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Original Research Article

Anthropometric profile of children attending anganwadi centers under integrated child development services scheme

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ABSTRACT

Background: The first six years of a child's life are most crucial as the foundations for cognitive, social, emotional, physical, motor and psychological development are laid at this stage. The present study was conducted to assess the nutritional status of children availing the services under Integrated Child Development Service Scheme.
Methods: The study was done with house to house survey with the help of a prepared scheduled proforma by personal interview and taking necessary anthropometric measurements and clinical examination. In the present study the following age independent criteria's are taken into account for the assessment of the nutritional status of the (3-5 years) age group of children in both the I.C.D.S and non I.C.D.S area separately: Mid upper arm circumference; Kanwati's index; Rao's index; Bangle screening method.
Results: The association of nutritional status and MUAC measurement is statistically significant ($p<0.05$). The association of nutritional status and Kanawati ratios is statistically significant ($p<0.05$). The association of the nutritional status and Rao's index is statistically significant ($p<0.05$). The number of children in I.C.D.S area with passing of the bangle above the elbow are only 28 and in non – I.C.D.S area, it is 42. In I.C.D.S area the immunisation status is better.
Conclusions: I.C.D.S scheme is encouraging and there is no doubt regarding the positive achievements and prospective of I.C.D.S. Still there is much to be done to improve its performance by giving much emphasis on the supplementary nutrition, to the beneficiaries.

Keywords: Anthropometry, Anganwadi centers, Integrated child development services scheme, Kanawati index, Rao's index

INTRODUCTION

The first six years of a child's life are most crucial as the foundations for cognitive, social, emotional, physical, motor and psychological development are laid at this stage. The scenario of Broad Mortality data shows that 50% of all the deaths occur below 5 yrs of age.[1] About 16% of the childhood population remains under the age of six years. Owing to above important reasons, simple and basic health care has to be provided to millions of children important to preserve their normal physical growth or the nutritional status.

The Government of India launched the Integrated Child Development Services (ICDS) in 1975 in recognition of the importance of early childhood care as the foundation of human development.[2] The ICDS has expanded over the years and is now one of the world's largest and unique outreach programmes responding to the challenges of meeting the holistic needs of a child. I.C.D.S is also a result oriented programme.[3] By the way

of feedback method it provides facility to evaluate the health status of children by monitoring device in the shape of field survey. This is an ongoing operational research network available in all states of our country.

There are many commonly used methods for the assessment of the nutritional status like clinical examination, anthropometry, and biochemical and laboratory evaluation. Out of all these, anthropometric measurements are in universally accepted as these are considered to be more reliable and rational. Anthropometry regarded as the most useful, simple and easy tool for assessing the nutritional status of the children. The attraction of the anthropometry is also due to it is inexpensiveness and uncomplicated equipment's and noninvasive performability with cost effectiveness.

Forty percent of the world's severely under-nourished under-five children live in India so the present study was conducted to assess the nutritional status of children availing the services under integrated child development service scheme.

METHODS

Type of study

Community based, cross sectional study.

Study population: All the children registered for supplementary nutrition and preschool education were included in study.

Study period: 05 January 2014 to 05 January 2015.

Selection criteria

For this study three subcentre area as (Tejagola, Kamagaon and Mulbar) of the primary health center, Bhatli (covered by I.C.D.S scheme more than 3 years) were selected as rural I.C.D.S area which is situated in Baragarh District and is about 60 km away from V.S.S. Medical College, Burla. The population of this area is 15818 and consists of the 21 Anganwadi centers. The rural non I.C.D.S area was also selected from the adjacent P.H.C Paharsirigida P.H.C also in Bargarh district. Three subcentre area of this P.H.C (Kharmunda, Tangarpali and Lachidal) which are adjacent to the above I.C.D.S area with a population of 14661 were selected. These two areas are selected because for comparison, both areas are found identical with respect to their Geographical location, climate communication of the place, identical socioeconomic status, literacy status, social habit and food habit of the people.

Sample size

Standard 30 cluster sampling methods 'described by W.H.O was employed to select the cohorts to be studied in both the I.C.D.S and non I.C.D.S area. In each area 30 clusters were randomly selected taking panchayat ward as the clustering unit, 300 children in 3-5 years age groups (10 against 7 per cluster for better appreciation) and their mothers were taken by door to door survey, with of prepared schedule.

