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Research Note

Nutritional adequacy of mid day meal in Allahabad schools

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■ **ABSTRACT :** A study was undertaken with the aim of nutritional evaluation of mid day meals served in Allahabad schools. A survey was carried out among 103 girls (age 5-12 yrs) studying in two government primary schools. Weekly menus and nutritive value of mid day meals served in the schools of the district were analyzed in terms of calories, protein, fat, CHO, iron, calcium, folic acid, vitamin C and β –carotene. The mean values per serving were; kcal 463, protein 14.01, fat 6.24g,CHO 88g, iron 4.30mg, calcium 67.23mg, vitamin C 6.11mg folic acid 32.68 µg and β-carotene 11µg. The recommendation of experts that one third RDA of nutrients must be provided by the MDM, was met in the case of protein of 5-9 yrs age group but not in the 10-12yrs age group. Energy and iron were below 1/3 RDA in case of all the children surveyed. In general, micronutrients were low in the MDM.

■ **KEY WORDS:** MDM, RDA, 24h recall, Mid day meal, Nutritional contrifutiono

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Children are the nation's biggest investment for development and must be given every opportunity to be mentally alert and physically strong. The total population of India is 1,210,193,422 (about 1.21 billion), out of which the 0-14 years group forms 31.1 per cent (362,874,979). The number of girls (0-14 yrs) is 172,799,553. The number of primary schools in India is about 0.664 million (National Informatics Centre, 2008; Census India (2011). Nutrition is the most important basic need, being a major determinant to health and mental development. Nutrition problems in adolescents start during childhood and continue, to adult life. The important role of school based health services and school performance of children is well recognized and documented. Mid day meal scheme is school lunch programme provided to children on working days. The government spends huge amount (about 9000 crores per year) for the program (India Together 2004) so that Indian system can achieve high literacy rate and avoid hunger and malnutrition in school children (Gupta *et al.*, 2010). The objective of the present investigation was nutritional evaluation of mid day meals.

Allahabad district of Uttar Pradesh was chosen for the research. Two primary schools were chosen from where 103 girls were surveyed. A pretested interview schedule was used to collect data. All the data were recorded for all the children from class I-V as per the survey schedule prepared by the researcher. Weekly school menus actually observed in the schools and those prescribed by the government were recorded. The quantities of food served on 6 day's (mid day meals) were noted down. Each child's home-food consumption was also recorded using the 24 hour dietary recall method of Swaminathan (2000). The nutritive value of MDM as well as that of the home diet was computed using the book "*Nutritive value of Indian foods*" (Gopalan *et al.*, 2004). Per cent contribution of the MDM towards whole day's nutrient intake was thereafter computed.

The weekly menus prescribed for the MDM' by the U.P Government (*www.upmdm.org.in*) as well as those actually observed in the surveyed schools are depicted in Table 1. It was reported that each child was served 100g MDM. Nutritive value calculated for an average meal is shown in Table 2.

The per serving values were: kcal 463, protein 14.01, fat 6.24 g, CHO 88 g, iron 4.30 mg, calcium 67.23 mg, vitamin C 6.11 mg folic acid 32.68 µg and β-carotene 11µg. The nutritional prescription of the government is 450 kcal 12g protein and adequate amount of micronutrients. In a survey carried out by Gupta *et al.* (2010) in another part of Uttar

Table1 : Mid day meal menu in Allahabad schools and the government prescribed menu

Day	As reported in surveyed schools	As prescribed by U.P Govt.
	Menu	Menu
Monday	Roti and subji mixed with soya chunks	Roti and subji mixed with soybean or dal badi
Tuesday	Rice and dal	Rice and seasonal vegetables mixed with dal (red gram)
Wednesday	Kadhi and rice	Kadhi and rice
Thursday	Roti and soybean mixed with potatoes and other vegetables	Roti and dal mixed with seasonal vegetables
Friday	Thahari	Thahari
Saturday	Rice and soya chunks curry with vegetables	Rice with soybean and vegetables

Table 2 : Nutrient composition of mid day meal served in Allahabad schools

Nutrients	Mean
Energy (kcal)	463
Protein (g)	14.01
Fat (g)	6.24
CHO (g)	88.03
Calcium(mg)	67.23
Iron (mg)	4.30
Vitamin C(mg)	6.11
β-carotene (µg)	11
Folic acid (µg)	32.68

