



Original Article: Hemoglobin Study in Vegetarian and Non Vegetarian Obese Females of Udaipur City

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Abstract

Introduction: obesity is a major contributor to the prevalence of cardiovascular disease in the developed world and yet has only recently been afforded the same level of attention as other risk factors of coronary artery disease. Hemoglobin 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. Association of vegetarian and non-vegetarianisms in obese female is controversial.

Method: The study was conducted on vegetarianism and non-vegetarianism obese female. A total of 55 subjects were enrolled (35 cases and 20 control) for the study. The Anthropometric measurements viz. height, weight, BMI and WHR, BP, were taken and hemoglobin level (Hg %) was assessed in vegetarian and non-vegetarianism obese women.

Results: Our results showed that hemoglobin level (HB %) in non-vegetarianism obese women was (13.25±1.08) high than vegetarian (10±1.2) obese women. The blood pressure systolic and diastolic was higher in the non-vegetarian obese women than vegetarians' obese female. There were no significant difference was found in heart rate in both groups i.e. vegetarianism and non-vegetarianism obese female. The Blood pressure systolic and diastolic was (126.63± 7.3 and 88.26±6.33) and (130.72± 8 and 85.52±4.81) in Vegetarian Non-vegetarian respectively.

Discussion: Thus Hemoglobin Level (Hg %) of non-vegetarianism were high in obese women than vegetarian. Due to Some nutrients intake, hemoglobin level was better in non-vegetarians than vegetarians.

Key words: Hemoglobin, Obesity, Vegetarian, Non-vegetarian

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/m² or greater, is a risk factor for infertility, as well as sub fertility, or reduced fertility, in women. Although some studies have shown associations between vegetarianism and blood pressure [1,2] blood lipids [3-8] cancer heart disease and all-cause mortality.[9, 10] 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.[11] In women, early onset of obesity favors the development of menses irregularities, chronic oligo-anovulation and infertility in the adult age. It is apparent that a verity of adaptations/alterations in cardiac structure and function occur as excessive adipose tissue accumulate, even in the absence of comorbidities. shift towards less physically demanding life style are observed today through difrent populations and this scour age associated with obesity implicates a corresponding increase in the number of individuals afflicted with the metabolic syndrome, which defines the obese patient

as being "at risk". 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/m². 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]

Prevalence of obesity:

Obesity has reached epidemic proportions in India in the 21st century, with morbid obesity affecting 5% of the country's population. Unhealthy processed food has become much more accessible following India's continued integration in global food markets. 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 >60% 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]

Material and Method

Two groups of 55 young healthy non-smoking, non-pregnant, married female, volunteers not using any hormonal contraception, between 25 to 40 years of age, were included in the study. The first group (Control group) consisted of twenty (20) volunteers and study group (Case Group) consist of 35 volunteers. According to body mass index (BMI) divided in two groups. The females having BMI between 20 and 25 kg/m² and they did not take any

regular medication were recognize as control group and the females having BMI greater than 27 kg/m² were recognize as study group and WHR (Waist Hip Ratio) < 0.85 having for female study group. All the participants were given written informed consent to participate. The anthropometric parameters measurement was done by standard instrument. The blood pressure were taken through standard B.P. instrument after at least 15 minutes rest in the sitting position before the recording the B.P. values in mm hg .

Biochemical Analysis:

Blood samples were collected in morning after an overnight fast. Samples was collected in supine position from median cubital vein. Blood sample were keep frozen at -20 ° C until analyzed. Blood samples were collected for the estimation of Hemoglobin (Hg %) levels in vegetarian and non-vegetarian obese women. The hemoglobin was measured by Sahli's method with a standard component of Sahli's haemoglobinometer.

Statistical analysis:

Results are expressed as mean ± S.D. One-way analysis of variance (ANOVA) were used to analyses the results with p < 0.05 considered significant .The relationships of Hemoglobin(Hg%) between Non-vegetarian Obese Women and Vegetarian Obese Women and the anthropometric parameters were also analyzed using Pearson correlations.

Results and Discussion

Hemoglobin (Hg %) in Vegetarian Obese Women (Case group):

The hemoglobin (gm %) in vegetarian Obese Women (case group) was 10±1.2 while in control group is 12.6±1.2 respectively. The P-value is P<0.01, which is statically significant.

