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Effectiveness of Soya Bean Supplementation on Nutritional Status among School Children

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Abstract
Aim: *This study aimed to evaluate the effectiveness of soya bean supplementation on nutritional status of schoolchildren available in selected schools of Nellore, Andhra Pradesh.*
Methodology: *A True –Experimental study was conducted in Z.P.H.School, located in T.P.Gudur, at Nellore District. Sample sizes of 60 school age children were selected by using stratified random sampling technique. Anthropometric measurements, food frequency questionnaire and 24 hours dietary recall were used to assess the nutritional status of a child.*
Results &Conclusion: *The results reveal that with regard to nutritional status, in experimental group, during pre test, 22 (73.3%) had normal weight, 8 (26.7%) had Grade-I malnutrition whereas in post test, 29 (96.7%) had normal weight and 1(3.3%) had Grade-I malnutrition. In control group, during pre test 23 (76.6%) had normal weight, 7 (23.4%) had Grade-I malnutrition whereas in post test, 24 (80%) had normal weight and 6 (20%) had Grade-I malnutrition. The study concludes that the soya bean supplementation is effective in improving nutrition status in aspects of weight, skin fold thickness among school children.*
Key words: *Nutitional status, School children, nutritional supplementation, anthrpometric measurements.*

INTRODUCTION

Nutrition is the combination of dynamic process by which the consumed food is utilized for nourishment for structural and functional efficiency of every cell of the body, it helps to sustain the body and keep it healthy. The nutritional status of children is of vital importance in their growth and development, in the promotion of health and in the restoration of health following illness or injury.[1]

During school years children become increasingly capable of and responsible for self-care activities. The energy and nutrient needs may vary from birth to pre-school and school going ages, there are specific recommended number of servings for each of the food group for different age groups. Having the right number of servings in the daily diet will help the children to get all the nutrients they need .The proteins required for the school children are 4-6 grams/kg/day as per Recommended Dietary Allowances .[2]

Soya bean is hailed as the most protective bean. Soya beans contain 40% protein as compared to other legumes which contain 20% protein. It has

the highest protein content amongst plant products. Soya bean is the only vegetable food that contains all essential amino acids. Soya beans contain 19% unsaturated fat, 8 grams of dietary fibre, 200 to 300mg of calcium, 4.3grams of carbohydrates and abundant isoflavones.[3]

According to World Health Organization (2013) in school children 118 per 1000 had malnutrition in India. In Maharashtra state provisional estimates suggest that 39 percent malnutrition among school children in 2013. Census 2011 has recorded that in India one fifth of the population comprises of children between 5-14 years of age, which includes the primary and secondary school age. Population projections indicate that over the next decade this age group will show by far the largest increase in numbers. It is therefore essential that over the next decade efforts should be focused on improving the health and nutritional status of school-age children, so that they reach adult life with optimal nutrition and health status.[4]

Nutritional status has positive impact on school achievement of children. Hence the researcher interested to provide protein rich supplementation i.e. soya bean supplementation to enhance the nutritional status.

METHODOLOGY

The study was conducted by using True experimental pre test and post test design. Subjects were selected by using the probability stratified sampling technique. 60 samples were selected based on the sampling criteria and screened for nutritional status by checklist. Among 60 school children, 30 were allotted to experimental group and 30 to control group. 15grams of cooked Soya beans supplementation was given twice a day for 28 days and post test was conducted on 30th day. The data was analyzed by using the descriptive and inferential statistics and tabulated according the objectives and hypothesis of the study.

