

# A Study of Lipid Profiles in Hypertensive Patients Visiting Dilla University Referral Hospital

Prabhanjan Kumar Vata<sup>1</sup>, Moges Tadesse Bordie<sup>2</sup>, Yohannes Addisu<sup>3</sup>, Getachew Nenko<sup>4</sup>, Reta Kassa<sup>5</sup>

<sup>1, 2, 3, 4, 5</sup> College of Health Sciences & Medicine, Dilla University Referral Hospital, Dilla SNNPR, Ethiopia- 419.

**Abstract:** “Hypertension” continues to be one of the most common global diseases, which is the leading cause of morbidity and mortality in the present world. It is increasingly clear that high blood pressure although an independent risk factor for adverse clinical events frequently exists as a part of a syndrome of cardiovascular, neuroendocrine and metabolic abnormality. The present article studies the incident of serum lipids in hypertensive cases in contrast with control Normo-tensive cases and found that there is a high level of significance of hyperlipidemias in hypertensive cases. The present article also examines and compares the serum lipid profiles with respect to age and gender to understand the significance of control subjects with hypertensive subjects.

**Keywords:** Hypertension, Serum lipid profiles, Hyperlipidemia, Dilla referral hospital.

## 1. Introduction

“Hypertension” continues to be one of the most common global diseases, which is the leading cause of morbidity and mortality in the present world and increasing common disease in developing countries. Ongoing research has better defined the mechanisms and clinical characteristics for this condition and enlarged the scope of therapeutic options. It is increasingly clear that high blood pressure although an independent risk factor for adverse clinical events frequently exists as a part of a syndrome of cardiovascular, neuroendocrine and metabolic abnormality.

The blood pressure however, is not the only determinant of cardiovascular damage and the propensity of hypertensive patients to develop target organ damage is markedly influenced by coexisting risk factors such as age, sex, smoking, obesity, dyslipidemia and others.

Among these factors lipoproteins are fundamental to the atherosclerotic process and greatly affect the impact of hypertension on development of target organ damage and therefore on Cardiovascular morbidity and mortality.

The serum lipid profiles of hypertensive subjects are usually higher and can be either decreased by dietary restriction and habits or by hypolipidemic agents

## 2. Materials and Methods

The prospective study was conducted in Dilla university referral hospital, Dilla, Ethiopia. A total 90 subjects whose age is ranging from 30-60 years were included in the study. Out of 90 subjects, 30 subjects (21 male, 9 female) are Normo-tensive subjects were selected as Group-I (control). The remaining 60 subjects (40 males and 20 females) were diagnosed as cases of hypertension based on history and on Anti- hypertensive Medication were as group-II.

5 ml venous blood was collected from each patient who was fasting overnight (12 to 14 hours). The samples were immediately dispatched to the clinical Laboratory for

estimation of lipid profile. The Total Cholesterol was determined by enzymatic (CHOD-PAP) colorimetric method, Triglycerides were determined by enzymatic (GPO-PAP) method and HDL & LDL cholesterol were estimated using precipitant and Friedewald Formula.

Relevant statistical methods were applied, to see the significance. (Statistical methods were applied, to see the significance of difference in mean values and to see the correlation between two study groups, age & gender). All values were expressed as Mean  $\pm$  S.E statistical significance of differences in two study groups by using t- test.

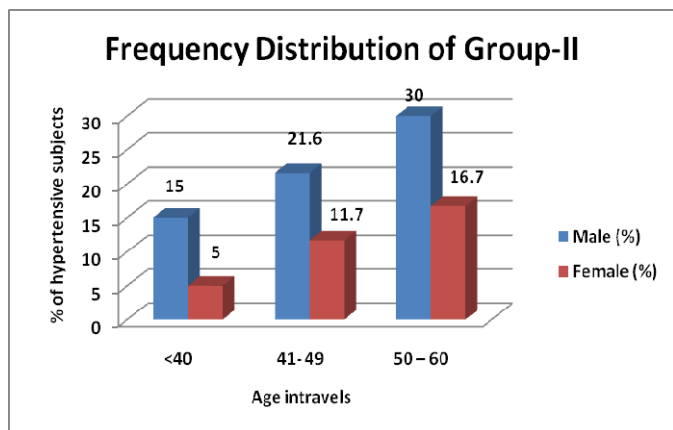
## 3. Results and Discussion

The following table-1 presents the data relating to hypertensive subjects (Group: 2) with gender and age distribution.

