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Boosting Healthy Growth: The Impact Of Nutritive Laddus On Weight Gain In Girls Aged 7 To 9

Ms. Dipali Suresh Chavan[1*], Dr. Lingaraju AR[2], Ms. Suwarna Krishnakant Jangam[3], Pradnesh Ram Jangam[4], Bhagyashri Shashikant Lingayat[5], Ajit Deshpande[6]

[*1]Clinical Instructor, Department of Community Health Nursing, Shri Vithalrao Joshi Charities Trust's, Samarth Nursing College, Kasarwadi, affiliated to MUHS, Nashik. Maharashtra.

[2]Professor, Department of Community Health Nursing, MES College of Nursing, Maharashtra. Affiliated to MUHS, Nashik

[3]Lecturer, Department of Child Health Nursing, Ramraje College of Nursing, Dapoli. affiliated with MUHS, Nashik. Maharashtra.

[4]Assistant Professor, Department of Medical Surgical Nursing, MES College of Nursing, Maharashtra. Affiliated to MUHS, Nashik

[5]Assistant Professor, Department of Child Health Nursing, MES College of Nursing, Maharashtra. Affiliated to MUHS, Nashik.

[6]Associate Professor, Department of Child Health Nursing, MES College of Nursing, Maharashtra. Affiliated to MUHS, Nashik.

[*]**Corresponding author:**

Ms. Dipali Suresh Chavan

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ABSTRACT

Background: Children are vital to society because they represent its future—tomorrow's leaders, workers, and caregivers. Their growth and development shape the progress of communities, and investing in their education, health, and well-being ensures a stronger, more prosperous future. Healthy, educated children grow into responsible, innovative adults who contribute to economic growth, cultural richness, and social stability. Our objective was to assess the nutritional status in terms of weight of girls in a selected community Maharashtra. To assess the effectiveness of nutritive laddu on nutritional status in terms of weight of girls. To find out the association between pretest scores and socio demographic variables of female children. Materials and Methods: It is a pre experimental study. The sample size was 50, with purposive sampling, and the data were collected using body mass index from Girls Aged 7 to 9 from the selected community Mahrashtra. The data were analyzed using descriptive and inferential statistics using SPSS software. Results: The mean score before nutritive laddu administration 11.7 ± 0.92, after that in post score was 11.9 ± 0.93. There was a significant association was found between the pre-test scores of girls and socio-demographic factors such as age and type of diet. Conclusion: We can conclude regular intake of nutritive laddu as a supplement with regular food is an effective strategy for the improvement of weight gain in girls aged 7 to 9, the study found that intervention must be given for a minimum of three months for drastic improvement in nutritional status of girls.

Keywords: *Nutritive Laddu, Weight Gain, girls*

1. INTRODUCTION

Children are a nation's most valuable resource, and their physical, mental, and emotional growth is vital for the country's future, as they are its future citizens. Ensuring proper nutrition for children lays the groundwork for their future health, strength, and intelligence.[1]

School-going children are the main contributors to the manpower of the coming time and will help in improving the socio-economic condition of developing countries like India. So, the mental and physical well-being of these children is the most concern that can be achieved by adequate nutrition. The children who do not get an adequate quantity of required macro and micronutrients, including carbohydrates, proteins, fats, vitamins, and minerals (iron, calcium, potassium, magnesium, phosphorus, iodine, etc.) may not be in a position to perform to their full potential in their academics.[2]

The Global Nutrition Report 2018 states that malnutrition affects one out of every three individuals, one in 20 children experiences hunger, and poor dietary habits are responsible for one in five deaths worldwide.[3]

UNICEF identifies malnutrition as one of the most severe nutritional challenges impacting thousands of young children in India, with the issue being particularly widespread in rural areas. Data from NFHS-4 reveals that underweight children are more prevalent in rural regions (38.3%) compared to urban ones (29.1%). A key approach to addressing malnutrition on a global scale is fortifying plant-based foods. Including protein-rich foods in children's diets is essential to closing the gap between nutrition and healthy growth. Groundnut, a legume, is a vital crop worldwide, especially in developing nations, as it offers a valuable source of oil, protein, energy, and other nutrients. Similarly, Bengal gram is high in protein, Ragi (a type of millet) is packed with iron and calcium, and jaggery serves as a good source of iron and carbohydrates.[4,5]

With this short evidence researcher decided to prepare a nutritive laddu to improve the nutritional status in terms of weight among girls in a selected community Maharashtra.

