



Government of Karnataka

## DISTRICT ADMINISTRATION RAICHUR



Department of Women  
and Child Development



Central Warehousing Corporation

### REPORT

## PROJECT ON MALNUTRITION ERADICATION. USING SUPER FOOD SUPPLEMENT

# MORINGA OLEIFERA

November 2023 to April 2024  
Raichur District, Karnataka, India



ERADICATING  
MALNUTRITION  
USING FOOD  
SUPPLEMENT

## Sri. Chandrashekhar Nayaka L, IAS Deputy Commissioner & District Magistrate

Our deepest appreciation and gratitude for your exemplary leadership and visionary initiative in addressing the critical issues of malnutrition and anemia in our district. Your unwavering commitment to eradicating malnutrition and tackling anemia has not only showcased your dedication to the well-being of our community.

The comprehensive vision you have outlined for this crucial mission reflects a profound understanding of the challenges faced by our district and demonstrates a genuine concern for the health and the future of our residents.

Your vision goes beyond just addressing the symptoms; it addresses the root causes, ensuring a holistic and enduring impact on the health of our community.



## Sri. Pandve Rahul Tukaram, IAS Chief Executive Officer, Zilla Panchayat, Raichur

CEO's outstanding initiative in spearheading the reporting efforts toward eradicating malnutrition and analysing the trend of improvement to create a holistic approach to solve the problem.

The impact of your proactive approach in highlighting and initiating action against malnutrition is truly commendable.

CEO's tireless efforts and initiative serve as a catalyst for change, fostering hope and progress toward a healthier and more nourished society.



# INTRODUCTION

Malnourishment among kids is acute in Raichur. It is at the bottom of the 31 districts of the state. Around 26000+ children are suffering from severe or moderate malnutrition who are age below 6 years.

Based on the successful trial conducted in the district, this malnutrition eradication project was initiated by district administration and Zilla Panchayat through Department of Women and Child Development, Raichur. As a part of Central Warehousing Corporation's CSR activity for supporting malnourished children in Raichur District with leadership of Deputy Commissioner & Chief Executive Officer Zilla Panchayat.

Malnutrition is seen in children whose consumption of protein and energy is insufficient to satisfy the body's nutritional needs. Malnutrition may also occur in persons who are unable to absorb vital nutrients or convert them to energy essential for healthy tissue formation and organ function. Malnutrition is a major factor in causing infant mortality in India and other developing countries. Current treatment for children involves the use of specially formulated foods.

Moringa, added daily to a child's food, has demonstrated its ability to bring recovery from moderate and severe malnutrition. In developing tropical countries, Moringa trees have been used to combat malnutrition, especially among infants and nursing mothers. As an example, Haiti and Senegal, health workers have been treating malnutrition in small children, pregnant and nursing women with Moringa leaves powder.

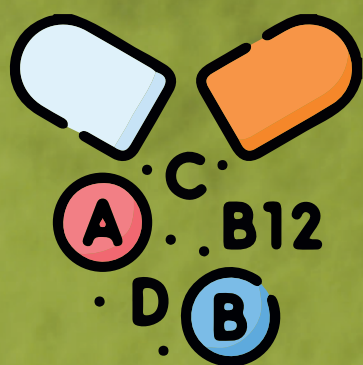
For children between the age group 6 months to 6 years of age the daily requirements of calcium, iron and half of protein can be obtained in 100 grams of fresh Moringa leaves. The Moringa leaves are an excellent source of vitamin A, the raw leaves are rich in vitamin C and they also have vitamin B and other minerals. It is also rich in potassium, copper and B complex vitamins. Moringa Oleifera can be used as a food additive with multiple purposes for enriching Proteins, Fatty acids, Minerals and Vitamins.

Scientists have published papers on benefits of Moringa across the globe and results have shown that the Moringa Oleifera leaves powder has improved the nutritional status of children to recover from malnutrition.

In this connection Moringa leaves are used as a super food supplement to enhance the nutritious status of malnourished children, pregnant women, nursing mothers and their growing babies. One teaspoon of dried moringa powder provides an added source of protein which can have revitalizing effects on both adults and children.

Infants fed with moringa powder up to 4 months showed significantly higher growth rate in weight, height, vitamin A and blood hemoglobin level.

**Moringa is rich in Beta-carotene (Vitamin A), Zeaxanthin and Lutein, all of which have been studied and recommended for their eye protective benefits.**



Moringa can enhance memory, reduce oxidative stress and neurodegeneration. Moringa is a hub of nutrients like boron, vitamin C, magnesium, potassium, phosphorous, these will play critical role in bone health and calcium absorption.

Moringa is rich in antioxidants like beta-carotene, these antioxidants play vital role in protecting our body from heart disease, cancer, immune system deficiency, and inflammatory conditions.



Moringa or Shevga is an ancient Vedic tree. In Vedas, Brahmanas and Puranas, it is mentioned as a healthy food.

As early as 2000 years BC, Moringa has been described as a medicinal herb in India. In the history of Ayurvedic Medicine, one of the oldest healthcare systems in the world, Moringa has been mentioned as a cure for over 300 diseases. It is the sole genus in the flowering plant family Moringaceae. The name is derived from Murungai, the Tamil word for Drumstick, and the plant is commonly referred to as the Drumstick Tree. In Kannada it is called as Nuge.

