International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Index Copernicus Value (2013): 6.14 | Impact Factor (2015): 6.391

Nutritional Status of Pre School Children

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Abstract: ***This study is done in order to reflect the health and nutritional status of Pre-School children of age group 2-5 years that were enrolled in various preparatory schools of Rajbagh area of Srinagar city. The survey was carried out in some selected preparatory schools. A sample of 150 children was taken by using random sampling. The information / data was collected from parents by using interview cum questionnaire method. The components of the nutritional assessment were Anthropometric measurements and clinical assessment. From the study it was found that, children / given sample, get less calories than their recommended RDA. Protein intake of pre-school children / sample is more than their RDA, Fat intake of 2-3 year children is more than their RDA. Children of age group 2-3, 3-4 years get less calcium than their RDA, while 4-5 years children get more calcium than their RDA. Iron intake of children / selected sample is less than their RDA.***

Keywords: Nutritonal status, weight, height, anthropometric study, dietary assessment

Objective of the Study

1) To study the health and nutritional status of pre-school children in the age group of 2-5 years.
2) To record the anthropometric measurement of selected sample and to compare it with the standards.
3) To find out the nutrient intake of pre-school children.
4) To compare the mean of nutrient intake of pre-school children with standards.
5) To assess the clinical signs and symptoms of nutritional deficiencies and malnutrition.

1. Introduction

Early childhood constitutes the most crucial period of life when foundations are laid for cognitive, social, emotional, physical, motor development and cumulative lifelong learning. The development of children is the first priority on the country's development agenda, not because they are most vulnerable, but because they are our supreme assets and also future human resources of the country. In these words, our tenth five year plan (2002-2007) underlines the fact that the future of India lies in the future of Indian children.

Children are the future of any nation. In India about three fourth of the infant population lives in village. It is imperative to preserve their health and to promote their well being through exercising, utmost care in order to make them healthy and to protect them from deadly disease. Care of children had always traditionally been forte of mothers irrespective of education, income and special class differences. Malnutrition is increasingly recognized as a prevalent and important health problem in many developing countries. This has serious long term consequences for the child and adversely influences their development. Malnutrition makes the child more susceptible to infection and recovery is slower and mortality is higher.

Over the past two decades, there has been a substantial and progressive decline in infant and child mortality rates in India. There has been a significant reduction in prevalence of nutritional deficiency disorders. It therefore, important that increasingly attention is now-paid to the nutritional status of survivors contrary to it. The alarming reports of some international agencies which have placed India at the bottom ring of an arbitrary world development scale, have raised apprehensions that nutritional status of children in India show no signs of improvement. The professionals who work with the children must have the knowledge of feeding practices and nutritional status of children. According to the NFHS malnutrition affects children the most during 6-12 months of age and one of the major determinant is poor feeding practices during the first year of life. Appropriate complementary feeding involves a combination of practices to maintain breast milk intake and of the same time improve the quality and quantity of foods children consume. The 6-11 months period is an especially vulnerable time because infants are just learning to earth and must be fed soft foods frequently and patiently. Care must be taken to ensure that these foods complement rather than replace breast milk. Micronutrient intake can be increased by diversifying the diet to include fruits, vegetable and animal products using fortified foods, giving supplements. Food preferences and total food intake fluctuates and change from time to time. Appetite is erratic, so then considering these factor we should ensure proper nutrition and eating habits during these vulnerable years.

2. Review of Related Literature

Deaton Angus and Dreze Jean (2008) examine the nutrition in India, facts and interpretation. Inspite of India's rapid economic growth, there have been a sustained decline in per capita calorie consumption during the last twenty five years. While the decline has been largest among better off households, it has taken place throughout the range of household per capita total expenditure. This study presents the basic facts about growth, poverty and nutrition in India, it points to a number of puzzles and it sketches a preliminary story that is consistent with the evidence. The reduction in calorie consumption cannot be attributed to declining real income, nor to any increase in the relative price of food. Caloric intake has serious limitations as a nutritional intake; while caloric are extremely important, there are too many sources of variation in caloric requirements for standard, invariant, calorie norms to be carefully applied to large sections of the population. This study concludes with a plea for better and more regular monitoring of nutritional status in India.

BredenKamp Caryn (2008) conducted a study 'Health reform, population policy and child nutritional status in China. It examines the determinants of child nutritional status in seven provinces of china during the 1990's, focusing specifically the role of two areas of public policy. The empirical relationship between income and nutritional status and the extent to which that relationship is mediated by access to quality healthcare and being an old child, is investigated using ordinary least squares, random effects, access to quality, healthcare and income is not found to be significantly associated with improved nutritional status in the preferred model.

