International Journal of Research in Social Sciences
Vol. 8 Issue 2, February 2018
ISSN: 2249-2496 Impact Factor: 7.081
Journal Homepage: http://www.ijmra.us, Email: editorijmie@gmail.com
Double-Blind Peer Reviewed Refereed Open Access International Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gate as well as in Cabell's Directories of Publishing Opportunities, U.S.A

Impact of Mid Day Meal Scheme on Nutrient Intake among Five Selected Blocks of Primary Schools' Children in District Deoria

Kajal Shahi[1]

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

ABSTRACT

Present study was an appreciable effort to assess the nutritional status of the Mid Day Meal consuming five primary schools' children in District Deoria. Under socio economic status the subjects were categorized on the basis of family type and profession, economic and educational status of their parents. Dietary intake was studied by interview and 24 hours recall method for six days. Present study concluded that in spite the consumption of Mid Day Meal the nutritional status of the primary schools' children under study was lower than the recommended Indian norms.

KEYWORDS : MDM, NMDM , Socioeconomic status, nutrient intake and Deoria.

INRODUCTION:

Children are the most vulnerable segment that suffers from various kinds and grades of malnutrition and nutritional deficiency. Childhood inadequacies will certainly have irreversible and serious consequences in the adulthood. Under nutrition during any period of child hood, even for relatively short term episodes, can have negative effects on the cognitive development thus leads to poor school performance among children. Primary schoolchildren (6-14 years) form about 20% of the total population. Free and compulsory education up to the age of14 years is the constitutional commitment. It is estimated that about 40% of children dropout of primary school. National Nutrition Monitoring Bureau (NNMB,2000)indicate that about 70% of these children are under nourished and there is about 30% deficit in energy consumption and over 75% of the children have dietary micronutrient deficit of about 50%.Nutrition support to primary education is considered as a means to achieve the objective of providing free and compulsory universal primary education of satisfactory quality to all the children below the age of 14 years by giving a boost to universalisation of primary education through increased enrolment, improved school attendance and retention and promoting nutritional status of primary school children.(Afridi and Farzana,2007)The National Program of Mid Day Meal in schools, the largest school feeding program in the world, cover nearly 9.70 crore children studying at the primary stage of education in class I-V in 9.50 lakhs government (including local body) and government aided schools and the centre run

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under Education Guarantee Scheme (EGS). The program was extended with effect from 01.10.2007 to children in the upper primary stage of education (class VI-VIII) in 3,479 Educationally Backward Blocks (EBBs).

OBJECTIVE:

.To study the nutrient intake among five selected blocks primary schools 'children in District Deoria .

MATERIAL AND METHODS :-

Study population – The study was carried out among 250 school children(125 Mid Day Meal (MDM) school children and 125 Non – Mid Day Meal (NMDM) school children) aged 7 to 11 years .

Study area :- To assess the impact of program a set of five schools with Mid Day Meal scheme and five school without Mid Day Meal scheme with comparable socio-economic background were used in five block of Deoria District.

Study design :- A cross sectional and multistage random sampling technique.

Data collection :- By using predesigned and pretested schedule (Interview technique and observation) .

Dietary survey

Mid-Day Meal (MDM) diet survey

The absolute consumption of six days meal by children was weighed by randomly selecting a sub sample (n=25 for each age 7-12 years) from school, the nutrient intake (energy, protein, calcium and iron) derived on dry weight basis was calculated.

Home diet survey

Information of meal pattern of all subjects was collected by following 24 hours recall method of diet survey for six days. Based on data the amount of raw material (food) consumed by each individual and calculated using the formula :-

$$\text{Consumed by individual} = \frac{\text{Total quantity of raw food used}}{\text{Total quantity of cooked food}} \times \text{individual intake of cooked}$$

The adequacy of foods and nutrients of diet (energy, protein, calcium and iron) consumed was calculated and compared with requirements and recommended dietary allowance, respectively (ICMR, 2000)

Statistical analysis – The data was statistical analysis with help of percentage, mean, t-test .

