

## ORIGINAL ARTICLE

# Pregnancy Induced Hypertension and Lipid Profile of Obese and Normal Weight Pregnant Women. A Comparative Study

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## ABSTRACT

Maternal dyslipidemia and hypertension are risk factors and correlated with the pregnancy complications which creates serious biochemical and physiological effects on neonatal outcome. It was concluded that different variables such as systolic and diastolic blood pressure serum cholesterol, triglyceride, low density lipoproteins and High density lipoproteins levels ( $140\pm 11.13$ ,  $90\pm 21.9$ ,  $169\pm 12.31$ ,  $146\pm 2.10$ ,  $170\pm 11.10$ ,  $49\pm 12.10$ ) and ( $200\pm 10.12$ ,  $100\pm 21.19$ ,  $226\pm 10.13$ ,  $200\pm 12.11$ ,  $230\pm 14.13$ ,  $37\pm 16.19$ ) of Group H and Group N have a significant changes ( $<0.005$ ) as compared to the control Group N ( $122\pm 1.3$ ,  $80\pm 2.9$ ,  $120\pm 23$ ,  $130\pm 21$ ,  $115\pm 10$ ,  $42\pm 20$ ).

## INTRODUCTION

When blood pressure of an individual increases than the normal levels the situation referred as hypertension [5]. Blood pressure of all individuals remain in changing pattern throughout the day based on life activities [12]. The most dangerous thing about hypertension or high blood pressure is that majority of people cannot feel blood pressure changing variations [9, 7]. Weight of mother is so important before the pregnancy preparation [4]. Body weight of a mother is directly linked to her lipid profile and blood pressure before and during pregnancy [8]. Maternal body weight has association between fetal development and genetic problems of new born baby [3].

Maternal obesity has regression of pregnancy complications during three trimesters [6]. Pregnancy induced hypertension, gestational diabetes, preeclampsia and changing in lipid profile are very common complications of maternal obesity [2.1]. In offspring retarded growth, diabetes, obesity and hormonal complication syndrome are very common because of their mother body weight in pregnancy [10]. It has seen in different studies that obesity is a leading cause of maternal mortality in all over the world and women face very serious health problems because of their obesity in both pre and after pregnancy [9]. Researchers concluded from their studies that both pre-pregnancy lipid profile and body weight independently increase blood pressure during pregnancy.

In a study when analysis were conducted and compared for further understanding of changes in maternal serum lipids and blood pressure in overweight and obese women with normal weight women between the first and late second trimester of pregnancy the results were absolutely significant [14]. Consequently, number of studies were linked dyslipidemia with obesity. Researcher claimed that high levels of low density lipoprotein (LDL), low levels of high density lipoprotein (HDL) and abnormal levels of triglycerides (TGs) presented hypertension and its complications during and after pregnancy in women [15]. On the other hand obesity created abnormalities in lipoprotein metabolism which can caused serious cardiovascular problems [13]. The aims and objectives of these studies were to determine that problems which are associated with lipid profile and hypertension in pregnant women and their measures for better health services in

both mother and fetus [12].

## MATERIALS AND METHODS

In current study 250 women were selected from different gynecological units of different hospitals and divided them into three different groups. In Group N, all fifty pregnant women were absolutely normal and it was control group, in Group H, 100 pregnant women were with controlled blood pressure and lipid profile while in Group P, 100 women were with high blood pressure and lipid profile. The biological markers systolic and diastolic blood pressure, cholesterol, LDL, Triglycerides and HDL levels were measured with sphygmomanometer and kit methods by spectrophotometer. Raw data of different variables were calculated bio- statistically with the help of SPSS. Model 2000.