Mukherjee Maj R. et.al, 2007 conducted the cross sectional study was carried out to determine the nutritional status of school children in Army School, Pune Associates of nutritional status with socio economic status, education status of parents, mothers working status, and family size were determined. Mothers educational level, socio economic status and family size were significantly associated with nutritional status of the school children.

Sharma et. Al, 2006 examined nutritional status of pre-school children of Raj Gond. A Tribal population in Madhya Pradesh, the cross sectional study of the nutritional status was made on 123 Raj Gond (tribal community of Central India) preschool children (62 boys and 61 girls aged 1 to 5 years) in the waratola village of Balaghat district of Madhya Pradesh. Anthropometric nutritional status was assessed by WHO criterion (Sc classification) and also NCHs standard using weight for age, height for age, weight for height indicates and MUAC. Comparatively, Raj Gond 25 Pre-School children were nutritionally were wasted than Gond and other non tribal pre-school children of Madhya Pradesh.

Akhtar Muhammad S.et. al (2005) examines 'Nutritional status of pre-schooling children of different socio-economic statuses as influenced by various diseases. The study was carried out on 100 children (85 malnourished and 15 apparently healthy) of pre-schooling age (0-4 years). The test patients were divided into four age groups (upto 23-12, 13-23, 24-35 and 36-48 months). Three socio-economic statuses i.e. lower class (maximum earning of Rs. 5000-15000 per month), sex and on the basis of area of living i.e. industrial or non-industrial. Mid arm circumference, percent of weight mass index were low in malnourished children. They were also low among malnourished children of third degree.

Bhattacharya Jayanta et. al (2004) examines the relationship between nutritional status, poverty and food insecurity for household members of various ages. The most striking result is that, while poverty is predictive of poor nutrition among pre-school children, food insecurity does not provide any additional predictive power for this age group. Among school age children neither poverty nor food insecurity is associated with nutritional outcomes. While among adults and the elderly, both food insecurity and poverty are predictive. These results suggest that researchers should be cautious and nutritional outcomes, particularly among children.

Bharyana Alok, (2001) conducted a study titled by nutrition, health and economic development. Some policy priorities reveals that most developing countries face different resource and infra-structural conditions that limit their economic growth. Nutritional deficiencies, poor environmental conditional and inadequate educational infra structural hamper childrens learning, which is critical for the future of skilled lab our and hence for economic development. Improved sanitation and vaccines against infections will prevent loss of vital nutrients. Investments in educational infra-structure, including adult literacy programs, are beneficial for childrens cognitive development. Nutrient and health policies based on long-term considerations will lead to a well trained lab our force enabling non-resource rich developing countries to escape from poverty traps.

3. Methodology and Procedure

For the collection of data, interview and questionnaire was adapted. The study was carried out in Srinagar city amongst the 150 preschool children of age group 2-5 years which were enrolled in various preparatory schools in Rajbagh Srinagar. The total sample of 150 children came from 3 groups which were evenly distributed between three age groups, 2-3 years, 3-4 years, 4-5 years (50 each).

After the required information was gathered the data was carefully analyzed and tabulated.

4. Results

The study of Health and nutritional status of pre-school children of age group 2-5 years, was carried out in four preparatory schools in the Rajbagh area of Srinagar city. The interview cum questionnaire method was used for the collection of data.
The results revealed:

Table 10 (a): Height Distribution on the Basis of Age and Sex (2-3 Years)

Height (cms)	Age in Years				Total	
	Male		Female			
	No.	%age	No.	%age	No.	%age
70-80	-	-	6	20	6	12
80-90	8	40	-	-	4	16
90-100	12	60	12	40	24	48
100-110	-	-	-	-	-	-
110-120	-	-	12	40	12	24
Total	20	100	30	100	50	100

Standard height data from Swaminathan, Food and Nutriton vol. 2, P. 530, Table 12 A (ICMR)	
MALE	FEMALE
Standard Height: 98 cm	Standard Height: 96 cm
Average Height : 90.5cm	Average Height : 73.93cm

Table 10(a) reveals that taking males and females separately, I found that most males occur in the height of 90-100 cms and females mostly occur in the height of 90-120 cms. When taken together, it was revealed that most children fall in the height ranging from 90-100 cms. Comparing standard height of both males and females, difference was found between standard and average of both males and females.

