D4N 2025

Delivering for Nutrition in South Asia

Towards Impact at Scale

School-Based Strategies for Anaemia Prevention

A Qualitative Gap Analysis in a South Indian State

Sandhya NVS Dittakavi
JSS College of Pharmacy
PhD, Part time (Ext)
(Currently working as - AGM, Research (ARMMAN))

Introduction

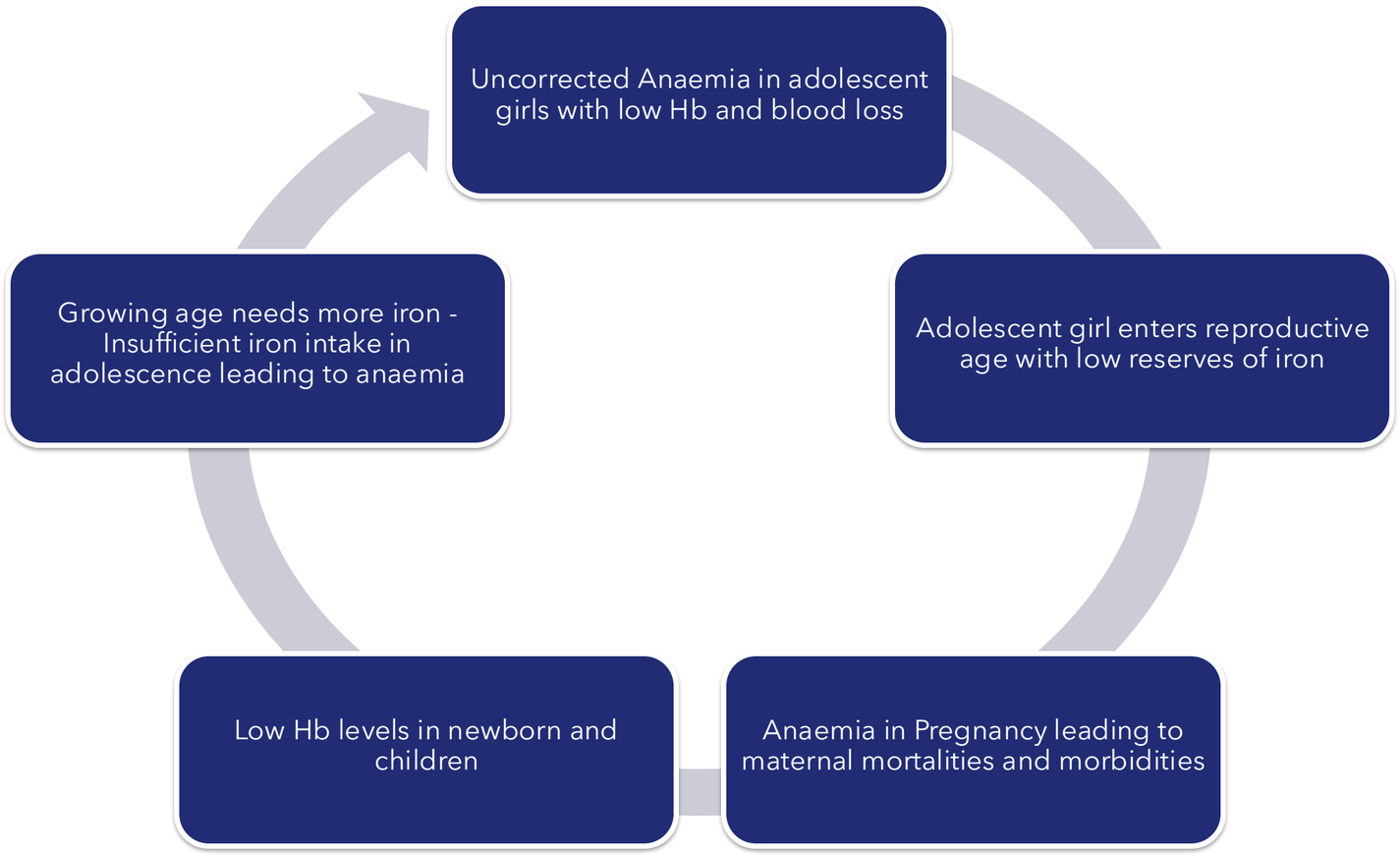
Many programs have been introduced in India to alleviate anaemia such as, the National Nutritional Anemia Prophylaxis Program (NNAPP), Weekly administration of iron and folic acid (WIFS), Rajiv Gandhi Scheme for Empowerment of Adolescent Girls (SABLA) etc.