#### Dry Moringa leaf contains



10 Times  
The Vitamin A  
of Carrots



12 Times  
The Vitamin C  
of Oranges



15 Times  
The Potassium  
of Bananas



25 Times  
The Iron  
of Spinach



17 Times  
The Calcium  
of Milk



9 Times  
The Protein  
of Yogurt

# OBJECTIVES

Consideration of MAM (Moderate Acute Malnutrition) and SAM (Severe Acute Malnutrition) grade children listed as per Department of Women and Child Development Raichur District, Karnataka.

## MATERIALS & METHODS

This program includes a total no of 221697 children including 279 SAM children, 25933 MAM children and 195485 Normal children's categories from entire Raichur district and its taluka places Devadurga, Manvi, Lingasugur, Turvihah, Siriwar, Sindhanur, Gillesugur, Raichur and its rural areas in Karnataka.

5 grams of dry Moringa leaves powder was included in the children diet under the guidance of his/her mother. Reassessment of nutritional status was done by conducting medical test as per routine.



## RESULTS

In SAM category showed potential impact and improvement in addressing malnutrition due to moringa nutritional benefits. Improvement status over period of 6 months and No of SAM Children reduced from 279 to 195. MAM category showed improvement in their nutritional status over period of 6 months and No. of MAM children reduced from 25933 to 23522.

## District level SAM & MAM Status:

### Raichur District: SAM Children Eradication Improvement Status (November 2023 – April 2024)

TOTAL SAM CHILDREN BEGINNING OF NOVEMBER 2023: **279**

TOTAL CHILDREN WENT OUTSIDE SAM CATEGORY IN Q2 **128**

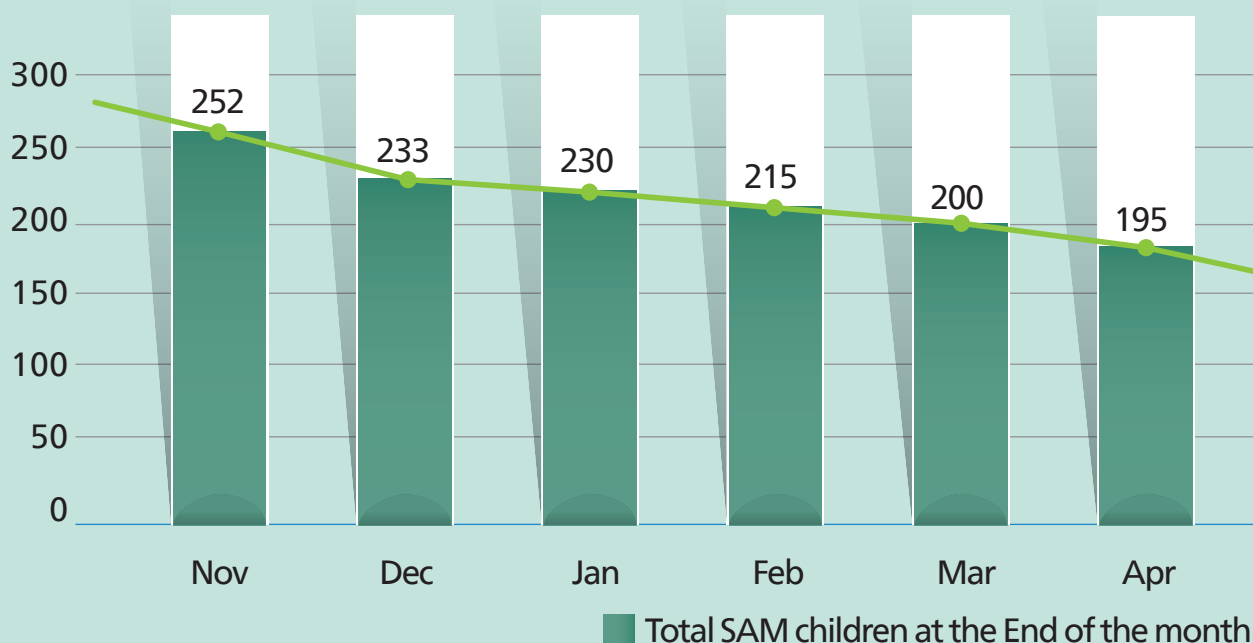
TOTAL SAM CHILDREN END OF APRIL 2024 **195**

TOTAL NEW CHILDREN ADDED **60**

SAM CHILDREN REDUCTION **33.14%**



### Raichur District **SAM Children Eradication** Improvement Statistics (Nov 2023 - Apr 2024)



## District Level: Nov 2023 to Apr 2024

### Overall Statistics of SAM children improvement



| Month | SAM Children at previous month | Newly arrived SAM children | Moderately to Severely underweight | No of extremely underweight children from other towns | Total SAM children in the month | Extremely underweight to normal | No of children went to town | No of children who died | Children completed six years | Total children at the end of the month |
|-------|--------------------------------|----------------------------|------------------------------------|-------------------------------------------------------|---------------------------------|---------------------------------|-----------------------------|-------------------------|------------------------------|----------------------------------------|
| Apr   | 202                            | 5                          | 1                                  | 0                                                     | 208                             | 10                              | 2                           | 0                       | 1                            | 195                                    |
| Mar   | 212                            | 10                         | 1                                  | 0                                                     | 223                             | 20                              | 0                           | 0                       | 1                            | 202                                    |
| Feb   | 227                            | 2                          | 1                                  | 0                                                     | 230                             | 14                              | 4                           | 0                       | 0                            | 212                                    |
| Jan   | 235                            | 13                         | 4                                  | 1                                                     | 253                             | 23                              | 1                           | 1                       | 1                            | 227                                    |
| Dec   | 252                            | 4                          | 2                                  | 0                                                     | 258                             | 17                              | 5                           | 1                       | 0                            | 235                                    |
| Nov   | 270                            | 6                          | 2                                  | 1                                                     | 279                             | 20                              | 6                           | 0                       | 1                            | 252                                    |
|       | 1398                           | 40                         | 11                                 | 2                                                     | 1451                            | 104                             | 18                          | 2                       | 4                            | 1323                                   |

