

Adolescent Anemia: A Challenge to Global Health

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Abstract - Deficit in iron more people than any other condition are affected by anaemia, which is a serious worldwide health issue and a public health crisis of epidemic proportions. Anemia that has a significant negative impact on a woman's health and wellbeing raises the chance of unfavourable outcomes for the mother and the unborn child. The WHO estimated that anaemia affects 24.8% of the world's population. Children in preschoolers have a prevalence rate of 47.4%, whereas men have a prevalence rate of 12.7%. However, non-pregnant women, who make up 468.4 million of the population, are the group most severely impacted. According to the WHO, Central and West Africa and South Asia have the highest anaemic prevalence rates. Although numerous policies and intervention programmes have significantly decreased the prevalence of anaemia, more practical efforts are required to combat the condition and meet the fifty percent reduction target. The prevalence of anaemia worldwide, its causes, risk factors, and intervention techniques to treat anaemia have all been covered in this review.

Keywords - Anemia; Global Health; Adolescents; Pregnant Women; Nutrition Education.

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INTRODUCTION

The prevalence of anaemia is recognised as a global public health issue, particularly in low- and middle-income nations. Low haemoglobin levels or a decline in the number of red blood cells are used to describe anaemia. Determined on haemoglobin levels, it is classified in clinical practise as mild, moderate, or severe, with the cutoffs being based on age, sex, and physiological state. Anemia's decreased haemoglobin levels would restrict the blood's ability to carry oxygen, making it insufficient to meet physiologic and metabolic demands. In addition to lowering physical and mental capabilities, this also increases the possibility of various additional harmful health consequences. shortcomings. Aside from limited access to water, sanitation, and hygiene, persistent exposure to infectious illnesses, inflammation, and hereditary haemoglobin abnormalities are only a few of the additional non-nutritional causes of anaemia. Anemia has non-health effects as well, including higher healthcare costs and a lower tendency to earn income. These effects have a variety of effects on people's health and ability to support themselves, their families, and their communities. Reducing anaemia has been identified as one of the World Health Assembly's global nutrition targets for 2025 and is included in the list of Sustainable Development Goals due to its detrimental effects on both the individual and social levels.

In 1985, around 30% of the world's population was anaemic, and in 1992, about 37% of women were anaemic, according to the World Health Organization

(WHO). According to a 2008 WHO report, anaemia affects 24.8% of the world's population, including 42% of pregnant women, 30% of non-pregnant women, and 47% of preschoolers. Kassebaum, et al. estimated the prevalence of anaemia to be 32.9% worldwide in 2010 in their study.

According to a 2011 WHO report, there are 496 million non-pregnant women and 32.4 million pregnant women worldwide who suffer from anaemia. Anemia is thought to impact half a billion women globally who are of reproductive age, directly contributing to about twenty percent of maternal deaths. Thus highlighting the importance of addressing this issue in order to ensure the health and wellbeing of women who are ready to have children, especially teenage girls (the future mothers). It is quite concerning that despite the large and rapidly expanding population of adolescent girls, the health requirements of adolescents have neither been sufficiently explored nor addressed. United Nations Population Fund estimates that 9.9% of the world's teenage female population and 21.9% of India's total population are in the adolescent age group. In India, the percentage of anaemic adolescent females is higher than that of the world's least developed nations, such as Sub-Saharan Africa, according to UNICEF. Non-pregnant women aged 15 to 49.9 years old have the highest prevalence of anaemia, which is mostly caused by nutritional inadequacies (WHO, 1993-2005). Due to non-uniform haemoglobin assessment methods, several studies on the prevalence of anaemia estimated that the prevalence of anaemia in India

ranged from 46% to 88%. There is a need for a uniform, standardised prospective research of the general population that includes susceptible subgroups because very few studies have used the conventional procedures for estimating haemoglobin. Teenagers, particularly girls, are most susceptible to the anaemia problem. As they get older, this bad health trend continues to exist, affects the health and well-being of women, and raises the risk of child, neonatal, and maternal mortality. According to the WHO, adolescence is the era of life between the ages of 10 and 19 that is characterised by particular developmental characteristics, such as rapid physical growth and development and physical, social, and psychological maturity.

