

A Study of Anaemia Prevalence
and Awareness Among
Adolescent students of
TSWREIS– A Mixed Method
Study



for a Safer Society





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Introduction

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

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

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

According to NFHS 5, anaemia in adolescent girls of Telangana is around 64.7%. It would be surprising to understand that anaemia in adolescent girls is as high as 79% in some parts of Telangana.



Study Objective

Primary objective:

- To understand the prevailing situation of Anaemia in Adolescent girls and to estimate the knowledge and skill of Healthcare stakeholders of Telangana Social Welfare Residential Schools.

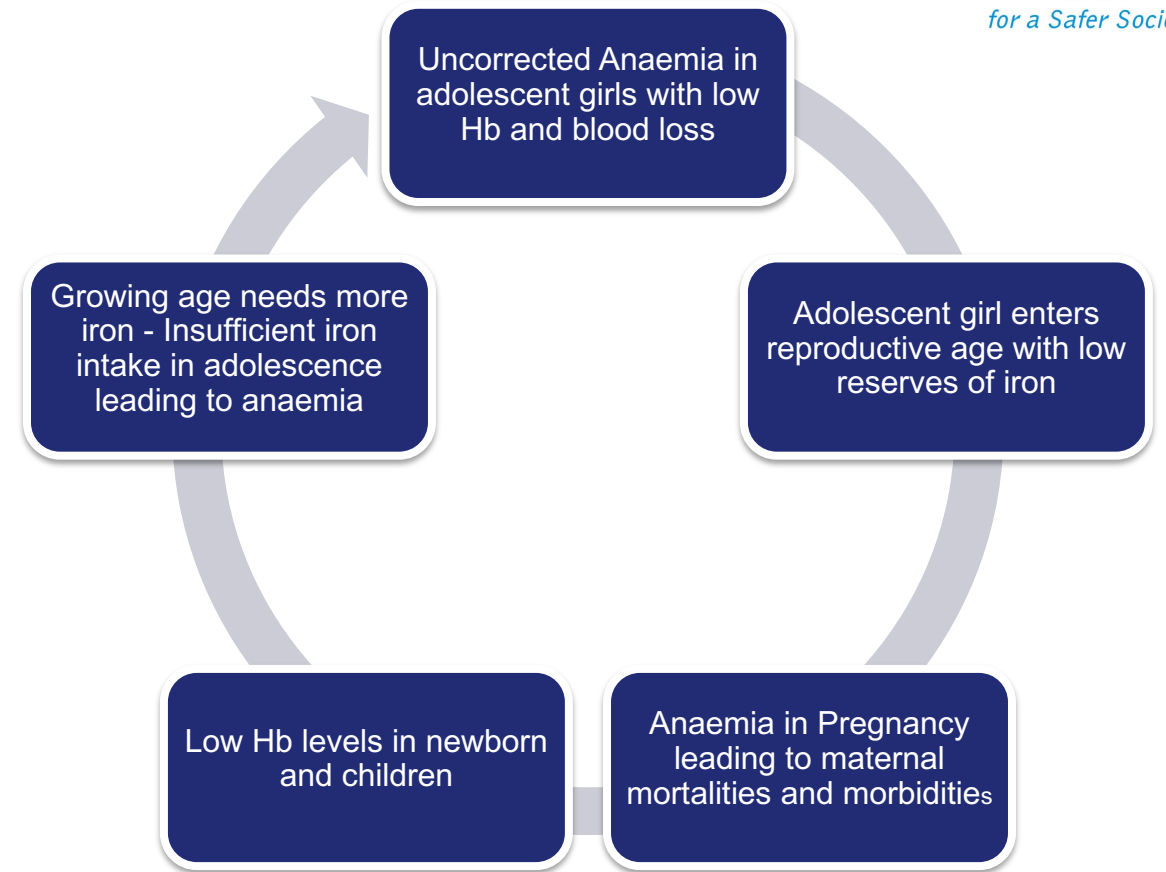
Secondary objectives:

- To provide training for all the stakeholders and beneficiaries involved in the caretaking of these adolescent girls.
- To assess the outcome of the awareness programs.



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Need for correction of Anaemia in Adolescent age





Study Population

- Based on the Anaemia performance indicators, obtained from the Health Command centre and the NFHS 5 data, the districts would be graded as good, moderate and poor, out of which 20% would be selected from each category for the study. The selection criteria of the participants would be in such a way that it includes all the social, geographical, cultural and economic insights of the current situation. Various stakeholders include (the study population will be only stakeholders) -
 - i. State level policy makers: Deputy Secretary, Health care officers, Training, and monitoring officers (of both sexes)
 - ii. Health command Centre staff: Project head, Doctors, Health care assistants and field staff (of both sexes)
 - iii. Regional Health officers: Regional health and sanitation officers of 13 regions (of both sexes)
 - iv. Principals: One Principal from one revenue division of the selected districts
 - v. Teachers: One teacher from one revenue division of the selected districts
 - vi. Health Supervisors: One Health supervisor from one revenue division of the selected districts
 - vii. Assistant care takers: One Assistant caretaker from one revenue division of the selected districts