Hemoglobin (Hg %) in Non-vegetarian Obese Women (Case group):

The hemoglobin (gm %) in Non-vegetarian Obese Women (case group) was 13.25±1.08 while in control group is

12.59±1.018 respectively. The P-value is $P>0.05$ which is not statically significant.

Blood Pressure (SBP & DBP) in vegetarian and non-vegetarian Obese Women:

The systolic blood pressure (mm hg) in Non-vegetarian Obese Women (case group) was 130.72± 8 while in control group it was 123.18 ± 5.05 respectively and p-value is $P<0.01$.which is greater than

control and borderline hypertensive. The observation shows that the diastolic pressure in cases of Non-vegetarian Obese Women (case group) was 85.52±4.81 mm hg while in control group were 80.23±5.78 mm hg respectively and p-value is $P<0.01$. The heart rate (beat/minute) in omnivores Obese Women (case group) was 68.22±11.14 while in control group it was 72.7 ± 3.56 respectively and P-value is $P>0.05$, which is not statically significant.

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

Parameter	Case Group (Obese)	Control Group (Non Obese)	P-Value
Age(Years)	32.90± 6	31.9± 6.3	$P>0.05$
Abdomen(cm)	73.47± 7.26	70.97± 5.62	$P<0.01$
Chest (cm)	84.53± 3.30	80.80± 3.52	$P<0.01$
BMI(Kg/m ²)	33.32 ± 4.44	26.87±3.26	$P<0.01$
WHR(cm)	0.9102± 1.39	0.8388±2.14	$P<0.01$
Height(m)	1.66± 0.13	1.69± 0.12	$P>0.05$
Weight(m)	74.31± 8.51	62.61± 7.41	$P<0.01$
Heart rate	69.22± 10.15	73.40± 3.46	$P>0.05$
B.P. Systolic (mm hg)	126.63± 7.3	120.18±5.05	$P<0.01$
B.P. Diastolic(mm hg)	88.26± 6.33	81.52± 4.91	$P<0.01$
Hips(cm)	81.71± 2.91	85.50± 2.77	$P<0.01$
Hemoglobin (gm %)	10±1.2	12.6±1.2	$P<0.01$

Table 2: Demographic and anthropometric characteristics of subjects (Non-vegetarian) (Values in mean±SD)

Parameter	Case Group (Obese)	Control Group (Non Obese)	P-Value
Age(Years)	31.52± 6.10	30.50 ± 6.13	$P>0.05$
Abdomen(cm)	74.37± 3.21	68.92± 5.62	$P<0.01$
Chest (cm)	87.36± 2.41	79.81± 3.52	$P<0.01$
BMI(Kg/m ²)	35.31 ± 3.15	26.89± 3.26	$P<0.01$
WHR(cm)	0.9143± 1.39	0.8388± 2.14	$P<0.01$
Height(m)	1.53± 0.11	1.56± 0.13	$P>0.05$
Weight(m)	74.21± 7.88	61.61± 7.51	$P<0.01$
Heart rate	68.22± 11.14	72.70± 3.56	$P>0.05$
B.P. Systolic (mm hg)	130.72± 8	123.18± 5.05	$P<0.01$
B.P. Diastolic(mm hg)	85.52± 4.81	80.23± 5.78	$P<0.01$
Hips(cm)	76.270± 3.21	9.97± 5.52	$P<0.01$
Hemoglobin (gm %)	13.25± 1.08	12.59± 1.018	$P>0.05$

Discussion

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

In this study we evaluated the hemoglobin

% in vegetarian and non-vegetarian obese female. Our results with hemoglobin 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.

Although the number of vegetarians

in this 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 hemoglobin % in vegetarian and Non vegetarian obese female. Our results with hemoglobin 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 parasympathetic 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 hemoglobin % was higher in nonvegetarian 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]

Conclusion

It conclude that Hb% level is higher in omnivores as compare to obese vegetarian women. 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 women than control group. Whereas the Heart rates were lower in case group of Vegetarian and Non-vegetarian obese women than control group. The value of hemoglobin showed the cardiac problem with relationship in hemodynamic variation ion vegetarian and nonvegetarian obese women. This study is providing data that help in diagnosis of infertility risk in obese/non obese women. Thus it helps to make new strategies for infertility, cardiac, anemia management and prevention.

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