Nutritional Assessments of Boys Belonging to Different Socio-Economic Groups

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Abstract

The purpose of the study was to carryout nutritional assessment of boys belonging to different socio-economic groups. The subjects for the study were 500 boys studying in different schools of Delhi. Using appropriate testing procedures, the Pelidisi score as well as Energy Requirement of the subjects were computed. The data was analyzed using descriptive as well as Analysis of Variance (F-test). Scheffe's Test was applied in case the F-ratio was significant. In respect of Pelidisi, the study concluded that the high and middle socio-economic groups are significantly better than the low socio-economic group and the difference between high and middle socio-economic groups is statistically not significant. With regard to Energy Requirement the findings reveal that the high socio-economic group is significantly better as compared to middle and low socio-economic groups whereas middle and low socio-economic groups do not significantly differ from each other in this variable.

KEYWORDS: Nutritional Assessments, Socio-economic Groups

INTRODUCTION

The science of nutrition studies the relationship of foods to optimal health and performance. The various scientific evidences have long been linked to good nutrition to overall health and well-being. Proper nutrition signifies that diet is supplying all the essential nutrients to carry our normal tissue growth, repair and maintenance. The diet will provide sufficient elements to obtain the energy necessary for work, physical activity and relaxation.

The essential nutrients required by the human body are carbohydrates, fats, proteins, vitamins, minerals, fibre and water. The carbohydrates, fats and proteins are fuel nutrients because they are the only substances used for supplying the energy for work and normal body functions. Vitamins, mineral, fibers (a type of complex carbohydrate) and water have no calories but are essential for normal body functions.

Benefits of good nutrition:

1. May help you live longer
2. Keeps skin, teeth, and eyes healthy
3. Supports development of muscles
4. Boosts immunity of the body
5. Strengthens bones

6. Lowers risk of heart disease, type 2 diabetes, and some cancers
7. Supports healthy pregnancies and breastfeeding
8. Helps the digestive system function
9. Helps achieve and maintain a healthy weight

Stalsberg and Pedersen (2018) conducted a study in order to find out differences in physical activity across socio-economic groups associated with choice of physical activity variables. The study was based on the hypothesis that individuals of higher socioeconomic status (SES) are more physically active than their lower SES counterparts. Fifty-six studies were included and were subsequently split into four physical activity (PA) domains that are transport PA (TPA), occupational PA (OPA), housing PA (HPA) and leisure time PA (LTPA). The positive relationship was found only in the case of LTPA, whereas relationship was non-existent or even opposite for all other domains. It was finally concluded that the obtained positive relationship between SES and PA is mainly a relationship between LTPA and SES. It is further suggested in the study that the PA domain should always be considered when studying said relationships.

Kankana D (2016) conducted a research study in order to ascertain the influence of Socio-economic Status on the nutritional status of rural adolescent girls. The subjects of the study were 1009 females whose age ranged from 10-19 years. They all belonged to Salboni Block which is one of block of Paschim Medinipur, West Bengal. The subjects' socio-economic data were collected through a self structured questionnaire and anthropometric data were collected with the help of different instruments. The study revealed that age wise there was an increase in weight and height of adolescent girls and also BMI score increased from 13 years to 17 years. The subjects of the study mostly belonged to agriculture based families. Among 112 girls, 80 subjects' parents were service holders whereas 72 girls come from daily wage labours. The body mass index, which ranged from 35.61 ± 3.41 to 42.79 ± 5.02 cm and 16.76 ± 2.31 to 18.18 ± 2.00 cm respectively. The results of the study further reveal that skilled labour parents' girl's mean weight was 44.54(5.08) and mean height was 151.02(4.82) whereas mean height of unskilled labours parents' girls was 150.82(5.04) and mean weight was 44.42(5.50).

Selection of Subjects

The subjects for the study were 500 boys whose age ranged between 14 to 16 years. The selection of subjects was done at random. They were studying in the following schools of Delhi.