RESULTS:

Table 1: Distribution of Demographic Variables of child (N=60)

S.No	Demographic Variables	Experimental group (n=30)		Control group (n=30)	
		f	%	f	%
1.	Age a)11-12 b)12-13 c)13-14	6 7 17	20 23.3 56.7	5 3 22	16.7 10 73.3
2.	a)Boys b)Girls	15 15	50 50	15 15	50 50
3.	Religion a)Hindu b)Muslim c)Christian	 23 1 6	 76.7 3.3 20	 19 1 10	 63.4 3.3 33.3
4.	Education a)6th standard b)7th standard c)8th standard d)9th standard	 7 8 8 7	 23.3 26.7 26.7 23.3	 8 7 7 8	 26.7 23.3 23.3 26.7
5.	Dietary pattern a)Vegetarian b)Non- vegetarian	 - 30	 - 100	 1 29	 3.3 96.7
6.	Medium of instruction a)English	 30	 100	 30	 100
7.	Age of mother a)<30 b)30-35 c)36-40	 7 8 11	 23.3 26.7 36.6	 6 8 14	 20 26.7 46.6

	d)41-45 e)Above 45	2 2	6.7 6.7	2 -	6.7 -
8.	Education of mother a)Illiterate b)Primary education c)Secondary education d)Higher secondary education	 9 10 11 -	 30 33.3 36.7 -	 8 6 14 2	 26.7 20 46.6 6.7
9.	Occupation of mother a)House wife b)Coolie c)Private employee d)Government employee	 15 14 1 -	 50 46.7 3.3 -	 18 9 1 2	 60 30 3.3 6.7
10.	Family income a)<5000 Rs/- b)Rs 5001-7000/- c) Rs 7001-9000/- d)Rs9001-11000/-	 15 6 7 2	 50 20 23.3 6.7	 11 8 8 3	 36.6 26.7 26.7 10
11.	Place of residence a) Sub urban	 30	 100	 30	 100
12	Medical history a)Normal	 30	 100	 30	 100

Table.1 reveals in relation to socio demographic variables, among the 60 school children, with regard to the age group, 17 (56.6%) school children were between 13-14years, regard to religion 23 (76.7%) school children were Hindus, regarding to medium of instruction all 100% children studying in English medium, regard to eating pattern 29 (96.7%) children were non vegetarians, regard to family income 15 (50%) children family income was less than Rs5000/- per month, With regard to education of children's mothers 11 (36.7%) were studied up to secondary education.

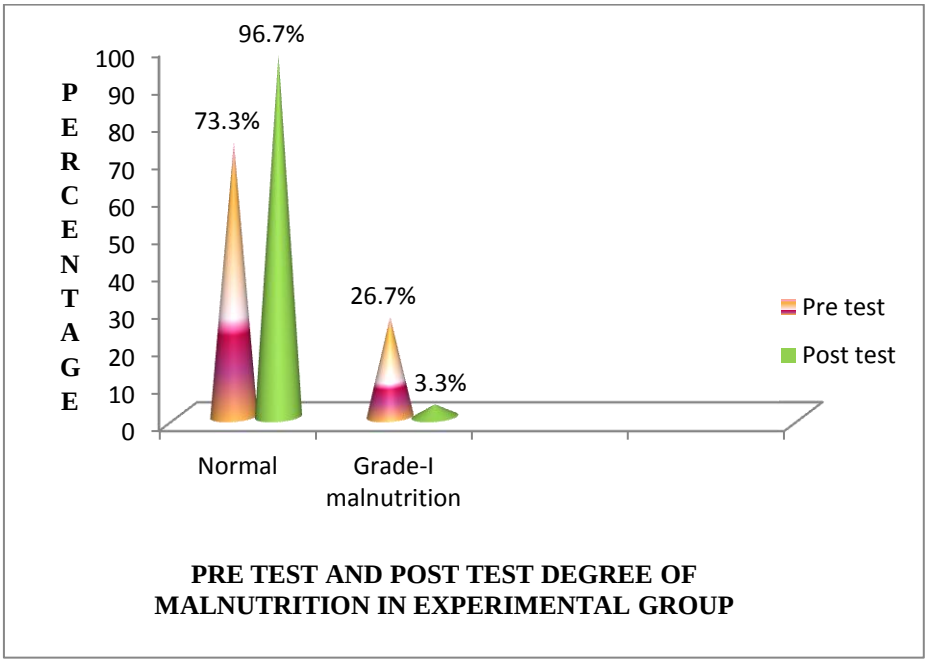

Fig.No:1 Percentage distributions of school children based on degree of malnutrition in experimental group

