

Public Health and Nutrition Programmes to Combat Child and Maternal Malnutrition - A Perspective from Andhra Pradesh, India

Subhasree Ray^{1*}, BLHS Devi² and Asish Samson³

¹Group Corporate Dietitian, Reliance Industries Limited, Navi Mumbai, Maharashtra, India

²BLHS Devi, I/c Joint Director, Child Health & Immunization, Department of Health, Medical & Family Welfare, Govt. of Andhra Pradesh, India

³Lecturer, Department of Biochemistry and Nutrition, EMMI Group of Institutions, Guntur, Andhra Pradesh, India

*Corresponding Author: Subhasree Ray, Group Corporate Dietitian, Reliance Industries Limited, Navi Mumbai, Maharashtra, India.

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Abstract

The Global Nutrition Report 2020 (GNR 2020) reported India as one of the 88 countries to miss global nutrition targets by 2025. The report also cited India as a country with presence of wide range of nutritional inequalities at domestic level. 37.9% of under-5 children are stunted and 20.8% are wasted in India. According to the GNR 2020, one in two women of reproductive age suffers from nutritional anemia. Between the years 2000 to 2016, rates of underweight among children have decreased from 66.0% to 58.1% for boys and 54.2% to 50.1% in girls. Despite the reduction, the values are still higher than Asia's average of 35.6% for the boys and 31.8% for the girls.

Global Burden of Disease Study 2019 stated child and maternal malnutrition as leading level 2 risk factor for attributable Disability-Adjusted Life Years (DALYs) across globe. Poor nutrition in the first 1000 days of a child's life leads to stunted growth, poor cognitive development, and reduced work performance at a later stage. Maternal malnutrition is directly associated with death during childbirth, severe nutritional anemia, and poor pregnancy outcome in Indian women. Multiple community nutrition programmes are adopted and implemented by the Govt. of India to curb maternal and child malnutrition. But, the outcome of these projects vary as the extent and nature of maternal and child malnutrition in India largely depends on geographic position, age, gender, ethnicity, literacy and socio-economic status.

This perspective discusses the problem statement of child and maternal malnutrition that prevailed in India followed by providing insight on various efforts taken by the current Government of the south Indian state of Andhra Pradesh in mitigating maternal and child malnutrition by designing comprehensive programmes that target health, nutrition, and education. The current administration of Andhra Pradesh incepted many unique measures like YSR Amrutha Hastham, YSR Sampoorna Poshan, Nadu Nedu, Amma Vodi, etc. to ensure spot feeding, access to optimum nutrition by the socially and geographically backward classes, enhanced school attendance, financial assistance to the women, etc. The schemes aim to achieve an overall reduction in social and nutritional inequality among mothers and children in the state.

Keywords: Public Health Nutrition; Community Nutrition; Nutrition Policy; Nutrition Supplementation; Andhra Pradesh; Child Malnutrition; Maternal Malnutrition; Nutritional Anemia; Education

Introduction

Malnutrition is one of the major global public health burden that caused more than half global deaths in children aged 5 years and below in low and middle income countries including India [1]. In India, 68% of the under-5 children deaths are mostly related to child and maternal malnutrition and 83% of the neonatal deaths to low birth weight and short gestational period [2]. Maternal malnutrition is also widespread in India which includes severe nutritional anemia, protein-energy malnutrition, calcium deficiency most common in both urban and rural women. One third of Indian women of reproductive age lacks optimum nutrition, with a body mass index (BMI) of less than 18.5 kg/m [1]. Ample of evidence have already proven that undernourished mothers gives birth to undernourished babes with impaired growth and cognitive development [3].

Andhra Pradesh is a Telugu speaking southern state in India reported over 52.9% of its pregnant women suffering from acute anemia, 31.9% of children reporting low birth weight and 31.4% of the children are suffering from stunted growth as stated by the National Family Health survey 2015-16 [4]. Current article explains different schemes implemented by the current state Govt. aiming a substantial reduction of maternal and child malnutrition and resultant premature deaths or poor health outcome in the state.

