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A Comparative Study Of Nutritional Status Of Children (Age 3 - 6) Under The ICDS And Non ICDS Schools In Nagpur City

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Abstract

Food is one of the basic needs of human being. With the development of science and technology, man, has learnt to analyze the food intake at different age groups on the basis of nutritional values.

This study is undertaken to understand the nutritional values of different food items, in general and for the age group 3 to 6 years in particular. Children need food for following three functions:

1. Providing energy
2. Maintaining growth and repair of the body
3. Protecting the body against diseases.

No one food can do all these functions. In order to keep a child in good health, his diet should include a variety of foods, so that all functions are performed well, such a diet is called balanced diet.

Feeding of 3-year olds

- Compared to infancy or the toddler years, 3-year olds have smaller stomachs and lower energy needs relative to their size.
- They tend to get full on a small amount of food; allow them to follow their hunger/ satiety cues.
- At this age, they are not swayed by portion sizes of healthy foods and stop eating when full. But new research shows that when 3 year olds are given foods high in sugar, fat and salt, they can overeat, so portion control these foods and let your child follow hunger cues of more healthful foods.

Foods to Choose

- At two years if age, it's time to switch to skim or 1% milk; fat can come from other sources like olive oil, nuts, and occasional full-fat cheeses.
- Strive to make half your grains whole. See Getting your Kids to Go Whole Grain Early for more on getting whole grains into your child's diet. Children need a balance of nutrients, but don't need to get every nutrient at every meal-or even every day. Look at the big picture, offer a variety of foods, and make meals pleasant by focusing on family, not food.
- Since their small stomachs don't allow them to eat big portions, they need foods that pack in a lot of nutrients. Foods like sweet potatoes and nuts are full of essential nutrients and give your child lots of energy.

Keywords : ICDS, Non-ICDS children (3 - 6), nutrition, food intake

Introduction :

ICDS in Maharashtra:

In Maharashtra there is only one department which is WCD. Both WCD and ICDS schemes are implemented by this department. There is a common Commissioner for both the units and

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Commissionerate has now been shifted to Pune.

- There are no ICDS offices building at the state / district /block / Sector level. There is a requirement for own office building at all levels. There is a need to make a blueprint of these buildings for all levels.
- There should be a resource centre at the CDPO level / project area. This place could also be used as meeting hall with the AWWs.

There is no office space for the Supervisors at sector level. They go to CDPO office for weekly meetings and visit AWCs on other days. There is a requirement for a office building for them at the beat level for beat level meetings with the AWWs. This could serve as a storage place and serve as a resource centre as well.

Nagpur City : The Heart of India :

The city of Nagpur is uniquely situated at the Geographical Centre of India and is, therefore, well connected to other part of the country through two National Highways No. 6 & 7 and Rail connections to all the major cities. Direct flights from the city connect to Mumbai, Delhi, Raipur, Calcutta, Bhuwaneshwar and Pune. The historic Vidarbha region, made famous in the history as home of the legendary princess Rukhmini, with Nagpur as its present day Head Quarter, is a land rich inagricultural and horticultural produce such as cotton, tur, legumes grains, oil seeds, oranges and other citrus fruits. Huge coal deposit s and other minerals such as manganese, dolomite, lime etc. exist in the region.

In view of very few studies have been conducted in Maharashtra and particularly in Nagpur district and Nagpur city therefore it was thought worthwhile to conduct the study on impact of ICDS scheme on nutritional status of pre-school children of Anganwadi sponsored by ICDS and non-ICDS.

Importance of the Study

People in India are becoming more and more aware about the nutritional values of food. As the physical and mental development of children is directly related to nutrition, it becomes evident to consider the nutritional values of food intake by children. The National Policy on Children are identified nutrition as an important area of planning.

Purpose of Study

The main purpose of the study is to examine and compare nutritional status of children (age 3 to 6 years) of beneficiaries Anganwadi with non-beneficiaries under ICDS Project in Nagpur city.

Limitations

The study is limited to beneficiaries and non-beneficiaries of Anganwadi. The study is limited to Nagpur city.

This study is related to comparison of Nutritional Status of Children in the Age group of 3 years to 6 years with respect to beneficiaries and non-beneficieries anganwadi under the ICDS Project in Nagpur City. For this study the following objectives have been finalized.

