ORIGINAL ARTICLE

COMPARISION OF BODY FAT PERCENTAGE OF VARIOUS SOCIO-ECONOMIC CATEGORY OF VEGETARIAN & NON-VEGETARIAN SPORTSMAN

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Abstract:

Background: Maintaining a healthy body weight and level of body fatness is key to a healthier and longer life. Overweight and underweight individuals with body fat levels falling at or near the extreme of the body continuum are likely to have serious health problems that reduce life expectancy and threaten the quality of life. The purpose of the present study was to compare the body fat percentage of various socio-economic categories of vegetarian and non-vegetarian 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 fat percentage. 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 fat percentage.

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

Conclusion: The study concludes that high Socio-economic categories and Non-vegetarian sportsman shows high body fat percentage.

KEYWORDS:

socioeconomic status, vegetarian & non-vegetarian, body fat percentage.

INTRODUCTION

Maintaining a healthy body weight and level of body fatness is key to a healthier and longer life. Overweight and underweight individuals with body fat levels falling at or near the extreme of the body continuum are likely to have serious health problems that reduce life expectancy and threaten the quality of life. Individuals who are overweight or obese have a higher risk of developing cardiovascular, pulmonary and metabolic disease as well as osteoarthritis and certain type of cancer. Under weight individuals with

low body fat level tend to be malnourished and have a relatively high risk of fluid-electrolyte imbalances, renal and reproductive disorders, osteoporosis and muscle wasting.

In physical fitness, body composition is used to describe the percentages of fat, bone and muscle in human bodies. Because muscular tissue takes up less space in our body than fat tissue, our body composition, as well as our weight, determines leanness. Two people at the same height and same body weight may look completely different from each other because they have a different body composition.

Another method is Bioelectrical Impedance Analysis (BIA), which uses the resistance of electrical flow through the body to estimate body fat. Bioelectrical impedance analysis (BIA) is a commonly used method for estimating body composition. Since the advent of the first commercially available devices in the mid-1980s the method has become popular owing to its ease of use, portability of the equipment and it's relatively low cost compared to some of the other methods of body composition analysis. It is familiar in the consumer market as a simple instrument for estimating body fat. Bioelectrical Impedance Analysis actually determines the electrical impedance, or opposition to the flow of an electric current through body tissues which can then be used to calculate an estimate of total body water (TBW). TBW can be used to estimate fat-free body mass and, by difference with body weight, body fat.

Bioelectrical Impedance Analysis, or BIA, is considered one of the most exact and accessible methods of screening body fat. In conventional BIA, a person is weighed, height, age, gender and weight or other physical characteristics such as body type, physical activity level, ethnicity, etc. are entered in a computer. While the person is lying down, electrodes are attached to various parts of the body and a small electric signal is circulated. Simply explained, BIA measures the impedance or resistance to the signal as it travels through the water that is found in muscle and fat. The more muscle a person has, the more water their body can hold. The greater the amount of water in a person's body, the easier it is for the current to pass through it. The more fat, the more resistance to the current. Bioelectrical Impedance Analysis is safe and it does not hurt. In fact, the signal used in body fat monitors cannot be felt at all either by an adult or child.

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 and their ages recorded. The body fat analyser (Tanita Innerscan Monitor Segmental Analysis BC 601) was used for data collection which measures the body fat percentage. 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 fat percentage.

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

VARIABLE	N	Minimum Limit	Maximum Limit	Range	Mean Score	SD
Socio-Economic Category – I (low)	47	5	16.5	11.50	8.56	3.09
Socio-Economic Category – II (medium)	44	5	17.8	12.80	8.56	3.13
Socio-Economic Category – III (high)	27	5	18.1	13.10	11.12	4.31

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

VARIABLE	N	Minimum Limit	Maximum Limit	Range	Mean Score	SD
Socio-Economic Category – I (low)	44	5.1	17.3	12.20	9.78	3.05
Socio-Economic Category – II (medium)	40	5	17.6	12.60	10.43	3.95
Socio-Economic Category – III (high)	27	4.9	20.3	15.40	10.81	4.65

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

VARIABLE	N	Minimum Limit	Maximum Limit	Range	Mean Score	SD
Vegetarian	118	5	18.1	13.10	9.15	3.56
Non-Vegetarian	111	4.9	20.3	15.40	10.27	3.80

To determine, whether some significant difference was existed between socio-economic category and Vegetarian & Non-Vegetarian on Body Fat Percentage, 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 Fat Percentage

Source of Variance	Degree of Freedom	Sum of Square	Mean of Square	F - Ratio	Tab – F
Socio-Economic category	2	119.33	59.66	4.56*	3.04
Vegetarian & Non-Vegetarian	1	71.90	71.90	5.49*	3.89
Interaction (Socio-Economic category * Vegetarian / Non-Vegetarian)	2	37.01	18.50	1.41	3.04
Error	223	2918.44	13.09		

*Significant at 0.05 level

Above table clearly indicate that the calculated 'F' - value of data in Socio- Economic category is 4.56 which is greater than tabulated value of 'F' (3.04) and shows that there is significant difference between groups. The calculated 'F' – Value of Vegetarian & Non-Vegetarian is 5.49 which is greater than tabulated value of 'F' (3.89) and shows that there is significant difference between groups. When data was analyzed for interaction the calculated 'F' – value 1.41 is less than tabulated value of 'F' (3.04) and found insignificant.