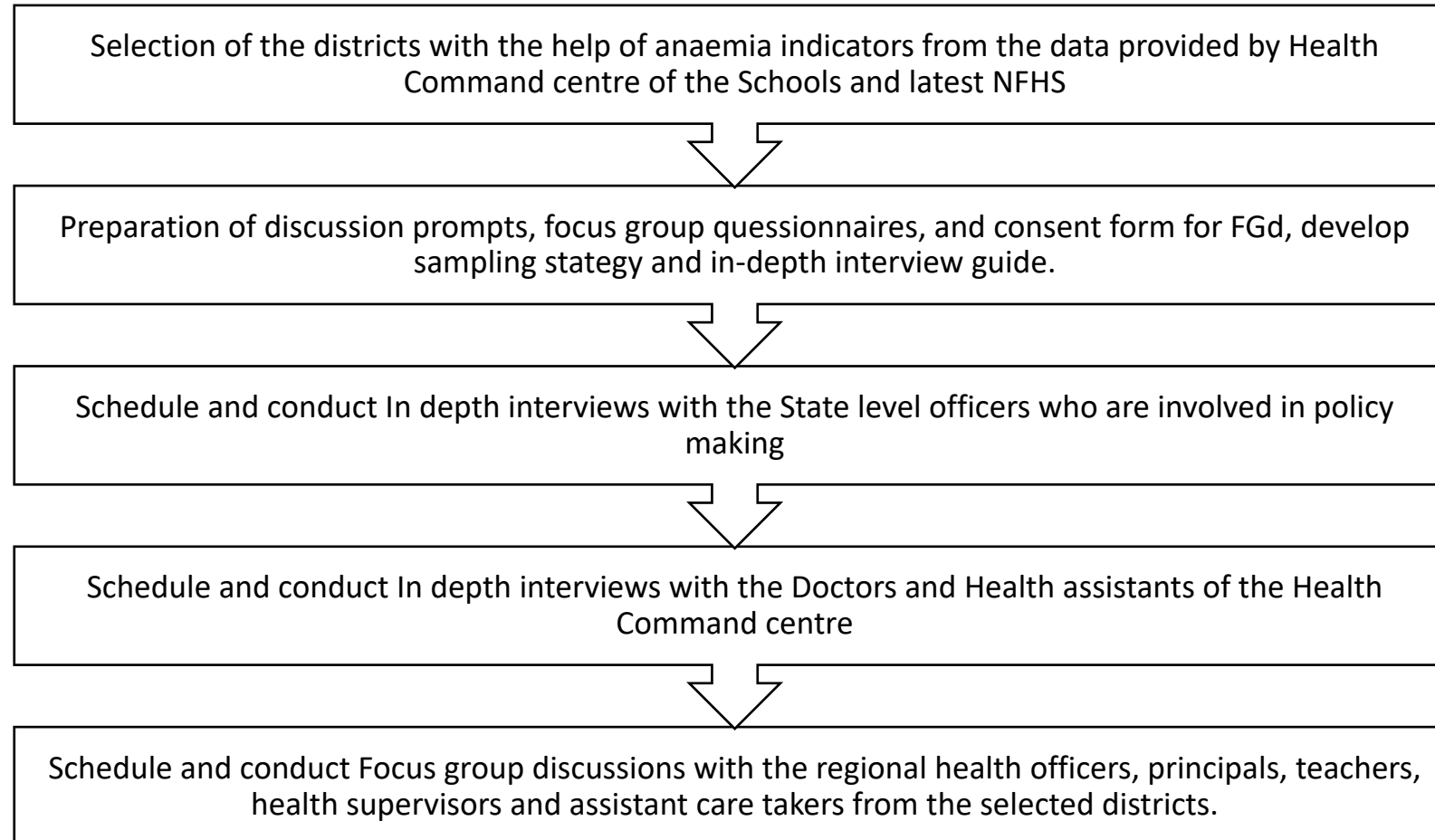
Subject Eligibility

- a. Inclusion Criteria: All stakeholders dealing with girls' schools will be included in the study (exception for state level officers, command centre staff and regional health officers). The age group of the girls studying in the Telangana Social welfare residential schools is 10yrs to 18 yrs.
- b. Exclusion Criteria: All stakeholders dealing with boys' schools will be excluded from the study (exception for state level officers, command centre staff and regional health officers)

Study Design



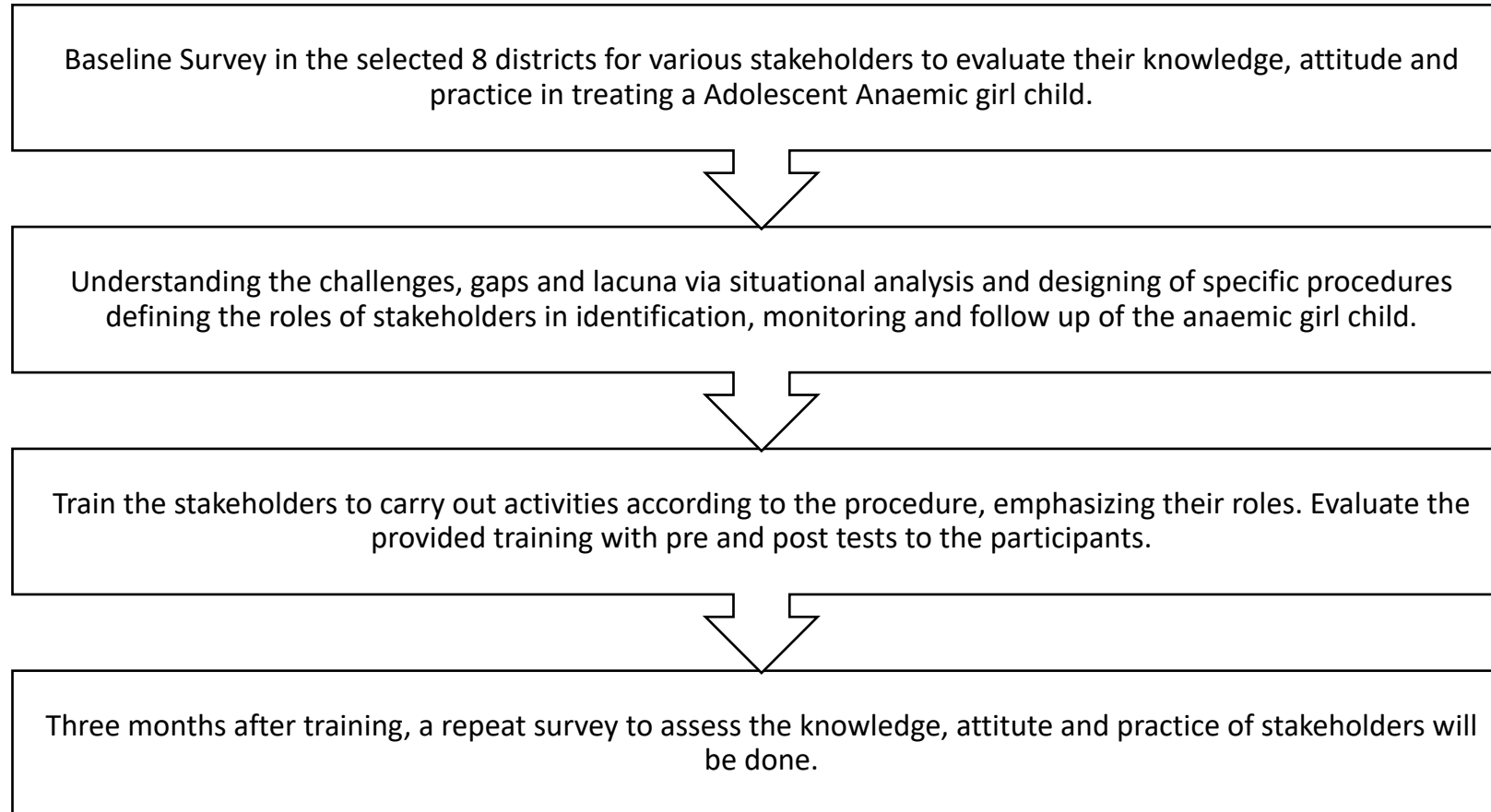
Part 1:



Study Design



Part 2:

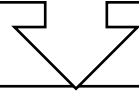


Study Design



Part 3:

Process evaluation of the implemented protocols and trend analysis to understand the effectiveness of the protocols.



