



## Obesity as risk factor for preeclampsia

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### Objective

Overweight is associated with alterations in lipid concentrations and an activation of inflammatory markers. Both of these metabolic abnormalities are characteristic of preeclamptic pregnancies, before the onset of clinically evident disease. The objective of this study was to determine the accuracy of pre-pregnancy body mass index (BMI), as risk factor for preeclampsia, in predicting of preeclampsia and to explore its potential for clinical application.

### Methods

The study included 400 participants, between 15 - 43 years (average age  $27.65 \pm 5.04$ ), divided in three groups: control group (n = 300 normotensive pregnancies); group with mild preeclampsia (n = 67) and group with severe preeclampsia (n = 33). Prepregnancy BMI was based on measuring maternal height and weight at the initial visit (6-12 w.g.). Total maternal weight gain during pregnancy was recorded on admission to delivery ward.

### Results

Women who developed preeclampsia had a higher pre - pregnancy BMI, had higher rates of overweight or obesity prior pregnancy and gained more weight during pregnancy. The majority of women who developed preeclampsia were overweight, but not obese. In our study, mean weight gain during the pregnancy in control groups was  $13.95 \pm 3.1$  kg, vs.  $19.59 \pm$  kg in mild preeclamptic women and  $20.24 \pm 7.36$  kg ( $p < 0.01$ ) in severe preeclamptic women .

### Conclusion

Prepregnancy BMI in combination with blood pressure measurement appear to be fairly weak predictors for preeclampsia. However, they are virtually free of cost, non - invasive and ubiquitously available.

**Table.** Pre-pregnancy BMI and blood pressure during pregnancy\*

Characteristics	Controls n=300	Mild preeclampsia n=67	Severe preeclampsia n=33	P value
Prepregnancy BMI	22.65±1.698 (19.06-27.63)	25.53±1.58 (21.8-27.91)	25.8±2.15 (21.68-29.06)	<0.01§
<19.99	1.67	0	0	<0.01§
20.0-24.99	87.33	23.88	30.3	
25.0-29.99	11.0	76.12	69.7	
>30	0	0	0	
Weight gain during pregnancy (kg)	13.95±3.1 (7-29)	19.59±3.78 (13-31)	20.24±7.36 (10-39)	
Blood pressure in first trimester (8-12 week of gestation)				
sBP	102.18±7.38	111.79±8.73	114.24±10.47	>0.05†
dBp	63.72±4.87	73.36±7.51	75.45±8.23	<0.05*
MAP	76.54±5.4	86.16± 7.66	88.38±8.6	<0.05
Blood pressure in second trimester (13-20 week of gestation)				
sBP	104.87±7.83	117.31±5.25	121.82±7.05	<0.05†
dBp	65.92±5.02	77.76±5.73	80.91±6.89	<0.05
MAP	78.89±5.78	90.91± 5.35	94.54±6.86	<0.05
Week of Preeclampsia onset				
<25		0	18.18	<0.01†
26-30	-	7.46	24.24	
>31		92.54	57.58	
Duration of hypertension	-	4.79±2.59 (1-14)	7.97±4.31 (2-16)	<0.01§§

Data are given as mean, standard deviation or % unless otherwise specified; n= number of subjects; BMI- body mass index; SBP- Systolic blood pressure; DBP- Diastolic blood pressure; MAP-Mean arterial blood pressure; - = data not available; § multivariate analysis, univariate ANOVA and Spearman correlation coefficient; §§ Student's t test; †parametric and non parametric one-way ANOVA in dependent of normal distribution; \* p<0.05 control vs. severe preeclampsia; between group p>0.05