Table 10 (b): Height Distribution on the basis of age and sex (3-4 years)

Height (cms)	Age in Years				Total	
	Male		Female			
	No.	%age	No.	%age	No.	%age
70-80	-	-	-	-	-	-
80-90	4	20	24	80	28	56
90-100	8	40	6	20	14	28
100-110	8	40	-	-	8	16
110-120	-	-	-	-	-	-
Total	20	100	30	100	50	100

Standard height data from Swaminathan, Food and Nutriton vol. 2, P. 530, Table 12 A (ICMR)	
MALE	FEMALE
Standard Height: 98.36 cm	Standard Height: 96.21 cm
Average Height : 96.2cm	Average Height : 86.8cm

Taking males and females separately, it was found that most males occur in the height of 90-110 cms and females mostly occur in the height of 80-90 cms. When taken together, it was revealed that most children fall in the height ranging from 80-9 cms. Comparing standard height of both males and females, difference was found between standard and average height is more than that males.

Table 10 (c): Height Distribution on the Basis of Age and Sex (4-5 Years)

Height (cms)	Age in Years				Total	
	Male		Female			
	No.	%age	No.	%age	No.	%age
70-80	-	-	-	-	-	-
80-90	-	-	-	-	-	-
90-100	2	10	6	20	8	16
100-110	10	50	12	40	22	44
110-120	8	41	12	40	20	40
Total	20	100	30	100	50	100

Standard height data from Swaminathan, Food and Nutriton vol. 2, P. 530, Table 12 A (ICMR)	
MALE	FEMALE
Standard Height: 104.7 cm	Standard Height: 104.1 cm
Average Height : 104.6 cm	Average Height : 103.6 cm

Taking males and females separately, it was found that most males occur in the height of 100-110 cms and females mostly occur in the height of 1100-120 cms. When taken together, it was revealed that most children fall in the height ranging from 100-110 cms. Comparing standard height of both males and females, slight/not much difference was found between standard and average of both males and females.

Table 11 (a): Weight Distribution on the basis of Age and Sex (2-3 Years)

Height (cms)	Age in Years				Total	
	Male		Female			
	No.	%age	No.	%age	No.	%age
10-15	20	100	24	80	44	80
15-20	-	-	6	20	6	12
20-25	-	-	-	-	-	-
25-30	-	-	-	-	-	-
30-35	-	-	-	-	-	-
Total	20	100	30	100	50	100

Standard weight data from Swaminathan, Food and Nutriton vol. 2, P. 530, Table 12 A (ICMR)	
MALE	FEMALE
Standard Weight: 14 kg	*Standard Weight : 13 kg*
Average Weight: 13.3 kg	*Average Weight : 12.46 kg*

Sample Population of age group 2-3 years children, when taken separately, it into males and females I found that most males fall in the weight of 10-15 kgs, also most female children fall in the weight of 10-15 kgs. When taken together it revealed that most children fall in the weight group of 10-15 kgs. Comparing standard weight of both males and females, slight / no difference was found between standard and average weight of both males and females.

Table 11 (b): Weight Distribution on the basis of age and sex (3-4 years)

Height (cms)	Age in Years				Total	
	Male		Female			
	No.	%age	No.	%age	No.	%age
10-15	-	-	6	40	6	24
15-20	12	60	6	40	12	48
20-25	8	40	3	20	7	28
25-30	-	-	-	-	-	-
30-35	-	-	-	-	-	-
Total	20	100	15	100	50	100

Standard weight data from Swaminathan, Food and Nutriton vol. 2, P. 530, Table 12 A (ICMR)	
MALE	FEMALE
Standard Weight: 14.78 kg	Standard Weight : 13.79 kg
Average Weight: 17.4 kg	Average Weight : 15.4 kg

Sample Population of age group 3-4 years children, when taken separately, it into males and females I found that most males fall in the weight of 15-20 kgs, and most female female children occurs in the weight of 10-20 kgs. When taken together it revealed that most children fall in the weight group of 15-20 kg. Comparing standard weight with average weight of both males and females, it was found that average weight of both males and females is slight more than standard.

