



Nutritional status assessment of under-five beneficiaries of Integrated Child Development Services program in rural Karnataka

Ashwini Kumar¹, Veena G Kamath², Asha Kamath³, Chythra R Rao⁴, Sanjay Pattanshetty⁵, Afrin Sagir⁶

¹Associate Professor, Department of Community Medicine, Kasturba Medical College, Manipal

²Professor, Department of Community Medicine, Kasturba Medical College, Manipal

³Selection grade lecturer, Biostatistician, Department of Community Medicine, Kasturba Medical College, Manipal

^{4,5} Assistant Professor, Department of Community Medicine, Kasturba Medical College, Manipal

⁶ Medical student, , Kasturba Medical College, Manipal

RESEARCH

Please cite this paper as: Kumar A, Kamath V, Kamath A, Rao C, Pattanshetty S, Sagir A. Nutritional status assessment of under-five beneficiaries of Integrated Child Development Services program in rural Karnataka. AMJ 2010, 3, 8, 495-8
Doi 10.4066/AMJ.2010.395

Corresponding Author:

Dr. Ashwini Kumar
Associate Professor
Department of Community Medicine
Kasturba Medical College, Manipal
University, Manipal – 576104
E-mail: drashwiniin@hotmail.com

Abstract

Background

The prevalence of underweight children in India is among the highest in the world, and is nearly double that of Sub-Saharan Africa. The effect of malnutrition is high morbidity and mortality among young children. The objective of this study was to determine the nutritional status of children aged between 3-6 years registered in government sponsored maternal and child care Anganwadi centres in India.

Method

A cross-sectional study was conducted in 35 centres in 11 villages situated in the field practice area of Community Medicine Department of a Medical College situated in Southern India.

Results

Of the 585 children in the study, 46.5% of the children were aged between 36 to 48 months. Assessment of nutritional status using the ICDS growth chart revealed malnourishment to be present among 189 (32.3%) children, of whom 166 children were grade I malnourished and 23 children were grade II malnourished. Proportionally girls (46.2%) were more malnourished than boys (33.6%). No

significant association was found between the nutritional status of children and their duration of stay in an Anganwadi centre (p-value=0.56).

Conclusion

The findings of this study indicate that malnutrition is still an important problem even among children attending Anganwadis. Further improvements in functioning of Integrated Child Development Services need to be made in order to address the problem of malnutrition.

Key Words

Nutritional status, Malnutrition, Integrated Child Development Services.

Background

Nutrition is the cornerstone of socio-economic development. Nutrition plays a key role in physical, mental and emotional development of children and much emphasis has been given to provide good nutrition to growing populations especially in the formative years of life.¹ Malnutrition is a silent emergency. Globally, more than one-third of child deaths are attributable to under nutrition.² According to the Indian census in 2001, the child population (0-6 years) was 15.9% of the total population.³ The prevalence of underweight children in India is among the highest in the world, and is nearly double that of Sub-Saharan Africa.⁴ The 3rd National Family Health Survey findings showed that 45% of less than 3 year old children were malnourished.⁴ If this continues, India would be raising a generation which is debilitated and unable to contribute effectively to the productivity of the country.

The Integrated Child Development Services (ICDS) program is the world's largest early child development program. It was initiated in India in 1975 with the objective of improving the nutritional status of pre-school children in addition to other services. The scheme provides an



integrated approach for converging basic services through community based workers in Anganwadis, in the coastal district of Karnataka, India. There is little consensus on the success of the ICDS program in tackling problems of health and nutrition in early childhood, despite being one of the most studied health and nutrition interventions.⁵

The objective of this study was to determine the nutritional status of children aged between 3-6 years registered in the maternal and child care centres in rural India.

Methods

A cross-sectional study was conducted in the month of July 2009 in the field practice area encompassing 35 Anganwadis in 11 villages by the Community Medicine Department of Kasturba Medical College situated in Southern India. A pre-tested questionnaire was used to collect information by trained doctors on the nutritional status of the children with the help of Integrated Child Development Services (ICDS) growth card and existing previous records. Children were weighed using a standardized Salter’s scale to the nearest 100 grams when attending an Anganwadi. There were 611 children present at the time of the visits; however, 26 children were excluded from the analysis since they had only joined the Anganwadi in the previous month. The grades of malnutrition were assessed using World Health Organization (WHO) recommended standards.⁶ Data of 585 children were analyzed using the Statistical Package for Social Sciences (SPSS) version 13.0.

