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Review Article

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Burden of nutritional anaemia in Africa: A Review

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Abstract

The condition of anaemia occurs when the concentration of haemoglobin which is needed to carry oxygen in the body is low.Nutritional anaemia is a pathological condition in which there is a drop in haemoglobin concentration due to deficiency in nutrients including iron, folic acid and vitamins A, B12 and C required for blood formation. While iron deficiency anaemia is the most prevalent type and is generally treatable with dietary adjustments, other types of anaemia necessitate medical interventions that could be more difficult to obtain. For the purpose of developing public health initiatives, understanding the burden and epidemiology of this issue, and providing people with clinical care throughout their lives, accurate characterization of anaemia is essential.Prioritization and prevention control strategies must be put in place to reduce the prevalence of nutritional anaemia especially in African countries where the prevalence rates are high. Practical approaches including enhancing dietary diversity and infant feeding practices, improving water sanitation and hygiene, disease control and dietary supplementation of iron, folic acid and vitamins could aid eliminate nutritional anaemia in Africa.

Keywords: anaemia, Africa, nutritional anemia, haemoglobin, iron deficiency anaemia, vitamain A, vitamin B_{12}, vitamin C

Introduction

The condition of anaemia occurs when the concentration of haemoglobin which is needed to carry oxygen in the body is low(Obeagu, 2018; Obeagu *et al.*, 2022; Obeagu *et al.*, 2023; Obeagu *et al.*, 2023; Obeagu and Agreen, 2023). This leads to manifestation of symptoms including general body weakness, dizziness and shortness of breath(WHO, 2023).Generally, anaemia is classified based on its cause. Nutritional anaemia is a pathological condition in which there is a drop in haemoglobin concentration due to deficiency in nutrients including iron, folic acid and vitamins A, B12 and Crequired for blood formation (Kotecha, 2011). Heavy menstruation, higher iron needs during pregnancy and in growing children, chronic infections (including

tuberculosis, HIV, hookworm, and malaria), and poor iron absorption, transport, and storage, including hemoglobinopathies, are other factors that contribute to nutritional anemia (Simbauranga *et al.*, 2015; Gautam *et al.*, 2019).

Iron-Deficiency Anaemia

Iron deficiency has been reported to be the primary cause of nutritional anaemia worldwide followed by folic acid-nutritional anaemia and then nutritional anaemia caused by vitamin B12 which is usually rare. Iron-deficiency anaemia has been found to negatively affect the mental development of children, retard their growth and reduce productivity in adults(WHO, 2004; WHO, 2023).Anaemia is an indicator of poor diet and poor health. The major cause of anaemia is malnutrition of which iron deficiency forms the bulk of it. Food fortification with micronutrients, dietary supplementation, and oral iron supplementation are the most economical ways to prevent and reduce anaemia. It is well recognized that appropriate dietary iron consumption can considerably prevent and treat iron-deficiency anaemia (WHO, 2014). In order to prevent anemia in pregnant women and children in high-burden areas, the World Health Organization (WHO) advised using these supplements as part of routine prenatal care. Although nutritional anaemia can be prevented with suitable interventions and approaches, more than 30 percent of the world's population are affected with iron deficiency nutritional anaemia. The prevalence is much higher in developing countries in Africa due to malaria and worm infections (Dreyfuss, 1998).

Vitamin B-Deficient Anaemia

While iron deficiency is the primary cause of anemia in many developing nations, folate and vitamin B12 deficiencies may also contribute to anemia. Although this anemia is macrocytic, megaloblasts, aberrant red cell progenitors, are present in the bone marrow. Anemia caused by concurrent iron insufficiency is frequently normocytic in nature. This can cause diagnostic challenges, making it difficult to determine the true incidence of folate or vitamin B12 deficiency. As a result, what is commonly diagnosed as pure iron shortage may frequently be caused in part by these deficiencies(Scott, 2007).

Certain nutrients are not at risk of being deficient since most diets include them at acceptable levels although there may be exceptions.There is a broad spectrum of the B complex vitaminswith pantothenic acid and biotin rarely being considered deficit whereas a lack of folate and vitamin B12 constitutes a deficit and a serious cause for concern. Vitamin B12 and folate deficits both have effects on the health of expectant mothers and their unborn babies. The embryo and fetus may not develop as they should. In addition to the well-established case of higher risk for spinal bifida, neural tube abnormalities (NTD), and other birth problems, there is cause for worry regarding impaired cognitive development and increased mortality and morbidity in adult life(Scott, 2007).

Vitamin A-Deficient Anaemia

Beyond iron, several nutritional deficits can result in or exacerbate anemia. The risk of iron-deficient erythropoiesis and anemia is particularly increased by vitamin A insufficiency, which may mediate iron metabolism at many sites along the internal iron and reticuloendothelial circuitry. Although debatable, there are four plausible mechanisms by which vitamin A nutrition may affect risk of anemia: modifying the sequestration and release of tissue iron, associated with responses to infection; exerting an effect on iron absorption; and having a direct regulatory effect on erythropoiesis. The first two mechanisms are supported by the largest body of evidence. Controlling vitamin A deficiency, which frequently coexists with iron deficiency in populations with inadequate nutrition, can therefore be crucial(West, and Sommer, 2007).

Vitamin A insufficiency continues to be the greatest nutritional cause of pediatric blindness and a significant nutritional predictor of severe illness and mortality among children in the poor countries due to the extent and severity of the

condition. In addition, maternal vitamin A insufficiency is becoming a significant public health issue. The extents and circumstances in which vitamin A insufficiency may also cause anemia are less well understood, which emphasizes the significance of preventing it(West and Sommer, 2007).

