

## Report on nutritional survey at uttaraj and kalam village

### 1. Introduction –

Undernutrition and micronutrient deficiencies contribute substantially to the global burden of diseases. Because nutritional inputs are necessary for children's growth, undernutrition is generally characterized by comparing the weights or heights (or lengths) of children at a specific age and sex with the distribution of observed weights or heights in a reference population of presumed healthy children of the same age and sex. Stunting and wasting are conditions that can occur in children. Stunting is when a child's height is below the recommended level for their age. Wasting is when a child's weight is below the recommended level for their height. Stunting results from chronic undernutrition, which retards linear growth, whereas wasting results from inadequate nutrition over a shorter period, and underweight encompasses both stunting and wasting. Typically, growth faltering begins at about six months of age, as children transition to foods that are often inadequate in quantity and quality, and increased exposure to the environment increases their likelihood of illness. According to the Joint Malnutrition Estimates (JME) 2023 released by UNICEF, WHO and the World Bank, In India, the child wasting rate was 18.7% in 2022. This was the highest rate among countries on the Global Hunger Index. India also had a child stunting rate of 31.7% in 2022.

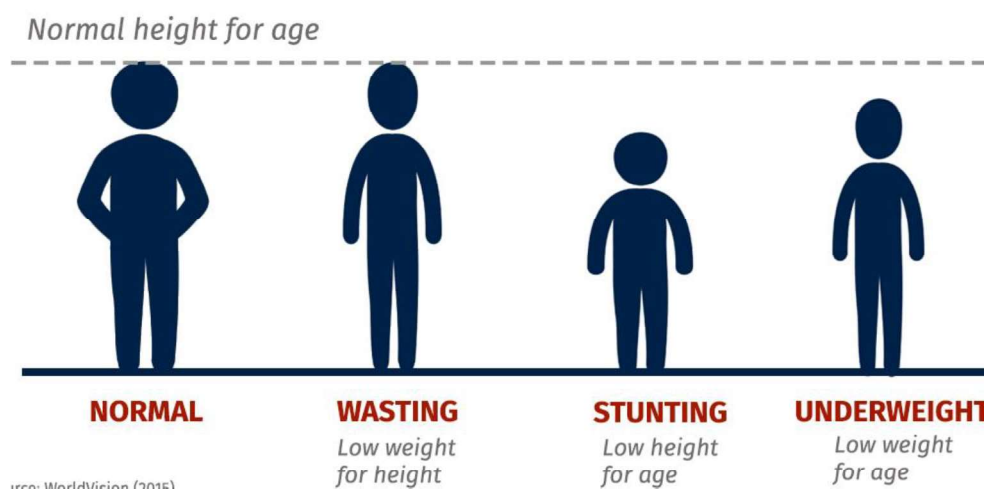


Figure 1 Different stages of malnutrition

Micronutrients though required in small amounts, are essential for proper growth and development of the human body. Micronutrient deficiencies also referred to as 'Hidden Hunger' affects the health, learning ability as well as productivity owing to high rates of illness and disability contributing to vicious cycle of malnutrition, underdevelopment and poverty. It is estimated that around two billion people in the world are deficient in one or more micronutrients. Micronutrient deficiencies (such as iodine, iron and vitamin A deficiency) not only affect the health but are also projected to cost around 0.8-2.5 per cent of the gross domestic

product. In India, around 0.5 per cent of total deaths in 2016 were contributed by nutritional deficiencies.