Table 3 : Nutritional contribution of average day's MDM towards RDA of MDM beneficiaries

Age group	Energy			Protein			Iron		
	MDM average per day (kcal)	RDA (kcal)	MDM quantity as % of RDA	MDM average per day (g)	RDA (g)	MDM quantity as % of RDA	MDM average per day (mg)	RDA (mg)	MDM quantity as % of RDA
5-6 Years	463	1690	27.40	14.01	30	46.70	4.30	18	23.89
7-9 Years		1950	23.74		41	34.17		26	16.54
10-12 Years		1970	23.50		57	24.58		19	22.63

Pradesh that is Ghaziabad they found slightly lower quantities of nutrients in the MDM. The values reported were energy 458.12 kcal, protein 10.58 g, calcium 40.18 mg, riboflavin 0.05 mg, vitamin C 6.57 mg, iron 2.90 mg, fat 5.26 g and carbohydrate 92.01g.

From Table 3 it can be seen that in the present study, the MDM beneficiaries (5-12 yrs) obtained about 23.50 to 27.40 per cent of RDA of energy, 24.58 to 46.70 per cent of RDA of protein and 16.54 to 23.89 per cent of RDA of iron from the MDM. Similarly Kushwaha (2008) had found that in general, the MDM in schools of Allahabad did not provide 1/3 RDA of nutrients. Similar work related to the topic was also done by Seetharaman (2010); Kumar *et al.* (2006) Verma and Grover (2009) ; Rana (2010) and Puri *et al.* (1984).

Conclusion :

Findings of the study show that MDM served in the primary schools in general was adequate in protein but not in energy and micronutrients. It is suggested that nutritional quality of a MDM may be further improved by inclusion of more fruits and vegetables as well as by addition of foods fortified with micronutrients like iron, vitamin A etc. To meet 1/3 RDA of kcal, a little higher quantity of oil or other foods with higher concentration of energy may be included.

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■ REFERENCES

Gopalan, C., Shastri, B.V.P. and Balasubramanium, S.C. (2004). *Nutritive value of Indian foods*, (1st Ed.,) NIN (ICMR), Hyderabad, 48-61.

Gupta, Pallavi, Kulshetra, Kanchan and Bakshi, Rita (2010). Nutritional evaluation of mid day meal in selected government school in Ghaziabad district (India). *Food Sci. Res. J.,* **1**(2) : 218-222.

Kumar, D., Mittal, P.C. and Singh, S. (2006). Socio-cultural and nutritional aspects of fast food consumption among school going children. *Indian J. Comm. Med.,* **31**: 178- 180.

Kushwaha, V. (2008). Nutritional evaluation of mid day meal programme in Allahabad district. M.Sc. Thesis, A.A.I-D.U. Allahabad, U.P. (INDIA).

Puri, R., Chawla, P., Sharma, M. and Pershad, D. (1984). Impact of an on-going supplementary feeding programme on the mental abilities of children. *Indian J. Pediatr.,* **51**: 653-657.

National Informatics Center (2008). State-wise number of primary and middle schools in India. Press Information Bureau 'A' wing, Shashtri Bhawan, Dr. Rajendra Prasad Road, NEW DELHI (INDIA).

Rana (2010). To find out the nutritional status of rural and urban school going children consuming the Mid Day Meal. M.Sc Thesis, Chaudhary Charan Singh Haryana Agricultural University, Hisar, HARYANA (INDIA).

Seetharaman, S. (2010). Impact of mid day meal on the nutritional status of school going children, NIRD, Hyderabad (A.P.) INDIA.

Swaminathan, M. (2002). *Essentials of food and nutrition*. (2nd Ed.), Bappco Publication, **2** : 337-338.

Verma, S. and Grover, K. (2009). A report on mid day meal: Evaluation of mid day meal scheme in Punjab. Punjab Agricultural University, Ludhiana (PUNJAB) INDIA.

■ WEBLIOGRAPHY

Census India (2011). Demographics of India 2011. *www.wikipedia.com.* Accessed on 19th February 2012.

India Together (2004). Groundswell for mid day meal scheme. India Together. January, 2004. *www.indiatogether.org*.

www.upmdm.org.in