

Evaluation of the Effect of Supplementary Nutrition through ICDS in Children below 6 Years

Saba Mohammed mansoor¹, Shrivathsa D N², K. G. Kiran³, Hemant kumar⁴

¹Assistant Professor, Dept. of Community Medicine, PMCH Medical College, Udaipur

²Associate Professor, Dept. of Community Medicine, Kanachur Institute of Medical Sciences, Natekal Mangalore

³Professor and Head, Dept. of Community Medicine, Kanachur Institute of Medical Sciences, Natekal Mangalore

⁴Medical Superintendent, Pravara Institute of Medical Sciences, Loni

Received: 25-07-2022 / Revised: 25-08-2022 / Accepted: 10-09-2022

Corresponding author: Dr. Shrivathsa D N

Conflict of interest: Nil

Abstract

Introduction: Malnutrition is one of the biggest issue in India and other parts of the world. From United Nation to World Health Organization and other International Councils and formal bodies are well concerned about this issue. Although, it is being pressurised and many programmes are running to reduce the effect and prevalence of malnutrition, the result shows it is hardly been tackled efficiently. There is a need to understand the depth of the problem and government needs to formulate policies and modifies the current programmes to suit the need of the problem, instead of formulating new programmes. Around 157.86 million children, or 15.42 % of India, are under the age of six, making it the country with the greatest pediatric population in the world. Malnutrition in the form of under-nutrition in children is now recognized as a vulnerable group in need of targeted intervention.

Aims and Objectives: To find out the health status of children under Integrated Child Development Scheme (ICDS) by analyzing the weight and height gain.

Materials and Methods: The study considered 250 children from 5 Anganwadi Centres (AWC) in Mangaluru region. Also, a control AWC has been considered. The anthropometric measurements have been taken and height and weight gain have been compared with that of control AWC. The outcomes and findings of this study were analyzed to find out the main objectives by employing ANOVA.

Results: It is shown that all the selected AWCs have shown significant ($p < 0.05$) improvement in weight gain as compared to the control AWC. Regarding height gain, only 1 AWC showed that the gain is not significant as compared to the control and another proved to be equal to that of control while 2 AWCs showed that their children had significant increase in gain in height as compared to the control AWC.

Conclusion: The study has concluded that there is significant improvement in weight and height due to the application of the awareness and education to the parents as intervention. Hence, providing education and awareness to the parents should be made mandatory as part of ICDS programme.

Keywords: ICDS, anganwadi, height, weight, malnutrition, nutritional status

This is an Open Access article that uses a fund-ing model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Around 157.86 million children, or 15.42 % of India, are under the age of six, making it the country with the greatest pediatric population in the world [1]. A sizeable majority of these kids live in low-income or underprivileged communities, which put them at risk for poor nutrition and stunt their physical and mental growth. In India, malnutrition is a major cause of infant and child mortality as well as morbidity [2]. Over 162 million children under the age of 5 are stunted, 51 million are wasted, and 17 million are severely wasted worldwide. India has the greatest percentage of stunting and severely anticipated wasting among all the South Asian nations [3].

Because proper nutrition is a crucial factor in determining a child's well-being, child malnutrition is a widespread public health issue with global implications. Malnutrition, particularly among young children, is the most ignored type of human deprivation. One of the few places in the world where preschoolers' health outcomes are negatively impacted by poor nutritional status is India [4]. When compared to the USA and China, nutritional status indices like wasting, stunting, low birth weights, breastfeeding, availability, and vitamin-A deficiency are still more prevalent in India. Child malnutrition is a result of a variety of intermediary processes, including household food access, access to healthcare, and nurturing behaviors [4].

Over than 34% of all fatalities in India are caused by children. Malnutrition, diarrhea, and respiratory infections account for seven out of ten of these fatalities. India has high rates of under-five morbidity and mortality. Most of these childhood morbidities and deaths are mostly caused by protein energy deficiency [2-4].

Due to a child's increased vulnerability to infections and sluggish recovery from illness, child malnutrition is the single

largest cause of under-five mortality. The idea that there isn't enough food available at the moment is a myth. Between 6 and 8 months, a baby only needs 200 to 300 kcal of food to maintain normal growth and development; however, due to parents' lack of knowledge about proper feeding techniques, they fail to give their kids enough food, which causes growth to falter and, ultimately, illness and child death [5].

On October 2, 1975, the Indian government introduced Integrated Child Development Services (ICDS) to address these malnutrition issues. It now ranks as the largest early childhood development initiative. The nutritional condition of the children has been assessed in the ICDS centers to identify the malnourished children, and supplemental food is provided to the benefit children between the ages of 6 months and 6 years [5].