**Table 1:** Frequency distribution for Group-II with age and gender

Sl.	Age	Group- II (%)	
		Male	Female (%)
1	<40	09	03 (5.0)
2	41- 49	13	07 (11.7)
3	50 – 60	18	10 (16.7)
Tota	n= 60	40	20 (33.4)

For the purpose of data interpretation and analysis the contents of table-1 has been presented in the following graph-1.



Graph 1: Frequency Distribution of Group-II (%)

It can be understood by referring table: 1 and Graph-1 the high number of hypertensive subjects of both genders are from 50- 60 years of age groups. Where 18 (30%) male respondents out of 60 hypertensive subjects are from 50- 60 years of age group, on the other hand 10 (16.7%) female respondents out of 60 hypertensive subjects are from 50- 60 years of age group in group- II. It can be inferred that hypertensive subjects are more in the age group of 50- 60 years in the both genders i.e. male and female in group-II.

To test the hypertensive subjects of group-II, with control cases of Normo-tensive subjects of group-I, the variations of serum lipid profile are made for both groups for comparison and t-test is employed to examine the significance with p value. The data of the same has been presented in the following table-2.

Table 2: Serum lipid profiles of Group- I (Normo-tensive subjects) & Group- II (Hypertensive subjects)

Serum Lipids (mg/dl)	Group- I n=30	Group- II n=60	P value
Total cholesterol	182.14±4.45 (110-245)	241.25±6.57 (180-310)	P<0.001 (s)
Triglycerides	142.73±6.68 (85-210)	184.77±5.97 (140-240)	P<0.001 (s)
HDL- cholesterol	42.88± 0.93 (40-56)	32.91±1.21 (32-52)	P<0.001 (s)
LDL- Cholesterol	105.73±3.35(70-165)	154.32±4.22(110-230)	P<0.001 (s)

Values are mean ± standard error (SE), figures in brackets indicate range, S= Significant.

From the above table-2 contents the serum lipid profile - total cholesterol, Triglycerides, HDL- cholesterol and LDL- Cholesterol of Group--II has been compared with Group-I and interpreted as follows.

- The mean total cholesterol levels in group- I is 182.14 ± 4.45 and in Group- II is 241.25±6.57, which indicates a significantly high levels of Total cholesterol in hypertensive subjects( Group-II)
- The mean Triglycerides levels in group- I is 142.73±6.68 and in Group- II is 184.77±5.97, which indicates a significantly increased levels of Triglycerides in hypertensive subjects (Group-II).
- The mean HDL- cholesterol levels in group- I is 42.88± 0.93 and in Group- II is 32.91±1.21, which indicates a

significant high levels of HDL- cholesterol is seen in Normo-tensive subjects of group-I.

- The mean LDL- Cholesterol levels in group- I is 105.73±3.35 and in Group- II is 154.32±4.22, which indicates a significant increase of LDL-cholesterol levels in hypertensive subjects (Group-II).

To test the gender difference of serum lipid profile in hypertensive subjects of group-II, with control cases of Normo-tensive subjects of group-I, The variations of serum lipid profile are made for both genders in two groups for comparison and t-test is employed to examine the significance with p value. The data of the same has been presented in the following table-3.

Table 3: Gender Difference of Serum Lipid Profile of Group-I & Group- II

Serum Lipids (mg/dl)	GENDER DIFFERENCE					
	GROUP- I (n= 30)			GROUP- II (n= 60)		
	MALE (n=21)	FEMALE (n=9)	P- VALUE	MALE (n= 40)	FEMALE (n= 20)	P- VALUE
Total cholesterol	193.12± 5.28 (130-245)	171± 7.41 (110- 232)	P<0.02 (S)	242.18± 6.78 (190- 310)	237.15± 7.95 (180- 295)	P>0.6 (N S)
Triglyceride s	157.25± 8.14 (105- 210)	138.21± 7.48 (85- 192)	P< 0.01 (S)	181.53± 5.03 (152- 240)	175.58± 6.12 (140- 227)	P> 0.4 (N S)
HDL- cholesterol	39.51± 0.98 (44- 58)	46.12± 0.73 (40-52)	P< 0.05 (S)	31.18± 1.12 (36- 52)	34.97± 1.01 (3 2- 46)	P> 0.1 (N S)
LDL- Cholesterol	112.45± 4.69 (85- 165)	92.53± 4.60 (70- 152)	P< 0.05 (S)	154.50± 5.15 (117- 230)	149.45± 7.30 (110- 217)	P> 0.5 (N S)

