

EFFECT OF VEGETARIAN AND NON-VEGETARIAN DIET ON BODY MASS INDEX OF VARIOUS SOCIO-ECONOMIC CATEGORY SPORTSMAN

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Abstract:

Background: Body Mass Index is perhaps the most common anthropometric measure used to predict relative overweight. However, the value of the measurement in children and adolescents is regularly questioned. The natural course of growth and maturation in children, plus the individual variability during the same period mean that indices of weight-for-height, including the Body Mass Index (W/H²) are not very good indices of adiposity. In children younger than 15 years of age, BMI is not totally independent of height and thus should be used with caution. The purpose of the present study was to compare the effect of vegetarian and non-vegetarian diet on body mass index of various socio-economic categories Sportsman.

Methods: 229 Sportsman of Madhya Pradesh were serving as subjects for this study. The ages of the subjects ranged from 18-24 years. They were divided into 3 groups on the basis of Socio-Economics status (i.e., high, medium and low) and two groups on the basis of food habits i.e. vegetarian & non-vegetarian. The study was delimited to the subjects of sportsman who has represented State level in Hockey, Cricket, Football and Basketball. The variable for the study were body mass index. Descriptive statistics and Two Way Analysis of Variance was used to find out the interpretation between group difference on the various Socio-Economic Categories and food habits (Vegetarians & Non-Vegetarians) for body mass index.

Result:- The result of the present research study showed a significant difference in body mass index between Socio-economic categories and High Socio-economic category showed greater body mass index than Medium and Low Socio-economic categories. The result also indicates that there is No significant difference was found in body mass index between Vegetarian & Non-Vegetarian sportsman and interaction group i.e. (Socio-economic categories* Vegetarian / Non-Vegetarian sportsman).

Conclusion: The study concludes that high Socio-economic categories shows higher body mass index.

KEYWORDS:

socioeconomic status, vegetarian & non-vegetarian, body mass index.

INTRODUCTION

Body Mass Index is perhaps the most common anthropometric measure used to predict relative overweight. However, the value of the measurement in children and adolescents is regularly questioned. The natural course of growth and maturation in children, plus the individual variability during the same period mean that indices of weight-for-height, including the Body Mass Index (W/H²) are not very good indices of adiposity. In children younger than 15 years of age, BMI is not totally independent of height and thus should be used with caution.

The body mass index is also known as Quetelet index. The body mass index (BMI), or Quetelet

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index, is a controversial statistical measurement which compares a person's weight and height. Due to its easy of measurement and calculation, it is the most widely used diagnostic tool to identify weight problems within a population, usually whether individuals are [underweight](#), [overweight](#) or [obese](#). It was invented between 1830 and 1850 by the [Belgian polymath Adolphe Quetelet](#) during the course of developing "social physics". Body mass index is defined as the individual's body weight divided by the square of his or her height. The formulae universally used in medicine produce a [unit of measure](#) of kg/m². Body Mass Index can also be determined using a Body Mass Index chart, which displays Body Mass Index as a function of weight (horizontal axis) and height (vertical axis) using contour lines for different values of Body Mass Index or colours for different Body Mass Index categories.

MATERIALS AND METHODS:

Participants:

The subjects for this study were 229 Sportsmen of Madhya Pradesh who had participated in State Level Competition. The ages of the subjects were between 18-24 years.

Procedures

The participants were fully informed about the purpose of the study and their consent was obtained before measurements were taken. Subjects' height and weight were measured. The body fat analyser (Tanita Innerscan Monitor Segmental Analysis BC 601) was used for data collection which measures the body mass index. For this study the socio-economic categories are classified on the basis of income tax slab which was used to collect information of the subjects. This was used to classify the subjects into the 3 different Socio-Economic categories.

Analysis:

Descriptive statistics of mean and standard deviation were used to summarize the data collected. Two Way Analysis of Variance was used to find out the interpretation between group difference on the various Socio-Economic Categories and food habits (Vegetarians & Non-Vegetarians) for body mass index.

Table – 1. Descriptive Statistics of Different Socio-Economic Status at Vegetarian In Relation to Body Mass Index

VARIABLE	N	Minimum Limit	Maximum Limit	Range	Mean Score	SD
Socio-Economic Category – I (low)	47	16.1	25.2	9.10	20.48	2.38
Socio-Economic Category – II (medium)	44	16.9	27.4	10.50	20.84	2.72
Socio-Economic Category – III (high)	27	17	27.89	10.89	22.62	2.95

Table – 2. Descriptive Statistics of Different Socio-Economic Status at Non-Vegetarian In Relation to Body Mass Index

VARIABLE	N	Minimum Limit	Maximum Limit	Range	Mean Score	SD
Socio-Economic Category – I (low)	44	17.9	26.6	8.70	21.38	1.89
Socio-Economic Category – II (medium)	40	16.1	26.6	10.50	21.85	2.69
Socio-Economic Category – III (high)	27	18.3	29.1	10.80	22.07	3.06

Table – 3. Descriptive Statistics of Socio-Economic Status at Different Food Types in Relation To Body Mass Index

VARIABLE	N	Minimum Limit	Maximum Limit	Range	Mean Score	SD
Vegetarian	118	16.1	27.89	11.79	21.11	2.75
Non-Vegetarian	111	16.1	29.1	13	21.72	2.50

To determine, whether some significant difference was existed between socio-economic category and Vegetarian & Non-Vegetarian on Body mass index, Two Way Analysis of Variance was administered and analysis of data is presented in the table 4.

