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Beyond 6×6×6: India's New 7×7×7 Strategy and the Changing Landscape of Anaemia Control

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Abstract **Background:** Anaemia remains a major public health challenge in India, particularly among children, adolescents and women. Despite implementation of Anaemia Mukt Bharat (AMB) through its 6×6×6 strategy in 2018, the National Family Health Survey-5 (NFHS-5) reported anaemia among 67.1% of children aged 6–59 months, 57.0% of women and 52.2% of pregnant women. In June 2026, India introduced the revised 7×7×7 framework to strengthen anaemia prevention and management. **Objective:** To critically examine India's transition from the 6×6×6 to the 7×7×7 strategy, assess recent scientific evidence, compare relevant NFHS-5 and NFHS-6 indicators, and identify implementation challenges and research priorities. **Methods:** A narrative review of national policy documents, population-based surveys, international guidelines and peer-reviewed literature was undertaken, emphasising evidence published between 2018 and November 2026. Findings were synthesised across epidemiology, clinical management, nutritional interventions and programme implementation. **Results:** The revised strategy adds low-birth-weight infants aged 0–6 months as the seventh beneficiary group, dietary diversification through Eating Right as the seventh intervention, and strengthened digital monitoring as the seventh institutional mechanism. It emphasises haemoglobin testing, cause-specific management, community participation and the T4 approach of Test, Treat, Talk and Track. NFHS-6 documented improvements in maternal iron–folic acid consumption for at least 100 days (44.1% to 54.9%) and 180 days (26.0% to 37.8%), alongside increased antenatal care coverage. However, comparable national anaemia prevalence estimates were not released with NFHS-6. Recent evidence also highlights the importance of venous haemoglobin measurement, non-iron causes and appropriate therapeutic management. **Conclusion:** The 7×7×7 framework represents a significant policy shift towards comprehensive, life-course anaemia control. Its success will depend on accurate diagnosis, appropriate treatment, dietary improvement, community engagement, equitable implementation and sustained follow-up. Rigorous evaluation is essential to establish its population-level effectiveness.

Key Words Anaemia Mukt Bharat Abhiyaan, 7×7×7 strategy, NFHS-6, Iron-Deficiency Anaemia, T4 Approach, Maternal Nutrition, India

INTRODUCTION

Anaemia continues to be a major global public health challenge despite longstanding efforts involving nutritional supplementation, maternal healthcare, infectious disease control and community-based preventive interventions. Characterised by haemoglobin concentrations below established physiological thresholds, anaemia reflects reduced oxygen-carrying capacity and may result from inadequate erythrocyte production, increased red-cell destruction, blood loss or combinations of these mechanisms. Although iron deficiency is a major contributor, anaemia is a heterogeneous condition with nutritional, infectious, inflammatory, inherited, obstetric and systemic determinants [1,2].

The Global Burden of Disease (GBD) Study 2021 estimated that approximately 1.92 billion people worldwide were affected by anaemia, representing a prevalence of 24.3% and contributing approximately 52 million years lived with disability. The burden was disproportionately concentrated among young children, women and populations

in South Asia and sub-Saharan Africa [3]. Anaemia is associated with fatigue, impaired physical performance, adverse pregnancy outcomes and developmental consequences, with implications extending beyond individual health to educational attainment, productivity and socioeconomic well-being.

India has implemented several national initiatives to address anaemia, progressively expanding from supplementation-based approaches to more comprehensive preventive and therapeutic strategies. The launch of Anaemia Mukt Bharat (AMB) in 2018 under the National Health Mission introduced the 6×6×6 framework, targeting six beneficiary groups through six interventions supported by six institutional mechanisms [4]. Nevertheless, the National Family Health Survey-5 (NFHS-5; 2019–2021) reported anaemia among 67.1% of children aged 6–59 months, 57.0% of women aged 15–49 years and 52.2% of pregnant women [5]. These findings highlighted the persistence of a substantial burden and the need to strengthen prevention, diagnosis, treatment adherence and continuity of care.

The release of NFHS-6 (2023–2024) on 29 May 2026 provided updated information on maternal healthcare, nutrition and programme coverage. It documented improvements in antenatal care, iron–folic acid (IFA) consumption during pregnancy and selected child-nutrition indicators [6]. However, comparable national anaemia prevalence estimates were not included in the released NFHS-6 fact sheets. The Ministry of Health and Family Welfare subsequently clarified that anaemia prevalence estimates would be derived from an independent Indian Council of Medical Research (ICMR) survey using venous blood haemoglobin measurement [7]. Consequently, improvements in supplementation coverage and related indicators cannot independently establish reductions in anaemia prevalence.

Against this background, the Government of India introduced the revised Anemia Mukt Bharat Abhiyaan Operational Guidelines on 29 June 2026, expanding the existing 6×6×6 framework into a 7×7×7 strategy [8,9]. The revised approach includes low-birth-weight infants aged 0–6 months as the seventh beneficiary group, dietary diversification through Eating Right as the seventh intervention, and strengthened digital monitoring as the seventh institutional mechanism. It also emphasises intensified haemoglobin testing, therapeutic management, identification of nutritional and non-nutritional causes, community participation and the T4 approach of Test, Treat, Talk and Track.

Recent scientific evidence supports the need for a differentiated approach. Indian biomarker-based studies have demonstrated the contribution of iron deficiency, haemoglobinopathies and other micronutrient deficiencies to anaemia [10,11]. Venous blood-based research has also raised important questions about the interpretation of earlier prevalence estimates, while recent trials and systematic reviews have strengthened the evidence concerning therapeutic iron interventions [12,13]. The present review critically examines India's transition to the 7×7×7 strategy, integrating national survey findings, current scientific evidence and implementation considerations to identify opportunities for strengthening anaemia control.

METHODS

This article was developed as a narrative review of India's national anaemia-control strategy, focusing on its evolution, scientific rationale, recent epidemiological evidence and public health implications. A narrative approach was adopted because the review addresses a recently introduced policy framework and integrates evidence from several domains, including nutrition, clinical management, epidemiology, health systems and programme implementation.

Relevant evidence was identified from PubMed-indexed biomedical literature and publicly available documents of the Ministry of Health and Family Welfare, National Health Mission, International Institute for Population Sciences, Indian Council of Medical Research, World Health Organization and UNICEF. The principal topics used to identify relevant sources were anaemia, Anemia Mukt Bharat, Anemia Mukt Bharat Abhiyaan, 6×6×6, 7×7×7, NFHS-5, NFHS-6, iron deficiency, haemoglobin measurement, venous blood, capillary blood, iron supplementation, low birth weight, dietary diversification and digital monitoring. Priority was given to evidence published between 2018 and 5 November 2026, while earlier foundational recommendations were retained when directly relevant. This was a purposive, topic-based evidence synthesis; a reproducible database search log, exhaustive screening record and formal study-quality grading were not prepared. The listed terms describe the topics used for evidence identification and are not presented as an exhaustive Boolean search strategy.

