Comparative study of Anemia in ICDS and Non ICDS areas.

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Abstract

Background: The two major deficiency syndromes moving the educational institution youngsters in developing countries ar supermolecule energy deficiency disease and nutritionary anemia. each these conditions have considerable impact on child's physical and mental development. the target of the study is to review and compare the prevalence of anemia among youngsters in ICDS and non ICDS areas **Methods:** A cross – sectional study with comparison group was carried out in urban slums of Pune city in the ICDS and Non-ICDS areas. In all 115 children were examined from each area and the prevalence of anaemia was estimated in both the areas separately. **Results:** prevalence of anaemia among 0-6 years kids in ICDS and Non-ICDS areas was forty seven.9% (44.1% in male and fifty one in female) and fifty six.1% (47.8% in male and sixty three.7% in female) severally. Majority of the anaemia male kids were having moderate grade of anaemia in each the teams i.e. 24.4% in ICDS and twenty nine.9% in Non-ICDS space. Cases of severe grade of anaemia were seen in 1-3 years kids in ICDS whereas in Non-ICDS cluster they were from 1-4 years age bracket. Majority of the anaemia feminine kids were having moderate anaemia in each the teams (30.7% and 45.2%). **Conclusion:** Prevalence of anemia was found as in ICDS space was forty seven.9% compared to fifty six.1% within the non ICDS space. Statistically this distinction wasn't vital. Infants showed least prevalence of anemia in each the teams.

Keywords: Anemia, Children, ICDS

INTRODUCTION

The ICDS programme was launched in 1975-76 in 33 experimental blocks. Encouraged by the results Government of India expanded ICDS programme and presently it covers over 5320 ICDS blocks nationwide.[1]

The objectives of the ICDS are[1-4]
1. To improve the nutritional and health status of children in the age group of 0-6 years.
2. To lay the foundations for proper psychological, physical and social development of the child.
3. To reduce the incidence of mortality, morbidity, malnutrition and school drop outs.
4. To achieve effective co-ordination of policy and implementation amongst the various departments to promote child development.
5. To enhance the capability of the mother to look after the normal health and nutritional needs of the child through proper nutrition and health education.

In order to achieve above said objectives, ICDS is providing package of services which include[1-4]
Supplementary nutrition
1. Immunization
2. Health check-up
3. Referral services
4. Nutrition and Health education
5. Non formal education

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The beneficiaries of ICDS programme are preschool children (0-6 years), pregnant and lactating mothers and women in the age group of 15 to 44 years.[4] These services are provided through a well-built organization at various levels of administration, governed by ministry of Woman and child Development.

The two major deficiency syndromes affecting the preschool children in developing countries are protein energy malnutrition and nutritional anemia. Both these conditions have considerable impact on child's physical and mental development.[5]

ICDS Scheme is being implemented in Nagpur, and project – II, Gandhi Nagar. These projects run the network of Anganwadi centers which are working in urban slum areas. There are total 211 Anganwadi centers in the city. Out of these two Anganwadi centers Shivaji Nagar, and Bhuteshwar Nagar Anganwadi centers were chosen for the study.

MATERIAL AND METHODS

Study design
Cross – sectional study with comparison group.

Study areas
The study was carried out in urban slums of Pune city. The ICDS and Non-ICDS areas were defined as follows;

ICDS areas
These are the areas where ICDS services are provided. These services are provided under two under ICDS projects viz. Project I, Hanuman Nagar and Project II, Gandhi Nagar. There are total 211 Anganwadi centers working under has four zones which include 25-30 Anganwadi centers.

Non-ICDS areas
These are the areas where no ICDS services are provided.
Pilot study was conducted in Bhuteshwar Nagar as a ICDS area and Gayatri Nagar as Non-ICDS counterpart which is a slum area where ICDS services are not provided.
In all 115 children were examined from each area and the prevalence of anaemia was estimated in both the areas separately.
Results of the pilot study were included in the final study.

Another Anganwadi centre, Shivaji Nagar was selected randomly. There were total 165 children enrolled in this Anganwadi Center, So to have complete coverage, all 165 children were included in the study.