Objectives:

The study is based on the following objectives:

1. To study the nutritional values of food provided to children beneficiaries in Anganwadi.
2. To study the nutritional values of food used by non-beneficiaries.
3. To compare the nutritional status of beneficiaries of Anganwadi under ICDS in Nagpur city.
4. To analyze the data and present conclusions.

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5. To provide for suggestions on the basis of findings of the study.

Hypothesis

H0 (Null Hypothesis)

1. "Food with better nutritional values does not lead to proper mental and Physical development of children".

H1 (Alternative Hypothesis)

"Food with better nutritional values leads to proper mental and Physical development of children".

Research Methodology:

Sampling

For this study, the sample has been chosen from selected blocks from Nagpur City under ICDS Project which represents the universe. A sample of beneficiaries from each Anganwadi and equal number of non-beneficiaries from the adjoining areas was taken randomly for comparison.

i.e. 300 samples from beneficiaries and 300 samples from non-beneficiaries of 3-6 age groups were taken for the study.

Data Collection

The data has been collected from Primary and secondary sources by questionnaires and other secondary sources.

I) Primary Data

The data from primary sources i.e. Anganwadi school, beneficiaries of ICDS and Non-beneficiaries from adjoining centres was collected by canvassing predesigned questionnaires

II) Secondary Data

Secondary data have been collected by referring to various reports, Govt. publications and other authentic sources.

Tabulation

The data collected from Primary and Secondary sources was tabulated in systematic manner on the basis of objectives of the study.

Analysis of Data

The data collected and tabulated has been analyzed as per objectives of study.

Table 1 - Gender

Nature of Pre School	Gender		Total
	Female	Male	
ICDS	142	158	300
	47.3%	52.7%	100.0%
Non-ICDS	136	164	300
	45.3%	54.7%	100.0%
Total	278	322	600
	46.3%	53.7%	100.0%

Chi-Square value= 0.241; df= 1; Asymp. Sig= 0.623; Pearson's R= 0.20; Approx. Sig.= 0.624

As regards ICDS centers, 142 out of 300 (47.3%) were females and 158 (52.7%) were males.

As regards Non-ICDS centers, 136 out of 300 (45.3%) were females and 164 (54.7%) were males.

The values of chi-square has shown the opinion as "Insignificant" and correlation 'R' is also "Positive and significant".

Table 2: Food at ICDS/ Non-ICDS

Nature of Pre School	Food at ICDS/ Non-ICDS				Total
	Nutritious Food	Khichdi, Chiwada	Satuche Pith	Poha, Biscuit, Soji, Upama	
ICDS	82	164	8	46	300
	27.3%	54.7%	2.7%	15.3%	100.0%
Non-ICDS	66	106	4	124	300
	22.0%	35.3%	1.3%	41.3%	100.0%
Total	148	270	12	170	600
	24.7%	45.0%	2.0%	28.3%	100.0%

Chi-Square value= 51.311; df= 3; Asymp. Sig= 0.000;Pearson's R= 0.247; Approx. Sig.= 0.000

In case of ICDS centers, 82 out of 300 (27.3%) were getting nutritious food, 164 (54.7%) were getting Khichadi/Chiwada, 8 (2.7%) were getting Satu Pith and 46 (15.3%) were getting Poha, Biscuit, Soji, Upama.

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In case of Non-ICDS centers, 66 out of 300 (22%) were getting nutritious food, 106 (35.3%) were getting Khichadi/Chiwada, 4 (1.3%) were getting Satu Pith and 124 (41.3%) were getting Poha, Biscuit, Soji, Upama.

The values of chi-square has shown the opinion as "Significant" and correlation 'R' is also "Positive and significant".

Table 3: Early Morning Food

Nature of Pre School	Early Morning Food				Total
	Nothing	Milk, Biscuits	Curry + Roti	Milk + Eggs	
ICDS	6	244	22	28	300
	2.0%	81.3%	7.3%	9.3%	100.0%
Non-ICDS	2	272	8	18	300
	.7%	90.7%	2.7%	6.0%	100.0%
Total	8	516	30	46	600
	1.3%	86.0%	5.0%	7.7%	100.0%

Chi-Square value= 12.227; df= 3; Asymp. Sig= 0.007; Pearson's R= -0.087; Approx. Sig.= 0.034

In case of ICDS centers, about early morning food, 6 out of 300 (2%) had nothing, 244 (81.3%) had mild/ biscuits, 22 (7.3%) had curry+roti, 28 (9.3%) had milk+eggs.

