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Assessment of nutritional status of preschool children of Shivpuri district M.P., India

PALLAVI SAXENA AND RANU SAXENA

ABSTRACT

Two hundred thirty rural preschool children at the age of 2-5 years, who attending the anganwadies of Shivpuri district were selected for the study. These children were belonging to lower income group. The socioeconomic status of rural preschool children was very poor. All the rural preschool children selected from low income group, with an average monthly income ranges from 1200 to 3000. Ninety per cent of home makers and seventy per cent of the family heads were farmer and remaining family head were involved in unskilled labour. In Fifty per cent of the families the women were also involved in income generating activities. Eighty five per cent of the families lived in rented houses. 82 per cent families did not have access to drinking water facilities and individual toilet facilities. It was observed that illiteracy, superstition, poverty, lack of awareness regarding family planning and educational backwardness of the home makers are main responsible factors for low socioeconomic status of rural preschool children. People works with locally trained women who go from house to house, advising mothers how to add supplementary foods available at home such as rice/chapati and daal with mashed, locally-grown green leafy vegetables to a child's diet from six months onwards, while maintaining breastfeeding as long as possible.

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Key Words : Health, Anganwadies, Nutrition, Malnutrition, Pre school children.

INTRODUCTION

Good nutrition is necessary for the development of the brain and the body before a child is born and in the early years of life. Eating the right nutrients at the right time during growth increases a child's potential. Yet, the physical, behavioral and cognitive development of too many children in Shivpuri is threatened by inadequate nutrition. Even as obesity has emerged as a major public health threat, researchers are learning how income, food access, physical activity and family interact to increase the likelihood of childhood obesity. While there are some early indications that living in poverty compounds the social, emotional and health risks that accompany childhood obesity, it is clear that both individuals and society will pay a significant price in financial costs and in human suffering if the trend toward obesity is not reversed. According to the National Family Health Survey (NFHS-3) carried out in 2005- 06, child malnutrition rates in India are disproportionately high.

Malnutrition is a public health problem, including micronutrient deficiencies damaging the health of one third of the world's population (WHO and UNICEF 2003).

Health and nutrition plays the key role in the development process of a country. But the health and nutrition situation in India, even after sixty three years of independence is quite unsatisfactory and unacceptable. Malnutrition remains the most debasing problem facing the majority of the poor population. (Singh and Raghuvansi, 2001). This stand the mental and physical growth of one in three children in developing countries. In developing countries one hundred and ninety million children under age five are chronically malnourished (Grant, 1994). The preschool children are the most vulnerable group of the society. During this age nutrients needs are increased, when these needs are not fulfilled from their diet malnutrition occurs. Nutritional deficiencies and infection contributing to malnutrition and malnutrition contributing to infection both acting synergistically (Chandra, 1989).

The determination of dietary energy requirements is still one of the most important issues that need to be tackled on priority basis, because large variation exists in defining adequate energy intake (Svedberg, 2002). Nutritional status is usually associated with food intake which, in turn, is taken to be dependent on income and hence poverty (Rizwanul, 1997). However, the level of income may not

be the only determinant of food intake. There may be several other measures/indicators of poverty. Energy requirements might have changed due to changes in lifestyle.

METHODOLOGY

To assess the nutritional status of preschool children of 2 to 5 years of age from rural areas, the present study was under taken from different anganwadies of Shivpuri district.

OBSERVATIONS AND ASSESSMENT

Two hundred thirty rural preschool children at the age of 2-5 years, who attending the anganwadies of Shivpuri district were selected for the study. These children were belonging to lower income group. Enrolled samples were selected randomly, data of the present study were collected and analyzed and discussed under the following manner:

Socio-economic survey:

The socio-economic status of rural preschool children was very poor. All the rural preschool children selected from low income group, with an average monthly income

ranged from 1200 to 3000. Ninety per cent of home makers and seventy per cent of the family heads were farmer and remaining family head were involved in unskilled labour. In Fifty per cent of the families the women were also involved in income generating activities. Eighty five per cent of the families lived in rented houses. 82 per cent families did not have access to drinking water facilities and individual toilet facilities. It was observed that illiteracy, superstition, poverty, lack of awareness regarding family planning and educational backwardness of the home makers were main responsible factors for low socioeconomic status of rural preschool children.

Diet survey:

The dietary pattern of rural preschool children revealed that the intake of cereals and pulses were quite satisfactory, *i.e.* 73.5 g and 46.67 g. per child, respectively but their diet was lacking in green and other vegetables *i.e.* 49.67 per cent. Whereas the intake of milk and milk product was 43.6 per cent and meat and fish was 56.67 per cent deficient (Table 1). The mean nutrients intake was lacking in protein, calcium, vit C and vit A. The mean intakes of these nutrients were 63.33 g per cent, 23.38 per cent, 40 per cent and 36.38 per cent, respectively (Table 2).