Equal number of 0-6 years subjects included from another Non-ICDS area, Nandaji Nagar.

Study areas

ICDS areas: Two Anganwadi centers from urban ICDS project II, Gandhi Nagar were selected by stratified random sampling.

Shivaji Nagar and Bhuteshwar Nagar were the two Anganwadi centers. The total population of these areas was 5608 and 1537 respectively. The numbers of children enrolled were 165 in Anganwadi centre Shivaji Nagar and 115 in Anganwadi centre Bhuteshwar Nagar.

Non-ICDS areas were selected Nandaji Nagar and Gayatri Nagar both in the close vicinity of the ICDS areas. The population of Nandaji Nagar was 2215 and that of Gayatri Nagar was 1238.

All the four areas (two ICDS and two Non-ICDS urban slums) are situated on the bank of Nag River.

Both ICDS and Non-ICDS areas are at 3-3.5 km. distance from Government Medical College, Nagpur.

Both, these ICDS and Non-ICDS areas, being the slum areas, the houses are mostly Kachha type. People are having access to both Corporation tap and public wells. There are few latrines but not in use. Majority of people belong to low socioeconomic group engaged in hard labor work.

In ICDS areas, health services are provided through ICDS services, Matru Sewa Sangh, Nagpur Homeopathy College, Nagpur Municipal Corporation Mobile Heath Clinics and Private practitioners, whereas in Non-ICDS areas except ICDS services, people have access to all the other health providers as that of ICDS areas.

The prominent local leaders were contacted before commencement of survey and the purpose of the study was explained to obtain the co-operation of local people.

For hemoglobin estimation 0.02 ml blood was taken in the hemoglobinometer pipette and transferred to a pre numbered dark glass bottle containing 5 ml Drabkin's solution, after thorough mixing the bottle was stored in cool, dark place.

Samples for hemoglobin were then brought to the Medical College, Nagpur for analysis.

Hemoglobin was estimated by cyanmethemoglobin method using Klett- Summerson photoelectric calorimeter with green filter of 500-570 waves length (details in Annexure II). Initial blood samples were analyzed with help of the laboratory technician. When the author became well conversant with the procedure, further samples were analyzed by him in the department of Preventive and Social Medicine.

The samples for hemoglobin were analyzed on the same day of collection.

Next day the results of the Hemoglobin estimation were conveyed to the parents. If the child was found anemic, the causes of anaemia in the child were explained to the parents with advice regarding proper diet and nutrition. The child was then given appropriate treatment.

Anaemia was interpreted as mild, moderate and sever depending on the estimated hemoglobin values.

Table 1: Prevalence of anaemia according to age and sex

Selection of cut off value

WHO has given the standard cut off value as 11 gm% for the children aged 6 months to 6 years. [6] As this does not include 0-6 moths children, Wintrobe's standard cut off values [7] were used for defining anaemia in 0-6 months of children and for children aged 6 months to 6 years. WHO standard cut off value was used. So the different cuts off values used were;

Age Group	Cut off value
Days 1-13	14.5 gm/dl
Days 14-6	10.7 gm/dl
3 months – 6 months	9.9 gm/dl
6 months – 6 years	11 gm/dl

The grading of anaemia as mild, moderate and severe was done as per the WHO guideline which classified them as more than 80%, 8 to 60% and less than 60% of cut off values respectively.[6]

Comparison between ICDS and Non-ICDS groups was done. Results are presented I a tabular form and percentages were calculated so as to make comparison easy.

RESULTS

Table 1 shows the prevalence of anaemia according to age and sex composition of study subjects in ICDS and Non-ICDS areas.

Table reveals that prevalence of anaemia among 0-6 years children in ICDS and Non-ICDS areas was 47.9% (44.1% in male and 51% in female) and 56.1% (47.8% in male and 63.7% in female) respectively.

The difference in the proportion of anemia in ICDS and Non-ICDS areas was statistically non-significant (p>0.05). Female were found more susceptible to anaemia in both the groups.