Government publications were used to establish official programme components, implementation arrangements and national survey findings. Peer-reviewed observational studies, clinical trials, systematic reviews and international guidelines were considered to examine the evidence supporting major interventions. Sources were selected for their relevance to the review objectives, methodological contribution and applicability to the Indian public health context. Particular attention was given to distinguishing programme specifications and observational associations from evidence of treatment effectiveness.

The evidence was organised thematically under epidemiological burden, evolution of national programmes, the revised framework, diagnostic and therapeutic interventions, implementation challenges, monitoring and research priorities. Findings from studies using different haemoglobin sampling methods were interpreted cautiously. Similarly, improvements in programme coverage were not considered equivalent to reductions in anaemia prevalence. Because the revised framework was introduced only in June 2026, its anticipated benefits were distinguished from demonstrated outcomes.

The review was not designed as a systematic review or meta-analysis. No pooled estimates were calculated, and formal study-level risk-of-bias grading was not undertaken. Its conclusions should therefore be interpreted as a critical narrative synthesis of selected evidence rather than an exhaustive assessment of intervention effectiveness. These methodological limitations, together with heterogeneity in study designs and diagnostic methods, constrain causal and quantitative comparisons across sources.

Epidemiological Burden and Changing Evidence from NFHS-5 and NFHS-6

National Burden and Trends in Anaemia: Anaemia remains widespread across vulnerable population groups in India. NFHS-5 reported anaemia among 67.1% of children aged 6–59 months, 57.0% of women aged 15–49 years, 52.2% of pregnant women, 59.1% of adolescent girls aged 15–19 years and 31.1% of adolescent boys of the same age [5]. The findings demonstrate that anaemia extends beyond pregnancy and affects individuals during periods of rapid growth and increased physiological requirements.

Comparison with NFHS-4 (2015–2016) showed increases in reported anaemia prevalence among several groups. Among children aged 6–59 months, prevalence increased from 58.6% to 67.1%; among women aged 15–49 years, from 53.1% to 57.0%; and among pregnant women, from 50.4% to 52.2%. These changes raised concerns about the persistence of anaemia despite longstanding preventive interventions. However, survey comparisons do not independently identify the causes of observed changes or establish the effects of particular programmes. Population characteristics, biological determinants, measurement methods and survey conditions must all be considered when interpreting trends.

NFHS-6 Findings and their Relevance to Anaemia Control

NFHS-6 was conducted during 2023–2024, with fieldwork covering approximately 679,000 households across 715 districts. The national and state/Union Territory fact sheets were released on 29 May 2026 [6,14]. The survey covered India except Manipur, a qualification relevant when interpreting published national estimates. It documented improvements in several indicators relevant to maternal nutrition and anaemia prevention, particularly antenatal care and IFA consumption.

The proportion of women receiving antenatal care increased from 92.6% in NFHS-5 to 95.9% in NFHS-6, while first-trimester antenatal care increased from 70.0% to 76.2%. Mothers receiving at least four antenatal visits increased from 58.5% to 65.2%. These improvements suggest stronger contact with maternal healthcare services, potentially creating additional opportunities for haemoglobin testing, nutritional assessment, counselling and treatment.

More directly relevant to anaemia prevention, the proportion of mothers consuming IFA supplements for at least 100 days during pregnancy increased from 44.1% to 54.9%, while consumption for at least 180 days increased from 26.0% to 37.8%. Although these increases represent meaningful improvements in reported supplementation duration, they also demonstrate that sustained consumption remains incomplete for a substantial proportion of pregnant women.

NFHS-6 additionally documented improvements in several child-nutrition indicators. Stunting among children younger than five years declined from 35.5% to 29.3%, severe wasting declined from 7.7% to 5.2%, and the proportion of children aged 6–8 months receiving solid or semi-solid foods alongside breastmilk increased from 45.9% to 59.5%. These findings reflect broader changes in nutritional conditions and feeding practices, although they cannot be directly translated into changes in anaemia prevalence (Table 1).

Why NFHS-5 and NFHS-6 cannot yet be Compared for Anaemia Prevalence

Although NFHS-6 provides recent information on maternal and child health, national anaemia prevalence estimates were not included in its released fact sheets. On 4 August 2026, the Ministry of Health and Family Welfare clarified that anaemia prevalence figures would be based on an independent ICMR survey using venous blood haemoglobin measurement [7].

Table 1: Comparison of NFHS-5 and NFHS-6 Indicators Relevant to Anaemia Control

Indicator	NFHS-5 (%)	NFHS-6 (%)	Change (percentage points)
Any antenatal care	92.6	95.9	+3.3
Antenatal care during first trimester	70.0	76.2	+6.2
At least four antenatal visits	58.5	65.2	+6.7
IFA consumed for at least 100 days during pregnancy	44.1	54.9	+10.8
IFA consumed for at least 180 days during pregnancy	26.0	37.8	+11.8
Institutional deliveries	88.6	90.6	+2.0
Newborn postnatal care within two days by specified health personnel	79.1	85.3	+6.2
Children aged 6–8 months receiving complementary foods with breastmilk	45.9	59.5	+13.6
Stunting among children younger than five years	35.5	29.3	−6.2
Severe wasting among children younger than five years	7.7	5.2	−2.5
Underweight among children younger than five years	32.1	31.8	−0.3
Anaemia among children aged 6–59 months	67.1	Not released	Not comparable
Anaemia among women aged 15–49 years	57.0	Not released	Not comparable
Anaemia among pregnant women	52.2	Not released	Not comparable

Sources: NFHS-5 National Findings; NFHS-6 National Fact Sheets and Government of India release [5,6,14]

This methodological decision is important because haemoglobin estimates can vary according to specimen type, sampling procedures, measurement devices and analytical methods. Capillary haemoglobin measurements obtained through point-of-care instruments may not be directly interchangeable with venous measurements obtained through laboratory methods. Differences in haemoglobin thresholds and adjustments for factors such as altitude, smoking and pregnancy can further influence classification [2].

Consequently, NFHS-5 remains the latest NFHS round with nationally published anaemia prevalence estimates for the principal population groups considered here. NFHS-6 can be used to assess changes in supplementation, healthcare utilisation and nutritional indicators, but it cannot currently establish whether anaemia prevalence has declined. This distinction is particularly important because NFHS-6 fieldwork preceded the June 2026 introduction of the revised 7×7×7 strategy. The survey's improvements therefore cannot be attributed to the new programme.

Venous Blood-Based Evidence and the Interpretation of Anaemia Burden

Recent Indian research has raised important questions about the magnitude and aetiology of anaemia when assessed using venous blood. Ghosh and colleagues conducted a community-based venous blood survey across eight Indian states and reported anaemia in 44% of adolescent girls, 41% of adult women and 45% of older women, compared with 24%, 21% and 37% among the corresponding male groups. The overall burden varied substantially between states, and iron-deficiency-associated anaemia accounted for less than one-third of total anaemia in most groups examined [12].

The investigators also reported that venous blood-based anaemia estimates were lower than earlier estimates derived from capillary blood-based surveys. These findings have important implications for national monitoring because they demonstrate how measurement methods may influence the apparent magnitude of a public health problem. However, the study covered eight states and should not be treated as a replacement for a nationally representative survey. Its findings are valuable for understanding measurement and aetiological considerations, but generalisation requires caution.