### Raichur District programme center wise SAM children reduction status

| Month          | Nov   |     | Dec   |     | Jan   |     | Feb   |     | Mar   |     | Apr   |     |  |
|----------------|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|--|
| Program Centre | Start | End | Start | End | Start | End | Start | End | Start | End | Start | End |  |
| Raichur        | 20    | 16  | 16    | 16  | 18    | 16  | 16    | 15  | 16    | 11  | 11    | 9   |  |
| Gillesugur     | 14    | 13  | 13    | 12  | 14    | 13  | 14    | 13  | 16    | 16  | 16    | 14  |  |
| Manvi          | 17    | 14  | 14    | 14  | 14    | 14  | 15    | 14  | 12    | 9   | 11    | 11  |  |
| Siriwar        | 28    | 26  | 26    | 24  | 25    | 23  | 23    | 21  | 22    | 22  | 24    | 18  |  |
| Sindanur       | 63    | 59  | 59    | 52  | 51    | 49  | 49    | 46  | 49    | 49  | 51    | 49  |  |
| Turvihal       | 27    | 24  | 25    | 21  | 25    | 21  | 21    | 19  | 21    | 18  | 19    | 18  |  |
| Lingasugur     | 35    | 31  | 35    | 27  | 38    | 30  | 32    | 30  | 31    | 223 | 21    | 21  |  |
| Devadurga      | 75    | 69  | 70    | 69  | 68    | 61  | 60    | 54  | 56    | 54  | 55    | 55  |  |
| Total          | 279   | 252 | 258   | 235 | 253   | 227 | 230   | 212 | 223   | 202 | 208   | 195 |  |

# Raichur District: MAM Children Eradication Improvement Status (November 2023 – April 2024)

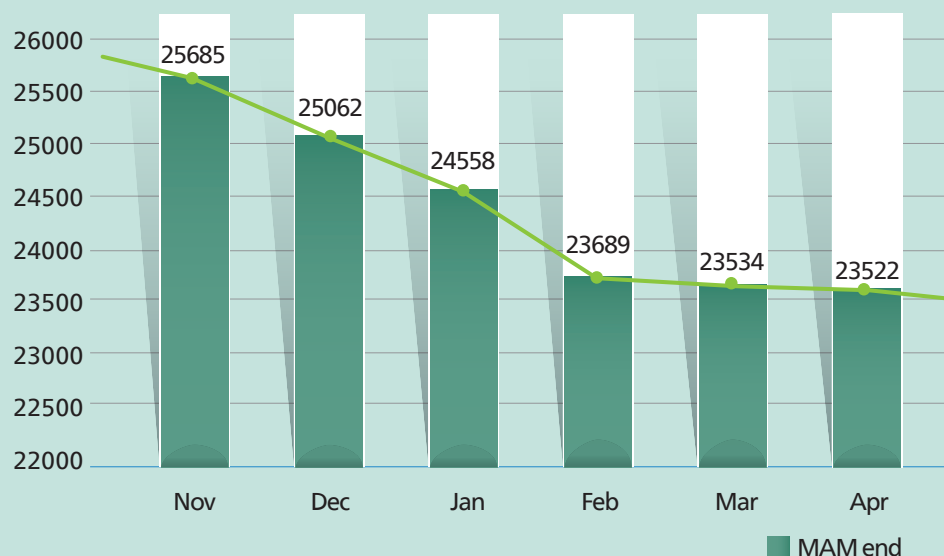
TOTAL MAM CHILDREN START OF NOVEMBER 2023 **25933**

