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Research Article

**A DESCRIPTIVE RESEARCH TO ASSESS THE LIPID
PROFILE AMONG PATIENTS DIAGNOSED WITH
HYPERTENSION AT MAYO HOSPITAL, LAHORE****¹Dr Aqsa Choudhary, ²Dr Masooma Batool, ²Dr Muntaha Munawar**¹House Surgeon, Ghurki Trust Teaching Hospital Lahore²House Surgeon, Sheikh Zayed Hospital RYK**Article Received:** February 2019**Accepted:** March 2019**Published:** April 2019**Abstract:****Objective:** The purpose of this study was to see the lipid profile in hypertension cases.**Methods:** This descriptive study held at Mayo Hospital, Lahore from April 2017 to August 2018. A total of 100 patients admitted with hypertension were the participants of the study. The patients are in the range of 40-80 years. Both known hypertensive patients who were on treatment for a varying time and newly diagnosed hypertensive patients participated in the study.**Results:** Serum TC, LDL/ HDL, VLDL, TGL, TC/HDL, LDL, were much higher within the hypertensive group in comparison with healthy controls. HDL serum was deficient within patients of hypertension in comparison with controls, and the LDL was high within obese in comparison with non-obese patient value for both HDL and LDL was statistically significant. It was definitely found that LDL /HDL and TC/ HDL were high within obese patients, TC was high in the group of CVA, LDL was high in the IHD group, TC was high in the IHD group, LDL was high in the CVA group, and LDL/ HDL along with TC/ HDL was high in the CVA group in comparison with non-CVA group.**Conclusion:** There was significant variation of lipid profile within hypertensive patients in comparison with controls. LDL cholesterol, triglycerides, total cholesterol, LDL/HDL, TC/HDL, and VLDL ratios were high within patients of hypertension. HDL was reduced in hypertensive patients. Hyperlipidemia was often observed in most cases of patients with Type IIa pattern. Mean TC /HDL, TC, LDL/ HDL, LDL were found high within obese. Average TC, TC/ HDL, LDL/ HDL, and LDL ratios are raised in a group of CVA. The average TC and LDL were high in the group of IHD.**Keywords:** Hypertension; TC; LDL; HDL; VLDL; TGL; Cerebrovascular accident; Ischemic heart diseases; Obesity.**Corresponding author:****Dr. Aqsa Choudhary,**

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INTRODUCTION:

Hypertension is very common in the age group of elderly people [1]. It is also observed that cerebrovascular and cardiovascular diseases linked with high blood pressure are found higher in elderly people. In Pakistan 52.3% deaths before the age of seventy occur due to CAD and a dramatic rise is seen in the occurrence of coronary artery illness from 3.5% in the 1960s up to 11% in the late 1990s in cities of Pakistan and it is predictable to increase noticeably in future time [2]. Many well-directed epidemiological studies have shown significantly higher cholesterol levels within the hypertensive patient as in body mass index, gender, and age-matched normotensive patient. [3] Many current studies have shown that left ventricular hypertrophy and atherosclerosis are the main factors causing hypertension and leading to myocardial infarction. Endothelial dysfunction, insulin resistance, mechanical stress, and genetic factors cause an increase in factors of common associating myocardial infarction and hypertension [4-6]. Hyperinsulinemia and slightly hypertensive patients appear possessing a rapid fractional rate of catabolic related to lower HDL-cholesterol and apo A1-HDL concentration. Hyperinsulinemia is the main reason behind these variations rather than hypertension itself as it is in practice with hypertriglyceridemia and patients of non-insulin dependent diabetes mellitus [7]. The biological association among hypercholesterolemia and hypertension can affect the mechanism but blood pressure is associated with coronary heart disease. Two risk causes appear to have a synergistic connection [8] therefore, an early finding of risk factors before the life-threatening effect of severe atherosclerosis and catastrophic is a prominent issue for the general public and for the doctors as well [9, 12]. The assessment of dissimilar lipoproteins fractions as risk factors for the growth of coronary artery ailment as well as hypertension found possible only recently when methodologies for fractionating lipoproteins were made accessible. On finding the cholesterol within atheromatous plaques, the cholesterol was implicated as an etiological issue for atherosclerosis. It is observed in many research studies that VLDL and LDL are atherogenic and HDL is a defensive factor contrary to the disease of coronary artery and hypertension. Serum lipid and lipoprotein concentration are normally used for finding out the person with the atherosclerotic disease with significant symptoms.