The scientific relevance of these findings extends beyond prevalence estimation. If a substantial proportion of anaemia is not attributable primarily to iron deficiency, programmes that rely exclusively on iron supplementation may fail to address important underlying causes. Accurate identification of iron deficiency, other nutritional deficiencies and non-nutritional disorders is therefore necessary for appropriately targeted clinical management.

Multifactorial Determinants of Anaemia

The Comprehensive National Nutrition Survey provides additional evidence concerning the causes of anaemia among Indian children and adolescents. A nationally representative analysis of adolescents aged 10–19 years found anaemia among approximately 39.6% of girls and 17.6% of boys. Iron deficiency was strongly associated with anaemia (OR 4.68; 95% CI: 3.21–6.83), while haemoglobinopathies, vitamin A deficiency and zinc deficiency were also associated with increased odds [10].

A separate CNNS-based analysis of children aged 12–59 months found anaemia in 40.5% of participants. Among anaemic children with complete relevant biomarker data, 72.6% had at least one of the micronutrient deficiencies examined. Iron deficiency remained an important determinant, but deficiencies of other nutrients and contextual factors were also relevant [11].

These findings highlight the need to distinguish anaemia from iron-deficiency anaemia. Although population-based supplementation remains important in eligible groups, severe, persistent, recurrent or atypical anaemia may require further clinical assessment and investigation. A differentiated approach is particularly relevant in populations with inherited haemoglobin disorders, endemic infections, chronic inflammatory conditions or other causes of impaired erythropoiesis.

Evolution of National Anaemia-Control Strategies in India

India's efforts to control anaemia have evolved through successive national programmes that progressively expanded the population groups covered and the range of interventions offered. Early approaches concentrated primarily on iron–folic acid supplementation among pregnant women and young children. Subsequently, adolescent health interventions, school-based supplementation, periodic deworming and community nutrition activities were incorporated into broader national programmes. The National Iron Plus Initiative and Weekly Iron and Folic Acid Supplementation programme helped establish the life-course perspective that informed the launch of Anaemia Mukt Bharat in 2018.

The original AMB strategy adopted a 6×6×6 framework, consisting of six beneficiary groups, six interventions and six institutional mechanisms. Its preventive and therapeutic components included IFA supplementation, deworming, behaviour-change communication, haemoglobin testing and treatment, provision of iron–folic acid-fortified foods through public health programmes, and identification and management of non-nutritional causes [4]. These activities were intended to operate through existing health, nutrition, education and community platforms.

However, programme implementation remained challenging. Availability of supplements did not always ensure their consumption, while screening did not necessarily lead to appropriate treatment and follow-up. Differences in diagnostic capacity, limited availability of specialised investigations, supply interruptions and barriers to accessing healthcare could reduce continuity of care. Recent Indian implementation research has also identified

Table 2: Comparison of Interventions Under the 6×6×6 and 7×7×7 Strategies

Earlier 6×6×6 interventions	Revised 7×7×7 interventions	Nature of change
Prophylactic IFA supplementation	Prophylactic IFA supplementation	Retained
Periodic deworming	Deworming and delayed cord clamping	Reorganised and broadened
Intensified year-round behaviour-change communication	Jan Bhagidari communication strategy	Greater emphasis on community ownership and adherence
Testing and treatment of anaemia	Testing for anaemia	Testing identified separately
Testing and treatment of anaemia	Therapeutic management of anaemia	Therapeutic care identified separately
Mandatory provision of IFA-fortified foods in public health programmes	Eating Right and dietary diversification	Explicit focus on locally available iron-rich foods and dietary practices
Addressing non-nutritional causes	Addressing non-nutritional causes	Retained, with stronger case-based emphasis

Sources: National Health Mission and Government of India [4,8,9]

Table 3: Beneficiary Groups Under the Revised 7×7×7 Strategy

Beneficiary group	Public health rationale	Principal service considerations
Children aged 6–59 months	Rapid growth, increased iron requirements and complementary-feeding challenges	Supplementation, appropriate screening, feeding counselling and treatment
Children aged 5–9 years	Continued growth and nutritional vulnerability	School and community-based preventive services
Adolescents aged 10–19 years	Pubertal growth, increased nutritional requirements and menstrual blood loss among girls	IFA supplementation, screening, counselling and treatment
Pregnant women	Increased maternal and fetal requirements and pregnancy-related risks	Antenatal screening, prophylaxis, therapeutic management and follow-up
Lactating women	Postpartum recovery and persistence of antenatal or delivery-related anaemia	Appropriate treatment and postpartum reassessment
Women aged 20–49 years	Prevention and treatment before and between pregnancies	Screening, supplementation where indicated and cause-specific management
Low-birth-weight infants aged 0–6 months	Reduced iron reserves and increased nutritional vulnerability	Specialised neonatal assessment, nutritional management and follow-up

Source: Ministry of Health and Family Welfare [9]

gaps involving counselling, follow-up, cultural misconceptions and fragmented supply chains, reinforcing the importance of addressing operational barriers alongside technical programme guidance [15].

Against this background, the Government of India introduced the revised Anemia Mukt Bharat Abhiyaan Operational Guidelines on 29 June 2026. The framework expanded from 6×6×6 to 7×7×7, with greater emphasis on intensified haemoglobin testing, severity-based therapeutic management, dietary diversification, community participation and digital tracking [8,9]. The revision should therefore be understood as a strengthening and reorganisation of existing interventions rather than the introduction of an entirely new anaemia-control programme (Table 2).

The Revised 7×7×7 Framework

The revised framework comprises seven beneficiary groups, seven interventions and seven institutional mechanisms. The Ministry of Health and Family Welfare explicitly listed these components in its August 2026 implementation statement [9].

Seven Beneficiary Groups

The seven beneficiary groups are children aged 6–59 months, children aged 5–9 years, adolescents aged 10–19 years, pregnant women, lactating women, women of reproductive age aged 20–49 years, and low-birth-weight infants aged 0–6 months. Their inclusion reflects differences in physiological requirements, nutritional vulnerability and opportunities for preventive and therapeutic services (Table 3).

The inclusion of low-birth-weight infants represents an important expansion of the life-course approach. Low birth weight, defined as birth weight below 2,500 g irrespective of gestational age, is associated with increased vulnerability to nutritional deficiencies. Preterm and low-birth-weight infants may have reduced iron stores and additional requirements associated with rapid postnatal growth. WHO guidance provides recommendations for the nutritional and clinical care of these infants, including iron supplementation under appropriate circumstances [16].

However, low-birth-weight infants constitute a heterogeneous clinical population. Supplementation and follow-up should therefore depend on gestational age, birth weight, feeding practices, clinical stability, previous transfusions and applicable neonatal protocols. Their inclusion in the national framework creates opportunities to strengthen continuity between antenatal services, delivery facilities, neonatal care and community follow-up.

The revised strategy also describes women of reproductive age as those aged 20–49 years, compared with 15–49 years in the earlier framework. This does not exclude adolescent girls aged 15–19 years, who remain included within the adolescent beneficiary category. Clear communication about this distinction is important for programme reporting and service delivery.