Table 1: Mean intake of different food stuff

Name of food stuffs	R.D.A by CMR- (g)	Present study food stuff intake (g)	Intake of food stuff in (%)	Deficient's (%)
Cereals	200	147	73.5	26.5
Pulses	60	28	46.67	53.33
Green vegetables	75	31	51.33	49.67
Roots and tubers	75	31	41.33	58.67
Other vegetables	50	31	62	38
Milk and milk product	250ml	141ml	56.4	43.6
Fruits	50	23	46	54
Fats and oil seeds	25	14	56	44
Sugar and jaggery	40	19	47.5	52.5
Meat, fish and eggs	30	13	43.33	56.67

Table 2: Mean intake of different nutrients

Sr. No.	Nutrients	R.D.A by IICMR	Intake of nutrients in present study	Intake of nutrients %	Deficient's %
1.	Protein	30g	19gm	63.33	36.67
2.	Energy	1690kcal	1195kcal	70.71	29.29
3.	Calcium	400mg	93.5mg	23.38	76.63
4.	Vitamin A	1600µg/d	582µg/d	36.38	63.63
5.	Vitamin B	0.9mg	0.59mg	65.56	34.44
6.	Vitamin B2	1mg	0.54mg	54	46
7.	Vitamin B3	11mg	6.5mg	59.09	40.91
8.	Folic acid	40mg	17mg	42.5	57.5
9.	Vitamin B12	10µg	5µg	50	50
10.	Vitamin C	40mg	16mg	40	60

The above anthropometrical measurement of the study shows that the mean weight of 2 to 3.5 years of rural pre school children was less *i.e.* 7.87 kg as compared to standard weight 9.8 kg, whereas mean weight of 3.5 to 5.0 years of rural preschool children was found to be less *i.e.* 9.39 kg as compared to the standard weight 14.60 kg. Hence, the difference between the mean weight and standard weight was 1.93 kg in 2 to 3.5 years and 5.21 kg weight in 3.5 to 5.0 years of age group children (Table 3).

Age	Sex	Mean weight in kg	Standard weight in kg	Difference in kg
2.0 to 2.5	M	5.89	8.4	2.51
	F	5.72	7.8	2.08
2.5 to 3.0	M	9.2	10.1	0.9
	F	8.1	9.6	1.5
3.0 to 3.5	M	9.5	11.8	2.3
	F	8.8	11.1	2.3
	Mean	7.87	9.80	1.93
3.5 to 4.0	M	10.75	13.5	2.75
	F	9.9	12.5	2.6
4.0 to 4.5	M	11.9	14.8	2.9
	F	11	14.5	3.5
4.5 to 5.0	M	12.2	16.3	4.1
	F	11.3	16	4.7
	Mean	9.39	14.60	5.21

The mean height of rural preschool children of 2 to 3.5 years was 78.75 cm which was less as compared to 80.43 cm of standard height. Whereas the mean height of 3.5 to 5.0 years preschool children was 99.23 cm which was less than standard height *i.e.* 101.65 cm.

Age	Sex	Mean height in (m)	Standard height in (m)	Difference in (cm)
2.0 to 2.5	M	72.1	72.9	0.8
	F	71.9	72.5	0.6
2.5 to 3.0	M	80.5	81.6	1.1
	F	78.5	80.1	1.6
3.0 to 3.5	M	85.2	88.3	3.1
	F	84.3	87.2	2.9
	Mean	78.75	80.43	1.68
3.5 to 4.0	M	94.5	96	1.5
	F	93.5	94.5	1
4.0 to 4.5	M	99.5	102.1	2.6
	F	98.2	101.4	3.2
4.5 to 5.0	M	105.5	108.5	3
	F	104.2	107.4	3.2
	Mean	99.23	101.65	2.42

Thus it was found that the mean difference in the height of rural preschool children 2 to 3.5 years and 3.5 to 5 years of age was 1.68 cm and 2.42 cm, respectively (Table 4).

A majority of the rural preschool children had clinical signs which may be attributed to protein energy malnutrition *i.e.* luster less skin (16.52%) luster less hair (9.57%) and mineral deficiencies *i.e.* dental crises (15.22%) and iron deficiencies (12.17%) (Table 5).

Sr. No.	Clinical signs	No. of preschool children	Percentage
1.	Night blindness	6	2.61
2.	Under weight	25	10.87
3.	Biotots spot	1	0.43
4.	Lusterless hair	22	9.57
5.	Lusterless skin	38	16.52
6.	Iron deficiency	28	12.17
7.	Fatigue	9	3.91
8.	Dental crises	35	15.22
9.	Normal	66	28.70
Total		230	

Gomez classification showed that 71.3 per cent children were malnourished and 45.65 per cent preschool children were having first grade of malnutrition (Table 6).

Total No. of sample	Normal	Malnourished	Grade-I	Grade-II
230	66	164	105	59
Percentage	28.7	71.3	45.65	25.65

Simple solutions that save lives:

People works with locally trained women who go from house to house, advising mothers how to add supplementary foods available at home such as rice/ chapatti and dal with mashed, locally-grown green leafy vegetables to a child's diet from six months onwards, while maintaining breastfeeding as long as possible. The best way of conveying this simple message is by saying that all one needs is a fistful of food every day to meet the calorie and protein gap of a child under three. Indian mothers tend to breastfeed until about two years and do not add semi-solid supplementary foods to children's diets, perpetuating the calorie and protein gap. Under-nutrition, diarrhoea and respiratory infections act together as a vicious cycle to lead to further malnutrition, higher morbidity and mortality in this age group. Training and motivating mothers to access health care at the first sign

of illness from nearby health centre and give more food to their child at regular intervals during the day to improve the immune response. A trained health worker has about 100 to 150 such children and families under her direct supervision and she monitors their growth.

Address for correspondence :

PALLAVI SAXENA

Department of Home Science,

Govt. Girls. College, SHIVPURI (M.P.) INDIA

E-mail:dr.pallavisaxena@gmail.com

Authors' affiliations :

RANU SAXENA

Department of Home Science, Govt. K.R.G. P.G. College

GWALIOR (M.P.) INDIA

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