International Journal of Research (IJR)

e-ISSN: 2348-6848
p-ISSN: 2348-795X
Vol. 9 Issue 10
October 2022

COMMUNITY-BASED INTERVENTIONS FOR ANAEMIA IN PREGNANCY: BEST PREVENTION AND CONTROL INTERVENTIONS

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Abstract

This write up on community –based best prevention and control interventions for anaemia in pregnancy, was conceived because of the increasing prevalence of anemia among this vulnerable group with gaps often faced in effective implementation of existing WHO strategies. This results in difficulties faced by health personnel in making decisions in patient care. The purpose for this write-up was to expose the gaps that have been found in anaemia prevention strategies. It is relevant in that some of the gaps will be filled up by exploring barriers to implementation, possible solutions, and expose current practices. Hence, the objectives of the write up were to expose best Community-based interventions for anaemia prevention, and to explain best public health intervention for anaemia prevention in pregnancy. Information on this write-up has been sourced from published journals, books, and web pages. It has been observed that, there is low knowledge in anaemia prevention; current practices have some gaps, which have been linked to barriers encountered both by the pregnant woman and health worker, with solutions as; Need for intensification of education on anaemia prevention strategy which include: Involvement of male partners into antenatal care of pregnant women, more sensitization programs on good nutrition practices, increase awareness and adherence strategy among pregnant women. These observations can be used during seminars to educate health care providers on anaemia prevention and control during pregnancy in their day- to-day follow up of women.

Key Words: *Anaemia, pregnancy, prevention, community-based intervention, best public health practices.*

Received*: 29 Sept. 2022*
Revised*: 9 Oct. 2022*
Final Accepted for publication*: 16 Oct 2022*

e-ISSN: 2348-6848
p-ISSN: 2348-795X
Vol. 9 Issue 10
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Introduction

Anaemia is a huge public health and nutrition problem in developing countries. The World Health Organization (WHO) estimates that anaemia affects between one-quarter to one-third of the world's population or up to 2 billion people (1). Most of the anaemic population lives in developing countries, where high anaemia prevalence is seen, particularly in pregnant women. Overall, anaemia contributes to about 20 percent of maternal and perinatal deaths in developing countries. A recent WHO World Health Report noted that the risks of both maternal and perinatal mortality were reduced by 25 percent and 28 percent, respectively, for each gram increase in haemoglobin level between 50 and 120 g/L (1). Anaemia's other serious negative consequences include poor pregnancy outcomes such as low birth weight and premature birth. Anaemia is most often caused by iron or folate deficiency and is especially common during pregnancy. Although supplementation of diets with Iron and Folic Acid (IFA) tablets has been a part of Government programming for over three decades, levels of IFA intake remain low (2). For example, only 22 per cent of pregnant women reported consuming IFA for 90 days or more when they were pregnant (3). The prevalence of anaemia is as high as 60 per cent among pregnant women (3). Anaemia is a direct cause of 100,000 maternal deaths (4% of maternal mortality) and an indirect cause of morbidity and death due to exacerbation of conditions in HIV/AIDS and haemorrhagic situations (4). Anaemia caused by lack of iron is the most common micronutrient deficiency in the world (5). Iron deficiency anaemia is determined as haemoglobin values less than 11 g/dL of blood (6).

The USAID anaemia report (7) presented that: Anaemia has multiple causes: failure to meet increased iron requirements during pregnancy, inadequate intake of micronutrients (particularly iron), closely spaced births allowing inadequate time for maternal repletion, and infections that destroy red blood cells, interfere with red blood cell formation, increase blood loss and/or deplete nutrient uptake.

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Final Accepted for publication: *16 Oct 2022*

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Cited reasons for high iron deficiency anaemia in Sierra Leone, include malaria endemicity, possible poor health provider knowledge about nutrient values, maternal anaemia, and lack of participation by pregnant women in activities or behaviours that improve their anaemia status (7), all of which pose challenges to addressing the maternal anaemia issues. Women often have low iron bioavailability, low use of intermittent preventive treatment for pregnant women (IPTp) and low consumption of iron supplements during pregnancy due to unavailability of the tablets (7). The objective of this write up was to explore best community-based interventions and best public health interventions.