METHODS:

This descriptive study held at Mayo Hospital, Lahore from April 2017 to August 2018. A total number of 110 patients of hypertension participated in the study. The age range of the patients was 45 to 80 years. Patients with known hypertensive which were on treatment for a varying period of time and recently identified were involved in the research study. Through the inclusion criteria, patients taking medicines for hypertension and possessing or depriving complications related to hypertension were contained within the research study. Patients had Systolic/ diastolic blood pressure >140 mm/>90 mmHg based on taking mean of two inspections or one in a situation of known antihypertensive and on hypertensive medication. Participants with Secondary hypertensive cases were omitted from the research study. Patients with the first 2 weeks following surgery and displaying high-grade fever were omitted from the study. The purpose behind the removal of such patients was to get a clear picture of association amongst serum lipids and hypertension. Patients receiving lipid-altering drugs, and the patients of hypothyroidism and diabetes mellitus were excluded from the study. The control group comprised over fifty participants and each patient had to provide a detailed history and gone through the careful physical exam as well as laboratory investigations were carried out. Furthermore, Urine - albumin, Complete blood count, microscopy, sugar, fasting blood sugar, postprandial blood sugar, ECG, lipid profile - Total cholesterol, LDL cholesterol, HDL cholesterol, Triglycerides, VLDL, ECHO/cardiac isoenzymes (CPK, LDH, SGOT)/X-ray for chest were completed in related cases. Blood samplings were taken after 12 hours of complete fasting and all patients were asked to have a fat free diet one day prior to sampling. Lipid profile analysis was carried out for all collected blood samples. Data entry was made using SPSS. Calculations of SD and Mean for numerical data and of frequencies for categorical data were carried out.

RESULTS:

A total number of 110 patients of essential hypertension and 50 healthy controls were included in this study. Out of which 87 were male and 13 were female. Participants age range comprised over 46 to 76 years. The level of Triglyceride within hypertensive participants subjects (163) compared to healthy controls (125), which is highly significant. An average of the level of HDL (39.78) is observed in hypertensive cases in comparison with healthy controls (54.5), it is significant. LDL level (average 12.0) in comparison with (76.1) in healthy controls, it is significant statistically. VLDL value (32.7) is

observed within hypertensive participants subjects in comparison with healthy (25.3), which is very significant. TC /HDL ratio indicates an obvious increase with an average of 4.96 within hypertensive participant subjects in comparison with 2.8 healthy controls which is very significant. LDL / HDL ratio indicates an increase with an average of 3.10 within hypertensive participants subjects in comparison with 1.4 in healthy control which is very significant. The average of the TC, TC /HDL, LDL, LDL/ HDL was

high in obese. The TC/ HDL and LDL /HDL and LDL was high within obese patients as compared to non-obese patients. TC, LDL, TC/ HDL, and LDL/ HDL are Obviously raised in the CVA group, which is statistically highly significant. TGL, VLDL, and HDL are not statistically significant. It is observable that TC and LDL are high in the IHD group, which is statistically significant. TGL, VLDL, HD, LDL / HDL, and TC / HDL are not statistically significant.