TOTAL MAM CHILDREN END OF APRIL 2024 **23522**

MAM CHILDREN REDUCTION **9.3%**



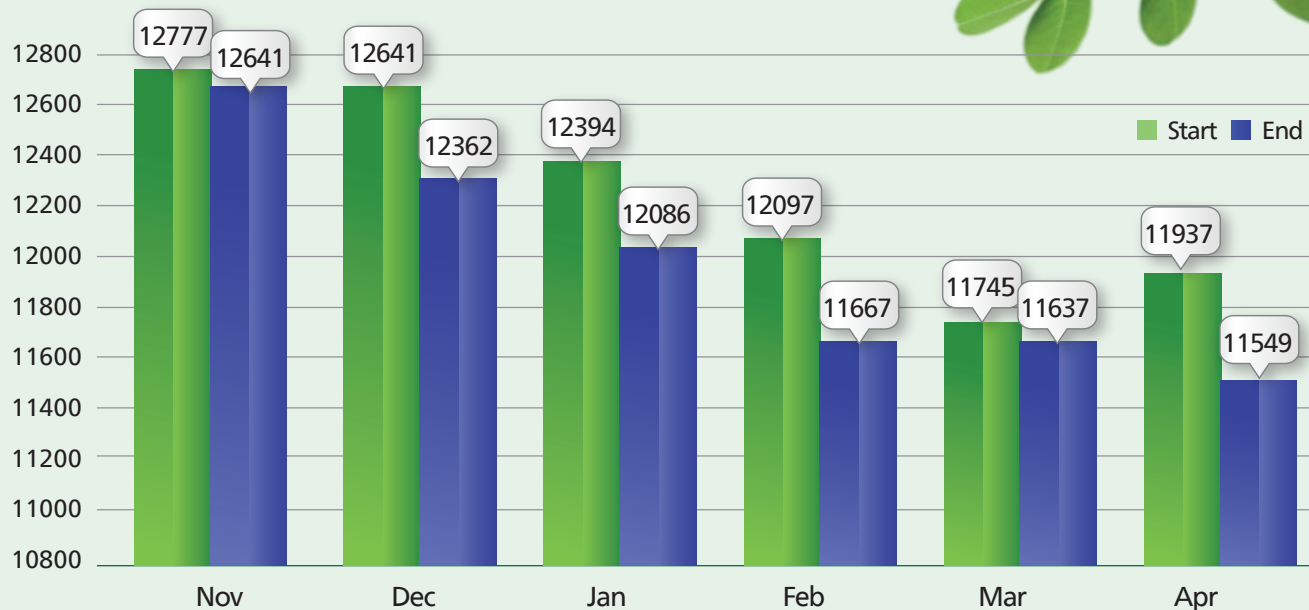
## MAM Children Reduction trend from Nov to Apr 2024



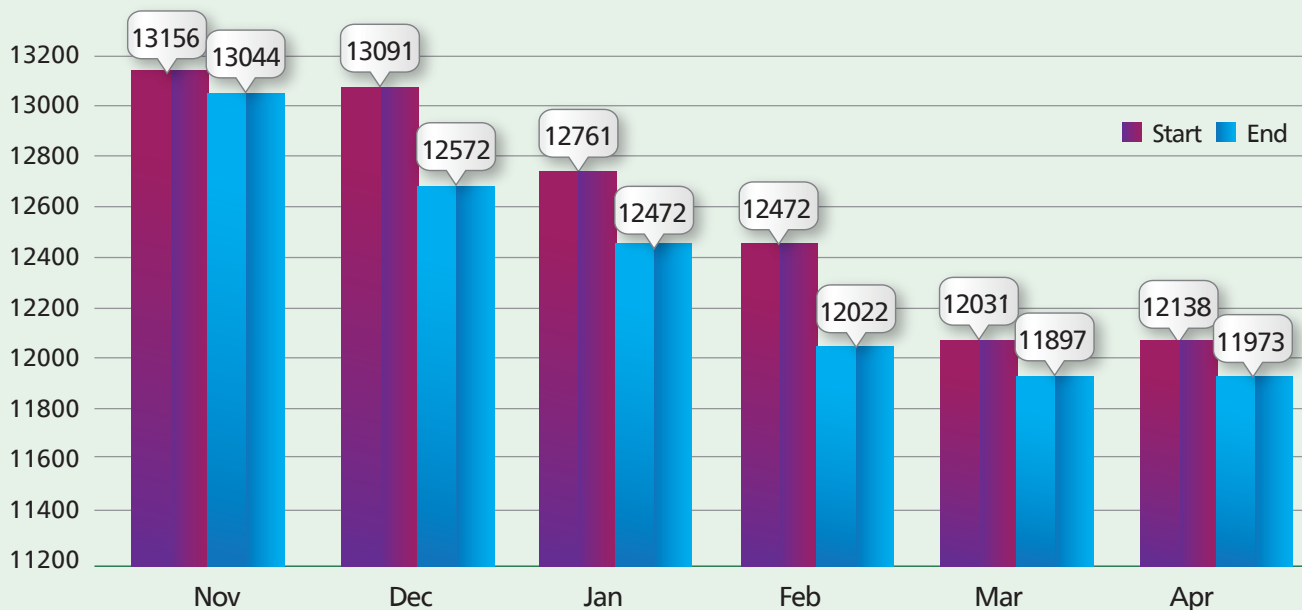
|       | MAM Male Children |       | MAM Female Children |       | MAM Children |
|-------|-------------------|-------|---------------------|-------|--------------|
| Month | Start             | End   | Start               | End   | Total        |
| Nov   | 12777             | 12641 | 13156               | 13044 | 25685        |
| Dec   | 12641             | 12362 | 13091               | 12572 | 24934        |
| Jan   | 12394             | 12086 | 12761               | 12472 | 24558        |
| Feb   | 12097             | 11667 | 12472               | 12022 | 23689        |
| Mar   | 11745             | 11637 | 12031               | 11897 | 23534        |
| Apr   | 11937             | 11549 | 12138               | 11973 | 23522        |



