

Correlation between pre-eclampsia and Body Mass Index (BMI)

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Introduction

The level of C-reactive protein (CRP) with the following incidence of pre-eclampsia, an extremely important relationship was known with a vital modifier being body mass index.^{1,2} These findings square measure of interest for numerous reasons. First of all, they show a connection between pro-inflammatory indicators and maternal diseases including the emergence of pre-eclampsia and an elevated BMI with elevated CRP levels^{3,4}. This is interesting because increase body weight may occur as an independent early event in the aetiology of pre-eclampsia because it influences to greater CRP levels, despite inflammation being considered a subsequent event in most cases of pre-eclampsia^{5,6}.

Obesity is a significant risk feature for pre-eclampsia; elevation of BMI prior to or during pregnancy are significant risk factors for the illness. Obesity is a well known risk factor for pre-eclampsia.^{7,8,9} Even after controlling for other potential confounding factors, the risk of pre-eclampsia in mothers increases with rising levels of obesity.^{10,11} Instead of the obesity itself, this is probably connected to the altered metabolic state linked with well established obesity. With increase serum TAG and very low density lipoprotein (VLDL) concentrations and lower high density lipoprotein (HDL) level than those seen in expected women who are slim, maternal obesity alters the plasma lipid profile^{12,13,14}. This dyslipidemia pattern resembles the "metabolic syndrome" as it is known in the non-pregnant population. In addition, obesity shares a trait with many other risk factors for the condition: chronic low-grade inflammation.¹⁵ The aim of this research was to find a relationship between pre-eclampsia and BMI.

Methodology

This cross sectional study was conducted in Liaquat University of Medical and health sciences Jamshoro at Biochemistry department during Jan 2017 to Jun 2017. The sample size was calculated by using Rao software and eighty (n=80) subjects were selected. This sample size was equally divided into two groups. Group A is a control group consists of normal pregnant women while group B consists of women in 2nd and 3rd trimester with diagnosed pre-eclampsia. The women with age range between 16-45 years irrespective of their parity were included in this study while those women with hypertension, rheumatoid arthritis, cardiac disorder, chronic renal disease and Tuberculosis were excluded from the study. The data was collected on the predesigned proforma. 5mL of blood was taken from normal and pre-eclamptic pregnant women under aseptic conditions. The results were obtained from laboratory. This study was permitted by (LUMHS) Ethical Review Committee of Jamshoro, Pakistan. consent was taken through written informed from all subjects.

The data was investigated by using SPSS 16 (statistical Package for Social Sciences) and Pearson correlation test was used for observed the correlation.”

Results

This study was planned to determine the correlation between pre-eclampsia and BMI. It was observed that BMI in group B with pre-eclamptic pregnant women was raised (31.45 ± 4.10 kg/m²) as compared to BMI in normal pregnant women (28.33 ± 2.13 kg/m²) with p value 0.02 (Fig 1). The results presented that there is a weighty difference between these two sets in terms of BMI.

Fig 1: Cases Distribution According to BMI

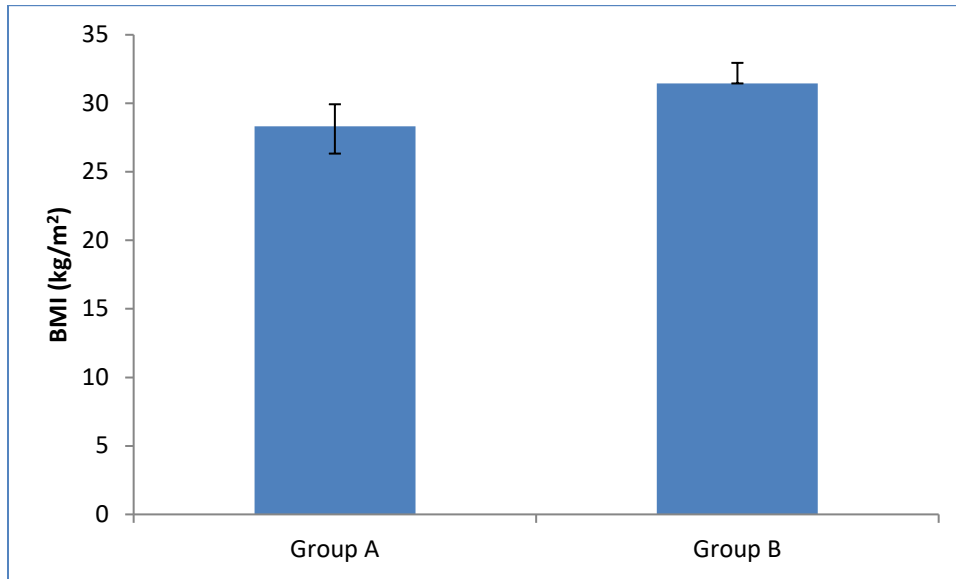


Table 1: : Cases Distribution According to underweight (BMI<28kg/m2) and overweight (BMI>28 kg/m2)

In group A 80% subjects (n=32) were having normal BMI while 20% subjects (n=8) were overweight, having BMI >28 kh/m². In group B, 60% subjects (n=24) were having normal BMI while 40% subjects (n=8) were overweight, having BMI >28 kh/m². All the results are shown in the table 1.

variable	Group A		Group B		p-value
	N	%age	N	%age	
Normal weight (BMI 28-25)	32	80	24	60	0.02*
Over weight (BMI >28)	8	20	16	40	
Total	40	100	40	100	

*t-test used for mean evaluation of BMI among cases and control healthy pregnancy

Chi-square test applied for frequency and % percentage comparison observing P<0.02

Group-B = cases of pre-eclampsia pregnancy, Group-A = control health pregnancy.

Discussion

In this study mean of Body mass index was significantly increased as compare to control (group A). These results are consistent with the research that was done by McClure et al¹⁶ where they revealed that females pre-eclamptic subjects had a higher body mass index (BMI). Another study done by researchers showed that pre-eclamptic women had higher BMI as compare to control. Shiozaki et al¹² findings were in accordance to this study in which they observed that every fourth women was having high BMI (i.e. ≥ 28 kg/m²) than normal.

“In the United States, it was observed over the last thirty years that the percentage (%) of females who are obese or The prevalence of overweight has grown by around 60%.¹⁴. The World Health Organization (WHO) estimated the prevalence of overweight or obese women with BMI ≥ 28 kg/m² to be 32% in China, 37% in France, 18% in India, 73% in Mexico, 69% in South Africa, 77% in the United States and has significant differences across each continent. 125 Given that obesity is linked to infertility, spontaneous miscarriage, fetal malformations, thromboembolic complications, gestational diabetes, stillbirth, preterm delivery, caesarean section, fetal overgrowth, and hypertensive complications, the high prevalence of obesity and projected increase have significant implications for pregnancy..^{12, 15, 16}

Conclusion:

Females with pre-eclampsia had a higher BMI as compare to normal pregnant women.

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