2. MATERIALS AND METHODS

Research approach: Quantitaive research, Study design: Pre experimental study, Study duration: 1 month, Sampling technique: Purposive sampling technique, Sample size: 50, Study setting and method of collection of data: The study was done in the 5 Vadis of Khed Taluk, District Ratnagiri, Maharashtra, India. Study was done after obtaining necessary permission. First by using body mass index nutritional status in terms of weight of the girls was assessed, then explained the mothers about the nutritive laddu, its ingredients, its benefits and frequency to be taken. Followed by this each day subjects received 56gm of nutritive laddu for one month then after one month again nutritional status of the same girls was assessed by using body mass index. The collected data in before and after administration of nutritive laddu was analyzed by using descriptive and inferential statistics. Variables: Independent Variable: Nutritive laddu, Dependent Variable: Nutritional status in terms of weight among girls. Inclusion criteria: Girls aged 7-9 years. Girls who parents were willing give consent. Girls had BMI under 18.5. Girls those who were studying in primary school. Exclusion criteria: Girls who were not willing to participate in the study. Girls who were not available during study period. Girls who were sick at the time of data collection. Girls who were allergy to any foods present in nutritive laddu. Girls who skipped any one day of taking Nutritive laddu.

Nutritive value and ingredients of Laddu:

Sr.no	Quantity	Energy (kcal)	Protein (g)	Fat (g)	Calcium (g)	CHO. (g)	Iron (mg)
1	1 Laddu = 56 gm	261.684	6.06	7.7196	65.99	27.018	3.250

Sr. no	Foodstuff	Energy (kcal)	Protein (g)	Carbo (g)	Fat (g)	Calcium (g)	Iron (mg)
1	Soya bean (100g)	432	43.2	20.9	19.5	240	10.4
2	Chick peas (100g)	292	13.4	7.9	23	480	-
3	Lentils (200g)	686	50.2	118	1.4	138	15.16
4	Kidney beans (100g)	346	22.9	60.6	1.3	260	5.8
5	Wheat (200g)	692	23.6	142.4	3	42	10.6
6	Almond (25g)	163.75	5.2	2.625	14.725	57.5	1.2725
7	Walnut (25gm)	229	5.2	3.6	21.5	33.3	0.88
8	Jiggery (400g)	1,532	1.6	380	0.4	320	45.6
9	Dry coconut (100g)	662	6.8	18.4	62.3	400	7.8
10	Ghee (300g)	2,700	-	-	-	-	-
11	Gond Katira (100g)	70	9.51	35	86	-	-
12	Green cardamon powder (25g)	57.25	2.55	10.525	0.55	32.5	1.15

13	Dry Ginger Powder (25g)	82	0.0725	20.25	0.67	-	-
14	**Total 1700gm**	**7,944**	**184.2325**	**820.2**	**234.345**	**2,003.3**	**98.6625**

3. RESULTS

Table 1 shows socio demographic details of the subjects, that 17(34%) of them were 7 and 8yrs old, and 16(32%) of them were 9 yrs old. In type of family 27(54%) of them were belongs to nuclear family and 23(46%) were belongs to joint family. Similarly in case of type of diet 9(18%) of them were vegetarians and 41(82%) were having mixed diet.

Table 2: In pre test, the average weight of girls is 11.7 kg, with most weights clustering around a median of 11.5 kg and a mode of 12.2 kg. The standard deviation is a modest 0.92, indicating relatively consistent weights within the group. Overall, their weights range from 10.2 kg to 14.9 kg, showcasing a healthy and balanced distribution. In the post-test, the average score reached 11.9, with a median of 11.7 and a mode of 11.5. The standard deviation of 0.93 suggests scores were fairly consistent across participants. Overall, the scores ranged from 10.5 to 15.2.

Table 3: In both the pre-test and post-test, all 50 participants were classified under the underweight nutritional status category, showing no change in overall nutritional classification between the two assessments.

Table 4: The data in the table reveals that the comparison between pre-test and post-test weight gain of girls yielded a t-value of 8.85 at 49 degrees of freedom, indicating that the nutritive laddu had a significant positive impact on improving weight.