BEST COMMUNITY-BASED INTERVENTIONS FOR ANAEMIA PREVENTION

At health facility level, different interventions are implemented to reduce burden of anaemia in pregnancy. These include anaemia screening and treatment, supplementation of iron and folic acids (FEFO) tablets, deworming, intermittent prophylactic treatment (IPTp) for malaria with sulphadoxine pyrimethamine (SP), free provision of mosquito nets and health education during antenatal care (ANC) visits (8). Despite the ongoing interventions, the prevalence of anaemia among pregnant women is still high (9). This could be due to the ways in which these interventions are provided giving opportunity to pregnant women who attend ANC services only (8); As well as those who delay in booking their ANC visit not receiving adequate services, which may predispose them to anaemia. In Tanzania, utilization of maternal healthcare services among pregnant women is still low with evidence that only 24% of pregnant women had their first ANC visits in the first trimester, while 73.5% of pregnant women attended ANC in the second and third trimesters of pregnancy (10).

In India, thirteen technical experts met for one day on July 19, 2007, (2) to review the nine selected interventions. The experts worked in a consultative manner and primarily in small groups to achieve the following objective:

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Analysing available evidence to make recommendations to the Government about achieving impact in anaemia prevention and treatment. Identifying evidence gaps where additional information needs to be generated.

Significant focus on the quality of data and available results. They commended implementing agencies for their evaluation and documentation work and the contributions they have made to the evidence - based in anaemia prevention and treatment in India. However, they did not feel the evidence was compelling enough to recommend a set intervention or model to the Government for adoption at scale. Instead, they produced a list of lessons learned and general recommendations based on the available evidence below.

Table 1: The Indian Experience

Problem	Intervention	Reasons
Poor data availability for decision making and evidence gap.	Improve data availability	There is a need to strengthen monitoring, evaluation and documentation capacity in the public and private sector.
NGO and donor-funded projects produce more documentation on outcome-level results compared to Government-led programs	More data on government-led intervention to guide program decision making.	There is data availability and limited public access to government program evaluation.
Lack of Government and private sector contribution to evidence-based.	Evaluating and documenting existing "natural experiments"	Improve success within Government programs.
Existing evidence provide less information on specific approaches where most effective	Interventions with specific results used the "positive deviance approach" (e.g., the Adolescent Anaemia Control Program for Girls in Vadodara District and the UMANG Project in Uttar Pradesh)	This approach should be further implemented and documented.
Poor results	Collaboration among Ministry of Health and Family Welfare, Women and Child Development,	To ensure better results (e.g., MCNM and UMANG in Uttar Pradesh and the Anaemia Control Program for

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	Education and Panchayat Raj Institutions.	Adolescent School Girls in Jharkhand)
Gaps in evidence as most research was on adolescent girls.	More comprehensive efforts including health and nutrition education, deworming and promotion of convergence.	A need for more documentation of work with other target groups such as pregnant women.

Of the nine community-level anaemia interventions selected for the review, six focused on anaemia among adolescent girls, two on maternal anaemia and two on fortification (2). All the interventions were community-based with most working in rural areas and two in an urban area.

The Africa Regional Office of the World Association of Girl Guides and Girl Scouts (WAGGGS), together with the Food and Nutrition Technical Assistance Project (FANTA) at the Academy for Educational Development (AED) and the Regional Centre for Quality of Health Care (RCQHC) developed this manual to help improve the nutritional status of women and girls(11) by 1) increasing girls' and women's knowledge of anaemia prevention and 2) increasing girls' and women's ability to effectively prevent anaemia through personal care actions, such as taking iron folic acid supplements during pregnancy and sleeping under bed nets, and through community activities, such as school-based deworming (11).

BEST PUBLIC HEALTH INTERVENTION FOR ANAEMIA PREVENTION IN PREGNANCY

Anaemia and iron deficiency reduce individuals' wellbeing, cause fatigue and lethargy, and impair physical capacity and work performance. Median losses in physical productivity due to iron deficiency are important (12). Failure to reduce anaemia worldwide consigns millions of women to impaired health and quality of life, communities and nations to impaired economic productivity and development (13).

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In 2012, the World Health Assembly Resolution 65.6 endorsed a Comprehends implementation plan on maternal, infant, and young child nutrition (14), which specified six global nutrition targets for 2025 (15). This policy brief covers the second target: a 50% reduction of anaemia in women of reproductive age. The purpose is to increase attention to, investment in, and action for a set of cost-effective interventions and policies that can help Member States and their partners in reducing the rates of anaemia among women of reproductive age.

