



**A community-driven intervention to eradicate and reduce Anemia in the population of Jharkhand**

## **Shrinivas Sarvmangalam Society**

(A registered society under Society Registration Act)

Registration No: 153, Eligible under 80G and 12 A

Niti Aayog Reg. :JH/2021/0275407

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# **CONTEXT**

## **Overview – The disease and its symptoms**

Anemia is a condition characterised by a reduction in the number of red blood cells and/or hemoglobin (Hb) concentration. Over the years, several studies have shown that Anemia is a global public health problem in most of the population and affects socio-economic development. One of the most important nutritional deficiencies affecting various social and socio-economic strata and more common in developing countries with children, adolescents and women being at significantly higher risk for the condition. With the decrease in capacity of the blood to carry oxygen to the body's tissues, Anemia results in symptoms such as fatigue, weakness, dizziness and shortness of breath. The optimal haemoglobin concentration needed to meet physiologic needs varies by age, sex, elevation of residence, smoking habits and pregnancy status. The most common causes of anaemia include nutritional deficiencies, particularly iron deficiency, though deficiencies in folate, vitamins B12 and A are also important causes; haemoglobinopathies; and infectious diseases, such as malaria, tuberculosis, HIV and parasitic infections. The burden of the disease varies with a person's age, sex, altitude, and pregnancy in females.

## **Treatment**

While iron deficiency anaemia is the most common form and is relatively easy to treat through dietary changes, other forms of anaemia require health interventions that may be less accessible. Accurate characterization of anaemia is critical to understand the burden and epidemiology of this problem, for planning public health interventions, and for clinical care of people across the life course. To help reduce the prevalence of anaemia through treatment and prevention certain guidelines, policies and interventions aim to increase dietary diversity, improve infant feeding practices and improve the bioavailability and intake of micronutrients through fortification or supplementation with iron, folic acid and other vitamins and mineral have been undertaken both at government and non-governmental not-for-profit levels. Social and behaviour change communication strategies are used to change nutrition-related behaviours. Interventions to address the underlying and basic causes of anaemia look at issues such as disease control, water, sanitation and hygiene, reproductive health and root causes such as poverty, lack of education and gender norms.

# **THE DISEASE BURDEN**

## **a. Global Context**

Anaemia impairs health and well-being in women and increases the risk of maternal and neonatal adverse outcomes. Anaemia affects half a billion women of reproductive age worldwide. In 2011, 29% (496 million) of non-pregnant women and 38% (32.4 million) of pregnant women aged 15–49 years were anaemic<sup>1</sup>. The global number of prevalent cases of Anemia increased from 1.4 billion (95% UI: 1.4–1.5) in 1990 to 1.8 billion (95% UI: 1.7–1.8) in 2019<sup>2</sup>.

The prevalence of anaemia was highest in south Asia and central and west Africa. While the causes of anaemia are variable, it is estimated that half of cases are due to iron deficiency. In some settings, considerable reductions in the prevalence of anaemia have been achieved; however, overall, progress has been insufficient. Further actions are required to reach the World Health Assembly target of a 50% reduction of anaemia in women of reproductive age by 2025.

## **b. Economic Burden**

It is difficult to isolate and quantify the economic costs of Anemia because of the varied settings in which it occurs. Analyses of the cost of treatment of Anemia associated with other disorders must consider drug acquisition expenses, drug administration costs, hospital charges, inpatient physician fees, transfusion costs, laboratory testing costs, and indirect costs. The influence of Anemia on the cost of treating the associated disease and on disease progression must also be considered. In general, Anemia increases the costs of care for patients with associated conditions.