Table 5: A significant association was found between the pre-test scores of girls and socio-demographic factors such as age and type of diet.

Table 1: Socio demographic variables of girls

N=50

Variables	**Frequency**	**Percentage**
Age in years		
7	17	34
8	16	32
9	17	34
Type of family		
Nuclear	27	54
Joint	23	46
Type of diet		
Veg	9	18
Mixed	41	82

Table 2: Nutritional status of girls in terms of weight

N=50

Sl. No.	**Aspect**	**Mean**	**Median**	**SD**	**Mode**	**Range**
1.	Pre test	11.7	11.5	0.92	12.2	10.2-14.9
2.	Post test	11.9	11.7	0.93	11.5	10.5-15.2

Table 3: Distribution of subjects according to level of nutritional status of girls

N=50

Nutritional status	Pre test		Post test	
	Frequency	Percentage	Frequency	Percentage
Under weight (Below 18.5 kg/m^2)	50	100	50	100
Normal Weight (18.5-24.9 kg/m^2)	0	0	0	0
Overweight (25-29.9 kg/m^2)	0	0	0	0
Obese (above 30 kg/m^2)	0	0	0	0

Table 4: Impact of nutritive laddu on weight gain among female children

N=50

Sl. No.	Aspect	Mean	SD	t value	df	Inference
1.	Pretest	11.7	0.92	8.85	49	S*
2.	Post test	11.9	0.93			

Table 5: Association between pretest scores and socio demographic variables of female children

N=50

Sl. No.	Demographic variables	Weight median score(11.5)		χ^2 calculated value	df	Inference
1.	**Age in yrs**	≤median	≥median			
	7	14	13	9.52	2	S*
	8	6	11			
	9	6	10			
2.	**Type of family**					
	Nuclear	15	12	0.29	1	NS
	Joint	11	12			
3.	**Type of diet**					
	Veg	2	7	3.89	1	S*
	Mixed	24	17		1	

4. DISCUSSION

In the present study, in both the pre-test and post-test, all 50 participants were classified under the underweight nutritional status category, showing no change in overall nutritional classification between the two assessments. Similar study found that is cross Sectional study was done on relation of dietary habits and weaning with nutritional status of children, in this study among 9 respondents who reported providing a good diet, only 1 child (11.1%) had good nutritional status, while 8 children (88.9%) had poor nutritional status. In contrast, among 23 respondents who reported providing a poor diet, 15 children (65.2%) had good nutritional status, and 8 children (34.8%) had poor nutritional status.

In the present study, comparison between pre-test and post-test weight gain of girls yielded a t-value of 8.85 at 49 degrees of freedom, indicating that the nutritive laddu had a significant positive impact on improving weight. Similar study was conducted to evaluate the impact of health mix supplementation on the health status of selected adolescent girls. The effectiveness of the supplementation was assessed using anthropometric measurements taken at both the beginning and end

of the supplementation period. The results showed a statistically significant increase in the mean weight of the experimental group at the 1% level after supplementation. Additionally, the Body Mass Index (BMI) of the adolescent girls in the experimental group improved notably following the 90-day supplementation period. These findings indicate that providing a health mix to undernourished adolescent girls led to a marked enhancement in their overall health status.

In the present study significant association was found between the pre-test scores of girls and socio-demographic factors such as age and type of diet. Similar to this A cross-sectional study was carried out to assess the nutritional status of school-aged children living in slum areas and to identify factors linked to malnutrition. The findings revealed that stunting and underweight were most prevalent among children aged 11 to 13 years, while wasting was more common in the 5 to 7-year age group. The study also found that the risk of malnutrition was significantly higher among children from joint families, those whose mothers had education only up to the 6th grade, and those with working mothers. In conclusion, the majority of school-aged children in the study were found to have poor nutritional status.

5. CONCLUSION

We can conclude from the above study that regular intake of nutritive laddu as a supplement with regular food is an effective strategy for the improvement of weight gain in girls aged 7 to 9, the study found that intervention must be given for a minimum of three months for drastic improvement in nutritional status of girls. In addition to this a community approach awareness regarding preparation of nutritive laddu is required for the mothers having girls aged 7 to 9.

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Conflicts of interest:

There are no conflicts of interest. Institute ethical committee clearance obtained.

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