Table – I: Age Versus Sex

Ager Vs. Sex	Male	Female	Total
40 - 49 Years	20	3	23
50 - 59 Years	25	5	30
60 - 69 Years	36	6	42
> 70	5	0	5
Total	86	14	100

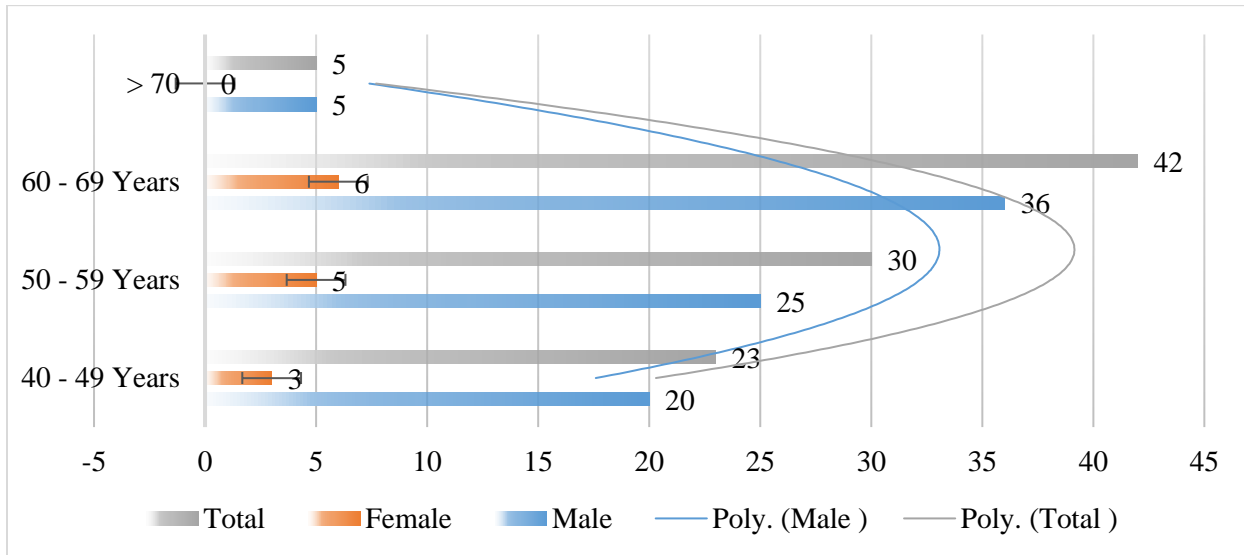
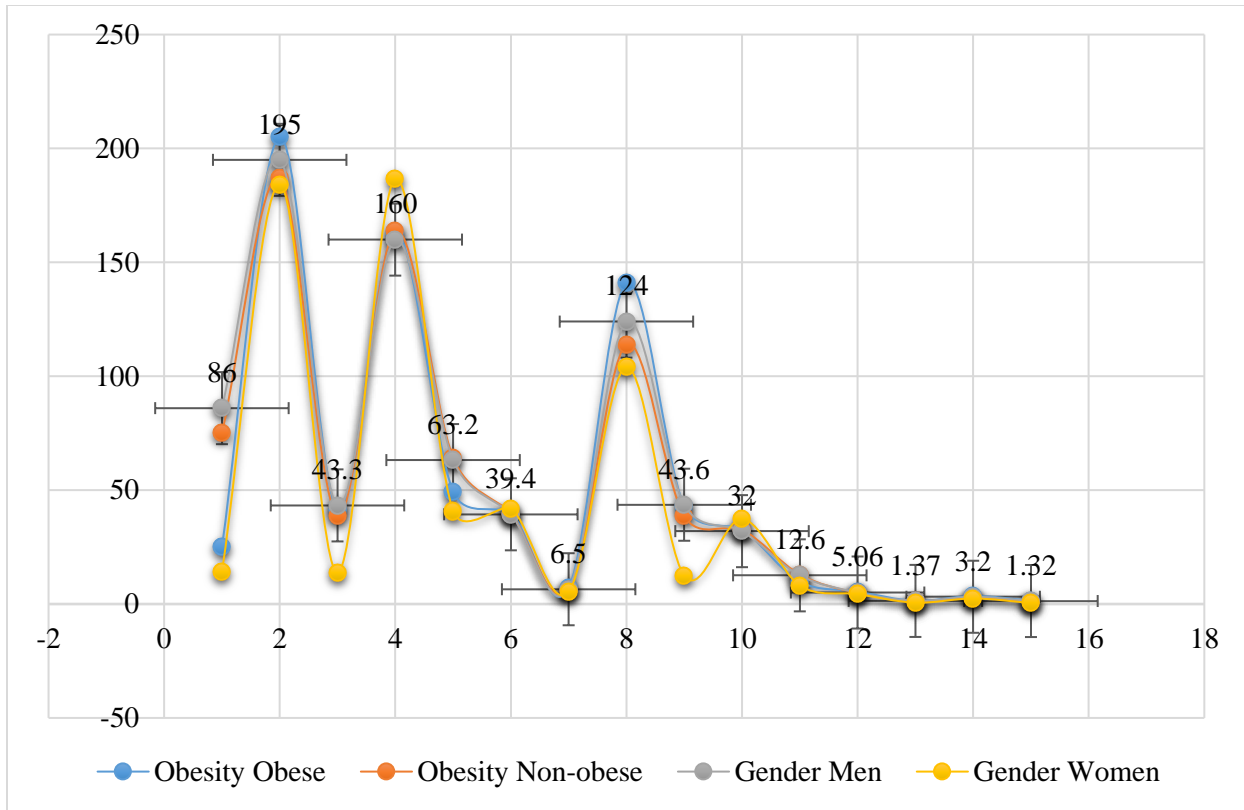