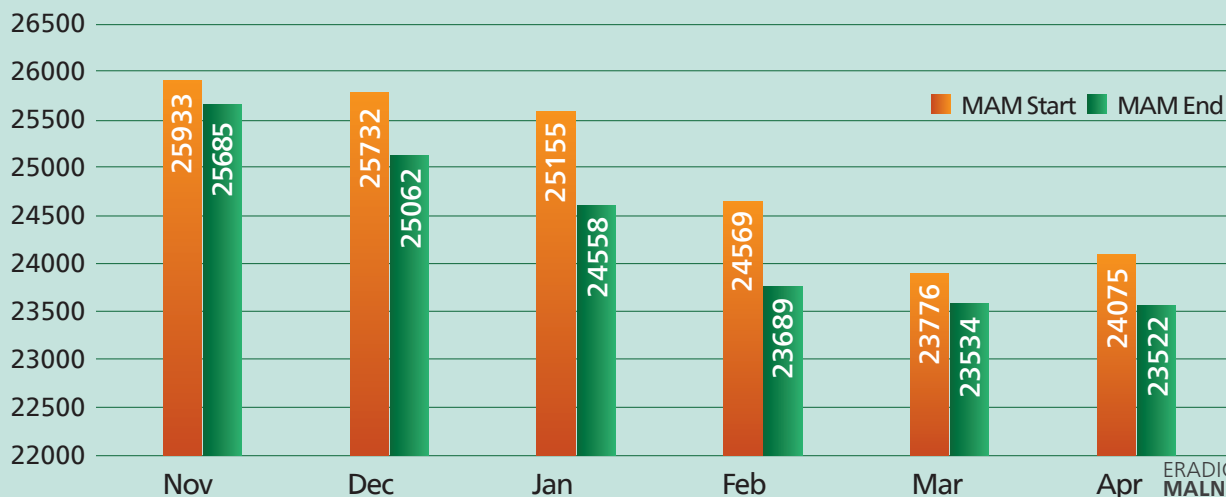
## MAM: Male Children Malnutrition Reduction Trend for 6 months



## MAM: Female Children Malnutrition Reduction Trend for 6 months



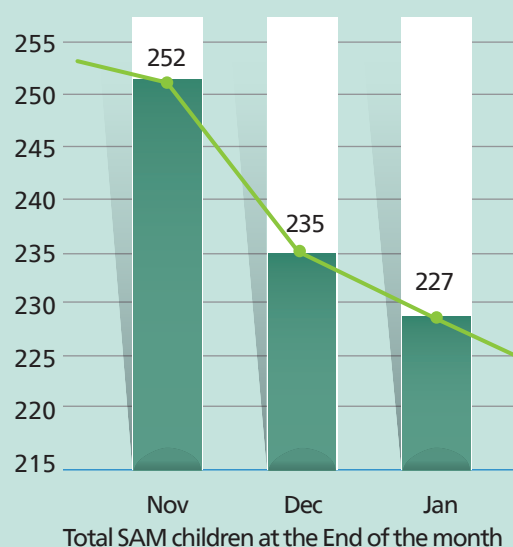
## Raichur District: Total MAM children Improvement Nov - April 2024 Reduction Trend



# SAM & MAM Children Malnutrition Eradication Improvement Q2 Status Nov 2024 – Jan 2024



## Total District: SAM children Malnutrition Eradication improvement Status Nov-Jan 2024 (Q2)



Total SAM children start of Q2: **279**

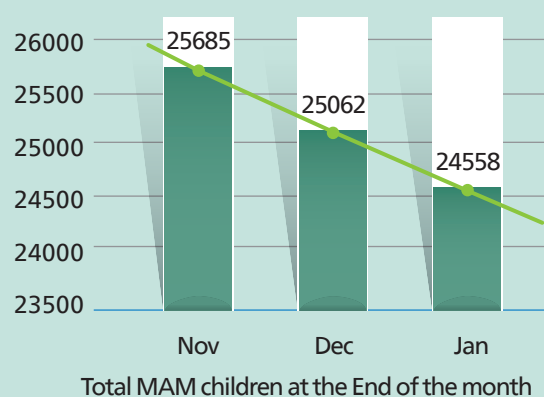
Total SAM children end of Q2: **230**

Total New children added in Q2: **33**

Total Children went outside SAM category in Q2: **76**

SAM Children Reduction in Q2: **17.56%**

## Total District: MAM children Malnutrition Eradication Status Nov-Jan 2024 (Q2)



Total MAM children beginning  
of November 2023: **25685**

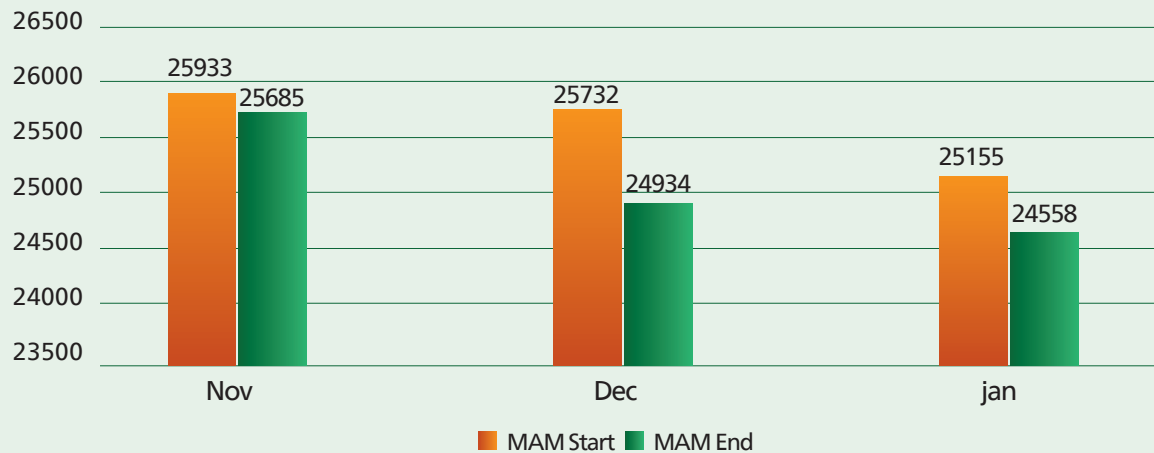
Total MAM children start of  
November 2023: **25933**