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RESULTS AND DISCUSSION :-

Table 1 : Average six days' nutrient intake of MDM and NMDM primary schools' boys (7-11 Years) among five blocks in District Deoria (2014)

Age (Years)	MDM & NMDM school children N=125		Particulars	Average six days nutrient intake of MDM and NMDM primary schools boys (7-11 Years) in District Deoria (2014)							
				Energy (Kcal)		Protein (g)		Calcium (mg)		Iron (mg)	
	MDM	NMDM		MDM Boys	NMDM Boys	MDM Boys	NMDM Boys	MDM Boys	NMDM Boys	MDM Boys	NMDM Boys
7-9	37 (59.68)	37 (59.68)	Six days mean of home diet	1286.77	1425	18.12	29.00	182.23	291.18	15.92	18.23
			Six days mean of MDM	353.23	0	14.10	0.00	125.77	0.00	4.46	0.00
			Total six day's mean	1640	1425	32.22	29.00	308.00	291.18	20.38	18.23
			RDA	1950	1950	41.00	41.00	400.00	400.00	26.00	26.00
			Deficit of RDA (%)	-310 (15.90)	-525 (26.92)	-8.78 (21.41)	-12 (29.27)	-92 (23.00)	-108.82 (27.21)	-5.62 (21.62)	-7.77 (29.88)
			% of RDA	84.10	73.08	78.59	70.73	77.00	72.80	78.38	70.12
			t-test (Sig)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10-11	25 (40.32)	25 (40.32)	Six days mean of home diet	1426.77	1650	29.84	39.10	304.23	410.00	22.22	23.59
			Six days mean of MDM	353.23	0	14.10	0.00	125.77	0.00	4.46	0.00
			Total six day's mean	1780	1650	43.94	39.10	430.00	410.00	26.68	23.59
			RDA	2190	2190	54.00	54.00	600.00	600.00	34.00	34.00
			Deficit of RDA (%)	-410 (18.72)	-540 (24.66)	-10.06 (18.63)	-14.90 (27.59)	-170 (28.33)	-190 (31.67)	-7.32 (21.53)	-10.41 (30.62)
			% of RDA	81.28	75.34	81.37	72.41	71.67	68.33	78.47	69.38
			t-test (Sig)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

<0.05 = Significant at 5% level, NS = Not – Significant, Obs = Observed value, Standard = ICMR standard

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Table 2: Average six days' nutrient intake of MDM and NMDM primary schools' boys (8-12 Years) among five blocks in District Deoria (2015)

Age (Years)	MDM & NMDM		Particulars	Average six days nutrient intake of MDM and NMDM primary schools boys (8-12 Years) in District Deoria (2015)							
	MDM	NMDM		Energy (Kcal)		Protein (g)		Calcium (mg)		Iron (mg)	
				MDM Boys	NMDM Boys	MDM Boys	NMDM Boys	MDM Boys	NMDM Boys	MDM Boys	NMDM Boys
8-9	25 **(40.32)**	**(40.32)**	Six days mean of home diet	1365.74	1560	18.27	30.85	211.75	319	16.74	19.82
			Six days mean of MDM	369.26	0	16.05	0.00	128.25	0.00	5.56	0.00
			Total six day's mean	1735	1560	34.32	30.85	340.00	319.00	22.30	19.82
			RDA	1950	1950	41.00	41.00	400.00	400.00	26.00	26.00
			Deficit of RDA (%)	-215 (11.03)	-390 (20.00)	-6.68 (16.29)	-10.15 (24.76)	-60.00 (15.00)	-18 (20.25)	3.70 (14.23)	-6.18 (23.77)
			% of RDA	88.97	80.00	83.71	75.24	85.00	79.75	85.77	76.23
			t-test (Sig)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10-12	37 **(59.68)**	**(59.68)**	Six days mean of home diet	1510.74	1720	29.98	41.35	351.75	460	22.52	25
			Six days mean of	369.26	0	16.05	0.00	128.25	0.00	5.56	0.00
			Total six day's mean	1880	1720	46.03	41.35	480.00	460.00	28.08	25.00
			RDA	2190	2190	54.00	54.00	600.00	600.00	34.00	34.00
			Deficit of RDA (%)	-310 (14.16)	-470 (21.46)	-7.92 (14.76)	-12.65 (23.43)	-120 (20.00)	140 (23.33)	-5.92 (17.41)	-9 (26.47)
			% of RDA	85.84	78.54	85.24	76.57	80.00	76.67	82.59	73.53
			t-test (Sig)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