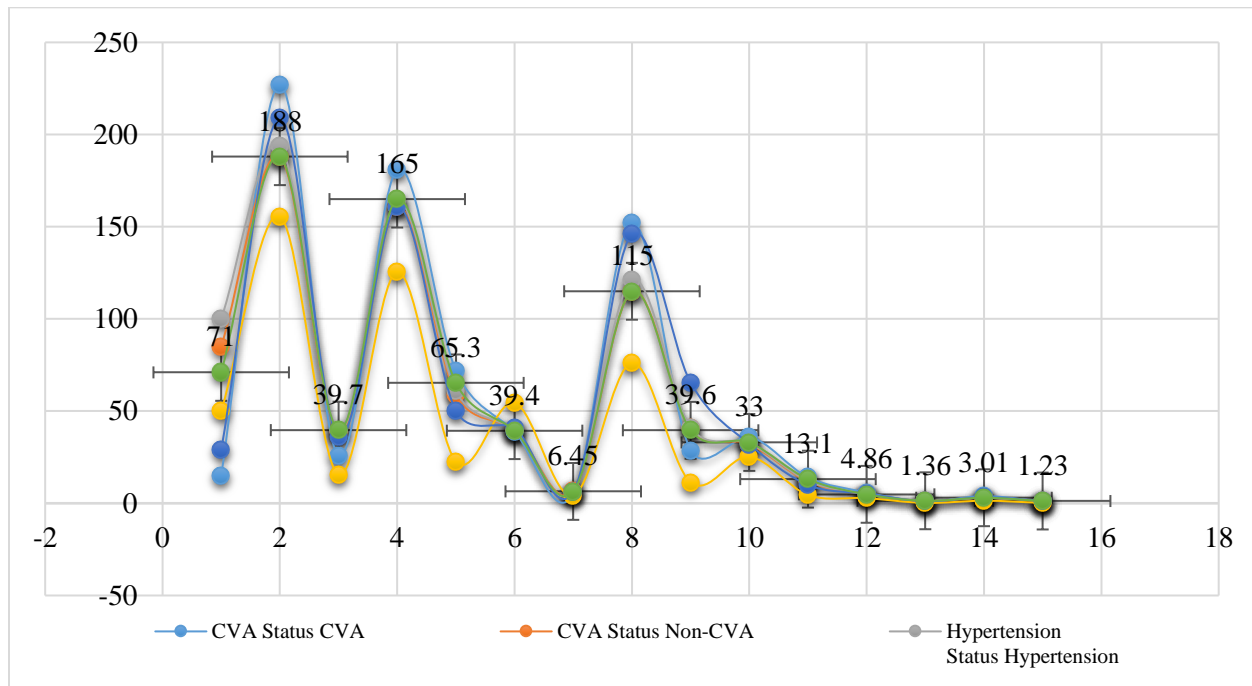
Table – II: Stratification of Variables (Mean and SD)

