

**An Evaluation of Mid Day Meal Scheme among Five Selected Blocks of Primary Schools'
Children in District Deoria**

Kajal Shahi¹

¹Research student, M.G.C.G.V, Chitrakoot Satna (M.P.)

ABSTRACT

MDM scheme should continue in the Deoria District as it had positive impact on nutritional status, enrolment, attendance and dropout rate of children. This would change the inclination of masses towards government schools and thus helpful uplift to nutritional and educational status in the area. Laboratory results showed that the protein content of menu in present investigation was maximum all most primary schools as comparison to recommended norms set under the scheme for year 2014 and 2015 whereas, the protein content of menu was minimum (soya bean deficit in menu) in Misrouli primary school as compared recommended RDA from year 2014. In case of energy content of menu analysis was lower among five selected blocks primary schools in year 2014&2015. Statistically, Significant difference ($P<0.05$) was observed for protein, energy, calcium, and iron content of menu between five selected blocks primary schools in Deoria district for year 2014 & 2015. To visualize overall performance of MDM, if the scheme may be implemented as a whole package, it will be beneficial in terms of nutritional and health aspect of rural mass of children to boost up their sound health and enhance mental ability of the children.

KEYWORDS : MDM, NMDM , Primary school and Deoria

INTRODUCTION:

The National Programme for Nutrition Support to Primary Education (NP-NSPE) was launched as a Central Sponsored Scheme on 15th August 1995 and extended to all blocks of the country by year 1997-98. The Cooked Mid Day Meal (CMDM) was introduced in all Government and Government aided primary schools in April 2002. CMDM Scheme proposed to supply meal containing 300 calories and 8-12 gm of proteins to all children studying in classes I to V in Government and Government aided schools and Education Guarantee Scheme (EGS)/ Alternative and Innovative Education (AIE) in september, 2004 (revised to 450 calories and 12 gm of protein with adequate quantities of micronutrients like iron, folic acid and vitamin-A etc.

in June, 2006). It aspires to boost the country to primary education by increasing enrolment, attendance and retention and simultaneously boost the nutritional status of students in primary classes.

National Programme of Nutritional Support to Primary Education today is the largest school nutrition programme in the world, covering nearly 12 crore children in more than 9.5 lacks primary school/education guarantee scheme (EGS)/alternative and innovation education centers (AIE). Allocation for this programme has been enhanced to Rs. 8000 crore in the Budget of 2008-09. **Gopalan (2003)** recommended that 1/3 of the child's RDA must come from the MDM. However, as one of the orders of the District Magistrate of Allahabad, circulated among Gram Pradhan and Primary School Principals, the Mid Day Meal must provide 300 Kcal and 8-12 gm protein (**District Magistrate, 2006**). Among, twenty three out of thirty five states and UTs have achieved full coverage of primary schools under the cooked MDM scheme. The defaulters include some of the larger states such Bihar, Uttar Pradesh and West Bengal and as result only 59% of all children entitled to cooked meals are covered (**Levinger, 2008**).

This evaluation study has tried to give a direction to guide the policy makers and implementers not only in the quantitative aspects, but also on the qualitative aspects of impact of the scheme i.e. nutritional improvement and social equity among the beneficiaries. However performance audit of the implementation of MDM scheme conducted in various states have revealed that despite crores of rupee being spent most of the objectives of the scheme remain unachieved due to variety of reasons, ranging from lack of coordination in efficient planning, monitoring, non adherence to audit standards discrimination on caste basis and caste barriers etc, especially among defaulter states like Uttar Pradesh Bihar and West Bengal. Keeping these points in view, study entitled "**Impact Analysis and Nutritional Assessment of Mid Day Meal Scheme in District Deoria, (U.P.)**" has been planned with following objectives-

.To evaluation of Mid Day Meal among five selected blocks primary schools 'children in District Deoria

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MATERIAL AND METHODS :-

3.3 (i) Physical parameters:-Moisture per cent:-

$$\text{Moisture content (\%)} = \frac{\text{Initial weight (g)} - \text{Final weight (g)}}{\text{Weight of sample (g)}} \times 100$$

Analytical procedures/ Methods of analysis adopted

3.3 (ii) Nutritional parameters: - Nutritional parameters which were under taken into consideration given as follows –

Fat per cent:-

The estimation of fat, present in different varieties of food determined by the soxhlet extraction procedure using petroleum ether of B.P. 60-80⁰C (AOAC 2012).

