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## Impact of supplementary nutrition by means of ICDS on the nutritional status in below 6 years children for the selected districts of Telangana state

**Vahini S and Aparna Kuna**

### Abstract

Malnutrition is one of the major causes of child's ill health, child mortality and morbidity rate in India. In this study, an attempt was made to find out the impact of supplementary nutrition provided via ICDS on the nutritional status in below 6 years children in the Anganwadi centres. To meet the objectives of the study, the selected anganwadi centres were covered using respective questionnaire was developed for evaluation and strengthening of Anganwadi centres. Anthropometric data of children from Anganwadi centres was collected on the spot. The primary data on the weights, heights of preschool children were recorded and data was analyzed. A total of 242 children aged from birth to 59 months registered in 7AWCs, one from each districts namely Warangal, Nizamabad, Adilabad, Mahbubnagar, Nalgonda and Karimnagar and one more centre from Nalgonda as control formed the study sample. The results of weight and height gain among children below 6 years after education intervention and observed feeding showed that not much improvement has occurred except for weight gain in the age group of 12-35months in Warangal. The results suggest the need for evaluating and monitoring the feeding practices at home and educating mother to give proper breakfast, inclusion of milk, balanced meal and diet plans in future. Mere monitoring of AWCs is not sufficient to bring improvement in child's growth and development. Improvement with attitudinal change in health and nutrition habits of the mothers and children shall positively and constructively improve their nutritional status.

**Keywords:** malnutrition, integrated child development services and anganwadi centre

### Introduction

India is home to largest child population in the world with around 157.86 million children, constituting 15.42 percent of country's population, who come under the age of 6 years. A significant proportion of these children live in low/poor economic and social environment, which predisposes them to poor nutrition and impedes their physical and mental development. (<http://wcd.nic.in/icds.htm>).

Malnutrition is a leading contributor of infant and child mortality and morbidity in India (Silva and Silva, 2015) [7]. Globally over 162 million children under 5 are stunted, 51 million children are wasted and 17 million children are severely wasted. Among all the South Asian countries, the rate of stunted and expected to suffer severely wasting is highest in India (Rubert, 2014) [4]. Child malnutrition is a wide spread public health problem having international consequences because good nutrition is an essential determinant for their well-being. The most neglected form of human deprivation is malnutrition particularly among preschool children. India is one of the few countries in the world where poor nutritional status among preschool children is detrimental to their health outcome. Nutritional status indicators like wasting, stunting, low birth weights, breast feed, availability and vitamin – A deficiency are also still high in India compared to the USA and China. Child malnutrition reflects a number of intermediately process such as household access to food, access to health service and caring practices.

It has been estimated that in India 65%, *i.e.*, nearly 80 million children under 5 years of age suffer from varying degrees of malnutrition (Elizabeth, 2010) [2]. The 4th National Family Health Survey (NFHS- 4) showed that the under-five mortality rate (U5MR) in India is 32. NFHS-4 reported that the percentage of children under 5 years who are stunted (height-for-age) and who are underweight (weight-for-age) are 32.5 and 31.5 respectively. The percentage of children under 5 years who are wasted (weight-for-height) and severely wasted are 20.3 and 6.5 respectively.

In developing country like India under nutrition is the main cause of high rate of child or infant death.

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Chronic under nutrition in childhood is linked to slower serious health impairments later in life that reduce the quality cognitive development and of life of individuals (Scrimshaw, 1996) Nutritional Status is an important index of this quality (Sachdev, 1996) [5].

Child malnutrition is the single biggest contributor to under-five mortality due to greater susceptibility to infections and slow recovery from illness. Misconception prevalent in the present time is the unavailability of the enough food. Between 6-8 months, young child requires only 200-300 kcal food to maintain normal growth and development; but because of insufficient knowledge of parents about feeding practices that don't provide enough food to their children leading to faltering of growth and consequently illness and death of child (Avachat *et al.*, 2009) [1].

To combat these malnutrition problems, Govt. of India launched Integrated Child Development Services (ICDS) on 2nd October, 1975. Now, it becomes the largest early child development program. In the ICDS centres supplementary food are given to the beneficiary children between 6 month to 6 years and nutritional status of the children has been evaluated to identify the malnourished children.