Detailed qualitative and quantitative analysis and reporting



Methodology

- i. Preparation of the informed consents for FGD/IDI/Baseline Survey/Pre- Post test tools and Process evaluation tools
- ii. Preparation of FGD/IDI/Baseline Survey/Pre- Post test tools and Process evaluation tools
- iii. Data collection: FGDs and IDIs will be open end discussions where the participants can provide their in-detail opinions regarding the questions being asked. Baseline survey and pre post test tools will contain closed end questions, which would help in quantitative analysis. FGDs and IDIs will be conducted either in person or online platforms where the discussions will be recorded and later transcribed. Google online survey platform will be used to conduct baseline/endline surveys and pre post test tools. Data for trend analysis will be collected from the electronic health records handled by Synergy India Foundation, district wise numbers of severe, mild and moderate anaemia every 6 months.
- iv. Statistical Data Analysis: Qualitative analysis to understand the strengths, weakness, opportunities and threats faced by the stakeholders, in taking care of the adolescent anaemic girls will be performed. Quantitative analysis for the comparison of baseline and endline survey will be executed with the help of Microsoft Excel and SPSS, to understand the frequency and percentage of the knowledge, attitude and practices of the participants. For pre post test tools, the relative percentage change in the scores of individuals as well as the question with the effect size of the training will be calculated. The student t test will be performed to understand the statistical significance of the data in the quantitative analysis using SPSS software. District wise trend analysis will be conducted quantitatively to understand the trends before and after implementation of the project.



Progress of the study

- Part 1: Initiated and completed FGDs and IDIs with various stakeholders responsible for the healthcare of the children studying in the schools. IDIs were performed one-on-one, and FGDs were conducted on an Online platform. All the interviews were recorded. Transcriptions and codes were made for the completed FGDs and IDIs. Sample districts were selected based on their performance indicators.
- Part 2: A baseline Study has been conducted on the Health Supervisors working across Telangana, and the basic analysis of this baseline has been studied.
- Part 2: Based on the analysis, a protocol has been developed (PPT) with the help of the doctors working at the health care centre, Panacea.



Part 1 – IDIs and FGDs

8 IDIs were conducted with State level offices (4) and Doctors (4) working at the Health Care Centre, Panacea.

16 FGDs were conducted with a total of 54 stakeholders

- 1. 3 batches of 11 RHSOs (Regional Health and Sanitation Officers), (Across Telangana)
- 2. 3 batches of 10 Teachers (from 7 districts – Kumarambheem Asifabad, Jogulamba Gadwal, Nizamabad, Siddipet, Vikarabad, Khammam, Warangal)
- 3. 3 batches of 9 Principals (from 7 districts – Kumarambheem Asifabad, Jogulamba Gadwal, Nizamabad, Siddipet, Vikarabad, Khammam, Warangal)
- 4. 3 batches of 10 Health Supervisors (from 7 districts – Kumarambheem Asifabad, Jogulamba Gadwal, Nizamabad, Siddipet, Vikarabad, Khammam, Warangal)
- 5. 1 batch of 4 Health Assistants (Panacea Command Centre)
- 6. 3 batches of 10 Assistant Care Takers (from 7 districts – Kumarambheem Asifabad, Jogulamba Gadwal, Nizamabad, Siddipet, Vikarabad, Khammam, Warangal)

SWOT Analysis - Strengths - Initiatives



- Sif Note
- Health Leaders
- Lifesaving Group Meetings
- Healthy Tuesday
- Special Diet
- Buddy Pairs
- Yoga and Exercise daily

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

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

SWOT Analysis - Weakness - Challenges



- Delay in identification due to lack of regular screenings and skills in identification
- Quality of food
- Lack of uniform methods of identification, management and treatment
- Poor eating by the students
- No proper reporting by the girls with suffering from heavy bleeding

“Many girls don’t eat food, they are from low economy group, so they don’t have proper food to eat, there is hormonal imbalance which causes gynaec issues and over bleeding, leading to anaemia and vice versa. Severe loss of blood will require blood transfusion for which parents doesn’t give their consent, and some are being managed without blood transfusion.” - Doctor#1

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

SWOT Analysis - Opportunities - Probable Solutions



- Regular screening for all the students (RBSK, SIF, PHC, Digital Hemoglobinometer (being used by HS in some schools))
- Fortification of food and proper sanitation
- Protocol Designing and training the healthcare staff to have uniform methods of identification, treatment and management across the schools.
- Awareness camps for the students to make them understand the side effects and future implications of Anaemia.

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

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



SWOT Analysis - Threats - Possible barriers

- Lack of uniformity in the treatment and food provided can have a greater influence on the outcomes in reducing anaemia.
- Lack of very strict follow up will lead to long term anaemia ending up as maternal Anaemia. This has some fatal side effects during maternity and hence adolescence is the correct age to resolve the issue. (80% of maternal deaths due to Anaemia in Southeast Asia)
- Misconceptions about blood transfusion during emergency.
- Severe anaemia leading to academic loss of the students.



Part 2 – Baseline Study

- A detailed baseline was conducted for Health supervisors, who act as the first contact of health care for the students (March 2022).
- An online baseline survey form was created, and all the Health Supervisors across the state were invited to an online meeting. They were given oral and written informed consent in the survey form.
- The responses were recorded in a google form, cleaned and analysed.
- Of the total 270 schools 182 responses were received of which 165 responses were eligible for analysis.