The WHO has published revised guidelines that support policies for the prevention and control of anaemia (16). In particular, the control of anaemia in women of childbearing age is essential to prevent low birth weight and perinatal and maternal mortality. It is therefore in policymakers' interests to make necessary investments in anaemia now, to promote human capital development and their nations' economic growth and long-term health, wealth, and well-being (13). Policymakers should consider prioritizing the following actions, to reach the global nutrition target of a 50% reduction of anaemia in women of reproductive age:

Table 2: Distribution of problems, intervention and rational

Problem	**Intervention**	**Rationale**
Poor identification and knowledge deficit of anaemia.	Improve the identification, measurement and understanding of anaemia among women of reproductive age.	Scale up coverage of prevention, control, and treatment activities.
Lack of supportive environment for anaemia prevention.	Create partnership between state and non-state actors for financial commitment and a supportive environment.	Implementation of comprehensive policies for nutrition and nutrition-sensitive actions to facilitate prevention and control of anaemia in women of reproductive age.

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Lack of intersectoral collaboration.	Ensure development policies and programmes beyond the health actors	Monitor and evaluate the implementation of anaemia control programmes.

Framework for intervention action

Public health strategies to prevent and control anaemia include improvements in dietary diversity; food fortification with iron, folic acid, and other micronutrients; distribution of iron-containing supplements; and control of infections and malaria. Achieving a 50% reduction in the prevalence of anaemia among women of reproductive age by 2025 will require a relative reduction in the prevalence of anaemia in this group of 6.1% per year. Recognizing the complexity of anaemia can lead to the establishment of effective strategies. An integrated, multifactorial and multisectoral approach is required to achieve this global target (17).

WHO guidelines are based on objective, comprehensive systematic reviews of the literature, and were using methodology for evidence informed guideline development (16). These are available on a central electronic platform: the WHO e-Library of Evidence for Nutrition Actions (18). The following points summarizes current WHO recommendations targeting anaemia in women (13).

Table 3: Good WHO Recommended Practices for anaemia prevention in pregnancy

Strategy	Reason	Different Implementations
Intermittent iron and folic acid supplementation are advised in menstruating women living in settings where the prevalence of anaemia is 20% or higher.	To reduce the high prevalence of anaemia in women.	Intermittent iron supplementation for non-pregnant women can be delivered via a range of community and health systems, including schools (to adolescent girls using weekly “iron days”), local health workers (via the primary health system), and community based social marketing (via the local health system and/or local vendors).

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Daily oral iron and folic acid supplementation is recommended as part of antenatal care.	To reduce the risk of low birth weight, maternal anaemia, and iron deficiency.	Antenatal iron and folic acid supplementation can be delivered via medical facilities, social marketing, or community health workers, as part of routine antenatal care.
In areas where the prevalence of anaemia among pregnant women is lower than 20%, intermittent iron and folic acid supplementation in non-anaemic, pregnant women.	To prevent anaemia and to improve pregnancy outcomes.	Community mobilization and social marketing can be used to raise awareness of the value of iron supplementation in women of reproductive age and other actors involved in the supply chain.
Fortification of wheat and maize flours and rice with iron, folic acid and other micronutrients is advised in settings where these foods are major staples.	To reduce the risk of anaemia by improving the iron status of the mother and adolescents.	Food fortification can be delivered through mass fortification, with the addition of iron to staple foods commonly consumed by the general public, such as wheat flour, maize flour and corn meals, rice and condiments such as soy sauce or fish sauce, or targeted fortification adding iron to foods consumed by populations at particular risk of anaemia (e.g. fortified biscuits for schoolchildren, adolescents and women).
In malaria-endemic areas, the provision of iron and folic acid supplements	To reduce the effect of malaria on the iron deficiency	The provision of iron and folic acid supplements should be made in conjunction with public health measures to prevent, diagnose and treat malaria

Other recommendations

- In emergencies, pregnant and lactating women should be given the United Nations Children's Fund (UNICEF)/ WHO micronutrient supplement providing one RNI

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(recommended nutrient intake) of micronutrients daily (including 27 mg iron), whether they receive fortified rations. Iron and folic acid supplements, when already provided, should be continued.