Seven Interventions

The seven interventions are:

- Prophylactic IFA supplementation

Table 4: Institutional Mechanisms and Their Intended Functions

Institutional mechanism	Intended function
Intra-ministerial coordination	Strengthen coordination among relevant health programmes and divisions
National Centre of Excellence and Advanced Research on Anemia	Support research, technical expertise and evidence generation
National AMB Abhiyaan Unit	Strengthen programme management, implementation support and coordination
Supply-chain and logistics strengthening	Improve availability of medicines, testing devices and consumables
Interministerial convergence	Coordinate complementary interventions across sectors
AMB Abhiyaan Portal	Support integration and analysis of programme information
Digital monitoring through T4	Strengthen beneficiary tracking, referral, follow-up and continuity of care

Source: Ministry of Health and Family Welfare [9]

- Testing for anaemia
- Therapeutic management of anaemia
- Deworming and delayed cord clamping
- Jan Bhagidari communication strategy
- Addressing non-nutritional causes of anaemia
- Eating Right and dietary diversification

The revised structure separates testing and treatment into distinct interventions, giving greater visibility to the need for timely diagnosis, appropriate clinical management and treatment-response assessment. The inclusion of Eating Right gives dietary diversification an explicit position within the framework, while Jan Bhagidari aims to improve understanding, adherence and community participation.

Seven Institutional Mechanisms

The revised institutional mechanisms consist of intra-ministerial coordination, a National Centre of Excellence and Advanced Research on Anemia, a National AMB Abhiyaan Unit, strengthened supply chains and logistics, convergence with other ministries, the Anemia Mukt Bharat Abhiyaan Portal and a digital monitoring framework supporting T4 [9] (Table 4).

The revised strategy recognises that anaemia control depends on more than clinical interventions. Effective implementation requires a functioning health system, reliable supplies, trained personnel, community engagement and coordinated administrative mechanisms. The establishment of dedicated research and programme structures also offers opportunities for more systematic evaluation of implementation gaps and clinical outcomes.

Scientific Evidence Supporting the Revised Strategy

Iron–Folic Acid Supplementation and Adherence: IFA supplementation remains a fundamental component of anaemia prevention because iron and folate are essential for normal erythropoiesis. The WHO recommends daily iron and folic acid supplementation during pregnancy and preventive iron supplementation among defined groups of menstruating women and young children in settings with a substantial anaemia burden [17–19]. These recommendations provide a strong scientific foundation for population-based preventive programmes, although national supplementation schedules must be followed for specific beneficiary groups.

The effectiveness of supplementation depends on more than the availability of tablets or syrups. Adequate dosage, adherence, tolerability, absorption and duration are important determinants of treatment or preventive response. Gastrointestinal adverse effects, limited counselling, cultural misconceptions, forgetfulness and irregular medicine supplies may reduce consumption. Recent implementation research from India identified practical barriers involving limited counselling, insufficient follow-up and fragmented supply chains, demonstrating the importance of strengthening delivery systems [15].

The revised strategy's emphasis on Jan Bhagidari and digital follow-up is therefore relevant. However, the programme should distinguish supplements distributed, supplements received and supplements consumed. It should also identify individuals who require therapeutic rather than prophylactic management. A high proportion of beneficiaries receiving supplements does not independently demonstrate adequate adherence or correction of anaemia.

Haemoglobin Testing and Diagnostic Accuracy

The revised framework emphasises intensified haemoglobin testing using digital invasive haemoglobinometers across beneficiary-specific service platforms [9]. Expanded testing can potentially improve early diagnosis, particularly among individuals with mild or nonspecific symptoms who may not otherwise seek healthcare.

However, accurate measurement is essential. Haemoglobin concentrations may vary according to specimen collection, device performance, operator technique, sample handling and analytical procedures. The WHO's updated 2024 guideline provides recommendations for defining anaemia using age- and physiological-status-specific thresholds [2].

The importance of measurement methodology has become particularly evident following Indian venous blood-based research and the government's decision to use a separate ICMR assessment for national anaemia estimates [7,12]. Routine screening and population prevalence estimation have related but distinct purposes. Point-of-care devices can support clinical screening, while nationally representative prevalence estimation requires appropriate sampling and standardised measurement methods.

Programme implementation should therefore include validated devices, routine quality assurance, standard operating procedures and training in specimen collection and interpretation. Severe or unexpected results may require confirmatory assessment according to clinical protocols.

Importantly, haemoglobin concentration identifies anaemia but not its underlying cause. Screening must consequently be linked to appropriate clinical assessment, treatment and further investigation where indicated.

Therapeutic Management and Intravenous Iron

The explicit recognition of therapeutic management as a separate intervention is one of the most important changes introduced by the revised strategy. Preventive supplementation aims to reduce deficiency risk, whereas treatment of established anaemia requires assessment of severity, cause, appropriate therapeutic dosing and clinical response.

Oral iron remains an established treatment for many patients with iron-deficiency anaemia, but its effectiveness may be limited by intolerance, inadequate absorption, poor adherence or continuing blood loss. Patients with persistent, severe or atypical anaemia require reassessment rather than repeated empirical supplementation without investigation.

The revised operational framework includes intravenous iron therapy, including ferric carboxymaltose and iron sucrose, for appropriate clinical indications among pregnant and lactating women [8]. Recent systematic reviews support the clinical value of intravenous iron for selected patients while also highlighting uncertainties in some outcomes.

A 2024 Cochrane review involving 13 randomised controlled trials and 3,939 participants found that intravenous iron probably improved haemoglobin concentrations more than oral iron three to six weeks after treatment initiation. However, the review found little or no difference in blood transfusion rates, and evidence concerning several uncommon maternal outcomes remained uncertain [13]. A subsequent 2026 meta-analysis in JAMA Network Open, including 29 randomised trials and 11,771 participants, reported greater improvements in maternal haemoglobin and ferritin concentrations and a lower rate of blood transfusion during delivery hospitalisation among women receiving intravenous iron [20].

These differences highlight the importance of examining study eligibility, outcome definitions, trial quality and synthesis methods when interpreting treatment evidence. The findings support considering intravenous iron for appropriately selected patients but do not justify indiscriminate administration. Clinical decisions must account for gestational age, disease severity, iron status, patient condition, safety considerations and applicable national protocols.

Deworming and Delayed Cord Clamping

Deworming and delayed cord clamping are included within the fourth intervention, although their mechanisms differ. Certain intestinal helminths, particularly hookworm, may contribute to chronic blood loss and iron deficiency. Deworming can therefore support anaemia control in appropriate epidemiological settings, but its contribution depends on local infection prevalence, treatment coverage and complementary sanitation measures.

Delayed umbilical cord clamping allows continued placental transfusion after birth and can improve neonatal iron endowment. WHO guidance recommends delayed cord clamping, generally not earlier than one minute after birth, when clinically appropriate [21]. This intervention is particularly relevant to the expanded attention given to early infancy under the revised strategy.

Nevertheless, delayed cord clamping should be integrated into appropriate intrapartum and neonatal care rather than treated as an isolated anaemia-control measure. Similarly, deworming should follow age-, pregnancy- and epidemiology-specific recommendations.

