



Association of Eating Habits with Body Mass Index among Young Adults: A Case Control Study

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Citation this Article: Tanushri, Satyajit Bagudai, Vijaykumar Gupta, Amit Dayma, “Association of Eating Habits with Body Mass Index among Young Adults: A Case Control Study”, IJMSIR - September - 2024, Vol – 9, Issue - 5, P. No. 46 – 49.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Stress, digitalization, comfortable lifestyle, lack of physical exercise, industrialization and food processing have become the leading cause of lifestyle related diseases in this growing world.

Overeating, untimely meals have lead to young adults facing the cardiovascular and biochemical changes adversely affecting there well-being.

Nutritional status, imbalance between energy intake and expenditure plays a major role in development of obesity.

This study was conducted in obese and non-obese young subjects to study the relationship between dietary intake and obesity at Hind Institute of Medical Sciences, Safedabad, Barabanki.

Keywords: Safedabad, Barabanki, Young Obese and Non Obese

Introduction

Diet plays a major role in sustaining the living organisms on our planet. Both vegetarian and non-vegetarian diet constitute a major part of our feeding habits. Unhealthy eating habits which includes untimely meals loaded with

fat and preservatives over a long period of time leads to deranged biochemical process in our body. Obesity is a direct outcome of energy balance, *i.e.* a balance between dietary energy intake and energy expenditure. This balance is dependent on a host of factors including dietary intake, level of physical activity, metabolic, endocrine, and behavioral factors (1).

Obesity has a huge health and economic burden. In the year 2010, overweight and obesity already were estimated to cause 3.4 million deaths. 3.9% of years of life lost and 3.8% of disability adjusted life years (DALYs) globally (2).

Vegetarian diets do not contain meat and its derivatives, which can contribute to the harmful effects related to excess animal protein intake, saturated fats, heme-iron, and the formation of trim ethylamine-N-oxide (TMAO), through the different mechanisms to be discussed later(3). Vegetarian diets generally have higher content of plant foods, hence of complex carbohydrate, fiber polyunsaturated fatty acids, and several micronutrients (e.g., magnesium and potassium) and

phytochemical(4,5), whose beneficial synergistic combinations have been associated with a reduced incidence of many pathological conditions such as overweight, T2D, and hypercholesterolemia (6, 7, 8, 9, 10)

Material and Methods

This study was conducted in the Department of Physiology at Hind Institute of Medical Sciences, Barabanki.

The study was approved by the Institutional Ethics committee. It was a case control study, 200 apparently healthy subjects from age 18 to 29 years of age, who met the inclusion criteria were included after taking proper consent.

Out of 200 subjects, 100 subjects with BMI more than or equal to 25 were categorized as obese and rest 100 subjects with BMI less than 25 were categorized as non-obese subjects. BMI was calculated using the Quetels index. Anthropometric variables such as height (in kgs) and weight (in meters) were measured. Body mass index was classified as per Asia Pacific Classification (WHO 2000) for estimation of obesity.

Inclusion criteria

- Obese young subjects of age group 18 to 29 years of age.
- Non – obese young subjects of age group 18 to 29 years of age.

Exclusion Criteria

- Known case of diabetes
- Known case of hypertension
- Known case of respiratory disease
- History of drug usage such as steroids etc.
- History of chronic alcohol abuse

Data Collection: Data was collected using a semi-structured proforma that recorded name, age, gender and

dietary habits. Anthropometric details like height, weight and BMI were also noted. Dietary intake during last 3-days and activity level.

