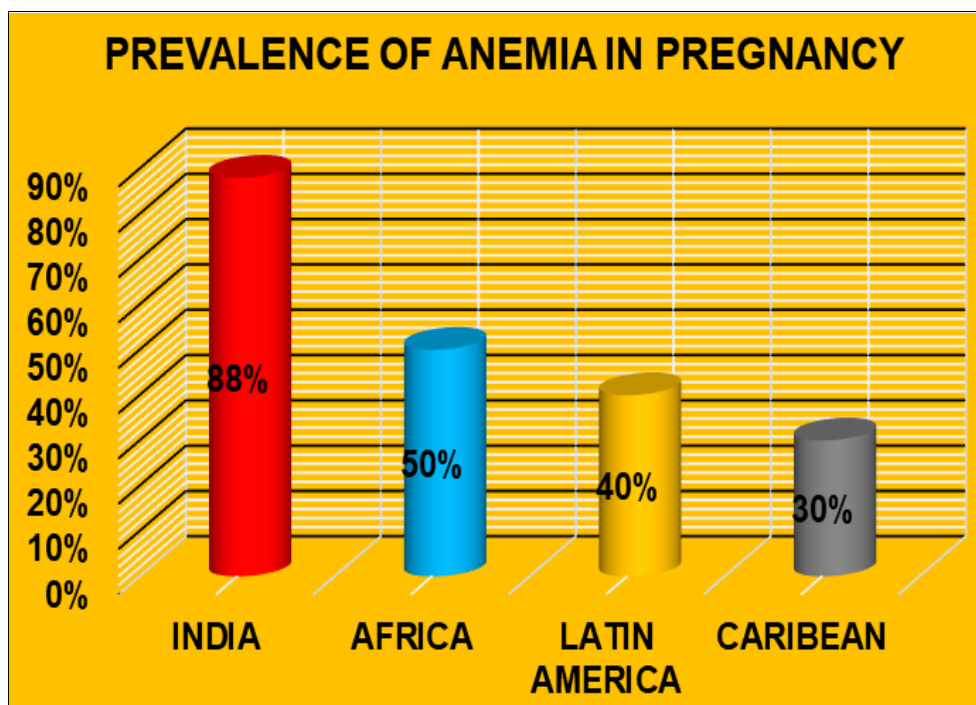


Fig 3: Global prevalence of Anemia in pregnancy ^[39].

As earlier highlighted, anemia during pregnancy is a worrisome public health issue amongst developing countries especially in Africa, it is pathetic to state that, a fifth of the African population (278m) is undernourished, and 55 million of its children under the age of five are stunted due to under-nourishments which is partly is a direct result of inadequate political choices and poor financial management ^[44].

Campbell (2021) reported that during pregnancy, anemia can become a serious problem that requires urgent and more careful medical attention ^[45]. Though Elder (2003) recommended that at this stage, the woman would need to eat healthy foods and take some folate supplements, this

may be difficult for a woman who got into early marriage with a husband who is incapable of providing care such as good food with adequate nutrition ^[46].

Poor nutrition and lack of vital micro nutrient like folate (folic acid) during pregnancy can result in neural defect because some pregnant women mostly in early marriage do not have adequate foods to eat as a result of poor financial status of both couple in the marriage, making them highly vulnerable to anemia, congenital defects and other associated risks ^[47, 48, 22]. The Harvard School of Public Health (2012) advised that during pregnancy, folate is a necessity for the pregnant woman in order to maintain a healthy level of red blood cells and is also critical for

normal fetal growth, the consumption of dark green leafy vegetables (turnip greens, spinach, romaine lettuce, asparagus, brussels sprouts, broccoli), beans, peanuts, sunflower seeds, fresh fruits, fruit juices, avocado, banana, whole grains, liver, seafood, eggs, fortified foods and supplements would help to ensure this is achieved [48].

Conclusion

Poor nutritional habits may be a behavioral health issue capable of causing physical and psychosocial effects on our thought, action, perception and relationship with people and the environment. This behavioral issue is compounded when an adolescent gets forced into marriage against her free will resulting in immature womanhood and teenage pregnancy. Consuming inadequate quantity of food due to starvation or unbalanced diet may result in the decrease of the micronutrients that are critically needed for the body's growth and development. During pregnancy (especially among adolescents), poor diets lacking in key nutrients – like iodine, iron, folate, calcium and zinc are associated with anemia, pre-eclampsia, hemorrhage and death in mothers, as well as stillbirth, low birth-weight, wasting and developmental delays for children [49].

It is important to note that everyone deserves access to healthy through affordable food and quality nutrition care. Unfortunately, this access is hindered by deeper gender inequities. Female adolescents who were victims of early or forced marriage need to be educated in order to deal with nutritional health consequences, if such practices cannot be stopped. Hence, the adolescents who were victims of early or forced marriage must be assisted and educated to deal with nutritional health consequences of it.

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