

Dissertation Thesis

Topic- Bridging the Gap: Assessing Anaemia Interventions and
Behaviour Change Communication in India

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INTRODUCTION

1. Anaemia remains a persistent public health challenge in India, with prevalence rates escalating across all age groups according to the latest NFHS-5 (2019-21) data.
2. According to WHO, in 2019, the global prevalence of Anaemia among **women aged 15-49** was **29.9%**, affecting over **500 million individuals**
3. The burden of Anemia continues to surge. (Fig-1)
4. According to NFHS-5 data, anemia prevalence is alarmingly high, impacting 67% of children aged 6-59 months, 59% of adolescent girls, and nearly 52% of pregnant women, with higher rates in rural areas compared to urban ones.
5. The primary causes include nutritional deficiencies, infections, and chronic diseases, with iron deficiency being the most common

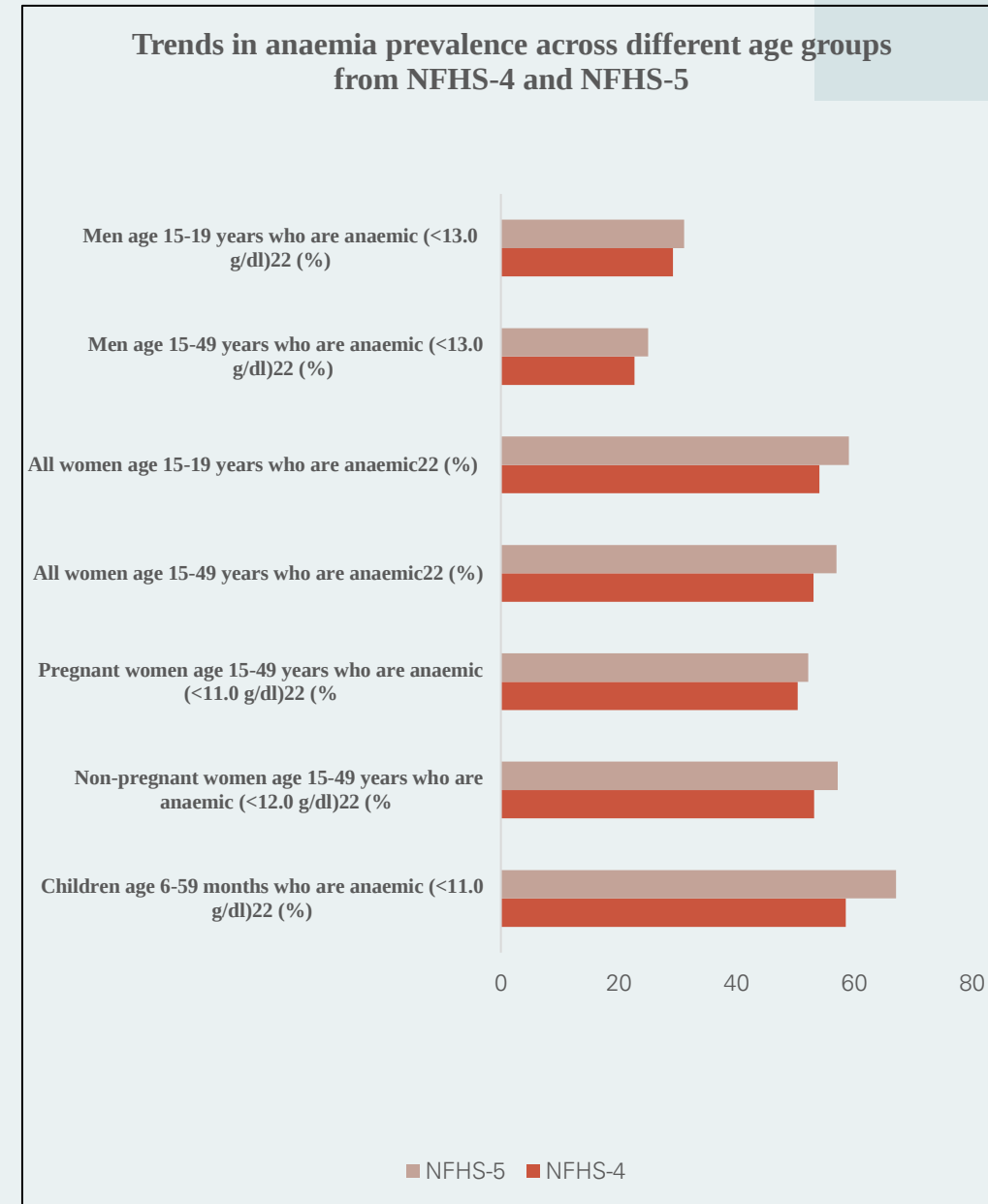
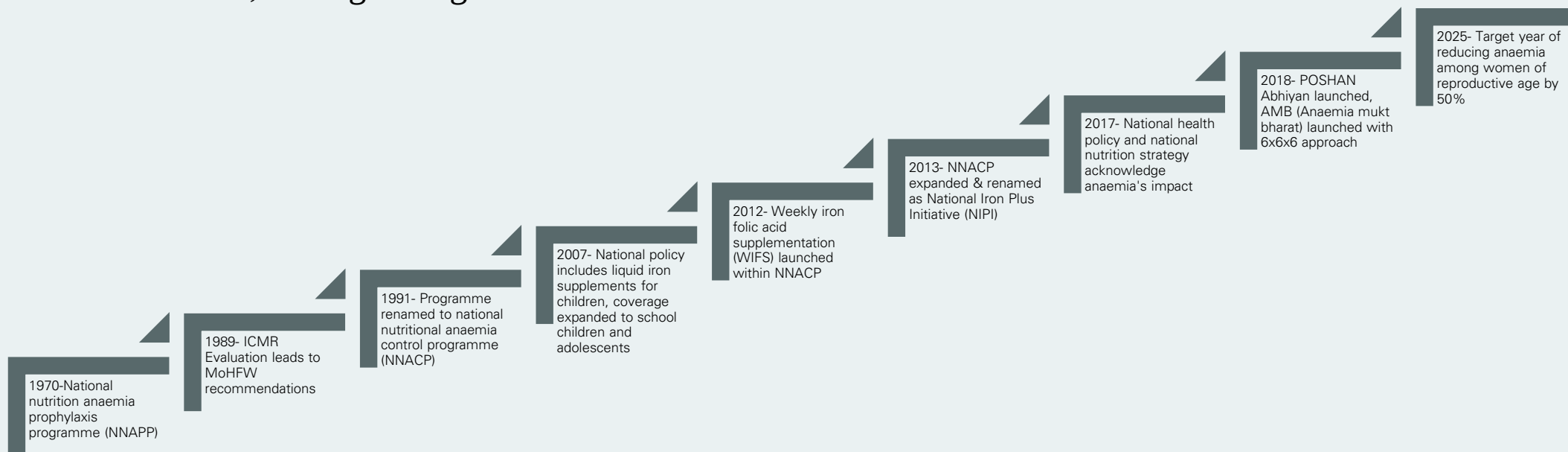


