Progress and Challenges in Implementation of Anemia Mukt Bharath among Rural and Tribal Adolescents in Tamil Nadu

Principal Investigator

Dr. G. Nancy Angeline MD DTM&H

Assistant Professor

Department of Community Health

St. John's Medical College, Bangalore

Co-Principal Investigator

Dr. Prashanth T PhD

Professor

Division of Nutrition

St. John's Research Institute

EXECUTIVE SUMMARY

Adolescence (10-19 years) is a phase of life characterised by accelerated physical, psychological growth and behavioural changed. This age group is at high risk of iron deficiency anemia due to increase in requirements. Our study was conducted among 415 school going adolescents in 5 Government Schools in the Districts of Krishnagiri and Dharmapuri in Tamil Nadu. We assessed the progresses and challenges of the implementation of Anemia Mukt Bharath in the study area and assessed the hemoglobin levels of the children through venous blood sampling. Of the 414 children sampled, 55.4% were belonging to early adolescence age group and 44% were in mid adolescence age group. Males constituted 46% of the study population and females constituted 54% of the study population. As per the weightage of the items in SLI and the scoring, 18.1% of the children belonged to lower SLI, 47.5% in middle SLI and 34.5% in higher SLI.

Our study shows that the prevalence of anemia among school going adolescents is 19%. Prevalence of mild anemia is 11%, moderate 7% and severe 1%. Anemia is significantly higher among older adolescents than the early adolescents AOR 2.1 (1.3-3.3). All children consumed lesser calories and proteins per day as compared to recommended guidelines, as per our single 24 hours dietary recall. Prevalence of severe thinness was 1%, thinness 8% and overweight 6% among the study population. Taste was mentioned as a negative factor about WIFS by 98% of the students who had not consumed a maximum of 4 WIFS tablets in the last one month. The WIFS tablets we observed were of 100 mg elemental iron strength. Health system strengths observed were coordination between RBSK, PHC and school education department in periodic screening for anemia in their biannual visits to school, follow-up, line listing of severe anemia cases, management and referral to First Referral Unit. Use of iron fortified salt and rice in mid day meals, robust WIFS consumption, biannual deworming and daily egg intake is functional in all schools and should be continued. Intersectoral coordination between school education, health, women and child development is essential to address child sex abuse, child marriage and sex determination issues and address holistic development.

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INTRODUCTION

Adolescence (10-19 years) is a phase of life characterised by accelerated physical, psychological growth and behavioural changed. This age group is at high risk of iron deficiency anemia due to increase in requirements for iron, poor dietary intake, infections, worm infestations, social norms of early marriage and pregnancy. The peak in iron requirement during adolescence is explained by rapid growth, increase in lean body mass, blood volume, red cell mass, increased iron needs for myoglobin in muscles and hemoglobin in blood. Indian diet is characterised by low dietary intake and poor availability of iron. Also there is a lowered consumption of nutrients among girls as compared to boys due to gender norms. Anemia adversely affects the attentiveness, memory, school performance, attendance and retention of school going children. It affects physical growth, onset of menarche and immunity

Prevalence of Anemia among adolescents:

As per NFHS-5, which assessed hemoglobin using capillary blood using Hemo Cueanalyser, in the state of Tamil Nadu, 52.9% of adolescent girls aged 15-19 are anemic and 24.6% of adolescent boys aged 15-19 are anemic[1]. As per NFHS-5, in the District of Krishnagiri, prevalence of anemia among 15-19 year old girls is 39.4% and prevalence of underweight among 15-49 year old women is 11.7% and child marriage prevalence is 20.3%. NFHS-5 Data in Dharmapuri reveals that prevalence of anemia among 15-19 year old girls is 31.9%, underweight among 15-49 year old women is 12.9% and child marriage prevalence is 20.3%. As per the Comprehensive National Nutrition Survey 2018 in Tamil Nadu in which the gold standard method of hemoglobin concentration in venous whole blood sample was analysed by cyanmethaemoglobin method using automated haematology counter was used, it was observed that, 16.4% of adolescents aged 10-19 suffer from anemia. Among the male adolescents, 7.5% and female adolescents, 26.4% have anemia. Moderate to severe underweight was observed among 22.6% of 10-19 year

[1] Anemia Mukth Bharath. https://pib.gov.in/PressReleasePage.aspx?PRID=1795421

old adolescents and severe thinness was observed among 7.2% of them. Overweight was observed among 12% and obesity was observed among 3.1% [2]. A study done in 2017 among adolescent girls in Jawadhi hills observed 76% were anemic[3]. Sickle cell anemia is prevalent in tribal communities of Gudalur and Pandalur Taluks of Nilgiris District[4].

Tribal Health in Tamil Nadu:

Tribal population constitute 1% of the population of Tamil Nadu. In the study area, Sittilingi in Dharmapuri and Bettamuhilalam in Krishnagiri are tribal areas with native tribal population living. Some of the tribals resettle in plains and they enroll the children in schools in plains. Land alienation, indebtedness, forest and housing issues, lack of access to education and employment, migration, high drop out from schools, nutritional deficiencies are problems faced by tribal population[5]. The National Health Mission has implemented screening of hemoglobinopathies (Sickle Cell Anemia and Thalassemia) among children in Dharmapuri and Krishnagiri Districts apart from other districts[6]. National Programme for prevention and control of Fluorosis (NPPCF) was initiated in Dharmapuri District for surveillance and management of fluorosis cases[7].

Implementation of Anemia Mukth Bharath for adolescents in Tamil Nadu:

To understand the implementation of this scheme, a Theory of Change framework is developed and indicators are developed for the same. Complementing services from other schemes are also added.

Impact:
1. Reduction of anemia among adolescent girls from 59% to 36%
2. Reduction of anemia among adolescent boys from 31% to 11%
Outcome:

[2] https://healthnutritionindia.in/static_files/factsheets/CNNS-v6-factsheet-Tamil-Nadu.pdf
[3] P.saravanakumar, Muthusundari.A, Saradha Suresh, Chitra. A, prevalence of anemia among the tribal adolescent girls in javvadu hills in thiruvannamalai, tamil nadu, international journal of scientific research : volume-6 | issue-6 | june-2017
[4] https://tnhsp.org/tnhsp/tribal-healthcare.php
[5] https://tntribalwelfare.tn.gov.in/Know-Us.php
[6] https://www.nhm.tn.gov.in/en/nhm-programs/tribal-health
[7] https://www.nhm.tn.gov.in/en/nhm-programsnon-communicable-diseases/national-programme-for-prevention-and-control-of-fluorosis

1. Consumption of IFA tablets by adolescent weekly in the past 6 months
2. Consumption of 1 Albendazole tablet by adolescent in the past 6 month
3. Adequate knowledge of iron rich, protein rich and vitamin c rich foods among adolescents, parents and teachers
4. Haemoglobin is tested in the last 1 year
5. Mid day meals food rice and salt is fortified with iron
6. Screening and referral of hemoglobinopathies and fluorosis
Strategies:
1. Prophylactic Iron and Folic Acid supplementation • For School Children (Both boys and girls): 60 mg Iron and 500 mcg FA Blue tablet under WIFS • For out of school girls: 60 mg Iron and 500 mcg FA
2. Biannual Deworming: Celebration of National Deworming days: 10th February and 10th August
3. Intensified year-round Behavior Change Communication Campaign (Solid Body, Smart Mind) Iron Rich, Protein rich, Vitamin C rich food consumption, dietary diversity, quantity, frequency of food to be addressed: in Schools, Anganwadi Centres, Village Health Sanitation and Nutrition Days (VHSND), Self Help Groups, National Nutrition week celebration September 1-7, use of Interactive Voice Response System, Adolescent Health Day celebration at Health and Wellness Centres
4. Testing of Anemia using digital methods and point of care treatment • Use of digital Hemoglobinometers in annual Hb estimation of children through RBSK • Line listing of all anemia cases with school register and maintained by ANM/LHV/MPHW

5. Mandatory Provision of Iron Folic Acid fortified foods in public health programmes: Use of fortified salt (Iron +Iodine), wheat flour (Iron, Folic Acid and B12), oil, rice (Iron, Folic Acid and B12), in Mid day Meals, Anganwadi meals, take home rations
6. Addressing non-nutritional causes or anemia in endemic pockets, with special focus on malaria, haemoglobinopathies and fluorosis: Screening for thalassemia and Sickle cell anemia, fluorosis

Important Message in Solid Body Smart Mind campaign:

Mid-day meals for adolescents:

The mid-day meals for adolescents will contain 750 calories and 20 grams of protein in upper primary level schools and it comes from 150 gms of rice, 30 gms of pulses and 75 gms vegetables. Provision of green leafy vegetables in meals ensures iron is provided[8]. The menu of mid-day meals in the state of Tamil Nadu is as follows[9]

[8] https://pmposhan.education.gov.in/Files/School%20Health%20Programme/Note_Anemia_for_website.pdf
[9] https://middaymeal.tn.gov.in/Pages/varietymeals

Days	Images	First and Third Week	Images	Second and Fourth Week
Monday		Vegetable Biriyani with Pepper Egg		Sambar Sadham (Bisibelabath) with Onion Tomato Masala Egg.
Tuesday		Black Bengal Gram Pulav with Tomato Masala Egg.		Mixed Meal Maker with Vegetable Rice and Pepper Egg
Wednesday		Tomato Rice with Pepper Egg		Tamarind Rice with Tomato Masala Egg
Thursday		Rice, Sambar and Boiled Egg		Lemon Rice, Sundal and Tomato Egg
Friday		Curry Leaf Rice / Keerai Sadham with Masala Egg and Chilly Fried Potato.		Rice, Sambar and Boiled Egg with Fried Potato.

Double fortified salt and Vitamin A &D fortified oil from Tamil Nadu Civil Supplies Corporation is used in cooking mid day meals.

Explain briefly the importance of this topic and how an empirical analysis (contextually) will help in strengthening the delivery system. Review published or unpublished research reports/articles on this topic and how the proposed research could add to the existing literature.

Poshan Abhiyan:

One of the objectives of Poshan Abhiyan in the state is to reduce anemia among adoelscents (15-19 years) to 3% per annum. This scheme was initially implemented in Villupuram, Nilgiris and now being rolled out to other districts. Through incremental learning approach, knowledge of anemia is expected to increase.

Existing literature on evaluation of Anemia Mukth Bharat:

In 2017–20 across Indian states, the Iron and Folic Acid (IFA) supplementation coverage has increased for all beneficiary groups especially school going adolescent girls (boys) from 23% to 40% (21% to 42%); out-of-school adolescent girls from 6% to 23%. Coverage is relatively low for target groups being served through a multi-departmental convergence mechanism (health and other departments such as education department for schools or women and child development department for Anganwadi centres) than compared to those served by health department alone. No major gender disparities are noted in the coverage of IFA supplementation among school-going girls and boys[10].

A study done in Gujarat to review the progress towards Anemia Mukt Bharat, recommended that effective convergence of several governmental departments like health, education, water supply and sanitation is needed. In addition, the other focus actions of the AMB mission require acceleration, as do the social determinants of anemia. More concerted efforts are required to promote dietary diversity, availability of iron-rich fruits and vegetables at affordable cost throughout the year, so as to utilize food based approach along with an intensified year-round behavior change communication campaign to bring about a sustainable change[11]

Another study done to identify the bottlenecks of the IFA supply chain in key areas of supply chain i.e., forecasting, procurement, warehousing and inventory management, transportation, distribution, logistic information system and suggests a plan of action aimed at ensuring uninterrupted supplies to the end beneficiaries. The average lead time across states was 35 weeks with top three performing states being Goa, Sikkim, and Telangana. The key issues identified in the assessment were–a lack of standardized forecasting process, absence of inventory management techniques, no fixed distribution schedule, inadequate availability of transport vehicles and an absence of an integrated MIS[12]

Considering the strong health system and advancing health indicators in the State, the prevalence of anemia among adolescents in the State is significantly high. This needs to

[10] Joe W, Rinju, Patel N, Alambusha R, Kulkarni B, Yadav K, et al. Coverage of iron and folic acid supplementation in India: progress under the Anemia Mukt Bharat strategy 2017–20. Health Policy and Planning. 2022 May 1;37(5):597–606

[11] Nambiar V, Ansari S. REVIEW OF PROGRESS TOWARDS ANEMIA MUKT BHARAT Reasons for staggered reduction in Anemia -A review. 2020 Nov 1;8:3190.

[12] Ahmad K, Singh J, Singh RA, Saxena A, Varghese M, Ghosh S, et al. Public health supply chain for iron and folic acid supplementation in India: Status, bottlenecks and an agenda for corrective action under Anemia Mukt Bharat strategy. PLoS One. 2023;18(2):e0279827

be studied in the detail with focus on the strengths and weakness of the scheme of Anemia Mukth scheme which has been implemented since 2019.

STUDY OBJECTIVES

1. To assess the prevalence of anemia among rural and tribal adolescents in Krishnagiri and Dharmapuri Districts in the state of Tamil Nadu
2. To assess the progress and challenges of Anemia Mukth Bharath (AMB) programme in reduction of anemia among tribal adolescents in the state of Tamil Nadu, Iron supplementation through WIFS and provision of iron in Mid-day meals provided to adolescents
3. To assess the Knowledge Attitude and Practice with regards to anemia among adolescents and their parents and teachers

APPROACH AND METHODOLOGY

Inclusion criteria:

Objective no.1: To assess the prevalence of anemia among rural and tribal adolescents in Krishnagiri and Dharmapuri Districts in the the state of Tamil Nadu

Both Adolescent boys and girls aged 10-19

Objective no.2: To assess the strengths and challenges in implementation of strategies of AMB at the community level among rural and tribal adolescents at the school, community and health care settings.

School teachers, Health care workers- PHC Medical Officers, Community Health officers at the Ayushman Bharath Health and Wellness Centres, ANMs, ASHA workers, RBSK Medical Officers,

Objective no.3: To assess the Knowledge Attitude and Practice with regards to anemia among adolescents and their parents and teachers

Adolescents, their parents and teachers

SAMPLE SIZE and the BASIS for the same:

Objective no.1: To assess the prevalence of anemia among rural and tribal adolescents in Krishnagiri and Dharmapuri Districts in the State of Tamil Nadu

P = 52.9% (Prevalence of anemia among adolescent girls aged 15-19 in NFHS-5)

Q= 47.1

D= 5

N = 4* 52.9*47.1/ 25

N= 398.65

414 adolescents aged 10-19 screened for anemia

Objective no.2: To assess the strengths and challenges in implementation of strategies of AMB at the community level among rural and tribal adolescents at the school, community and health care settings.

In 2 PHCs/tribal HWCs/ RBSK Medical Officers both the Health Care workers and the health care settings were assessed for the strengths and challenges in implementing AMB

5 schools (both Day rural and 1 tribal residential school in the study area) were assessed qualitatively for supply and storage of WIFS, implementation of Menstrual Hygiene scheme (supply and storage of sanitary napkins) , Presence of Sanitation facilities in school, Assessment of Morning Assemblies and any youth festivals for inclusion of anemia in education

Objective no.4: To assess the Knowledge Attitude and Practice with regards to anemia among adolescents and their parents and teachers

Using convenient sampling, 100 parents of adolescents and 25 teachers were interviewed on KAP of anemia

Detailed Methodology:

1. Institutional Ethics Committee approval
2. Registration at Clinical Trial Registry of India
3. Permission from Directorate of Public Health and Preventive Medicine, Government of Tamil Nadu
4. Permission from Directorate of School Education, Government of Tamil Nadu
5. Permission from Deputy Director of Health Services, Krishnagiri and Dharmapuri Districts
6. Permission from Chief Education Officers, Krishnagiri and Dharmapuri Districts
7. Information to Block PHC Medical Officers of Theerthamalai and Kelamangalam
8. Information to Head Masters, Child Development Project Officer, RBSK team, Tribal Medical Team

Study Settings:

Harur Block, Dharmapuri Health Unit District:

Harur Revenue Block has the Theerthamalai upgraded Block PHC with in patient facility. The PHCs in this area are Keeripatti, Koothadipatti, Kottapatti, Naripalli and Theerthamalai. The total population covered is around 50,000.

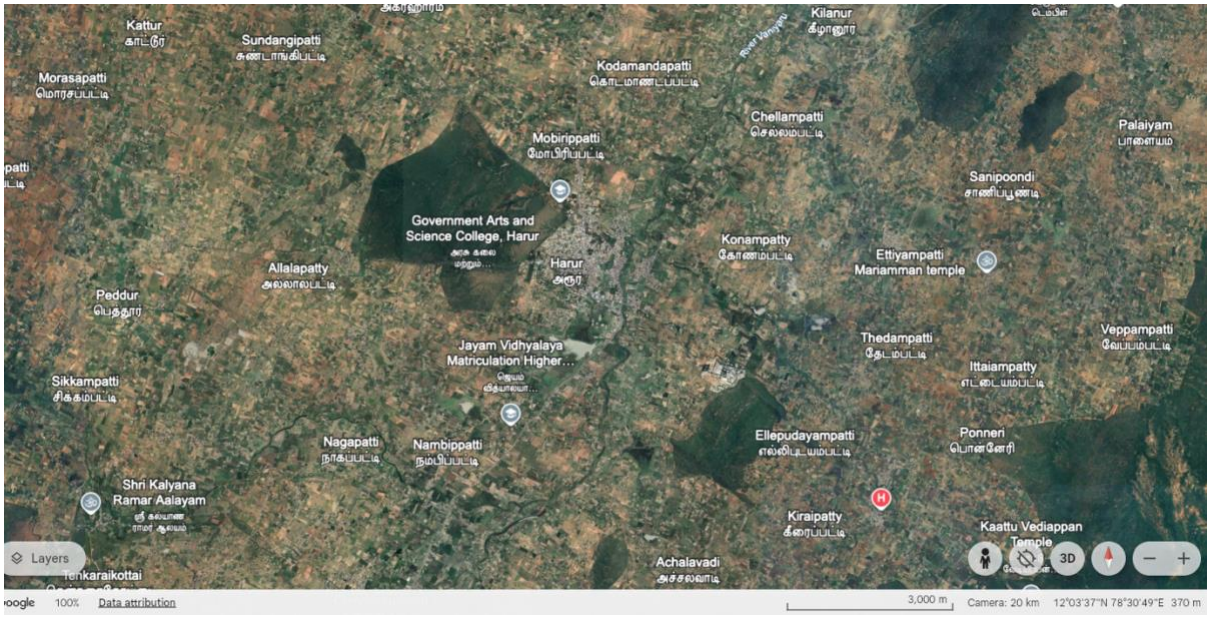


Figure 1: Harur Block- Dharmapuri HUD

Kelamangalam, Krishnagiri District:

In the Kelamangalam Upgraded Block PHC area, a total of 11,000 Irular population are residing. This block has a tribal region called Betamuhilalam.