Nutritional status is one of the most important indicators of the overall wellbeing of population and human resource development. Unbalanced or inadequate diets and chronic illness are responsible for poor nutrition among people. In the present study an attempt has been made to examine the nutritional status of different age groups of population. The entire study was based on primary data which have been collected through field survey. To assess the nutritional status of population among different age groups, measurements of weight and height/length were obtained. Data on weight and height/length were used to calculate the weight-for-age, height-for-age and weight-for-height.

## Material and Methods

### Study Design

This study is a community based cross sectional study. The study was conducted in the six Anganwadi centres one each at Warangal, Nizamabad, Adilabad, Mahabubnagar, Nalgonda and Karimnagar district of Telangana State and one more Anganwadi centre from Nalgonda district as control formed the study sample.

### Sample selection

Six anganwadi centers were selected for strengthening of functioning @ one each from 6 districts of Telangana State namely Warangal, Nizamabad, Adilabad, Mahabubnagar, Nalgonda and Karimnagar.

### Materials

A checklist was prepared to evaluate the existing facilities and functioning of anganwadi centres.

### Methodology

To meet the objective of the present study, the selected anganwadi centres were covered using respective questionnaire was developed for evaluation and strengthening of Anganwadi centres. Anthropometric data of children from Anganwadi centres was collected on the spot. The primary data on the weights, heights of preschool children were recorded and data was analyzed.

Intensification of nutrition and health education to the mothers and encouragement and pursuance of compliance to

the supplementary nutrition services was done for a period of 6 months. Nutritional status of children was assessed.

### Statistical analysis

The results of the present study were statistically analyzed to test the significance of variance between Anganwadi centres and age groups by using Analysis of Variance (ANOVA) (Snedecor and Cochran, 1994) [8].

## Results and Discussion

Baseline study with respect to working of Anganwadi Centres (AWCs) was carried out in the districts of Telangana State. The nutritional and health component in selected six AWCs was strengthened for six months and the post intervention analysis for selected AWCs was carried out in Telangana State.

The Integrated Child Development Service (ICDS) Scheme is one of the flagship programmes being implemented through a network of Anganwadi Centers (AWCs) across the country. Anganwadi centre is the first out post at the habitation level for nutrition, health and early childhood development and learning. However, several evaluation studies have indicated that the AWCs established across different states in India are not functioning optimally and require fresh inputs in terms of training, counseling, infrastructure etc, for optimization of its purpose.

The Government of India started ICDS Scheme, a centrally sponsored scheme to enhance the health, nutrition and learning opportunities for children below 6 years of age especially targeted for the poor and the deprived. Under the ICDS Scheme, Anganwadi Centers (AWCs) are the focal points for the delivery of services and are run by the local community woman, the Anganwadi Teacher (AWT) and a helper. Freshly cooked food along with egg is provided to all the enrolled and attended children aged 3-6 years, while take-home-ration of Balamrutham (2.5 kg/packet) along with 16 eggs per month is provided to children >6 months-3 years.

Weighing of each child was carried out by the AWT every month and plotted on the growth chart which is a graphical presentation of weight-for-age. Through the strategy of intensive nutrition education and monitoring on the spot feeding of children on a regular basis nutritional status was improved and evaluated.

A total of 242 children aged from birth to 59 months registered in 7AWCs, one from each districts namely Warangal, Nizamabad, Adilabad, Mahabubnagar, Nalgonda and Karimnagar and one more centre from Nalgonda as control formed the study sample.

Distribution of children in age groups is given in table 1. Birth to 11 months old children constituted 21%, 49% were 12-35 months old and 30% were between 36 to 59 months of age.

**Table 1:** Distribution of children in age groups

Age group (months)	Number (n=242)	%
Birth-11	50	21
12-35	120	49
36-59	72	30

Impact of supplementary nutrition of anganwadi on the nutritional status of below 6yrs children was assessed by anthropometric measurements after a period of 6 months. The mean weights of children before and after the intervention in different age groups in different districts are given in table 2.