Therefore, it is advised that adolescent girls undergo screening in order to identify and assess the influencing factor of anaemia. Adolescent girls at high risk should be closely monitored in order to change risk factors. They need to be counselled on lifestyle modifications such as healthy eating, self-care, consistent exercise, and weight growth. To reduce these risk factors at an early level, proper health education must be taught at home and in the classroom. The plan of action for preventing anaemia and the risk factors associated with it should be prioritised by health care professionals and policy makers. The main issue is to reduce anaemia in women of reproductive age by 50% in order to satisfy the global nutrition targets. These actions will ultimately make a significant contribution to the economic development, well-being, and prosperity of nations.

Anemia

A lack of one or more vital elements, particularly iron, which is crucial for the production of haemoglobin, can cause anaemia, a condition in which the blood's haemoglobin level is lower than normal. Any form of anaemia is characterised by a drop in the concentration of haemoglobin in blood on the mass of red blood cells as well as an abnormal decrease in total blood red blood cell mass. Due to reduced haemoglobin levels and a lack of red blood cells, various tissues are less able to transfer oxygen, which affects cognitive development, physical labour capability, and body temperature control. Numerous research have revealed that anaemia negatively impacts people's physical and mental capacities.

Anemia, a disorder in which the blood's haemoglobin content is lower than normal, can be brought on by a deficiency in one or more essential nutrients, particularly iron, which is essential for the formation of haemoglobin. Any type of anaemia is characterised by both an abnormal decrease in the overall mass of red blood cells and a decline in the concentration of haemoglobin in the blood on the mass of red blood cells. Reduced haemoglobin levels and a deficiency in red blood cells make it harder for different tissues to transmit oxygen, which has an impact on bodily

temperature regulation, physical labour capacity, and cognitive development. Numerous studies have shown that anaemia has a detrimental effect on people's physical and mental abilities.

Table 1: Level of Hemoglobin for Anemia According to UNICEF

Anemia level	Hemoglobin Level		
	Children	Adolescent Girls	Pregnant women
Mild	8.0-10.99g/dl	10.0-11.99g/dl	8.0-10.99g/dl
Moderate	5.0-7.99g/dl	8.0-9.99g/dl	5.0-7.99g/dl
Severe	Below 5.0g/dl	Below 8.0g/dl	Below 5.0g/dl

levels of Anaemia

According to Herbert, there are four stages that go from a normal iron status to the anaemic stage. Stage-I sees the beginning of mild depletion of iron reserves due to reduced iron absorption, while Stage-II sees the beginning of severe depletion of iron stores, which results in a negative iron balance. Despite low iron reserves in these stages, malfunction does not happen. Dysfunction may be averted if intervention is initiated at these phases. In stage III, iron deficiency causes anaemia but is not accompanied by dysfunction. Negative iron balance is characterised by inadequate body iron, which leads to dysfunction in addition to anaemia in stage IV.

Reasons for Anemia

A number of factors can lead to anaemia, and sometimes more than one factor is at play. Iron deficiency is the main cause of the development of anaemia. Iron deficiency anaemia is frequently gauged by the prevalence of anaemia (IDA). Since more than 50% of anaemia cases are caused by inadequate iron intake, the terms "iron deficiency anaemia" and "anaemia" are frequently used interchangeably. However, the proportion may vary across different populations and places depending on the local conditions. Iron-deficiency anaemia, as previously mentioned, develops through many phases of iron deficiency, starting with iron depletion, which, if treated, would eventually result in IDA.

Low dietary iron intake and poor iron absorption from diets caused by phytate or phenolic chemicals in the diet are the main causes of iron deficiency anaemia. There are times in life when having enough iron is extremely important, such as during childhood, teenage development, and pregnancy. This is due to the fact that throughout these periods of growth and development, there is a greater requirement for iron. Other significant causes include secondary disease, poverty, poor hygiene, medication, alcohol, intestinal parasites, decreased nutrient intake, hereditary factors, and malnutrition. Lack of iron is frequently brought on by parasite illnesses such hookworms,

ascaris, and schistosomiasis as well as heavy menstrual blood loss.

