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Assessing the role of mid-day meal on nutritional status and growth of children: A comparative study in rural and urban area in Hazaribag

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Abstract

The nutrition status of primary school going children is worst. To decrease the incidence of malnutrition and increase growth of primary school going children, the government of India has launched Mid Day Meal Program keeping these facts in consideration. The present research study has been structured to analyze the nutritional status of primary school going children. A comparative study in rural and urban area of Hazaribag with sample of 100 primary school children to find out the role of Mid-Day meal on nutritional status and their growth. Questionnaire/ Schedule were used for getting personal details. Anthropometries measurement and Clinical Examination conducted for getting nutritional status of children. The main findings were that in Government School Children of rural were of mild angular stomatitis, loss of luster of hair, skin indicates protein and energy deficiencies, chalky teeth (calcium deficiency) and short in carbohydrate requirements. The nutritional analysis of children of urban area, shown a normal appearance no prominent nutritional deficiency sign were seen. Thus the present research indicated mid day meal program play a vital role to overcome from malnutrition.

Keywords: Mid-day, meal, children, micronutrients, malnutrition

1. Introduction

In India 21% of total population (207 million) is suffering from hunger and under nourishment. To address the issue of malnutrition among children, government has introduced mid-day meal programs in all the government schools. The major objective of this program is to improve the nutrition status among school going children.

The national program of nutritional support to primary education (NP-NSPE) was launched as a centrally sponsored scheme on 15 August 1995, initially in 2408 blocks in the country. By the year 1997-98 the NP-NSPE was introduced in all blocks of the country.

The program supplies free lunches on working days for children in primary and upper primary classes in government, government aided local body education guarantee scheme, and alternate innovative education centers, special training centers and Madrasas and makhtabs supported under the sarva Shiksha Abhiyan.

The mid-day meal program is covered by the National food security Act 2013. The Legal backing of the Indian School Meal program is similar to the legal backing provided in the US through the National school program lunch Act.

In the year 2001, the supreme court of India ordered all the state govt. and union territories to implement MDM scheme and provide cooked meal. MDM currently covers nearly 12 crore children. The mid-day meal program in India is a program covering primary school children to improve nutrition.

The scheme guidelines envisage to provide cooked Mid-day meal with 450 calories and 12 gm of protein to every child at primary level and 700 calories and 20 gm of protein at upper primary level. This energy and Protein at upper primary child comes from cooking 100 gm rice/flour 20 gm pulses and 50 gm vegetables and 5 gm in addition to adequate quantities of micronutrients such as iron and Folic Acid

(i) Importance of Present Research: A world Bank (2008) report states that India has 42 percent of the world's under weight children.

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The school going age is a dynamic period of a physical growth and development along with mental emotional and social changes.

- a) Due to poverty one third of school children are Malnourished children are underdeveloped both physically and cognitively which makes schooling difficult for them.
- b) Many life style factors and poor eating habits acquired during childhood can lead to serious disease later in life.

The nutrition status of primary school going children is worst. To decrease the incidence of malnutrition and growth of primary school going children, the government of India has launched Mid day meal program ,keeping these facts in consideration, the present research study has been structured to analyze the nutritional status of primary school going children and to find out the role of Mid-Day meal on nutritional status and their growth.

(ii). Objective of Research work

- a) To assess the role of mid-day meal in providing nutritious diet to primary School children.
- b) To compare the the nutritional deficiencies among primary school children in both, taking Mid-day meal or not.
- c) To know the growth pattern of children taking Mid-day meal or not.

(iii). Hypothesises

- i. Mid-day meal program play a vital role in improving nutritiona status.
- ii. The nutritional status of children of urban area is more better than rural area taking mid-day meal.
- iii. The growth pattern of children of urban area is more better than rural area taking mid-day meal.
- iv. The lack of nutritional deficiencies among children taking Mid-day meal.

2. Review of Literature

School age, also known as middle childhood age (6-10years of age) is the fourth developmental stage in one’s life span after infancy toddler and preschool stages (RM Kliegman 2008) [9].

The Mid-day meal scheme is a school meal programme of the Government of India degined to improve the nutrition status of school age children nationwide Rajan- Chettiparambil (July 2007) [2].