Table 1:

	Dietary Intake with Quantity		
	Day 1 (Two Days before yesterday)	Day 2 (Day before Yesterday)	Day3 (Yesterday)
Between breakfast and lunch			
At Lunch			
Between lunch and evening tea/snacking			
Between evening tea/snacking and Dinner			
At Dinner			
After dinner before sleeping			

Statistical Tools Employed

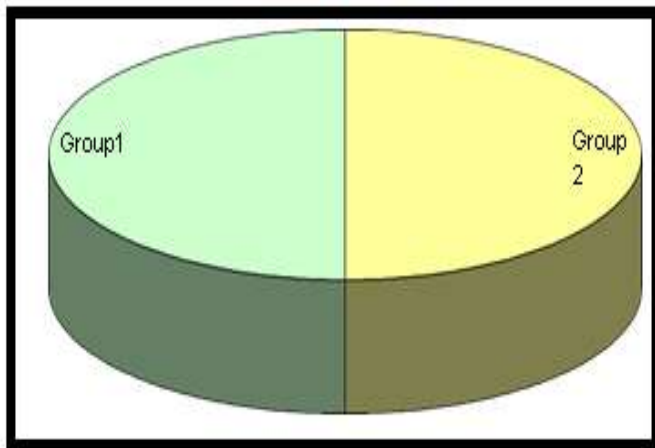
The statistical analysis was done using SPSS (Statistical Package for Social Sciences) Version 15.0 statistical Analysis Software. The values were represented in Number (%) and Mean±SD.

Results

Table 1: Groupwise Distribution of Study Population

Group	Obesity	No. of patients	Percentage
Group I	Obese (Cases)	100	50.0
Group II	Non-obese (Controls)	100	50.0

Graph 1:



Obesity Grade (BMI)	No. & %
OBESE I (25-29.9 kg/m ²)	70
OBESE II (≥ 30 kg/m ²)	30

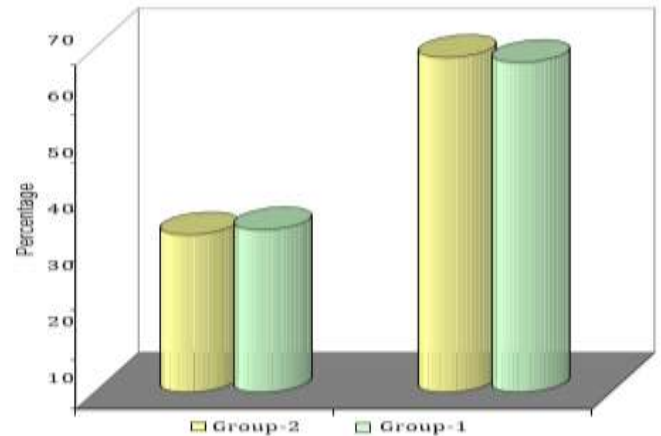
Table 2: Between group comparison of daily nutrient intake

	Group I (n=100)		Group II (n=100)		Statistical significance	
	Mean	SD	Mean	SD	't'	'p'
Energy (K)	2025.94	223.1	1634.51	260.34	11.417	<0.001
Protein (gms)	53.25	7.34	65.26	10.30	-9.500	<0.001
Fat (gms)	77.78	12.88	51.80	6.71	17.884	<0.001
Calcium (mg)	471.53	221.73	735.01	268.56	-7.565	<0.001
Iron (mg)	13.79	4.67	18.68	7.73	-5.416	<0.001

Table 3: Between group comparison of dietary habits

Dietary Habits	Group I (n=100)		Group II (n=100)		Total (N=200)	
	No.	%	No.	%	No.	%
Non-vegetarian	32	32.0	33	33.00	65	32.50
Vegetarian	68	68.0	67	67.00	135	67.50
	$\chi^2=0.023$ (df=1); p=0.880					

Graph 2:



Majority of overall (67.50%) as well as Group I (68.00%) and Group II (67.00%) subjects were vegetarians and rest of them were non-vegetarians. Difference in dietary habits of subjects of Group I and Group II was not found to be statistically significant (p=0.880).

Discussion

Majority of subjects included in the study were non-vegetarians and there was no significant difference between two groups with respect to age, gender and dietary preference. Although age and gender were matched purposefully, however, absence of difference in dietary preferences of subjects indicated that non-vegetarians diet cannot be considered as an indicator of obesity. Although several studies in India have shown a significant association between dietary preference and obesity risk (11). However, this risk has been shown to be equally associated with different types of vegetarian diets (12). The findings of present study did not substantiate the association between non vegetarian diet and obesity.