Major nutrition supplementation programmes in India for mothers and children

There are multiple nutrition supplement programmes available in India for both mother and children. Few major community level nutrition programmes are - Integrated Child Development Services Scheme (ICDS), Mid-day meal Programmes (MDM), Special Nutrition Programmes (SNP), Wheat Based Nutrition Programmes (WNP), Balwadi Nutrition Programmes (BNP), National Nutritional Anaemia Prophylaxis Programme (NNAPP), National Programme for Prevention of Blindness due to Vitamin A Deficiency, National Goiter Control Programme (NGCP) [5]. Among these, ICDS, MDM and SNPs are widely implemented in the country. The ICDS programme is the largest community nutrition programme in the country and the world covers children below 6 years, pregnant and lactating mothers, and women aged 15 - 44 years as beneficiaries, who are supplemented with nutritional foods, elementary education for pre-school children, immunization, regular health check-ups, referral services, and treatment of minor illnesses [6]. The beneficiaries of MDM are the children of school-going age. In this scheme, the children from socio-economic backward classes, scheduled caste and scheduled tribe are prioritized [7].

The problem - Key indicators

The 4th National Family Health Survey 2015-16 (NFHS-4) [8] elicits information on population distribution, health and nutrition status of overall India and every State/Union territory in the country. The figures of NFHS 4 and the earlier surveys might vary due to differences in sample size. NFHS-4 fieldwork in Andhra Pradesh was carried out in between 6 May 2015 to 4 August 2015 by a private establishment, GFK Mode Private Limited and collected information from 10,265 households, 10,428 women, and 1,399 men [4]. This article includes nutrition related key indicators which describe the status of maternal and child health in the state according to NFHS-4.

Infant mortality rate and under-five mortality rate

According to Sample Registration Survey 2018 [9], Infant Mortality Rate of Andhra Pradesh stands at 29 per 1000 live births, better than the national status of 32 per 1000 live births. The under-five child mortality rate (U5MR) was 33 per 1000 live births in the state of Andhra Pradesh and 36 at overall country level. In the state, U5MR was found to be high (45 per 1000 live births) in rural belt with 66.64% of the total population. The U5MR in urban Andhra was 29 per 1000 live births. This disproportion could be due to the lack of awareness, accessibility to medical amenities and illiteracy that prevailed widely among the people of rural Andhra.

Year	Infant Mortality Rate per 1000 live births	Under 5 Mortality Rate per 1000 live births
2018	29	33

Table 1: IMR and U5MR in Andhra Pradesh (2015-16, NFHS-4).

Child malnutrition

The Global Burden of Disease Study 1990 - 2017 [10] reported that the states of Andhra Pradesh has succeeded to reduce undernutrition in children to some extent. The study stated in 2010 the prevalence of underweight in Andhra was 32.9% and in 2017, it has reduced to 27.2%, which translate to a reduction of 5.7%. At the same time, India reported a decline of 8.2% in the child underweight status.

Category of Malnutrition	2010	2017	% Reduction
Stunting (low height for age in %)	42.9	35.1	7.8
Underweight (low weight for age in %)	32.9	27.2	5.7
Wasted (Low weight for height in %)	19.3	17.6	1.7

Table 2: Malnutrition status in Andhra Pradesh (2010-2017) among children under 5 years.

Anemia in children and women

The Global Burden of Disease Study 1990 - 2017 [10] also reported a downward trend in both child and women nutritional and non-nutritional anemia. As projected in table 2, child anemia declined by 8% (from 67.5% in 2010 to 59.5% in 2017), similar to the national average of 8.1% reduction in child anemia cases. However, anemia in women reduced by only 0.7% (from 59.3% in 2010 to 58.6% in 2017) in Andhra, whereas the fall was more at 2.7% at country level.

Anemia Cohort	2010	2017	% Reduction
Children (6 - 59 Months)	67.5%	59.5%	8%
Women (15 - 49 Years)	59.3%	58.6%	0.7%

Table 3: Prevalence of anemia among children and women in Andhra Pradesh.

Diarrhea

According to states National Health Profile 2019 [11] conducted by the Central Bureau of Health Intelligence, Andhra Pradesh demonstrated poor performance in reducing cases and deaths due to acute diarrheal diseases. In 2017, the state recorded approximately 11.89 lakh cases and 52 deaths. In 2018, the number of cases rose to 11.93 lakh cases and the number of deaths increased to 72. Diarrhea is directly associated with poor nutritional status and hygiene.

Thus, the provision of adequate health measures, nutrition, sanitation and education is the top priority of the current state Govt.