Despite having had an anaemia control programs for over 50 years, India has the highest burden of the disease. The lack of anaemia reduction in the country is surprising, considering India's rapid economic growth during the last 20 years.

According to NFHS-5, West Bengal and Gujarat had the highest prevalence of anaemia among adolescent girls. Almost 97% of the adolescent women in Ladakh in the 15 to 19 age group were anaemic, an increase from 81.6% during NFHS-4.

According to NFHS-5, the prevalence of anaemia among adolescent girls shows wide variation across South Indian states, with several districts in the region reporting levels ranging from the mid-50s to nearly 80%.

Rationale/Objective



To identify gaps in awareness, implementation, and monitoring of anaemia control programmes in Social Welfare Residential Schools of a South Indian state and propose standardised, scalable strategies for early identification, management, and prevention of anaemia among adolescent girls to improve health and academic outcomes.

Methodology - Qualitative Situational Analysis

- **Study Design:** Qualitative situational analysis across **7 districts** purposively selected by performance indicators of **Health Dashboard** at state level and **NFHS-5 anaemia indicators** (good, moderate, poor).
- **Participants:**
  - **8 IDIs** with state-level officers and doctors.
  - **16 FGDs** with **54 stakeholders** – regional health officers, principals, teachers, health supervisors, assistant caretakers.
- **Focus Areas:** Awareness, screening practices, diet quality, programme implementation, and operational challenges.
- **Data Collection:** Conducted via Zoom; sessions recorded, informed consent taken, transcribed, translated, and coded from June to October 2022.
- **Participant Criteria**
  - Stakeholders working with **girls' schools (10–18 yrs)** were included, while those from **boys' schools were excluded**, except state-level officers, command centre staff, and regional health officers who were eligible for both groups.
- The study received **ethical approval from the Institutional Ethics Committee, JSS College of Pharmacy, Mysuru (Approved: 26-03-2022)**.
- **Analysis Frameworks:**
  - **Braun & Clarke Thematic Analysis (2006)** – used to derive themes related to programme performance, awareness, and system gaps and presented as **SWOT Analysis** .
  - **COREQ Checklist** – ensured rigour in qualitative reporting.

SWOT Analysis - Strengths - Initiatives

- Health Leaders
- Lifesaving Group Meets
- Healthy Tuesday
- Special Diet
- Buddy Pair
- Yoga and Exercise daily
- Tech based Health support APP

"The teachers play a major role as they watch over only the students of her class (40), so he/she has the knowledge of the student's health status and will inform the HS if required. Every day we give 5- 10 mins to the teacher during which the teacher talks to the students." - State level Officer#2

"Class-wise, I allot duties to certain students to check on the students and they report it to me. This is called Buddy pairs - To avoid any problems we made pairs in 40 students that no matter wherever they go they should go in pairs. The other buddy in pair reports everything to House madam (class teacher) or HS. This includes taking tablets, any health issues, or any other complaints etc" - Health Supervisor#3

SWOT Analysis - Weaknesses - Challenges

- Delay in identification due to lack of regular screenings and skills in identification
- Quality/quantity of the food
- Lack of uniform methods of identification, management and treatment
- Students do not eat properly
- Girls do not inform about heavy bleeding