Study tool

Measurement of the mid upper arm circumference: The mid upper arm circumference measurements are taken of all children in both the I.C.D.S and non I.C.D.S area as per the guidelines. They are divided into three groups as per the nutritional status: i) MUAC>13.5 cm, ii) >12.5 cm<13.5 cm, iii) <12.5 cm. Then necessary observation tables were prepared for further discussion. Kanawati ratio: Kanawati index is the ratio of the mid upper arm circumference / head circumference. The Kanawati ratios of all children of the I.C.D.S and non I.C.D.S are derived. They are divided into four groups and observation tables were prepared. Group 1- Normal >0.310; Group II- Mild 0.310 – 0.280; Group III- Moderate 0.279 to 0.250 Group IV- Severe <0.250 Rao's weight - Height ratio: They are again divided into two groups: Group 1- Normal 0.15 or above; Group II- Malnourished <0.14. Then necessary observation tables were prepared for further discussion. Bangle test: This test consists of slipping a bangle with inner diameter of 4cm. above the elbow. All children of the I.C.D.S and non I.C.D.S area were undergone Bangle screening test. Then they are divided into two groups and observation tables were prepared: Bangle passing above the elbow; Bangle not passing above the elbow. The study was done with house to house survey with the help of a prepared scheduled proforma by personal interview and taking necessary anthropometric measurements and clinical examination. Kuppuswamy socioeconomic scale was adopted to assess the socioeconomic status of the parents.

Statistical analysis

All collected data was tabulated, t-test, chi-square test is used and statistically analysed by using SPSS.20 Software.

RESULTS

Children having mid-arm circumference >l3.5 cm are higher in I.C.D.S area. The maximum number of children belongs to the group II i.e. >12.5 cm ≤13.5 cm. It indicates mild and moderate malnutrition are more prevalent in the I.C.D.S area. This is more due to the low socioeconomic status and poor health awareness and illiteracy. Supplementary nutrition is taking the main role in lowering incidence of malnutrition in I.C.D.S area. The association of nutritional status and MUAC measurement is statistically significant ($p<0.05$). Kanawati ratios reveal that MAC/HC ratio is higher in all grade of malnutrition. The association of nutritional status and Kanawati ratios is statistically significant ($p<0.05$). Kanawati ratio is a better index than only MUAC measurement for the assessment of the nutritional status.

Table 1: mid arm circumference age wise (group) in children of 3-5 years age group in I.C.D.S area.

Mid arm circumference	I.C.D.S area	
	31-48 month	49-60 month
>13.5 cm	51	63=114
13.5-12.5 cm	82	95=177
<12.5 cm	3	6=9
Total	136	164=300

Table 2: children in the I.C.D.S area age wise having different Kanawati ratio.

Kanawati ratio	I.C.D.S	
	37-48 month	49-60 month
>0.310	57	65
0.310-0.280	47	57
0.280-0.250	28	36
<0.250	4	6
Total	136	164

Children with normal nutritional status are found more in the age group of 4-5 years and malnutrition cases are found more in 3 to 4 years age group in the I.C.D.S. Rao's index reveals better picture of chronic malnutrition. The association of the nutritional status and Rao's index is stastically significant ($p<0.05$). The number of children in I.C.D.S area with passing of the bangle above the elbow are only 28 and in non – I.C.D.S area, it is 42. That shows the picture of severe malnutrition and to some extent of moderate malnutrition in the I.C.D.S area, which gives the pie of less case of severe malnutrition Grade III and IV present in non – I.C.D.S area.

In I.C.D.S area the immunisation status is better where compared to immmunisation 80% more have been done. UIP programme reveals that immunisation i.e. done to keep the child free from vaccine preventable disease like tuberculosis, and others which indirectly affects the nutritional status of the child. Here immunisation status is better in I.C.D.S area I.C.D.S area upper respiratory tract infection is predominant, which mainly contributes the major morbidity of the children. Anemia cases are more found in I.C.D.S area Number of the children suffering from the diarrhea are decreasing as the popularity of use of ORS is increasing and health awareness too.