Least prevalence of anaemia was found in infancy (0-12 months) in both the groups i.e. 26.2% in ICDS and 32.4% in Non-ICDS group. Prevalence of anaemia increased as the age increased, maximum being in the 5-6 years of age.

[Table 2] shows that distribution of male subjects as normal mild anaemia, moderate anaemia, and severe anaemia of ICDS was 55.9%, 18.1%, 24.4% and 1.6% and of Non-ICDS was 52.2%, 14.2%, 29.9% and 3.7% respectively. This difference was statistically not significant (X2=2.05, df = 2, P>0.05)

Majority of the anaemia male children were having moderate grade of anaemia in both the groups i.e. 24.4% in ICDS and 29.9% in Non-ICDS area.

In ICDS group no case of moderate of severe anaemia was found in 0-1 year age group while only one case of moderate anaemia was seen in Non-ICDS group in the same age group.

Cases of severe grade of anaemia were seen in 1-3 years children in ICDS whereas in Non-ICDS group they were from 1-4 years age group.

Age group (month)	ICDS						Non-ICDS					
	Male		Female		Both sexes		Male		Female		Both sexes	
	Total	Anaemia No.(%)	Total	Anaemia No.(%)	Total	Anaemia No.(%)	Total	Anaemia No.(%)	Total	Anaemia No.(%)	Total	Anaemia No.(%)
0-6	16	3 (18.7)	13	3 (23.1)	29	06 (20.7)	21	3 (14.3)	17	5 (29.4)	38	8 (21.1)
7-12	15	2 (13.3)	21	9 (42.8)	36	11 (30.6)	13	3 (23.1)	17	11 (64.7)	39	14 (46.7)
13-24	25	14 (56.0)	23	11 (47.8)	48	25 (52.1)	19	7 (36.8)	22	15 (68.2)	41	22 (53.7)
25-36	28	13 (46.4)	33	19 (57.6)	61	32 (52.5)	35	21 (60.0)	30	17 (56.7)	65	38 (58.5)
37-48	25	12 (48.0)	35	18 (51.4)	60	30 (50.0)	25	14 (56.0)	29	22 (75.9)	54	36 (66.7)
49-60	12	8 (66.7)	18	10 (55.6)	30	18 (60.0)	14	11 (78.6)	14	10 (71.4)	28	21 (75.0)
61-72	06	4 (66.7)	10	8 (80.0)	16	12 (75.0)	7	5 (71.4)	17	13 (76.5)	24	18 (75.0)
Total	127	56 (44.1)	153	78 (51.0)	280	134 (47.9)	134	64 (47.8)	146	93 (63.7)	280	157 (56.1)

Table 2: Severity of anaemia according to Age-male

Age group (month)	ICDS					Non-ICDS				
	Total	Normal No.(%)	Mild No.(%)	Moderate No. (%)	Servere No. (%)	Total	Normal No.(%)	Mild No. (%)	Moderate No. (%)	Servere No. (%)
0-6	16	13 (81.3)	03 (18.7)	-	-	21	18 (85.7)	02 (09.5)	01 (04.8)	-
7-12	15	13 (86.7)	02 (13.3)	-	-	13	11 (76.9)	03 (23.1)	-	-
13-24	25	11 (44.0)	05 (20.0)	08 (32.0)	01 (04.0)	19	12 (63.2)	02 (10.5)	03 (15.8)	02 (10.50)
25-36	28	15 (53.6)	04 (14.3)	08 (28.6)	01 (03.5)	35	14 (40.0)	06 (17.1)	14 (40.0)	01 (02.90)
37-48	25	13 (52.0)	05 (20.0)	07 (28.0)	-	25	11 (44.0)	03 (12.0)	09 (36.0)	02 (08.00)
49-60	12	04 (33.3)	03 (25.0)	05 (41.7)	-	14	03 (21.4)	02 (14.3)	09 (64.3)	-
61-72	06	02 (33.3)	01 (16.7)	03 (50.0)	-	07	02 (28.6)	01 (14.03)	04 (57.1)	-
Total	127	71 (55.9)	23 (18.1)	31 (24.4)	02 (01.6)	134	70 (52.2)	19 (14.2)	10 (29.9)	05 (03.70)