$$\text{Fat\%} = \frac{\text{Final weight of oil} - \text{initial weight of oil}}{\text{Weight of sample (g)}} \times 100$$

Ash per cent:-

Principle:-

Ash is the residues which are left after the ignition incineration of food samples. On ignition organic matter is oxidized and inorganic matter remained.

$$\text{Ash (\%)} = \frac{\text{Weight of ash (g)}}{\text{Weight of sample (g)}} \times 100$$

Protein percent:-

The nitrogen content of food samples were estimated by Kjeldhal method (AOAC) This method essentially involves digestion of the sample to convert nitrogenous compounds into NH₄ form. Protein was determined by multiplying the total nitrogen content by the factor 6.25.

$$\text{Nitrogen (\%)} = \frac{(T - B) \times N \times 14.01}{W}$$

$$\text{Crude protein \%} = \text{Nitrogen \%} \times 6.25$$

Where,

N = Normality of standard NaOH

W = Weight of the sample (g)

T = Titrate value

B = Blank value

Atomic mass of Nitrogen = 14.01

Carbohydrate percent:-

Total carbohydrate by difference was calculated by subtraction the sum of percentage of moisture, protein, fat and

$$\text{Carbohydrate \%} = 100 - \text{moisture (\%)} + \text{Ash (\%)} + \text{Protein (\%)} + \text{Fat (\%)}$$

Energy percent:-

Energy value of the food sample was calculated by multiplying the figure for percentage of protein, fat and carbohydrate by 4, 9 and 4, respectively and added the figures obtained.

$$\text{Energy \%} = (4 \times \text{protein}) + (9 \times \text{fat}) + (4 \times \text{carbohydrate})$$

Calcium per cent

Calcium per cent

$$C = \frac{(A - B) \times V}{M}$$

Where,

C = concentration in the sample (mg/kg)

A = concentration in the sample solution (mg/kg)

B = mean concentration in blank solution (mg/L)

V = volume of the sample solution (mg/L)

M = weight of the sample (g)

Iron Per cent

Principle:-

The food organic matter was removed by dry ash. The residue was dissolved in dilute HCl and sprayed into the flame of an Atomic Absorption Spectrophotometry (AAS). The absorption of the Fe to be analyzed measured at a 248.3 nm wavelength. The liquid sample was aspirated and atomized in an air-acetylene flame where it converted into atomic vapor in their ground state. Atoms of iron of interest absorb the intensity of light from Fe hollow cathode lamp. The amount of light absorbed in flame was proportional concentration of Fe in solution.

Fe per cent:

$$C = \frac{(A - B) \times V}{M}$$

Where,

C = concentration in the sample (mg/Kg)

A = concentration in the sample solution (mg/Kg)

B = mean concentration in blank solution (mg/L)

V = volume of the sample solution (mg/L)

M = weight of the sample (g)

Statistical analysis – The data was statistical analysis with help of percentage, mean, ANOVA table .

RESULTS AND DISSCUTION: Table 4.3.5 Average nutritional analysis of prepared food samples (2014-2015) among selected five blocks in District Deoria.