<0.05 - Significant at 5% level, NS - Non - Significant, RDA – ICMR

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Table 3: Average six days' nutrient intake of MDM and NMDM primary schools' girls (7-11 Years) among five blocks in District Deoria (2014)

Age (Years)	MDM & NMDM schools children N=125		Particulars	Average six days nutrient intake of MDM and NMDM primary schools girls (7-11 Years) in District Deoria (2014)							
				Energy (Kcal)		Protein (g)		Calcium(mg)		Iron (mg)	
	MDM	NMDM		MDM Girls	NMDM Girls	MDM Girls	NMDM Girls	MDM Girls	NMDM Girls	MDM Girls	NMDM Girls
7-9	38 (60.32)	38 (60.32)	Six days mean of home diet	1196.77	1400	16.94	28.30	168.91	280.54	14.78	17.50
			Six days mean of MDM	353.23	0	14.10	0.00	125.77	0.00	4.46	0.00
			Total six day's mean	1550	1400	31.04	28.30	294.68	280.54	19.24	17.50
			RDA	1950	1950	41.00	41.00	400.00	400.00	26.00	26.00
			Deficit of RDA (%)	-400 (20.51)	-550 (28.21)	-9.96 (24.29)	-12.70 (30.98)	-105.32 (26.33)	-119.46 (29.87)	-6.76 (26.00)	-8.50 (32.69)
			% of RDA	79.49	71.79	75.71	69.02	73.67	70.14	74.00	67.31
			t-test (Sig)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10-11	25 (39.68)	25 (39.68)	Six days mean of home diet	1336.77	1500	27.77	38.00	293.23	400.00	19.84	21.81
			Six days mean of MDM	353.23	0	14.10	0.00	125.77	0.00	4.46	0.00
			Total six day's mean	1690	1500	41.87	38.00	419.00	400.00	24.30	21.81
			RDA	1970	1970	57.00	57.00	600.00	600.00	19.00	19.00
			Deficit of RDA (%)	-280 (14.21)	-470 (23.86)	-15.13 (26.54)	-19. (33.33)	-181 (30.17)	-200 (33.33)	5.3 (-27.89)	2.81 (-14.79)
			% of RDA	85.79	76.14	73.46	66.67	69.83	66.67	127.89	114.79
			t-test (Sig)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NS	NS

<0.05 - Significant at 5% level, NS - Non - Significant, RDA- ICMR

Table 4 : Average six days nutrient intake of MDM and NMDM primary schools girls (8-12 Years) among five blocks in District

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Deoria (2015)

Age (Years)	MDM & NMDM schools children N=125		Particulars	Average six days nutrient intake of MDM and NMDM primary schools girls (8-12 Years) in District Deoria (2015)							
				Energy (Kcal)		Protein (g)		Calcium (mg)		Iron (mg)	
	MDM	NMDM		MDM Girls	NMDM Girls	MDM Girls	NMDM Girls	MDM Girls	NMDM Girls	MDM Girls	NMDM Girls
8-9	25 (39.68)	25 (39.68)	Six days mean of home diet	1300.74	1520	17.34	30.00	191.75	300.00	15.06	18.48
			Six days mean of MDM	369.26	0	16.05	0.00	128.25	0.00	5.56	0.00
			Total six day's mean	1670	1520	33.39	30.00	320.00	300.00	20.62	18.48
			RDA	1950	1950	41.00	41.00	400.00	400.00	26.00	26.00
			Deficit of RDA (%)	-280 (14.36)	-430 (22.05)	-7.61 (18.56)	-11.00 (26.83)	-80.00 (20.00)	-100 (25.00)	-5.38 (20.69)	-7.52 (28.92)
			% of RDA	85.64	77.95	81.44	73.17	80.00	75.00	79.31	71.08
			t-test (Sig)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10-12	38 (60.32)	38 (60.32)	Six days mean of home diet	1360.74	1600	28.54	39.86	330.75	430	20.74	24
			Six days mean of MDM	369.26	0	16.05	0.00	128.25	0.00	5.56	0.00
			Total six day's mean	1730	1600	44.59	39.86	459.00	430.00	26.30	24.00
			RDA	1970	1970	57.00	57.00	600.00	600.00	19.00	19.00
			Deficit of RDA (%)	-240 (12.18)	370 (18.78)	-12.41 (21.77)	-17.14 (30.07)	-141 (23.50)	-170(28.33)	7.3(-38.42)	5(-26.32)
			% of RDA	87.82	81.22	78.23	69.93	76.50	71.67	138.42	126.32
			t-test (Sig)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NS	NS