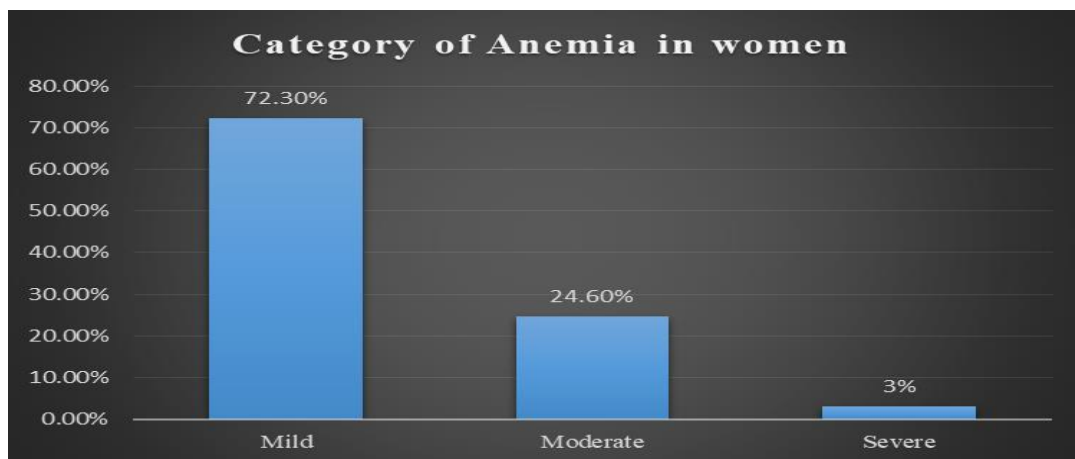
Large claims analyses have demonstrated increased healthcare utilization and expenditures when Anemia coexists with several major disorders. For example, a 2005 study of approximately 2.3 million health plan members found that patients with a systemic disorder condition (CKD, solid-tumor cancers, HIV, RA, IBD, or congestive heart failure) who were also anemic had twice the average annualized costs of nonanemic patients with the same condition. Here again, Anemia was a surrogate for more severe disease with consequent higher costs.

## LITERATURE REVIEW

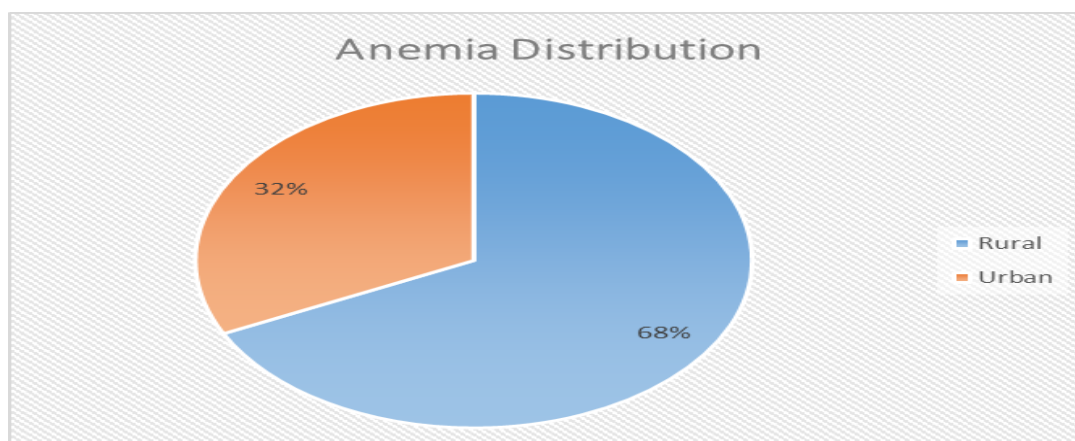
Anemia is multi-factoral and affects different age-groups. Over the years it has proved to be a significant public health problem and its prevalence varies in different cohorts. Correct identification of this problem in a given population is important for implementation of various health schemes.

Literature review of Anemia in pregnant women of India has been conducted over the years in different States. One such review done on a tertiary care hospital at Haryana diagnosing Anemia in pregnant females at their first trimester considering WHO definition of hemoglobin level (Severity of Anemia was categorized as mild (hemoglobin 10-10.9 gm/dl), moderate (hemoglobin 7-9.9 gm/dl) and severe (hemoglobin < 7 gm/dl), the results of the study were :

- A. Total 264 out of 388 pregnant females were found anemic
- B. 68% females had Anemia ; **72.3%** had mild Anemia, **24.6%** had moderate and **3%** were severely anemic



- C. Among the studied anemic patients 67.8% belonged to rural and 32.20% belonged to urban areas



Another review conducted to identify the iron deficiency in adolescents and their nutritional deficiencies leading to stunted growth and wastage and long term disability. A total of 102 studies published between January 1st, 2000 and June 30th, 2013 were identified and evaluated. Forty-two articles meeting the inclusion criterion (adolescents with Anemia) were selected for this review. Finally, an analysis was conducted and the papers were evaluated in accordance with the study objectives. Results and Discussion: The studies reviewed revealed a prevalence of iron deficiency Anemia of around 20% in adolescents and described the harmful effects of Anemia in this age group.