Further the Tukey HSD test is applied to find out critical difference in Row wise and Column wise data which is present in table – 5 & 6.

TABLE – 5. Vegetarian & Non-Vegetarian Critical Difference of Body Fat Percentage Mean

Group Mean			
Vegetarian	**Non-Vegetarian**	**Mean Difference**	**Critical Difference**
9.15	10.27	- 1.21*	0.94

*Significant at 0.05 level

Table – 5 reveals that the mean difference between Vegetarian and Non-Vegetarian Sportsman is higher than critical difference. It clears shows that mean difference is statistically significant at 0.05 level. So it shows significant difference between the Vegetarian and Non-Vegetarian sportsman in body fat percentage. It shows that Non-Vegetarian Sportsman body fat percentage is higher than Vegetarian sportsman.

TABLE – 6. Socio-Economic Categories Critical Difference of Body Fat Percentage Mean

Group Mean			Mean Difference	Critical Difference
Category I (low)	**Category II (medium)**	**Category III (high)**		
9.15	**9.45**		**0.30**	
9.15		**10.97**	**1.82***	**1.42**
	9.45	**10.97**	**1.52***	

*Significant at 0.05 level

Table – 6 indicates that high socio-economic category was found significantly higher in body fat percentage than medium & low socio-economic categories. Whereas no significant difference was found between medium & low socio-economic categories.

The graphical representation of mean scores of Body Fat Percentage of vegetarian and non-vegetarian and socio-economic category has shown in fig.1 and 2.
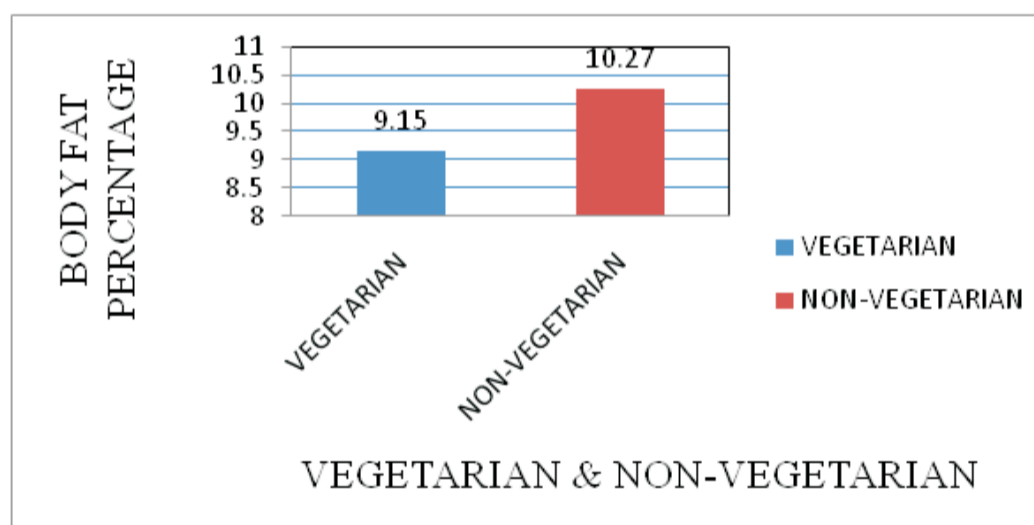

Fig.1: Mean Scores of Body Fat Percentage of Vegetarian & Non-Vegetarian
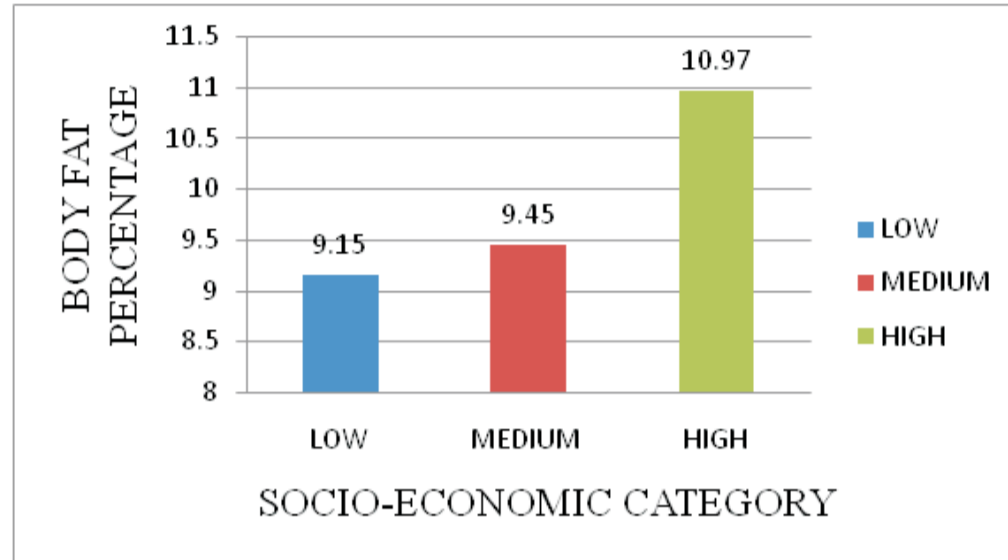
Fig.2: Mean Scores of Body Fat Percentage of Various Socio-Economic Category