Figure 2: Kelamangalam, Denkanikottai, Royakottai area

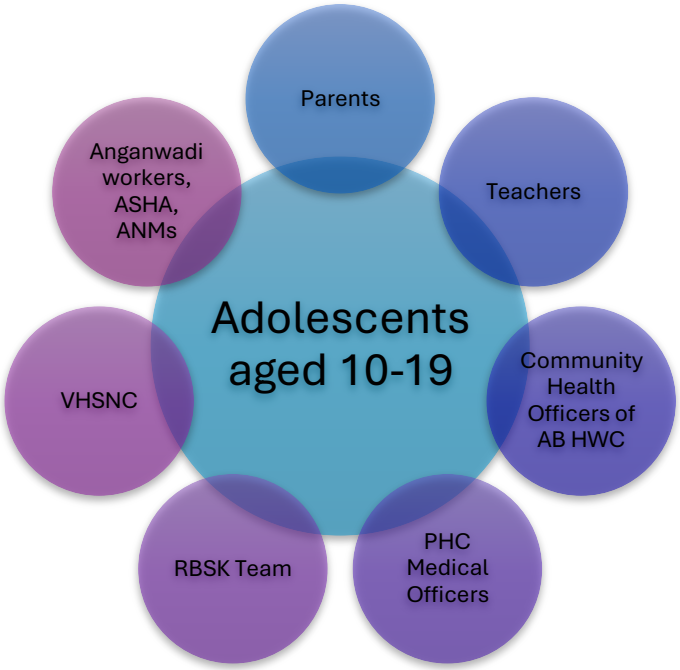


Figure 3:Stakeholder mapping of the study population

Summary of interventions in this study:

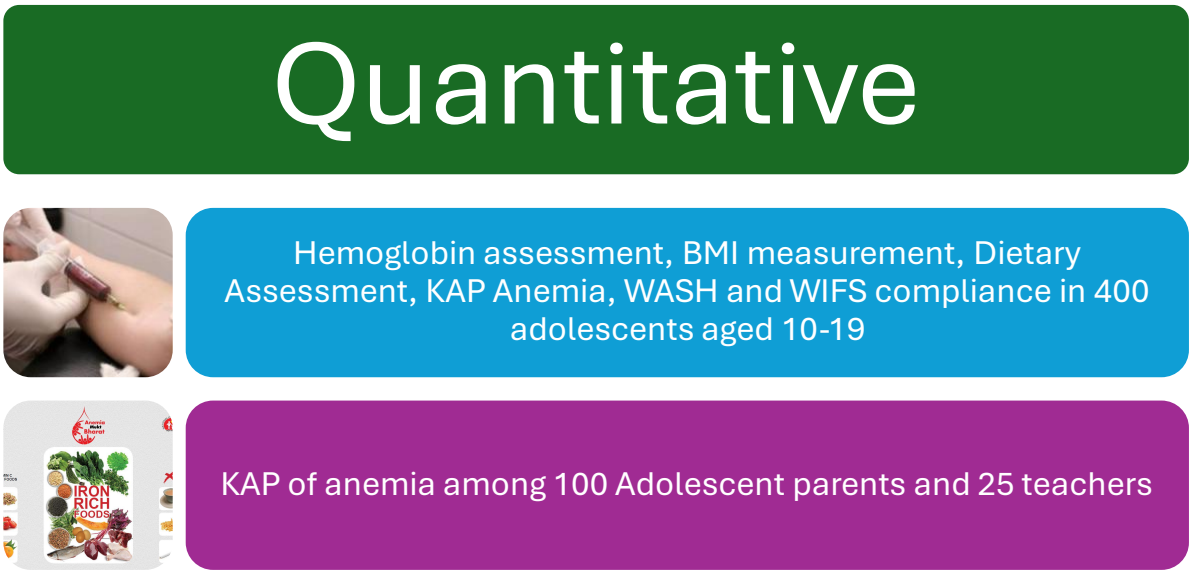


Figure 4: Quantitative assessments in the study

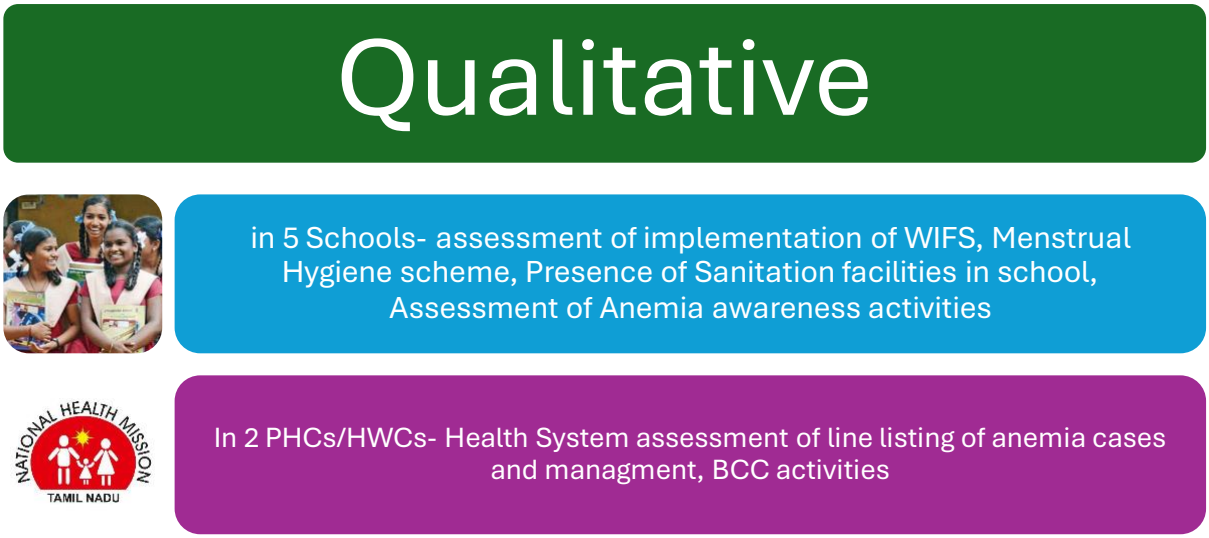


Figure 5: Qualitative assessments in the study

Quantitative research methods:

Objective no.1: To assess the prevalence of anemia among rural and tribal adolescents in Krishnagiri and Dharmapuri Districts in the State of Tamil Nadu

For the assessment of socio-economic status of children, Standard of Living Index was used with the consumable list and weightage of consumables as per the recommended criteria was used to categorise the SLI among children. Among parents BG Prasad socioeconomic status classification using per capita monthly income was used.

414 adolescents were assessed for hemoglobin estimation

A total of 6 ml of venous blood was collected aseptically by venipuncture (4ml in EDTA ethylenediaminetetraacetic acid tubes and 2ml Serum: Red top tubes) in the morning for haemoglobin (Hb). The tubes were covered with aluminium foil to protect against light exposure and stored on ice packs for immediate transport. Whole blood was aliquoted and analysed within 12 hours of blood sampling. Serum samples were aliquoted and frozen at –20°C and were safely transported in sealed dry ice boxes to St. John's Research Institute Laboratory to be stored at –80°C until further analysis. Haemoglobin concentrations were measured in whole blood by using a Coulter (Beckman counter DxH

520) with 3-level quality-control material (BioRad). After Hemoglobin assessment, samples will be stored for 5 years till funds obtainment for other tests.

These 414 adolescents were also assessed for Knowledge Attitude and Practice regarding anemia and BMI Assessment consumption pattern of Weekly Iron and Folic Acid in the past 6 months, WASH practices at home. Anemia Classification was done as per the following criteria[13].

Table 1: Hemoglobin cut offs for diagnosis of anemia in adolescents

Age Group	Category of Anemia		
	Mild	**Moderate**	**Severe**
Children 5–11 years of age	11–11.4	8–10.9	<8
Children 12–14 years of age	11–11.9	8–10.9	<8
Non-pregnant women (≥15 years)	11–11.9	8–10.9	<8
Men (15 years of age and above)	11–12.9	8–10.9	<8

For all children diagnosed with anemia in the study, the following treatment protocol under the AMB was provided through RBSK/PHC

1. Moderate Anemia

2 IFA tablets (each with 60 mg elemental iron and 500 mcg folic acid) once daily for 3 months orally after meals

Repeat Hb after 3 months and if still low, refer to District Hospital/First Referral Unit

1. Severe anemia

Refer to District Hospital/First Referral Unit/District Early Intervention Centre for Further Management

[13] https://nhm.gov.in/images/pdf/programmes/wifs/guidelines/technical_handbook_on_anaemia.pdf

Protocols followed during blood collection:

For the pupose of blood collection, the labels were provided by SJRI, Bangalore and were barcoded. The coding includes State code, Area code, Village/ward code and Household code. There were two labels for each child – one for the child and the other for affixing in the blood collection form. This was affixed by SJRI lab technician. The supervisor also checked that it is recorded on the blood collection form/log sheet to avoid any errors.
All non-fasting samples were collected in the morning and kept immediately in a portable fridge. The portable fridge was provided by SJRI, Bangalore. The portable fridge had to be connected to the vehicle taken to the field. The portable fridge was maintained at 4 to 8^0 C only. The temperature was set well before sample collection early in the morning. It was set about 1 hour before collection and the temperature was maintained till it reaches the main laboratory. The blood samples were collected using butterfly needle (22 gauge) by directly connecting it to the vacutainer. All the disposal were done in the provided container. The samples were transported within 4-6 hours of blood collection from the study sites- Krishnagiri, Dharmapuri to the pathological laboratory at Bangalore for the hemogram estimation. The sample collection was coordinated with the receipt of samples at laboratory such that no samples are missed for analysis. The laboratory completed the hemogram on the same day and the plasma was separated and stored at -20°C until shipment to SJRI. The lab technicians recorded the following in the blood collection form and put the blood sample collection label on the forms. The blood collection and receipt log sheets were provided in the blood collection standard operating procedure manual shared. The hard copy of the forms were sent to Bangalore at the end of survey. All the needles and the swabs used were disposed in the bio hazard bag and the plastic bottle provided and disposed in a proper manner at end of day at SJRI. All blood collections was done using disposable gloves.

Additional tests that will be done in stored samples in the future, after securing funds from other agencies:

Serum Ferritin, Soluble Transferrin Receptor (sTfR), C-Reactive Protein (CRP) will be analysed with a Roche Cobas Integra 400 Plus. Serum ferritin will be analysed using

Roche Cobas e 411 analyzer. Body iron stores will be calculated from the ratio of sTfR:SF. These tests and analysis will be done after obtainment of funds in the future.

Dietary recall among adolescents:

One 24-hour dietary recalls was recorded from the 400 adolescents by the field staff. During each recall, all food and drink consumed over the previous 24-hour period were recorded chronologically in an open-ended questionnaire by trained field staff. Standard measures were placed before the respondent to quantify the portion size of each food item when the questionnaire was administered. Adolescents were encouraged to give detailed descriptions of all solid and liquid foods consumed, such as whether fat or oil was used in an item and whether sugar was added to beverages. Foods consumed outside the home were reported and quantities were estimated by the study participants. Energy and protein intakes were calculated.

1 cup/bowl – 150 g

1 glass – 120 ml

1 tbsp – 15 g
1 tsp – 5 g

Anthropometry assessment:

Anthropometry measurements:

Stadiometer was used to measure height of the children and a OMRON digital weighing scale to measure weight to the nearest 100 g. For each type of anthropometry, two measurements were taken independently and recorded.

Protocols taken for the measurement of weight:

Setting Up the Scale

• Removing the packaging and placing the scale on a firm, level surface

Switching the Weight Display

The weighing scale has inbuilt battery and as soon as the person will place his/he feet on the scale it will start.

• The kg display lights up.

• For the purpose of this study, all weight will be recorded in kg.

Automatic Switch-Off/Stand-By Mode

If no further weighing operations are performed, the scale switches off automatically after 3 minutes time.

Calibration

Weighing scale was calibrated once a week with standard weights. We ensured that the child stood with minimal clothing. Spare batteries were taken on field. Children were not allowed to wear any footwear, dupatta was removed, hands were free of any objects like mobile phone, pen, book etc. Tare the scale to "0" before taking the measurement. Child was made to stand in the center of the platform, weight distributed evenly on both feet. Child was not allowed to look down. Weight is recorded to the precision of the weighing scale (i.e. 0.1kg).

Protocols taken for the measurement of Height:

Height was measured on a SECA 213 portable stadiometer kept on a plane even surface. Child was made to stand barefoot at a right angle to the vertical board of stadiometer and head in the Frankfurt plane; arms hanging freely with palms facing thighs. The heels of the feet were brought together with the inner borders of the feet at an angle of about 60 degrees. The head, scapula and the buttocks were made to be in contact with the measuring wall, or upright of the stadiometer. The head was held in the Frankfort plane (with the tragus of the ear and the lateral angle of the eye in a horizontal line). Height was recorded to the nearest 0.1 cm after the subject inhales fully and maintains the erect position without shifting their weight on their feet.

BMI Calculation:

Body Mass Index formula of weight in Kilograms/(Height in Meters)^2 was used to calculate BMI. Indian Academy of Pediatrics (IAP) 2015 Growth charts which are recommended

simplified WHO-IAP BMI charts for assessment of nutritional status was used for classification of childrens' BMI into severe thinness, thinness, normal, overweight and obesity as per the following WHO classification

Overweight: >+1SD (equivalent to BMI 25 kg/m2 at 19 years)
Obesity: >+2SD (equivalent to BMI 30 kg/m2 at 19 years)
Thinness: <-2SD
Severe thinness: <-3SD

The BMI data obtained from the study population was entered in the IAP Growth Chart Application, supported by Zuventus Health Care available at Google Play Store free of cost at https://play.google.com/store/apps/details?id=com.mindspace.iapgrowthchart&hl=en_IN was used for obtainment of z scores in the study population.

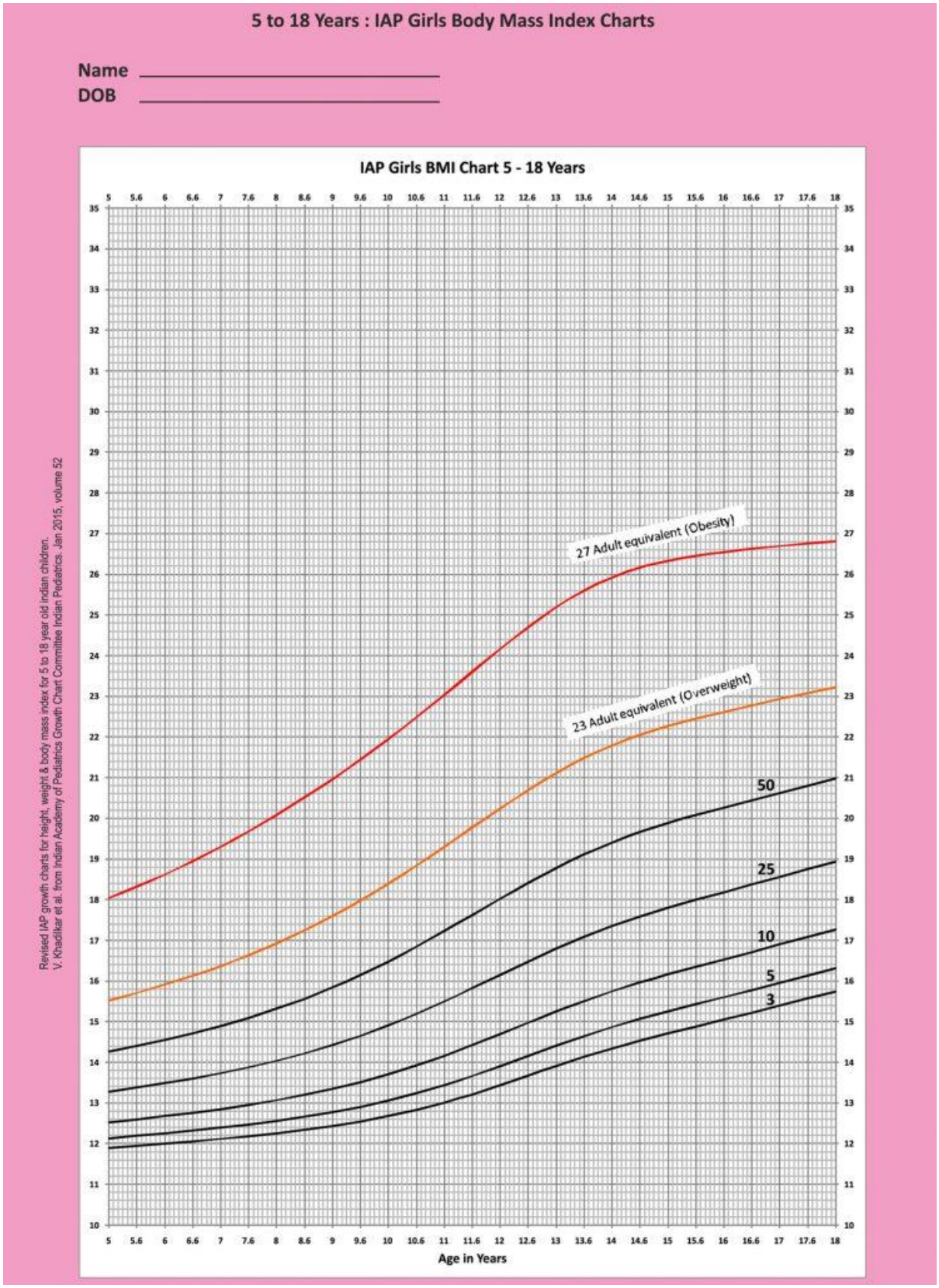


Figure 6: IAP Girls BMI Growth Chart

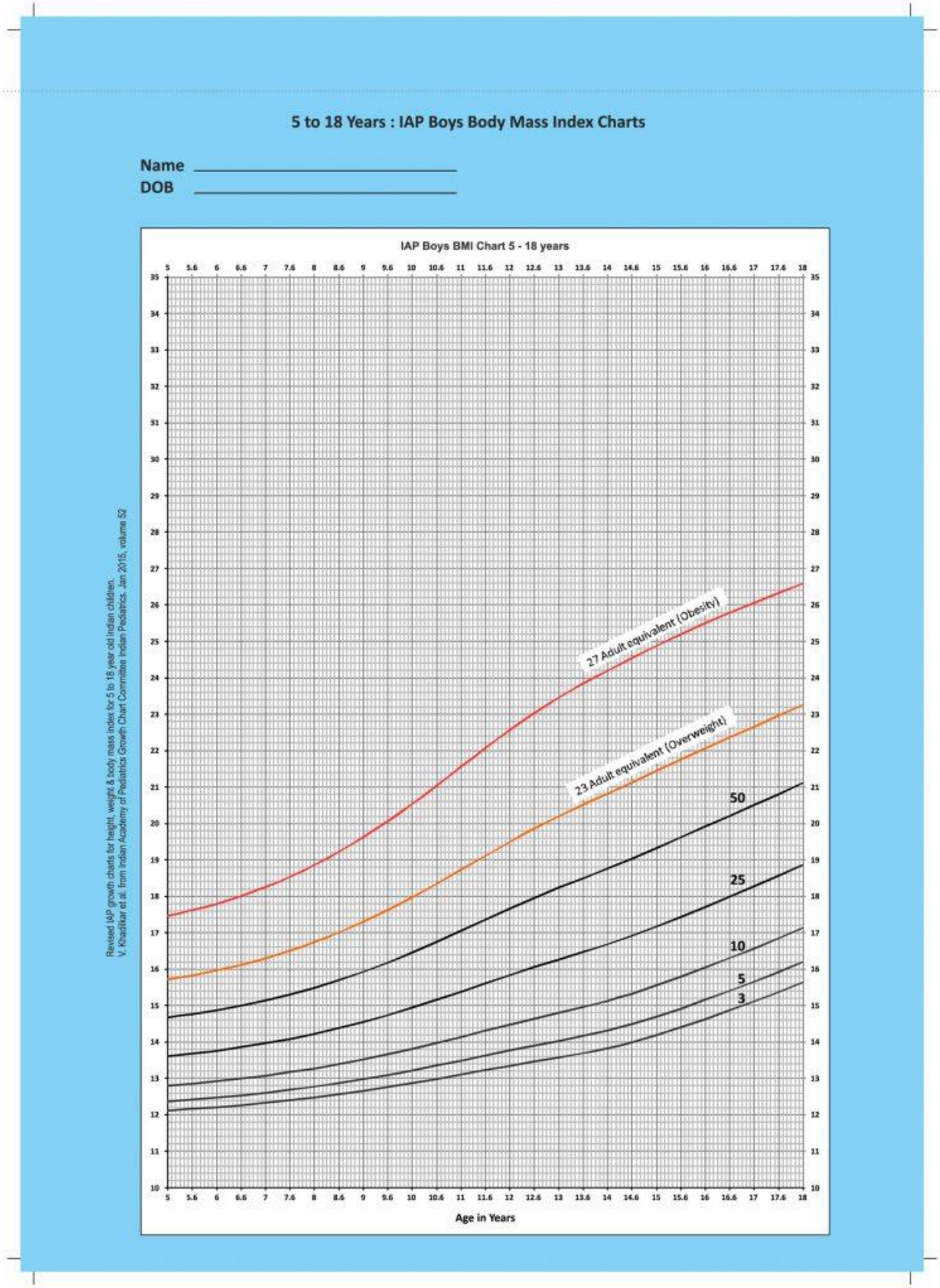


Figure 7: IAP Boys BMI Growth Chart

Objective no.4: To assess the Knowledge Attitude and Practice with regards to anemia among adolescents and their parents and teachers

Using convenient sampling, 100 parents of adolescents and 25 teachers were interviewed on KAP of anemia

Objective no.3: To assess the strengths and challenges in implementation of strategies of AMB at the community level among rural and tribal adolescents at the school, community and health care settings.