Fig-1 Trends in anaemia prevalence from NFHS-4 to NFHS-5

HISTORICAL BACKGROUND

1. India's efforts to combat anaemia date back to 1970 with the launch of the National Nutritional Anaemia Prophylaxis Programme (NNAPP), which evolved over the decades to include more comprehensive strategies and expanded coverage.
2. Despite these ongoing efforts, anaemia remains a significant public health challenge. In 2018, the government launched the Anaemia Mukht Bharat (AMB) strategy, which employs a 6x6x6 approach targeting various interventions and groups to reduce anaemia prevalence. This strategy builds on past initiatives, emphasizing prophylactic supplementation, deworming, behavior change communication, and food fortification, aiming for significant reductions in anaemia rates.



AIM

This study aims to assess and improve behaviour change communication (BCC) strategies within India addressing anaemia through a comprehensive analysis of gaps in the existing anaemia Programmes, identification of major determinants of anaemia from NFHS-5 data, and evaluating the efficacy of current BCC Interventions

OBJECTIVE

1. To analyze the gaps in current anaemia programs implemented in India, including identifying shortcomings and areas for improvement.
2. To extract key determinants of anaemia from the National Family Health Survey-5 (NFHS-5) data, focusing on demographic, socio-economic, and health-related factors.
3. To assess the effectiveness of current behaviour change communication (BCC) interventions aimed at reducing anaemia prevalence in India, including evaluating their reach, relevance, and impact.
4. To develop tailored recommendations for strengthening BCC strategies targeting specific determinants of anaemia identified through NFHS-5 analysis