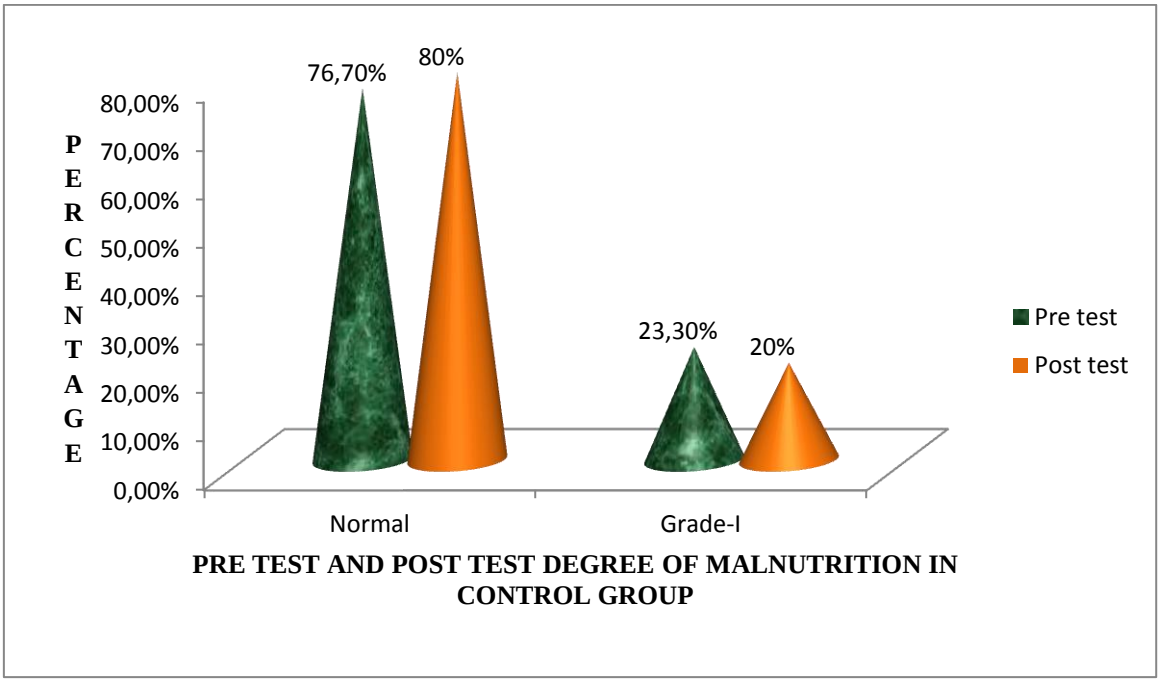

Fig.No.2: Percentage distributions of school children based on degree of malnutrition in Control group