Observation and qualitative School level Assessment:

For objective no. 3, the only qualitative method that was used was observation using the developed checklist for each of the mentioned activities. The study team visited schools, PHCs, Anganwadis, Villages and conduct the observation related to anemia mukt Bharath. All the 5 schools (both Day and 1 tribal Government residential school in the study area) were assessed qualitatively for supply and storage of WIFS, implementation of Menstrual Hygiene scheme of Reproductive Maternal Neonatal Child Health +Adolescent Health Programme (RMNCH+A) (supply and storage of sanitary napkins), Presence of Sanitation facilities in school, Assessment of Morning Assemblies and any youth festivals

Observation and qualitative assessment PHC and AB HWC level interventions:

Block PHCs were assessed for the following

- Qualitative Assessment of Solid body Smart Mind BCC implementation through Poshan Abhiyan- Anganwadi centres, AB HWCs, PHCs

- Assessment of one Village Health Sanitation and Nutrition Committee Meeting for inclusion of anemia in the meeting discussion
- Assessment of one Village Health Sanitation and Nutrition Days for inclusion of anemia in the awareness session
- National Nutrition Week celebration activities in the past 1 year (September 1-7) for inclusion of anemia in the themes
- Observance of atleast one Adolescent Health and Wellness Days with anemia as focus at the AB-HWCs/Schools
- Challenges in Rashtriya Bal Swasthya Karyakram assessment of hemoglobin measurement, hemoglobinopathy identification and referral and management of anemia
- Implementation of National Programme for prevention and control of fluorosis-identification and referral of fluorosis cases in schools

RESULTS

This study was conducted only among the Government school children. Government aided and private schools were not included in the study. In Krishnagiri, a total of 189 children were screened in 3 schools and in Dharmapuri a total of 226 children were screened in 2 schools.

Table 2: School wise distribution of children sampled

Name of the school	Date	Total number of children screened		Total
		Boys	Girls	
KRISHNAGIRI				
Kelamangalam Model Higher Secondary School	10/24	14 (33.3%)	28 (66.7%)	42
Koppakarai Government High School	02/25	52 (58.4%)	37 (41.6%)	89

Lingegoudenahalli Government High School	03/25	33 (56.9%)	25 (43.1%)	58
DHARMAPURI				
Keeraipatty Government High School	01/25	47 (42%)	65 (58%)	112
M. Thathampatty Government High School	01/25	44 (38.6%)	70 (61.4%)	114
Total		**190**	**225**	**415**

Baseline characteristics

The age of the children was calculated from their date of birth and most of the children belonged to early adolescence age group of 10-13. The late adolescents were difficult to cover in the study, since most of the school going adolescents are within the age of 17. Due to 10th and 12th Standard students' preparation for public exam, the student representation from these classes were less (Table 2). Scheduled caste students formed 24.8% of students and tribal students formed 11.1% of the students. Most of the children (52.5%) belonged to nuclear families. 4.6% of the mothers do not have formal education and 48.4% of the mothers are not gainfully employed.

Table 3: Baseline characteristics of children

Baseline details	Male	Female	Total
Age			
10-13 Early Adolescence	100 (52.9%)	130 (57.5%)	230
14-17 Middle	89 (46.6%)	94 (51.4%)	183

18 and above Late	1 (0.5%)	1 (0.5%)	2
Class Distribution			
6th	8	17	25
7th	30	48	78
8th	60	51	111
9th	38	48	86
10th	52	50	102
11th	1	4	5
12th	1	7	8
Gender			
Male	190 (46%)		
Female	225 (54%)		
Caste			
Scheduled caste	103 (24.8%)		
Scheduled tribe	46 (11.1%)		
OBC	262 (63.1%)		
Others	4 (1%)		

Religion	
Hindu	409 (98.6%)
Muslim	5 (1.2%)
Christianity	1 (0.2%)
Type of Family	
Nuclear	218 (52.5%)
Joint Family	178 (42.9%)
Extended family	19 (4.6%)
Total Family Members	Mean 5.2 (1.5)
Total Number of siblings	Mean 1.6 (0.6)
Education of the mother	
No schooling	19 (4.6%)
Primary and middle school	106 (15.5%)
High and Higher secondary school	198 (47.7%)
College education	92 (22.1%)
Occupation of the mother	
Not gainfully employed	227 (48.4%)

Farming	77 (18.6%)
Unskilled and semi skilled work	84 (20.2%)
Skilled work	17(4.09%)
Professional	10(2.4%)
Education of the father	
No schooling	27 (6.5%)
Primary and middle school	144 (34.8%)
High and Higher secondary school	168 (40.6%)
College education	75 (18.1%)
Occupation of the father	
Not employed	44 (10.6%)
Farming	72 (17.3%)
Unskilled and semi skilled work	88 (21.2%)
Skilled work	92 (22.2%)
Own business and professional	119 (28.7%)

Standard of Living Index among families with adolescents

Most of the households had all the basic consumables required for the daily living. Entertainment and communication consumables such as Mobile phone, colour tv was present in most households. As per the weightage of the items in SLI and the scoring, 18.1% of the children belonged to lower SLI, 47.5% in middle SLI and 34.5% in higher SLI.

Table 4: Standard of Living of adolescents

Presence of consumables	**N (%)**
Mattress	400 (96.4%)
Pressure cooker	383 (92.3%)
Chair	245 (59%)
Bed	341 (82.2%)
Table	214 (51.6%)
Colour TV	272 (65.5%)
Smart phone	339 (81.7%)
Internet	17 (4.1%)
Computer	17 (4.1%)
Refrigerator	76 (18.3%)
Air conditioner	59 (14.2%)
Washing machine	76 (18.3%)
Watch or clock	263 (63.4%)
Bicycle	262 (63.1%)
Bike	355 (85.5%)

Menstruation details of children

Of the 225 girls sampled, 143 (64%) of them had attained menarche. The details of menstruation are mentioned below

Table 5: Menstruation details of children

Menstruation details	Mean	SD
Age at menarche	11.94	1.09
Days of menstruation	7.8	8.98
Total pads used per day	3.3	0.8

Calorie and protein consumption

In the 24 hours dietary recall, it was observed that children were consuming 3 meals and 1-2 snacks per day. The availability of junk food near the schools that we sampled were very less due to the interior nature of the schools and proximity to hilly zones. None of the sampled schools had morning breakfast scheme since they were not primary schools. Most of the children consumed idly, dosa, rice, ragi balls as staple food. Few children reported carbonated beverages and junk food consumption on a regular basis. The calorie and protein consumed were compared with the ICMR NIN Nutritive requirements for Indians guidelines 2020[14]. It was observed that there was statistically significant difference between the recommended calories and protein guidelines and the amount consumed by children.

Table 6: Calorie and Protein consumption among children

	Mean calorie intake (SD)	Expected Calorie intake	Mean difference	T test and p value
Boys 10-12	2016 (495)	2230	214	-3.2 (0.002)
Boys 13-15	1970 (990)	2860	890	-10.1 (<0.001)
Boys 16-18	1880 (928)	3300	1420	-5.1 (<0.001)

[14] ICMR NIN Expert Committee, Dietary guidelines 2024.

Girls 10-12	1744 (626)	2060	316	-4.4 (<0.001)
Girls 13-15	1881 (521)	2410	529	-11.3 (<0.001)
Girls 16-18	1690 (550)	2490	800	-7.1 (<0.001)
Age category	**Mean protein intake (SD)**	**Expected protein intake**	**Mean Difference**	**T test and p value**
Boys 10-12	44 (15)	76	32	-15 (<0.001)
Boys 13-15	50 (28)	95	45	-18.1 (<0.001)
Boys 16-18	51 (28)	107	56	-6.9 (<0.001)
Girls 10-12	38 (14)	70	32	-19.6 (<0.001)
Girls 13-15	43 (12)	81	38	-35.5 (<0.001)
Girls 16-18	43 (12)	85	42	-16 (<0.001)

Nutritional status of the children

As per the IAP WHO criteria, no obese children were observed in this study, 6 children (1%) were in severe thinness category and 31 (8%) were in thinness category. Most of the children (85%) were in the normal nutritional status category.

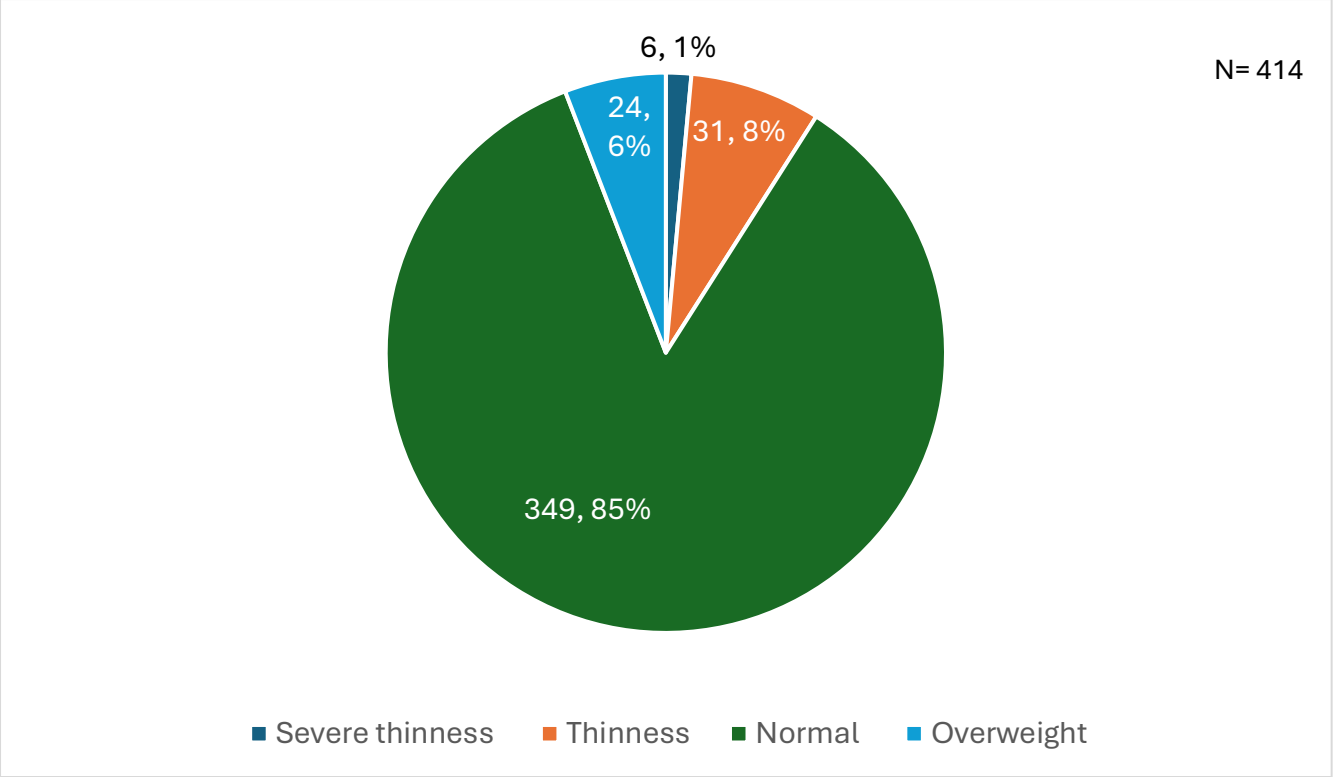
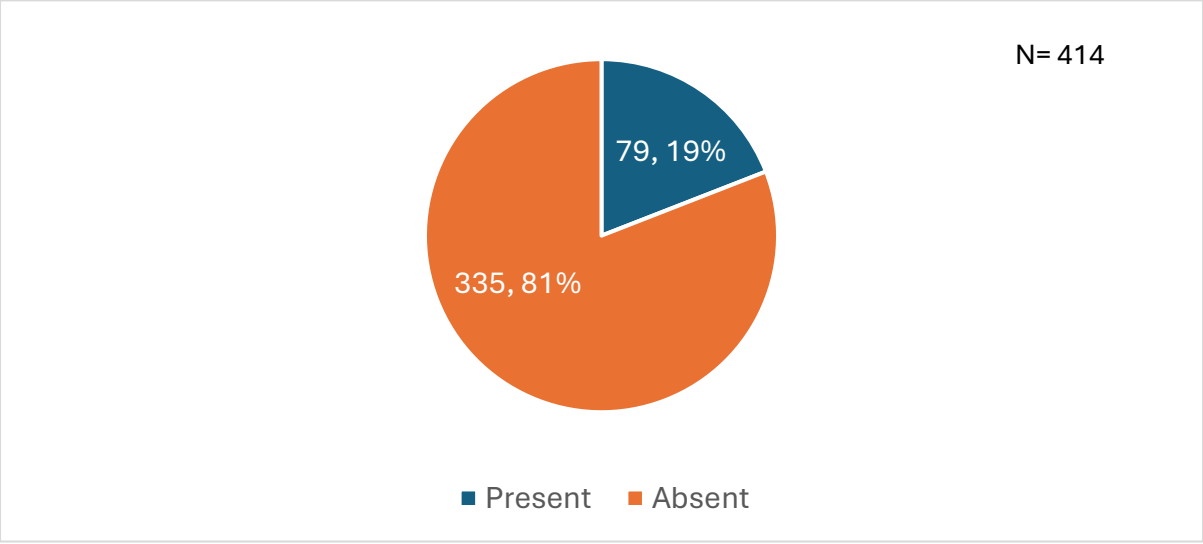


Figure 8: Body Mass Index of the study population

Anemia status of the children



In our study we observed that 19% of the children had anemia. In the Krishnagiri District, 18 children (9.5%) and Dharmapuri District 61 (27%) had anemia.

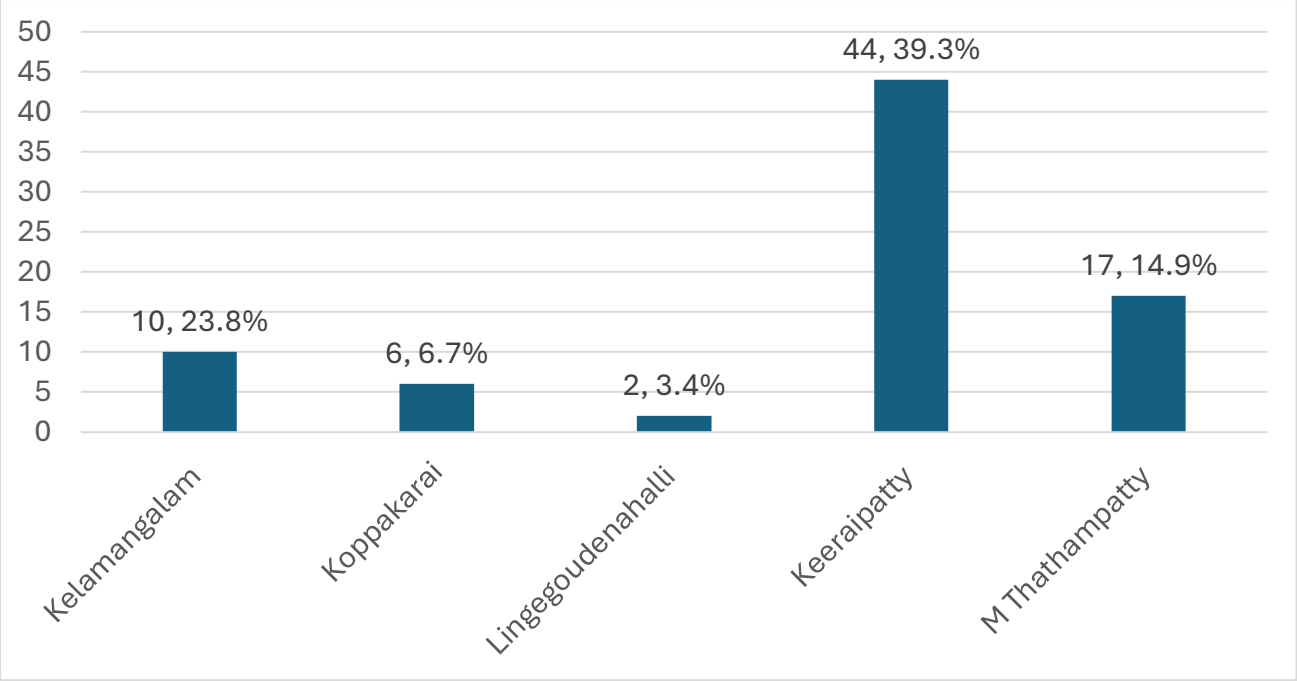


Figure 9: School wise distribution of anemia

Higher prevalence of anemia was observed in Dharmapuri Schools. Among the girls prevalence of anemia was 22.6% and boys was 14.7%. Among the girls who had attained menarche (143 girls), prevalence of anemia was 26.6% (38 girls) and those girls who did not attain menarche prevalence was 15.8% (13 children). Anemia among early adolescence stage was 11.7% (27 children) and mid adolescence was 28.4% (52 children).

Table 7: Age group wise prevalence of anemia

Age Group	Category of Anemia		
	Mild	Moderate	Severe
Children 5–11 years of age	0	0	0
Children 12–14 years of age	26	22	0
Non-pregnant women (≥15 years)	6	9	3
Men (15 years of age and above)	13	0	0

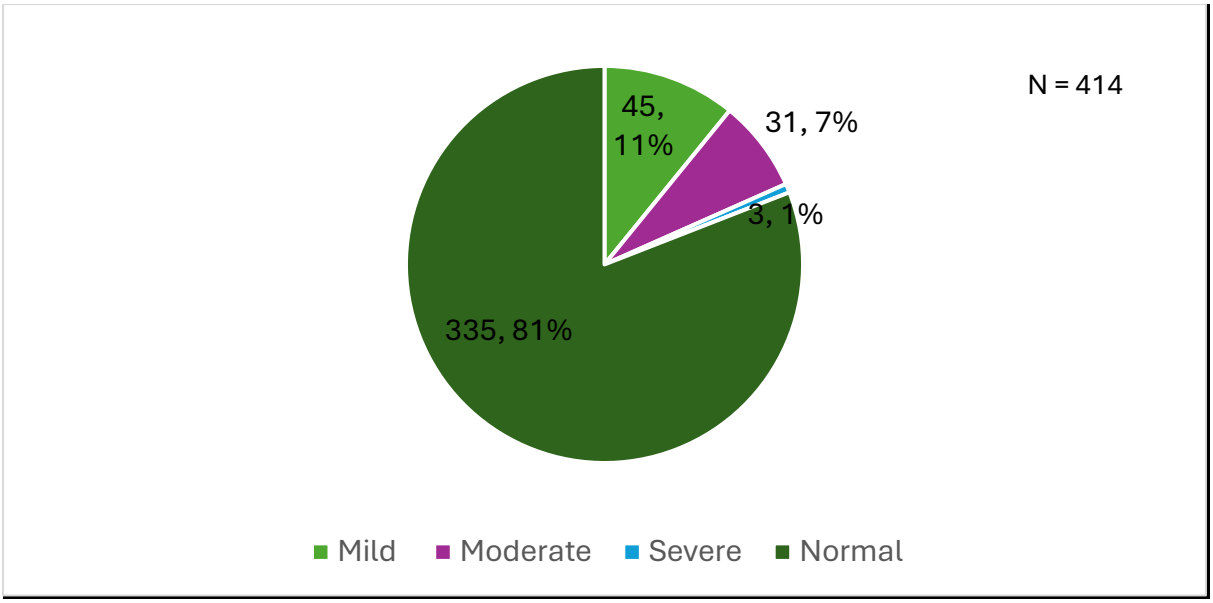


Figure 10: Severity of anemia

Factors associated with anemia

Among the factors studied, BMI, calories and protein were not associated with hemoglobin levels. Age was observed to be a significant factor associated with anemia. As the child enters the different stages of adolescence growing needs, makes the child prone for anemia.

Socio-demographic factors	**Anemia**		**Adjusted odds ratio**
Age	**Absent**	**Present**	
Early adolescence	119 (91.5%)	11 (8.5%)	2.1 (1.3-3.3)
Mid adolescence	182 (75.8%)	58 (24.2%)	
Late adolescence	26 (72.2%)	10 (27.8%)	
Gender			
Male	161 (85.2%)	28 (14.8%)	1.6 (0.9-2.8)
Female	174 (77.3%)	51 (22.7%)	
Standard of living			
Low	61 (82.4%)	13 (17.6%)	1 (0.7-1.4)
Middle	157 (79.7%)	40 (20.3%)	
High	117 (81.8%)	26 (18.2%)	

Knowledge, attitude and practice regarding anemia and WIFS among children

All the children mentioned that they were given atleast WIFS in the last one month. The WIFS tablet that is being distributed in schools contains 100 mg elemental iron and 500 mcg folic acid. Except 8 children who mentioned that they were given only 2 WIFS tablet last month rest of the children were given 4 tablets. Only 143 (34.5%) of the children knew that it contains iron tablet. The others were assuming it was a vitamin tablet or some mineral tablet. The reason for not consuming included taste and absence. 388 children mentioned that they didn't consume WIFS. The most common reason mentioned was taste (73%) and remaining mentioned being absent and not given by the teacher (27%) as the reason. This data was a challenge to obtain since children were afraid that they will be punished if they tell the real numbers. Since the study settings was school based, this fear was difficult to manage. All the children knew about deworming tablet and had consumed it in the last 6 months.