The mean weight of children below 11 months varied between 4.95 to 7.45 kgs of Nalgonda and Karimnagar respectively before intervention and it was 7.21 to 9.6kgs after intervention of Nalgonda and Karimnagar respectively. The increasing order of weight before intervention was 4.95, 6.09, 6.34, 6.5, 7.13 and 7.45 in the respective districts of Nalgonda, Nizamabad, Warangal, Adilabad, Mahabubnagar and Karimnagar. The increasing order of weight after intervention was 7.21, 8.11, 8.4, 8.5, 8.51 and 9.6 in respective districts of Nalgonda, Warangal, Mahabubnagar, Adilabad, Nizamabad and Karimnagar respectively. The mean weight of children 12-35 months varied between 9.42 to 10.20kgs of Warangal and Karimnagar respectively before intervention and it was 10.23 to 11.82kgs after intervention of Warangal and Adilabad respectively. The increasing order of weight before intervention was 9.42, 9.75, 9.9, 9.9, 10.18 and 10.20 in the respective districts of

Warangal Nalgonda, Nizamabad, Mahabubnagar, Karimnagar and Adilabad. The increasing order of weight after intervention was 10.23, 11.03, 11.18, 11.36, 11.81 and 11.82 in respective districts of Warangal, Mahabubnagar Nalgonda Nizamabad, Karimnagar and Adilabad respectively.

The mean weight of children 36-59 months varied between 10.7 to 13.68kgs of Nalgonda and Adilabad respectively before intervention and it was 12.4 to 15.8kgs after intervention of Nalgonda and Warangal respectively. The increasing order of weight before intervention was 10.7, 12.05, 12.9, 13.37, 13.5, and 13.68 the respective districts of Nalgonda Nizamabad, Mahabubnagar, Adilabad, Warangal and Karimnagar. The increasing order of weight after intervention was 12.4, 14.17, 14.54, 14.70, 14.71 and 15.8 in respective districts of Nalgonda, Mahabubnagar, Adilabad, Nizamabad, Karimnagar and Warangal respectively.

**Table 2:** Weight of children before and after intervention

AWCs from districts	0-11 Months		12-35 Months		36-59 Months	
	Initial	Final	Initial	Final	Initial	Final
Warangal	6.34±2.86	8.11±2.55	9.42±1.52	10.23±1.29	13.5±0.9	15.8±0.8
Nizamabad	6.09±2.13	8.51±1.37	9.9±1.43	11.36±1.46	12.05±0.83	14.70±0.94
Adilabad	6.5±0.40	8.5±0.35	10.20±0.94	11.82±1.32	13.37±1.45	14.54±1.03
Mahabubnagar	7.13±0.98	8.4±0.17	9.9±1.25	11.03±1.55	12.9±0.79	14.17±0.84
Nalgonda	4.95±1.25	7.21±0.77	9.75±1.53	11.18±1.60	10.7±0.000	12.4±0.00
Karimnagar	7.45±0.21	9.6±0.56	10.18±1.53	11.81±1.07	13.68±1.06	14.71±0.87
Control	5.41±1.51	7.46±0.92	9.82±1.12	10.7±1.14	10.15±0.21	11.85±1.62

Compared to control group the mean weights of children between below 11 months were high in Warangal, Nizamabad, Adilabad, Mahabubnagar and Karimnagar districts due to the impact of intervention. Compared to control group the mean weights of children between below 12-35 months and 36-59 months were high in all the selected districts due to the impact of intervention.

Since the children are in a phase of rapid growth, gain in weight and height are natural but highly influenced by the food intake both in terms of quantity and quality. Supplementary nutrition in AWCs not only provided quality food but also developed positive attitude and knowledge and improved acceptance to a great extent.

The gain in height and weight of children after intervention is given in table 3 and the data was analyzed for testing the

significance of variation through ANOVA. The mean gain in weight ranged between 1.27 to 2.42kg of Mahabubnagar and Nalgonda respectively against the control 2.05kg.

Weight gain of children below 11months after 6 months intervention in AWCs showed no significant difference between 6 districts and between and intervention AWCs. Weight gain among 12-35months children was significantly low in Warangal compared to weight gain of children in, Adilabad, Nalgonda and Karimnagar ( $P<0.05$ ), not different from either control or Mahabubnagar. In general 12-35months children gained similar weight in Nizamabad, Adilabad, Mahabubnagar, Nalgonda, Karimnagar and control Nalgonda center ( $P<0.05$ ) indicating that children grow in a slow pace during this age, education intervention and observed feeding of SNP in AWCs has not influenced the weight of children.