Year	Cases	Deaths
2017	11,89,407	52
2018	11,93,473	72
% Increase	0.34	38.46

Table 4: Cases and deaths due to acute diarrheal diseases.

Initiatives to tackle maternal and child malnutrition

The current state Govt. has taken multiple interventions those are either directly or indirectly aim to enhance health and nutritional status among state's women and children.

Direct intervention

The current article discusses three direct interventions - YSR Amrutha Hastham and YSR Sampoorna Poshana and YSR Sampoorna Poshana Plus to curb malnutrition in the state.

YSR Amrutha Hastham

YSR Amrutha Hastham is flagship programme by the current Govt. was previously known as Anna Amrutha Hastham and Indiramma Amrutha Hastham. This programme provided raw take-home ration like rice, legumes, oil and four eggs to the pregnant and lactating mothers. Newly defined YSR Amrutha Hastham is a spot feeding programme for the pregnant and lactating mothers to provide them hot, cooked meal six days a week between 11 am and 2 pm, prepared by anganwadi workers. This meal is also offered to the children who come to the centers in the morning. In addition to the take home ration, the programme has added an egg and 200 ml of milk to each pregnant mother every day. The cost per meal is 22 INR [12].

This project was evaluated by researcher Sethi V., *et al.* 2019 [13]. The authors has reported that among pregnant mothers, the average days of meal consumption ranged from 19 to 21 days per month as spot meal enhanced dietary diversity (more than 6 food groups; 57% - 59%) and consumption of eggs and milk (74% - 96%) among pregnant and lactating women. The findings also stated, on-the-spot consumption of iron, folic acid, calcium, and deworming was 18%, 87%, and 56%, respectively. 94% of the beneficiaries have attended at least 1 of the 2 nutrition monthly counseling sessions. The report stated most of the women (68%) were encouraged to enroll in YSR Amrutha Hastham by the members of self-help groups or family members suggesting the role of self-help groups and families as catalysts in effective implementation of the programme. The authors concluded that the maternal spot feeding schemes similar to YSR Amrutha Hastham can successfully deliver target based nutrition interventions and reduce maternal mortality as outlined by the World Health Organization antenatal care guidelines 2016 [14].

YSR Sampoorna Poshana and YSR Sampoorna Poshana Plus

On September 7, 2020 Andhra Pradesh Chief Minister YS Jagan Mohan Reddy launched two nutrition schemes 'YSR Sampoorna Poshana' and 'YSR Sampoorna Poshana Plus' to provide nutritious foods to the state's pregnant women, lactating mothers and children of the tribal belt. The scheme targets to benefit about 30.16 lakh mothers and children [15]. During inception of this article, the project was at implementation stage.

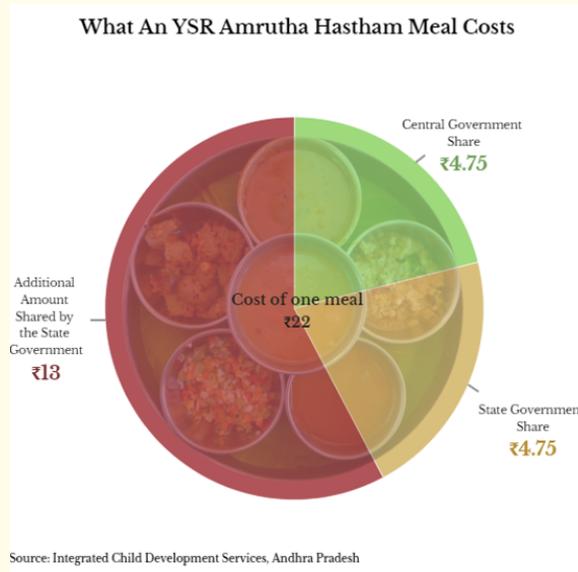


Figure 1: Cost of an YSR Amrutha Hastham meal [12].

Aims:

- Implementing Y.S.R Sampurna Poshan Plus Scheme in the 77 tribal mandals of the state.
- Simultaneous implementation of YSR Sampurna Poshana Scheme in the plain areas.
- Total investment of Rs. 1863 crore approximately for both these schemes.
- Monthly expenditure of 850 INR per month for pregnant women and new mother’s diet in plain areas, 350 INR for infants and 412 INR for children.
- Covering all beneficiaries from the lower socio-economic strata. Previous to this, the diet schemes in the state targeted only women and children with nutritional anemia [15].