1. Kamal Model Public School, Mohan Garden, Delhi
2. Angel Public School Delhi, Vasundhara Enclave, Delhi
3. Rajkiya Pratibha Vikas Vidhyalaya, GKSV Nangloi, Delhi
4. Government Boys Seniors Secondary School, Mangolpuri Delhi
5. Government Boys Seniors Secondary School, Najafghar Delhi

Due permission was sought from the school authorities before collection of necessary data pertaining selected variables. The Socio-economic Questionnaire developed and standardized by Kuppu Swamy was administered to the subjects in their respective schools. Based on the norms the subjects were divided into three socio-

economic status groups' i.e. high socio-economic status, middle socio-economic status and low socio-economic status. In order to calculate caloric requirement by the subjects, following equation suggested by Rajulu (2006) was used:

Normal caloric requirement= 24 hours of the day × weight in kg × 1.3

Selection of Variables

The nutritional variables selected in the study were as follows:

S. No.	Variable
1	Pelidisi
2	Energy Requirement

1. **Pelidisi Index:** It was calculated with the help of the following formula:

$$\text{Pelidisi} = \frac{3\sqrt{10 \times (\text{weight in gm.})}}{(\text{Sitting height in cm})}$$

2. **Calories required:** Number of calories required by each subject were calculated with the help of the formula suggested by Rajulu (2006).

Findings

For testing the significance of difference in the selected variables among subjects belonging to three socio-economic groups using one-way analysis of variance was applied. The level of significance chosen was 0.05 level of confidence, which was considered adequate for the purpose of the study.

Table 4
Descriptive statistics of Pelidisi in respect of boys belonging to selected Socio-economic Groups

		N	Mean	Std. Deviation	Std. Error
Pelidisi	High Socio Economic	119	100.8111	6.69931	0.61412
	Middle Socio Economic	178	99.4247	7.70302	0.57737
	Low Socio Economic	203	95.3930	6.75616	0.47419
	Total	500	98.1178	7.44968	0.33316

The analysis of data in Table 4 presents the descriptive analysis of Pelidisi of boys belonging to high socio-economic, middle socio-economic and low socio-economic groups. The mean and standard deviation values of Pelidisi for high Socio-economic, middle socio-economic and low socio- economic groups are M = 100.8111, SD = 6.69931; M = 99.4247, SD = 7.70302; M = 95.3930, SD = 6.75616 respectively.

The means and standard deviations in respect of boys with regard to Pelidisi are presented in Fig. 1.

Fig.1 Means and SD of Boys for Pelidisi

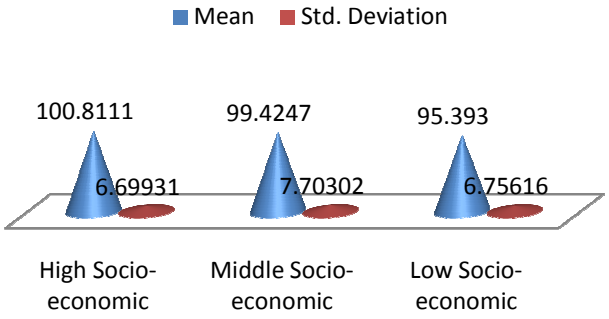

Table 2

ANOVA of Pelidisi of selected groups for Boys

		Sum of Squares	df	Mean Square	F	Sig.
Peledisi	Between Groups	.266	2	.133	26.408*	.000
	Within Groups	2.504	497	.005		
	Total	2.770	499			

***Significant at 0.05 level** **F (2 and 497) =3.01**

From the above table clearly it is clearly seen that the F-ratio of 26.408 is statistically significant at 0.05 level of confidence. The F-ratio obtained is more than the table value of 3.01 with 2 and 497 degrees of freedom. In order to find out variance in different socio-economic groups with respect to Pelidisi, Scheffe's test was applied and data pertaining to this is presented in the following table.

Table 3
Post hoc Comparison of Pelidisi for Boys using the Scheffe Test

Dependent Variable	(I) Socio Economic Status	(J) Socio Economic Status	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Peledisi	High Socio Economic	Middle Socio Economic	1.38643	.84014	.257	-.6762	3.4491
		Low Socio Economic	5.41814*	.81915	.000	3.4070	7.4293
	Middle Socio Economic	High Socio Economic	-1.38643	.84014	.257	-3.4491	.6762
		Low Socio Economic	4.03171*	.72855	.000	2.2430	5.8204
	Low Socio Economic	High Socio Economic	-5.41814*	.81915	.000	-7.4293	-3.4070
		Middle Socio Economic	-4.03171*	.72855	.000	-5.8204	-2.2430

Analysis of data in table 2 shows that in respect to Pelidisi, the score of boys belonging to high as well as middle socio-economic groups are significantly higher as compared to those belonging to low socio-economic group. No significant difference has been seen in this variable between high and middle socio-economic groups.