Risk Elements

The whole development of a country is severely hampered by anaemia. Anaemia prevalence is a sign of both a country's poor nutrition and health. One of the "top ten" risk factors for the world's diseases is iron deficiency anaemia. It is the most frequent factor in the danger of mother and child mortality, as well as the likelihood of abnormalities, preterm births, underweight kids, and foetal fatalities.

A deficit of five to ten points in intelligence quotient (IQ) is also a result of IDA's detrimental effects on cognitive performance. It also has an impact on children's physical development as well as their linguistic, motor, coordination, and motor skills as infants and early children. Additionally, it has an adverse effect on the immune system and raises the risk of infections and inflammatory diseases, which results in exhaustion, weakness, lethargy, shortness of breath, pain, discomfort, anxiety, sadness, and poor concentration. All of these factors lead to individuals having lower work capacity and overall performance, which has major economic repercussions and creates barriers to national growth. According to the World Bank, iron deficiency anaemia is believed to be the cause of approximately a million fatalities yearly. While the loss is unfathomable, in terms of economics, these annual deaths only represent a loss of \$50 billion in global gross domestic product (GDP) each year. Additionally, the Net Present Value of Lost Future Workforce is estimated to be roughly 4.05% of Gross Domestic Product and represents US\$14.46 in lost cognitive function as IDA lowers IQ by half a standard deviation and US\$3.32 in lost productivity per person. India is estimated by the World Bank to have lost 0.9 percent of its GDP in 2016, which might have cost up to \$20.25 billion (RS.1.35 lack crore). As a result, anaemia poses a threat to both the global and economic health of the country.

Strategies for intervention

During interactions with vulnerable groups, the following crucial interventions can be combined as necessary to address the main causes of anaemia:

- Anemia treatment and prevention
- Adding iron to common dishes
- Iron supplementation for at-risk populations
- Applying insecticide to bed nets and treated fabrics,
- Regular deworming in at-risk populations
- Increase iron-rich food production
- Boosting the consumption of all micronutrients, including folic acid, vitamins A, C, B-12, and zinc
- Promoting the consumption of foods high in iron
- Children's timely immunisation
- Controlling and treating contagious diseases

- Controlling obstetric issues, especially excessive bleeding
- Promoting birth spacing by exclusively nursing and using modern contraception
- Upgrade water and sanitation resources and procedures
- Increasing public knowledge and awareness of the health risks linked with anaemia.
- Emphasizing exclusive breastfeeding for at least six months after delivery, starting within an hour of birth.

Where can anaemia be treated?

Children under the age of five and women who are pregnant are the most anaemic, so special attention should be given to them. As the most vulnerable population, public health services should be designed to target young children, their mothers, and adolescent girls. Both private and public schools should be included in the implementation of an action plan for children and adolescents that includes preventative and vital strategies. Working closely with communities on sanitation, environmental health, hygiene, and infectious disease control initiatives should be parents' and teachers' responsibility.

Increased production and consumption of foods high in iron and other micronutrients should be supported by agricultural extension and food security programmes. Intervention strategies need to be widely distributed among all socioeconomic levels because anaemia rates are high even among the wealthier classes.

CONCLUSION

The government has launched numerous nutritional intervention programmes and policies, including the National Anemia Prophylaxis Programs (1972), the Integrated Child Development Services Scheme in 1975, and the recently implemented National Anemia Prevention Strategy, to reduce the prevalence of anaemia called Mission for Rural Health (2005). The primary objectives were to promote iron-rich foods, provide iron and folate supplements to high-risk populations (all pregnant and lactating women, users of intrauterine devices), identify and treat severely anaemic individuals, and educate mothers about nutrition and health to prevent maternal anaemia. However, the evaluation of large-scale programmes reveals that maternal anaemia has not significantly decreased. Anemia prevalence has been significantly reduced in some situations, but the research reveals significant gaps and failures that have prevented sufficient overall development. Despite the enormously growing population of teenagers, their health needs have neither been met nor properly addressed. Additionally, their demands in terms of reproductive health were frequently misunderstood, ignored and undervalued. Teenagers are generally perceived to be a healthy population, with lower death and morbidity rates than other age groups, hence

policies and programmes tend to place less emphasis on their health. Given the increased interest in adolescent sexual and reproductive health, action is required to enhance nutritional status before conception.