Values are mean ± standard error (SE), figures in the brackets indicate range, N S= Not significant, S= significant

Refer table:3 In Group-II hypertensive subjects, the differences of mean serum lipid levels in both sexes was not significant, where as in the same table-3, there was significant higher levels of serum lipids are found in males compared to females in group-I Normo-tensive subjects with low HDL- cholesterol levels when compared with female Normo-tensive subjects.

#### 4. Conclusion

The current prospective study shows a high incidents of hypertensive subjects are found at high age group (50- 60) and hypertension cases noted high with increase in age. In hypertensive subjects the serum lipids- total cholesterol, Triglycerides, and LDL- Cholesterol are significantly high and low levels of HDL- cholesterol as compared with Normo-tensive subjects. In contract to gender it was been found that there is no significance in male and female in hypertensive subjects but in Normo-tensive subjects male compared to females found to be estimated high levels of serum lipids- total cholesterol, Triglycerides, and LDL- Cholesterol and low levels of HDL- cholesterol. A detailed research need to be conducted about the causes of

hyperlipidemias in all associated co- existing factors like smoking, drinking, obesity, diet, diabetes mellitus and ischemic heart diseases, etc, in hypertensive cases.

## References

- [1] John Farmer, Antonio Gotto. Dyslipidemia and other risk factors for coronary heart diseases. Brownwald Heart Disease, Chapter 35, W.B.Saunders's Company, 5th edition, 1997; 2:1126-60.
- [2] Joshi P, Kate S, Shegokar V. Blood pressure trends and lifestyle risk factors in rural India. JAPI 1993; 41(9): 579-81.
- [3] Castelli WP, Anderson KJ. A population at risk prevalence of high cholesterol level in hypertensive patients in Framingham study. Am .Med 1986; 80: supp (2A), 23-32.
- [4] Kaare II. Bonaa. Dag S. Association between blood pressure and serum lipids in a population-The Tromso Circulation 1991;83 (4): 1305-13.
- [5] Y-D. Ida Chen, Wayne H-H Sheu, Arthur, Gearld M. High density lipoprotein turnover in patients with Hypertension 1991; 17(3):386-93.
- [6] Carlson L A and Bottiger L E (1972) Ischemic heart disease in relation to fasting values of plasma triglycerides and cholesterol in Stockholm prospective study. *Lancet*. **1**: 865-868.
- [7] Castilli W P, Doyle J T, Gordon T, Hames C J, Hjortland M C, Hurray S B, Kagan A and Zukel W K (1977) HDL-cholesterol and other lipid in coronary heart disease. The cooperative phenotyping study. *Circulation* 55 (5): 767-772.
- [8] Friedewald W T, Levy R I and Fredrickson D S (1972) Estimation of the concentration of LDL-cholesterol. *Clin. Chem.* **18** (6): 499-515.
- [9] Gordon T and Gordon M (1977) Enzymatic method to determine the serum HDL-cholesterol. *Am. J. Med.* **62**: 707-708.
- [10] Gotto A M, Gorry G A and Thomson J R (1978) Relationship between plasma lipid concentration and coronary artery disease in 496 patients. *Circulation* **56** (5): 875-883.
- [11] Jacobs N J and VanDenmark P J (1960) Enzymatic determination of serum triglyceride.ch. *Biochem. Biophys.* **88**: 250-255.
- [12] Kristensen B O (1981) Triglycerides and HDL-cholesterol in essential hypertension. *Acta. Med. Scand.* (suppl), **646**: 31-42.
- [13] Lipid Research Clinics Program (1984). The lipid research clinics coronary primary prevention trial results-2. *JAMA.* **251**: 365-374.