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Estimation of Hemoglobin in Vegetarian and Non Vegetarian Obese Females in Varanasi

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Abstracts: ***The haemoglobin (Hb) levels of blood samples from vegetarians and non-vegetarians were determined for the purpose of assessing their nutritional status and making recommendation. Haemoglobin level and pattern of food intake is closely associated with risk of cardiovascular diseases. The cardiovascular diseases are primarily may be due to altered lipid profile which is depend on type and pattern of food intake. Venous blood samples were collected from all the cases to analyze haemoglobin levels along with healthy controls. The haemoglobin (gm%) in vegetarian obese female (case group) was 9.8 ± 0.63 while in control group is 12.5 ± 0.32 respectively. The haemoglobin (gm%) in non-vegetarian obese female (case group) was 12.50 ± 0.33 while in control group is 13.64 ± 0.39 respectively. Thus haemoglobin level of non-vegetarianism were high in obese female than vegetarian. Due to some nutrients intake, haemoglobin level was better in non-vegetarians than vegetarians.***

Keywords: vegetarian, non-vegetarian, obesity and haemoglobin

1. Introduction

Obesity is a chronic metabolic disorder associated with cardiovascular disease and increased mortality and morbidity. Obesity defined by the World Health Organization as having a Body Mass Index of 30 kg/ m^2 or greater, is a risk factor for infertility, as well as sub fertility, or reduced fertility, in women. The reasons why obesity causes fertility problems in women are not well understood, but some scientists speculate that obesity related disturbances of certain metabolic hormones, including insulin and leptin, may harm a women's fertility.[1]Although some studies have shown associations between vegetarianism and blood pressure[2,3] blood lipids[4-9] cancer heart disease and all-cause mortality.[10-11] In women, early onset of obesity favors the development of menses irregularities, chronic oligoanovulation and infertility in the adult age. Obesity in women can also increase risk of miscarriages and impair the outcomes of assisted reproductive technologies and pregnancy, when the body mass index exceeds 30 kg/m^2. The main factors implicated in the association may be insulin excess and insulin resistance. These adverse effects of obesity are specifically evident in polycystic ovary syndrome. Gynecologists and reproductive scientists have encountered the reproductive consequences of a society increasing in weight as a higher frequency of women diagnosed with disorders of menstruation, infertility, and diabetes mellitus in pregnancy and other significant sequel.[12]In addition, polycystic ovary syndrome (PCOS) is a condition characterized by hyperandrogenism and menstrual disturbances, further complicates the issue.[13]

2. Prevalence of Obesity

In India prevalence of obesity was 2.9% in boys and 1.5% in girls,[14] but in adult the prevalence of overweight/obesity was 37%. Along with males 27.27% and females 44.64%.[15]This is particularly evident in the USA where >50% of all women are overweight and 30% obese. In Australia, 67% of men are overweight or obese and 52% of women are overweight or obese which constitutes a marked increase over the last 20 years.[16]

3. Material and Method

The present study was conducted in the Department of pathology, Heritage Institute of Medical Science, Varanasi, India during the period from January 2015 to June 2015. Randomly selected 60 patients which were categorized in two groups (30 vegetarian and 30 non-vegetarian) with an age ranged from 20-40 years along with 60 (30 vegetarian and 30 non-vegetarian) healthy controls.

Biochemical Analysis

An overnight fast blood samples was collected for the estimation of haemoglobin (Hb%) levels in vegetarian and non-vegetarian obese female. The haemoglobin was estimated by Sahli's method with a standard component of Sahli's haemoglobinometer.

Statistical Analysis

All values were expressed as mean ± S.D. We used student t-test and pearson's correlation coefficient to find the statistical significance. A P-value < 0.05 was to be considered statistically significant.

4. Results and Discussion

We studied the Estimation of Hemoglobin in vegetarian and Non Vegetarian Obese Females. Table-1 shows the Mean & S.D. of vegetarian and non-vegetarian obese females age, abdomen, chest, BMI, WHR, height, weight, hips, heart rate, systolic & diastolic blood pressure.

The haemoglobin (gm%) in vegetarian obese female (case group) was 9.8 ± 0.63 while in control group is 12.5 ± 0.32 respectively. The p-value is < 0.0001, which is statically significant.

The haemoglobin (gm%) in non-vegetarian obese female (case group) was 12.50 ± 0.33while in control group is 13.64 ± 0.39 respectively. The p-value is < 0.0001, which is statically significant.

Table 1: Demographic and anthropometric characteristics of the subjects (Vegetarian & non- Vegetarian). Values in mean ± S.D.