In case of Non-ICDS centers, about early morning food, 2 out of 300 (0.7%) had nothing, 272 (90.7%) had mild/biscuits, 8 (2.7%) had curry+roti, 18 (6%) had milk+eggs.

The values of chi-square has shown the opinion as "Significant" and correlation 'R' is "Negative and Insignificant".

Table 5: Mid-Time Food

Nature of Pre School	Breakfast Food				Total
	Nothing	Snacks	Curry + Roti	Tea/Milk /Biscuits	
ICDS	6	182	98	14	300
	2.0%	60.7%	32.7%	4.7%	100.0%
Non-ICDS	20	214	34	32	300
	6.7%	71.3%	11.3%	10.7%	100.0%
Total	26	396	132	46	600
	4.3%	66.0%	22.0%	7.7%	100.0%

Chi-Square value= 41.676; df= 3; Asymp. Sig= 0.000;Pearson's R= -0.259; Approx. Sig.= 0.000

In case of ICDS centers, about food - mid-time, 0 out of 300 (0%) had nothing, 148 (49.3%) had dal, rice, khichadi, 36 (12%) had snacks, 116 (38.7%) had tea.

In case of Non-ICDS centers, about food - mid-time, 4 out of 300 (1.3%) had nothing, 212 (70.7%) had dal, rice, khichadi, 34 (11.3%) had snacks, 50 (16.7%) had tea.

The values of chi-square has shown the opinion as "Significant" and correlation 'R' is "Negative and Insignificant".

Table 6: Food for Lunch

Nature of Pre School	Food for Lunch			Total
	Nothing	Dal, Rice	Khichdi	
ICDS	0	286	14	300
	.0%	95.3%	4.7%	100.0%
Non-ICDS	4	212	84	300
	1.3%	70.7%	28.0%	100.0%
Total	4	498	98	600
	.7%	83.0%	16.3%	100.0%

Chi-Square value= 64.996; df= 2; Asymp. Sig= 0.000; Pearson's R= 0.288; Approx. Sig.= 0.000

In case of ICDS centers, about food - lunch, 0 out of 300 (0%) had nothing, 286 (95.3%) had dal, rice, 14 (4.7%) had khichadi.

In case of Non-ICDS centers, about food - lunch, 4 out of 300 (1.3%) had nothing, 212 (70.7%) had dal, rice, 84 (28%) had khichadi.

The values of chi-square has shown the opinion as "Significant" and correlation 'R' is also "Positive and significant".

Table 7: Food for Dinner

Nature of Pre School	Food for Dinner			Total
	Roti+Curry	Dal, Rice	Milk	
ICDS	28	272	0	300
	9.3%	90.7%	.0%	100.0%
Non-ICDS	28	270	2	300
	9.3%	90.0%	.7%	100.0%
Total	56	542	2	600
	9.3%	90.3%	.3%	100.0%

Chi-Square value= 2.007; df= 2; Asymp. Sig= 0.367; Pearson's R= 0.011; Approx. Sig.= 0.784

In case of ICDS centers, 28 out of 300 (9.3%) had roti + curry at dinner, 272 (90.7%) had dal, rice and 0 (0%) had milk.

In case of Non-ICDS centers, 28 out of 300 (9.3%) had roti + curry at dinner, 270 (90%) had dal, rice and 2 (0.7%) had milk.

The values of chi-square has shown the opinion as "Insignificant" and correlation 'R' is "Positive but Insignificant".

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Chi-Square value= 2.007; df= 2; Asymp. Sig= 0.367; Pearson's R= 0.011; Approx. Sig.= 0.784

In case of ICDS centers, 28 out of 300 (9.3%) had roti + curry at dinner, 272 (90.7%) had dal, rice and 0 (0%) had milk.

In case of Non-ICDS centers, 28 out of 300 (9.3%) had roti + curry at dinner, 270 (90%) had dal, rice and 2 (0.7%) had milk.

The values of chi-square has shown the opinion as "Insignificant" and correlation 'R' is "Positive but Insignificant".