Variables		Obesity		Gender	
		Obese	Non-obese	Men	Women
Number		25	75	86	14
TC	Mean	205	187	195	184.14
	±SD	41.4	38.8	43.3	13.78
TGL	Mean	163	164	160	186.71
	±SD	49.3	64.3	63.2	40.8
HDL	Mean	40.1	39.7	39.4	42
	±SD	7.01	6.23	6.5	5.49
LDL	Mean	141	114	124	104.07
	±SD	43	38.6	43.6	12.48
VLDL	Mean	32.7	32.7	32	37.35
	±SD	9.85	13	12.6	8.17
TC / HDL	Mean	5.49	4.79	5.06	4.37
	±SD	1.43	1.23	1.37	0.6
LDL / HDL	Mean	3.55	2.95	3.2	2.44
	±SD	1.55	1.11	1.32	0.47



Tale – III: Stratification of Variables (Mean and SD)

Variables	CVA Status		Hypertension Status		IHD Status		
	CVA	Non-CVA	Hypertension	Healthy	IHD	Non-IHD	
Number	15	85	100	50	29	71	
TC	Mean	227	188	194	155.6	209	188
	±SD	25.7	38.9	39.49	15.4	36	39.7
TGL	Mean	181	161	163.6	125.5	161	165
	±SD	71.9	58.9	60.8	22.7	50.2	65.3
HDL	Mean	38.8	40	39.78	54.5	40.8	39.4
	±SD	5.13	6.61	6.37	4.2	6.3	6.45
LDL	Mean	152	115	121	76.1	146	115
	±SD	28.8	40.7	41.2	11.4	65.5	39.6
VLDL	Mean	36.2	32.1	32.7	25.3	32.1	33
	±SD	14.1	11.8	12.2	4.5	10	13.1
TC / HDL	Mean	5.91	4.8	4.96	2.8	5.22	4.86
	±SD	0.95	1.3	1.31	0.2	1.17	1.36
LDL / HDL	Mean	3.93	2.96	3.1	1.4	3.32	3.01
	±SD	0.89	1.26	1.25	0.2	1.3	1.23



DISCUSSION:

Hyperlipidemia and Hypertension are known as higher risk factors in the growth of CHD as shown by many epidemiologic research studies all over the world [11]. These concepts show the atherosclerotic plaque development starting when the migration of low-density lipoprotein into the arterial wall from the bloodstream by arterial endothelium happens. Receptor sites pick it up and brought into smooth muscle cells from media. The process of atherosclerotic initialized at the time of cells migration into the intima proliferate and finally ends into atherosclerotic plaque. In this scheme, Hypertension performs its role by damaging the endothelial lining of the artery and helping the LDL passage, specifically at arterial bifurcation sites which were sheer and stress is maximal [10]. A study in Pakistan showed HDL-C level as a potent lipid risk factor possessing an inverse link with the CHD incidence both in women and men; the hypothesis which states that HDL helps up taking of cholesterol (form peripheral tissue). It also helps in its transportation to the liver for excretion. But, lower levels of HDL, high levels of LDL and TC/ HDL ratio are more prognostic of coronary heart disease [11] Our study presented 110 patients with essential hypertension and fifty healthy control participants were included. The definition of Hypertension was in accordance with JNC VII, a systolic and diastolic blood pressure (≥ 140 mmHg ≥ 90 mmHg). For lipid