Table 3: Children of different age group of (3-5 years age) with Rao's index in I.C.D.S area with relation to their nutritional status (weight/height)^2 × 100.

	I.C.D.S		Non I.C.D.S	
	37-48 months	49-60 months	37-48 months	49-60 months
Healthy	57	70=127	39	64=103
Malnourished	79	94=173	99	98=197
Total	136	164=300	138	162=300

Table 4: Bangle test in I.C.D.S area.

	I.C.D.S		
Bangle passed above the elbow	13 cm or more	12.9-12.5 cm	<12.5 cm
Bangle passed above the elbow	0	19	9
Bangle did not pass above the elbow	132	140	112
Bangle passed above the elbow	28 (9.3%)		
Bangle did not pass above the elbow	272 (90.7%)		
	300		

DISCUSSION

The children of 49-60 month are more in both I.C.D.S and non I.C.D.S area. Male children are predominant in both the I.C.D.S and non I.C.D.S area. Maximum number of children found in group IV, V Class IV and V predominant in both the group. The percentage of grade I malnourished children in study area was more than reported by Mittal et al (26.76%), Farooq et al (24.14%).[5-7] Economic status more or less same in both the area. In both Male and Female children, I.C.D.S and Non I.C.D.S area MUAC <I.C.M.R standard. Average mid upper arm circumference in I.C.D.S area is higher than the non I.C.D.S area. Average height in male and female in both I.C.D.S and non I.C.D.S area <I.C.M.R standard. Height of the children in I.C.D.S area is marginally higher than the non I.C.D.S area. Head circumference almost equal in both the I.C.D.S and non I.C.D.S group of children and Average head circumference <ICMR standard (marginally less). Mean average weight higher in I.C.D.S area than non I.C.D.S area. In our study children having mid arm circumference >13.5 are more in the I.C.D.S than non I.C.D.S i.e. the children having normal nutritional status are more in I.C.D.S than non I.C.D.S area. Children having mid-arm circumference Between 13.5 to 12.5 cm are the predominant group, which are having mild and moderate malnutrition. Children with normal nutritional status are more in I.C.D.S group than non I.C.D.S group. Mild and moderate, severe malnutrition even though higher in Non

I.C.D.S group, difference in mild and moderate group are significant. The difference of the normal and children having different grade of malnutrition in I.C.D.S and non I.C.D.S area are significant p<0.05.

In our study, MAC/HC ratio is higher among the 4-5 years age group in both the I.C.D.S and non I.C.D.S group. In group III having range of (0.280 to 0.250) there is significant difference in both the I.C.D.S and non I.C.D.S group. In non I.C.D.S area all grades of malnutrition are higher especially moderate malnutrition difference is highly significant<0.05. Our study shows that malnourished children are more present in 4–5 years are group. Malnourished children are more present in the non I.C.D.S area. Here is significance difference in the number of malnourished children in non I.C.D.S as compared to the I.C.D.S area and there is significant difference in normal children in I.C.D.S area in comparison to non I.C.D.S area p<0.05.Our study depicts about bangle passing above the elbow in the children group of 3-5 year in I.C.D.S and non I.C.D.S group. Bangle is more passed above the elbow in non I.C.D.S group. In non I.C.D.S group moderate or severe malnutrition is more predominant. The immunisation status is better in ICDS area than in non ICDS area. While according to NFHS -3 full immunization coverage of rural area (20.5) and urban area (33.0).[8-10] One unimmunized child found in the rural ICDS study area.

CONCLUSION

In the present study achievement of I.C.D.S scheme is encouraging and there is no doubt regarding the positive achievements and prospective of I.C.D.S. Still there is much to be done to improve its performance by giving much emphasis on the supplementary nutrition, to the beneficiaries. Supplementary nutrition programme is the vital part of the I.C.D.S scheme which takes the main role in the improvement of the nutritional status of the children. Good supplementary nutrition programme can be made by the regular supply of the ration without any disruption. Food distribution must be good and community participation must be adequate. In this study there is higher prevalence of disease like URTI in the I.C.D.S area. There is also prevalence of diarrhea and skin infection, vitamin A deficiency and anemia in the community which are not less to overlook. These diseases have public health significance.

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