

# Multisectoral Nutrition intervention for Anemia Reduction Initiative (NARI) Tripura, India



## Background

India continues to grapple with a significant public health challenge – Anemia, affecting 57% of women of reproductive age (15–49 years), as per NFHS-5 (2019–21). Despite initiatives like Anemia Mukt Bharat, which promotes iron-folic acid supplementation, deworming, and awareness campaigns, progress has been sluggish, and prevalence has even risen in recent years. The consequences are far-reaching, including reduced physical capacity, adverse pregnancy outcomes, and long-term effects on maternal and child health.

Tripura is among the most affected states, with 67.2% of women of reproductive age anemic.<sup>1</sup> This alarming burden increases maternal morbidity and mortality risks, compromises women's productivity, and perpetuates intergenerational health disadvantages through low birth weight and impaired child growth. To address this, context-specific, multi-sectoral interventions are urgently needed, tailored to local dietary patterns, service delivery gaps, and socio-cultural realities.

## About NARI study

The Multi-sectoral Nutrition Intervention for Anemia Reduction Initiative (NARI) is a three-year implementation research project launched in 2024, structured into four phases (Table 1). Conducted in West Tripura district (Mandai & Hezamara blocks) and North Tripura districts (Kalacherra & Kadamtala blocks) (Figure 1). Among these, Mandai and Kadamtala serve as control blocks, while Hezamara and Kalacherra are intervention blocks. NARI aims to understand contextual factors driving anemia among Women of Reproductive Age (WRA) 18–49 years, across tribal and non-tribal populations.

The project co-designs and implements multi-sectoral interventions focusing on:

Improving anemia and nutrition education



Increasing dietary diversity



Enhancing IFA and deworming consumption and adherence



Improving hemoglobin screening, tracking and follow-up of anemic women

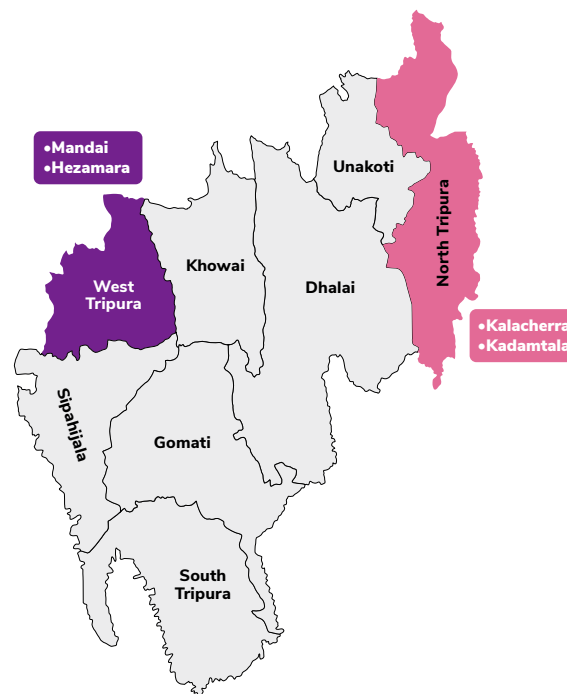


Figure 1: Geographic location of the study sites

Addressing both nutritional and non-nutritional components, NARI seeks to implement strategies to improve anemia outcomes among WRA.

1. International Institute for Population Sciences. National Family Health Survey-5 2019-21. Mumbai: International Institute of Population Sciences; 2021.



## Project brief

Table 1: Phases of the NARI Project

### PHASE: 1

#### Formative Research – *Explore*

Assess prevalence, dietary patterns, knowledge, attitudes and practices of women, and training needs of frontline health workers.

### PHASE: 2

#### Intervention – *Design*

Co-develop a multi-sectoral intervention integrated into health and nutrition services, focusing on nutrition, IFA supplementation and deworming, and Hb screening.

### PHASE: 3

#### Intervention – *Act*

Implement the intervention at community and health system levels by promoting anemia and nutrition education and strengthening service delivery.