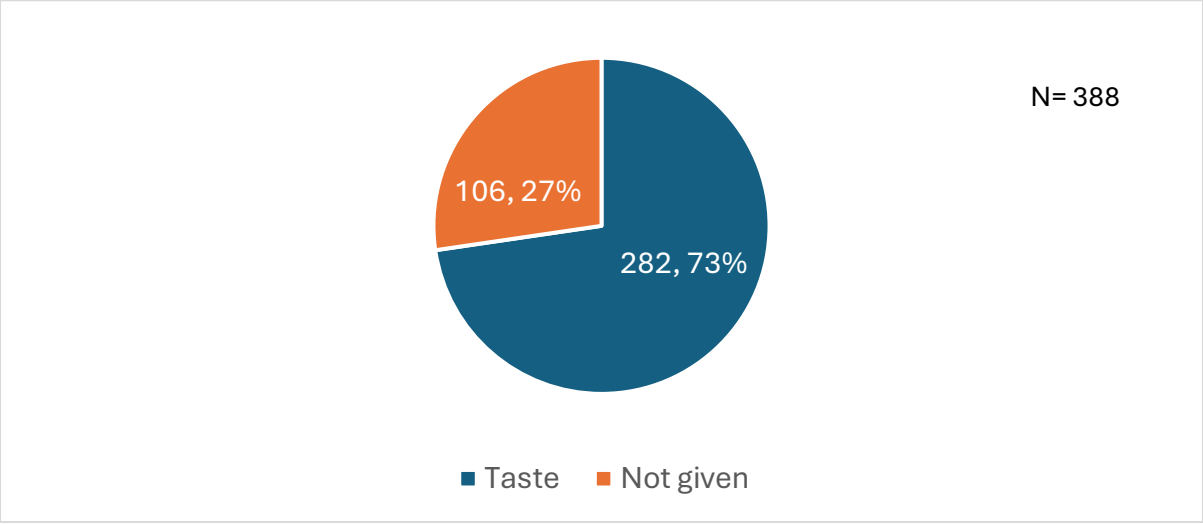


Figure 11: Reasons for not consuming WIFS

Parents knowledge and attitude towards anemia and WIFS

We interviewed a total of 100 parents in the community and anganwadis to assess their knowledge and attitude towards anemia and WIFS. All the parents reported knowledge of their children taking WIFS and deworming tablets.

Table 8: Knowledge of anemia and WIFS among parents (n=100)

Variables	**N**
Age	36.1 (7.5)
Religion	Hindu 87 Muslim 13 Christianity 4
Gender	Father 47 Mother 53
Caste	Scheduled caste 16 Scheduled tribe 7 Others 77
Type of family	Nuclear 62 Joint 38
Socio economic status classification: BG Prasad 2024 CPI-IW Scale	Class I: 8 Class II: 14 Class III: 32 Class IV: 43 Class V: 6
Monthly family income	16300 (10999)
Knowledge of rathasogai	88/100
Recognition of signs of anemia	0
Knows atleast one impact of anemia on a child's health	22/100
Food/beverages that increase absorption of iron	0
Atleast one source of iron	100

Aware of iron fortified rice	40
Aware of their child taking WIFS	100

Teachers' knowledge and attitude towards anemia and WIFS

25 teachers were interviewed regarding their knowledge and attitude towards anemia and WIFS. Their knowledge was adequate. More focus on their capacity building can be on the importance of dietary diversity.

Table 9: Knowledge of anemia among teachers (n=25)

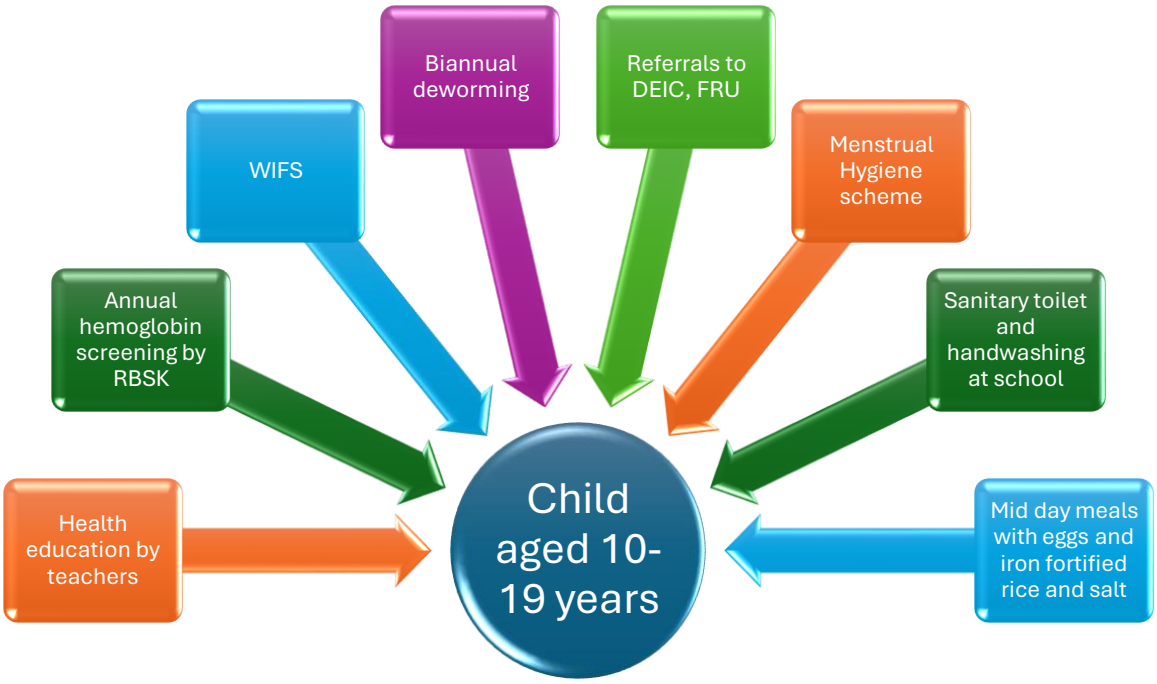
Socio-demography	**N, Mean SD**
Age	43.7 (9.52) Minimum 23 Maximum 55
Gender	Male 10 Female 15
Work experience	12.7 (6.7) Minimum 1 Maximum 30
Monthly Income	Mean 72,456 SD 24509
Knowledge of anemia n(%)	
Knowledge of the disease "Rathasogai"	18/25 (72%)
Ability to say atleast one sign of anemia	23/25
Knows atleast one Health risk of low blood	25/25

Knows atleast one cause of low blood	25/25
Knowledge of good nutrition as a prevention of anemia	16/25 (64%)
Foods/beverages that can help in iron absorption	0/25
Mention atleast one source of iron	23/25
Mention atleast one recipe for iron rich food	19/25
Mention atleast one midday meal rich in iron	20/25 (Keeraisatham)

Observation on the facilities available at school:

In all schools, WIFS tablet stock was available and weekly WIFS tablet were given in a fixed day approach of Thursday afternoons during lunch hours. All schools had sanitary toilets for boys and girls and staff. Handwashing facilities were available in all schools with soap and water. All schools had celebrated national deworming day during February and August. There was an RBSK nodal teacher appointed in all schools who coordinated with the RBSK team from PHC for the camps and WIFS consumption. Mid day meals were provided in all schools. Sanitary napkins were supplied directly to girl children WIFS to nodal teacher by VHN through the nodal teacher. Based on the total number of children enrolled in school, the tablet supply is calculated. There was no logistics issues observed in PHCs or in schools. In all the sampled schools, tablets were in surplus as well as in PHCs. Mid day meals are opted by around 50% of the children in each school.

Table 10: Anemia prevention strategies in school



Prevention and control of hemoglobinopathies

In both Krishnagiri and Dharmapuri Districts, under the NHM Tribal Health Programme, Mobile Medical Units are operational, which screen tribal children for hemoglobinopathies such as B thalassemia and sickle cell anemia. Less than 10% of children in these areas have traits.

Observations of the Health System

The health system in both the districts have adequate coordination between the RBSK Team, PHC team and the DDHS Office. A SWOT analysis was done with anemia in focus and it was observed that the strengths were a strong field team dedicated teachers, VHN and RBSK Team. Each RBSK Team has a nurse and pharmacist. Even though dedicated doctors join the RBSK team, they have deputation elsewhere or keep getting transferring due to PG education and other factors. Even though the field team was strong, the instrinsic weakness is the presence of one Block PHC Medical Officer who has to run the one man show and coordinate all the activities. There should be a similar leadership staff who can support the team in the field, apart from this one person. Logistics and supply chain of WIFS and albendazole is excellent and the biggest strength. However, the

sanitary napkins logistics should be relooked considering the increased number of days of menstruation and amount of bleeding in young and middle adolescent age group girls. In all schools, we could observe iron fortified rice and salt in mid day meals and the supply chain of eggs is also adequate. However, the uptake of mid day meals should be increased to more than 50% considering that mid day meals ensure protein intake, iron fortified meals and empowers the parents at home by relieving their time of lunch box packing. The threat is the challenges of out of school adolescents due to early employment, child marriage, migration, tribal and hilly zones with many of the villages having no roads and the medical team having to walk for more than hour to reach villages. Line listing of anemia and follow-up is a challenge due to one RBSK team having to cover nearly 160 schools. The weakness in the system is the need to perform constant data entry, EMIS data entry work, recurrent report writings, updating height weight HB data, communication to DDHS office, attending all meetings while doing field work as well. One strength observed in Krishnagiri is the strong DEIC (District Early Intervention Center) with facilities for further evaluation of anemia, treatment facilities for severe anemia. The major threat we faced was the intersectoral coordination between Health and School education Department. Even though the health department is very clear about the benefits of this study, the school education could not be convinced due to ongoing child sex abuse cases. Regular communication between both departments is essential to ensure continuum of care for children and so that children can achieve holistic growth and development.

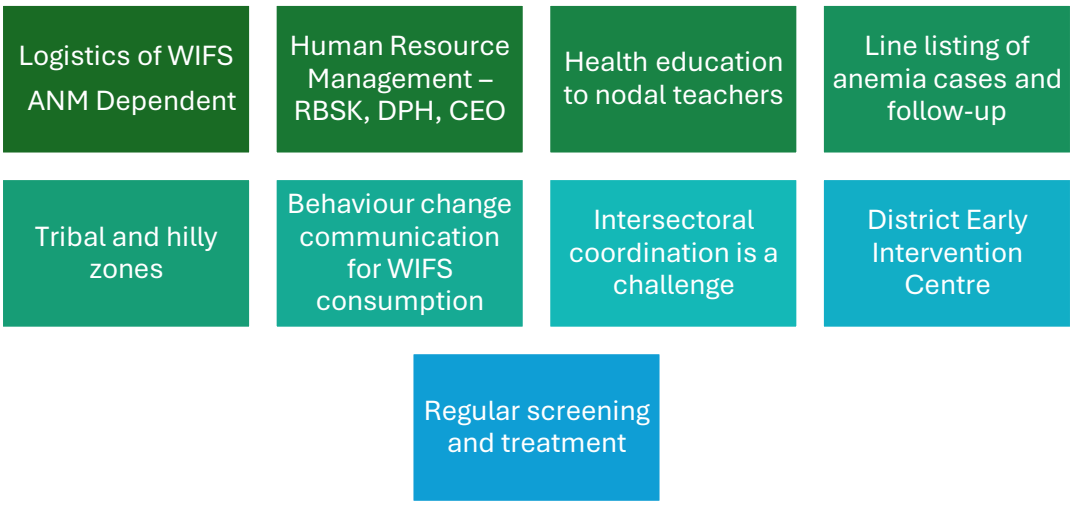
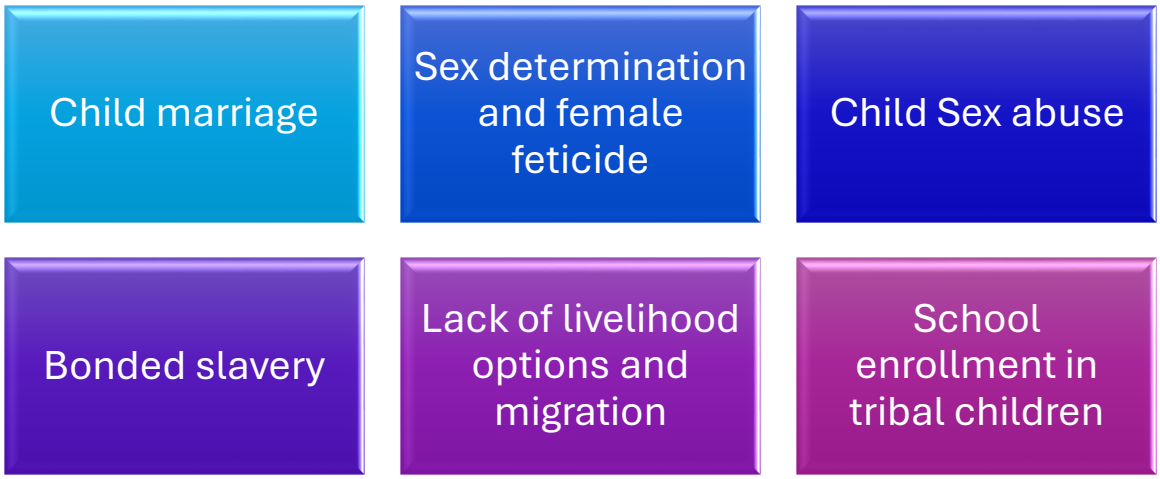


Figure 12: Features of the health system

Social determinants identified

The study areas have high rates of child marriage. During the study duration itself, multiple cases of child marriages were reported with Medical officers and DDHS taking actions to prevent it[15][16]. Apart from these child marriages, there was a tribal child marriage in which the child[17] marriage victim delivered a child. Even though the infant survived, the 14 year old mother died due to severe anemia, 80 days after delivery. Reported child sex abuse in the study area, prevented the study from initiation due to various barriers. During the course of the study, a child sex abuse case with multiple victims in a private school and another child sex abuse by teachers in Government school was reported. Sex determination despite being illegal is practised by rackets in the study area[18].



[15] https://www.thehindu.com/news/national/tamil-nadu/14-year-old-girl-forcibly-married-off-rescued/article69295379.ece
[16] https://www.newindianexpress.com/states/tamil-nadu/2025/Feb/12/girl-comes-to-school-wearing-thaali-in-krishnagiri-five-booked-under-child-marriage-act
[17] https://www.newindianexpress.com/states/tamil-nadu/2024/Oct/03/child-marriage-victim-in-tamil-nadus-denkanikottai-dies-80-days-after-delivering-baby
[18] https://timesofindia.indiatimes.com/city/chennai/fetus-sex-determination-racket-busted-in-tamil-nadu-phc-doctor-and-nurse-among-six-arrested/articleshow/118582876.cms

DISCUSSION

Anemia is a nutritional disorder with intergenerational impact. We observed that 19% of the children have anemia in our study. As per the World Health Organization, this is considered as a mild public health problem in this population. This finding is different from NFHS since capillary samples were used in NFHS. Our finding is comparable with CNNS, where the prevalence was observed to be 16%. In a study done by DPHPM State of Tamil Nadu, 56% of girls and 41% of boys suffer from anemia[19]. In CNNS venous samples were obtained. Hence our findings are comparable with CNNS. From the inception of Anemia Mukt Bharath in 2018, for the past 7 years the 6x6x6 strategies of the programme address beneficieries in life course approach with intersectoral coordination. From our observations, it is evident that the program has been successful in interministerial coordination, strengthening of supply chain and logistics, implementation of WIFS, Biannual deworming, intensified year round behaviour change communication and testing and treatment of anemia. The weak link we observed is the difficulty in line listing, treatment, following and referral due to health manpower management issues. The success of mandatory provision of iron fortified rice and salt in mid day meals was observed by us and the state Government's mandate on provision of eggs daily was observed. However fortified rice and salt supply was not observed in PDS. The districts selected in this study had hemoglobinopathies and fluorosis for which 2 separate programs are operations with the tribal welfare department actively screening and managing B-thalasemia, sickle cell anemia and traits.

The question of reduction of anemia from the CNNS levels of 16% arises, since our study's prevalence is 19%. Other micronutrient deficiencies such as B12, Folate and vitamins are not assessed in our study. We could not correlate the data from hemoglobinopathy and the iron deficiency anemia as well. Considering the lower socio-economic status of the Government school enrolled children and mid day meal uptake of around 50% of the total school population, we can assume that the other factors

[19] https://www.tnjphmr.com/article/pdf/542.pdf

associated with anemia could be operational in causing this prevalence of anemia in this population, despite the robust measures to address anemia.

Our study was conducted only among school going adolescents, adolescents who have dropped out of school due to child marriage, employment and migration were not assessed in this study. Further community based studies in this population can be conducted to assess the true population prevalence of the study. The study initially was planned to be conducted through simple random sampling from the list of all schools in the study area, including primary and middle schools where Breakfast scheme is being implemented. However, due to ongoing 2 cases of sexual abuse, the study team were not permitted to enter school premises and the study could not be conducted for a long duration of time. The sampling method was revised to convenient sampling and schools were selected as per the recommendation of the RBSK Team. Due to the child sex abuse cases, CEOs were hesitant that entry of outsiders could be a threat and intervention on children can be perceived as bad touch by the stakeholders. This created a barrier in the rigor in the conduct of the study resulting in the pragmatic nature of the study approaches.

AMB Index is a simple average of the coverage indicators across beneficiary groups covered by AMB Program. In Tamil Nadu, this index has fallen from 50.8 in 2018 to 44.7 in 2020 [20]. One factor could be that at the field, coordination between school department and health workers could be weak, resulting in reduced intake of WIFS and lack of awareness of anemia. Other studies in tamil nadu observed that early adolescents and menarche as risk factors for anemia[21]. In our study we did observe that females and those who attained menarche were at higher risk, however, mid and late adolescents were at higher risk for anemia as compared to early stage.

[20] William Joe, Rinju, Narendra Patel, Ruby Alambusha, Bharati Kulkarni, Kapil Yadav, Vani Sethi, Coverage of iron and folic acid supplementation in India: progress under the Anemia Mukt Bharat strategy 2017–20, *Health Policy and Planning*, Volume 37, Issue 5, May 2022, Pages 597–606, https://doi.org/10.1093/heapol/czac015

[21] Shanmugam J, Kumar M, G D, Ravikumar S. Prevalence And Determinants of Anemia Among Adolescents in Coimbatore District, Tamil Nadu – A School Based Analytical Cross-Sectional Study. Natl J Community Med [Internet]. 2023 Jan. 31 [cited 2025 Mar. 27];14(01):3-9.

CONCLUSION

Our study shows that the prevalence of anemia among school going adolescents is 19%. Prevalence of mild anemia is 11%, moderate 7% and severe 1%. Anemia is significantly higher among older adolescents than the early adolescents AOR 2.1 (1.3-3.3). Health system strengths observed were coordination between RBSK, PHC and school education department in periodic screening for anemia in their biannual visits to school, follow-up, line listing of severe anemia cases, management and referral to First Referral Unit. Use of iron fortified salt and rice in mid day meals, robust WIFS consumption, biannual deworming and daily egg intake is functional in all schools and should be continued. Intersectoral coordination between school education, health, women and child development is essential for the holistic growth and development of all children including school dropouts. Appropriate measures must be taken by concerned departments to address child sex abuse, child marriage and sex determination issues.