X2=2.05, df = 2, P>0.05

Table 3: Severity of anaemia according to Age – female

Age group (month)	ICDS					Non-ICDS				
	Total	Normal No.(%)	Mild No. (%)	Moderate No. (%)	Servere No. (%)	Total	Normal No.(%)	Mild No. (%)	Moderate No. (%)	Servere No. (%)
0-6	13	10 (77.00)	03 (23.00)	-	-	17	12 (70.6)	04 (23.5)	01 (05.9)	-
7-12	21	12 (57.10)	05 (23.80)	04 (19.10)	-	17	06 (35.30)	03 (17.6)	08 (47.1)	-
13-24	23	12 (52.20)	03 (13.00)	08 (34.80)	-	22	07 (31.80)	04 (18.2)	09 (40.9)	02 (09.10)
25-36	33	14 (42.40)	06 (18.20)	12 (36.40)	01 (03.00)	30	13 (43.30)	05 (16.7)	11 (36.7)	01 (03.30)
37-48	35	17 (48.60)	07 (20.00)	11 (31.40)	-	29	07 (24.10)	03 (10.3)	18 (62.1)	01 (03.50)
49-60	18	08	04	06	-	14	04	02	08	-

		(44.50)	(22.20)	(33.30)			(28.60)	(14.3)	(57.1)	
61-72	10	02 (20.00)	02 (20.00)	06 (60.00)	-	17	04 (23.50)	02 (11.8)	11 (64.7)	-
Total	153	75 (49.00)	30 (19.70)	47 (30.70)	01 (00.60)	146	53 (36.30)	23 (15.8)	66 (45.2)	04 (02.70)

X2=8.6521, df = 5, P<0. 05

[Table 3] shows the distribution of female subjects as normal mild anaemia, moderate anaemia and severe anaemia of ICDS was 49%, 19.7%, 30.7% and 0.6% and of Non-ICDS was 36.3%, 15.8%, 45.2% and 2.7% respectively. This difference was statistically significant. (X2=8.6521, df = 5, P<0.05). Majority of the anaemia female children were having moderate anaemia in both the groups (30.7% and 45.2%)

There was only one case of severe anaemia among females in ICDS group which was in 2-3 years age group where as in Non-ICDS group severe anaemia was seen 1-4 years age group.

DISCUSSION`

Prevalence of anemia was found as in ICDS area was 47.9% compared to 56.1% in the non ICDS area. Statistically this difference was not significant. Infants showed least prevalence of anemia in both the groups whereas higher prevalence was observed as the age advanced. The anemia was more prevalent in female study subjects.

Majority of the children were found in moderate grade of anemia. Different workers reported different prevalence of anemia. It may be as high as 77.8% as reported by Bansal R et al or 76% as by Gomber et al.[8,9]

Motghare DD,[5] observed prevalence of anemia as 69.23% in preschool children. Viswewara Rao K,[10] observed prevalence of anemia to be 52.2% in children of 1-5 years of age group. World Health Organization[6] reported prevalence of anemia among children in developing countries as 51%. Sindhu S,[11] Observed prevalence of anemia as 55% in children of 0-6 years age group. The distribution of children as normal, milk, moderate and severe was 45%, 25.7%, 19.3%, and 10% respectively.

George KA et al,[12] found the prevalence of anemia as 11.4%. The prevalence in male and female study subjects was 10.25% and 12.55% respectively. Thus, he reported that female children were more susceptible to anemia. Similar observations were noted in the present study.

Anemia and protein energy malnutrition go hand in hand. The important causes of anemia in preschool age are mainly nutritional like iron deficiency anemia and megaloblastic anemia mainly due to folate deficiency.[5]

CONCLUSION

Prevalence of anemia was found as in ICDS area was 47.9% compared to 56.1% in the non ICDS area. Statistically this difference was not significant. Infants showed least prevalence of anemia in both the groups.

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