REVIEW OF LITERATURE

S.No.	Author	Literature review
1.	Neogi et al	This study reviewed the anaemia control programmes during pregnancy in India; which brought out number of methodological issues in methods of Hb determination methods, Hb cut offs used and many more.
2.	Saxena et al	This paper underscores the escalating prevalence of anaemia among men in India. It highlights that despite global attention predominantly focusing on anaemia among women and children, the condition is also significantly affecting men, with prevalence rates ranging from 20% to 39.9% nationally. This public health concern is particularly pronounced in regions like Ladakh and Jammu & Kashmir, where prevalence rates exceed 40%. Despite the health implications, national surveys and policies often overlook anaemia in men, leading to a lack of targeted interventions. The study calls for prioritizing men's health in anaemia research and policy at state and national levels.
3.	Jaiswal et al. 2023	The Anemia Mukht Bharat (AMB) program, launched in 2018, aims to reduce India's anaemia burden through a comprehensive 6x6x6 strategy. Implementation research has identified key challenges such as low IFA coverage, procurement issues for hemoglobin devices, and strategies for non-nutritional anemia causes.

S.No.	Author	Literature review
4.	Singh et al. 2023	According to the study, the prevalence of anaemia among children aged 6–59 months increased from 59 percent in NFHS-4 to 67 percent in NFHS-5 data. This study tried to depict the key drivers in reversal trends of anaemia among children which included the mothers' level of education, anaemia status of the mother and Socio-Economic factors They conclude that these new challenges might also require the further fine-tuning of the Anaemia Mukht Bharat Programme, noting that proposals should take into consideration some socio-economic and demographic features
5.	Kulkarni et al. 2022	This study brought into light that the highest raised haemoglobin level in adolescent females was obtained from the administration of IFA supplement in combination with vitamin C. The study recommended strengthening NIPI by integrating evidence-based measures such as Vitamin C supplementation, low-dose iron options, intensified health education, and iron-rich food distribution. Ensuring an adequate and timely supply of IFA supplements and delegating health education responsibilities to medical and nursing colleges were also suggested.
6.	Lamstein et al. 2014	The significance of Behaviour Change Communication (BCC) strategies in addressing anaemia in this study. They emphasized BCC's potential to influence dietary behaviours and improve iron intake. These strategies leverage behavioural theories to address factors such as cultural beliefs, food accessibility, and maternal dietary behaviours, proving crucial for vulnerable populations, including pregnant women, infants, and young children

METHODOLOGY

1. Key Research Questions-
 - i. What are the current gaps in the existing anemia control programs in India?
 - ii. How effective are the current Behavior Change Communication (BCC) interventions in addressing anemia?
2. Research Design- The study employs a secondary data analysis research design, focusing on existing literature, government reports, and data from the National Family Health Survey (NFHS-5)
3. Study Population- The study population includes: Children aged 6-59 months, Adolescents, Women of reproductive age (15-49 years), Pregnant and lactating women, Men
4. Research Procedures/Approaches- The study uses both quantitative and qualitative assessments
 - i. Quantitative Assessment:
 - a) Analysis of NFHS-5 data to identify trends and prevalence rates.
 - b) Review of statistical reports and previous survey data to understand the historical trends in anemia prevalence.
 - ii. Qualitative Assessment:
 - a) Review of existing literature and government reports to identify gaps in current programs and effectiveness of BCC interventions.
 - b) Synthesis of findings from various studies to recommend targeted BCC strategies.

RESULTS

I. KEY DETERMINANTS OF ANAEMIA AMONG DIFFERENT TARGET GROUPS

- a) In case of ***pregnant women***, lack of support from husband and family members especially mother-in-law directly impact the decision making for IFA compliance among women.
- b) A study conducted on tribal women suggests that the main driver of Anaemia in India may not be the traditional "usual suspects" like poverty, lack of education, or food insecurity. Micronutrient deficiencies, particularly iron deficiency due to poor absorption from typical Indian diets, might be the main culprit behind the high prevalence of anaemia.
- c) The determinants of anaemia among ***women of reproductive age group*** were examined, revealing several key factors which included socioeconomic indicators such as caste, education level, household wealth, and region of residence.
- d) Individuals with 3-4 children showed 13% higher odds compared to women without children, and breastfeeding women had 17% higher odds than non-breastfeeding counterparts. Higher education was associated with a 13% lower likelihood of anaemia compared to no education. Underweight women had a 20% higher likelihood of anaemia than those with normal BMI. Occasional fish consumption was also linked to 14% higher odds of anaemia.
- e) Among ***adolescent females*** data from both NFHS-4 and NFHS-5 shed light on several socio-demographic factors influencing this prevalence. Multiple risk factors for anaemia were identified, including lower educational levels, living in multiparous households, experiencing economic deprivation, belonging to ST communities, having a low BMI, and the specific year of the survey.