**Table 3:** ANOVA for difference between AWCs

AWCs	0-11 Months		12-35 Months		36-59 Months		Overall	
	Weight	Height	Weight	Height	Weight	Height	Weight	Height
Warangal	1.77±0.79	10.34±4.69	0.82±0.85 <sup>a</sup>	4.98±1.58 <sup>bc</sup>	2.20±1.10 <sup>b</sup>	3.40±0.80	1.50±1.20 <sup>ab</sup>	5.10±3.00 <sup>bc</sup>
Nizamabad	2.42±0.93	11.00±4.69	1.46±0.82 <sup>b</sup>	5.50±1.50 <sup>c</sup>	2.66±0.89 <sup>b</sup>	3.18±1.26	1.90±1.00 <sup>c</sup>	5.82±3.31 <sup>cd</sup>
Adilabad	2.00±0.16	7.18±1.54	1.62±0.93 <sup>b</sup>	4.25±2.03 <sup>abc</sup>	1.17±0.97 <sup>a</sup>	3.16±1.12	1.48±0.91 <sup>ab</sup>	4.20±2.06 <sup>ab</sup>
Mahabubnagar	1.27±0.91	6.34±0.45	1.14±0.69 <sup>ab</sup>	3.59±2.17 <sup>a</sup>	1.21±0.64 <sup>a</sup>	2.83±1.87	1.18±0.66 <sup>a</sup>	3.49±2.14 <sup>a</sup>
Nalgonda	2.26±0.95	11.15±4.41	1.43±0.39 <sup>b</sup>	4.49±1.21 <sup>abc</sup>	1.70±0.00 <sup>ab</sup>	3.40±0.00	1.77±0.78 <sup>bc</sup>	7.12±4.41 <sup>c</sup>
Karimnagar	2.15±0.78	7.50±0.71	1.63±1.47 <sup>b</sup>	4.99±4.11 <sup>bc</sup>	1.03±0.65 <sup>a</sup>	2.78±0.97	1.38±1.09 <sup>ab</sup>	4.14±3.03 <sup>ab</sup>
Control	2.05±0.75	10.47±4.89	0.94±0.21 <sup>ab</sup>	3.93±0.85 <sup>ab</sup>	1.70±1.30 <sup>ab</sup>	3.75±2.25	1.51±0.83 <sup>abc</sup>	6.93±4.73 <sup>de</sup>
F-Value	0.976	1.004	2.765	2.437	5.501	0.465	2.370	5.455
Sig.	0.453	0.435	0.015	0.030	0.000	0.831	0.030	0.000

Weight gain among 36-59 months showed that children from Warangal, Nizamabad and Nalgonda district had gained significantly more weight compared to Adilabad, Mahabubnagar and Karimnagar districts ( $P<0.001$ ). Weight gain in control group was on par with Adilabad, Mahabubnagar, Nalgonda and Karimnagar with no significant

difference between each other, but children from Warangal and Nizamabad districts gained more weight compared to control ( $P<0.001$ ). Overall gain in weight of age merged data indicated that children of Mahabubnagar district gained significantly least weight ( $P<0.001$ ), while children from Nizamabad, Nalgonda, and control gained significantly more

weight compared to others ( $P<0.001$ ), without any difference between the three.

Increase in height among children below 11 months showed no significant difference between the districts or between control and study sample. Gain height of 12-35 months children was significantly low in control sample, as well as from Mahbubnagar, Adilabad and Nalgonda districts compared to Nizamabad and Karimnagar district where the children significantly grew well in height ( $P<0.05$ ). No significant difference was seen in the increase in height of children of any 6 districts or of control in the age group of 36-59 months. Significant increase in overall height was seen among children of Nalgonda district and control compared to other areas ( $P<0.001$ ). District Mahbubnagar showed an overall height gain in children, which was significantly low ( $P<0.001$ ) compared to other districts except Adilabad and Karimnagar.

The results of weight and height gain among children below 6 years after education intervention and observed feeding showed that not much improvement has occurred except for weight gain in 12-35 months in Warangal. The results suggest the need for evaluating and monitoring the feeding practices at home and educating mother to give proper breakfast, inclusion of milk, balanced meal and diet plans in future. Mere monitoring of AWCs is not sufficient to bring improvement in child's growth and development. Improvement with attitudinal change in health and nutrition habits of the mothers and children shall positively and constructively improve their nutritional status.

### Conclusion

The ICDS is one of the major programmes of the Government lunched for the development of women and children of our country. The Union Government has been spending thousands of crore of rupees every year through the networks of AWCs for reducing malnutrition among the children from the age group of zero to five+ years. It can be recommended that the supplementary feeding should be strengthened in the anganwadi with spot feeding technique and supervisors should monitor the centres regularly.

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