It has gradually grown over the past 25 years, and as of now, it has 5614 projects (central 5103, state 511) covering over 5300 community development blocks and 300 urban slums, as well as more than 60 million children under the age of 6 and more than 10 million women between the ages of 16 and 44, as well as 2 million lactating mothers [6]. A total of 70 million people or around 7% of the world's population of 1 billion are covered by the ICDS.

As according estimates, % of Indian children, or approximately 80 million young children, is malnourished to varying degrees [3, 5]. According to the Fourth National Family Health Survey (NFHS-4), India's under-five mortality rate (U5MR) is 32%. According to NFHS-4, 32.5% and 31.5 % of children under the age of five have stunted growth (height-for-age) or are underweight (weight-for-age), respectively. The percentages of children under the age of five who are severely wasted and wasted (weight for height) are 20.3% and 6.5%, respectively [3, 4].

Growth in children can be used to assess their nutritional health. Malnutrition in the form of under-nutrition in children is now recognized as a vulnerable group in need of targeted intervention. Anthropometric indices such as stunting, weight loss, and underweight have been used to quantify under-nutrition. Low weight for height and low height to weight ratios are correlated with stunting (low height for age) and current nutritional status, respectively. Both chronic and acute malnutrition are represented by underweight (low weight for age) [3-6]. The goal of the current study is to look at the nutritional status of various population age groups. The foundation of the entire study was primary data that was gathered through field research.

Materials and Methods

Study Design

This current study was a cross-sectional based on a specific community. This study was conducted during the period of one year.

It was conducted in Mangaluru region of Karnataka where 4 Anganwadi centres (AWC) were selected. Another one AWC was considered from outside of Mangaluru region as control. This was done for effective comparison of AWCs in Mangaluru with that of AWC outside Mangaluru. A checklist was made to evaluate and analyze the facilities and the working efficiency of AWC. The required permission and consent were obtained from the selected AWC. The data involving anthropometric measurements and baseline characteristics of the children were taken from the AWC. The study considered 250 children as participants. Health education was provided as

intervention, to the parents for increasing awareness about the nutritional services and the nutritional status of the children was assessed before and after the intervention.

Inclusion and Exclusion Criteria

AWC was selected at the mentioned area and randomly 400 children were selected at first. Based on their parents' interest to participate in the study, children from 0 to 5 years were included.

There were some children with chronic conditions or their nutritional status were not acceptable by the authors and hence, many participants were excluded. Many of their parents lost interest or some children also did not cooperate and such children were also excluded.

After applying inclusion and exclusion criteria, the study considered 250 participants from all the selected AWC.

Statistical analysis

Statistical analysis was conducted using SPSS 25 and excels software. The descriptive data was expressed as mean±standard deviation. The outcomes and findings of this study were analyzed to find out the main objectives by employing ANOVA. For required assessment of nutritional status of the children, the anthropometric measurements and data were obtained for calculation of weight-for-age, height-for-age and weight-for-height.

Results

The study found that there are 55 children (22%) in 0-11 months, 130 children (52%) in 12-35 months age group and 65 children (26%) in 36-59 months age group. Table 1 shows the detailed finding of age groups in this study.

Table 1: Distribution of number of children in each age group

Age group (in months)	Number of children	%
0-11 months	55	22
12-35 months	130	52
36-59 months	65	26

The study found that the weight of the children in each AWC increased, specially the study AWC. The findings were done in children of 0-11 months, 12-35 months and 36-59 months, separately. It is shown that all the selected AWCs have shown significant ($p < 0.05$) improvement in

weight gain as compared to the control AWC. The initial and final measurement of weight are given in Table 2. Also, table 2 shows the significance of difference between initial and final measurement, with that of control.

Table 2: Weight of the participants before and after the intervention

AWC	0-11 months		12-35 months		36-59 months		<i>p-value*</i>
	Initial measurement	Final measurement	Initial measurement	Final measurement	Initial measurement	Final measurement	
AWC 1	6.22±2.77	8.22±2.58	9.22±2.8	9.23±2.2	13.8±1.2	14.2±1.3	P<0.05
AWC 2	6.15±2.75	6.16±2.55	9.56±2.4	9.7±2.0	12.99±1.5	13.67±2.1	P<0.05
AWC 3	4.96±1.63	4.97±1.23	8.83±3.2	8.96±2.1	11.57±1.9	12.23±1.2	P<0.05
AWC 4	6.20±2.88	6.22±2.59	9.32±2.7	9.41±2.6	12.4±1.7	13.1±1.9	P<0.05
Control	6.18±3.2	6.19±3.1	9.4±2.1	9.48±2.1	13.74±1.6	13.85±1.3	

*Compared with control group

Table 3 shows the gain in height (in inch) of the children in each age group. The significance has been obtained for each AWC with that of control group. Only AWC 3 shows that the gain in height is not significant and AWC 1 shows that the gain in height is almost equal. But for other AWCs, the gain in height is significantly different ($p < 0.05$) than that of control group.