Table – 4. TWO WAY ANALYSIS OF VARIANCE OF BODY MASS INDEX

Source of Variance	Degree of Freedom	Sum of Square	Mean of Square	F - Ratio	Tab - F
Socio-Economic category	2	69.9	34.95	5.25*	3.04
Vegetarian & Non-Vegetarian	1	21.2	21.2	3.19	3.89
Interaction (Socio-Economic category * Vegetarian / Non-Vegetarian)	2	22.1	11.05	1.66	3.04
Error	223	1483.42	6.65		

*Significant at 0.05 level

Table – 4 reveals that, the calculated 'F' – Value of Vegetarian & Non-Vegetarian is 3.19 and calculated 'F' – value of interaction wise is 1.66 is less than tabulated value of 'F' (3.89 & 3.04) and are found insignificant. The calculated 'F' - value of Socio- Economic category is 5.25 which is greater than tabulated value of 'F' (3.04) and shows that there is significant difference between groups. Further the Tukey HSD test is applied to find out critical difference in Row wise which is present in table – 5.

TABLE – 5 SOCIO-ECONOMIC CATEGORIES CRITICAL DIFFERENCE OF BODY MASS INDEX MEAN

Group Mean			Mean Difference	Critical Difference
Category I	Category II	Category III		
20.91	21.32		0.41	1.01
20.91		22.34	1.43*	
	21.32	22.34	1.02*	

*Significant at 0.05 level

Table –5 indicates that High Socio-economic category was found significantly in ferric than Medium and Low Socio-economic categories. Whereas no significant difference was found between other groups i.e. Medium Socio-economic category and Low Socio-economic category.

The graphical representation of mean values of Body Mass Index of Vegetarian & Non-Vegetarian and socio-economic category has shown in fig.1 and 2.

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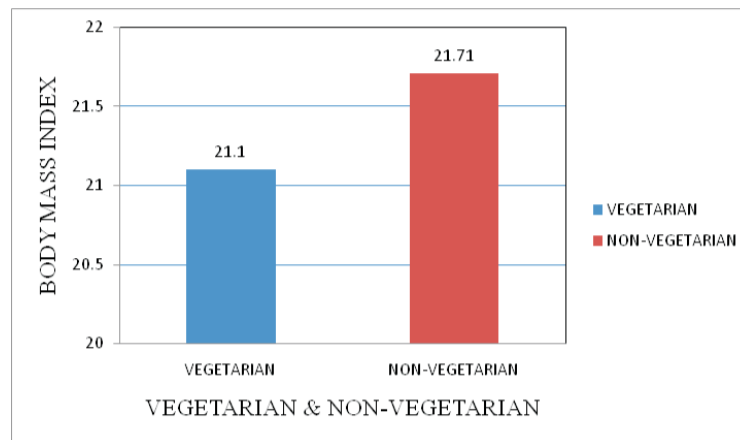


Fig. 1: Mean Scores of Body Mass Index of Vegetarian & Non-Vegetarian

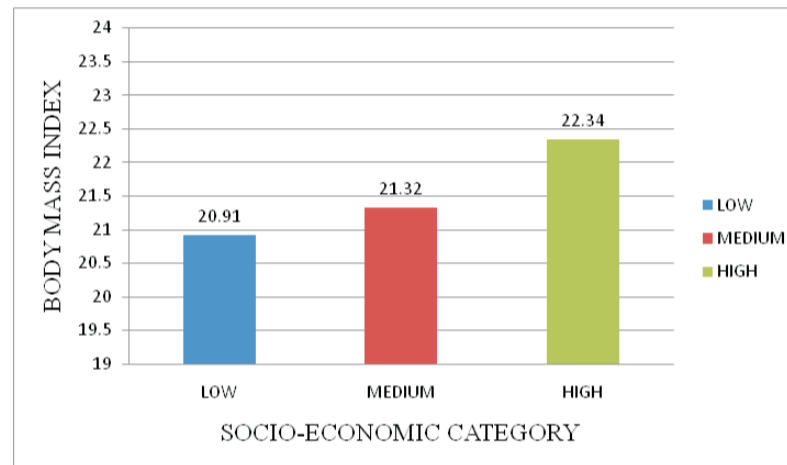


Fig. 2: Mean Scores of Body Mass Index of Various Socio-Economic Categories

The graphical representation of interaction wise mean scores of body mass index has shown in fig.3 and 4.