The nutritional status of primary school children in India is poor as 44 percent of children girls are still suffering from iron deficiency anemia and are underweight (NFHS-3 2006).

India has 42 percent of the worlds underweight children (A world Bank 2008).

The National programme for nutritional support to primary education, popularly known as mid-day meal (MDM) programme in India started on August 15, 1995 in the largest school based nutritional programme in the world (AM Chutani 2012).

MDM is intended to eliminate the classroom hunger, improving the nutritional status of the upper and lower primary school children (1st to 8th standards), increase enrollment and retention of students enhance social integration and inculcate good food habits in children. (GS Kainth 2013)

Under nutrition impairs Physical, mental and behavioural development of millions of children and is a major cause of child death. (World Bank 1993, Falkner 1991).

Anthropometric measurements (height and weight) of the children were taking using standardized in struments CSECA: 813 Electronic flat weighing scale and SECA:213 stadiometer by strictly following the WHO guidelines. (WHO 2008)

Clinical examination is the best indicator of deficiency symptoms of micronutrients. The clinical examination of the deficiency disease was carried out. (Jelliffe 1966) [8].

3. Methodology

The present research was based on both analytical and descriptive study of various facts.

- i. Research area: A Comparative Study In Rural And Urban Area In Hazaribag
- ii. Sample Design of 100 (Primary school children)

Urban (50)		Rural (50)	
Govt. (25)	Private *(25)	Govt. (25)	Private*. (25)

*. Private/semi Government (Madarsa /Maktabas / Aided /Minority) Schools (where the mid day meal is not provided).

iii. **Tools:** The given tools were used for present research : Three tools were used in the study to assess the nutrition status and growth of primary school going children under study.

- a) Questionnaire/ Schedule- were used for getting personal detail such as name ages locality and income (Monthly).
- b) Anthropometries measurement Method and Clinical Examination by use of clinical comparative Chart

iv. **Data collection:** After the selection of sample personal data questionnaire /schedule was applied on them. The tools mentioned earlier were applied on selected sample based on different criteria.

v. **Plan of analysis:** Considering the aims and hypothesis of the present research, the attempt was made for calculation of nutritional status and growth pattern of children and suitable statistical techniques were used for analysis of the data which was mentioned earlier.

- a) Frequencies and percentage were calculated to compare the level of nutritional status and growth pattern.
- b) Various diagrams, graphs, pie charts and other suitable statistical analysis were done where ever needed.

4. Collection of Facts and Analysis

The present research was based on both analytical and descriptive study of various facts. Data collected by the use of various tools and methods. The collected data analyzed and presented below

Table 1: Anthropometries measurement

Measurement	Rural (%)				Urban (%)			
	Private		Govt.		Private		Govt.	
	N.G	S.G	N.G	S.G	N.G	S.G	N.G	S.G
Weight	10	90	20	80	5	95	8	92
Height	12	88	25	75	7	93	10	90
Arm- Circumference	15	85	30	70	5	95	20	80
Chest Circumference	20	80	30	70	8	92	15	85

*N.G :- Normal Growth

*S.G :- Standard Growth

4.1 Weight: In Rural area Private school going children 90% were standard growth & 10% were normal and in Govt. school children 80% were good in weight 20% were normal growth. While in urban area private school going children 95% were Good weight (Standard Growth), 5% were normal weight and Govt. school going children 92% were normal weight and 8% were standard growth.