Data obtained from NFHS fact sheets (India) on prevalence of Anemia data was collated and represented in a research paper and published on *International Journal of Science and Healthcare Research*. It was observed that Anemia is present in all life stages and effect both male and female but children under 5year of age and reproductive age women (15-49 year) are the most vulnerable group as more than half of their population is suffering from Anemia. Men also not remain unaffected of Anemia but for them only 1/4th population are affected which almost half as compared to women is.

A snapshot taken from the research paper *International Journal of Science and Healthcare Research* which states the prevalence of Anemia in India (as of 2021), WHO report.

**Table 1: Prevalence of anemia in India and World and targets to be achieved by India**

	#Prevalence in World (2019)	Prevalence in India(NFHS-5)	(%difference)	Targets to Achieve by India	
				National target 2022 (of Poshan Abhiyan, India) <sup>[3]</sup>	Global Nutrition Target, 2025 (by WHO) <sup>[13]</sup>
Women of reproductive age	29.9%	57.0%	(-27.1)	35%	23%
Non-pregnant women of reproductive age	29.6%	57.2 %	(-27.6)		
Pregnant women	36.5%	52.2%	(-15.7)	32%	
# WHO, Global Anaemia estimates, 2021 Edition <sup>[10]</sup>					

# **SECONDARY RESEARCH ON PREVALENCE OF ANEMIA – GLOBAL AND STATE**

## **Anemia in Different Age Groups**

In 2019, global Anemia prevalence was 29.9% in adult women of reproductive age, equivalent to over half a billion women aged 15-49 years, and 39.8% in children aged 6-59 months, equivalent to 269 million children with Anemia. (*WHO Report 2019*)

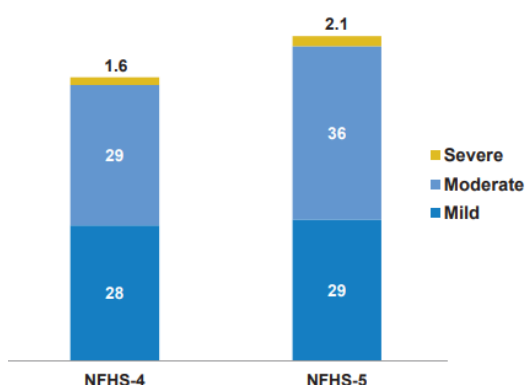
**In India, the prevalence of Anemia is 52% (NCBI report)**

*Percentage of children age 6-59 months*

## **Anemia in Children within age group 6-59 months – NFHS 5 (2019-2021)**

In the 2019-21 NFHS, haemoglobin testing was performed on children age 6-59 months. The testing was successfully completed for 91 percent of the children eligible for testing.

Overall, 67 percent of children had some degree of anaemia (haemoglobin levels below 11.0 g/dl). Twenty-nine percent of children had mild anaemia, 36 percent had moderate anaemia, and 2 percent had severe anaemia. Between 2015-16 and 2019-21, the prevalence of anaemia among children age 6-59 months increased from 59 percent to 67 percent and continued to be higher among rural children