In present study, we carried out a 3-day 24-hour dietary assessment in order to assess the dietary intake of the subjects and found that obese individuals had significantly higher intake of calories and fat as compared to non-obese group, however, the non-obese group had significantly higher intake of protein, calcium

and iron as compared to that of obese group. These findings in turn suggested that there was in general an energy imbalanced caused by excessive intake of calories and fat that was resulting in obesity.

Conclusion

Though dietary habits of the obese and non-obese subjects were similar but difference in daily nutrient intake was significantly different. Daily energy and fat intake of obese subjects was significantly higher as compared to non-obese while daily protein, calcium and iron intake of non-obese subjects was significantly higher as compared to obese.

Energy imbalance were the major reasons for obesity. Although, none of the subjects included in the study had metabolic syndrome, however, the tendency towards lipid, blood pressure and weight gain indicated a probable risk of metabolic syndrome in these young subjects.

References

1. Caballero B. The Global Epidemic of Obesity: An Overview. *Epidemiologic Reviews*. 2007; 29: 1-5.
2. Lim SS, Vos T, Flaxman AD, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global the Burden of Disease Study 2010. *The Lancet*. 2012; 380: 2224–60.
3. A. Wolk Potential health hazards of eating red meat. *J Intern Med*. 2017; 281:106-122.
4. G.M. Turner Mc Grievy, N.D. Barnard, J. Cohen, D.J. Jenkins, L. Gloede, A.A. Green Changes in nutrient intake and dietary quality among participants with type 2 diabetes following a low-fat vegan diet or a conventional diabetes diet for 22 weeks. *J Am Diet Assoc*. 2008; 108: 1636-1645.
5. J. Acosta-Navarro Vegetarians and semi-vegetarians are less expose to cardiovascular risk factors. *Int J Atheroscler*. 2006; 1: 48-54.
6. N.D. Barnard, A.R. Scialli, G. Turner-Mc Grievy, A.J. Lanou, J. Glass The effects of a low-fat, plant-based dietary intervention on body weight, metabolism, and insulin sensitivity. *Am J Med*. 2005; 118: 991-997.
7. N.D. Barnard, J. Cohen, D.J. Jenkins, et al. A low-fat vegan diet improves glycemic control and cardiovascular risk factors in a randomized clinical trial in individuals with type 2 diabetes. *Diabetes Care*. 2006; 29: 1777-1783.
8. D.J. Jenkins, C.W. Kendall, D.A. Faulkner, et al. Assessment of the longer-term effects of a dietary portfolio of cholesterol-lowering foods in hypercholesterolemia. *Am J Clin Nutr*. 2006; 83: 582-591.
9. B.J. Pettersen, R. Anousheh, J. Fan, K. Jaceldo-Siegl, G.E. Fraser Vegetarian diets and blood pressure among white subjects: results from the Adventist Health Study-2 (AHS-2). *Publ Health Nutr*. 2012; 15: 1909-1916
10. M. Rosell, P. Appleby, E. Spencer, T. Key Weight gain over 5 years in 21,966 meat-eating, fish-eating, vegetarian, and vegan men and women in EPIC-Oxford. *Int J Obes*. 2006; 30: 1389-1396.
11. Shridhar K, Dhillon PK, Bowen L, et al. The Association between a Vegetarian Diet and Cardiovascular Disease (CVD) Risk Factors in India: The Indian Migration Study. Arumugam TV, ed. *PLoS ONE*. 2014; 9(10): e110586.
12. Agrawal S, Millett CJ, Dhillon PK, Subramanian SV, Ebrahim S. Type of vegetarian diet, obesity and diabetes in adult Indian population. *Nutr J*. 2014; 5(13): 89.