ANALYSIS OF THE BASELINE STUDY -

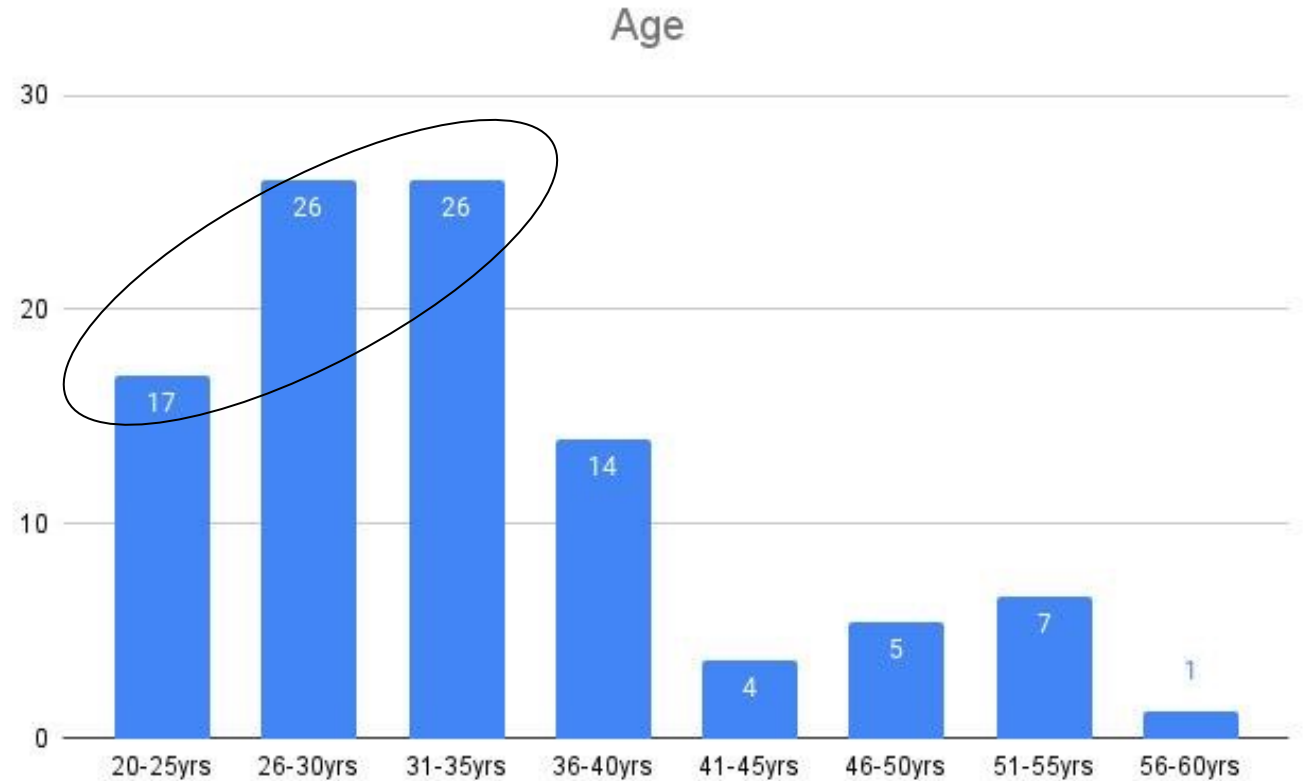
Total Number of Eligible Responses

Total number of Schools/Health Supervisors	270
Total number of responses recieved	182
Total number of Eligible responses	165

Background Information - Gender, Age, Experience and Qualification



Gender	N	N%
Female	127	77
Male	38	23
Experience as a Health Supervisor	N	N%
0-5 Years	103	62
6-10 years	23	14
11-15 years	15	9
16-20 years	5	3
21-25 Years	4	2
26-30 Years	15	9
Qualification	N	N%
ANM	34	21
GNM	88	53
RMP	3	2
Doctor in Alternative Medicine	12	7
Other	28	17



IDENTIFICATION OF ANAEMIA BY THE HEALTH SUPERVISORS

When HS were asked to estimate students falling under particular type of Anaemia:	<20%	20-30%	30-40%	40-50%	50-60%	60-70%	70% & Above
	N%	N%	N%	N%	N%	N%	N%
Percentage of students suffering from Mild Anaemia as identified by the Health Supervisors	68	15	4	0	6	4	2
Percentage of students suffering from Moderate Anaemia as identified by the Health Supervisors	61	16	9	0	10	4	1
Percentage of students suffering from Severe Anaemia as identified by the Health Supervisors	87	6	6	0	1	0	1
Percentage of students suffering from Very Severe Anaemia as identified by the Health Supervisors	89	6	4	0	1	0	1

Identification of Anaemia based on classification by HS

When HS were asked to identify the correct range of Anaemia:

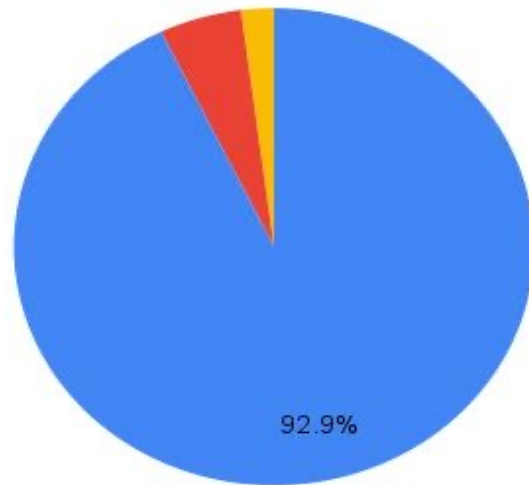
	>12g/dl (N%)	10-11.9g/dl (N%)	7-9.9g/dl (N%)	<7g/dl (N%)	<4g/dl (N%)	I'm not sure
Normal Hb Level	81	9	4	1	3	2
Mild Anaemia	26	44	22	3	2	3
Moderate Anaemia	4	32	48	14	0	2
Severe Anaemia	2	8	9	63	16	3
Very Severe Anaemia	4	10	3	31	52	6

*Source: Haemoglobin concentration for the diagnosis of anaemia and assessment of severity. WHO