Salient features

- Around 3 lakh tribal women and children would be covered through 8,320 anganwadi centres spread of 77 tribal mandals.
- Pregnant women and infants between 6 months to 3 years will get nutritious diet.
- Eggs and milk will be provided to children between 3 to 6 years of age.
- AP govt. will spend 1100 INR per month to provide diet to pregnant women. The state government will also spend 553 per month for diet to children in tribal areas.
- A budget of 308 INR crore will be invested in AP YSR Sampurna Poshan Plus Scheme implementation [15].

The similar features will be implemented in YSR Sampoorna Poshana Scheme as well. This scheme will benefit 27 lakh women and children by involving 47,287 anganwadi centers. Apart from nutrition supplementation, aligned to the national POSHAN Abhiyaan guidelines [13] Community Based Events (CB Events) will also be organized at the Anganwadi Centres to generate awareness among pregnant and lactating women on health, nutrition, sanitation, immunization and child care [15].

To monitor overall effective implementation of YSR Sampoorna Poshana and Plus, Department of Women Development and Child Welfare has developed a handy mobile application to assess the quality of the services and satisfaction levels among the beneficiaries [15].

National prophylaxis programme against nutritional blindness

The national prophylaxis programme against nutritional blindness is a centrally sponsored scheme with an aim to reduce the prevalence of blindness due to deficiency of Vitamin A. The key agenda of this programme is to administer multiple bolus Vitamin A doses. The supplementation is started from the age of 9 months and up to 5 years with different dosage as per the age. To increase the coverage the scheme was linked to the immunization programme [16].

In the first dose at 9 months of age, 100000 IU of Vitamin A is administered along measles immunization. For the second dose, at 16 - 18 months of age 200000 IU is administered along with a DPT booster and from the third dose onwards 200000 IU is administered for every 6 months till the child attains the age of 5 to bring the total to 9 mega doses [16].

Coupled with the standard dosage, the scheme also includes the treatment of Vitamin A deficient children including those suffering from severe malnutrition, xerophthalmia etc. Children with measles are given 1 dose of Vitamin A if not received in the previous month. Finally, the scheme also promotes the regular consumption of dietary sources of Vitamin A by encouraging local production of green leafy vegetables and rich sources of carotenoids for pregnant and lactating women, those attending Antenatal clinics and immunization sessions and children under 5 years of age [16].

Andhra Pradesh is executing the National Prophylaxis programme against Nutritional Blindness, aligned with the central govt. At present the prevalence of blindness is 0.65% in the state. Andhra Pradesh has set the goal to reduce the prevalence of blindness to 0.3% by the year 2020 [17].

Anemia Mukh Bharath programme

Anemia Mukh Bharat Programme, a Govt. of India scheme that aims to make India free from anemia by reducing prevalence of anemia by 3% each year among women, children, and adolescents of the reproductive age group (15 - 49 years). The strategy targets to cover 450 million beneficiaries, affected by nutritional anemia. As per the progress, the no. of target beneficiaries will be revised and updated annually [18].

The Anemia Mukh Bharat strategy will be implemented across India by merging with the existing nutrition interventions such as National Iron Plus Initiative (NIPI) and Weekly Iron Folic Acid Supplementation (WIFS) programme [18].

Target

Figure 2 describes the national target to reduce anemia in each beneficiary group by the year 2022.