The graphical representation of interaction wise mean scores of Body Fat Percentage has shown in fig.3 and 4.
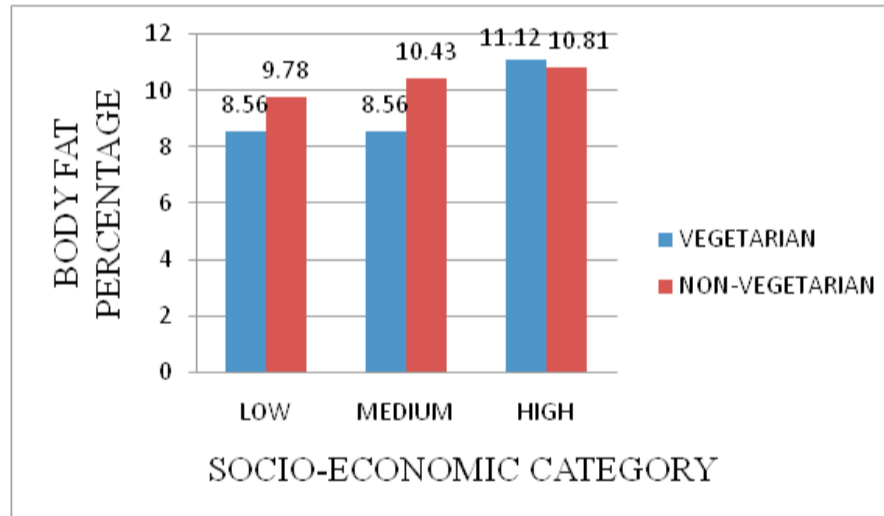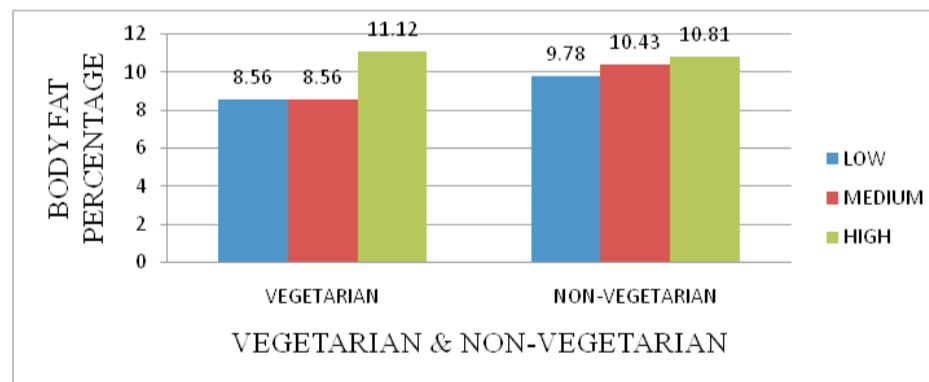

Fig.3: Mean Scores of Body Fat Percentage of Vegetarian & Non Vegetarian Sportsmen of Various Socio-Economic Category

Fig.4: Mean Scores of Body Fat Percentage of Vegetarian & Non Vegetarian Sportsmen of Various Socio-Economic Category

DISCUSSION:

The present study indicates that significant difference was found among socioeconomic category of different sportsman in relation to body fat percentage. High socioeconomic category are having greater body fat percentage in comparison to medium socio-economic category & low socio-economic category this might be due to unaltered habits of nutrition, in part by sedentary life style and High socioeconomic status sportsman intake high fat related food (due to high economic condition) and also take much fast food and they spend their life in a lavish way. (Darvishi 2012).

The present study also indicate that significant difference was found between vegetarian and non-vegetarian sportsman in relation to body fat percentage, the reason behind it is that non-vegetarian are having greater fat percentage in comparison to vegetarian, this difference could be attributed to different food patterns (Darvishi 2012), (Sathian et.al 2010) & (Tonstad 2009).

The present study also indicates that Interaction (vegetarian / non-vegetarian * socioeconomic category) was found insignificant differences in relation to body fat percentage. This might be due to all the subject participated in a physical activity so; the socioeconomic category and food habits did not much affect the percentage of body fat. (Kesavachandran 2009).

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