Results

The sample studied included 585 children with equal gender representation (49% males and 51% females). Children aged between 36 to 48 months comprised 46.5% of the population. About 97% of the mothers were literate and 66.3% were housewives. Assessment of the growth chart revealed that malnourishment was evident in 189 (32.3%) of the children, of which 166 children were grade I malnourished and 23 children were grade II malnourished. Proportionally girls (46.2%) were more malnourished than boys (33.6%). No significant association was found between the nutritional status of children and their duration of stay in an Anganwadi centre (chi-square value=10.53, df =12, p-value=0.56). Table 1 shows the dynamics of change in nutritional status of the children in this study.

Table 1: Dynamics of change in nutritional status of study subjects (Baseline to Final Assessment)

Nutritional Status	Baseline n (%)	Improvement n (%)	Same n (%)	Deterioration n (%)
Normal	396 (100)	0	299 (75.5)	97 (24.5)
Grade I	166 (100)	41 (24.7)	117 (70.5)	8 (4.8)
Grade II	23 (100)	12 (52.2)	11 (47.8)	0
Total	585 (100)	53(9.0)	427 (73.0)	105 (18.0)

It was observed that around 73% of the children maintained their nutritional status after registering with an Anganwadi however 18% of the children deteriorated, as shown in Table 2. Children with higher grades of malnutrition showed marked improvement during the period they were enrolled in an Anganwadi.

Table 2: Change in nutritional status with duration of stay in Anganwadis.

Duration of stay (months)	Change in nutritional status			Total n (%)
	Same n (%)	Improvement n (%)	Deterioration n (%)	
<6	102 (76.7)	12 (9.0)	19 (14.3)	133 (100)
7-12	113 (70.6)	19 (11.8)	28 (17.6)	160 (100)
13-24	134 (74.9)	10 (5.6)	35 (19.5)	179 (100)
25-36	64 (68.1)	10 (10.6)	20 (21.3)	94 (100)
>36	14 (73.7)	2 (10.5)	3 (15.8)	19 (100)
Total	427(73.0)	53 (9.0)	105 (18.0)	585 (100)

Discussion

Under nutrition involving major deficiencies in calories, protein, vitamin A, iron, folic acid and iodine presents one of the most important public health problems in the developing countries.⁷ Compared to a well nourished child, a mildly malnourished child has twice the risk of dying from common childhood diseases; while in a moderately malnourished child the risk escalates to a staggering eight times. To prevent or minimize the problem, various



nutrition intervention programmes have been introduced, from time to time, in different countries.⁷ In pursuance of the National Policy for Children, the Government of India launched the 'Integrated Child Development Services' scheme on 2nd October, 1975 in 33 pilot projects. Each project aimed at delivery of a package of services in an integrated manner to preschool children, expectant and nursing mothers and women aged 15-44 years. The scheme provides an integrated approach for converging basic services through community based workers in Anganwadis.⁸ An Anganwadi, literally meaning a court yard play, covers a population of 1000 in rural India. Each child up to six years of age in the Anganwadi receives 300 calories and 8-10 gm of protein per day, while a malnourished child receives 600 calories and 16-20 gm of protein as supplementary nutrition. The utilization of ICDS scheme varies from place to place and depends on involvement of the community in the programme. This study was designed to determine the nutritional status of children aged between 3-6 years registered in the Anganwadi centres. Such studies will make the authorities aware of the factual situation regarding the scheme.

In the study, the majority (83.8%) of the children attending Anganwadi centres were aged 3 years or older. Under the ICDS program, mothers, are permitted to take the supplementary food to their small children at home instead of having the arduous task of bringing the very young to the centres daily, thus children under three years rarely attend the centres. In this study the prevalence of malnutrition among children was 32.3% as compared to lower prevalence reported in a study conducted by Aneja et al where the prevalence of grade IV malnutrition was 4%.⁹ Similar findings were reported in a study conducted by Yankanchi.¹⁰ However recent studies in northern India by WHO⁶ and Ahmad et al¹¹ revealed the problem to be much more extensive with 56.3 % children with different grades of malnutrition. In a study conducted by Avachat¹² the prevalence of malnutrition was 50.5%. According to UNICEF estimates, the prevalence of underweight (moderate and severe malnutrition) is 47% in India among children under 5 years.¹³ In our study, malnutrition was found to be more in females (46.2%) than in males (36.6%) which can be explained by the prevailing cultural beliefs and practices of the community which favour the male child over females. Such a statistically significant gender difference in the nutrition status was also reported from a study of infants in Vadodra, a major city centre in India.¹⁴