It requires identifying and addressing the relevant elements in order to be effectively combated. Iron supplements should be given to vulnerable individuals in the locations where iron insufficiency is most prevalent. However, adolescent health will not improve in the absence of all-inclusive and user-friendly services.

There is some work being done in this area, but it hasn't really taken off in low- and middle-income nations. A lot more work needs to be done by healthcare professionals and practitioners worldwide to close the gap between global policies and local action, according to the UN agencies, particularly UNICEF, UNFPA, and the World Health Organization (WHO). Adolescence has been highlighted as a critical global gap and a "age of opportunity" by these UN agencies. Reaching the World Health Organization's aim of a 50% decrease in anaemia in women of reproductive age by 2025 will require incredibly focused and committed measures. All interested parties should unite behind this as the true global challenge.

REFERENCES

- World Health Organization. Nutrition micro nutrient deficiencies, Iron deficiency anemia, the challenge: WHO(2018).
- WHO Global Nutrition Targets 2025: Anemia Policy Brief Essential nutrition actions – improving maternal, newborn, infant and young child health and nutrition (2014).
- UNFPA Motherhood in Childhood: Facing the challenge of adolescent pregnancy, State of World Population 2013, United Nations Population Fund (2013).
- UNICEF. UNICEF Conceptual Framework. Available online: <https://www.unicef.org/nutrition/training/2.5/5.html> (accessed on 16 December 2021).
- Bailey, S.; Hedlund, K. The Impact of Cash Transfers on Nutrition in Emergency and Transitional Contexts: A Review of Evidence; Humanitarian Policy Group: London, UK, 2012. Available online: <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/7596.pdf> (accessed on 30 April 2021).
- Black, R.E.; Allen, L.H.; Bhutta, Z.A.; Caulfield, L.E.; De Onis, M.; Ezzati, M.; Mathers, C.; Rivera, J.; Maternal; Group, C.U.S. Maternal and child undernutrition: Global and regional exposures and health consequences. *Lancet* 2008, *371*, 243–260.
- Sanou, D.; Turgeon- O'Brien, H.; Desrosiers, T. Nutrition intervention and adequate hygiene practices to improve iron status of vulnerable preschool Burkinabe children. *Nutrition* 2010, *26*, 68–74.
- Al- Jawaldeh, A.; Taktouk, M.; Doggui, R.; Abdollahi, Z.; Achakzai, B.; Aguenau, H.; Al- Halaika, M.; Almamary, S.; Barham, R.; Coulibaly- Zerbo, F. Are countries of the eastern mediterranean region on track towards meeting the world health assembly target for anemia? A review of evidence. *Int. J. Environ. Res. Public Health* 2021, *18*, 2449.
- Mahmud, M.A.; Spigt, M.; Bezabih, A.M.; Pavon, I.L.; Dinant, G.J.; Velasco, R.B. Efficacy of handwashing with soap and nail clipping on intestinal parasitic infections in school- aged children: A factorial cluster randomized controlled trial. *PLoS Med.* 2015, *12*, e1001837.
- Beard, J.L. Iron biology in immune function, muscle metabolism and neuronal functioning. *J. Nutr.* 2001, *131*, 568S–580S.
- UNESCWA. *Challenges for Development in Current Conflict Settings: The Impact of Conflict on Child Marriage and Adolescent Fertility*; UNESCWA: Beirut, Lebanon, 2020. Available online: <https://www.unescwa.org/sites/default/files/publications/pdf/impact-conflict-child-marriage-adolescent-fertility-english.pdf> (accessed on 28 April 2021).
- Rahman, M.S.; Mushfiquie, M.; Masud, M.S.; Howlader, T. Association between malnutrition and anemia in under- five children and women of reproductive age: Evidence from Bangladesh Demographic and Health Survey 2011. *PLoS ONE* 2019, *14*, e0219170.
- International Institute for Population Sciences: Nutritional Status of Children and prevalence of Anemia among Children, Adolescent Girls, and Pregnant Women. Mumbai: IIPS (2006)
- National Family Healthy Survey, 2004-05 (NFHS-3). International Institute of Population science Mumbai 2009.

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