KAP of Health Supervisors in identification of Anaemia

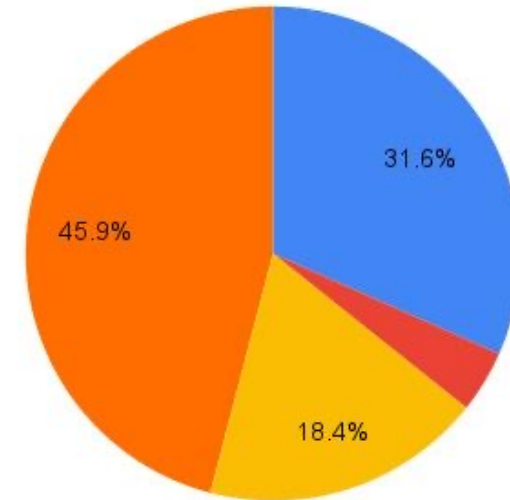


Definition of Anaemia



- Having less percentage of Haemoglobin in blood
- Having less percentage of plasma in the blood
- Having less percentage of WBC in the blood

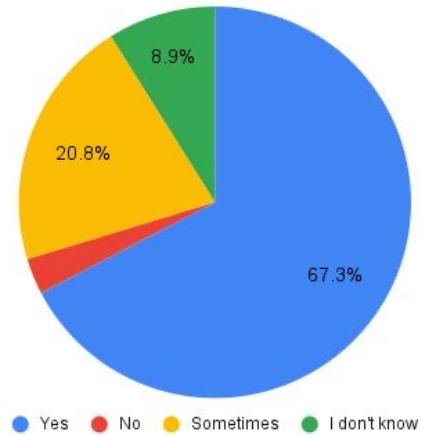
Causes of Anaemia



- Poor dietary intake of iron
- Low bioavailability of iron
- Low protein; Dietary deficiency of Vitamin C, Folate and Vitamin B12
- All the above

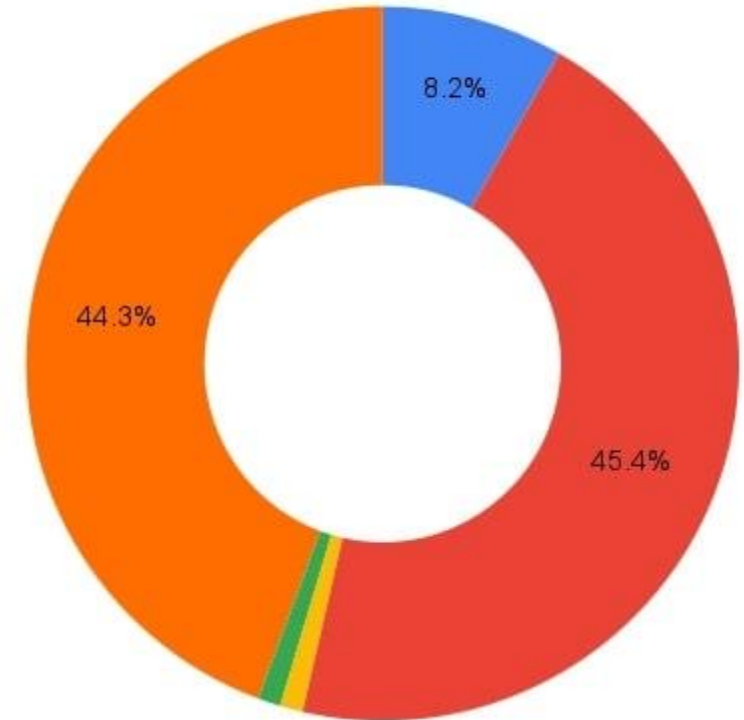
KAP of Health Supervisors in identification of Anaemia

Ability to diagnose anaemia by physiological signs and symptoms



General Signs and Symptoms of Anaemia

- Weak Bones, Body aches, fatigue, depression
- Pale skin, Pallor in the inner rims of the lower eyelid, Brittle and spoon shaped nails
- Pallor of hands, Glossitis, Pica
- Delayed wound healing, small clots underneath the nails, tarry stools
- b and c



KAP of Health Supervisors in identification of Anaemia

	Yes	No	Sometimes	I don't know
	N%	N%	N%	N%
Comprehension of treatment methods under mild, moderate and severe anaemia based on Hb%	76	2	13	8
Anaemia having an effect on the student's lack of concentration, attention deficiency, fatigue and severe weakness	74	4	15	8
Anaemia having an effect on the student's appetite	71	7	13	9
Role of diet in alleviating anaemia	90	2	7	1
Role of diversified diet in alleviating anaemia	62	3	19	16
Role of diet provided by the school in alleviating anaemia	58	9	20	13
Taking the student to the nearest PHC/Hospital	75	1	23	2
Prescribing a diet to the student	80	0	19	1
Planning meals for the Students	70	7	17	6
Organise LSG(Life Saving Group) Meetings and Healthy Tuesdays	82	1	16	1

KAP of Health Supervisors in identification of Anaemia

	Start giving them Special Diet	Start giving them IFA Tablets (as per Doctor's recommendation)	Take the student to the nearest health care centre and start iron-sucrose injections (as per Doctor's recommendation)	Take the student to the nearest health care centre and start them on Blood Transfusion (as per Doctor's recommendation)	Other	I don't know
	N%	N%	N%	N%	N%	N%
Suggestion to the student with Mild Anaemia	69	13	6	1	8	4
Suggestion to the student with Moderate Anaemia	43	47	4	3	2	2
Suggestion to the student with Severe Anaemia	14	38	39	5	1	3
Suggestion to the student with Very Severe Anaemia	5	3	25	62	1	4

Dietary Management at the schools



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	Everyday	Once in a week	Twice in a week	Thrice a week	Others	Never
	N%	N%	N%	N%	N%	N%
Ragi Java	46	32	8	8	2	13
Other millet products (Jonnalu/Korralu/Samalu, etc.)	21	47	7	4	10	21
Green Leafy Vegetables	55	22	19	8	1	1
Beetroot	39	38	15	20	2	6
Carrot	41	38	18	5	2	1
Banana	82	8	5	12	1	0
Citrus Fruits (Santra/Lemon Juice/Mosambi)	24	49	13	7	7	6
Amla	21	41	7	6	7	24
Dates	30	41	12	3	5	15
Pallipatti	56	31	10	7	4	0
Egg	81	10	7	9	2	1
Chicken	10	74	12	7	4	0
Mutton	8	62	13	7	10	3
Fish	7	47	4	2	4	38

Part 2 – Protocol Design



- Identifying major gaps in the current practices in treatments given to the students suffering from Anaemia and creating a protocol with the help of the major stake holders is in the process.
- The protocol majorly includes early identification, timely referral, and regular long-term management of anaemia as per the stakeholder's duties.