Non-Nutritional Causes and Differentiated Clinical Management

Anaemia may arise from inherited haemoglobin disorders, infections, chronic inflammation, renal disease, haemolysis, persistent blood loss and other systemic conditions. Their relative contributions vary by age, sex and geographical setting. Evidence from the CNNS and venous blood-based Indian research reinforces the importance of recognising causes beyond iron deficiency [10–12].

A differentiated approach should consider clinical history, severity, previous treatment and response, menstrual or other blood loss, family history and local disease epidemiology. Further investigations may include complete blood counts, peripheral blood examination, ferritin and other iron-status markers, vitamin B12 or folate assessment, haemoglobinopathy testing and investigations for relevant infections or systemic disorders.

Ferritin is an important marker of iron stores, but interpretation requires caution because inflammation may raise ferritin concentrations. WHO guidance recommends accounting for inflammation when assessing iron status [22]. This is particularly relevant in settings where infectious and inflammatory conditions coexist with nutritional deficiencies.

The success of cause-specific management will depend on access to appropriate diagnostic investigations and referral services, particularly for severe, recurrent or non-responsive anaemia.

Eating Right and Dietary Diversification

The explicit inclusion of Eating Right recognises that sustainable anaemia prevention requires attention to dietary quality in addition to medicinal supplementation. Balanced dietary patterns can improve the intake of iron and other nutrients involved in erythropoiesis. The ICMR–National Institute of Nutrition's Dietary Guidelines for Indians, 2024 emphasise dietary diversity and appropriate food choices across the life course [23].

Practical dietary advice may encourage consumption of locally available legumes, pulses, suitable whole grains, vegetables, fruits, nuts, seeds and animal-source foods where acceptable and available. However, iron bioavailability must

be considered. Haem iron is generally more readily absorbed than non-haem iron, while the absorption of non-haem iron can be enhanced by vitamin C-containing foods and inhibited by certain dietary components.

Dietary counselling should therefore address complete meal patterns rather than promoting individual foods as sufficient to prevent or correct anaemia. It should also recognise that established moderate or severe iron-deficiency anaemia may require therapeutic supplementation.

Food affordability, seasonal availability, household preferences and food insecurity can limit the effectiveness of dietary recommendations. Consequently, the Eating Right intervention should be supported by broader nutrition and social programmes and assessed through changes in dietary practices and relevant health outcomes.

Jan Bhagidari and Behaviour Change

Jan Bhagidari aims to strengthen community ownership of anaemia prevention and management. Its importance lies partly in challenging the perception of anaemia as an unavoidable consequence of menstruation, pregnancy or physical work. Individuals may delay seeking care when fatigue, weakness and reduced exercise tolerance are regarded as normal.

Effective communication should explain the purpose of testing, the importance of prescribed treatment, possible adverse effects, dietary practices and the need for follow-up. Messages should be understandable, culturally appropriate and responsive to local misconceptions.

Frontline healthcare workers, schools, community institutions and family members can contribute to sustained engagement. However, individual behaviour cannot be separated from structural circumstances. Poverty, food insecurity, transport barriers and medicine shortages may prevent beneficiaries from following recommendations even when they understand their importance. Community engagement should therefore be combined with accessible services and practical support.

Institutional Strengthening and the T4 Continuum of Care

The revised 7×7×7 framework seeks to strengthen anaemia control by improving coordination, service delivery and beneficiary-level monitoring. Its institutional mechanisms recognise that the effectiveness of nutritional and clinical interventions depends on reliable healthcare systems capable of delivering services consistently across different populations and geographical settings. Intra-ministerial coordination and convergence with other departments are particularly important because anaemia is influenced by nutrition, infectious diseases, education, sanitation and socioeconomic conditions. Dedicated research and programme-management structures can support technical guidance, implementation review and evidence generation.

The transition from the T3 approach of Test, Treat and Talk to T4—Test, Treat, Talk and Track—is a defining feature of the revised strategy [8,9]. Its principal significance lies in recognising that identification and treatment initiation are insufficient unless beneficiaries complete the appropriate care pathway. A patient may be diagnosed with anaemia and receive medication but fail to complete treatment because of adverse effects, poor adherence, continuing blood loss, an incorrect diagnosis or difficulties accessing follow-up services. Digital tracking offers an opportunity to identify such gaps and support timely corrective action.

Under the T4 framework, testing should lead to appropriate severity classification and further assessment where necessary. Treatment should be guided by clinical findings and applicable protocols, while counselling should encourage understanding and adherence. Tracking should establish whether treatment was initiated, recommended follow-up occurred, referrals were completed and clinical reassessment demonstrated an appropriate response. The programme's success should therefore be evaluated through continuity of care and treatment outcomes rather than the volume of screening or registration alone.

The Ministry of Health and Family Welfare's national implementation workshop, held on 12–13 August 2026, emphasised state-level implementation, interministerial convergence and digital monitoring. The workshop also marked the launch of the AMB Abhiyaan application and portal, intended to facilitate beneficiary tracking and programme review [24].

However, digital integration introduces practical challenges involving data quality, duplicate records, patient identification, interoperability, connectivity and the protection of personal health information. These concerns may be particularly important in remote settings where internet access is intermittent and healthcare workers already face substantial administrative responsibilities. Information systems should therefore be designed to support clinical action, minimise unnecessary duplication and provide timely feedback to service providers.

The revised framework also creates opportunities for strengthening programme accountability. National and state authorities can monitor implementation patterns, but district and facility teams must be able to identify specific gaps and address them. Regular review should focus on actionable problems, such as low treatment initiation after diagnosis, delayed referral completion or persistent medicine shortages. Without such mechanisms, increased digital reporting may improve administrative visibility without producing equivalent improvements in patient outcomes.

Implementation Challenges and Health-System Readiness

The effectiveness of the 7×7×7 strategy will depend largely on its implementation across India's diverse health systems. Although the revised framework is comprehensive, geographical, socioeconomic and institutional differences may influence the availability, accessibility and quality of services. A strategy implemented successfully in an urban tertiary healthcare setting may face very different challenges in remote rural, tribal or mountainous regions.