Total MAM children end of April 2024: **24558**

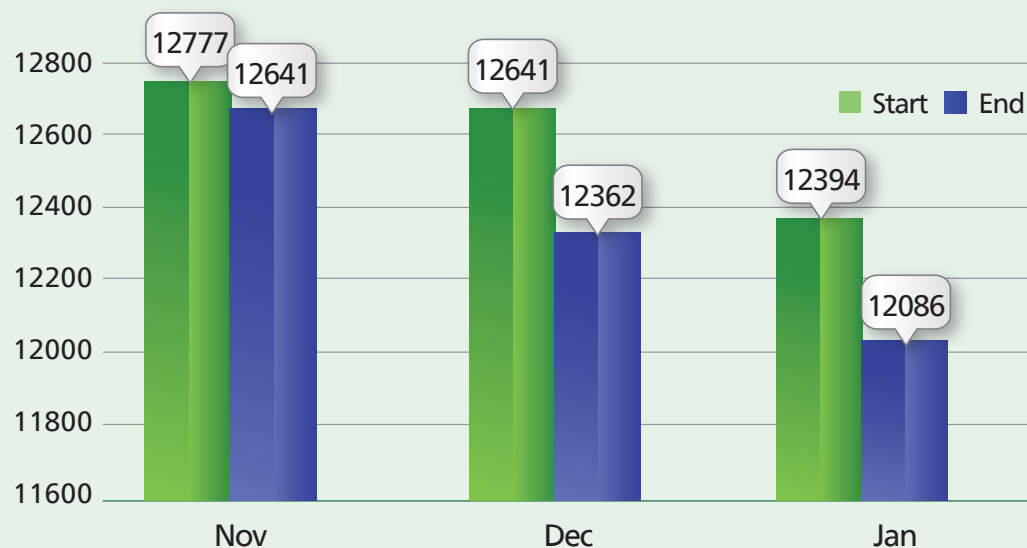
MAM Children Reduction end of April: **5.31%**



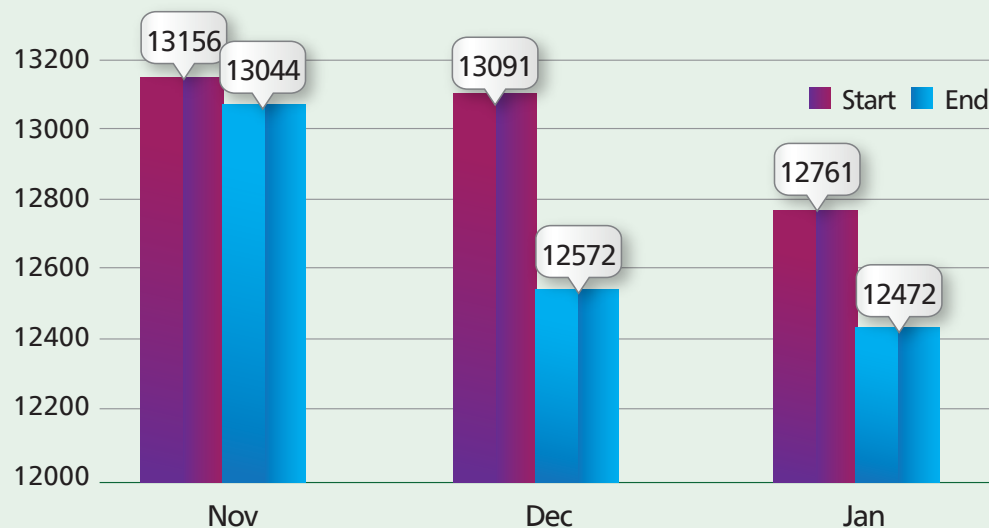
## Total MAM children Improvement Q2 Monthly start - end Reduction Trend



## MAM: Male Children Malnutrition Reduction Trend for Q2



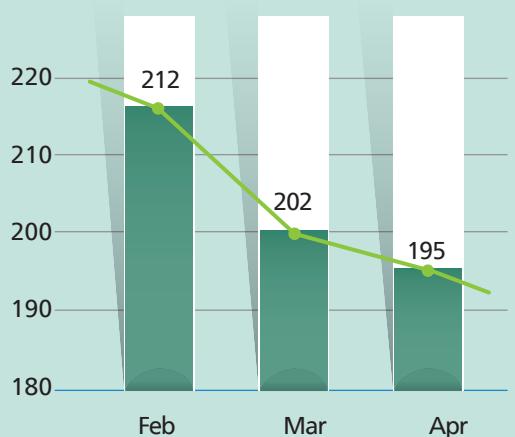
## MAM: Female Children Malnutrition Reduction Trend for Q2