Table 8: Dietary Allowance for Pre-School Children

Nutrient	Recommended Dietary Allownace 3-6 years	ICDS centres	Non-ICDS centres
Weight (kg)	16.0	12.66	11.67
Energy (k cal)	1690	1531	1582
Protein (g)	30	24	27
Fat (g)	25	26	28
Calcium (mg)	400	328	361
Iron (mg)	18	15	17
Vitamin A (mcg)	400	365	382
Beta carotene (mcg)	1600	1470	1522
Thiamine (mg)	0.9	0.5	0.6
Riboflavin (mg)	1.0	0.86	0.91
Nicotinic acid (mg)	11	7	9
Pyridoxine (mg)	0.9	0.87	0.89
Ascorbic acid (mg)	40	34	35
Folic acid (mcg)	40	31	30
Vitamin B_{12} (mcg)	0.2 to 1	0.5	0.8

Above table explains the nutritional values of Dietary Allowance for pre-school children between 3 and 6 years of age. This was compared with the actual observed values of ICDS centres and Non-ICDS centres through interviews of teachers and doctors. Non-ICDS centers were showing higher values in nutritional contents as compared to ICDS centres because convents were not under government ambit and could provide better food than the food provided to the ICDS centres through government grants and food supplies.

Table 9: Comparison of observed results with ICMR standards

Sr. No.	Particulars	Weight (Kg)		Height (cms)		Head Circumference (cms)		Chest Circumference (cms)		Mid-Upper –Arm Circumference (cms)	
		ICMR	Observed results (average)	ICMR	Observed results (average)	ICMR	Observed results (average)	ICMR	Observed results (average)	ICMR	Observed results (average)
1.	ICDS Centres										
	Female	12.3	12.66	99	91.81	57	54.22	50.1	51.28	17	17.04
	Male	12.8	12.62	101	92.34	56	53.39	50.8	49.88	18	17.15
2.	Non-ICDS Centres										
	Female	12.3	11.67	99	88.04	57	55.75	50.1	48.30	17	16.72
	Male	12.8	11.92	101	89.21	56	50.97	50.8	47.61	18	17.07

The above table and Figure 5.89(a) presents comparison between ICMR standard values with that of average observed values of females and males enrolled in ICDS centres and non-ICDS centres. The values of ICDS and Non-ICDS centres were very close to the ICMR standard values showing that the nutritional intake of ICDS children and Non-ICDS children was quite normal and providing better results of growth in weight, height, head circumference, chest circumference and mid-upper arm circumference.

Results based on children's responses (Annexure II)

The children have responded that:

- The nutritional values of Dietary Allowance for pre-school children between 3 and 6 years of age. This was compared with the actual observed values of ICDS centres and Non-ICDS centres through interviews of teachers and doctors. Non-ICDS centers were showing higher values in nutritional

contents as compared to ICDS centres because convents were not under government ambit and could provide better food than the food provided to the ICDS centres through government grants and food supplies.

- 90.7% of ICDS and 90% of Non-ICDS had dal, rice during dinner.
- 56.7% of ICDS and 47.3% of Non-ICDS were having weight in the range of 11 kg to 15 kg.
- 46% of ICDS and 51.3% of Non-ICDS were having height between 60 cms to 90 cms.
- 68.7% of ICDS and 54% of Non-ICDS had head circumference of 41 cm to 60 cm.
- 86% of ICDS and 77.3% of Non-ICDS had chest circumference above 45 cms.
- 75.3% of ICDS and 76.7% of Non-ICDS had mid-upper arm circumference between 16 cms to 20 cms.
- Comparison between ICMR standard values with that of average observed values of females and males enrolled in ICDS centres and non-ICDS centres. The values of ICDS and Non-ICDS centres were very close to the ICMR standard values showing that the nutritional intake of ICDS children and Non-ICDS children was quite normal and providing better results of growth in weight, height, head circumference, chest circumference and mid-upper arm circumference.

Suggestions and Recommendations (for ICDS and non-ICDS centres)

Based on analysis of data, interviews and observations, following suggestions and recommendations have been put forward -

- Proper monitoring of children be there with focus on mal-nurished children.
- Proper medication and control of food intake and water be observed carefully.
- Nutritional content of diet should be enhanced with proper guidance and direction from doctor.
- Regular feed-back from parents, children and teachers is necessary for any corrective action for betterment of service.

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