Table 4
Descriptive statistics of Energy Requirement for Boys Belonging to Selected Socio-economic Groups

		N	Mean	Std. Deviation	Std. Error
Energy Requirement	High Socio-economic	119	1751.6571	283.26537	25.96689
	Middle Socio-economic	178	1726.9025	333.30627	24.98236
	Low Socio-economic	203	1605.2631	330.29255	23.18199
	Total	500	1683.4085	326.82110	14.61588

The analysis of data in table 4 shows the descriptive analysis of Energy Requirement of boys belonging to high socio-economic, middle socio-economic and low socio-economic groups. The mean and standard deviation values of Energy Requirement for high socio-economic, middle socio-economic and low Socio- economic groups are M = 1751.6571, SD = 283.26537; M = 1726.9025, SD = 333.30627; M = 1605.2631, SD = 330.29255 respectively.

The means and standard deviations in respect of boys with regard to Energy Requirement are presented in Fig. 4.21.

Fig.4.21 Means and SD of Energy Requirement for Boys

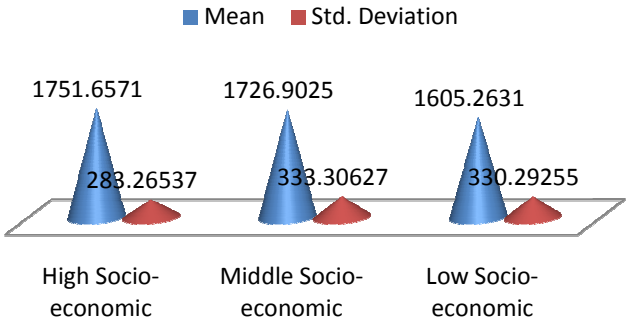

Table 5
ANOVA of Energy Requirement in respect for Boys Belonging to Different Socio-economic Groups

		Sum of Squares	df	Mean Square	F	Sig.
Energy Requirement	Between Groups	2130676.821	2	1065338.410	10.348*	.000
	Within Groups	51168526.823	497	102954.782		
	Total	53299203.644	499			

***Significant at 0.05 level** **F (2 and 497) =3.01**

The analysis of data in table 5 clearly shows that the F-ratio of 10.348 is statistically significant at 0.05 level of confidence. The F-ratio obtained is more than the table value of 3.01 with 2 and 497 degrees of freedom. In order to find out variance in different socio-economic groups with respect to Energy Requirement, Scheffe's test was applied and data pertaining to this is presented in the following table.

Table 6
Post-hoc Comparison of Energy Requirement for Boys using the Scheffe's Test

Dependent Variable	(I) Socio-economic Status	(J) Socio-economic Status	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Energy Requirement	High Socio-economic	Middle Socio-economic	24.75467	37.9942	.809	-68.526	118.036
		Low Socio-economic	146.3940*	37.0450	.000	55.4433	237.344
	Middle Socio-economic	High Socio-economic	-24.75467	37.9942	.809	-118.03	68.5267
		Low Socio-economic	121.6394*	32.9479	.001	40.7476	202.531
	Low Socio-economic	High Socio-economic	-146.3940*	37.0450	.000	-237.34	-55.443
		Middle Socio-economic	-121.6394*	32.9479	.001	-202.53	-40.747

Analysis of data in table 6 shows that the Energy Requirement of boys belonging to high socio-economic group is significantly higher as compared to boys belonging to low socio-economic group. The difference is significant at 0.05 level of confidence. No significant difference has been seen in this variable between high and middle as well as middle and low socio-economic groups.

DISCUSSION OF FINDINGS

Pelidisi is a measure of malnutrition and varies directly as the cube root of person's weight in grams and inversely as person's sitting height in centimeters. In respect of Pelidisi score the subjects can be classified as follows:
Distinctly low state of nutrition- up to 92.0
State of mild under nutrition-92 to 95
Normal State of nutrition-95 to 100
Mildly overweight-100.1 to 105
Distinctly overweight and Obese 105.1 and above

The subjects belonging to the high socio-economic group have a Pelidisi score of more than 100 where as the other two socio-economic groups have a Pelidisi score of less

than 100 and in view of this the subjects belonging to high socio-economic group have a significantly higher score than the other two groups which gives an indication that they are being overfed. This can further be justified by mentioning that the subjects belonging to high socio-economic group have the means as well as their financial condition is better and as a result they probably have been resorting to overfeeding both in terms of calories as well as variety of foods.

With regard to Energy Intake the findings reveal that the high socio-economic group is significantly better as compared to middle and low socio-economic groups whereas middle and low socio-economic groups do not significantly differ from each other in this variable. In as much as those belonging to higher socio-economic groups have higher body weights as well as they belong to affluent families, therefore their Energy intake is expected to be higher as compared to those belonging to lower socio-economic groups.

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