### PHASE: 4

#### Evaluation and Dissemination – *Reflect*

Assess impact and scalability and disseminate findings.

## Phase 1: Formative phase background and insight

Data collection for the formative phase was conducted between October 2024 to January 2025, comprising the following components:

- **Household** survey assessing Knowledge, Attitude, and Practices (KAP) related to anemia prevention and management among 1,981 women.
- **Biomarker analysis:** Haemoglobin were measured in 1,712 women who consented to provide blood samples. A subsample of 80 women was additionally tested for hemoglobinopathies and serum iron profiles.
- **Food Environment Profile (FEP) and 24-hour dietary recall** with 259 women to examine food access, dietary patterns, and intake.
- **Training Needs Assessment (TNA)** with 63 frontline workers to evaluate their anemia prevention and management knowledge
- **Focus Group Discussions (FGD)** with women (fgd<sub>n</sub>=6), mother-in-law (fgd<sub>n</sub>=6) and men (fgd<sub>n</sub>=3) to explore contextual influences on anemia.

## KEY FINDINGS

### Prevalence

**73.7%** of women were anemic

### Genetic Disorders

In the subsample of 80 women selected for hemoglobinopathy testing, 75% had HbE and 66% had the beta-thalassemia trait.

### Poor Awareness

**36.5%** had heard of anemia/ low blood level

### Nutritional Gaps

Diet predominantly rice-based; average iron intake was ~50% below recommended levels

### Systemic Gaps

- Limited understanding about anemia among frontline workers
- VHND platforms under-optimized, non-pregnant women often missed out.
- Frontline workers lacked visual aids and effective counseling tools

## Phase 2 and 3: Intervention

Based on formative phase findings, the intervention was co-developed through a collaborative, multi-sectoral process involving key stakeholders from Health (Community Health Officers (CHOs), Auxiliary Nurse Midwives (ANMs), Multipurpose Workers (MPWs), Accredited Social Health Activists (ASHAs)), Social Welfare and Social Education (Anganwadi workers (AWWs)), Panchayati Raj Institution (local representatives), and Tripura Rural Livelihood Mission (Swasthya Sakhis). This coordinated effort leveraged the defined roles of each stakeholder.



## Project brief

### Intervention Components

The intervention has two components:

1. Community-based anemia and nutrition education, and
2. Strengthening anemia service delivery. It is implemented at two levels – the community and the health system.

At community-level, strategies focused on improving awareness, dietary practices, and engagement related to anemia prevention using existing community platforms:

Village Health and Nutrition Day (VHND), Saas Bahu Sammelan, Self-Help Groups (SHG) and community meetings supported by mobilization from PRI bodies and frontline workers (ASHAs, AWW and Swasthya Sakhis).

Health system-level strategies emphasized strengthening anemia-related service delivery, including screening, counselling, supplementation, referral, and follow-up, through capacity building and systems strengthening (refer Figure 2).