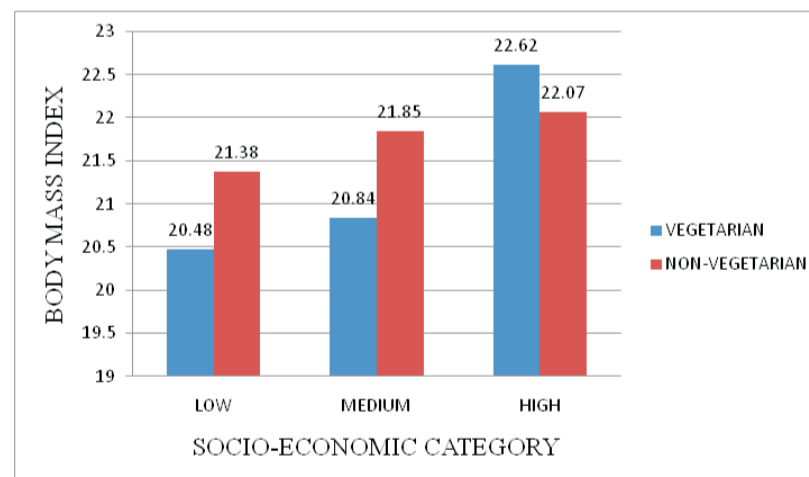


Fig.3: Mean Scores of Body Mass Index of Vegetarian & Non Vegetarian Sportsmen of Various Socio-Economic Categories

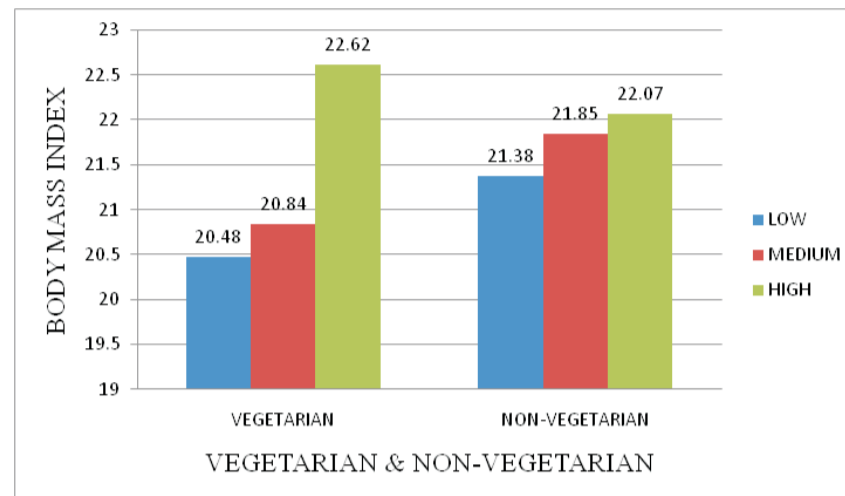


Fig.4: Mean Scores of Body Mass Index of Vegetarian & Non Vegetarian Sportsmen of Various Socio-Economic Categories

DISCUSSION:

The present finding of the study indicate that significant difference was found among socioeconomic category of different sportsman in relation to body mass index and socioeconomic category III are having greater body mass index in comparison to socio-economic category II & Category I this might be due to good habits of nutrition (vegetarian and non-vegetarian food), good physique and found greater fat percentage in category III.

The finding of study also indicate that insignificant difference was found between vegetarian and non-vegetarian sportsman in relation to body mass index and non-vegetarian are having greater body mass index in comparison to vegetarian, this difference could be attributed to different food habits. Spencer (2003) conducted a study to compare body mass index (BMI) in four diet groups (meat-eaters, fish-eaters, vegetarians and vegans) in the Oxford Cohort of the European Prospective Investigation into Cancer and Nutrition (Epic-Oxford) and to investigate lifestyle and dietary factors associated with any observed differences.

Interaction (food types* socioeconomic category) was found insignificant differences in relation to body mass index. This might be due to all the subjects were similar physique and not greater differences in their body fat percentage with respect to socioeconomic status.

REFERENCES

1. Heyward, V. H. and Wagner, D. R., "Applied Body Composition Assessment", (Human Kinetics: Champaign, IL, 2004), 2nd edition, p. 3.
2. http://en.wikipedia.org/wiki/Bioelectrical_impedance_analysis.
3. Body mass index (http://www.lumrix.net/health/body_mass_index.html).
4. Spencer, EA et.al, "Diet and Body Mass Index in 38000 Epic-Oxford Meat-Eaters, Fish-Eaters, Vegetarians and Vegans", International Journal of Obesity, 2003; Vol. 27, pp 728-734.