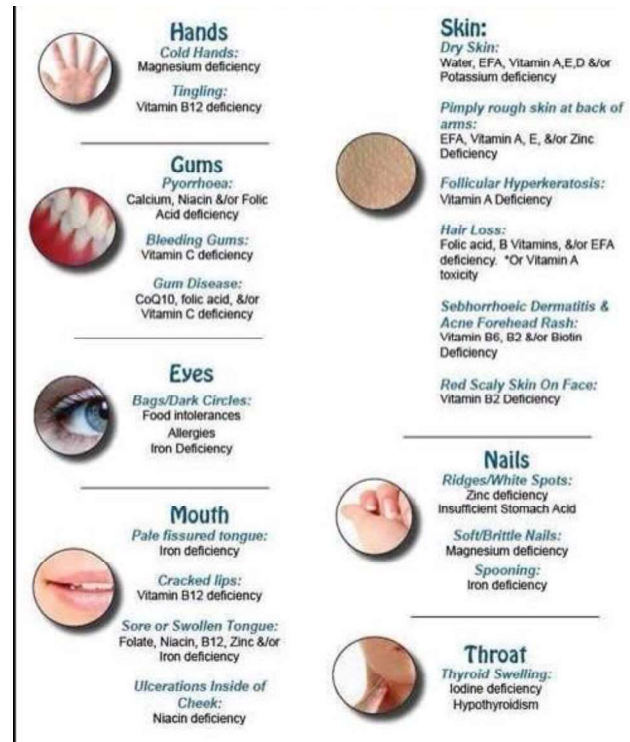


Figure 2 Different symptoms of micronutrient deficiencies

## 2. Aim-

To assess the nutritional status of 2- 8-year-old children from selected villages of Surat, Gujrat.

## 3. Objectives-

1. To assess the nutritional status (Anthropometric, clinical and dietary) of selected children from the selected village of Surat
2. To estimate the level of malnutrition and nutritional edema
3. To evaluate nutrient deficiencies, especially Vitamin A, C, D, and Minerals ( Calcium, iron)

## 4. Methodology-

A questionnaire was developed having 3 sections anthropometric, clinical and dietary was developed (Annexure -1).

### Anthropometric measurement-

The participant's weight was measured in kilograms with a weighing scale to assess their growth. Using the standard technique, the participant's height was measured using a stadiometer/infantometer. The indicator prevalences for low weight-for-age and low height-for-age were calculated using an international standard ( the combined WHO – IAP height and weight chart). Growth charts are invaluable tools in the assessment of childhood nutrition and growth. Indian academy of pediatrics (IAP) produced and recommended IAP 2015 Growth charts for monitoring Indian children between the age of 5 to 18 years and recommended simplified WHO growth charts for monitoring children under the age of five. This is an effective tool for detecting low weight-for-age, low height-for-age.

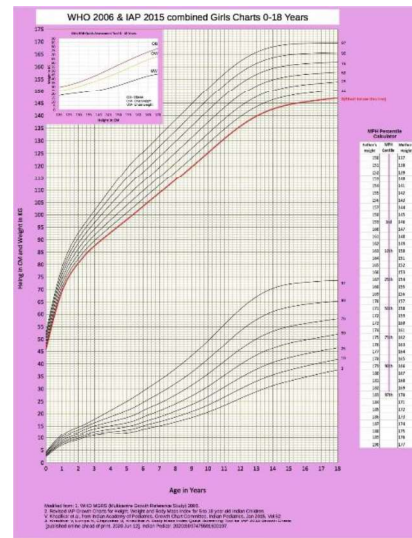
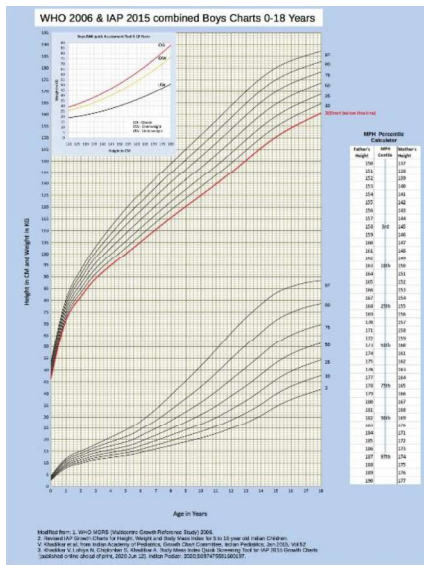


Figure 2 growth chart for boys

Figure 3 growth chart for girls

### Clinical Measurement-

Clinical techniques for evaluating nutritional status include looking for deficiencies at specific body sites or asking the patient if they are experiencing any symptoms that might point to a nutrient deficiency.

### Dietary assessment-

Dietary methods of assessment include looking at past or current intakes of nutrients from food by individuals or a group to determine their nutritional status. A 24 hour diet recall was taken to analyse the dietary intake.

## 5. Result and discussion-

Total 54 children were assessed during the survey. The age was between 3 to 8 years old 27 boys and 27 girls were participated in the survey. Sever stunting ( Low height for age) was seen in 37% boys and 31.48% girls. Wasting ( low weight per height) was seen in 16.66% boys and 12.96% girls. That shows prevalence of chronic malnutrition and less nutrient intake over a short period of time (Laura E et.al, 2006).