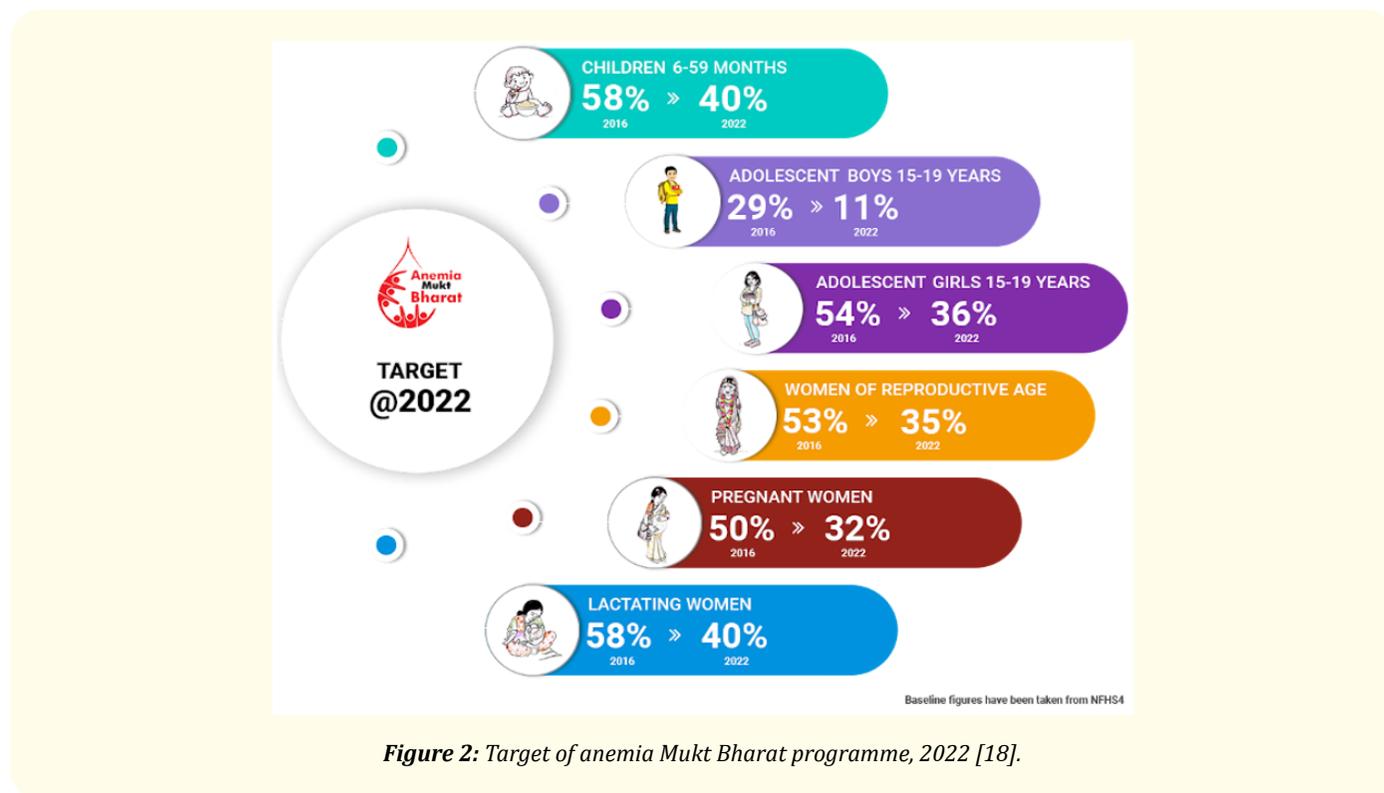


Figure 2: Target of anemia Mukht Bharat programme, 2022 [18].

Six interventions

The Anemia Mukht Bharat strategy focuses on the following six interventions:

- Prophylactic supplementation of iron and folic acid.
- Deworming.
- Behaviour modification communication campaign (Solid body, smart mind) focusing on four key behaviours - (a) Improving compliance to iron folic acid supplementation and deworming, (b) Appropriate infant and young child feeding practices (IYCF), (c) Increase in intake of iron-rich food through diet diversity/quantity/frequency and/or fortified foods with focus on harnessing locally available resources and (d) Ensuring delayed cord clamping after delivery (by 3 minutes) in health facilities.
- Testing and treatment of anemia, using digital methods and point of care treatment, with special focus on pregnant women and school-going adolescents.
- Mandatory provision of iron and folic acid fortified foods in government funded public health programmes.
- Intensifying awareness, screening and treatment of non-nutritional causes of anemia in endemic pockets, with special focus on malaria, haemoglobinopathies and fluorosis [18].

Andhra Pradesh is actively participating in anemia Mukht Bharat programme to correct nutritional anemia in adolescent girls, young male, pregnant and lactating women. Aligned to the national policy, the state is conducting mass anemia screening of males aged 6 to 10 years, women in reproductive age group (15 to 49 years), pregnant and lactating women. Six interventions of the programme are also being implemented by the state as stated by the national scheme.

Indirect intervention

Nutrition and health are two key outcomes which are closely associated with education, hygiene and awareness. The state's two distinct programmes also benefitting the women and children in enhancing their current nutritional status.