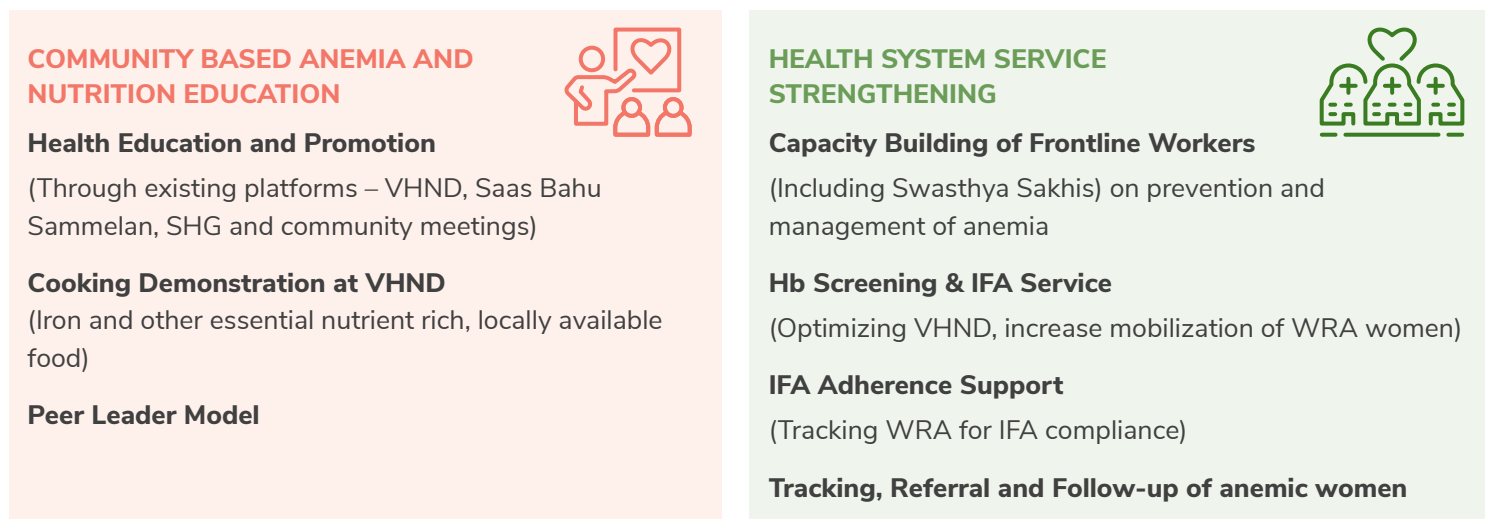


Figure 2: NARI Intervention Strategies

### What do we expect from this intervention?

Overall, we intend to raise mean Hb level and reduce prevalence of anemia by improving knowledge and awareness on anemia and nutrition among WRA (18-49 years) and their family members, strengthen the existing platforms to enhance anemia service delivery, and generate evidence to inform policy decisions (see Figure 3).

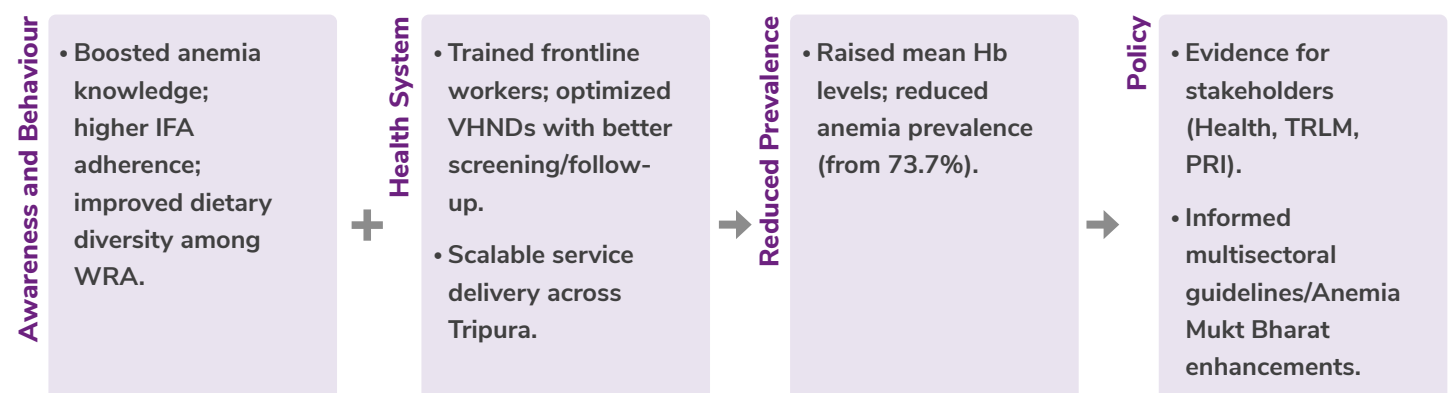


Figure 3: Expected Outcome of NARI Intervention