"Many girls don't eat food, they are from low poverty line, so they don't have proper food to eat, there is hormonal imbalance which causes gynaec issues, over bleeding leading to anaemia and vice versa. Severe loss of blood will require blood transfusion for which parents doesn't give their consent, and some can manage without blood transfusion." - Doctor#1

"I generally do not prefer tablets for girls. Tablets may have more side effects. So I make sure they eat properly and keep testing them. I don't even prefer Vitamin C, especially for girls." - Health Supervisor#5

SWOT Analysis - Opportunities - Probable Solutions

- Regular screening for all the students (RBSK, PHC, Digital Hemoglobino meter)
- Fortification of food and proper sanitation
- Protocol Design to have a uniform identification, treatment and management across the schools.
- Awareness camps for the students to make them understand the side effects and future implications of Anaemia.

"Major problem is we get those students tested who have severe symptoms. If we test all the students, we will see that there are many students who have moderate to severe anaemia. So, regular screenings for all the students will have a huge impact on early identification" - RHSO#8

"Providing students with special fortified diet kits overall at once, can solve the problem of low-quality food. It will also have uniformity in nutrition leading to better improvement of nutrient diet. This could also be a cost-efficient model" - State level officer #1

SWOT Analysis - Threats - Possible barriers

- Lack of uniformity in the treatment and food provided to the anaemic students can have a greater influence on the outcomes in reducing anaemia.
- Lack of very strict and continuous follow up will lead to long term anaemia ending up as maternal Anaemia. This has some fatal side effects during maternity and hence adolescence is the correct age to resolve the issue.
- Awareness on anaemia should be provided to all the stakeholders on regular basis, including the beneficiaries and their parents, so they do not have any misconceptions about blood transfusion during emergency.
- Teachers and Principals should play a major role in identification and regular follow up of the students. They need to understand that anaemia has severe consequences on the concentration of the students in the class.

"Parents and even some staff hesitate when they hear the word 'blood transfusion.' There are fears and myths that delay treatment. In emergencies this becomes dangerous. We need continuous awareness so decisions are quick and based on facts, not fear."
– State-Level Officer #3

"Each school identifies and manages anaemia differently. Some rely only on visible symptoms, some wait for Hb tests, and some miss the signs completely. Without a single, standardised method, many girls continue to remain undiagnosed until the condition becomes severe."
– Regional Health Officer #4

From Gap Identification to Action – Capacity Building & Tools Developed

A detailed **Knowledge-Attitude-Practice (KAP) study** with state, regional, and school-level stakeholders helped identify critical gaps in anaemia awareness, screening, management, and follow-up practices across residential schools.

Through **16 FGDs and 8 IDIs**, recurrent challenges emerged: non-uniform identification, poor diet diversity, misconceptions about treatment, weak follow-up, and lack of standardised protocols. These insights guided the creation of **simple, visual, protocol-based IEC tools** for frontline staff.

Based on the qualitative findings, the team developed **standardised anaemia management posters** (identification, classification, treatment steps, follow-up, and counselling) specifically tailored for school health supervisors, nurses, and teachers. An example of this poster is shown here.

These posters were validated with stakeholders and **adopted by the Tribal Welfare Department** after recognising their clarity and usefulness for school settings.

The posters were incorporated into **training sessions for staff nurses, health supervisors, and teachers**, where each step—from screening to referral—was explained with real-case examples.

Pre- and post-training tests demonstrated measurable knowledge gain among stakeholders, confirming improved understanding of anaemia categories, IFA dosing, special diet needs, danger signs, and referral pathways.

The combination of the KAP study, co-created tools, and structured trainings helped move from *identifying gaps* to *implementing solutions*, strengthening school-based anaemia management systems across both Social Welfare and Tribal Welfare institutions.