Nutritional analysis of prepared food samples (2014-2015)								
Nutritional Parameters	Years	Salempur Block	Baitalpur Block	Bhatni Block	Bhatpar Block	Bankata Block	Pooled	F-test (sig)
		Nawalpur Primary school	Belhi Primary school	Nonapar Primary school	Bingari bazar Primary school	Misrouli Primary school		
Moisture (g)	2014	18.00 ± 1.60	18.75 ± 1.34	19.81 ± 0.89	22.48 ± 0.75	21.10 ± 0.47	20.03 ±0.97	<0.05
	2015	15.10 ± 2.98	16.35 ± 2.0	17.25 ± 1.50	18.35 ± 1.30	20.44 ± 0.98	17.50 ±1.44	
Ash (g)	2014	3.74 ± 0.97	2.06 ± 0.89	1.62 ± 0.66	0.96 ± 0.54	0.70 ± 0.39	1.82 ± 0.78	<0.05
	2015	4.00 ± 1.70	3.61 ± 1.44	2.50 ± 1.38	1.25 ± 1.22	0.80 ± 1.11	2.43 ±1.23	
Protein (g)	2014	18.92 ± 1.83	15.86 ± 1.70	14.51 ± 1.49	11.00 ± 1.20	10.20 ± 1.02	14.10 ±1.33	<0.05
	2015	20.00 ± 2.96	18.54 ± 2.85	16.20 ± 2.73	13.50 ± 2.66	12.00 ± 2.00	16.05 ±2.45	
Fat (g)	2014	12.00 ± 1.19	10.02 ± 0.98	8.20 ± 0.79	6.00 ± 0.58	4.39 ± 0.35	8.12 ± 0.65	<0.05
	2015	14.00 ± 1.92	11.44 ± 1.56	9.34 ± 1.48	8.08 ± 1.40	6.12 ± 1.25	9.80 ±1.56	
Carbohydrate (g)	2014	47.34 ± 2.09	53.31 ± 1.98	55.86 ± 1.50	59.56 ± 0.70	63.61 ± 0.52	55.94 ± 0.84	<0.05
	2015	46.90 ± 3.11	50.06 ± 2.58	54.71 ± 2.00	58.82 ± 1.68	60.64 ± 1.00	54.23 ± 1.99	
Energy (Kcal)	2014	373.04 ± 7.25	366.86 ± 6.39	355.28 ± 5.08	336.24 ± 5.68	334.75 ± 5.00	353.23 ±4.92	<0.05
	2015	393.60 ± 9.30	377.36 ± 8.34	367.70 ± 6.89	362.00 ± 5.00	345.64 ± 4.28	369.26 ±7.12	
Calcium (mg)	2014	132.44 ± 2.00	130.28 ± 1.58	128.79 ± 0.86	120.01 ± 0.66	117.31 ± 0.41	125.77 ± 0.85	<0.05
	2015	135.20 ± 3.00	133.41 ± 2.38	131.00 ± 2.00	122.23 ± 1.54	119.40 ± 1.33	128.25 ± 1.90	
Iron (mg)	2014	6.85 ± 1.24	5.09 ± 1.04	4.85 ± 0.88	3.33 ± 0.70	2.20 ± 0.58	4.46 ± 0.98	<0.05
	2015	8.25	7.34	5.20	4.01	3.00	5.56	

	± 1.90	± 1.74	± 1.02	± 0.86	± 0.67	± 1.69	
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<0.05 = significant

NS= Non- significant

The nutritional impact of Mid Day Meal depends both on the quality and quantity of food provided at school. As requirement of food for different age group varied in calorie, protein, calcium and iron consumption. When analyzed the calorie, protein, calcium, and iron consumption of primary school student through MDM scheme, it was found low as compared to their requirement. However, MDM boys were recorded maximum energy, protein, calcium and iron mean values in all the age groups in years 2014 and 2015 when compared with their NMDM primary school boys. Although it was less than ICMR RDA in all age groups of both MDM and NMDM boy's primary schools. Nutrient intakes (energy, protein, calcium and iron) of MDM and NMDM primary school boys a significant difference was found (P<0.05) for age of 7 to 11 years and 8 to 12 years in previous and preceding years among selected five blocks primary schools in Deoria district.

Nutrient intake minimum than ICMR RDA in all age group of both MDA and NMDA primary school girls from 7 to 11 and 8 to 12 years. Whereas the mean intake of iron was more than ICMR RDA of MDM and NMDA girls from 10 to 12 years for years 2014 and 2015 among five blocks in Deoria district. Statically, significant among difference (P<0.05) was observed for age of 7 to 11 and 8 to 12 years in previous and preceding years while 10 to 12 years of MDM and NMDM girls iron intake was noticed non-significant (P>0.05) in years 2014 and 2015. However, MDM primary school girls had maximum energy, protein, calcium and iron mean values as compared to NMDM primary school girls for 7 to 11 years in 2014 and 8 to 12 years in 2015 among five blocks.

CONCLUSION:

As observed related achievements to emerge from the survey was of the view that Mid Day Meal had helped the students by reducing class room hunger. According to them, it is not possible to feed all the children in the family everyday in the morning. Sometimes children go to school on an empty stomach and return home for lunch. Even the students who came to school

after having a morning most found it difficult to manage the whole day on a single most. Some of the students went home at lunch time and did not come back to school. Poor households such as headed by widow or landless laborers value the assurance of free lunch every day for the children. When they are provided with a cooked meal they feel good and most of them remain in school after taking the meal.

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