RECOMMENDATIONS

We recommend the following measures in the ongoing prevention of anemia among adolescents

Social recommendations:

- Prevention of child sex abuse, rigorous implementation of POCSO act
- Adolescent reproductive, sexual health education in schools among students and teachers with a child friendly approach
- Prevention of school drop outs by appropriate measures by the school education department
- Coordination between health, school education and Women and Child development for the prevention of child marriages, elimination of sex determination and female feticide practices
- Ensuring livelihood options in study area without forced labour, bonded slavery or exploitation to reduce migration for unorganised sector work

Health System recommendations:

- Continue WIFS through adoption of best practices such as directly observed consumption, fixed day, fixed time consumption, integration into existing activities in school such as study with availability of safe water for drinking
- Continue annual screening, line listing and follow-up of anemia cases in schools
- Coordination and prompt data sharing between RBSK, Block PHC team, Schools, Tribal Health team
- Adopt best practices and use appropriate technologies to minimise time spent on report writing, data entry
- Health man power management practices to ensure continuum of care
- Regular health education on nutrition, WIFS, importance of screening

Nutrition recommendations:

- Health education on anemia, the importance of dietary diversity, protein and calorie intake for the growing child in schools, parents teachers meetings, Anganwadis. Utilise appropriate technology such as telehealth applications in health education
- Capacity building of teachers on WIFS, anemia and basics of nutritious diet
- Increase mid day meal uptake in all schools, expand breakfast scheme. Continue rice and salt fortification of iron in mid day meals. Ensure plates are larger in size and continue the adequate portion size that is served. Continue eggs everyday with different flavours such as salt and pepper
- Encourage the existing ragi ball intake practices in regular diet among adolescents and adults
- Use of fortified rice, fortified salt in PDS
- Head masters and teachers to try mid day meals regularly to ensure quality
- Feedback system in mid day meals to ensure quality and taste is maintained
- Adequate physical activity, especially for 10^{th} standard and 12^{th} standard students

ACKNOWLEDGEMENTS

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3. Phlebotomy team, Division of Nutrition, SJRI
4. Child Line, Krishnagiri District
5. Head masters and teachers of all 5 schools
6. Dr. Rajesh, Dr. Azhagarasan, Block Medical Officers
7. Dr. Ramkumar, DDHS, Krishnagiri
8. Dr. Vimal, DTMO, Krishnagiri
9. Dr. Vijay, Tribal Medical Officer
10. Sr. Palaniammal, Sr. Guna Priya, RBSK Team
11. CDPOs, both District

ANNEXURES

Study Tools

Study tool for adolescents

DATE: DD/ MM/ /YY

DAY:

PART I: SOCIO-DEMOGRAPHIC DETAILS

1.	Subject Name/ID/Colour Code:	District Code	Taluk code	Village code	School code	Child ID		
2.	Interviewer code							
3.	Interviewer name							
4.	School name:							
5.	Class enrolled (√):	5	6	7	8	9	10	11	12
6.	Section							
7.	Class Teacher's name:							
8.	Contact details (Name and mobile no):	Teacher/Warden		Father/Guardian		Mother		
9.	Living in hostel	1= Yes 2= No						
10.	Out of School	1= Yes 2= No						
11.	DOB (from school records):	DD		MM		YY		
12.	Age	Years			Months			
13.	Gender	1= Male 2= Female						
14.	Religion:	1= Hindu 2= Muslim 3=Christian 4=Others. Describe						

15.	Caste category (as per school records):	1= Scheduled caste 2= Scheduled tribe 3= OBC 4= Others. Describe		
16.	Tribe name (as per school records):			
17.	Tribe nature:	1= Native 2= Resettled		
18.	Duration of resettlement:	Years		
19.	Type of family:	1=Nuclear 2=Joint 3=Extended		
20.	Total number of family members	Adults (19 and above):	Children (0-5 years):	Children (6-18):
21.	Total number of siblings for the child			
22.	Education of the mother	1= No schooling 2=Primary School (1-5thstd) 3=Middle School (6-8thstd) 4=High School(9-10thstd) 5=Intermediate (11-12th std) PUC/Diploma (11-12th std) 6=Graduate 7=Postgraduate Professional 8= not known 9= Others- Describe		
23.	Occupation of the mother	1=Unemployed and not seeking work 2=Unemployed and seeking work		

		3=Farmer 4=Unskilled worker 5=Semi-skilled worker 6=Skilled 7=Clerk 8=Semi-professional/high school teacher 9=Professional 10=Pensioner 11= not known 12= Others- Describe
23.	Education of the father	1= No schooling 2=Primary School (1-5thstd) 3=Middle School (6-8thstd) 4=High School(9-10thstd) 5=Intermediate (11-12th std) PUC/Diploma (11-12th std) 6=Graduate 7=Postgraduate Professional 8=not known 9= Others- Describe
24.	Occupation of the Father	1=Unemployed and not seeking work 2=Unemployed and seeking work 3=Farmer 4=Unskilled worker 5=Semi-skilled worker 6=Skilled 7=Clerk 8=Semi-professional/high school teacher 9=Professional 10=Pensioner

		11= not known 12= Others- Describe

II: STANDARD OF LIVING

Does your household possess any of the following?		
25.	Electricity	Yes=1 No=2
26.	Solar panel	Yes=1 No=2
27.	Mattress	Yes=1 No=2
28.	Pressure cooker	Yes=1 No=2
29.	Electric or gas cooker	Yes=1 No=2
30.	Chair	Yes=1 No=2
31.	Cot or bed	Yes=1 No=2
32.	Table	Yes=1 No=2
33.	Solar or Electric fan	Yes=1 No=2
34.	Radio or Transistor	Yes=1 No=2
35.	Black and white television	Yes=1 No=2
36.	Colour television	Yes=1

		No=2
37.	Cable television	Yes=1 No=2
38.	Sewing machine	Yes=1 No=2
39.	Mobile telephone	Yes=1 No=2
40.	Landline telephone	Yes=1 No=2
41.	Internet connection	Yes=1 No=2
42.	Computer	Yes=1 No=2
43.	Refrigerator	Yes=1 No=2
44.	Air conditioner/cooler	Yes=1 No=2
45.	Washing machine or dish washer	Yes=1 No=2
46.	Watch or clock	Yes=1 No=2
47.	Bicycle	Yes=1 No=2
48.	Motorcycle, scooter, or auto-rickshaw	Yes=1 No=2
49.	Animal-drawn cart	Yes=1 No=2
50.	Cow which gives milk	Yes=1 No=2
51.	Buffalo which gives milk	Yes=1 No=2

52.	Goat which gives milk	Yes=1 No=2
53.	Chicken which lays eggs	Yes=1 No=2
54.	Other livestock	Yes=1 No=2
(Field investigator: this can include horses, or other animals which do not give milk or eggs)		
55.	Car, truck, or jeep	Yes=1 No=2
56.	Water pump	Yes=1 No=2
57.	Thresher	Yes=1 No=2
58.	Clothing iron	Yes=1 No=2
59.	Generating set	Yes=1 No=2
60.	Tractor	Yes=1 No=2
61.	Primary Source of lighting	Oil =1 Kerosene =2 LPG =3 Electricity =4 Solar =5 Wood = 6 Other source =7
62.	Primary source of fuel for cooking (Investigator: Do not prompt. Select only ONE, most common source.)	Wood/Straw/Shrubs/Grass =1 Agricultural Crop Waste =2 Dung Cakes =3 Coal/Lignite/Charcoal =4

		Kerosene =5 LPG/Natural Gas =6 Biogas =7 Electricity=8 Solar =9 Other=77 Don't know=99
63.	Secondary source of fuel for cooking (Investigator: Do not prompt. Select only ONE, second most common source.)	Wood/Straw/Shrubs/Grass =1 Agricultural Crop Waste =2 Dung Cakes =3 Coal/Lignite/Charcoal =4 Kerosene =5 LPG/Natural Gas =6 Biogas =7 Electricity=8 Solar =9 None = 10

III: WASH QUESTIONS – SCHOOL

64.	According to you what is the ideal way of sanitation	1=Sanitary latrine 2=Shared Sanitary latrine 3=Open air defecation 4=Do not know
65.	Is there a toilet in the school?	1=Yes 2=No – **If NO move to 70**
66.	If yes, do you use it?	1=Yes 2=No
67.	If no, why do you not use it?	1=It is locked 2=Water issue

		3=Dirty 4=Others – describe
68.	Water supply	1=Piped-continuous water supply 2=Piped- irregular water supply 3=Manual (Drawing out using hands from well/tank or hand pipe, river, surface water) 4=Others – describe
69.	Is there a toilet in your home?	1=Yes 2=No – **If NO move to** Handwashing questions -74
70.	If yes, do you use it?	1=Yes 2=No
71.	If no, why do you not use it?	1=It is locked 2=Water issue 3=Dirty 4=Others – describe
72.	Water supply	1=Piped-continuous water supply 2=Piped- irregular water supply 3=Manual (Drawing out using hands from well/tank or hand pipe, river, surface water) 4=Others – describe
73.	According to you what is the ideal way of handwashing	1=Handwashing with only water 2=Handwashing with soap and water
74.	Please tell me all the occasions when it is important for you to wash hands. **(Investigator: DO NOT PROMPT, PROBE 'ANYTHING ELSE?'**	Before eating =1 Before feeding a child =2 Before cooking preparing food =3 After defecation urination =4

	MARK ALL THAT APPLIES)	After cleaning a child that has defecated changing nappieswashing diaper =5 Other =7 None mentioned =8 Don't know=9	
75.	From the handwashing occasions you told, what should be used for washing hands	**Handwashing practice**	**occasions**
		1. Only water	
		2. Water with soap	
		3. With sanitiser	
76.	Handwashing facility at home	1= basic (Soap and water available) 2=limited (soap and or water lacking) 3=no facility (no tap or any facility)	

IV: MEDICAL ISSUES

78.	Do you have any known medical illness?	1=Yes – Describe 2=No
79.	Currently suffering from any of the illness	1=Thalassemia 2=HIV 3=Tuberculosis 4=Heart disease 5=Sickle cell anemia 6=Malaria 7=Others – describe 8= Do not know

V: MENSTRUAL HISTORY- From girl children aged 10 and above

80.	If female, attained menarche?	1=Yes. 2= No. If No go to WIFS Question no. 84
81.	Age at menarche	
82.	Menstrual history	No. of days of menstruation: Frequency of menstruation: (once in how many days) Total pads used per day:
83.	Menstrual hygiene	1=cloth 2=sanitary napkins 3=others – describe

VI: WIFS RELATED QUESTIONS

84.	Have you heard of WIFS (local words) tablets?	1=Yes 2=No. **If No go to** Deworming section Question no. 96
85.	What is your opinion about WIFS tablet? (Select all that apply)	1= Good for health 2= Causes side effects 3= Good for development 4= Others – Describe
86.	Why do you need to take these tablets? (select all that apply)	1= For health 2= For growth 3= It is given by my teacher 4= Others- describe 5= I don't know

87.	What does it contain? (select all that apply)	1= Iron 2= Folic acid 3= Calcium 4= Vitamins 4= Others – describe 5= Don't know
88.	How should it be taken?	1= Daily 2= Weekly 3= Monthly 4= Others – describe 5 =I don't know
89.	Who should take these tablets?	1= Boys 2= Girls 3= Both 99= don't know
90.	Who should not take WIFS tablet ?	1= Sick children 2= Boys 3= Girls 4=Teachers 5=Others – describe 99= Don't know
91.	Consumed WIFS in the last month	1=Yes 2=No. **If No go to 94.**
92.	If you experienced side effects, please name them.	1=Abdominal pain 2=Metallic taste (*local terms*) 3=Chest burns 4=Nausea, vomiting 5=Change in colour of stools 6=Constipation/diarrheal 7=Others- describe 8=No issues

93.	Do you take the WIFS under supervision? (Teacher/class monitor)	1=Yes 2=No
94.	If under supervision, who supervises you?	1=Teacher 2=Class monitor 3=Others- describe
95.	Where is the tablet consumed?	1=School 2=Anganwadi 3=Home 4=Others – describe
92.	How many tablets did you take for the past month?	
93.	WIFS History (Check School supply and delivery log records) Enter number of tablets consumed per month	
	Month 1 =	Month 2= Month 3=
94.	If no, what are the reasons for not consuming WIFS tablet?	1= Taste 2= Not popular among friends 3= Instructions from parents 4= Side effects- name them 5=I was not given 6=Was on leave 7=Throw into dustbin 8=Donated to friends/family 9=Sold to others 10=Others- describe
95.	Name the side effects	1= nausea 2= vomiting 3= stool problems 4= others – describe 5= Don’t know

VII: DEWORMING

95.	Is your school giving any medicine for worms in the abdomen?	1=yes 2=no
96.	Worm tablet consumption in the last 6 months	1=yes2=no

VIII: ANTHROPOMETRY

Height-1 (cm) □□□.□□	Height-2 (cm) □□□.□□
Weight-1 (kg) □□□.□	Weight-2 (kg) □□□.□

IX: *24 HOURS DIETARY RECALL*

Interviewer ID: ---------- Signature----------

Date of interview ☐☐ D ☐☐ M ☐☐☐☐ Y

1. Name of child: _____
2. Age of child: ☐☐☐ months
3. Sex of child: ☐ Male=1, Female =2
4. Day of the week :_____(e.g. Monday etc.)
5. Primary/duplicate recall: ☐ Primary=1, Duplicate=2

24 HOUR DIETARY RECALL FORM

- *What did you eat or drink the whole of yesterday starting with what you had after waking in the morning till you went to bed.*
- *Include foods that you ate outside.*

TIMING 00:00 hrs.	**FOOD EATEN**	**PORTION SIZE Bowl/glass/No./Tbsp/tsp/scoop**	**INGREDIENTS OF THE FOOD ITEM**	**MODE OF COOKING** (1=Boiled (e.g., as for rice/upma); 2=Boiled (gravy); 3=Steamed. 4=Sauteed (e.g., for dry sabjis); 5=fried; 6=raw; 7=baked; 8=frozen; 9=Roasted)	**SOURCE** (1 = Home, 2 = Midday meals/Anganwadi, 3 = Hotels/Restaurants 4 = Shops)
_____ *hrs.*					
_____ *hrs.*					
TIMING 00:00 hrs.	**FOOD EATEN**	**PORTION SIZE Bowl/glass/No/tbsp/tsp/scoop**	**INGREDIENTS OF THE FOOD DISH**	**MODE OF COOKING** (1=Boiled (e.g., as for rice/upma); 2=Boiled (gravy); 3=Steamed. 4=Sauteed (e.g., for dry sabjis); 5=fried; 6=raw; 7=baked; 8=frozen;	**SOURCE** (1 = Home, 2 = Anganwadi, 3 = Hotels/Restaurants 4 = Shops)

				9=Roasted)	
_____ *hrs.*					
_____ *hrs.*					
TIMING 00:00 hrs.	**FOOD EATEN**	**PORTION SIZE Bowl/glass/No/tbsp/tsp/scoop**	**INGREDIENTS OF THE FOOD DISH**	**MODE OF COOKING** (1=Boiled (e.g., as for rice/upma); 2=Boiled (gravy); 3=Steamed; 4=Sauteed (e.g., for dry sabjis); 5=fried; 6=raw; 7=baked; 8=frozen; 9=Roasted)	**SOURCE** (1 = Home, 2 = Anganwadi, 3 = Hotels/Restaurants 4 = Shops)
_____ *hrs.*					

Name of oil predominantly used for cooking at home: _____

Was any vitamin or mineral supplement (capsule/tonic) taken yesterday?

Yes=1, No=0

Name of Vitamin/mineral supplements (Taken yesterday): **1.** _____

(The label on the supplement pack needs to be checked) ***2.*** _____

Probes:

- *Did you add anything to the drink/beverages? How many tsp of it? E.g. sugar, honey, supplement like bournvita, horlicks etc.*
- *Did you eat anything with your beverage such as biscuits, rusks etc.*
- *Did you add anything to your meals while eating? E.g. Ghee / butter / oil etc.*
- *Did you consume anything in addition to the above foods (probe for each timing of meal and in between meals)? (Salad, pickles, chips, papads, sweets, chocolates, alcohol etc).*
- *Did you have any salty or sweet snack to eat in the morning/evening before or after your tea?*
- *Did you add salt or sugar while eating to any of the meals?*
- *Did you attend any special function yesterday? If yes, did you eat anything at the function?*
- *Did you eat anything else at your work place?*

Study Tool for Parents

DATE: **DD/** **MM/** **YY**

DAY:

PART I: SOCIO-DEMOGRAPHIC DETAILS

77.	Subject Name/ID/Colour Code:	District Code	Taluk code	Village code	School ID	Child ID
78.	GPS Coordinate					
79.	Interviewer code					
80.	Interviewer name					
81.	Nature of guardian	1= Parent 2. Caregiver (other than parent) 2= Teacher/hostel warden				
82.	Age	Years ☐☐		Months ☐☐		
83.	Gender	1= Male 2= Female				
84.	Religion:	1= Hindu 2= Muslim 3=Christian 4=Others. Describe----------				
85.	Caste category:	1= Scheduled caste 2= Scheduled tribe 3= OBC 4= Others. Describe----------				
86.	Tribe name:					
87.	Tribe nature:	1= Native 2= Resettled				

88.	Duration of resettlement:	Years		
89.	Type of family:	1=Nuclear 2=Joint 3=Extended		
90.	Total number of family members	Adults (19 and above):	Children (0-9years):	Children (10-19):
91.	Total number of siblings for the child			
92.	Does any of your family member consume tobacco (chewable/smoking)?	1= Yes 2= No		
93.	Education of the participant	1= No schooling 2=Primary School (1-5thstd) 3=Middle School (6-8thstd) 4=High School(9-10thstd) 5=Intermediate (11-12th std) PUC/Diploma (11-12th std) 6=Graduate 7=Postgraduate Professional 8= Others – Describe		
23.	Occupation of the participant	1=Unemployed and not seeking work 2=Unemployed and seeking work 3=Farmer 4=Unskilled worker 5=Semi-skilled worker 6=Skilled 7=Clerk 8=Semi-professional/high school teacher		

		9=Professional 10=Pensioner 11= Others – describe
94.	Education of the spouse	1= No schooling 2=Primary School (1-5thstd) 3=Middle School (6-8thstd) 4=High School(9-10thstd) 5=Intermediate (11-12th std) PUC/Diploma (11-12th std) 6=Graduate 7=Postgraduate Professional 8= Don't Know 9= Others – describe
95.	Occupation of the spouse	1=Unemployed and not seeking work 2=Unemployed and seeking work 3=Farmer 4=Unskilled worker 5=Semi-skilled worker 6=Skilled 7=Clerk 8=Semi-professional/high school teacher 9=Professional 10=Pensioner 8= Don't Know 9= Others – describe
96.	Total monthly family income	

II: STANDARD OF LIVING

Does your household possess any of the following?		
97.	Electricity	Yes=1 No=2
98.	Solar panel	Yes=1 No=2
99.	Mattress	Yes=1 No=2
100.	Pressure cooker	Yes=1 No=2
101.	Electric or gas cooker	Yes=1 No=2
102.	Chair	Yes=1 No=2
103.	Cot or bed	Yes=1 No=2
104.	Table	Yes=1 No=2
105.	Solar or Electric fan	Yes=1 No=2
106.	Radio or Transistor	Yes=1 No=2
107.	Black and white television	Yes=1 No=2
108.	Colour television	Yes=1 No=2
109.	Cable television	Yes=1 No=2
110.	Sewing machine	Yes=1 No=2
111.	Mobile telephone	Yes=1

		No=2
112.	Landline telephone	Yes=1 No=2
113.	Internet connection	Yes=1 No=2
114.	Computer	Yes=1 No=2
115.	Refrigerator	Yes=1 No=2
116.	Air conditioner/cooler	Yes=1 No=2
117.	Washing machine or dish washer	Yes=1 No=2
118.	Watch or clock	Yes=1 No=2
119.	Bicycle	Yes=1 No=2
120.	Motorcycle, scooter, or auto-rickshaw	Yes=1 No=2
121.	Animal-drawn cart	Yes=1 No=2
122.	Cow which gives milk	Yes=1 No=2
123.	Buffalo which gives milk	Yes=1 No=2
124.	Goat which gives milk	Yes=1 No=2
125.	Chicken which lays eggs	Yes=1 No=2
126.	Other livestock	Yes=1 No=2

(Field investigator: this can include horses, or other animals which do not give milk or eggs)		
127.	Car, truck, or jeep	Yes=1 No=2
128.	Water pump	Yes=1 No=2
129.	Thresher	Yes=1 No=2
130.	Clothing iron	Yes=1 No=2
131.	Generating set	Yes=1 No=2
132.	Tractor	Yes=1 No=2
133.	Source of lighting	Oil =1 Kerosene =2 LPG =3 Electricity =4 Solar =5 Other source =7
134.	What do you cook your food on?	Open fire=1 Chulla =2 LPG =3 No food cooked in the household=4
135.	Primary source of fuel for cooking (Investigator: Do not prompt. Select only ONE, most common source.)	Wood/Straw/Shrubs/Grass =1 Agricultural Crop Waste =2 Dung Cakes =3 Coal/Lignite/Charcoal =4 Kerosene =5 LPG/Natural Gas =6 Biogas =7