Global prevalence of nutritional anaemia

The prevalence of nutritional anaemia is high worldwide especially in relatively poorer countries among little children and women of child-bearing age (WHO, 2023). Nutritional anaemia is a public health threat of global concern that mainly affects children and expectant mothers. Children and pregnant women have an increased risk of mortality. Nutritional anaemia is also associated with other global nutrition concerns includinglow birth weight, childhood obesity and stunting, as well as low energy levels for activity. Further social and economic effects on the individual and family might be caused by poor academic achievement in kids and decreased productivity at work in adults owing to anaemia. It has been estimated that about 42% of children below 5 years and 40% pregnant women are anaemic worldwide(WHO, 2023).

Prevalence of nutritional anaemia in Africa

In contrast to other regions of the world, sub-Saharan Africa has a unique nutritional anemia epidemiology. This region has a higher frequency of people at high risk of nutritional anemia than other parts of the world due to the low-quality meals that are common there, frequent infectionexposure among the populace, and demographic factors (Mwangi *et al.*, 2021)**.** In 2019, the World Health Organization estimated that Africa recorded the highest global prevalence rate of nutritional anaemia in children ranging from 6-59 months of age of 60.2% (WHO, 2023).In 2019, Africa recorded a high prevalence rate of nutritional anaemia among pregnant women (aged 15-49 years) in many of its countries including Congo (51%), Cote d'Ivoire (54.4%), Mali (59%), Nigeria (55.9%), Togo (53.7%), Gabon (52.5%), Gambia (55.1%) and Benin (58.1%) (World Health Organization, 2023).

Conclusion

While iron deficiency anaemia is the most prevalent type and is generally treatable with dietary adjustments, other types of anaemia necessitate medical interventions that could be more difficult to obtain. For the purpose of developing public health initiatives, understanding the burden and epidemiology of this issue, and providing people with clinical care throughout their lives, accurate characterization of anaemia is essential.

Prioritization and prevention control strategies must be put in place to reduce the prevalence of nutritional anaemia especially in African countries where the prevalence rates are high. Practical approaches including enhancing dietary diversity and infant feeding practices, improving water sanitation and hygiene, disease control and dietary supplementation of iron, folic acid and vitamins could aid eliminate nutritional anaemia in Africa.

References

Dreyfuss, R. J. S. M. L. (1998) *GUIDELINES FOR THE USE OF IRON SUPPLEMENTS TO PREVENT AND TREAT IRON DEFICIENCY ANEMIA prepared by Dr. Rebecca Stoltzfus and Ms., International Nutritional Anemia Consultative Group*. Available at: http://www.univ-lille1.fr/pfeda/Ngonut/1998/9808e.htm.

Gautam, S. *et al.* (2019) 'Determining factors for the prevalence of anemia in women of reproductive age in Nepal : Evidence from recent national survey data', pp. 1–17.

Keith P. West, Jr., A. D. G. and Sommer, and A. (2007) 'Vitamin A in nutritional anemia ': SIGHT AND LIFE Press / DSM Nutritional Products Ltd.

Kotecha, P. V. (2011) 'Nutritional anemia in young children with focus on Asia and India', *Indian Journal of Community Medicine*, 36(1): 8–16.

Mwangi Martin N., Glory Mzembe, Ernest Moya, Hans Verhoef,Iron deficiency anaemia in

sub-Saharan Africa: a review of current evidence and primary care recommendations for high-risk groups,The Lancet Haematology. 8 (10): e732-e743.

Obeagu, E.I., Bot, Y.S., Obeagu, G.U., Alum, E.U. and Ugwu, O.P.C. (2023). Anaemia and Risk Factors in Lactating Mothers: A Concern In Africa. Journal of Innovative and Applied Research. 11 (2): 15-17.

Obeagu, E.I., Bot, Y.S., Opoku, D., Obeagu, G.U. and Hassan, A.O. (2023). Sickle Cell Anaemia: Current Burden in Africa. International Journal of Innovative and Applied Research. 11 (2): 12-14.

Obeagu, E.I.and Agreen, F.C. (2023). Anaemia among pregnant women: A review of African pregnant teenagers. *Journal of Public Health and Nutrition*. 6(1):138

Obeagu, E.I., Okwuanaso, C.B., Edoho, S.H. and Obeagu, G.U. (2022). Under-nutrition among HIV-exposed Uninfected Children: A Review of African Perspective. Madonna University Journal of Medicine and Health Sciences. 2(3): 120-127

Obeagu, E.I. (2018). A Review on Nutritional Anaemia. International Journal of Advanced Multidisciplinary Research. 5(4): 11-15. DOI: http://dx.doi.org/10.22192/ijamr.2018.05.04.003

Scott J.M. (2007): "Nutritional anemia", SIGHT AND LIFE Press// DSM Nutritional Products Ltd.

Simbauranga, R. H. *et al.* (2015) 'Prevalence and factors associated with severe anaemia amongst under-five children hospitalized at Bugando Medical', *BMC Hematology*, pp. 1–9. doi: 10.1186/s12878-015-0033-5.

WHO - The Global Burden of Disease (2004) 'The global burden of disease 2004', *Update*, *World Health Organization*, p. 146.

World Health Organization (2023). Available at: https://www.who.int/health-topics/anaemia (Accessed: 27 February 2023).

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