Table 5: Major Implementation Challenges and Proposed Responses

Challenge	Potential consequence	Suggested programme response
Inadequate diagnostic capacity	Delayed or incorrect diagnosis	Device quality assurance, training and referral support
Poor IFA adherence	Incomplete prevention or treatment	Individual counselling, follow-up and adverse-effect management
Medicine stock-outs	Interrupted treatment	Facility-level stock monitoring and timely replenishment
Limited aetiological investigations	Missed non-iron causes	Risk-based investigation and referral pathways
Excessive frontline workload	Incomplete services or recording	Supportive supervision and simplified digital workflows
Fragmented information systems	Loss to follow-up	Interoperable beneficiary records and data validation
Geographic inaccessibility	Delayed treatment and referral	Context-specific outreach and referral arrangements
Food insecurity	Limited dietary improvement	Affordable, locally appropriate nutrition interventions
Inadequate neonatal follow-up	Missed care among vulnerable infants	Linkage between neonatal and community services
Weak programme accountability	Persistent service-delivery gaps	Regular outcome-oriented district reviews

Table 6: Proposed Monitoring Indicators for the Revised 7×7×7 Framework

Domain	Proposed indicator	Purpose
Screening coverage	Eligible beneficiaries tested (%)	Assess service reach
Detection	Anaemia positivity among those tested (%)	Describe burden among screened beneficiaries
Severity classification	Diagnosed cases correctly classified (%)	Assess diagnostic quality
Treatment initiation	Eligible diagnosed cases starting appropriate treatment (%)	Assess linkage to care
Treatment delay	Median days from diagnosis to treatment initiation	Identify delays
Adherence	Beneficiaries completing prescribed treatment (%)	Assess treatment continuity
Follow-up	Beneficiaries receiving scheduled reassessment (%)	Assess continuity of care
Treatment response	Beneficiaries achieving protocol-defined response (%)	Assess clinical effectiveness
Referral completion	Indicated referrals completed (%)	Evaluate referral functioning
Non-response management	Non-responders receiving appropriate reassessment (%)	Assess case-based management
Stock availability	Facilities reporting relevant stock-outs (%)	Monitor supply reliability
Data completeness	Records containing essential clinical information (%)	Assess information quality
Equity	Coverage and outcomes by geographical and population groups	Identify disparities
Population impact	Anaemia prevalence from representative surveys	Evaluate long-term public health outcomes

Diagnostic infrastructure represents a major operational concern. Expanded haemoglobin screening requires validated devices, adequate consumables, routine maintenance, quality assurance and trained personnel. Facilities must also have access to appropriate investigations and referral services for severe, recurrent or non-responsive anaemia. Detecting low haemoglobin without ensuring appropriate treatment may increase the number of identified cases without substantially improving health outcomes.

Supply-chain reliability is equally important. Interruptions in IFA supplementation, deworming medicines, diagnostic supplies or intravenous iron preparations may compromise treatment continuity. Monitoring should assess actual availability at service-delivery points rather than relying exclusively on procurement or warehouse-level records. Effective forecasting, distribution and replenishment are especially important in geographically difficult regions, where transport limitations may cause prolonged shortages.

Human-resource capacity also requires attention. Frontline healthcare workers, including ASHAs, ANMs and AWWs, are central to community mobilisation, supplementation, counselling and follow-up. The additional responsibilities associated with expanded testing and digital tracking may increase workload unless supported by practical training, supervision and simplified reporting systems. Medical officers and other clinicians also require updated knowledge of severity-based treatment, recognition of non-response and appropriate referral criteria.

Recent Indian implementation research has highlighted the importance of these concerns. A mixed-methods study published in 2026 identified gaps in haemoglobin testing and IFA delivery among pregnant women, alongside barriers related to counselling, cultural misconceptions, follow-up and supply-chain functioning [15]. Such findings should be interpreted within the study's setting rather than extrapolated directly to the national population, but they demonstrate the types of barriers that the revised framework must address.

Health equity is another critical consideration. Remote communities, tribal populations, urban disadvantaged groups, migrant families and out-of-school adolescents may face different obstacles to accessing services. In Himalayan regions, difficult terrain, seasonal road closures, long travel distances and limited referral facilities may affect treatment initiation and follow-up. In urban settings, migration, employment conditions and fragmented healthcare utilisation may complicate beneficiary tracking.

The Eating Right intervention similarly requires attention to household-level constraints. Dietary recommendations may have limited effectiveness when families cannot afford recommended foods or when seasonal availability restricts dietary diversity. Counselling should therefore be supported by broader nutrition interventions and locally feasible recommendations.

The newly included low-birth-weight infant group presents additional challenges because safe management requires appropriate neonatal expertise and continuity between institutional and community services. Infants requiring specialised care must remain linked to relevant neonatal protocols, with supplementation and monitoring tailored to their clinical circumstances.

Table 7: Priority Research Questions Under the Revised Strategy

Research area	Research question	Suggested design
Programme readiness	Are facilities and districts adequately prepared for implementation?	Facility-based readiness assessment
Diagnostic accuracy	How accurately do point-of-care devices classify anaemia?	Diagnostic accuracy study
Treatment delay	What is the interval between diagnosis and treatment initiation?	Retrospective or prospective cohort
Adherence	What factors influence completion of prescribed treatment?	Mixed-methods study
T4 monitoring	Does digital tracking improve follow-up and treatment outcomes?	Controlled implementation evaluation
Persistent anaemia	What causes non-response to initial treatment?	Clinical and laboratory study
Dietary diversification	Does Eating Right counselling improve dietary practices and nutritional outcomes?	Community intervention study
Low-birth-weight infants	How effectively are infants linked to appropriate follow-up?	Prospective cohort
Equity	Which population groups remain inadequately served?	Disaggregated programme-data analysis
Population impact	Does implementation reduce anaemia prevalence over time?	Representative surveys or quasi-experimental evaluation

Overall, the revised strategy requires more than the introduction of additional programme components. Its effectiveness depends on whether health systems can provide reliable testing, appropriate treatment, uninterrupted medicines, meaningful counselling and sustained follow-up across all eligible population groups (Table 5).

Monitoring, Evaluation and Research Priorities

The revised strategy provides an opportunity to strengthen the evaluation of anaemia-control services by moving beyond traditional coverage indicators. Numbers of individuals screened, tablets distributed and counselling sessions delivered remain necessary for monitoring programme activity, but they cannot independently demonstrate successful clinical management or population-level improvement.

An effective monitoring system should distinguish several stages of the care pathway: eligibility for screening, completion of testing, diagnosis, treatment initiation, adherence, clinical reassessment, referral completion and documented treatment response. Each indicator requires an appropriate denominator. For example, treatment initiation should be assessed among diagnosed individuals eligible for treatment, while follow-up completion should be evaluated among beneficiaries for whom follow-up was due.

Routine programme data must also be distinguished from population survey findings. An increase in screening coverage may produce more diagnosed cases without indicating an increase in underlying anaemia prevalence. Conversely, changes in the characteristics of those screened may influence positivity rates. Reliable population-level evaluation therefore requires appropriately designed representative surveys with standardised measurement methods (Table 6).

Research is particularly important because the revised strategy was introduced only in June 2026. Initial evaluations should examine readiness, implementation fidelity, diagnostic performance, treatment adherence and continuity of care. Subsequent studies can investigate effects on clinical and population outcomes.

Research on haemoglobin measurement should compare point-of-care testing with appropriate reference methods under routine field conditions. Studies should evaluate sampling techniques, operator variability and potential misclassification. Aetiological research should investigate the contribution of iron deficiency, other micronutrient deficiencies, haemoglobinopathies and relevant infections across different populations.

The T4 approach offers opportunities for prospective cohort studies and implementation evaluations. These could examine whether digital tracking improves treatment initiation, completion of referrals, follow-up attendance and documented clinical response. Such evaluations should also assess workload, feasibility, data quality, patient acceptability and cost-effectiveness (Table 7).

The Eating Right component requires research examining whether nutrition counselling improves dietary diversity and nutrient intake and whether these changes translate into measurable haematological outcomes. The new low-birth-weight infant component similarly requires evaluation of care pathways, follow-up coverage and appropriate clinical management.