## RESULTS

Table 1: Group N, n= 50 normal and healthy pregnant women

Variables	Units	Levels Mean $\pm$ SD	P value
Systolic B.P	mm Hg	$122\pm 1.3$	0.00
Diastolic B.P	mm Hg	$80\pm 2.9$	0.00
Cholesterol	mg/dl	$120\pm 23$	0.00
Triglyceride	mg/dl	$130\pm 21$	0.00
LDL	mg/dl	$115\pm 10$	0.00
HDL	mg/dl	$42\pm 20$	0.00

&lt;0.005

Table 2: Group H, n= 100 pregnant women with control biomarkers

Variables	Units	Levels Mean $\pm$ SD	P value
Systolic B.P	mm Hg	$140\pm 11.13$	0.00
Diastolic B.P	mm Hg	$90\pm 21.9$	0.00
Cholesterol	mg/dl	$169\pm 12.31$	0.00
Triglyceride	mg/dl	$146\pm 2.10$	0.00
LDL	mg/dl	$170\pm 11.10$	0.00
HDL	mg/dl	$49\pm 12.10$	0.00

&lt;0.005

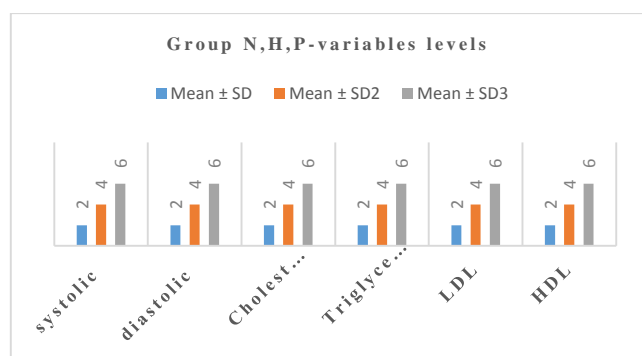
In this study different variables such as systolic and diastolic blood pressure serum cholesterol, triglyceride, low density lipoproteins and High density lipoproteins levels ( $122\pm 1.3$ ,  $80\pm 2.9$ ,  $120\pm 23$ ,  $130\pm 21$ ,  $115\pm 10$ ,  $42\pm 20$ ), ( $140\pm 11.13$ ,  $90\pm 21.9$ ,  $169\pm 12.31$ ,  $146\pm 2.10$ ,  $170\pm 11.10$ ,  $49\pm 12.10$ ) and ( $200\pm 10.12$ ,  $100\pm 21.19$ ,  $226\pm 10.13$ ,

200±12.11, 230±14.13, 37±16.19) of Group N, Group H and Group P were calculated bio-statistically. All pregnant women of each group showed a significant changes (<0.005) regarding their observed levels. Graphically representation in fig-1 and fig-2 showing significant (<0.005) changes in all groups.

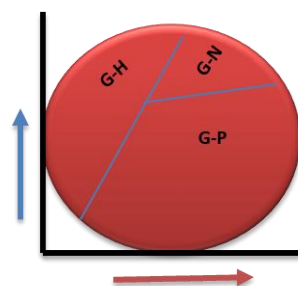
Table 3: Group P, n= 100 pregnant women with complicated biomarkers

Variables	Units	Levels Mean ± SD	P value
Systolic B.P	mm Hg	200±10.12	0.00
Diastolic B.P	mm Hg	100±21.19	0.00
Cholesterol	mg/dl	226±10.13	0.00
Triglyceride	mg/dl	200±12.11	0.00
LDL	mg/dl	230±14.13	0.00
HDL	mg/dl	37±16.19	0.00

<0.005



(Levels Mean ± SD)



## DISCUSSION

Increased obesity in pregnant women is correlated to blood pressure, serum cholesterol, triglyceride, low density lipoproteins and High density lipoproteins implications [16]. The pathophysiological mechanisms showed that increased in blood pressure and lipid profile associated with obesity in pregnant women [6.9]. Systolic and diastolic blood pressure, serum cholesterol, triglyceride, low density lipoproteins and High density lipoproteins levels are likely important contributing factors [17]. Many researchers proved in their studies that abnormal lipid profile of pregnant women is a sign of pathogenesis at different stages of pregnancy [15].

In current study, it has proved that lipid parameters and blood pressure in pregnant women are caused of complications. It was concluded that different variables such as systolic and diastolic blood pressure serum

cholesterol, triglyceride, low density lipoproteins and High density lipoproteins levels (140±11.13, 90±21.9, 169±12.31, 146±2.10, 170±11.10, 49±12.10) and (200±10.12, 100±21.19, 226±10.13, 200±12.11, 230±14.13, 37±16.19) of Group H and Group N have a significant changes (<0.005) as compared to the control Group N(122±1.3, 80±2.9, 120±23,130±21, 115±10, 42±20).

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