*Table 1 SUMMARY TABLE OF ASSESSMENT RESULTS*

<b>Village</b>		<b>Kalam</b>	<b>Uttaraj</b>	<b>Total</b>	<b>%</b>
Total no of sample		22	32	54	100
	boy	8	19	27	50
	Girl	14	13	27	50
<b>Pitting edema-</b>		0	0	0	0
Height for age less than 3 percentile	boy	7	13	20	37
	Girl	9	8	17	31
Height for age between 3 to 10 percentile	Boy	0	2	2	4
	Girl	3	3	6	11
Height for age between 10 to 25 percentile	Boy	0	2	2	4
	Girl	3	2	5	9
Height for age more than 50 percentile	Boy	0	1	1	2
	Girl	0	1	1	2

weight for age less than 3 percentile	Boy	2	7	9	17
	Girl	5	2	7	13
weight for age between 3 to 10 percentile	Boy	5	6	11	20
	Girl	4	3	7	13
weight for age between 10 to 25 percentile	Boy	0	2	2	4
	Girl	5	5	10	19
weight for age more than 50 percentile	Boy	0	3	3	6
	Girl	1	3	4	7
Wasting	Boy	6	3	9	17
	Girl	3	4	7	13
Stunting	Boy	7	17	24	44
	Girl	15	13	28	52
Thin and wasted general appearance		8	5	13	24
Clinical assessment					
Teeth- Mottled enamel /Fluorosis (Mild)		4	7	11	20
Hair Discoloration		2	0	2	4

Hair- Sparse and thin	5	3	3	6
Nail- Variation / Transverse Line (mild)	1	0	1	2
Nail- white line	1	0	1	2



Figure 4 Weight and height monitoring and uttaraj and kalam



*Figure 5 Clinical Symptom- Spare  
Thin hair*



*Figure 6 Discoloration of hair*

Upon studying the clinical parameters calcium (Teeth- Mottled enamel /Flurosis ) zinc (Variation / Transverse Line in nail / white line) protein ( spare and thin hair) deficiencies was seen in 20 %, 1.8% and 5.5% population respectively. Besides that, hair discoloration was also seen which can be because of protein or iron deficiency.

Children coming to Anganwadi schools were provided with adequate amount of breakfast and lunch as per requirement but still there is insufficient nutrient intake for which more than 90%

of the population were falling into low height for age and low weight for age category. However, proper dietary easement was not possible because children were unable to recall their previous day's food intake, and all participants were not from Anganwadi centres; hence they had different food habits.

## **6. Conclusion-**

Prevalence of wasting and stunting showed improper dietary intake; there was also vitamin and mineral deficiencies. the population should be educated properly to use natural resources as a low-cost food source.



## 7. Reference-

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**Anneure -1**  
**Questionnaire**  
**Personal data**

**Name-**

**Age-**

**Gender-**

**A. Anthropometric measurement**

**Length/ Height-**

**Weight –**

**MUAC-**

**B. Clinical assessment-**

Clinical Symptoms	
1. General Appearance	Normal built
	Thin built/ wasted
	Obese
2. Face	Normal
	Diffuse Depigmentation
	Oedema
3. Eyes	Normal
	Conjunctival Xerosis
	Corneal Xerosis
	Bitot's spot
	Pale
4. Teeth	Normal
	Mottled enamel /Fluorosis
	Carries
	Gingivitis
5. Lips	Normal

	Polar
	Angular stomatitis
	Sore mouth
6. Hair	Normal
	Spare and thin
	Discoloration
	Easy to pull out
7. Skin	Normal
	Pallor
	Flaking dermatitis
	Symmetrical dermatitis
	Pigmentation
	Dry and Rough
	Purpura
8. Nails	Normal
	Variation / Transverse Line
	Koilonychia
9. Gums	Normal
	Spongy
	Bleeding
10. Tongue	Normal
	Glossitis
	Pale and flabby

Pitting edema- Yes/no

### C. Dietary pattern

Common one day's menu during working days

TIME	MENU	HOUSEHOLD MEASUREMENT
BREAKFAST		
LUNCH/ MIDDAY MEAL		
EVENING SNACKS		
DINNER		

#### Food group wise data

Cereal	Pulses	Milk	Fruits	Vegetable	Fish / meat	Fat
Frequency	Frequency	Frequency	Frequency	Frequency	Frequency	Frequency