The nutritional status of over 70% of the children in the study remained the same, irrespective of the duration of the stay in the Anganwadi. The overall percentage of deterioration (14%-21%) in nutritional status among the children was twice that of improvement (5%-12%). Despite

this short coming, there was a greater improvement of nutritional status among the children who had higher grades (grade II) of malnutrition at baseline as compared to the children who had lesser grades of malnutrition. Despite the high level of literacy among the parents (96.6% in both the parents) and the presence of free Anganwadi services in the rural areas, the prevalence of malnutrition among the children was high (32.3%). A limitation of this study was not accounting for the registered Anganwadi children who did not attend the Anganwadi centres, but for whom supplementary food was provided. This could have opened another dimension for the study.

Conclusion

Prevalence of malnutrition in Southern India is lower than the national mean. Although the ICDS program has been successful in improving the nutritional status of children under 5 years, further improvements can be made in the functioning of the program. Changes need to be made in the understanding and utilization of the services. Further operational research is needed to find out the reasons for the substitution of the supplementary food for breakfast or lunch, the exact caloric content of Anganwadi food given to the children, and if there is any correlation between children's food intake and the psychological impact of the child being away from their mothers.

References

1. Vaid S, Vaid N. Nutritional Status of ICDS and Non-ICDS Children. *J. Hum. Ecol.* 2005; 18(3): 207-212.
2. Status of world's children. Available from URL: <http://www.childinfo.org/mortality.html> (Accessed on February 25 2009)
3. Census of India 2001. Available from URL: http://censusindia.gov.in/Census_Data_2001/India_at_glance/broad.aspx. (Accessed on August 15 2009)
4. National Family Health Survey III. Available from URL: http://www.nfhsindia.org/nutrition_report_for_website_18sep09.pdf (Accessed on December 30 2009)
5. Prinja S, Verma R, Lal S. Role of ICDS program in delivery of nutritional services and functional integration between anganwadi and health worker in north India. *The Internet Journal of Nutrition and Wellness* 2008; 5(2).



6. WHO new growth standards for children. Available from http://www.who.int/childgrowth/standards/Technical_report.pdf (Accessed on November 20 2009) URL:
7. Tandon BN. Nutritional interventions through primary health care: impact of the ICDS projects in India. *Bulletin of the World Health Organization* 1989; 67(1): 77-80.
8. Trivedi S, Chhapparwal BC, Thora S. Utilization of ICDS scheme in children one to six years of age in a rural block of central India. *Indian Paediatrics* 1995; 32: 47-50.
9. Aneja B, Singh P, Tandon M, Pathak P, Singh C, Kapil U. Etiological Factors of Malnutrition among Infants in Two Urban Slums of Delhi. *Indian Pediatrics* 2001; 38: 160-5.
10. Yankanchi GM, Naik Rama K, Gaonkar V, Nutritional status of rural pre-school children by anthropometry. *Indian J. Nutr. Diet.* 2002; 39: 404-9.
11. Ahmad E, Khan Z, Khalique N, Amir A, Khalil S. A study of utilization of Integrated Child Development Services in 1-5 years old children registered with rural health training center, Jawan, Aligarh, UP. *Indian J. Prev.Soc. Med.* 2005; 36: 137-142.
12. Avachat SS, Phalke VD, Phalke DB. Epidemiological study of malnutrition (under nutrition) among under five children in a section of rural area. *Pravara Med Rev* 2009; 4: 20-22.
13. Kapil U, Saxena N, Nayar D. ICDS Scheme – A Programme for Maternal Health and Child Development. *Indian J of Public Health* 1997; 41: 93-99.
14. Bhalani KD, Kotecha PV. Nutritional status and gender differences in the children of less than 5 years of age attending ICDS Anganwadis in Vadodra city. *IJCM* 2002; 27: 124-129.

PEER REVIEW

Not commissioned. Externally peer reviewed.

CONFLICTS OF INTEREST

The authors have no conflict of interest