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**Awareness program for Health supervisors of
Telangana Social Welfare Residential Schools
in handling Anaemic Adolescent Girls**



SAMPLE SLIDE OF
THE PROTOCOL



Part 3 - Trend Analysis

- To understand the effectiveness of the implemented protocol, a trend analysis will be performed quarterly.
- A baseline or a starting point of this has been piloted from the data available with the SIF note (student data from the diagnosis performed by RBSK team at 8 schools of Karimnagar district), has been analyzed and presented here.
- Data from all the schools will make it a full-fledged Baseline for the implementation of Various programs and protocols as well.

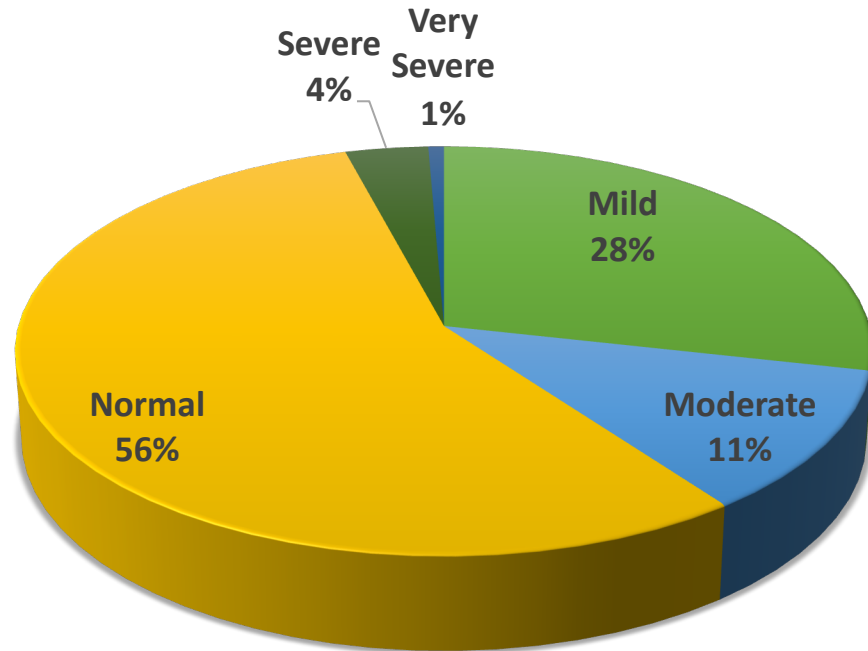
SAMPLE
SIZE FOR
BASELINE
OF TREND
ANALYSIS -
PILOT

**Data received from Schools
in Karimnagar**

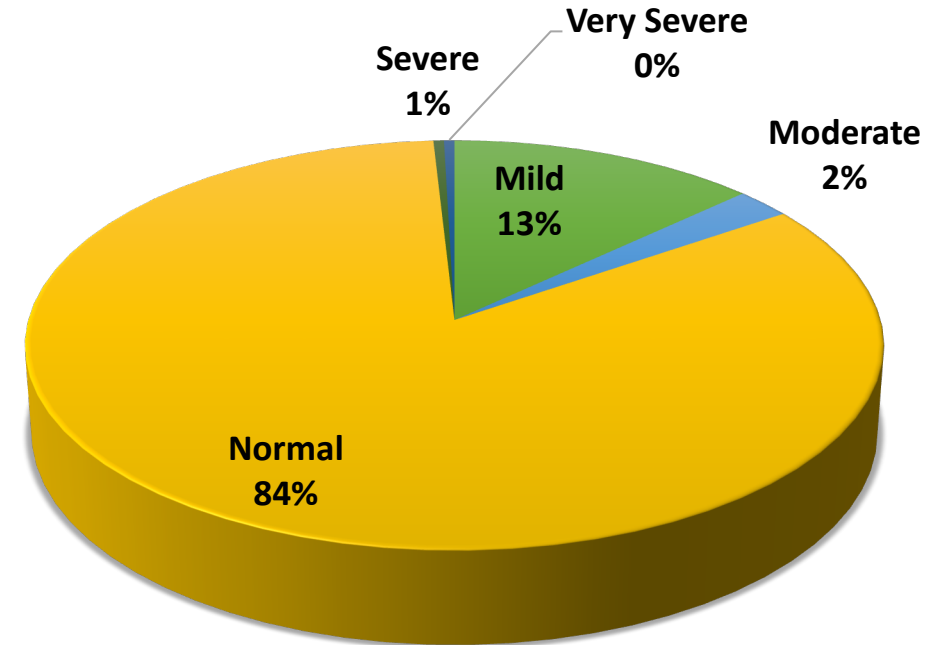
8 schools

Total number of reports received	4113
Incomplete and duplicate reports deleted from analysis	201
Total number of Eligible reports for analysis	3912
Eligible Reports of Boys	1351
Eligible Reports of Girls	2561