		Electricity=8 Solar =9 Other=77 Don't know=99
136.	Secondary source of fuel for cooking (Investigator: Do not prompt. Select only ONE, second most common source.)	Wood/Straw/Shrubs/Grass =1 Agricultural Crop Waste =2 Dung Cakes =3 Coal/Lignite/Charcoal =4 Kerosene =5 LPG/Natural Gas =6 Biogas =7 Electricity=8 Solar =9 None = 10

II: HOUSING DETAILS

137.	Type of house **(Investigator: Record Observation)**	Kuccha=1 Semi-Pucca=2 Pucca =3
138.	Main material of the floor **(Investigator: Record Observation)**	Natural Walls=1 Rudimentary Walls =2 Finished Walls=3
139.	Main material of the Roof **(Investigator: Record Observation)**	Natural Walls=1 Rudimentary Walls =2 Finished Walls=3
140.	Main material of the Exterior walls	Natural Walls=1 Rudimentary Walls =2

	(Investigator: Record Observation)	Finished Walls=3
141.	How many rooms in this household are used for sleeping	Rooms☐☐
142.	Total number of rooms in house:	
143.	Is there a separate room for cooking	Yes=1 No =2
144.	Is this house	owned by household member=1 owned by other family member (not part of household) =2 rented =3 loaned (pays no rent) =4
145.	Does any member of the household own any other house or apartment?	Yes=1 No=2
146.	Does any member of the household own any agricultural land?	Yes=1 No =2
147.	Does any member of the household own or rent a shop or commercial establishment?	Yes=1 No=2
148.	What is the MAIN source of income of the household	Agriculture =1 Non-agriculture =2 Both =3
149.	If non-agriculture is the MAIN source of income, please specify	Daily wage (coolie) =1 Salaried =2 Self-employed =3 Others=7; Specify _____
150.	Does your household irrigate its agricultural land	Yes=1 No =2

151.	What is your household's main source of irrigation? (Investigator: record only ONE answer)	Rainwater=2 Stream or river, Well, tube well =5 Others =7; Specify_____ Don't know=9

III: WATER AND SANITATION

152.	What is the MAIN source of drinking water for the household in the monsoon season?	Surface water =1 Protected spring =2 Unprotected Spring = 3 Rainwater =4 Public tap/ Standpipe=5 Protected Well = 6 Unprotected well=7 Tube well or borehole/handpump =8 Cart with small tank =9 Tanker Truck=10 Community RO plant =11 Piped to yard plot =12 Piped into dwelling=13 Bottled water=14
153.	Where is that water source located	Elsewhere=1 In own yardplot =2 In own dwelling =3
154.	What is the MAIN source of drinking water for the household in the dry season?	Surface water 1 Unprotected spring =2 Protected spring =3 Rainwater =4 Public tap/Standpipe =5

		Unprotected well=7 Tube well or borehole/handpump =8 Cart with small tank =9 Tanker Truck =10 Community RO plant =11 Piped to yardplot =12 Piped into dwelling =13 Bottled water =14
155.	Where is that water source located	Elsewhere =1 In own yardplot =2 In own dwelling =3
156.	How long does it take to go there, get water and come back? **(Investigator: WRITE IN minutes if <60 min or hours and minutes if >60 min.** **IF 'DON'T KNOW', RECORD 99.)**	Hours .....☐☐ Minutes ...☐☐
157.	Do you treat drinking water in any way	Yes =1 No =2
158.	What methods are used to treat the drinking water? (Investigator: Do not prompt. Multiple options possible. Circle all that apply.)	Boil=1 Alum =2 Bleach/Chlorine tablets=3 Strain through a cloth =4 Use water filter (ceramics and composite) =5 Use electronic purifier =6 Others – Describe=7
159.	Why do you not treat the drinking water?	Not aware =1 Costly =2 Do not like the taste of treated water =3

	(Investigator: Do not prompt. Multiple options possible. Circle all that apply.)	Not required =4	
160.	Do you use the same source of drinking water for all other purposes such as cooking, bathing, and washing clothes and household items?	Yes =1 No=2	
161.	What kind of toilet facility do members of your household typically use	Open space =1 Pit latrine=2 Flush toilet=3 Other=7 (Specify)	
162.	Does this household share toilet facility with any other households?	Yes=1 No=2	
163.	How many households use this toilet facility?	☐☐	
164.	Please tell me all the occasions when it is important for you to wash hands. **(Investigator: DO NOT PROMPT, PROBE 'ANYTHING ELSE?'** **MARK ALL THAT APPLIES)**	Before eating =1 Before feeding a child =2 Before cooking preparing food =3 After defecation urination =4 After cleaning a child that has defecated changing nappieswashing diaper =5 Other =7 None mentioned Don't know=9	
165.	From the handwashing occasions you told, what should be used for washing hands	**Handwashing practice**	**occasions**
		4. Only water	
		5. Water with soap	

		6. With sanitiser	

IV: OBSERVATION OF HOUSE

166.	(Field Investigator: do not ask the respondent this question. Observe and record the appropriate response) What is the general appearance of the respondent's hands?	Clean=3 Dirty=2 Dusty=1
167.	(Field Investigator: do not ask the respondent this question. Observe and record the appropriate response) What is the general appearance of the respondent's hair?	Dirty=3 Dusty=2 Clean=1
168.	(Field Investigator: do not ask the respondent this question. Observe and record the appropriate response) What is the general appearance of the respondent's clothes?	Dirty=3 Dusty=2 Clean=1
169.	(Field Investigator: do not ask the respondent this question. Observe and record the appropriate response) What is the general appearance of the respondent's face?	Dirty=3 Dusty=2 Clean=1

170.	**(Field Investigator: Do not ask the respondent this question. Record the appropriate response)** Are you in or near the household compound?	Yes=1 No=2
171.	**(Field Investigator: do not ask the respondent this question. Observe and record the appropriate response)** What is the general appearance of the compound?	Dirty =1 Clean =2
172.	(**Field Investigator: do not ask the respondent this question. Observe and record the appropriate response)** Does the area immediately around the house need to be swept or cleaned?	Yes=1 No=2
173.	**(Field Investigator: do not ask the respondent this question. Observe and record the appropriate response)** Are there human feces around the house or in the compound?	Yes=1 No=2
174.	**(Field Investigator: do not ask the respondent this question. Observe and record the appropriate response)**	Yes=1 No=2

	Are there animal feces (chicken, dog, goat, cattle, horse) around the house or in the compound?	
175.	**(Field Investigator: do not ask the respondent this question. Observe and record the appropriate response)** Is there garbage (open garbage, garbage on the ground) around the house or in the compound?	Yes=1 No=2

V: KNOWLEDGE QUESTIONS ON ANEMIA

176.	Have you heard about anemia (*local terms*)?	1= Yes 2= No 99= Don't know
177.	Can you tell me how you can recognize someone who has anemia?	1= Less energy/weakness 2= Paleness/pallor 3= Spoon nails/bent nails (koilonychia) 4= More likely to become sick (less immunity to infections) 5= Other- describe 99= Don't know
178.	What are the health risks of anemia?	1= Growth is reduced 2= Studies will be affected

		3= Menstruation will be affected 4= Others- Describe 99= Don't know
179.	What causes anemia?	1= Lack of iron in the diet/eat too little, not much 2=Sickness/infection (malaria, hookworm infection, other infection such as HIV/AIDS) 3= Heavy bleeding during menstruation 4= Others. Describe 99= Don't know
180.	How do you prevent anemia?	1= Good food 2= Exercise 3= Medicines 4= Hygiene 5= Others- Describe 99= Don't know
181.	What are the foods that increase iron absorption?	1= Rice 2= Wheat 3= Dhal 4= Vegetables 5= Green leafy vegetables 6= Fruits 7= Nuts 8= Meat

		9= Fish 10= Egg 11= Milk 12= Citrus fruits 13= Others- Describe 99= Don't know
182.	What are the beverages decrease iron absorption when taken with meals?	1= Coffee 2= Tea 3= Milk 4= Others- Describe 99= Don't Know
183.	How anemia can be treated?	1= Medicines 2= Vitamin Tablets 3= Iron tablets 4= Worms tablet 5= Others- Describe 99= Don't know
184.	Common sources of iron include	1= Rice 2= Wheat 3= Dhal 4= Vegetables 5= Green leafy vegetables 6= Fruits 7= Nuts 8= Meat 9= Fish 10= Egg 11= Milk 12= Citrus fruits 13= Jaggery 14= Others- Describe

		99= Don't know
185.	Name some recipes which are rich in iron	1= Describe 99 = Don't know
186.	How frequent are you preparing iron rich foods for your child in a week?	1= Everyday 2= Once in 2 days 3= Once in 3 days 4= Once in 4-7 days 5= Others. Describe 99= Don't know
187.	Did you consume iron-rich food on the previous day. Specify	1= Yes 2= No 99= Don't know

VI: PDS and WIFS

188.	Do you have PDS card?	1= Yes 2= No
189.	What are all the foods you are obtaining from PDS?	1= Rice 2= Dhal 3= Oil 4= Others – Describe 99= Don't Know
190.	How frequent do you purchase food from PDS?	1= Once in a month 2 = Twice in a month

		3 = Once in a week 4= Others – Describe 99 = Don't know	
191.	Quantity of food purchased from PDS usually	**Items**	**Quantity**
192.	Have you heard of iron fortified rice	1= Yes 2= No	
193.	What salt do you consume? (*Tick all that applies*)	1= From PDS 2= From outside shop 3 = Others – Describe 99 = Don't know	
194.	Have you heard of Anemia Mukt bhartath program?	1= Yes 2= No	
195.	Do you know about WIFS (local word) scheme?	1= Yes 2= No	
196.	Where is WIFS given? (Select all that apply)	1= School 2= Anganwadi	

		3= Primary Health Centre 4= From ASHA worker/VHN/ANM at household 5= Others – Describe 99= Don't know
197.	Do you know if children are given WIFS at school?	1= Yes 2= No
198.	Do you know the frequency of consumption of WIFS tablet by your child in school?	1=Everyday 2= Once in a week 3= Once in a month 4= Others – describe 99= Don't know
199.	Do you know if children are given worms tablet at school?	1= Yes 2= No
200.	Do you know the frequency of consumption of worms tablet by your child in school?	1=Twice in a year 2= Once in a year 4= Others – describe 99= Don't know
201.	Do you know if sanitary napkins are given at schools?	1= Yes 2= No

202.	Do you know if sanitary latrine is there at school?	1= Yes 2= No

Study Tool for Teachers

DATE: DD/ MM/ YY

DAY:

PART I: SOCIO-DEMOGRAPHIC DETAILS

1.	Subject Name/ID/Colour Code:	District Code	Taluk code	Village code	School ID	Child ID
2.	GPS Coordinate					
3.	Interviewer code					
4.	Interviewer name					
5.	Nature of guardian	1=Teacher 2= Hostel warden				
6.	Duration of work experience of the teacher (years)	☐☐				
7.	Age	Years ☐☐		Months ☐☐		
8.	Gender	1= Male 2= Female				
9.	Religion:	1= Hindu 2= Muslim 3=Christian				

		4=Others. Describe----------
10.	Type of family:	1=Nuclear 2=Joint 3=Extended
11.	Education of the participant	1= No schooling 2=Primary School (1-5thstd) 3=Middle School (6-8thstd) 4=High School(9-10thstd) 5=Intermediate (11-12th std) PUC/Diploma (11-12th std) 6=Graduate 7=Postgraduate Professional
12.	Total Income of the participant per month:	
13.	Total monthly family income	

II: STANDARD OF LIVING

Does your household possess any of the following?		
14.	Electricity	Yes=1 No=2
15.	Solar panel	Yes=1 No=2
16.	Mattress	Yes=1 No=2
17.	Pressure cooker	Yes=1 No=2
18.	Electric or gas cooker	Yes=1

		No=2
19.	Chair	Yes=1 No=2
20.	Cot or bed	Yes=1 No=2
21.	Table	Yes=1 No=2
22.	Solar or Electric fan	Yes=1 No=2
23.	Radio or Transistor	Yes=1 No=2
24.	Black and white television	Yes=1 No=2
25.	Colour television	Yes=1 No=2
26.	Cable television	Yes=1 No=2
27.	Sewing machine	Yes=1 No=2
28.	Mobile telephone	Yes=1 No=2
29.	Landline telephone	Yes=1 No=2
30.	Internet connection	Yes=1 No=2
31.	Computer	Yes=1 No=2
32.	Refrigerator	Yes=1 No=2
33.	Air conditioner/cooler	Yes=1 No=2

34.	Washing machine or dish washer	Yes=1 No=2
35.	Watch or clock	Yes=1 No=2
36.	Bicycle	Yes=1 No=2
37.	Motorcycle, scooter, or auto-rickshaw	Yes=1 No=2
38.	Animal-drawn cart	Yes=1 No=2
39.	Cow which gives milk	Yes=1 No=2
40.	Buffalo which gives milk	Yes=1 No=2
41.	Goat which gives milk	Yes=1 No=2
42.	Chicken which lays eggs	Yes=1 No=2
43.	Other livestock	Yes=1 No=2
(Field investigator: this can include horses, or other animals which do not give milk or eggs)		
44.	Car, truck, or jeep	Yes=1 No=2
45.	Water pump	Yes=1 No=2
46.	Thresher	Yes=1 No=2
47.	Clothing iron	Yes=1 No=2
48.	Generating set	Yes=1

		No=2
49.	Tractor	Yes=1 No=2
50.	Source of lighting	Oil =1 Kerosene =2 LPG =3 Electricity =4 Solar =5 Other source =7
51.	What do you cook your food on?	Open fire=1 Chulla =2 LPG =3 No food cooked in the household=4
52.	Primary source of fuel for cooking (Investigator: Do not prompt. Select only one, most common source.)	Wood/Straw/Shrubs/Grass =1 Agricultural Crop Waste =2 Dung Cakes =3 Coal/Lignite/Charcoal =4 Kerosene =5 LPG/Natural Gas =6 Biogas =7 Electricity=8 Solar =9 Other=77 Don't know=99
53.	Secondary source of fuel for cooking (Investigator: Do not prompt. Select only one, second most common source.)	Wood/Straw/Shrubs/Grass =1 Agricultural Crop Waste =2 Dung Cakes =3 Coal/Lignite/Charcoal =4 Kerosene =5 LPG/Natural Gas =6 Biogas =7

		Electricity=8 Solar =9 None = 10

III: KNOWLEDGE QUESTIONS ON ANEMIA

54.	Have you heard about anemia (*local terms*)?	1= Yes 2= No 99= Don't know
55.	Can you tell me how you can recognize someone who has anemia?	1= Less energy/weakness 2= Paleness/pallor 3= Spoon nails/bent nails (koilonychia) 4= More likely to become sick (less immunity to infections) 5= Other- describe 99= Don't know
56.	What are the health risks of anemia?	1= Growth is reduced 2= Studies will be affected 3= Menstruation will be affected 4= Others- Describe 99= Don't know
57.	What causes anemia?	1= Lack of iron in the diet/eat too little, not much

		2=Sickness/infection (malaria, hookworm infection, other infection such as HIV/AIDS) 3= Heavy bleeding during menstruation 4= Others. Describe 99= Don't know
58.	How do you prevent anemia?	1= Good food 2= Exercise 3= Medicines 4= Hygiene 5= Others- Describe 99= Don't know
59.	What are the foods that increase iron absorption?	1= Rice 2= Wheat 3= Dhal 4= Vegetables 5= Green leafy vegetables 6= Fruits 7= Nuts 8= Meat 9= Fish 10= Egg 11= Milk 12= Citrus fruits 13= Others- Describe 99= Don't know

60.	What are the beverages decrease iron absorption when taken with meals?	1= Coffee 2= Tea 3= Milk 4= Others- Describe 99= Don't Know
61.	How anemia can be treated?	1= Medicines 2= Vitamin Tablets 3= Iron tablets 4= Worms tablet 5= Others- Describe 99= Don't know
62.	Common sources of iron include	1= Rice 2= Wheat 3= Dhal 4= Vegetables 5= Green leafy vegetables 6= Fruits 7= Nuts 8= Meat 9= Fish 10= Egg 11= Milk 12= Citrus fruits 13= Jaggery 14= Others- Describe 99= Don't know
63.	Name some recipes which are rich in iron	1= Describe 2= Don't know
64.	Name some foods given in school mid day meals which are rich in iron	1= Describe 2= Don't know

65.	How frequent are you preparing iron rich foods in a week?	1= Everyday 2= Once in 2 days 3= Once in 3 days 4= Once in 4-7 days 5= Others. Describe 99= Don't know
66.	Did you consume iron-rich food on the previous day. Specify	1= Yes 2= No 99= Don't know

IV: PDS and WIFS

67.	Have you heard of iron fortified rice	1= Yes 2= No
68.	What rice do you consume?	1= from PDS 2= from outside shop 3= Others – Describe 4= Don't know
69.	What salt do you consume? (*Tick all that applies*)	1= From PDS 2= From outside shop 3 = Others – Describe 4 = Don't know

70.	Have you heard of Anemia Mukt bhartath program?	1= Yes 2= No
71.	Do you know about WIFS (local word) scheme?	1= Yes 2= No. If no, move to Question No. 74 on deworming
72.	Where is WIFS given? (Select all that apply)	1= School 2= Anganwadi 3= Primary Health Centre 4= From ASHA worker/VHN/ANM at household 5= Others – Describe 6= Don't know
73.	Do you know if children are given WIFS at school?	1= Yes 2= No
74.	Do you know the frequency of consumption of WIFS tablet by children in school?	1=Everyday 2= Once in a week 3= Once in a month 4= Others – describe 5= Don't know

75.	Do you know if children are given worms tablet at school?	1= Yes 2= No
76.	Do you know the frequency of consumption of worms tablet by your child in school?	1=Twice in a year 2= Once in a year 4= Others – describe 5= Don't know
77.	Do you know if sanitary napkins are given at schools?	1= Yes 2= No
78.	Do you know if sanitary latrine is there at school?	1= Yes 2= No

Observation guides

Study title: Progress and challenges in Implementation of Anemia Mukt Bharatamong rural and tribal adolescents in Tamil Nadu

Observation guide for all study schools

Permission from District and Block Education Officers will be obtained

Permission from selected two school Headmasters- one from day and another from tribal residential school will be obtained

PIS and consent from the concerned teachers will be obtained

Observation item	Checklist

Name of the school				•			
Name of the Headmaster				•			
Address of the school				•			
GPS				•			
Name of ANM/VHN, Contacy				•			
Name of PHC MO				•			
Name of RBSK MO				•			
No. of students enrolled				• Male • Female			
5th Male Female	6th Male Female	7th Male Female	8th Male Female	9th Male Female	10th Male Female	11th Male Female	12th Male Female
Stock of Iron tablets				• Adequate for the number of students in school* • Inadequate for the number of students in school			
Supply of Iron tablets				• Weekly • Monthly • Yearly • Others – describe			
Any expired iron tablets present				• Yes • No			
Log register of arrival				•			
Log register of distribution of tablets				•			
Storage of WIFS							
Celebration of biannual deworming day in the last 6 months (August/February)				• Yes • No			

Stock of Albendazole	• Adequate for the number of students in school* • Inadequate for the number of students in school
Names of 2 WIFS nodal teachers	1 2
Are the teachers consuming the tablets along with children?	• Yes • No
WIFS is given for whom in which age group?	• Boys – age • Girls – age
Provision of mid-day meals in school	• Yes • No
Provision of breakfast in school	• Yes • No
Milk/ egg supply in school	•
Use of iron fortified rice in school	• Yes • No
Use of iron fortified salt in school	• Yes • No
Foot wear usage by students	• All children use footwear • Some do not use footwear
Toilets in school	• Present only for staff • Present only for female students • No toilet present • Present but non functional
Toilet locked	• Yes • No
Sanitation Type service level at school (refer JMP)	a) safely managed b) basic c) limited

	d) unimproved e) open defecation
Handwashing facilities	• Present with soap • Present without soap • Absent
Handwashing facility at School	a) basic b) limited • c) no facility
Menstrual hygiene scheme	• Sanitary napkins available • Sanitary napkins not available • Sanitary vending machine • Menstrual cups
Presence of IEC materials regarding anemia in school	• Yes • No
Any education session about anemia in assembly or school functions	If yes Describe
Last visit by ANM for supervision (Date)	
Presence of list of anemic children	• Yes • No
Last hemoglobin assessment of children by RBSK team	Date:
Any hemoglobinopathy suspected	
Any hemoglobinopathy identified	
Any hemoglobinopathy referred	
List of anemic children referred to PHC by RBSK team	
List of anemic children managed by RBSK Team in school	

