

BLOOD PRESSURE AND LIPID PROFILE IN GENERAL POPULATION AND VEGETARIAN INDIVIDUALS IN LIBYA

Ibrahem Omran Lakhder and Salem Mohamed Aljetlawi

*AL-Asmarya Islamic University, Faculty of Science, Department of Mathematics, Libya.
E-mail: salemmohamed641@yahoo.com*

ABSTRACT

Background: Blood pressure and lipid profile are two tests used to determine the health level of individuals. The previous studies have found a positive correlation between high fruits and vegetable diets and decrease the incidence of hypertension, cardiovascular diseases compared to general populations.

Objective: To compare the blood pressure and lipid profile in semi- vegetarians people and the general population.

Methods: A Cross-Sectional Study which conducted 60 random samples was divided into two groups the first group consisted of 30 samples of people semi-vegetarians and the second group consisted of 30 samples of a general population, in both groups between the ages of 18-45 to measured blood pressure, and lipid profile.

Results: There is no significant difference between semi-vegetarians and the general population in measuring the blood pressure and HDL. And we found a marked difference in TG, CL and LDL measurements In all instances, $p > 0.05$.

Conclusion: From this study, it can be concluded that CL and TG and LDL level in the semi-vegetarians people less than people from the general population.

Keywords: BP, CL, HDL, LDL, TG.

1. INTRODUCTION

Blood pressure is the force of blood against artery walls as it circulates through the body. It normally rises and falls throughout the day, but it can cause health problems if it stays high for a long time. High blood pressure or hypertension is our most common chronic illness. About 80 million Americans over age 20, 1 in 3 adults, have it [1].

High blood pressure is also called the “Silent Killer,” because many people have it for years and don’t know it. Often, high blood pressure has no warning signs. By the time it is noticed, it may have already caused serious damage to the heart, blood vessels, and more. When discovered early high blood pressure can be treated and controlled. And lowering blood pressure can help prevent strokes [2].

A lipid profile is a measurement of various lipids that are found in the blood. This kind of blood test is often used to assess the risk of heart disease. And used to guide providers in deciding how a person at risk. The lipid profile includes total cholesterol, HDL-cholesterol (often called good cholesterol) LDL cholesterol (often called bad cholesterol) and triglycerides [3].

Hypertension and dyslipidemia are major risk factors for cardiovascular disease, accounting for the highest morbidity and mortality among the population. People with obesity and high blood pressure are also more likely to have lipid abnormality than those with normal blood pressure [4]. hypertension in obese adolescents is mainly associated with high triglyceride levels [5].

A lipid profile varies significantly in various population groups due to differences in geographical locations, cultural, economic and social conditions, dietary habits and genetic.

Vegetarian people has become more popular in recent years. There are approximately 3 million vegetarians in the UK – around 5% of the adult population [6], and a body of information is now emerging that provides an

insight into the differences between those following an omnivorous diet and those following plant-based diets. There is much interest in the potential effects of plant-based diets on a range of health outcomes and nutrition [7]. The aim of the study to determine the differences in blood pressure and lipid profile between Vegetarian people and the general population, proof the role of vegetarianism in reducing blood pressure and cardiovascular problems.

2. MATERIALS AND METHODS

Design of the study

A cross-sectional study includes 30 participants as a semi-vegetarians who don't eat meat but may eat poultry or fish, 30 of the general population. This study was carried out private laboratory in Zliten city during the period from October 2015 To February 2016.

Study Population:

The study population consists of sixty (30 semi-vegetarians and 30 non-vegetarians) males, healthy individuals, aged 18 to 45 years, different social and educational levels.

Diet Questionnaire:

A detailed, pre-designed and self-administered questionnaire was used for data collection. The questionnaire included Participants were also asked to identify their current diet: vegan (not consuming any animal products), vegetarian (not consuming any meat or fish), semi-vegetarian (consuming red meat, poultry or fish no more than once a week), pesco-vegetarian (consuming no meat but fish), and omnivorous (eating meat or fish almost

every day). Subjects were classified in different diet groups using information from the diet questionnaire.

Sample Collection:

Blood pressure was measured by mercury sphygmomanometer and the venous blood sample was drawn and assay for lipid profile from fasting blood the white tube. Height and weight were measured using the WHO recommended standard techniques. Body mass index (BMI) was calculated (the weight in kilograms divided by the square of the height in meters).

Statistical Analysis:

The statistical analysis was done using SPSS Software (Version 23). The results of the study were expressed as the mean \pm standard deviation (SD). The statistical significance of the difference between the various groups was determined by using the student's t-test and a p-value of < 0.05 is considered significant.

Results:

The current research based on 60 males, age range (18-45 years) divided to two groups, group-I included 30 an individual as a semi-vegetarians who don't eat meat but may eat poultry or fish and group-II included 30 of general population

Blood Pressure: Blood pressure is measured in units of millimeters of mercury, or mm Hg. and recorded as two numbers. The systolic blood pressure (the “upper” number) and diastolic blood pressure (the “lower” number). The result showed that were no significant difference among group-I and group-II in both systolic and diastolic blood pressure.(Table 4-1).