Anaemia in girls



Anaemia in Boys

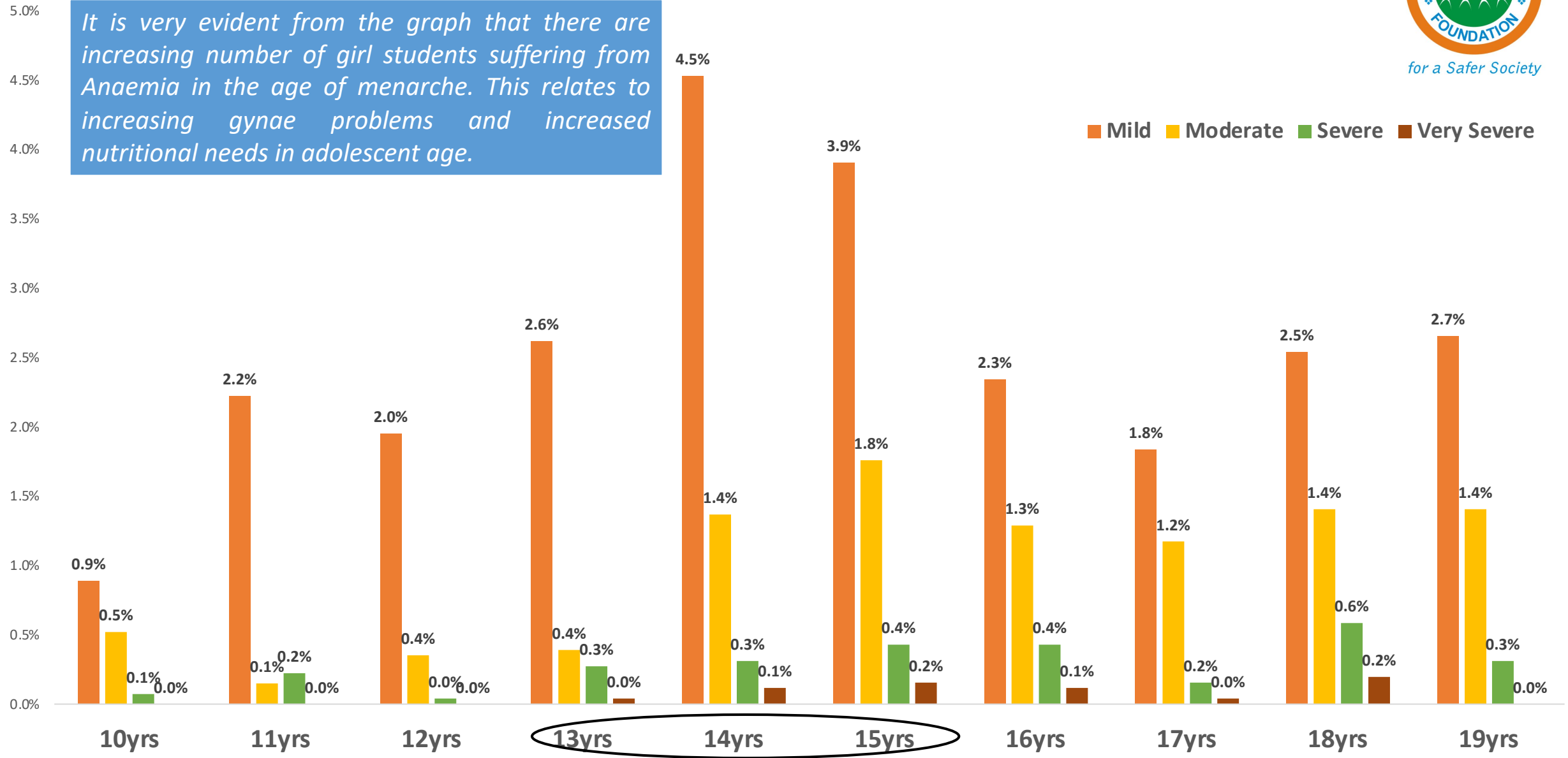


From the above figure it is very clear that higher percentage of girls are suffering from Anaemia when compared to boys as per the data obtained from the 8 schools. Around 44% girls fall under various categories of Anaemia and only 16% boys are anaemic.

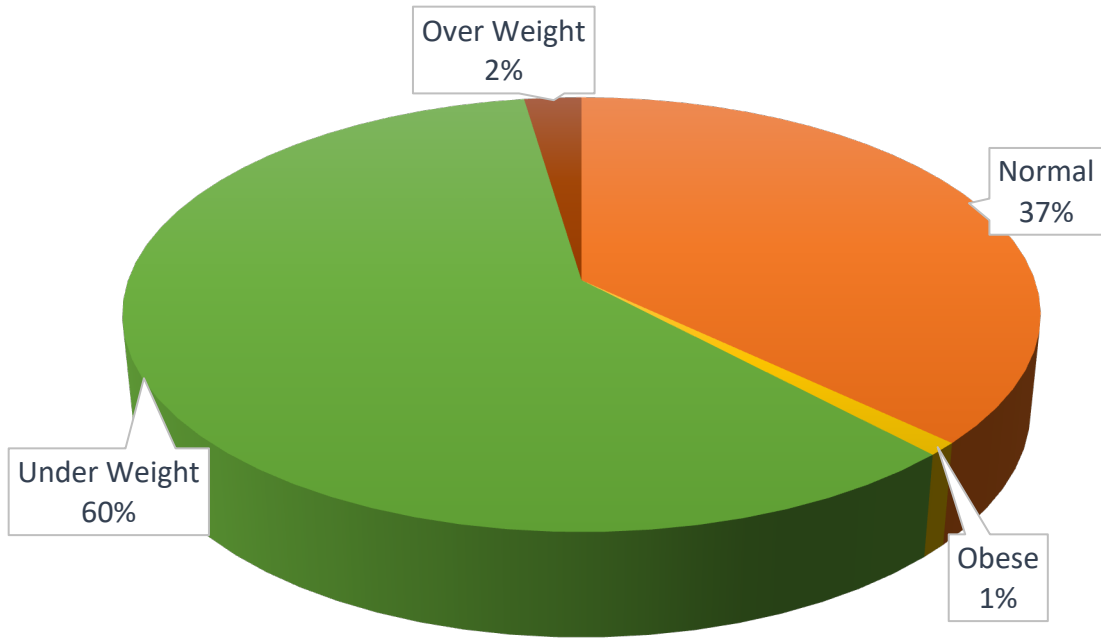
Age wise - Anaemia Levels in Girls



It is very evident from the graph that there are increasing number of girl students suffering from Anaemia in the age of menarche. This relates to increasing gynae problems and increased nutritional needs in adolescent age.