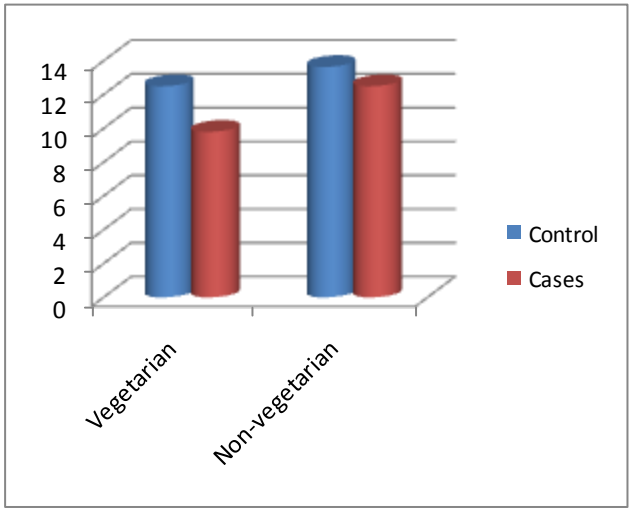
Parameters	Vegetarian		Non-vegetarian	
	Control gr. (non-obese)	Case gr.(obese)	Control gr. (non-obese)	Case gr.(obese)
Age (years)	29.60±3.50	31.77±4.64	31.30±4.60	31.33±4.33
Abdomen (cm)	70.60±1.50	72.73±1.68	67.90±1.58	74.70±2.22
Chest (cm)	79.23±1.10	84.87±1.68	77.73±2.66	85.95±1.87
BMI (kg/m^2)	23.31±0.50	31.42±1.20	24.65±0.81	35.93±2.54
WHR (cm)	0.83±2.14	0.91±1.39	0.83±2.14	0.91±1.39
Height (m)	1.61±0.03	1.61±0.04	1.52±0.03	1.51±0.04
Weight (m)	60.17±2.02	81.43±2.30	57.20±2.85	81.43±2.30
Hips (cm)	85.10±1.45	81.13±1.41	79.03±2.11	76.50±2.76
Heart rate	73.17±4.99	70.47±4.91	72.43±4.90	69.4±3.60
Systolic (mmHg)	122.53±3.01	126.47±5.35	123.67±6.08	129.4±4.07
Diastolic (mmHg)	81.4±3.32	84.27±3.27	82.27±4.16	84.33±3.19

Table 2: Comparison of Haemoglobin (Hb%) between case gr. (obese) and control gr. (non-obese).

Parameters	Vegetarian group		P-Value
	Control (non-obese) n=30	Case (obese) n=30	
	mean±S.D.	**mean±S.D.**	
Haemoglobin (Hb%)	12.5 ± 0.32	9.8 ± 0.63	<0.0001
	Non-vegetarian group		
Haemoglobin (Hb%)	13.64 ± 0.39	12.50 ± 0.33	<0.0001

*****Statistically significant p-value is < 0.0001

Chart-A shows comparison of Haemoglobin (Hb%) between case gr. (obese) and control gr. (non-obese).



In our study, Mean weight, BMI and prevalence of overweight and obesity were highest among omnivores compared with vegetarian. The risk of overweight and obesity is lower in vegetarian as compared to omnivores.

In our study we evaluated the haemoglobin % in vegetarian and non-vegetarian obese female. Our results with haemoglobin in Non-vegetarian had impaired infertility over vegetarian. Observations revealed that the change in diastolic blood pressure in omnivores is higher than in age and sex matched vegetarian and control group. In our study the population was small, the large sample size of the study allowed us to examine dietary associations between BMI and overweight or obesity among vegetarian and to detect significant effect.[17] In this study we evaluated the haemoglobin % in vegetarian and Non-vegetarian obese female. Our results with haemoglobin in non-vegetarian had impaired infertility over vegetarian. Observations revealed that the change in diastolic blood pressure in omnivores is higher than in age and sex matched vegetarian and control group. These findings suggest that there may be dysfunction in sympathetic reactivity also, and Alteration in parasympathetic nerve conductivity may cause undue regulatory effects on heart rate.[17] Therefore now it become evident that in omnivores also causes parasymapathetic impairment. Tachycardia was also seen in omnivores as compared to control group. It suggests that necessary change in cardiac output was compensated by increase in heart rate. This tachycardia prominent in subject with high energy or macronutrient intake. Exact mechanism is not clear but it is understood that it is due to cardiac dysfunction. The haemoglobin % was higher in non-vegetarian as compare to vegetarian and control group. It suggests that the macronutrient in omnivores is higher energy than vegetarian and control group. Cardiovascular disease is the leading cause of mortality and major contributor of the burden of disease in world wide.[18]

5. Conclusion

These findings suggests that haemoglobin% level in vegetarian obese female is significantly less than the omnivores female. It suggests that the macronutrient in omnivores is higher energy than vegetarian and control

group. The systolic and diastolic blood pressure was higher in case group of vegetarian and non-vegetarian obese female than control group. Whereas the heart rates were lower in case group of vegetarian and non-vegetarian obese female than control group. The value of haemoglobin showed the cardiac problem with relationship in haematodynemic variation in vegetarian and non-vegetarian obese female. This study is providing the data that is help to diagnose infertility risk in obese/non-obses female and also able to be indicating the incidence of infertility risk in obese female. Thus it helps to make newer strategies for infertility, cardiac,anemia management and prevention.

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