## **Anemia Prevalence in Adults– NFHS 5 (2019-2021)**

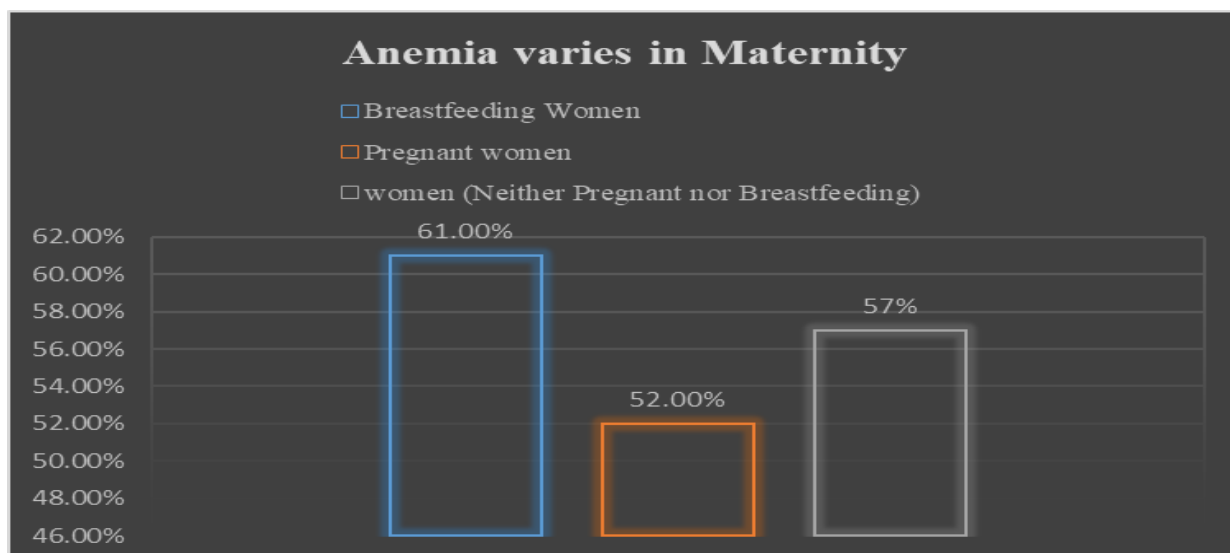
The report states that 57 percent of women and 25 percent of men age 15-49 in India are anaemic. 26 percent of women are mildly anaemic, 29 percent are moderately anaemic, and 3 percent are severely anaemic. 20 percent of men are classified as mildly anaemic, 5 percent as moderately anaemic, and 0.4 percent as severely anaemic.

Trends: Anaemia prevalence has increased between NFHS-4 and NFHS-5, from 53 percent in 2015-16 to 57 percent in 2019-21 among women and from 23 percent in 2015-16 to 25 percent in 2019-21 among men.

## **Patterns by background characteristics**

- The overall prevalence of anaemia is consistently high, at more than 50 percent, in almost all of the subgroups of women. For men, the prevalence is above 20 percent in almost all of the subgroups.

- Anaemia varies by maternity status—61 percent of women who are breastfeeding are anaemic, compared with 52 percent of women who are pregnant and 57 percent of women who are neither pregnant nor breastfeeding.



- Women in urban areas are slightly less likely to be anaemic (54%) than those in rural areas (59%). The difference is larger for the prevalence of anaemia in men (27% in rural areas versus 20% in urban areas).

## **DETAIL REPORT OF ANEMIA IN JHARKHAND**

The percentage of Women in the age bracket of 15-49 years suffering from Anemia has increased in the past five years in Jharkhand. In 2020-21 at least 65.7% of non-pregnant women in the aforementioned age bracket suffered from Anemia in the Tribal-State though the figure was 65.3% in 2015-16.

Even though Jharkhand has witnessed a marginal drop in the percentage of anemic children, Anemia continues to be a concern in the State. According to the World Health Organisation (WHO), if the prevalence of Anemia in a population is 40% or higher it is characterized as a severe public health problem.

**According to NHFS 5**, Neonatal Mortality Rate in the State dropped from 33% in 2015-16 TO 28.2% IN 2020-21. Infant Mortality Rate and Under Five Mortality Rate also dropped from 43.8% in 2015-16 to 37.9% in 2020-21 in Jharkhand.

**According to NHFS 5**, at least 67.5% of children between 6-59 months were anemic in Jharkhand in 2020-21. **The prevalence of Anemia in women was found to be 60 percent in women in Jharkhand – NHFS 5 (2019-21)**



## Consequences of the Disease:

The consequences of Anemia in women are enormous as the condition adversely affects both their productive and reproductive capabilities. Among women, iron deficiency prevalence is higher than among men due to menstrual iron losses and the extreme iron demands of a growing foetus during pregnancies. Worldwide it is estimated that 20% of maternal deaths are caused by Anemia. Anemia reduces women's energy and capacity for work and can therefore threaten household food security and income. Severe Anemia in pregnancy impairs oxygen delivery to the foetus and interferes with normal intra-uterine growth, resulting in growth retardation, stillbirth, LBW and neonatal deaths, and increased risk of death during pregnancy and postpartum.