An important additional priority is health equity. Programme performance should be examined across socioeconomic groups, rural and urban settings, geographically difficult regions, tribal communities and out-of-school populations. Aggregate improvements may conceal persistent gaps among vulnerable groups, making disaggregated monitoring essential.

The success of future research will depend on using appropriate study designs and clinically meaningful outcomes. As implementation expands, collaboration among medical colleges, public health institutions, state health departments and research organisations may help generate evidence for continuous programme improvement.

DISCUSSION

India's transition from the 6×6×6 strategy to the revised 7×7×7 framework represents a significant development in national anaemia-control policy. The revised approach builds upon the earlier life-course strategy while placing greater emphasis on comprehensive diagnosis, appropriate therapeutic management, dietary diversification, community participation and longitudinal monitoring. Its introduction reflects recognition that anaemia control requires more than provision of preventive supplements and that improvements in service coverage do not necessarily translate into sustained reductions in population-level disease burden.

The persistent anaemia burden documented by NFHS-5 provides an important justification for strengthening national interventions. However, the release of NFHS-6 introduces a more nuanced epidemiological picture. Improvements in antenatal care, IFA consumption and selected child-nutrition indicators suggest progress in important service-delivery and nutritional conditions. In particular, the increase in maternal IFA consumption for at least 180 days from 26.0% to 37.8% indicates greater reported duration of supplementation, although substantial gaps remain. These findings demonstrate both the potential of existing interventions and the need to improve their reach and continuity.

The absence of national anaemia prevalence estimates in the released NFHS-6 fact sheets is an important methodological consideration. The government's decision to derive national anaemia estimates from a separate ICMR survey using venous blood measurement reflects increased attention to diagnostic standardisation [7]. This decision is particularly relevant in light of recent Indian evidence showing that venous blood-based anaemia estimates can differ substantially from earlier capillary blood-based estimates [12]. Consequently, future assessment of national trends must distinguish genuine changes in haemoglobin status from differences associated with measurement procedures, sampling and diagnostic classification.

The revised framework's emphasis on intensified testing is scientifically appropriate, but its contribution will depend on the accuracy of measurement and availability of subsequent care. Expanded screening may identify previously undiagnosed cases, yet detection alone cannot improve health outcomes without appropriate treatment. This is particularly important because anaemia has multiple underlying causes. Evidence from Indian biomarker-based research demonstrates the contribution of iron deficiency, inherited haemoglobin disorders and other nutritional deficiencies [10,11]. The findings of Ghosh and colleagues further challenge the assumption that most anaemia detected in the population necessarily represents iron-deficiency anaemia [12]. Together, these studies support a differentiated approach combining population-based prevention with cause-specific clinical management.

This does not diminish the importance of IFA supplementation. Rather, it highlights the need to distinguish prophylactic supplementation from treatment of established anaemia. Preventive programmes remain relevant for vulnerable populations, while affected individuals may require therapeutic doses, assessment of treatment response and further investigations when clinically indicated. Recent implementation research has shown that counselling, adherence, supply-chain reliability and follow-up remain important barriers to effective service delivery [15]. The revised strategy's emphasis on Jan Bhagidari and digital monitoring is therefore aligned with recognised operational needs.

The inclusion of therapeutic management as a distinct intervention also provides an opportunity to strengthen clinical care. Recent systematic reviews comparing intravenous and oral iron therapy have demonstrated improvements in selected haematological outcomes with intravenous treatment, although conclusions concerning major maternal outcomes vary according to the evidence included and methods of synthesis [13,20]. These findings support the availability of appropriate therapeutic options but reinforce the importance of clinical assessment, protocol-based treatment and safety monitoring. The revised programme should therefore be evaluated not by the number of intravenous iron administrations but by the appropriateness of treatment and subsequent clinical outcomes.

The addition of low-birth-weight infants aged 0–6 months is another important feature. It extends the national life-course approach into early infancy, a period when reduced iron stores and rapid growth may increase vulnerability. WHO guidance supports specialised nutritional management for preterm and low-birth-weight infants, but clinical care must account for differences in gestational age, birth weight, feeding and medical condition [16]. Integration with neonatal and community follow-up services will be necessary to translate this component into effective care.

Dietary diversification through the Eating Right approach broadens the programme's nutritional perspective. While medicinal supplementation addresses defined deficiencies, sustained nutritional improvement also requires adequate dietary quality and access to diverse foods. This approach is consistent with international nutrition principles and ICMR–NIN dietary guidance [23]. However, the effectiveness of dietary counselling depends on affordability, seasonal availability, cultural practices and household food security. The revised strategy will therefore benefit from coordination with wider nutrition and social programmes rather than relying solely on individual behaviour change.

The T4 framework may be among the most consequential operational developments because it explicitly recognises the importance of continuity beyond diagnosis and treatment initiation. Beneficiary-level tracking has the potential to identify missed follow-up, incomplete treatment, unresolved referrals and inadequate clinical response. Nevertheless, digital systems are useful only when information is accurate and healthcare providers can act upon it. Their effectiveness should therefore be assessed through improvements in care pathways and clinical outcomes, not merely increased registration or reporting.

The seven institutional mechanisms provide a basis for addressing several implementation constraints, including coordination, research, logistics and digital monitoring. The August 2026 national workshop highlighted the importance of state ownership, interministerial collaboration and effective implementation at facility and community levels [24]. These priorities are appropriate given the substantial variation in health-system capacity and population needs across India.

Health equity must remain central to programme implementation. Remote, tribal, mountainous and

economically disadvantaged populations may experience difficulties accessing diagnostic services, medicines and referrals. Similarly, out-of-school adolescents and mobile populations may not be adequately reached through conventional service platforms. The revised strategy should therefore be implemented with sufficient flexibility to address geographical and social barriers while maintaining consistent clinical standards.

The main limitation in assessing the 7×7×7 strategy is the short interval since its introduction. As of November 2026, evidence is insufficient to establish its effectiveness in reducing national anaemia prevalence. The improvements documented in NFHS-6 largely predate the policy revision and cannot be attributed to it. Future evaluation should therefore focus on programme implementation, appropriate diagnosis, treatment initiation, adherence, referral completion and haematological response, followed by representative population-level assessment.

Overall, the revised framework represents a scientifically coherent attempt to strengthen anaemia control by connecting preventive interventions with clinical management and sustained follow-up. Its success will depend on whether these components function together in routine healthcare delivery. The transition from 6×6×6 to 7×7×7 should therefore be judged by measurable improvements in the quality, continuity and outcomes of anaemia care rather than the numerical expansion of the programme framework itself.

CONCLUSION

The introduction of the 7×7×7 framework under Anemia Mukt Bharat Abhiyaan marks an important evolution in India's national approach to anaemia control. By including low-birth-weight infants, explicitly promoting dietary diversification and strengthening therapeutic management and digital follow-up, the revised strategy extends the life-course approach beyond conventional supplementation-based interventions.