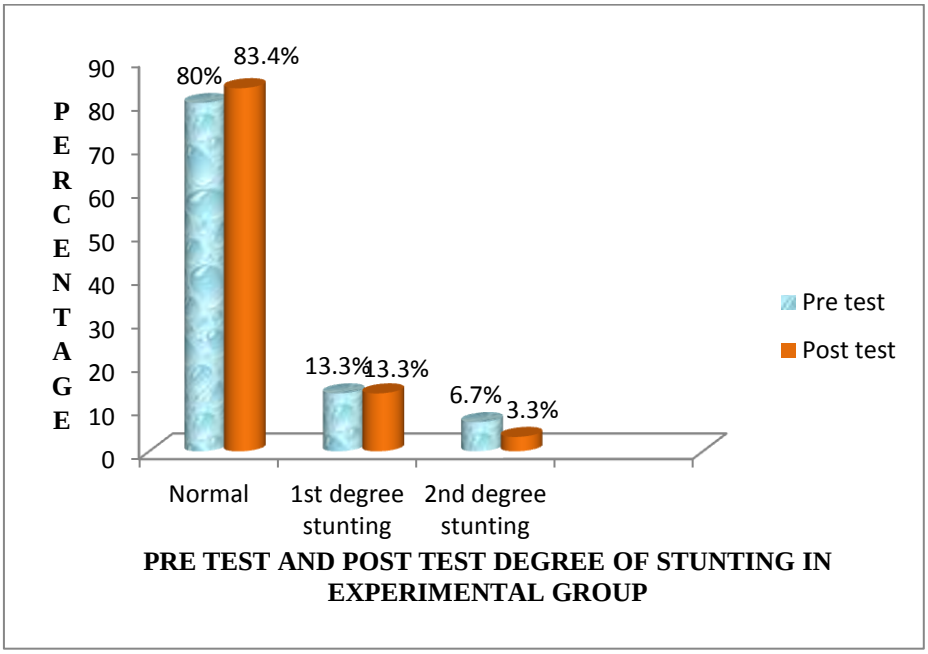

Fig.No:3 Percentage distributions of school children based on degree of stunting in experimental group

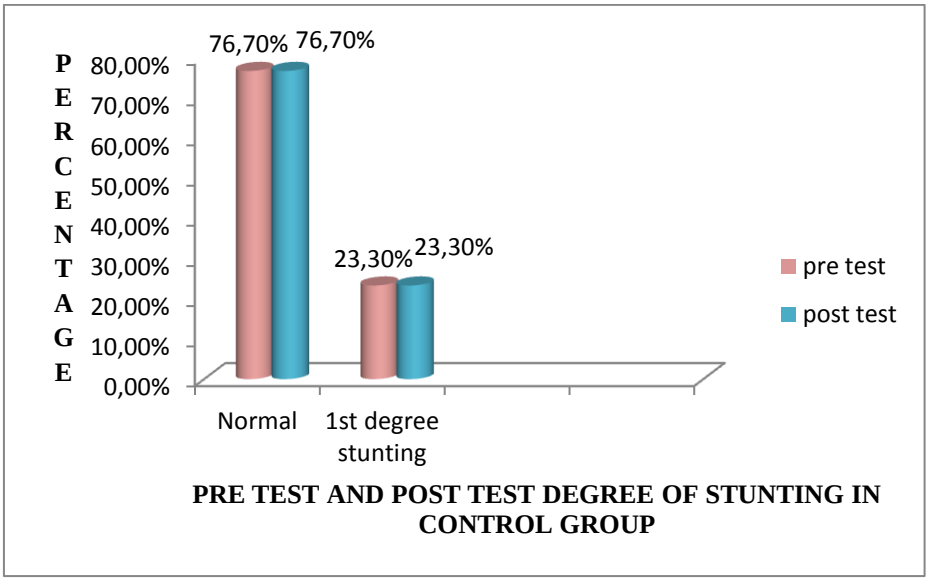

Fig.No:4 Percentage distributions of school children based on degree of stunting in control group