# SAM & MAM Children Malnutrition Eradication Improvement Q3 Status Feb 2024 – April 2024



## Total District: SAM childrens Malnutrition Eradication Status Feb-Apr 2024 (Q3)



Total SAM children at the End of the month

Total SAM children start of Q3: **230**

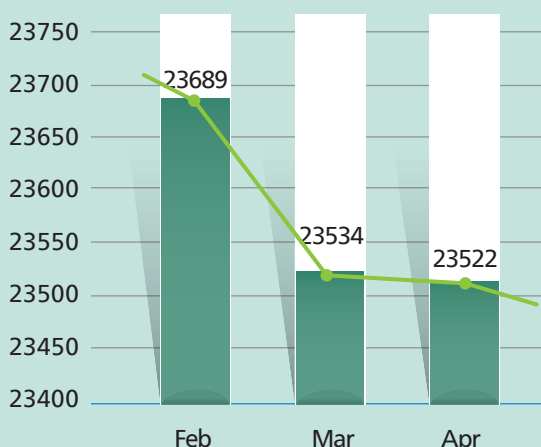
Total SAM children end of Q3: **195**

Total New children added in Q3: **20**

Total Children went outside SAM category in Q3: **52**

SAM Children Reduction in Q3: **15.58%**

## Total District: MAM childrens Malnutrition Eradication Status Feb-Apr 2024(Q3)



Total MAM children at the End of the month

Total MAM children beginning of Feb 2023: **24558**

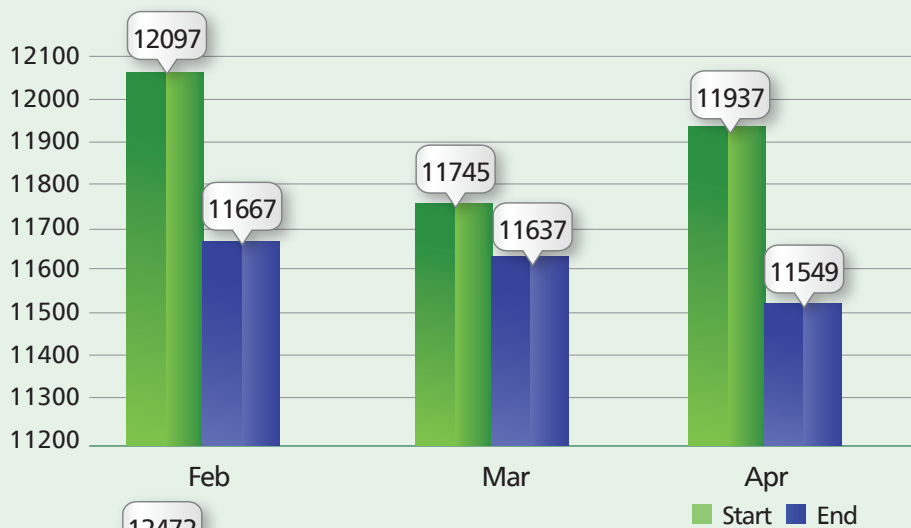
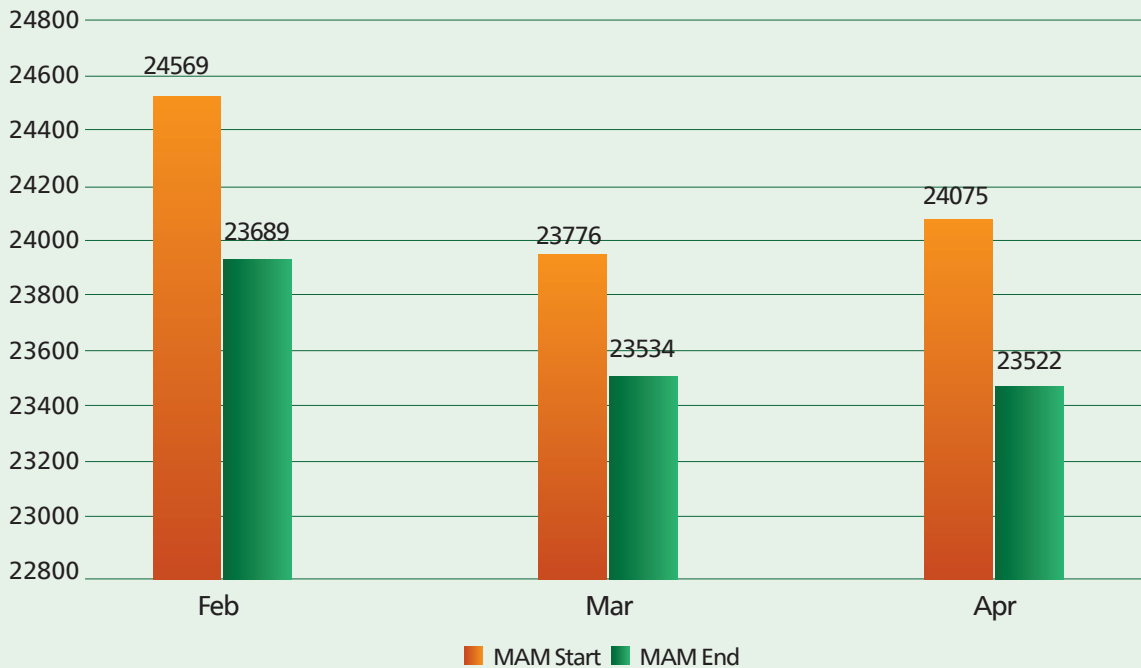
Total MAM children start of Feb 2023: **24569**