Mana Badi-Nadu-Nedu

According to a 2020 report by the NSO (National Statistical Office) by data taken from 2017 - 2018, literacy rate in AP is 66.4%, the worst in the country [19]. Mana Badi-Nadu-Nedu, meaning 'then and now', a flagship programme of AP current state Govt. is incepted to inculcate better learning outcomes and reduce the dropout rate in all Govt. run schools by upgrading the school infrastructure in phase wise manner. The scheme is a joint initiative by APEWIDC (Andhra Pradesh education and welfare infrastructure corporation), municipal health, panchayat raj, rural water supply and sanitation, Samagra Shiksha [20].

The current state Govt. felt a need to upgrade the school education infrastructure in the Govt. run schools to reduce burden of huge yearly fees, borne by the parents to send their children to private establishments with better facilities. Moreover, this scheme will not only provide quality education to the children in a better environment, but will also improve their hygiene, which is a key to reduce food-borne illnesses and resulted malnutrition.

This article reports phase 1 of the scheme in which 15,715 schools were selected and 3573 crore rupees were sanctioned to completely revamp and transform the selected schools [20].

Salient features

- New furniture, ceiling fans, running water, mineral water for drinking, landscaping, compound walls, green boards, clean toilets, signage, paint work, decorative art and building of new buildings English labs and classrooms among many others.
- English Medium is introduced from 1 to 6 classes with new textbooks printed with both English and Telugu content on each page on opposite sides.
- Customized uniforms and shoes. For the first time in the country, shoe measurements of each student were taken and stored digitally and each pair of shoes are manufactured and delivered with the name of the student tagged.
- Parent committees are involved in each and every aspect of the functioning of the school including the usage of the sanctioned funds.
- Drinking water is being tested for the Total Dissolved Solids (TDS), ferrous and fluoride content. Rather than regular bore wells and syntax tanks, new high grade stainless steel drums (304 grade steel procured from Jindal and SAIL) with various type of filtering systems including membrane system, sand-filter system and UV system are being installed in all the selected schools.
- For bathrooms, the state government has procured quality material with special arrangements for differently-abled students. The government is also making efforts to monitor and maintain the quality of the installations using a specialized software with data real-time data on their status [20].

To ensure transparency, all the data for the schemes and the various programmes can be accessed at the official government site of the scheme: nadunedu.se.ap.gov.in. School Transformation Monitoring System (STMS) app has also been launched. Through the site and the app both the citizen and government officials can monitor and observe the myriad works going on throughout the state with options to select a specific school from a specific municipality/mandal from a specific district [20].

Post this scheme, the Govt. schools in Andhra Pradesh seeing a spike in enrolments. Some schools have also reported excess admissions with up to 2.47 Lakh new children enrolling in govt schools in 13 districts [21].

Amma Vodi

Amma Vodi (Mother's Lap) scheme is another welfare scheme which aims to provide financial assistance to mothers (or guardian in the absence of a mother) for education of their children on an annual basis from kindergarten to 12th standard. Under this scheme, which was launched on 9 January 2020, a financial assistance of 15,000 INR will be credited to the bank accounts of mothers every January until their child passes out of school or junior college. The AP government has already earmarked and allocated funds of 6,318 Crore rupees this year. About 43 Lakh mothers and up to 82 Lakh children will and have benefitted from this scheme which provides assistance to children studying in both public and private schools [22,23].

The unique facet in the scheme is that financial assistance is credited to the account of the mother rather than the educational institution or an account in the child's name which gives a choice to the mother to use it according to her needs. The aim of the scheme is to reduce the percentage of drop outs and encourage the parents to get quality education for their children without heavy financial burden. Already the announcement of the scheme along with the Nadu-Nedu scheme launched last year saw a 30% increase in enrolment for the current academic year [22,23].

Discussion and Conclusion

With the current scenario of global pandemic and the resulting economic slowdown, the problem of maternal and child malnutrition could be exacerbated and government intervention and welfare could be crucial to address and attenuate these effects. The various schemes being implemented in Andhra Pradesh could show the way forward for other states in India and other parts of the world to replicate or implement similar methods to combat the problem of malnutrition in mother and children. Moreover, higher engagement of women in the decision-making process concerning the overall nutritional needs of the children and themselves is essential. It is conceivable to gain better nutritional upshots for women and children through deeper integration of community mobilization and technology, and by paying more comprehensive attention to the rural/urban trends of the food consumption exchange.

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