- f) Among ***Rural men*** a greater risk of anaemia were found to be older (49-54 years old), have less education, belong to Scheduled Tribes, be in the lowest income group, and be underweight.
- g) Several chronic health problems can increase the risk of anaemia in adult men. These conditions include kidney disease, liver disease, cancers, ongoing rectal bleeding, and bone marrow disorders. Additionally, advancing age is a contributing factor, with the likelihood of anaemia increasing as men grow older (5). Moreover, lifestyle elements such as alcohol consumption and tobacco usage were found to correlate with an increased susceptibility to anaemia within this demographic
- h) Among ***Adolescent men***, the demand of nutritional intake is high to support rapid muscle and body mass growth. Poor nutrition, especially a lack of iron, folate, vitamin A, and vitamin B12, can stunt growth and development during this critical period, leading to anaemia.
- i) Other threats include infectious diseases like malaria and hookworm, genetic conditions like hemoglobinopathies, and blood loss from violence or injuries.
- j) Socio-economic factors and dietary habits, including reduced consumption of nutritious foods, adherence to food fads, and meal skipping, further compound the risk of anaemia. These diverse factors highlight the multifaceted nature of anaemia and advocate for comprehensive intervention strategies.

II) GAP ANALYSIS OF CURRENT STRATEGIES

1. Knowledge and Awareness Gaps among Healthcare Practitioners
2. Comprehensive Approach to Micronutrient Deficiencies
3. Importance of Dietary Habits in Anaemia Prevention
4. Compliance to IFA supplementation
 - a) Challenges in Achieving Adequate IFA Supplementation Coverage*
 - b) Bottlenecks in the supply chain of IFA supplementation*
5. Methodological Issues in Anaemia Measurement
6. Disparities in Early Antenatal Care Coverage
7. Addressing Anaemia in Men: An Overlooked Concern
8. Enhancing Behaviour Change Communication Strategies

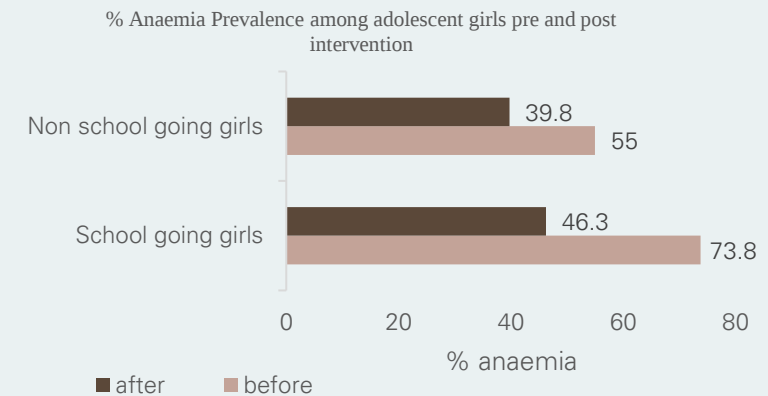
III) Effectiveness of current behaviour change communication (BCC) interventions aimed at reducing anaemia prevalence in India

The systematic review and synthesis of interventions aimed at reducing anaemia and promoting healthy dietary practices across diverse target groups and settings yielded promising results

The results segregated into two sections focused on –

1) Compliance to IFA supplementation through BCC strategies

A.) Contextualized IEC Materials and Counselling



S.No.	Author	Results
1.	Vir et al. 2008	In Uttar Pradesh, India the UMANG intervention involved weekly IFA supplementation coupled with deworming and monthly family life education sessions over 4 years. Contextualized approaches like culturally relevant posters in classrooms and individual compliance cards maintained by girls facilitated high compliance rates of 86% among non-school-going adolescents
2.	Rimal et al. 2021	This study intervened to change the social norms of Women Of Reproductive Age and their Social Networks (Eg Husbands And Mother-in-law) through educational modules and counselling (IFA supplementation, Dietary diversity, Social norms) and Interactive activities and games around prevailing social norms. This Resulted in a 315% increase in IFA consumption.