profile analysis blood samples were taken from all patients. Many clinical parameters were used for the analysis of lipid profile values and these were discussed in which age range in the recent study group was from 46 to 76 years and the average age was 61 years. A large number of patients of hypertension were observed between age range 51 to 70 years representing 72 % of the total cases studied. Men 29% and women 35.8 % in the age range 51-60 years and men 42 % and women 43 % were in the age group of 61 to 70 years. The comparison of the study with PROCAM trial data analysis was carried out which indicated increasing hypertension prevalence with age in both genders. In the studies presented by Assmann G and Schulte H in 1987 showed that ten percent of males and less than five percent of females below 30 years of age were found hypertensive and 27 % from both genders were among age 40 to 50 years and 37 % of males and 43 % of females of the age 51to 60 years were found hypertensive [12]. A recent study has shown lipid fractions TC, LDL/HDL-C, TGL, TC/HDL-C VLDL, & LDL-C ratio was high within the hypertensive cases as compared to the healthy controls which are according to most of the earlier reports. All the lipid fractions were high in this study except HDL-C which was reduced. The change in TC, LDL/HDL-C, TGL, TC/HDL-C VLDL, & LDL-C was high in hypertensive participants subjects as in comparison with healthy controls. In the studies

presented by Castelli W. P, Anderson K.A in 1986 also stated that serum cholesterol and blood pressure are connected with an 'r' factor of 0.12 signifying those with high values of blood pressure likely to have higher serum cholesterol within Framing the heart study. The diseased of Coronary heart developed with high consistency within patients of total cholesterol to HDL-C more than 4.5. Fifty percent of women and more than fifty percent of men with hypertension were already possessing an abnormal profile of lipid. In the studies presented by Bonna K.H, Thelle D.S in 1991 had stated that within both genders total and non-HDL-C levels were enhanced on increasing systolic/diastolic blood pressures. The link amongst cholesterol level and blood pressure increased with growing age in females but decreased with growing age within the male. Tobacco, exercise, and alcohol consumption had a slight influence on the link between serum lipids and blood pressure [14]. Chen Y-DI et al in 1991 presented that mildly hypertensive patients have a faster catabolic rate of lower HDL-C and Apo-A1/ HDL concentration [15]. In our study LDL, TC/HDL, LDL/ HDL, and TC were found high in obese. The LDL, TC/ HDL, and LDL /HDL were high within obese as in comparison with non-obese patients. Raj Lakshman M., et al in 1996 stated that plasma triglycerides enlarged increasingly with growing obesity and HDL reduced with growing obesity [16]. In the studied by Bonna K.H in 1991 stated that lean subjects over massive subjects were having a rapid increase in triglyceride level and total cholesterol as with enlargement in blood pressure [14]. TC TC/ HDL and LDL/ HDL, LDL was high in the CVA group, statistically significant and TGL, HDL, VLDL were not statistically significant. The comparison of this study has been made with the study by Rajwade.N A., et al in 1996. LDL-C lipoprotein, levels of total cholesterol and triglyceride, the strokes patients were seen with high levels but not as expressive as those of matched normal subjects. In this study LDL/HDL is high in males. TC, TC/HDL, LDL-C, are high in the males in comparison with females which is statistically not significant. TGL, VLDL, and HDL-C were high in females as compared to males, which is statistically not significant. In the study by Castelli W. P in 1986 reported that triglycerides were an influential forecaster of CHD in females over the age of fifty, and no relationship was observed male in univariate analysis and on multivariate analysis the triglycerides are a risk factor in female [13]. A conclusion in the study by Karpanov E. et al in 1992 stated, serum lipid and Apo variation within the menstrual cycle is significantly different amid normotensive and hypertensive females this is

important in the treatment of patients with hypertension [18].

CONCLUSION:

There was significant variation of lipid profile within hypertensive patients in comparison with controls. LDL cholesterol, triglycerides, total cholesterol, LDL/HDL, TC/HDL, and VLDL ratios were high within patients of hypertension. HDL was reduced in hypertensive patients. Hyperlipidemia was often observed in most cases of patients with Type II pattern. Mean TC /HDL, TC, LDL/ HDL, LDL were found high within obese. Average TC, TC/ HDL, LDL/ HDL, and LDL ratios are raised in a group of CVA. The average TC and LDL were high in the group of IHD.

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