Management of Anaemia
Instructions for Staff Nurses

Signs and Symptoms:
- Paleness (eyelids, tongue, skin, nails),
- brittle spoon-shaped nails,
- tongue soreness, and lip cracks.
- Fatigue,
- dizziness, rapid heartbeat, shortness of breath,
- headaches,
- and leg cramps.
- Difficulty concentrating,
- lethargy,
- frequent infections,
- and disinterest in activities.

Identification:
- All students should have their hemoglobin (Hb) levels tested and ready before the start of the academic year.
- Regular Hb testing should be conducted for all students every three months, utilizing resources like RBSK, nearby PHCs, or NGO sponsorships.
- If any student exhibits signs and symptoms of anaemia, immediate Hb testing should be arranged to confirm their condition.

Mild Anaemia (11 - 11.9 g/dL)
- Dietary Modifications need to be suggested.
- Include Vitamin C foods

Moderate Anaemia (8 - 10.9 g/dL)
- Special Diet,
- Two IFA tablets (each with 60 mg elemental iron and 500 mcg folic acid) &
- Vitamin C Supplements, daily for 3 months as recommended by the doctor.

Severe Anaemia (5 - 7.9 g/dL)
- Should be **referred urgently** to PHC/Nearest Hospital (Suggested Iron-sucrose injections).
- Iron-Folic Acid Tablets
- Special Diet,
- Vitamin C Supplements, and
- Deworming Tablets as recommended by the doctor.

Very Severe Anaemia (> 5 g/dL)
- Should be **referred urgently** to PHC/Nearest Hospital follow doctors advice regarding Iron sucrose or Blood Transfusion.
- Two IFA tablets (each with 60 mg elemental iron and 500 mcg folic acid) &
- Vitamin C Supplements, daily for 3 months.
- Special Diet.

The student should be screened and tested again after 3 months

- Improvement in Hb levels to normal Hb
  - Supplementation and counselling done
  - Provide prophylactic IFA Dose and Counselling
- No improvement in Hb after 3 months
  - Student should be **referred** to PHC/Nearest Hospital

The student should be screened and tested again after 1 month

- Follow up and regular checkups done for the student
- Follow up and regular checkups done for the student

Counselling:
- Educate on risks of untreated anaemia (e.g., poor academic performance, compromised physical growth, reduced immunity, menstrual health issues, and long-term health complications).
- Collaborate with teachers and principals to identify anaemic students.
- Incorporate diverse food groups like pulses, cereals, and oils, along with superfoods such as amla, curry leaf powder, and moringa powder, to enhance the nutritional quality of meals and address anaemia effectively.
- Highlight the importance of sanitation and educate students about the role of hookworms in inducing anaemia.
- Highlight vitamin C's role in iron absorption and proper iron tablet use.
- Encourage breathing exercises to boost oxygen intake in blood.

Systems & Partnerships Required for Global Scale-Up

"If we really want to control anaemia, schools cannot work in isolation. Education, Health, Nutrition, and even technology systems must move together with one clear protocol. Today every region does things differently, and that is why results vary so much. Unless all departments build a unified approach—common screening tools, standard diets, trained staff, and strong referral linkages—the problem will keep repeating, no matter how many programmes exist."
— Senior State-Level Officer

The insights echoed by the senior state-level officer highlight a universal reality: **similar unified, multi-sector approaches are required not only within the country but across the globe** to strategically reduce anaemia during adolescence. Establishing common screening tools, standard diets, well-trained school health teams, and strong referral linkages is essential to prepare adolescent girls for healthier maternal years. Strengthening adolescent nutrition through coordinated education, health, and nutrition systems is therefore critical for breaking the intergenerational cycle of anaemia worldwide.

My participation was made possible through the generous support of the

Delivering for Nutrition 2025 Conference funders

This work was carried out as part of my PhD under the guidance of Dr. R. S. Savitha, Associate Professor, Department of Pharmacy Practice, JSS College of Pharmacy, Mysore**.**
I sincerely thank her for her constant support and encouragement.