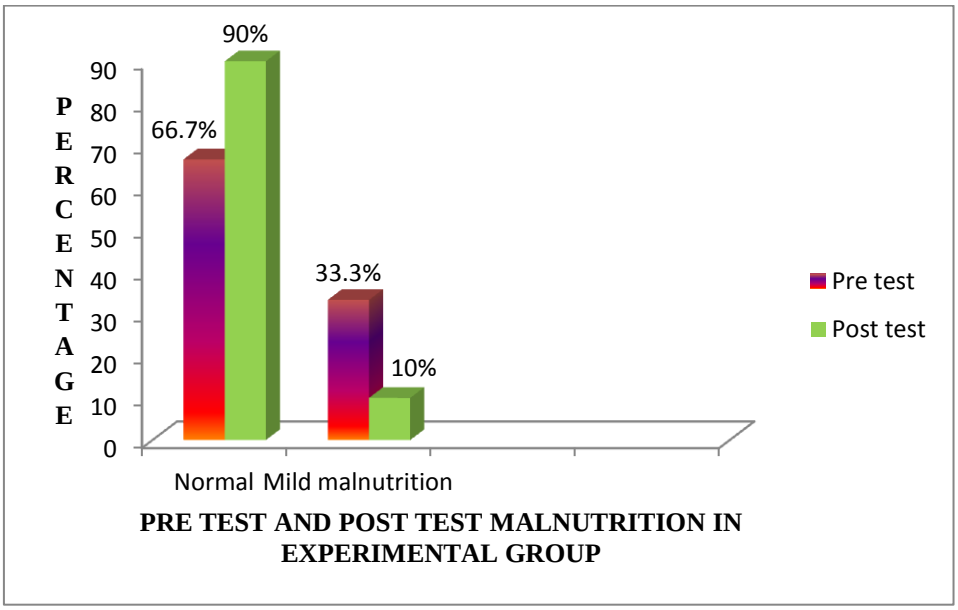

Fig.No:5 Percentage distributions of school children based on skin fold thickness in experimental group

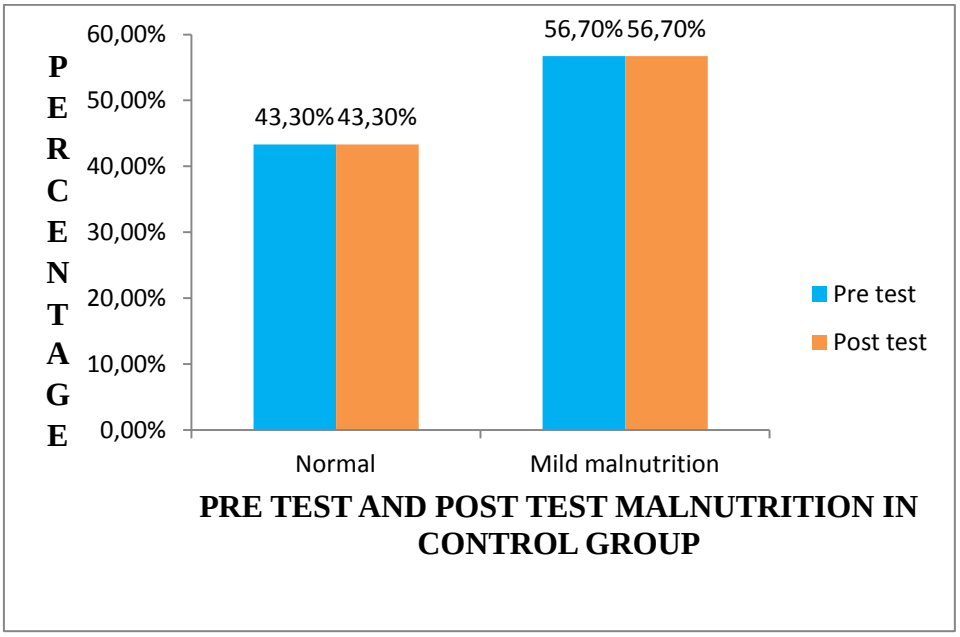

Fig.No.6: Percentage distributions of school children based on skin fold thickness in control group