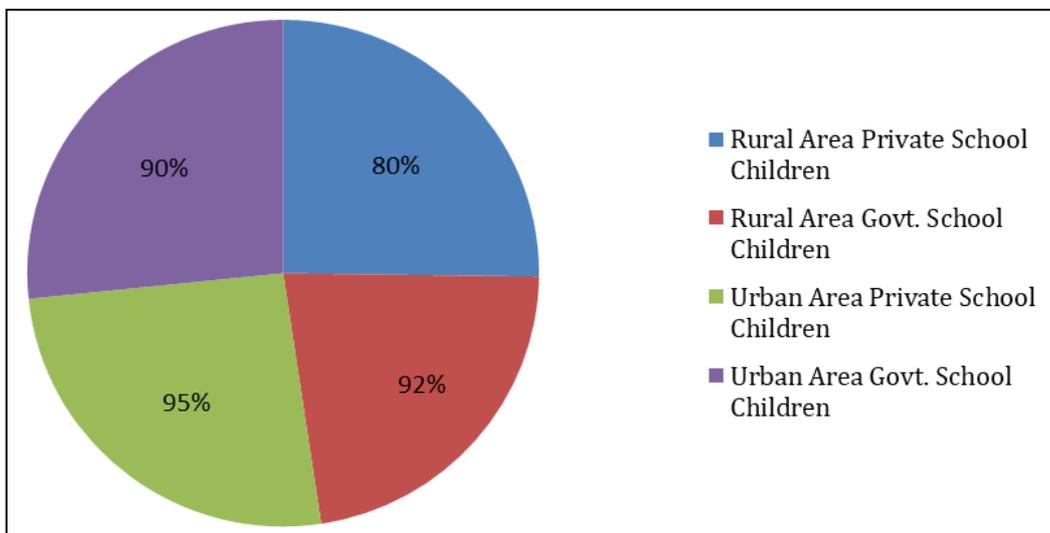


Fig 1: (Information Regarding Standard Weight)

4.2 Height: In Rural area Private School 88% were standard growth 12% were normal growth and Govt. school children 75% were standard Height and 25% were normal Height.

While in urban area private school going children 93% were standard growth and 7% were normal and in Govt. school 80% were standard growth and 20% were normal in Height.

4.3 Arm Circumference

In rural area private school children 85% were of good arm circumference 15% were normal growth, Govt. school children 70% were standard growth, 5% were normal.

While in urban area private school 95% were of good and 5%

were normal growth while in urban area Govt. school 80% were standard growth and 20% were normal growth.

4.4 Chest Circumference

80% Rural area Private School children were standard growth 20% were normal and 70% children of Govt. School were standard growth and 30% were normal.

While in urban area private school children 92% were standard growth 8% were normal growth while in gov. school 85% were standard growth and 15% were normal growth.

Table 2: Clinical Nutritional Survey Chart of Rural and Urban Children

Clinical Sign	Category	Rural Area		Urban Area	
		Private School(%)	Govt. School (%)	Private School(%)	Govt. School (%)
General Appearance	Good	70	6	97	77
	Fair	15	45	3	13
	Poor	14	45	-	7
Hair	Very Poor	1	4	-	3
	Normal	50	37.5	99.5	40
	Loss of Luster	20	51	0.5	25
	Discovered & Dry Spare & Brittle	15	13.5		15
Eye-Discharge	Absent	99	98	100	98.5
	Watery	1	2	-	2.5
	Mucopurulent	-	-	-	-
Gums	Normal	95	93.5	98	97
	Bleeding	3	4.5	2	2
	Pyorrhoea	2	1	-	1
Teeth	Retracted	-	1	-	-
	Absent	75	21	98	50
	Chalky Teeth	15	44	2	25
	Pitting of Teeth	5	8.5	-	20
Skin	Discovered	5	26.5	-	5
	Normal	70	46.5	99.5	80
	Loss of Luster	20	49.5	-	15
	Dry & Rough	10	4	0.5	5
Lips	Hyperkeratosis	-	-	-	-
	Normal	40	6.5	98	60
	Angular	40	65	2	20
	Stomatitis	-	-	-	-
	Mild				
	Angular	20	17.5		20
	Stomatitis				
	Marked				

Table No. 2 show the percentage distribution of the Nutritional deficiency signs among rural and urban area both Govt. and Private School children.