Childhood Anemia is associated with serious consequences including **growth retardation, impaired motor and cognitive development, and increased morbidity and mortality**. Moreover, Anemia can decrease school performance, productivity in adult life, quality of life, and the general income of affected individuals.

Rural populations are mostly from disenfranchised community that lacks social and economic advantages. Men are mostly the hardworking bread-earners of the family and toil day and night to make ends meet. As a result, they consume a high carbohydrate-rich diet which obscures enough protein and nutrition intake. Anemia can lead to several health problems in men causing fatigue, low-spirit, nausea, and dizziness which is a major hindrance to their earning capacity and thus increases unemployment. This results in a vicious cycle of disease burden.

## Prevention Approach

- Community awareness of the disease through behavior-change communication models
- Testing of Anemia and 'point-of-care' treatment.
- Addressing non-nutritional causes as well with a special focus on malaria, fluorosis, and hemoglobinopathies
- Free distribution of iron tablets for children and women ensuring an adequate intake of iron
- Educating and training community healthcare workers to provide awareness on Maternal and Child Health and identify Anemic women and children
- Field-level awareness by our trained healthcare female workers and Self-help groups through community mobilization activities and IEC activities focussed on Anemia in pregnant women.

## **OUR BACKGROUND WORK AND PROPOSAL**

In 2018, the Shrinivas Sarvmangalam Society in association with both of its units – Shrinivas Hospital and Hazaribag College of Dental Sciences and Hospital, undertook an initiative towards the eradication of Anemia in Hazaribag district of Jharkhand. Under the expert guidance of a professional team of doctors and healthcare staff, **a full-fledged community survey with a sample size of 3000 and further analysis has been performed and analysed.**

### **The Findings of the survey:**

- 2210 patients were found anemic out of 3000 examined.
- Anemic patients were provided with free iron supplement/medicines and critical cases were referred to Shrinivas Hospital for further treatment.

### **The survey was conducted in 25 villages of the district.**

Given the high percentage of anemic patients in the district of Hazaribagh, Shrinivas Sarvmagalam Society would like to contribute to the total prevention and cure of this lifestyle disorder in the community and march a step further towards improvement in public health and awareness.

### ***Broadly our activities will include (Detail Plan of Action given below):***

1. *Free distribution of iron tablets to the identified patients of the district.*
2. *Free Anemia tests to be conducted by Shrinivas Diagnostics*
3. *Free consultation by specialized doctors periodically.*
4. *Training of our female community health care workers called Sahelis, employed under Shrinivas Hospital to increase awareness on the disease and provide primary care to Anemic children and mothers/pregnant women.*
5. *Monthly awareness program conducted by the Society.*

## **SURVEY DETAILS (LOCATION WISE)**

<b>Date</b>	<b>Place of survey</b>
11/11/2019	Survey at Hurhad
13/11/2019	Survey at Hurhad
14/11/2019	Survey at Baheri
15/11/2019	Survey at Hurhad
16/11/2019	Survey at Baheri

04/12/2019	Survey at Pouta
05/12/2019	Survey at Pouta
09/12/2019	Survey at Pouta
10/12/2019	Survey at Bhelwara
16/12/2019	Survey at balibodra village
17/12/2019	Survey at balibodra
18/12/2019	Survey at lalpurchowk
20/12/2019	Survey at kujju village
21/12/2019	Survey at Chichi Kalan village
23/12/2019	Survey at Balsagra village
24/12/2019	Survey at Badkagaon village

## **PROJECT HIGHLIGHTS**

**Thematic Area : Public Health and Livelihood**

**Objectives :**

<b>Short-Term Objectives</b>	1. Identify the population affected
	2. Provide immediate 'Point-of-care' treatment to mitigate the problem
	3. Awareness through promotion of iron and folate supplements
	4. Adoption of behaviour-change lifestyle model to prevent the disease occurrence
<b>Long-Term Objectives</b>	1. Anaemia-free block in the identified and affected district
	2. Livelihood capacity of local women (SHGs) through training as healthcare promoters