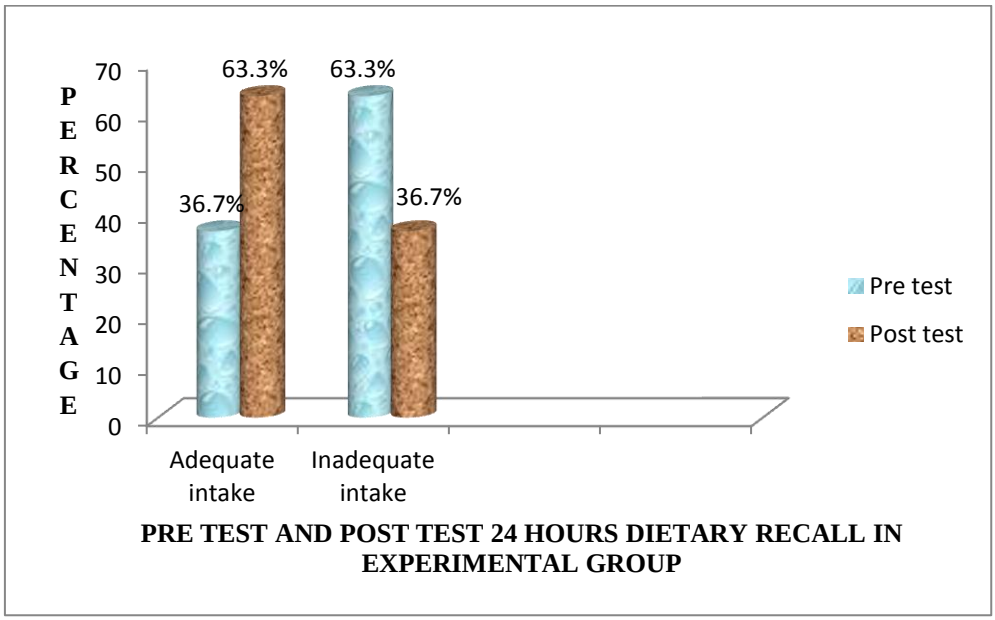

Fig.No:7 Percentage distributions of school children based on 24 hours dietary recall in experimental group.

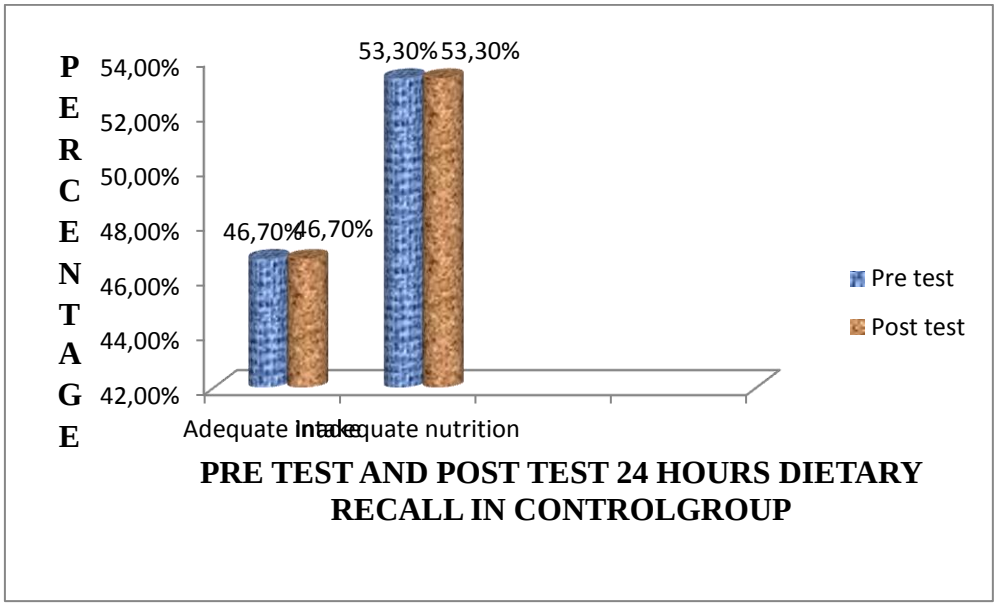

Fig.No.8: Percentage distributions of school children based on 24 hours dietary recall in control group.