The description of urban and rural area, private and govt. both school children is as follows :-

4.5 General Appearance :- A majority of the rural area private school children were classified as good (70%) fair

(15%), Poor (14%), very Poor (1%) and majority of the rural area govt. school children were classified as Good (6%), fair (45%), poor (45%) very poor (4%).

and Table No. 2 also exhibits the status of urban area private school children were classified as good (97%), Fair (3%), and Govt. School children were classified as Good (77%), fair (13%), Poor (7%), Very poor (3%),

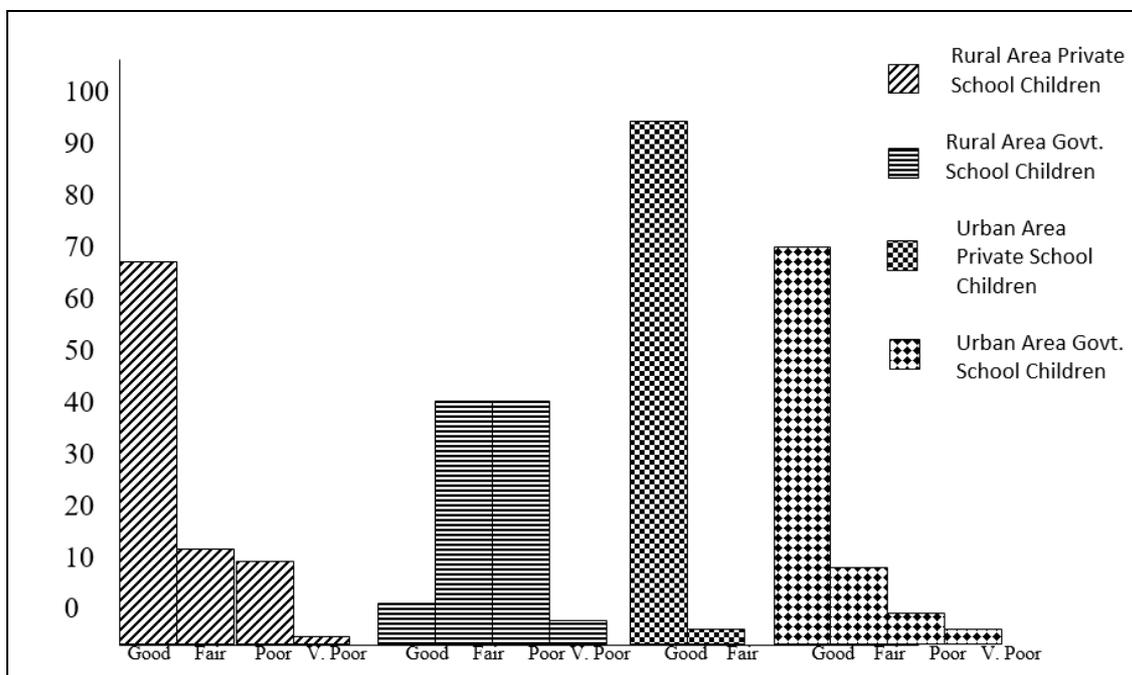


Fig 2: Information regarding General Appearance

4.6 Hair: 50% children of rural area private school had normal hair, 20% hand dull or hair without luster. 15% had discolored & Dry hair 15% has spare & Brittle hair and in rural area Govt. School children were classified as 37.5% Normal hair, 51% loss of lusture, 13.5% Discolor, 21.5% spare & Brittle and urban area private school children were 99.5% normal hair 0.5% loss lusture Or in urban area govt. school 40% normal hair, 25% loss of lustier, 15% Discolored, 20% sparse and brittle.

4.7 Eye Discharge: 99% of Rural area Private School children had healthy eye with no discharge. 1% were watery eyes and in Govt. School children hand 98% eyes with no discharge 2% were watery and in urban area private school 100% respondents had healthy eye with no discharge or in Govt. school 98.5 with no discharge 25% watery.

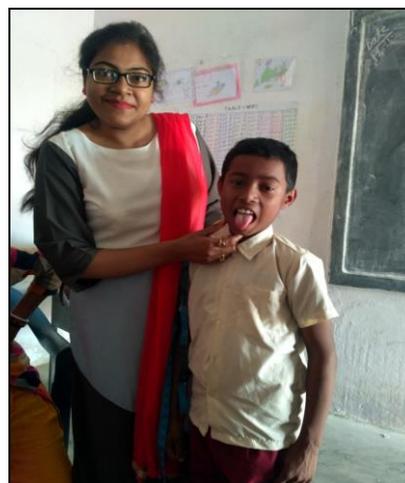
4.8 Gums: Gums were observed in rural area private school 95% (Normal), 3% Bleeding, 2% pyorrhea and in Govt. school 93.5% (Normal), 4.5% Bleeding, 1% pyorrhea, 1% retracted and in urban area private school 98% had normal gum, 2% had bleeding gums or in Govt. School 97% had normal gums, 2% bleeding and 1% had pyorrhea.