**Output :**

<ul style="list-style-type: none"> <li>• <b>Prevent nutritional Anemia through improved consumption of Vitamin B12, iron and folate rich foods among all gender and age groups</b></li> </ul>
<ul style="list-style-type: none"> <li>• <b>Reduce impact of Anemia on health – comorbidities</b></li> </ul>
<ul style="list-style-type: none"> <li>• <b>360-degree awareness on existing strategies and government policies undertaken to reduce Anemia</b></li> </ul>
<ul style="list-style-type: none"> <li>• <b>Increased livelihood capacity of women healthcare workers by inclusive strategy</b></li> </ul>
<ul style="list-style-type: none"> <li>• <b>Enabling SHGs of the selected communities and employment generation</b></li> </ul>

**Outcome** : Prevention, Mitigation and Eradication of Anemia through Awareness and Point-of-care treatment among the population of Jharkhand.

**Beneficiaries** :

**Direct-** Anemia-diagnosed patients in the population in all age and sex group of the selected Blocks.

**Indirect-** Trained women healthcare providers from the Self-Help groups (SHGs) of the community.

**Project Area:**

Two (2) Aspirational Blocks in the district of Hazaribagh

1. Badkagaon
2. Katkamdag

**Demography of the blocks** :

*as per Indian Village Directory (link provided underneath)*

Katkamdag Block	
Total Population	82385
Area (in size)	163.03 km <sup>2</sup>
Number of villages	47
Number of GPs	13
Total Households	14462
Female Population	39804
Male Population	42581

Badkagaon Block	
Total Population	136839
Area (in size)	364 km <sup>2</sup>
Number of villages	84
Number of GPs	23
Total Households	25760
Female Population	66481
Male Population	70358

## **METHOD OF INTERVENTION AND KEY ACTIVITIES**

1. Identification of Aspirational Blocks of the district.
2. Dividing the Blocks into GPs (Gram Panchayats) and villages under each GP in the descending order of size and population or sex ratio with maximum number of females.
3. Determining the Sample Size
4. A community-based cross-sectional study on prevalence and determinants of Anemia in the identified blocks through comprehensive societal survey.
5. Data Collection –
  - ✓ Primary Data (open and close-ended Surveys and Questionnaires, Focussed Group Discussions with the local population and direct interviews)
  - ✓ Secondary Data collection (public records, research on socio-demographic status, case studies, historical and statistical documents and trends, district factsheets and journals)
6. Identifying the Symptomatic patients through detail screening by qualified doctors.
7. Direct intervention through Medical Tests for Anemia by trained medical professionals to identify the levels of Anemia.
8. Classification of anemic patients according to haemoglobin levels into mild (10.0-10.9 g/dl), moderate (7.0-9.9 g/dl), severe (<7.0 g/dl).
9. Mitigation Activity specially designed to reduce Anemia in all age groups through awareness drives, behaviour-change communication model, therapeutic approach and policy-framing
10. Eradication through free distribution of nutrient- rich supplements – iron, folate and vitamin B-12
11. Monitoring and Evaluation during the course of medicine
12. Repeat Anemia-Test to understand the exact percentage of haemoglobin-level reduced or eradicated after intervention.
13. Detail Report and Analysis of the findings submitted after the period of completion

## **PLAN OF ACTION AND ROLES AND RESPONSIBILITIES**

<b>Sr. No.</b>	<b>Plan of Action</b>	<b>Roles &amp; Responsibilities</b>
<b>1</b>	Identification of Aspirational Block and GPs	Project Head (PH)
<b>2</b>	Community Survey and Data Collection	Trained social worker(group of 10)
<b>3</b>	Focused Group Discussion and Direct Interviews	20 Skilled community female healthcare providers (SHGs)
<b>4</b>	Secondary data collection	Project Head and Team
<b>5</b>	Screening of symptomatic patients	Expert and qualified Doctors
<b>6</b>	Awareness through medical camps	Doctors, trained healthcare workers (nurses, paramedical staffs) and social workers and SHGs
<b>7</b>	Anemia - Test	Shrinivas Diagnostics (1 phlebotomist)
<b>8</b>	Free distribution of supplements	SHGs and registered volunteers ( approx 50) of Shrinivas Sarvmangalam Society
<b>9</b>	Monitoring and Evaluation	PH and trained social workers
<b>10</b>	Repeat Test to identified anemic patients	Shrinivas Diagnostics (1 phlebotomist)
<b>11</b>	Data Analysis and Report	PH
<b>12</b>	Bi-annual checkup through medical camps	Doctors, trained healthcare workers (nurses, paramedical staffs)