Total MAM children end of April 2024: **23522**

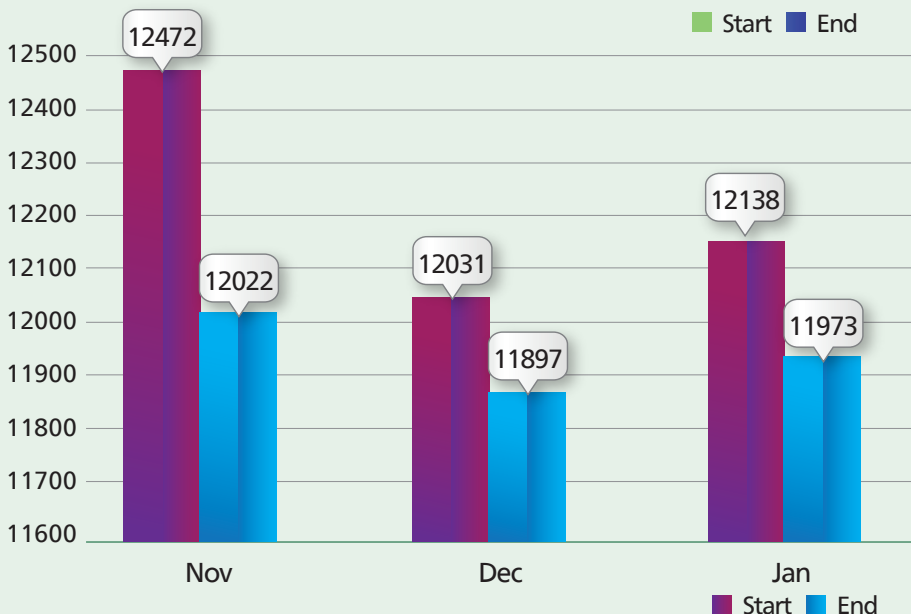
MAM Children Reduction end of April: **4.3%**



## Total MAM children Improvement Q3 Monthly start - end Reduction Trend



MAM: Male Children  
Malnutrition  
Reduction Trend for  
Q3



MAM: Female  
Children Malnutrition  
Reduction Trend for  
Q3

# RAICHUR DISTRICT MALNUTRITION ERADICATION CHALLENGES

- In the entire district, few children were found with severe diseases due to high generic issue in rural area.
- New Children addition and exit to talukas from each centre needs to be attended and monitored.
- Continuation of moringa consumption program and regular medical test is mandatory to follow-up with the parents.
- Couple of children went out of station not included in follow up medical test as children migrated to other locations from few talukas



# DISCUSSION

In Raichur district, Karnataka, India, the successful reduction of Severe Acute Malnutrition (SAM) and Moderate Acute Malnutrition (MAM) among children has been significantly bolstered by the integration of Moringa oleifera into local nutritional interventions.

Moringa leaves powder rich in flavonoids, stacked with nutrients, antioxidants vital proteins, vitamins and various phenolics. Moringa's nutrients are easily absorbed, and no allergy has been reported. Most of the nutrients of the Moringa trees are in its leaves, which can be made into a powder that can be added to the regular diet to add essential nutrients. Moringa leaves also are rich in vitamins and minerals such as B-complex vitamins, vitamin C, calcium, potassium, magnesium, selenium, zinc and amino acids namely arginine and histidine which is especially important for infants.

Raichur district, like many rural areas in India, faces challenges related to food insecurity and malnutrition, particularly among children under five years old. SAM and MAM are serious conditions that can lead to long-term health issues and even mortality if not addressed promptly and effectively.

Key strategies that have contributed to the successful reduction of SAM and MAM include:

- 1. Nutritional Supplementation Programs:** District Administration, Central Warehouse Corporation, Dept of Women and Child Development along with Local Organic Moringa Supplier (NOFH PVT LTD) have implemented programs that distribute Moringa leaf powder or incorporate Moringa leaves into meals provided at anganwadis (childcare centers) and schools. These efforts ensure that children receive regular access to the vital nutrients Moringa offers.
- 2. Community Awareness and Training:** Community health workers and volunteers educate parents and caregivers about the nutritional benefits of Moringa and demonstrate how to incorporate it into daily diets. This grassroots approach enhances acceptance and adoption of Moringa as a dietary supplement.
- 3. Integration with Healthcare Services:** Moringa supplementation is integrated into routine healthcare services, including regular growth monitoring and counseling sessions for parents. This ensures that malnourished children receive comprehensive care that addresses both nutritional deficiencies and overall health.

The results of these initiatives have been encouraging. Over time, there has been a noticeable decline in the prevalence of SAM and MAM among children in Raichur district. Health indicators such as improved weight gain, reduced incidence of infections, and better overall health outcomes reflect the positive impact of integrating Moringa into local nutrition programs. In conclusion, the successful reduction of SAM and MAM in Raichur district underscores the potential of Moringa oleifera as a sustainable and effective solution to combat childhood malnutrition.

# ACKNOWLEDGEMENT

The authors are incredibly grateful to the following officials of Raichur District.

- Deputy Commissioner
- Chief Executive Officer, Zilla Panchayat
- Central Warehousing Corporation
- Deputy Director, Department of Women and Child Development, Programme Officer and CDPO's
- District Health Officer and Taluk Health Officers
- All taluk place Tahsildar's
- NOFH Private Limited

Thanks to Central Warehousing Corporation for all the support and encouragement given for the Malnutrition eradication program.

We are highly grateful to Deputy commissioner and Chief Executive Officer, Zilla Panchayat for this initiative and Deputy Director, Department of Women and Child Development and its officials for complete support and also mothers/children participated in this program.

Thanks to NOFH PVT LTD management team for regular supply of chemical free organic Moringa powder for the malnutral children of Raichur district.

# Malnutrition Eradication Program Execution Photo Gallery



Thanks to Central Warehousing Corporation for providing CSR support to Raichur district.





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# ERADICATING MALNUTRITION USING FOOD SUPPLEMENT MORINGA OLEIFERA

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