4.9 Teeth: 75% teeth of rural area private school children were absent 15% chalky teeth, 5% pitting of teeth 51% discolored and in Govt. school 21% were abset, 44% chalkey teeth 85% pitting of teeth, 26.5% discoloured white in urban area private school 98% absent, 2% chalky teeth, and in Govt. school 50% absent 25% chalky, 20% pitting of teeth 5% discolored.

4.10 Skin: In rural area private school children 70% were normal skin, 20% loss of luster, 10% Dry & Rough skiing and in Govt. School children 46.5% normal 49.5% loss of lustier, 4% Dry and Rough.

While in urban area private school 99.5% were normal skin 0.5% Dry and Rough Skin and in Govt. School children 80% Normal, 15% loss of lusture 5% Dry and Rough skin.

4.11 Lips: Normal 40% in Rural area private school, 40% Angular stomatitis milk, 20% Angular stomatitis marke and in Govt. School Children 6.5%, Normal 65% Angular Stomatitis mild 20% Angular stomatitis marked while in urban area private school 98% were normal lips 2% angular stomatitis mild and in Govt. School children 60% were Normal lips 20%, Angular Stomatitis 20%, Angular stomtitis marked.





5. Future work

This work may be extended in the future work the more number of samples for rural and urban area may be taken under study in future.

6. Summary and Conclusion

To address the issue of malnutrition among children, government has introduced mid-day meal programs in all the government schools. The major objective of this program is to improve the nutrition status among school going children.

I took 25 children from rural area private school and 25 children government school and also 25 children from urban area private school and 25 children government school. Who take mid-day meal or not take mid-day meal.

- Then I observe that in Rural area Private school going children 90% were of standard growth & 10% normal and in Govt. school children 80% were of good in weight

20% normal growth. While in urban area private school going children 95% were of good weight (Standard Growth), 5% normal weight and Govt. school going children 92% were of normal weight and 8% standard growth.

- In rural area private school children 85% were of good arm circumference 15% normal growth, Govt. school children 70% standard growth, 5% normal.
- While in urban area private school 95% were of good and 5% were normal growth while in urban area Govt. school 80% were standard growth and 20% were normal growth.
- A majority of the rural area private school children were classified as good (70%) fair (15%), Poor (14%), very Poor (1%) and Majority of the rural area govt. school children were classified as Good (6%), fair (45%), poor (45%) very poor (4%).
- Urban area private school children were classified as good (97%), Fair (3%), and Govt. School children were classified as Good (77%), fair (13%), Poor (7%), Very poor (3%),
- 50% children of rural area private school had normal hair, 20% hand dull or hair without luster. 15% had discolored & Dry hair 15% has spare & Brittle hair and in rural area Govt. School children were classified as 37.5% Normal hair, 51% loss of lustier, 13.5% Discolor, 21.5% spare & Brittle and urban area private school children were 99.5% normal hair 0.5% loss lustier
- Or in urban area govt. school 40% normal hair, 25% loss of luster, 15% Discolored, 20% sparse and brittle.
- 75% teeth of rural area private school children were absent 15% chalky teeth, 5% pitting of teeth 51% discolored and in Govt. school 21% were abset, 44% chalky teeth 85% pitting of teeth, 26.5% discolored white in urban area private school 98% absent, 2% chalky teeth, and in Govt. school 50% absent 25% chalky, 20% pitting of teeth 5% discolored.

I also found that in Rural Area Government School Children mild angular stomatitis loss of luster of hair and skin indicates protein and energy deficiencies, chalky teeth, shows calcium deficiency among them. They also short in carbohydrate requirements.

The urban children nutritional analysis shows a normal appearance no prominent nutritional deficiency sign were seen.

8. Future work

This work may be extended in the future work the more number of samples for rural and urban area may be taken under study in future.

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