3.	Adhikari et al. 2009	A study in Nepal investigated the impact of education and pill adherence on hemoglobin levels during prenatal care among Nepalese women, employing a comprehensive educational program, direct counselling with brochure to enhance the knowledge about anaemia and IFA supplementation. This resulted into decrease in prevalence of anaemia in both education group and education with pill count group
4.	Gross et al. 2006	Another study was conducted in Peru to see the effectiveness of different communication methods used like handouts, pamphlets, IPC, etc. The study showed that it led to improved haemoglobin levels from 9.6g/dl to 11.08g/dl. The prevalence of anaemia also decreased from 75% to 30%.
B) Multimedia Campaigns and Interpersonal Communication		
1.	Talegwaskar et al. 2021	In Odisha, India , a multimedia BCC campaign was organized that utilized health communication videos made by local people, tailored for specific audiences (pregnant, non-pregnant women, husbands, mothers-in-law), followed by group discussions, facilitated a remarkable increase in IFA consumption among non-pregnant women from 5.4% to 31.7% over 30 months
2.	Ghanekar et al. 2002	In Vadodara, India pregnant women were counselled using a culturally appropriate flip chart with illustrations depicting stories of anaemic and non-anaemic pregnant women, coupled with involvement of family members (husbands, mothers-in-law) in the counselling process. As a result, over 90% of women started consuming the recommended IFA dose

C) Mobile Messaging and Reminders

1.	Khorshid et al. 2014	An intervention in Ahvaz, Iran sent weekly SMS reminders to pregnant women about regular IFA intake, tips for better absorption, consequences of anaemia, and motivational messages. This approach led to significantly higher mean IFA tablet consumption (80.5 vs 67.2 tablets) and compliance rate (94% vs 66%) in the intervention group compared to the control group.
2.	Arifah et al. 2023	A similar study conducted in Indonesia used WhatsApp personal chat to send daily educational messages to pregnant women in 1 st and 2 nd trimester. This led to increase in the mean IFA consumption and had a significant effect on anaemia prevention knowledge.

2. Enhancing Nutrition Knowledge and Dietary Practices

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| 1. | Senanayake et al. 2010 | In Sri Lanka, interactive small group sessions (4-5 mothers) conducted by trained personnel covered topics like anaemia, importance of IFA, absorption enhancers/inhibitors, and specific dietary instructions (timing of intake, avoiding inhibitors like tea/coffee, etc.). This interpersonal counselling approach led to substantial increases in mean haemoglobin levels (from 11.1 to 11.97 g/dL) and reductions in anaemia rates (from 46.8% to 14%) among pregnant women in the study group compared to the control group receiving routine antenatal care |
| 2. | | Another study conducted in Eithiopia to address the challenge of anaemia among children , Mothers of these children were targeted and were given counselling through oral explanations and figure charts with the target to change their attitude and knowledge towards their child feeding practices. As a result of this study Prevalence of iron deficiency anaemia was seen to be reducing |
| 3. | Oddo et al. 2022 | In Indonesia, a school-based intervention combined weekly 30-minute interactive learning sessions facilitated by teachers, SBCC messaging campaigns, appointment of student ambassadors, and weekly IFA supplementation for adolescent girls over 15 months. This integrated approach enhanced overall nutrition knowledge scores (from 13.9 to 17.2 out of 20), raised IFA compliance from 40.9% to 99.1%, and fostered better dietary habits like increased fruit/vegetable consumption and reduced unhealthy snack intake.(53) |

DISCUSSION

1. This systematic review highlights the multifaceted nature of anaemia and the critical role of Behaviour Change Communication (BCC) strategies in its prevention and control.
2. Key findings underscore the importance of context-specific, culturally sensitive interventions, including multimedia-based IEC materials, interpersonal counselling, and community participation, in enhancing adherence to Iron and Folic Acid (IFA) supplementation and promoting healthy dietary practices.
3. However, significant supply-side challenges, such as forecasting errors, procurement delays, and distribution issues, undermine the effectiveness of these strategies and weaken user confidence in health systems.
4. Additionally, methodological difficulties in accurately measuring anaemia prevalence due to variability in haemoglobin cut-off points and estimation methods further complicate evidence-based decision-making.
5. Addressing broader nutritional deficiencies beyond iron and tailoring interventions to specific demographic groups are essential for sustainable anaemia management. Expanding the audience to include influential family members and leveraging technology for reminders and education can enhance intervention effectiveness.

CONCLUSION

1. In conclusion, combating Anaemia requires integrated approaches that combine behavioural change with robust healthcare delivery systems, accurate prevalence measurement, and comprehensive nutritional strategies.
2. Tailored, context-specific BCC interventions, supported by reliable supply chains and precise data, are crucial for sustainable Anaemia control.
3. Empowering frontline workers and involving influential family members can improve dietary practices and IFA compliance among women and adolescents.
4. Strengthening Anaemia education in schools and engaging communities through interactive campaigns can further enhance awareness and prevention efforts.
5. Future research should address gaps such as nutrition education for adolescent males to ensure a comprehensive approach to Anaemia prevention and control. Addressing these multifaceted challenges is critical for achieving sustainable Anaemia management in diverse global contexts.