## PROJECT TIMELINE

Project Timeline (month-wise activity)									
Activity	Month	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>
	Identification of Blocks and Villages								
	Survey through Questionnaires								
	Focused group discussion								
	Secondary data collection								
	Data screening & medical awareness camp								
	1st Anemia test - symptomatic patients								
	Free supplement distribution to identified patients								
	Special Medical Camp								
	Repeat Test								
	Final Report								

## PROJECT FINANCIALS

Recurring Cost					
Sr.no	Manpower	Quantity	Remuneration/person (In Rs)	Cost/person/month (In Rs)	Cost/person (for 6 months)
1	Field Social Worker	10	10000	100000	600000
2	Community (SHGs)	20	5000	100000	600000
3	Project Head	1	40000	40000	240000
4	Phlebotomist	10	10000	100000	600000
5	Doctor	2	10000	20000	120000
6	Nurse	2	10000	20000	120000
7	Paramedical staffs	3	8000	24000	144000
8	Driver	1	20000	20000	120000
<b>Total</b>		<b>49</b>	<b>113000</b>	<b>424000</b>	<b>2544000</b>
Sr.no	Transportation	Distance (1 visit)	Fuel Cost (1 visit)	Total Nos. visits/month	Total nos. visits in 6 months
1	Winger Van	120 km	1200	15	90
<b>Total</b>					<b>108000</b>

Fixed Cost			
	Type	Target Population (in Lacs)	Total Cost (In Lacs)
1	Medicine (cost/person)- INR		
	75	1	75
2	Test Cost and Repeat Test (cost/person)-INR		
	75	1	75
<b>Total</b>			<b>150</b>

<b>Total Cost (Recurring + Fixed) -INR</b>
<b>1,76,52,000</b>



## ANNEXURE 1: PHOTOS



## ANNEXURE 2: SURVEY SCHEDULE

**DEPARTMENT OF PUBLIC HEALTH DENTISTRY**  
**HAZARIBAG COLLEGE OF DENTAL SCIENCES AND HOSPITAL, HAZARIBAG, JHARKHAND**

**“PREVALENCE OF ANEMIA AMONG RESIDENTS OF HAZARIBAG DISTRICT, JHARKHAND”**

S. No.	4			Date	4/02/2022		
1. Name				Pinky Devi			
2. Address				Mamda.			
3. Contact number (Mobile)							
4. Age	32 yr.						
5. Gender	Male			Female		Transgender	
6. Residence	Urban			Rural			
7. Marital Status	Unmarried			Married		Divorced/Separated	
8. Religion	Hindu			Muslim		Others	
9. Occupation of head of family				Tailor			
10. Educational status of head of family				Matriculation			
11. Monthly income of family				Rs - 8,000 - 10,000/month.			

**PHYSICAL FINDINGS**

1. Pulse Rate	<60 Beats / per min		60-100-Beats / per min	
2. Conjunctiva colour	Pallor		Normal	
3. Tongue and palm	Pallor		Normal	
4. Dizziness	Yes	No	Sometimes	
5. Fatigue	Yes	No	Sometimes	
6. Light-headedness	Yes	No	Sometimes	
7. Malaise	Yes	No	Sometimes	
8. Brittle nails	Yes	No	Sometimes	
9. Headache	Yes	No	Sometimes	
10. Shortness of breath	Yes	No	Sometimes	
11. Weakness	Yes	No	Sometimes	
12. Leg cramps	Yes	No	Sometimes	
13. Difficulty in concentrating	Yes	No	Sometimes	

Name of the observer: M. D. Khan

Signature: पिंकी देवी

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<https://villageinfo.in/jharkhand/hazaribagh/katamdag.html>

## **HELPING HANDS**

- Facilitation unit : Shrinivas Hospital
- Special Initiative taken by : Dr Praveen Shrinivas
- Facility Incharge: Dr. Shilpi Chatterjee, Dr. Shudanshu Saxena, Dr. Aarti Kumari
- Project Writing Courtesy : Saheli Naskar