TABLE1: INDEPENDENT – SAMPLES T-TEST FOR SYSTOLIC AND DIASTOLIC BLOOD PRESSURE MEASUREMENTS

variables	Groups	Mean (SD) Mm Hg	P. Value
Systolic	Group –I	115.500 ± 8.84249	0.223
	Group –II	120.500 ± 20.27186	
Diastolic	Group –I	78.6667± 7.18395	0.658
	Group –II	79.6667 ± 9.99425	

Results are given as mean ± SD. Data were analyzed statistically using Independent – samples t-test, the differences between all values of all measured parameters calculated and were used in statistical analysis. In all instances, P-value > 0.05.

Lipid profile:

Triglycerides (TG): The result showed that there was a significant difference between TG in group-I and group-II. In all instances, P value less than 0.05. (Table 4-2).

High-Density Lipoprotein (HDL) The result showed that no significant difference among groups. In all instances, p > 0.05. (Table 4-2).

Cholesterol (Cl): The result showed a significant difference between CL in group-I and group-II. In all instances, the P value less than 0.05. (Table 4-2).

Low-Density Lipoprotein (LDL)The result showed a significant difference between group-I and Group-II. In all instances, the P value less than 0.05 (**Table 4-2**).

TABLE2: INDEPENDENT – SAMPLES T TEST FOR LIPID PROFILE CONCENTRATIONS IN BOTH GROUPS:

Variables	Groups	Mean (SD) Ng/ml	P. Value
	Group –I	84.0667 ± 36.01430	
TG	Group –II	204.1333 ± 90.71354	0.001
	Group –I	112.8667 ± 25.78924	
CL	Group –II	152.9667± 38.91678	0.001
	Group –I	38.7667± 9.55089	
HDL	Group –II	36.2667 ± 9.74833	0.320
	Group –I	70.5667 ± 16.56686	
LDL	Group –II	89.7333 ± 33.02761	0.006

Results are given as mean \pm SD. Data were analyzed statistically using independent – samples t-test, the differences between all values of all measured parameters calculated and were used in statistical analysis. In all instances, the P value less than 0.05.

Body Mass Index(BMI). The result showed that a significant difference between BMI between group-I and group-II (**Table 4-3**).

TABLE 3: INDEPENDENT – SAMPLES T-TEST FOR MEASUREMENTS TWO GROUP BMI

Group	Mean (SD) Kg/M²	P. Value
Group -I	22.7700 ± 4.32387	
Group –II	25.8883 ± 5.00513	0.012

Results are given as Mean \pm SD. Data were analyzed statistically using independent – samples t-test, the differences between all values of all measured parameters calculated and were used in statistical analysis. in all instances, the p-value less than 0.05.

3. DISCUSSION

What eats and drink can have a real effect on the health of heart and blood vessels and also directly affect your blood pressure. a healthy diet will help to keep heart and blood vessels in good shape, reducing your risk of future health problems. the vegetarian diet is full of vitamins, minerals, and fiber to keep your body in good condition. they also contain potassium, which can help to balance out the negative effects of salt. this has a direct effect on your blood pressure, helping to keep it down.

Overweight and obesity is associated with increased total mortality and increased risk of disease or death from cardiovascular diseases, diabetes. it does so by increasing high blood pressure, blood cholesterol, insulin resistance [8]. The vegetarians in this study had significantly lower BMI than the general population.

This study found no significant difference in systolic and diastolic blood pressure between the vegetarians and non-vegetarians. The blood pressure readings contradict past studies that have found that plant-based diets are associated with a significantly lower prevalence of hypertension [9].

We observed that serum TC, TG, And LDL-Cholesterol were significantly higher among people on non-vegetarian diets including meat and fish. Studies In Japan and China reported that vegetarians have lower serum total cholesterol than the non-vegetarians [10].

Low plasma level of high-density lipoprotein cholesterol (HDL-C) was an independent risk factor for cardiovascular disorders and associated with poor outcomes in pulmonary arterial hypertension [11]. The present study provides evidence indicating that there was no significant difference in HDL-C levels between vegetarians and the general population.

4. CONCLUSIONS

The conclusion of this study has shown that vegetarians individuals have low-risk factors for cardiovascular disease than general populations. and no difference blood pressure measurements between semi-vegetarians people and general individuals. this based on:

1. Vegetarian diets significantly reduce the level of BMI, TG, CL, LDL in semi-vegetarians people.
2. No significant difference between systolic and diastolic blood pressure measurements in both semi-vegetarians people and general individuals.

3. HDL less than normal value in both semi-vegetarians people and general individuals who live in Libya.

5. RECOMMENDATION

1. All Obese People Should Follow Vegetarians Patterns To Reduce Body Mass Index And Lipid Profile Levels.
2. Vegetarian Diet Should Be Studied Future With Other Variables.

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