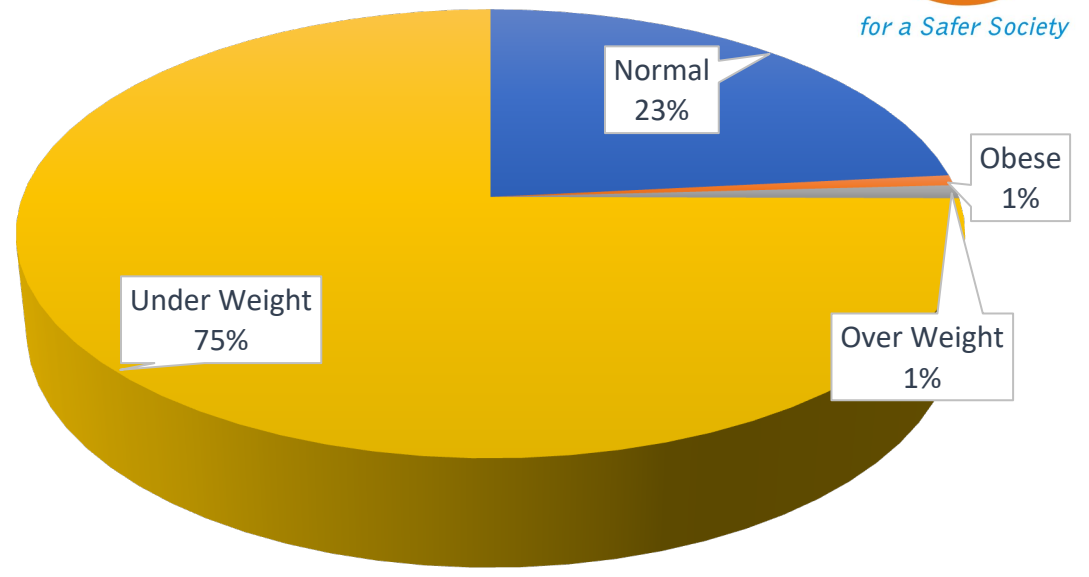


BMI of girls



■ Normal ■ Obese ■ Under Weight ■ Over Weight

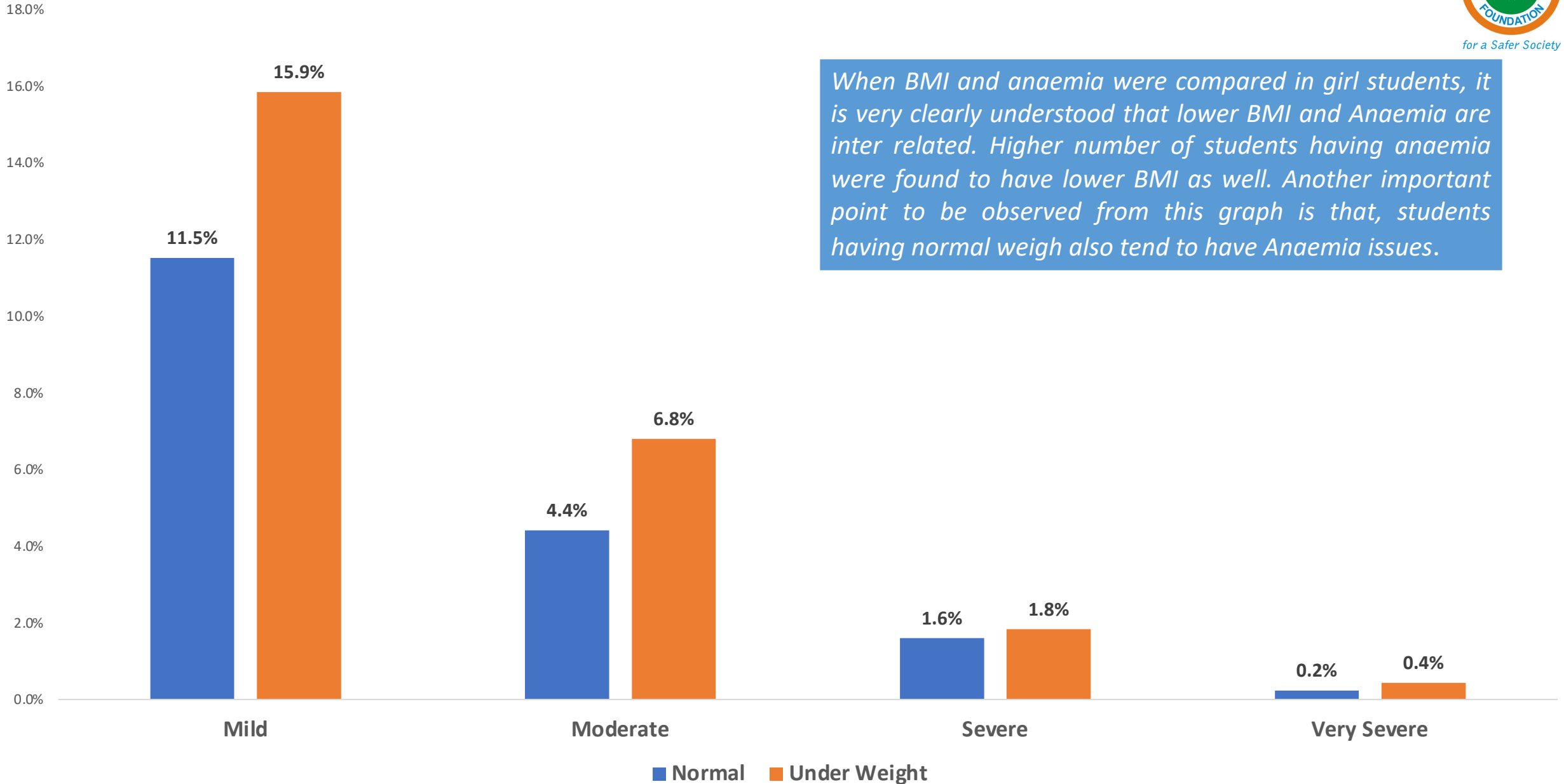
BMI of Boys



■ Normal ■ Obese ■ Over Weight ■ Under Weight

Although, Anaemia seems to be a major issue in girls, BMI is observed to be more prevalent in boys. Overweight and obesity is merely an issue in these schools. This signifies increased nutritional need in adolescent age and hence, special measures need to be taken to alleviate this nutritional issue in the students, both boys and girls.

BMI Vs Anaemia - in girl students



When BMI and anaemia were compared in girl students, it is very clearly understood that lower BMI and Anaemia are inter related. Higher number of students having anaemia were found to have lower BMI as well. Another important point to be observed from this graph is that, students having normal weigh also tend to have Anaemia issues.

Recommendations

Increasing regular screenings for better identification of the anaemic girls early and giving them prompt treatment.

Baseline Study to understand the KAP of Teachers and Principals.

Based on the survey results, finalizing of the protocols in the presence of experts from the fields of Medicine, Nutrition and Public Health, in the presence of the state team and RCOs. Protocol should consist of role specific design for all the stakeholders.

Protocol training - Identification of TOTs (Preferably Science teachers), who will be trained by our research team, who in turn will train Health supervisors on regular basis.

Facilitating the trainings by a team of monitoring and evaluation staff by creating pre and post tests for all the trainings. Reports will be provided.

Trend analysis baseline for all the schools should be helpful in understanding the effectiveness of the implemented program. Similar analysis every 3 months post the implementation of the program will help in analyzing the effectiveness of the program.

Regularly monitoring the quality of the food provided at the schools by an expert team of Quality Assurance



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