Table 11 (c): Weight Distribution on the Basis of Age and Sex (4-5 Years)

Height (cms)	Age in Years				Total	
	Male		Female			
	No.	%age	No.	%age	No.	%age
10-15	1	10	3	20	4	16
15-20	6	60	6	40	12	48
20-25	3	30	3	20	6	24
25-30	-	-	-	-	-	-
30-35	-	-	3	20	3	12
Total	10	100	15	100	50	100

Standard weight data from Swaminathan, Food and Nutriton vol. 2, P. 530, Table 12 A (ICMR)	
MALE	FEMALE
Standard Weight: 16.18 kg	Standard Weight : 15.85 kg
Average Weight: 16.5 kg	Average Weight : 18.6 kg

Sample Population of age group 4-5 years children, when taken separately, it into males and females was found that most males fall in the weight of 15-20 kgs, and most female female children occurs in the weight of 15-20 kgs. When taken together it revealed that most children fall in the weight group of 15-20 kg. Comparing standard weight of both males and females, slight difference was found between standard and average weight of both males. Among females average weight was found to be more than that of standard.

Table 12 (a): Mid Term Circumstances Distribution on the Basis of Age and Sex 2-3 Years

Mid Arm Circumference (in cm)	Age in Years				Total	
	Male		Female			
	No.	%age	No.	%age	No.	%age
10-12	-	-	-	-	-	-
12-14	-	-	-	-	-	-
14-16	-	-	6	20	6	12
16-18	18	90	12	40	30	60
18-20	2	10	6	20	8	16
20-22	-	-	6	20	6	12
Total	20	100	30	100	50	100

From the table, it was depicted that all the sample population that is both males and females are normal, and do not suffer from any malnutrition.

Classification by Shakir and Morely

MUAC (cms)	*Subjects*	*Category of malnutrition*
14-16	12	Normal
16-18	60	Normal
18-20	16	Normal
20-22	12	Normal

Standard Mid Arm Circumstance date from Shant Ghosh (ICMR), Shakir & Morley

Mid Arm Circumference (in cm)	Age in Years				Total	
	Male		Female			
	No.	%age	No.	%age	No.	%age
10-12	-	-	6	20	6	12
12-14	4	20	-	-	4	8
14-16	2	10	12	40	14	28
16-18	14	70	12	40	26	52
18-20	-	-	-	-	-	-
20-22	-	-	-	-	-	-
Total	20	100	30	100	50	100

From the table, it was depicted that 20% of male children suffer from moderate malnourishment and among females 20% suffer from severe malnourishment. Also from table 1 found, 12% of total children in this age group suffer from severe malnourishment while as 8% suffer from moderate malnourishment.

Mid Arm Circumference Distribution on the Basis of Age and Sex (4-5 Years)

Mid Arm Circumference (in cm)	Age in Years				Total	
	Male		Female			
	No.	%age	No.	%age	No.	%age
10-12	-	-	6	20	6	12
12-14	-	-	6	20	6	12
14-16	2	10	12	40	14	28
16-18	12	60	6	20	18	36
18-20	6	30	-	-	6	12
20-22	-	-	-	-	-	-
Total	20	100	30	100	50	100

From the table, it was depicted that 20% of male children suffer from moderate malnourishment and 20% suffer from severe malnourishment. Also from table 1 found, 12% of total children in this age group suffer from severe malnourishment, while as 12% suffer from moderate malnourishment.

Classification by Shakir and Morely

MUAC (cms)	*Subjects*	*Category of malnutrition*
10-12	12	Severe malnourishment
12-14	12	Moderate malnourishment
14-16	28	Normal
16-18	36	Normal
18-20	12	Normal

Standard mid arm circumstance date from Shant Ghosh (ICMR), Shakir & Morley
Classification by Shakir and Morely

MUAC (cms)	*Subjects*	*Category of malnutrition*
10-12	12	Severe malnourishment
12-14	8	Moderate malnourishment
14-16	28	Normal
16-18	52	Normal

5. Conclusion

This study is done in order to reflect the health and nutritional status of Pre-School children of age group 2-5 years that were enrolled in various preparatory schools of Rajbagh area of Srinagar city. The survey was carried out in some selected preparatory schools. A sample of 150 children was taken by using random sampling. The information / data was collected from parents by using interview cum questionnaire method. The components of the nutritional assessment were Anthropometric measurements and clinical assessment. From the study it was found that, children / given sample, get less calories than their recommended RDA. Protein intake of pre-school children / sample is more than their RDA, Fat intake of 2-3 year children is more than their RDA. Children of age group 2-3, 3-4 years get less calcium than their RDA, while 4-5 years children get more calcium than their RDA. Iron intake of children / selected sample is less than their RDA.

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