- All pregnant women with active tuberculosis should receive multiple micronutrient supplements that contain iron and folic acid and other vitamins and minerals, according to the UNIMAP, to complement their maternal micronutrient needs.
- A diet containing adequate amounts of bioavailable iron should underpin all efforts for prevention and control of anaemia.

Appropriate implementation of these recommendations can produce a marked reduction in the prevalence of anaemia in target populations.

Interventions for prevention and control of anaemia

A diet containing adequate amounts of bioavailable iron should underpin all efforts for prevention and control of anaemia.

Malaria control: chemoprophylaxis/intermittent preventative treatment, insecticide-treated nets and vector elimination.

Deworming: periodic treatment with anthelminthic medicines, without previous individual diagnosis, for all women of childbearing age (including pregnant women in the second and third trimesters) living in endemic areas.

Success made in the anaemia control

Improvements in the prevalence of anaemia among women of reproductive age have been seen in countries around the world: for example, Burundi (64.4% to 28% in 20 years); China (50.0% to 19.9% in 19 years); Nepal (65% to 34% in 8 years); Nicaragua (36.3% to 16.0% in 10 years); Sri Lanka (59.8% to 31.9% in 13 years); and Viet Nam (40.0% to 24.3% in 14 years). Examples are seen below from three countries that have successfully implemented strategies for prevention and control of anaemia.

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Table4: A country –to-country success made in anaemia control in pregnancy

Country	Successes	Reasons
Vietnam 2006	In 2006, a pilot project distributing weekly iron-folic acid, together with de-worming for all women of reproductive age, was implemented in two districts of Yen Bai province, covering approximately 50 000 women aged 15 to 45 years. Following an evaluation survey after 12 months, the programme was expanded to target all women of reproductive age in the province (250 000 women), with management of the programme led by provincial health authorities., confirming that this condition had essentially been eliminated in this population (19).	The prevalence of anaemia fell from 38% at baseline to 19% after 12 months and 18% after 54 months of intervention; the prevalence of iron deficiency anaemia fell from 18% at baseline to 3% at 12 months and remained at 4% at 54 months, confirming that this condition had essentially been eliminated in this population.
India	A programme of weekly iron–folic acid supplementation for adolescent girls was piloted in 52 districts in 13 states. The programme reached both school-attending and non-attending girls aged 10–19 years. Evaluation of the pilot programmes indicated a 24% reduction in the prevalence of anaemia after 1 year of implementation. For example, in Gujarat, implementation of intermittent (weekly) iron–folic acid supplementation to over 1.2 million adolescent girls led to a reduction in the prevalence of anaemia, from 74.2% to 53.5% within 1 year, with estimated compliance of over 90%. The cost of the programme was estimated at US$ 0.58 per adolescent per year.	The project was expanded to cover 11 entire states by the end of 2011. In 2013, the Government of India introduced national implementation of weekly iron–folic acid supplementation to approximately 120 million adolescent girls (12).

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Conclusion

Different interventions are being implemented at health facility level to reduce the burden of anaemia during pregnancy. These include anaemia screening and treatment, supplementation of iron and folic acids (FEFO) tablets, deworming, intermittent prophylactic treatment (IPTp) for malaria with sulphadoxine pyrimethamine (SP), free provision of mosquito nets and health education during antenatal care (ANC) visits.

Improvements in the prevalence of anaemia among women of reproductive age have been seen in countries around the world: for example, Burundi (64.4% to 28% in 20 years); China (50.0% to 19.9% in 19 years); Nepal (65% to 34% in 8 years); Nicaragua (36.3% to 16.0% in 10 years); Sri Lanka (59.8% to 31.9% in 13 years); and Viet Nam (40.0% to 24.3% in 14 years).

Recommendation

There is need for improvement in the nutritional status of pregnant women by: increasing women's knowledge of anaemia prevention and their ability to effectively prevent anaemia through personal care actions, such as taking iron folic acid supplements during pregnancy and sleeping under bed nets, and through community activities.

Policymakers should consider prioritizing the actions, to reach the global nutrition target of a 50% reduction of anaemia in women of reproductive age:

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Received: *29 Sept. 2022*
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Revised: *9 Oct. 2022*
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