List of children identified with fluorosis and referred by RBSK team/Teachers	

*IFA tablet calculation for the year = (52x total number of children in 6-12th standards)+(52 tablets/per teacher/year). An additional 20% stock as buffer should be added

*Albendazole tablets requirements per year= (2 x number of children in 6th-12th standards)+10% stock as buffer

Observation guide for Solid Body Smart Mind Behavioural Change Communication Implementation at Anganwadi Centres

Name of the anganwadi centre	
Name of the Anganwadi Teacher	
Name of the village	
Iron fortified salt	
Iron Fortified rice	
Behaviours under Solid Body Smart Mind BCC covered	
Appropriate Infant and Young child feeding practices advised	• Early initiation of breastfeeding • Exclusive breastfeeding for 6 months • continued breastfeeding for 2 years • supplementary nutrition from 6 months
Improving compliance to Iron Folic Acid supplementation and deworming	• IFA prophylactic supplementation to out of school adolescents,

	pregnant and lactating adolescents • Biannual deworming day celebration • awareness on IFA consumption and albendazole consumption
Increase in intake of iron-rich food through diet diversity/quantity/frequency and/or fortified foods with a focus on harnessing locally available resources	• awareness on iron rich food among adolescents

Observation guide for Solid Body Smart Mind Behavioural Change Communication Implementation at Ayushman Bharath Health and Wellness Centres

(In areas where the schools are located)

Name of the ABHWC	
Name of the Community Health Officer	
Name of the ASHA worker	
Name of the village	
Behaviours under Solid Body Smart Mind BCC covered	
Improving compliance to Iron Folic Acid supplementation and deworming	• IFA prophylactic supplementation to adolescents, pregnant and lactating adolescents • Biannual deworming day celebration • awareness on IFA consumption and albendazole consumption

Increase in intake of iron-rich food through diet diversity/quantity/frequency and/or fortified foods with a focus on harnessing locally available resources	• awareness on iron rich food among adolescents
Ensuring delayed cord clamping after delivery (by 3 minutes) in health facilities	• Yes • No • Not applicable • Not aware

Observation guide for Primary Health Centres

Name of the PHC	
Name of the MO	
Name of the ASHA worker	
Name of the village	
Behaviours under Solid Body Smart Mind BCC covered	
Improving compliance to Iron Folic Acid supplementation and deworming	• IFA prophylactic supplementation to adolescents, pregnant and lactating adolescents • Biannual deworming day celebration • awareness on IFA consumption and albendazole consumption
Increase in intake of iron-rich food through diet diversity/quantity/frequency and/or fortified foods with a focus on harnessing locally available resources	• awareness on iron rich food among adolescents

Ensuring delayed cord clamping after delivery (by 3 minutes) in health facilities	• Yes • No • Not applicable • Not aware
Line listing of adolescents with anemia maintained	• Yes • No
Any hemoglobinopathy suspected, identified and referred	
List of children identified with fluorosis	

Observation guide for Village Health Sanitation and Nutrition Committee Meeting-1

Name of the village	
Members of theVHSNC	
Name of the ASHA Worker	
Is this a sub committee of Gram Panchayat?	
Number of participants in the meeting	
Date of the meeting	
Venue of the meeting	
Last date of conduct of awareness on nutrition in the village	
Whether anemia awareness session was conducted in the last 1 year?	• Yes • No

Whether any survey on nutrition has been conducted in the village	• Yes • No
Locally available nutritional rich foods	
Whether nutrition is included in village health plan? If yes describe	
Whether anemia is included in village health plan? If yes describe	
Any grievance issues regarding nutrition received	

Observation guide for Village Health Sanitation and Nutrition Day-1

Name of the village	
Members of the VHSNC	
Name of the ASHA Worker	
Name of AWW	
Name of ANM	
Day of the week	
Frequency of VHSND observation (usually it is monthly)	• **Weekly** • **Fortnightly** • **Monthly** • **Others – describe**
Health workers present	
Number of participants present	
Date of the session	
Venue of the session	
Last date of conduct of awareness on nutrition	

Whether anemia awareness session was conducted in the last 1 year?	• Yes • No
Whether awareness regarding IFA is being provided in the session or in the past session	• Yes • No
Whether adolescents are given focus in the session?	• Yes • No

Observation checklist for National Nutrition Week Celebration (September 1-7)

Venue of event	
Date of event	
Total number of participants	
Health workers who conducted the event	
Describe the event	
Whether anemia was discussed	
Topics covered in the event	

Observation checklist for Adolescent Health and Wellness Days

Venue of Day	
Date of event	
Name of the village	
Name of school/ABHWC	
Name of CHO	
Total number of participants	

Health workers who conducted the event	
Describe the event	
Whether anemia was discussed	
Topics covered in the event	

Clinical Trial Details (PDF Generation Date :- Thu, 05 Sep 2024 08:47:22 GMT)

CTRI Number	CTRI/2024/09/073490 [Registered on: 05/09/2024] - **Trial Registered Prospectively**
Last Modified On	05/09/2024
Post Graduate Thesis	No
Type of Trial	Observational
Type of Study	Cross Sectional Study
Study Design	Other
Public Title of Study	Helping children and government in Tamil Nadu Stay Healthy and Strong: Fighting Anemia Together!
Scientific Title of Study	Progress and challenges in Implementation of Anemia Mukth Bharath among rural and tribal adolescents in Tamil Nadu

Secondary IDs if Any

Secondary ID	Identifier
NIL	NIL

Details of Principal Investigator or overall Trial Coordinator (multi-center study)

Details of Principal Investigator	
Name	Dr G Nancy Angeline
Designation	Assistant Professor
Affiliation	St. John's Medical College
Address	Department of Community Health St John's Medical College Bangalore Bangalore KARNATAKA 560034 India
Phone	9108551783
Fax	
Email	Nancy.ag@stjohns.in

Details Contact Person (Scientific Query)

Details Contact Person (Scientific Query)	
Name	Dr Prashanth Thankachan
Designation	Professor
Affiliation	St. John's Research Institute
Address	Division of Nutrition St. John's Research Institute Bangalore Bangalore KARNATAKA 560034 India
Phone	9886006166
Fax	
Email	Prashanth.t@sjri.res.in

Details Contact Person (Public Query)

Details Contact Person (Public Query)	
Name	Dr G Nancy Angeline
Designation	Assistant Professor
Affiliation	St. John's Medical College
Address	Department of Community Health St John's Medical College Bangalore Bangalore KARNATAKA 560034 India
Phone	9108551783

Figure 13: CTRI Registration

INSTITUTIONAL ETHICS COMMITTEE

No : IEC/1/72/2024

23rd January 2024

Dr. Nancy Angeline G
Assistant Professor
Dept. of Community Health
St. John's Medical College
Bangalore – 560 034

IEC Study Ref No. 275 / 2023

Dear Doctor,

Sub : Approval of Research proposal by the I.E.C.

I wish to inform you that your Research Project titled, **"Progress and challenges in implementation of Anemia Mukt Bharath among rural and tribal adolescents in Tamil Nadu"** has been approved by the Institutional Ethics Committee (IEC), SJMC **on 23rd January 2024.**

The approval of I.E.C. is VALID TILL END OF STUDY

NOTE THE FOLLOWING:

1. Waiver of consent is not applicable for the study.
2. **IEC approval is for inclusion of 400 subjects only**
3. **Submit Annual Study Status Report in the prescribed format.**
4. Keep the IEC informed of the following:
   - The Occurrence of Serious Adverse Events (SAE) / AE / Protocol violations and/or Death, during the study period, in the IEC specified format.
   - Protocol amendment in the IEC specified format.
   - Discontinuation (b) Abandonment.
5. **In case of record review, submit the CMS permission letter to IEC.**
6. The IEC will issue the No dues certificate only on submission of study completion report in the prescribed format.

With best wishes,

Dr. Karuna Rameshkumar, MD, PhD
Chairperson

CHAIRPERSON
Institutional Ethics Committee
St. John's Medical College & Hospital
Sarjapur Road,
Bangalore-560 034, India.

CC : The Dean, SJMC
The HOD of Community Health, SJMC

Ground Floor, St. John's Medical College, Sarjapur Road, Bengaluru - 560 034, India.
Telephone : (080) 49466346 / 48 E-mail: sjmcierb@gmail.com, sjmc.ierb@stjohns.in

Figure 14: IEC Approval

Directorate of Public Health and Preventive Medicine
Scientific Advisory Committee
No. 359, Anna Salai, DMS Campus, Teynampet, Chennai – 06.

S.No: DPHPM/DPHSAC/2024/007 R.No.011575/HEB/A2/2024
Date: 15-03-2024

Sub:	DPH - Health Education Bureau (HEB) – DPHSAC - Study protocol – "Process and Challenges in Implementation of Anaemia Mukt Bharath among rural and trible adolescents in Tamil Nadu" – Dr. G. Nancy Angeline - Regarding.
Ref:	1. Application on "Process and Challenges in Implementation of Anaemia Mukt Bharath among rural and trible adolescents in Tamil Nadu" from Dr. G. Nancy Angeline, Principal Investigator on submitted dated 12.02.2024 2. SAC Reviewer Suggestions – No Comments on 14.02.2024 3. SAC Committee Approved on 21.02.2024
IEC Approval Date	Institutional Ethics Committee, Department of Community Health, St. John's Medical College, Sarjapura Road, Bangalore – 560 034 dated on 23.01.2024

The study protocol titled "Process and Challenges in Implementation of Anaemia Mukt Bharath among rural and trible adolescents in Tamil Nadu" – is approved by the DPH- Scientific Advisory Committee (DPHSAC).

Dr. G. Nancy Angeline, Assistant Professor the Principal Investigator from the Department of Community Health, St. John's Medical College, Sarjapura Road, Bangalore – 560 034, is permitted to collect the necessary data and conduct the above study.

Subject to the following conditions:

1. Data of the study should not be shared with any other 3rd party. and it should not be published in the newspaper or in any media without the prior permission of the Government of Tamil Nadu / DPH&PM, Chennai – 06.
2. Analytical findings are to be shared to this office for useful inputs. The outcomes of the proposed study, and its implications in Public Health may be shared with this department.
3. Inference arising on analysis of the data should not be disseminated without the written permission of the Director of Public Health and Preventive Medicine / Government of Tamil Nadu.

Dr.T.S. Selvavinayagam,
Director of Public Health and
Preventive Medicine, Chennai – 06.
(P.T.O.

Page **1** of **2**

Figure 15: DPHPM Permission

From
Mrs.K.Sasikala
Joint Director
Directorate of school education
Perasiriyar Anbazhakan Educational Campus,
Chennai-06.

To
Chief Educational officers,
Dharmapuri & Krishnagiri
District.

R.C. No.56630/M2/S1/2024 Date: 29.11.2024

Sub : School Education - TamilNadu Health system Program (TNHSRP) - Study on progress and challenges in implementation of Animia Mulkth Bharath – Communication – Reg.

Ref : ORP Team, TNHSRP E-mail Dated 17.05.2024

*****

It is submitted that vide E-mail cited in reference it has been requested to permit the principal investigator Dr. G. Nancy Angeline to conduct the study in schools in Theerthamalai Block in Dharmapuri and Kelamangalam Block in Krishnagiri District.

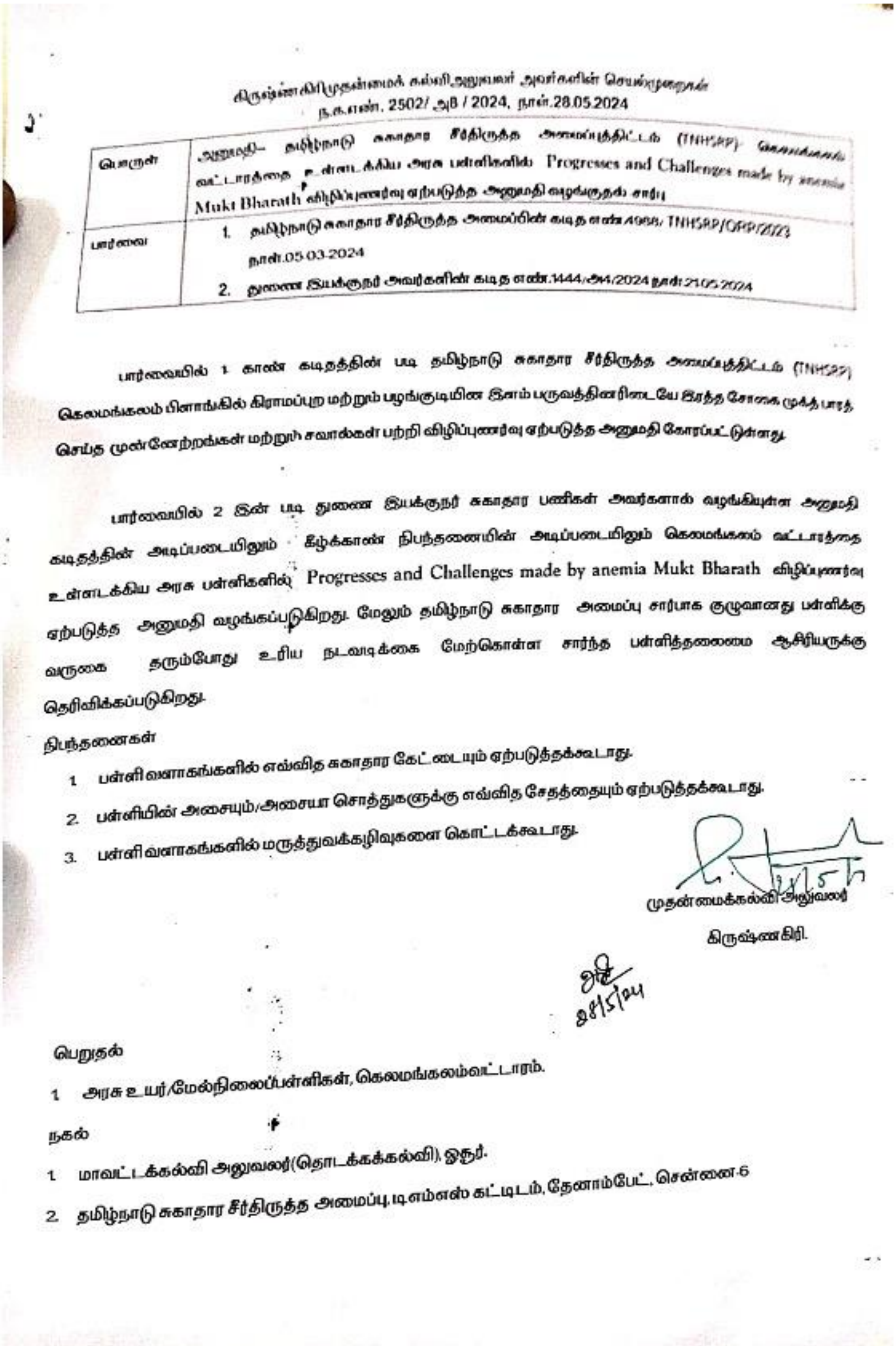
It is informed that the study is pending now in few schools. Hence it is directed Chief Educational Officer Krishnagiri and Dharmapuri to issue necessary orders and facilitate the completion of the study.

Joint Director

29/11/24

Copy to
The Project Director
Tamil Nadu Health System Reform Program,
3rd Floor, DMS Annex Building, Teynampet,
Chennai-06.

Figure 16: JD School education permission



கிருஷ்ணகிரி முதன்மைக் கல்வி அலுவலர் அவர்களின் செயல்முறைகள்
ந.க.எண். 2502/ அ8 / 2024, நாள்.28.05.2024

பொருள்	அனுமதி– தமிழ்நாடு சுகாதார சீர்திருத்த அமைப்புத்திட்டம் (TNHSRP) கெலமங்கலம் வட்டாரத்தை உள்ளடக்கிய அரசு பள்ளிகளில் Progresses and Challenges made by anemia Mukt Bharath விழிப்புணர்வு ஏற்படுத்த அனுமதி வழங்குதல் சார்பு
பார்வை	1. தமிழ்நாடு சுகாதார சீர்திருத்த அமைப்பின் கடித எண்.4988/ TNHSRP/OPP/2023 நாள்.05.03.2024 2. துணை இயக்குநர் அவர்களின் கடித எண்.1444/அ4/2024 நாள்:21.05.2024

பார்வையில் 1 காண் கடிதத்தின் படி தமிழ்நாடு சுகாதார சீர்திருத்த அமைப்புத்திட்டம் (TNHSRP) கெலமங்கலம் பிளாக்கில் கிராமப்புற மற்றும் பழங்குடியின இளம் பருவத்தினரிடையே இரத்த சோகை முக்த் பாரத் செய்த முன்னேற்றங்கள் மற்றும் சவால்கள் பற்றி விழிப்புணர்வு ஏற்படுத்த அனுமதி கோரப்பட்டுள்ளது.

பார்வையில் 2 இன் படி துணை இயக்குநர் சுகாதார பணிகள் அவர்களால் வழங்கியுள்ள அனுமதி கடிதத்தின் அடிப்படையிலும் கீழ்க்காண் நிபந்தனையின் அடிப்படையிலும் கெலமங்கலம் வட்டாரத்தை உள்ளடக்கிய அரசு பள்ளிகளில் Progresses and Challenges made by anemia Mukt Bharath விழிப்புணர்வு ஏற்படுத்த அனுமதி வழங்கப்படுகிறது. மேலும் தமிழ்நாடு சுகாதார அமைப்பு சார்பாக குழுவானது பள்ளிக்கு வருகை தரும்போது உரிய நடவடிக்கை மேற்கொள்ள சார்ந்த பள்ளித்தலைமை ஆசிரியருக்கு தெரிவிக்கப்படுகிறது.

நிபந்தனைகள்

1. பள்ளி வளாகங்களில் எவ்வித சுகாதார கேட்டையும் ஏற்படுத்தக்கூடாது.
2. பள்ளியின் அசையும்/அசையா சொத்துகளுக்கு எவ்வித சேதத்தையும் ஏற்படுத்தக்கூடாது.
3. பள்ளி வளாகங்களில் மருத்துவக்கழிவுகளை கொட்டக்கூடாது.

முதன்மைக்கல்வி அலுவலர்
கிருஷ்ணகிரி.

பெறுதல்

1. அரசு உயர்/மேல்நிலைப்பள்ளிகள், கெலமங்கலம்வட்டாரம்.

நகல்

1. மாவட்டக்கல்வி அலுவலர்(தொடக்கக்கல்வி), ஓசூர்.
2. தமிழ்நாடு சுகாதார சீர்திருத்த அமைப்பு, டிஎம்எஸ் கட்டிடம், தேனாம்பேட், சென்னை-6

Figure 17: CEO Permission from Krishnagiri

//மின்னஞ்சல் வழியாக//

தருமபுரி மாவட்ட முதன்மைக்கல்வி அலுவலரின் செயல்முறைகள்

திருவள்ளுவராண்டு 2055 / குரோதி வருடம்/கார்த்திகை -

ந.க.எண்.0175/அ4/2024 நாள்.11.12.2024

பொருள்- அனுமதி - தமிழ்நாடு சுகாதார சீர்திருத்த அமைப்புத்திட்டம்(TNHSRP) தீர்த்தமலை வட்டாரத்தை உள்ளடக்கிய அரசு பள்ளிகளில் Progresses and Challenges made by Anemia Mukt Bharath விழிப்புணர்வு ஏற்படுத்த அனுமதி வழங்குதல் - தொடர்பாக.

பார்வை- 1. சென்னை-06, பேராசிரியர் அன்பழகன் கல்வி வளாகம், பள்ளிக் கல்வி இணை இயக்குநர் அவர்களின் கடித எண்.56630/எம்2/எஸ்1/2024 நாள்.29.11.2024

2. தமிழ்நாடு சுகாதார சீர்திருத்த அமைப்பின் கடித.எண்.4988/ TNHSRP/ORP/2023 நாள்.05.03.2024

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பார்வை(2)இல் படிக்கப்பட்ட படி தமிழ்நாடு சுகாதார சீர்திருத்த அமைப்புத்திட்டம் (TNHSRP) தீர்த்தமலை வட்டம் கிராமப்புற மற்றும் பழங்குடியின இளம் பருவத்தினரிடையே இரத்த சோகை முக்த் பாரத் செய்த முன்னேற்றங்கள் மற்றும் சவால்கள் பற்றி விழிப்புணர்வு ஏற்படுத்த அனுமதி கோரப்பட்டுள்ளது.