Table 3: Height of the participants before and after the intervention

AWC	0-11 months	12-35 months	36-59 months	<i>p-value*</i>
	Gain in height	Gain in height	Gain in height	
AWC 1	10.35±5.12	5.24±3.95	2.94±2.2	P=0.05
AWC 2	11.2±3.98	4.27±4.17	3.2±1.9	P<0.05
AWC 3	10.48±5.36	3.8±4.89	3.1±1.7	P>0.05
AWC 4	10.89±5.32	4.74±3.2	3.0±1.1	P<0.05
Control	9.45±3.25	3.5±1.6	2.8±1.6	

*Compared with control group

Discussion

According to a study that was conducted in the state of Telangana, the study sample consisted of 242 children between the ages of 0 and 59 months who were registered in 7 AWCs, one from each of the districts of Warangal, Nizamabad, Adilabad, Mahbubnagar, Nalgonda, and Karimnagar, as well as a control center in Nalgonda. Results of weight and height gains in children younger than 6 years old following educational interventions and

monitored eating revealed that, with the exception of weight increase in the 12- to 35-month age range in Warangal, not much progress had taken place. The findings point to the necessity of assessing and keeping an eye on household feeding patterns, as well as training mothers on how to provide good breakfasts, include milk in meals, and generate new diet plans. The growth and development of children cannot be improved by simply monitoring AWCs. Their nutritional status will be

positively and constructively improved by changes in mothers' and children's eating and health habits [4].

According to a study that was reportedly conducted in Gujarat, a total of 60 anganwadi centers 46 in the rural and 14 in the urban were chosen from 12 different Gujarati districts. Five AWCs were randomly chosen from one district. Pregnant women (87.3 %), breastfeeding mothers (91.7 %), and teenagers also reported receiving SN at high rates (86.7%). Only 25% of AWCs offered 3- to 6-year-old children hot cooked food (HCF). Less than half of the AWCs offered ready-to-eat (RTE) meals to adolescents, pregnant and breastfeeding mothers, and children aged 6 months to 3 years (48.3%, 46.7%, and 46.7%, respectively) (45.0%). Overall, 38.3 % of AWCs reported a lack of SN supply, with rural areas reporting a higher rate (41.3 %) than urban areas (28.6%). Anganwadi employees reported a number of SN-related issues, including a lack of storage space, a lack of a separate kitchen, poor food quality, erratic supply, insufficient supply, and fuel issues.

The recipients will receive more hot prepared food, ready-to-eat food, and take-home rations when SN is provided on a regular and sufficient basis, improving the community's overall nutritional status. Supplemental nutrition has been shown to be essential to the success of the ICDS program since it not only raises children's nutritional levels and decreases malnutrition, but it also encourages participation in AWC activities by mothers and children.

In the current study, 78.3% of beneficiaries ate supplemental nourishment, and the majority of them did so for more than 21 days in a month. The least amount of supplemental nourishment was consumed by teenage girls (70.8%). Additionally, it was discovered that every THR beneficiary gave their family members some of the extra food. The goal

of supplemental nutrition is to close the recipients' nutritional gap. If supplemental nutrition is not used to its full potential, ICDS will not be able to close the calorie gap between the vulnerable target population's average calorie needs and the recommended dietary allowance [8].

Beneficiaries gave a variety of excuses for not consuming supplemental nutrients. The primary justification offered was a dislike of the flavor of the food (53.8%). According to a study done in West Bengal, the most frequent causes of supplemental nutrition not being accepted were faulty cooking (45.9 %) and low-quality ingredients (44.7%). Lack of diversity in the diet was the least popular justification (8.9%) [9]. There was nobody at home who could go get food from AWC, according to 24.9% of pregnant women and 7.6% of breastfeeding moms who participated in an impact evaluation of ICDS in Madhya Pradesh [10]. Therefore, food quality and taste should be increased while maintaining nutritional value in order to increase the usage of supplementary food.