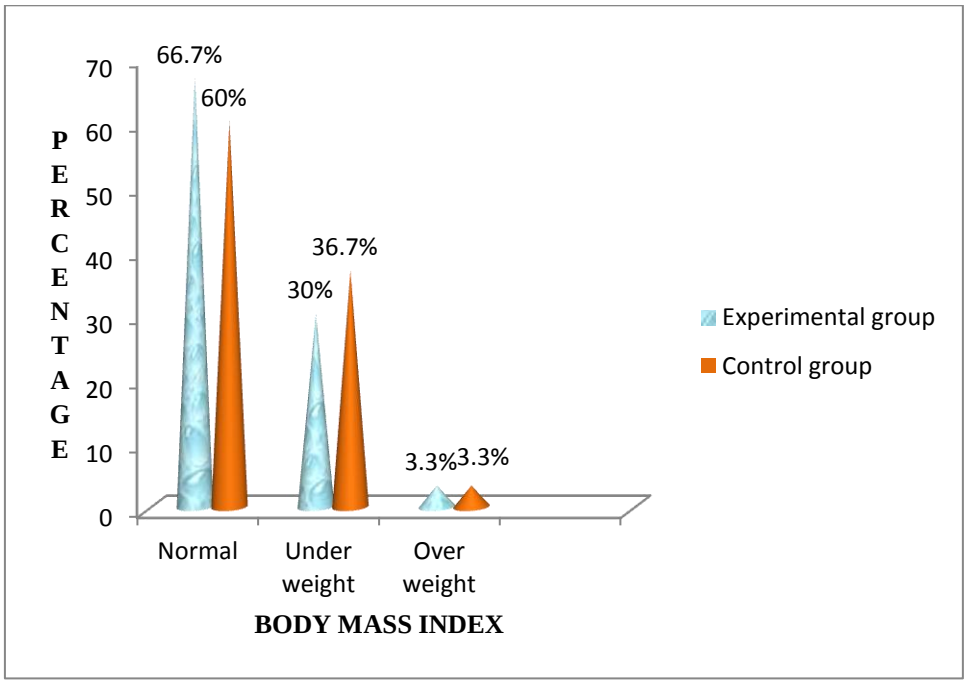

Fig.No:9.Percentage distributions of school children based on BMI in experimental & control group

DISCUSSION

This study was conducted in Z.P.H.School, located in T.P.Gudur, at Nellore District. In relation to socio demographic variables, among the 60 school children, with regard to the age group, 17 (56.6%) school children were between 13-14years, regard to religion 23 (76.7%) school children were Hindus, regarding to medium of instruction all 100% children studying in English medium, regard to eating pattern 29 (96.7%) children were non vegetarians, regard to family income 15 (50%) children family income was less than Rs5000/- per month, With regard to education of children's mothers 11 (36.7%) were studied up to secondary education.

A Descriptive cross sectional study was conducted to assess the nutritional status of primary school children and to find out various socio-demographic correlates of nutritional status. 816 students were selected from four primary schools at chiraigaon community development block of Varanasi. Out of 816 subjects 429 (52.6%) were

under weight, 75(9.2%) were stunted. This study concluded that Educational status of the parents has been strongly associated with nutritional status of children.[5]

A cross sectional study was done on prevalence of morbidity and morbidity pattern due to nutritional deficiencies in school children aged 5-11years in urban area of Meerut on 800 children, the results revealed that 542 children (67.8%) were found to be suffering from one or more morbid conditions, maximum children(93.4%) were having morbidity related nutritional deficiencies followed by diseases of oral cavity(92.3%), malnutrition (73.1%), skin diseases (59%).[6]

To summarize the findings from the study With regard to nutritional status in experimental group, in pre test majority 22 (73.3%) had normal nutritional status and 8 (26.7%) had grade-I Malnutrition and in the post test 29 (96.7%) 23 (76.6%) had normal nutritional status and 1(3.3%) 7(23.4%) had grade-I Malnutrition In control group, in pre test majority 23 (76.6%) had normal nutritional status and 7 (23.4%) had grade-I Malnutrition and in the post test 23 (76.6%) had normal nutritional status and 7 (23.4%) had grade-I Malnutrition.

CONCLUSIONS

The study reveals that there is a significant association between soya bean supplementation and nutritional status. There is a significant in improvement of nutritional status in experimental group as compared to the control group. This shows that administration of soya beans in improvement of nutritional status and it is very effective and cost effective in the management of malnutrition.

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