எனவே, பார்வை(1)இன் படி, இணை இயக்குநர் அவர்களால் வழங்கியுள்ள அனுமதி கடிதத்தின் அடிப்படையிலும் கீழ்க்காண் நிபந்தனைமின் அடிப்படையிலும் தீர்த்தமலை வட்டாரத்தை உள்ளடக்கிய அரசு பள்ளிகளில் Progresses and Challenges made by Anemia Mukt Bharath விழிப்புணர்வு ஏற்படுத்த அனுமதி வழங்கப்படுகிறது. மேலும் தமிழ்நாடு சுகாதார அமைப்பு சார்பாக குழுவானது பள்ளிக்கு வருகை தரும்போது உரிய நடவடிக்கை மேற்கொள்ள சார்ந்த பள்ளித்தலைமை ஆசிரியருக்கு தெரிவிக்கப்படுகிறது.

நிபந்தனைகள்:

1. பள்ளியின் அன்றாட பணிகளுக்கு இடையூறு இல்லாமல், விழிப்புணர்வு திட்டம் மேற்கொள்ளுதல் வேண்டும்.
2. பள்ளி வளாகங்களில் எவ்வித சுகாதார கேட்டையும் ஏற்படுத்தக்கூடாது.
3. பள்ளி வளாகங்களில் மருத்துவக்கழிவுகளை கொட்டக்கூடாது.

Figure 18: CEO permission from Dharmapuri

Figure 19: Children having lunch in school

Figure 20: Data collection among parents

Figure 21: Data collection among teachers

Figure 22: Information about the study to children

Figure 23: Height Measurement

Figure 24: Weight Measurement

Figure 25: National Deworming Day

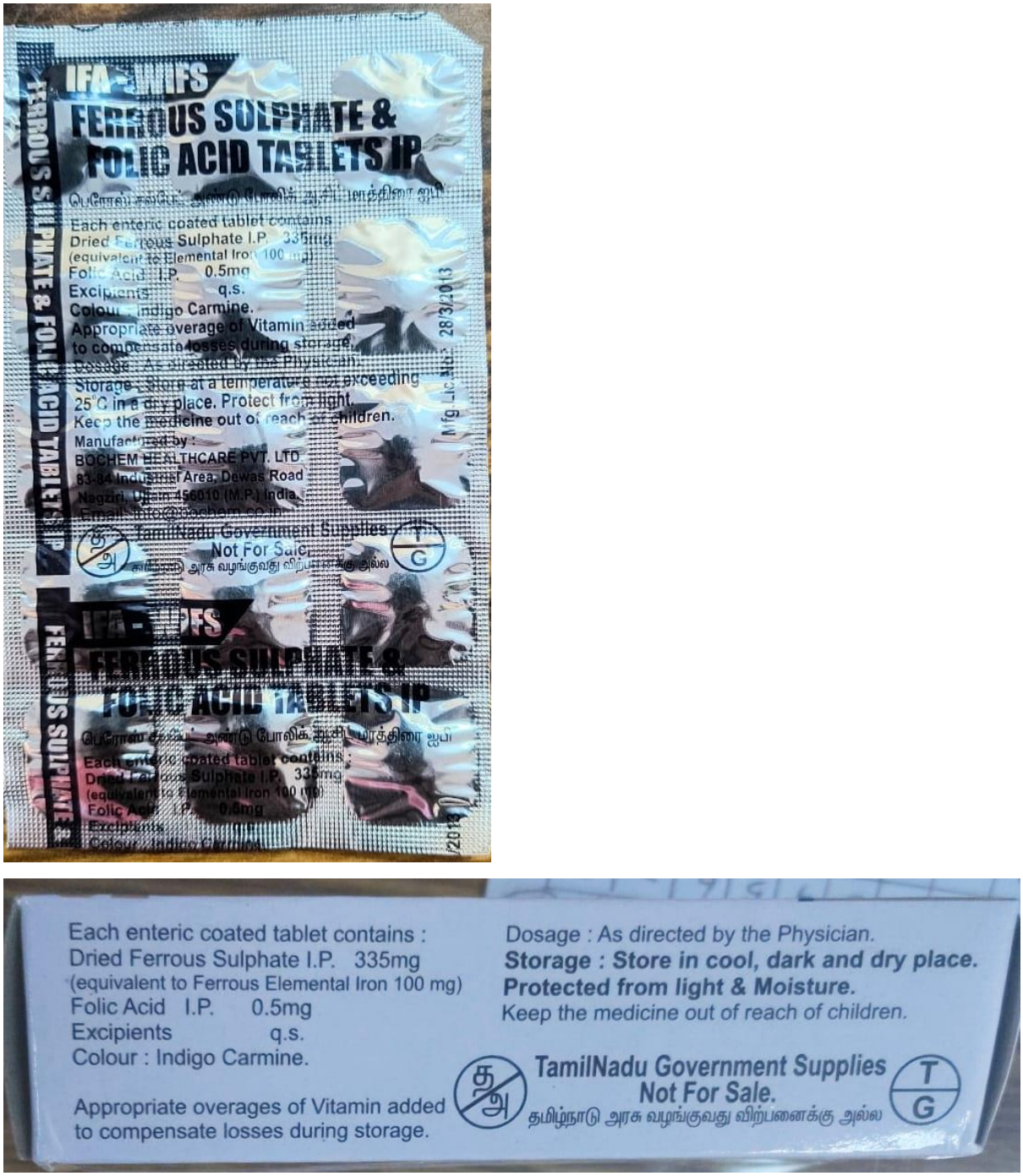
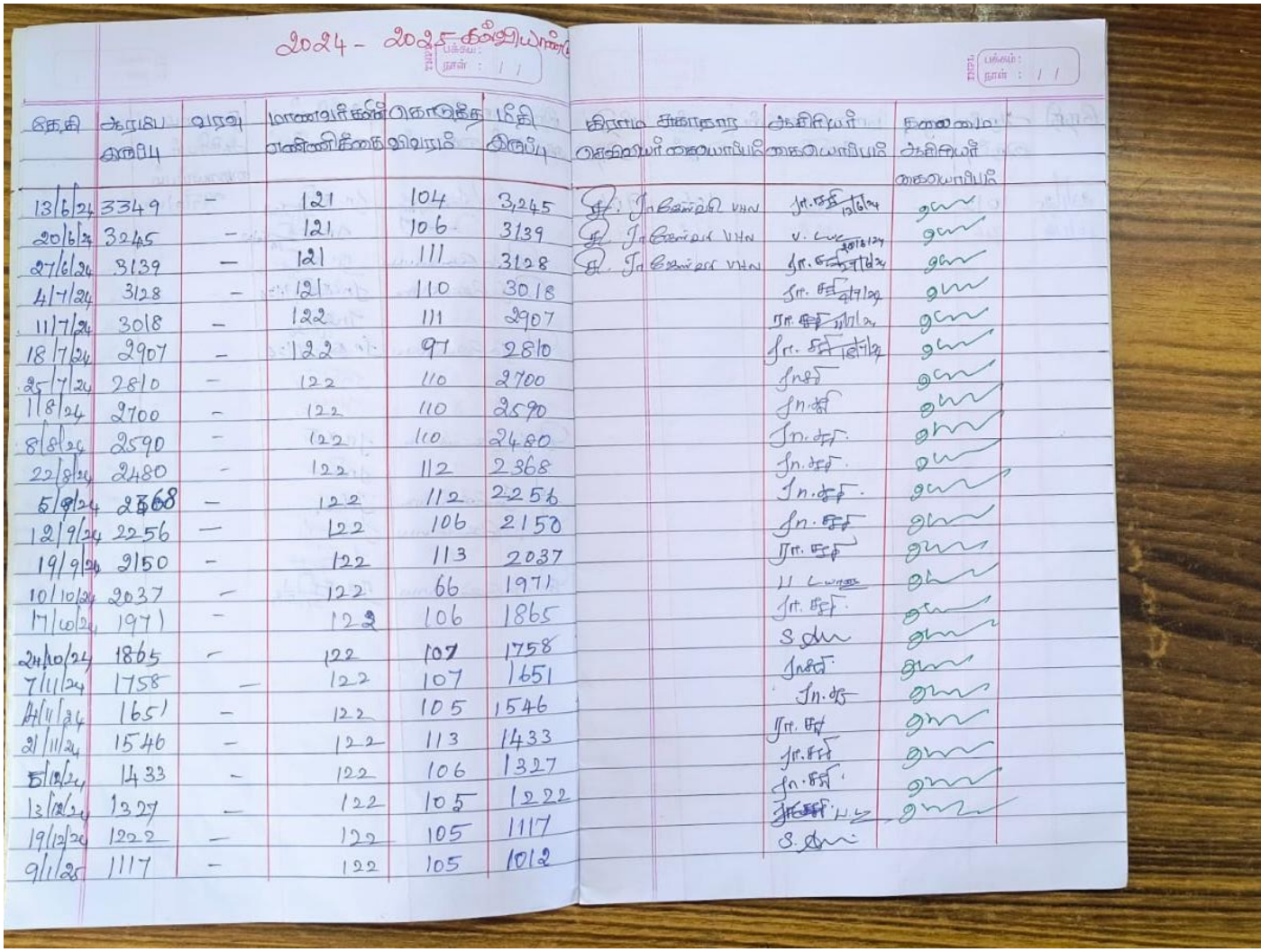


Figure 26: WIFS tablets



தேதி	கரும்பு எண்ணிக்கை	வரவு	மாணவிகளின் எண்ணிக்கை	செலவுத்தொகை விவரம்	மீதி இருப்பு
13/6/24	3349	-	121	104	3,245
20/6/24	3245	-	121	106	3139
27/6/24	3139	-	121	111	3128
4/7/24	3128	-	121	110	3018
11/7/24	3018	-	122	111	2907
18/7/24	2907	-	122	97	2810
25/7/24	2810	-	122	110	2700
1/8/24	2700	-	122	110	2590
8/8/24	2590	-	122	110	2480
22/8/24	2480	-	122	112	2368
5/9/24	2368	-	122	112	2256
12/9/24	2256	-	122	106	2150
19/9/24	2150	-	122	113	2037
10/10/24	2037	-	122	66	1971
17/10/24	1971	-	122	106	1865
24/10/24	1865	-	122	107	1758
7/11/24	1758	-	122	107	1651
14/11/24	1651	-	122	105	1546
21/11/24	1546	-	122	113	1433
5/12/24	1433	-	122	106	1327
12/12/24	1327	-	122	105	1222
19/12/24	1222	-	122	105	1117
9/1/25	1117	-	122	105	1012

கிராம சுகாதார செவிலியர் கையொப்பம்	ஆசிரியர் கையொப்பம்	தலைமை ஆசிரியர் கையொப்பம்
J.		ஒப்பம்
J.		ஒப்பம்
J.		ஒப்பம்
		ஒப்பம்
		ஒப்பம்
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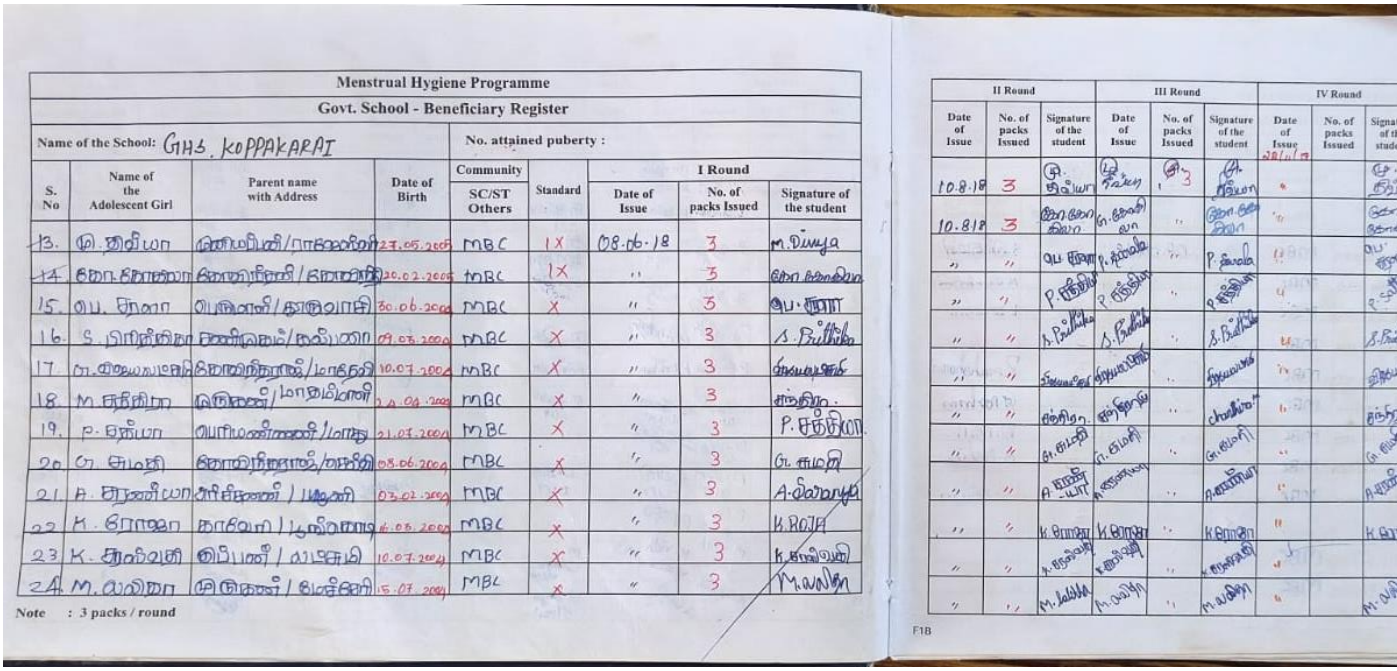
		ஒப்பம்
		ஒப்பம்
		ஒப்பம்

Figure 27: WIFS Register

Figure 28: Menstrual Hygiene Scheme



Menstrual Hygiene Programme

Govt. School - Beneficiary Register

Name of the School: GHS. KOPPAKARAI

No. attained puberty :

S. No	Name of the Adolescent Girl	Parent name with Address	Date of Birth	Community SC/ST Others	Standard	I Round Date of Issue	I Round No. of packs Issued	I Round Signature of the student	II Round Date of Issue	II Round No. of packs Issued	II Round Signature of the student	III Round Date of Issue	III Round No. of packs Issued	III Round Signature of the student	IV Round Date of Issue	IV Round No. of packs Issued	IV Round Signature of the student
13.	M. திவ்யா	மணியினி/ராகவன்	27.05.2005	MBC	IX	08.06.18	3	M.Divya	10.8.18	3							
14.	G. சுமதி	கோவிந்தி/கோவிந்தி	20.02.2005	MBC	IX	"	3	G. சுமதி	10.8.18	3							
15.	A. ரோஜா	பெருமாள்/தாயுமாசி	30.06.2004	MBC	X	"	3	A. ரோஜா	"	"							
16.	S. பிரிதிவிகா	கண்ணன்/கவிதா	09.03.2004	MBC	X	"	3	S. பிரிதிவிகா	"	"							
17.	G. வேலுமயில்	கோவிந்தராஜ்/மாதேவி	10.07.2004	MBC	X	"	3	G. வேலுமயில்	"	"							
18.	M. சந்தியா	முருகன்/மாதம்மாள்	24.04.2004	MBC	X	"	3	M. சந்தியா	"	"							
19.	P. ஹரிணி	பெரியண்ணன்/மாது	21.03.2004	MBC	X	"	3	P. ஹரிணி	"	"							
20.	G. சுமதி	கோவிந்தராஜ்/தனலட்சுமி	08.06.2004	MBC	X	"	3	G. சுமதி	"	"							
21.	A. ரோஜா	சரவணன்/ஜோதி	03.02.2004	MBC	X	"	3	A. ரோஜா	"	"							
22.	K. ரோஜா	காவேரி/ஆனந்தராஜ்	16.05.2004	MBC	X	"	3	K. ROJA	"	"							
23.	K. தனலட்சுமி	திப்பண்ணி/மாதேசுமி	10.07.2004	MBC	X	"	3	K. தனலட்சுமி	"	"							
24.	M. மலர்கொடி	முருகன்/பெச்சாயி	15.07.2004	MBC	X	"	3	M. மலர்கொடி	"	"							

Note : 3 packs / round

F18

Figure 29: Menstrual Hygiene Scheme Register

Figure 30: Handwashing and sanitation facilities in school

Figure 31: Fortified rice used in mid day meals

Figure 32: Double fortified salt used in Mid day meals

Figure 33: Coloured eggs in mid day meals

Figure 34: Prepared Mid day meals

Figure 35: Mid day meals served in schools

Table 11: Oil and Iodised Salt distributed in PDS

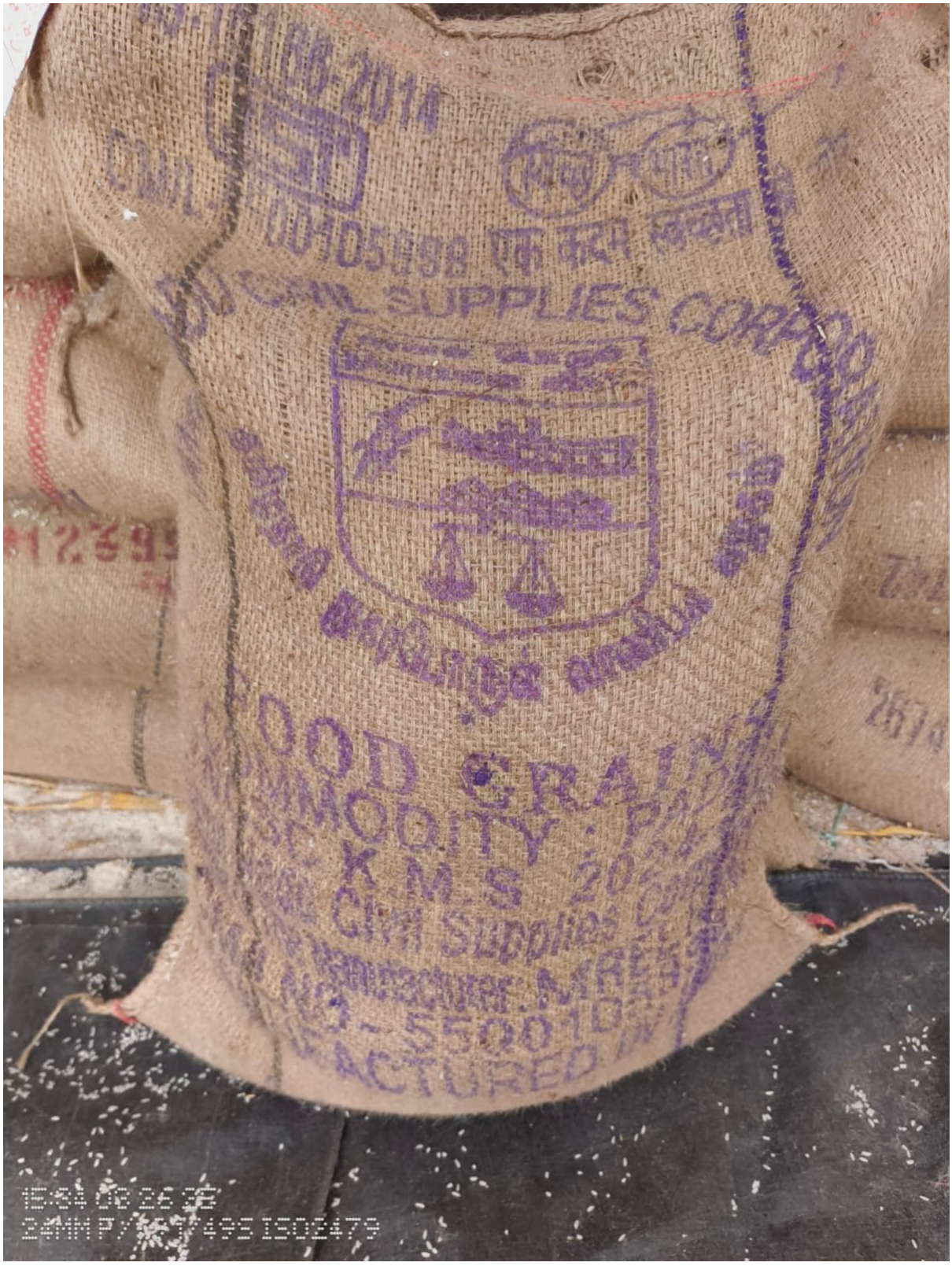


Figure 36: Rice sacks in PDS without F+

Figure 37: VHND in community