According to a research published in Punjab, just 50% of Anganwadi employees received their scheduled SN rations on time between January 1 and December 31, 2011. When all three ICDS projects were combined, it was shown that a sizable majority (76.66%) of AWWs did not give SN rations for 300 days out of the year as required by national standards. Only 45.42% of the total number of beneficiaries was registered in AWWs for early childhood education and supplemental nutrition. The pre-school education programs are attended by 72.45% of the beneficiary children aged three to six who are enrolled, and they frequently get SN rations from AWCs. This has major implications since it suggests that beneficiary children under the age of six were prevented from receiving SN rations from Anganwadi centers for a variety of reasons. In

actuality, there is a lot to be desired. Due to a lack of skills and stable working conditions, AWWs showed no enthusiasm in their job duties. Additionally, supervisors were always preoccupied with paperwork, leaving them with no spare time to oversee and manage the AWWs' pre-school activities [11].

The following are some of the actions that should be performed to enhance the pre-school education provided by ICDS, based on recent experiences:

1. It is advised that the government launch vigorous campaigns to educate the public, particularly the rural population, about the long-term benefits of pre-school education and the supplemental nutrition ration program of the ICDS scheme through the use of television, drama, folk songs, theater, and other media.
2. Those organizations in charge of supplying additional nourishment must get clear instructions to ensure that it is never interrupted at the Anganwadi level, with the exception of situations brought on by extreme weather or natural disasters. The government must also investigate the possible causes of the disruption and take any appropriate measures in the circumstances.
3. AWWs should also be properly and thoroughly supervised so that they can devote enough time to pre-school educational activities, which in fact form a solid foundation for the kids' later education.

From above all discussion and reported study, it was concluded that ICDS initiative through supplementary nutrition based on education, awareness, proper supply of SNP, government officers communication and other related aspects. The effect of SNP is going good but need more and more awareness through population. [12]

Conclusion

The study has concluded that there is significant improvement in weight and height due to the application of the awareness and education to the parents as intervention. Although Union government has allotted a lot of funding to the ICDS programme for carrying out the supplementary feeding, it is evident that awareness and education to the parents must be considered integral part of the programme to bring maximum benefit of the outcome of ICDS programme. Therefore, it is suggested that there is a need to conduct more studies in AWC in different parts of the country to optimize and customize the quality, amount and content of the education and awareness that must be given to the parents of the children as mandatory intervention of ICDS programme.

References

1. Silva VGP, Silva SGP. Nutritional status of Anganwadi children under the Integrated Child Development Services scheme in a rural area in Goa. *International Journal of Scientific Study* 2015;3(7):217-221.
2. Rubert C. Malnutrition in Asia promoted child nutrition in Asia. *Ventiane. UNICEF East Asia Pacific Office* 2014, 4-6.
3. Elizabeth KE. Nutrition and child development. *Pars Medical Publisher* 2010;4(1):163.
4. Vahini S, Kuna A. Impact of supplementary nutrition by means of ICDS on the nutritional status in below 6 years children for the selected districts of Telangana state. *The Pharma Innovation Journal* 2021; 10(2): 205-208.
5. Avachat S, Phalke DB. Epidemiological study of malnutrition among under five children in a section of rural area. *Indian Journal of community medicine* 2009;4(2):20-22.
6. Ministry of Human Resource Development, Department of women and Development. Annual Report

- 1995–96 Pari IV. Government of India Press New Delhi. 5-6.
7. Chudasama RK, Kadri AM, Joshi N, Bholra C, Zalavadiya D, Vala M. Evaluation of supplementary nutrition activities under Integrated Child Development Services (ICDS) at Anganwadi centres of different districts of Gujarat. *Online Journal of Health and Allied Sciences*. 2013 Nov 15;12(3).1-4.
 8. Sabat S, Karmee N. Utilisation of Supplementary Nutrition Service at Anganwadi Centres in a Block of Ganjam District, Odisha: A Cross-sectional Study. *Journal of Clinical & Diagnostic Research*. 2021 Sep 1;15 (9). LC09-LC12.
 9. Biswas AB, Das DK, Roy RN, Saha I, Srivastava P, Kaninika M. Awareness and perception of mothers about functioning and different services of ICDS in two districts of West Bengal. *Indian Journal of Public Health [Internet]*. 2010;54(1):33
 10. Centre for Advanced Research & Development (CARD) & Communications SR and Impact Assessment of ICDS in Madhya Pradesh. 2010.
 11. Kular S.S. A Study on Pre School Education and Supplementary Nutrition Program of ICDS for Children in Punjab. *International Journal of Social Science*. 2014;3 (3): 317-342.
 12. Roy D. S., Alqifari D. S. F., & Walia C. Cyclopedic analysis of medication-related osteonecrosis of the jaws in patients with diabetes mellitus. *Journal of Medical Research and Health Sciences*, 2022;5(8): 2153–2164.