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Table 5 : Average six days nutrient intake of MDM and NMDM primary schools' girls (8-12 Years) among five blocks in District Deoria (2015)

Age (Years)	MDM & NMDM schools' children N=125		Particulars	Average six days nutrient intake of MDM and NMDM primary schools girls (8-12 Years) in District Deoria (2015)							
				Energy (Kcal)		Protein (g)		Calcium (mg)		Iron (mg)	
	MDM	NMDM		MDM Girls	NMDM Girls	MDM Girls	NMDM Girls	MDM Girls	NMDM Girls	MDM Girls	NMDM Girls
8-9	25 (39.68)	25 (39.68)	Six days mean of home diet	1300.74	1520	17.34	30.00	191.75	300.00	15.06	18.48
			Six days mean of MDM	369.26	0	16.05	0.00	128.25	0.00	5.56	0.00
			Total six days mean	1670	1520	33.39	30.00	320.00	300.00	20.62	18.48
			RDA	1950	1950	41.00	41.00	400.00	400.00	26.00	26.00
			Deficit of RDA (%)	-280(14.36)	-430(22.05)	-7.61(18.56)	-11.00(26.83)	-80.00(20.00)	-100(25.00)	-5.38(20.69)	-7.52(28.92)
			% of RDA	85.64	77.95	81.44	73.17	80.00	75.00	79.31	71.08
			t-test (Sig)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10-12	38 (60.32)	38 (60.32)	Six days mean of home diet	1360.74	1600	28.54	39.86	330.75	430	20.74	24
			Six days mean of MDM	369.26	0	16.05	0.00	128.25	0.00	5.56	0.00
			Total six days mean	1730	1600	44.59	39.86	459.00	430.00	26.30	24.00
			RDA	1970	1970	57.00	57.00	600.00	600.00	19.00	19.00
			Deficit of RDA (%)	-240(12.18)	370(18.78)	-12.41(21.77)	-17.14(30.07)	-141(23.50)	-170(28.33)	7.3(-38.42)	5(-26.32)
			% of RDA	87.82	81.22	78.23	69.93	76.50	71.67	138.42	126.32
			t-test (Sig)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NS	NS

<0.05 - Significant at 5% level, NS - Non - Significant, RDA – ICMR

Table 1to 4 showed that 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 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.

In table 5 showed that the MDM schools' girls the age group wise mean daily intakes of energy (Kcal) and protein were 1670 Kcal (85.64) and 33.39g (81.44%), respectively for 8 to 9 years and 1730 Kcal (87.82%) and 44.54g (78.23%) respectively for 10 to 12 years. In case of the NMDM schools' girls the energy and protein mean values were varied 1520 Kcal (77.95%) and 30.00g (73.17%), respectively from 8 to 9 years and 1600.0 Kcal (81.22%) and 39.86g (69.93%), respectively for 10 to 12 years. Among MDM and NMDM schools' girls both energy and protein were less than ICMR RDA although the MDM schools' girls were higher nutrient intake in comparison to the NMDM schools' girls.

CONCLUCION :- Nutrient intake of the MDM Primary Schools Children was Significantly norms although, MDM Primary Schools Children was higher nutrient Maker in comparison to the NMDM Primary School. Results of the study clearly reveal the need to import the nutrition education to the mothers of the subject to enable then to know about low cost and nutritious sources of food in their diet so they con help their children to consume appropriate food. The results of the Present Study Was supports by the study of Laxmain et al (1999) and indicate that there was better impact of Mid Day Meal Consumption on the nutritional status of the Primary Schools Children in District Deoria.

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