The release of NFHS-6 provides encouraging evidence of improvements in antenatal healthcare, maternal IFA consumption and selected child-nutrition indicators. However, the absence of comparable national anaemia prevalence estimates prevents direct assessment of changes in disease burden between NFHS-5 and NFHS-6. The increasing emphasis on venous blood-based measurement further highlights the importance of accurate diagnosis and cautious interpretation of epidemiological trends.

The principal strength of the revised strategy lies in recognising anaemia as a multifactorial condition requiring integrated nutritional, clinical, behavioural and health-system responses. Its effectiveness will depend on reliable diagnostics, appropriate treatment, uninterrupted supplies, community engagement, equitable access and sustained follow-up.

Rigorous implementation research and outcome-based monitoring will be essential to determine whether the revised framework produces meaningful and sustained reductions in anaemia. Ultimately, the success of India's transition to 7×7×7 should be measured not simply by programme coverage, but by improvements in appropriate diagnosis, treatment completion, clinical recovery and population health.

REFERENCES

[1] World Health Organization. *Accelerating anaemia reduction: a comprehensive framework for action*. Geneva: World Health Organization, 2023. Available from: https://www.who.int/publications/i/item/9789240074033

[2] World Health Organization. *Guideline on haemoglobin cutoffs to define anaemia in individuals and populations*. Geneva: World Health Organization, 2024. Available from: https://www.who.int/publications/i/item/9789240088542

[3] GBD 2021 Anaemia Collaborators. Prevalence, years lived with disability, and trends in anaemia burden by severity and cause, 1990–2021: findings from the Global Burden of Disease Study 2021. *The Lancet Haematology*, vol. 10, no. 9, 2023, pp. e713–e734. https://doi.org/10.1016/S2352-3026(23)00160-6

[4] Ministry of Health and Family Welfare, Government of India. *Anaemia Mukt Bharat*. New Delhi: National Health Mission. Available from: https://nhm.gov.in/nhm_components/index1.php?lang=1&level=3&lid=797&sublinkid=1448

[5] Ministry of Information and Broadcasting, Government of India. *India's fight against anemia*. New Delhi: Press Information Bureau, 2025. Available from: https://static.pib.gov.in/WriteReadData/specificdocs/documents/2025/apr/doc2025418542201.pdf

[6] Ministry of Health and Family Welfare, Government of India. *Union Health Ministry releases National Family Health Survey-6*. New Delhi: Press Information Bureau, 2026. Available from: https://www.pib.gov.in/PressReleasePage.aspx?PRID=2266600

[7] Ministry of Health and Family Welfare, Government of India. *Update on NFHS-6*. New Delhi: Press Information Bureau, 2026. Available from: https://www.pib.gov.in/PressReleasePage.aspx?PRID=2294277

[8] Ministry of Health and Family Welfare, Government of India. *Union Health Minister Shri J.P. Nadda releases Anemia Mukt Bharat Abhiyaan Operational Guidelines during the 16th CCHFW meeting*. New Delhi: Press Information Bureau, 2026. Available from: https://www.pib.gov.in/PressReleasePage.aspx?PRID=2279050

[9] Ministry of Health and Family Welfare, Government of India. *Anemia Mukt Bharat Abhiyaan operational guidelines 2026*. New Delhi: National Health Mission, 2026. Available from: https://nhm.gov.in/nhm_live/index1.php?lang=1&level=4&lid=804&sublinkid=1455

[10] Scott, S. *et al.* Anaemia in Indians aged 10–19 years: prevalence, burden and associated factors at national and regional levels. *Maternal & Child Nutrition*, vol. 18, no. 4, 2022, e13391. https://doi.org/10.1111/mcn.13391

[11] Yadav, K. *et al.* Prevalence and determinants of anemia due to micronutrient deficiencies among children aged 12–59 months in India: evidence from Comprehensive National Nutrition Survey, 2016–18. *PLOS Global Public Health*, vol. 4, no. 1, 2024, e0002095. https://doi.org/10.1371/journal.pgph.0002095

[12] Ghosh, S. *et al.* Anaemia and iron deficiency in India: a venous blood-based survey of adolescents, adults, and the elderly in eight states. *European Journal of Clinical Nutrition*, vol. 79, 2025, pp. 443–451. https://doi.org/10.1038/s41430-024-01559-w

[13] Nicholson, L., Axon, E., Daru, J. and Rogozińska, E. Effect and safety of intravenous iron compared to oral iron for treatment of iron deficiency anaemia in pregnancy. *Cochrane Database of Systematic Reviews*, vol. 12, no. 12, 2024, CD016136. https://doi.org/10.1002/14651858.CD016136

[14] International Institute for Population Sciences. *National Family Health Survey (NFHS-6), 2023–24: India and State/UT fact sheets*. Mumbai: International Institute for Population Sciences, 2026. Available from: https://www.nfhsiips.in/nfhsuser/assets/National%20Family%20Health%20Survey%20%28NFHS-6%29%202023-2024%20Fact%20Sheets.pdf

[15] Gadapani Pathak, B. *et al.* Implementation challenges of India's national anaemia reduction program among pregnant women: insights from mixed-methods implementation research. *Frontiers in Global Women's Health*, vol. 7, 2026, 1695442. https://doi.org/10.3389/fgwh.2026.1695442

[16] World Health Organization. *WHO recommendations for care of the preterm or low-birth-weight infant*. Geneva: World Health Organization, 2022. Available from: https://www.who.int/publications/i/item/9789240058262

[17] World Health Organization. *Daily iron and folic acid supplementation during pregnancy*. Geneva: World Health Organization. Available from: https://www.who.int/tools/elena/interventions/daily-iron-pregnancy

[18] World Health Organization. *Guideline: daily iron supplementation in adult women and adolescent girls*. Geneva: World Health Organization, 2016. Available from: https://www.who.int/publications/i/item/9789241510196

[19] World Health Organization. *Daily iron supplementation in children 6–23 months of age*. Geneva: World Health Organization. Available from: https://www.who.int/tools/elena/interventions/iron-children-6to23

[20] Sales, S.K. *et al.* Intravenous vs oral iron for treating iron deficiency anemia in pregnancy: a systematic review and meta-analysis. *JAMA Network Open*, vol. 9, no. 9, 2026, e2630657. https://doi.org/10.1001/jamanetworkopen.2026.30657

[21] World Health Organization. *Delayed umbilical cord clamping for improved maternal and infant health and nutrition outcomes*. Geneva: World Health Organization, 2014. Available from: https://www.who.int/publications/i/item/9789241508209

[22] World Health Organization. *WHO guideline on use of ferritin concentrations to assess iron status in individuals and populations*. Geneva: World Health Organization, 2020. Available from: https://www.who.int/publications/i/item/9789240000124

[23] Indian Council of Medical Research–National Institute of Nutrition. *Dietary guidelines for Indians—2024*. Hyderabad: ICMR–National Institute of Nutrition, 2024. Available from: https://www.nin.res.in/dietaryguidelines/pdfjs/locale/DGI24thJune2024fin.pdf

[24] Ministry of Health and Family Welfare, Government of India. *Union Ministry of Health and Family Welfare convenes two-day national workshop on Anemia Mukt Bharat Abhiyaan with participation of over 160 representatives from all states and UTs*. New Delhi: Press Information Bureau, 2026.