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## Peculiarities of Pregnancy in Women with Different Body Mass

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### Abstract

*The aim of the study is* to identify the characteristics of pregnancy in women with different body mass before pregnancy on the background of extragenital diseases and to establish the risk groups to reduce the perinatal losses.

*Material and methods.* Observations were conducted in the Odessa City Hospital № 5 specialized in preterm labour. We studied the cases of 134 pregnant women with burdened obstetric history on the background of anemia Stage I–II. There were women with the cardiovascular system disorders, pre-eclampsia. The average age of the surveyed women was  $28.3 \pm 5.2$  years old. The statistical data were collected using SPSS program.

*Results and discussion.* Our study confirmed that the women who were overweight had by 12 % higher risk of occurrence of mild pre-eclampsia. In accordance with our research, one third of the women (32 %) were overweight hereditary, 14.9 % of the women had lack of body mass, which demonstrated high correlation with anemia during pregnancy. The overweight women as well as the women with lacking body mass form certain groups of risk. In the overweight women, mostly preeclampsia occurs, whereas the lack of body mass mostly causes such complications as anemia of I and II degrees.

**Conclusions.** The identification and establishment of the risk groups among the overweight and underweight women is an appropriate method of prevention of the perinatal complications and losses.

**Keywords:** overweight, deficiency of body weight, preeclampsia, anemia.

**Background.** The overweight has become an acute problem in the contemporary life of pregnant women and humanity in general, tending to increase. Adipose tissue has a complex endocrine effects in women, synthesizing biologically active substances, hormones, peptides [1].

Obesity is the endocrine disorder that has a genetic origin manifesting from the beginning of puberty. The violation of oocyte maturation, the chronic anovulation, the inadequate luteal phase of the menstrual cycle, and the infertility are directly dependent on the body weight of women [1, 2, 7]. The recent studies have also demonstrated the presence of a genetic link between the body mass index of the women before pregnancy and the metabolic features of their children. Special attention is paid to the pathological weight gain during pregnancy and the associated features of the fetal metabolism [8, 9]. We also know that the underweight in the women (UWW) of reproductive age is a biological marker of somatic and reproductive disadvantage, which is associated with a number of obstetrical complications that lead to spontaneous abortions, perinatal complications, and affect the quality of health of the next generation. The number of UWW is more than 25 % of the population [3-6].

**The AIM** of the study was to identify the characteristics of pregnancy on the background of varying body weight in the women with extragenital pathology and without it.

**METHODS.** It was analytical case control study of 134 clinical cases of pregnant women carried out in the Department of OBG, Odessa City Hospital № 5. The body mass index (BMI) was estimated before pregnancy and at the end of it using the Quetelet's formula [10]. By screening study, all case stories have been clarified as to the women's age, location, the number of pregnancies, the number of misabortions, the number of medical abortions, infertility, sexually transmitted diseases; extragenital diseases such as anemia — 69 (51.5 %), pyelonephritis — 30 (22.4 %), cardiovascular diseases — 18 women (13.4 %) have been considered. The pre-eclampsia of mild to moderate degrees (RCOG 2014) was found in 27 cases (20.1 %). There were women who lived in villages — 22 (16.4 %) and cities — 112 (83.6 %). It was found that 32 % of the overweight was hereditary (according to questionnaires). The statistical analysis of the data was conducted using SPSS software version 14; logistic regression, T-test, ANOVA, and ANOVA analysis bivariantnyy (CHI-

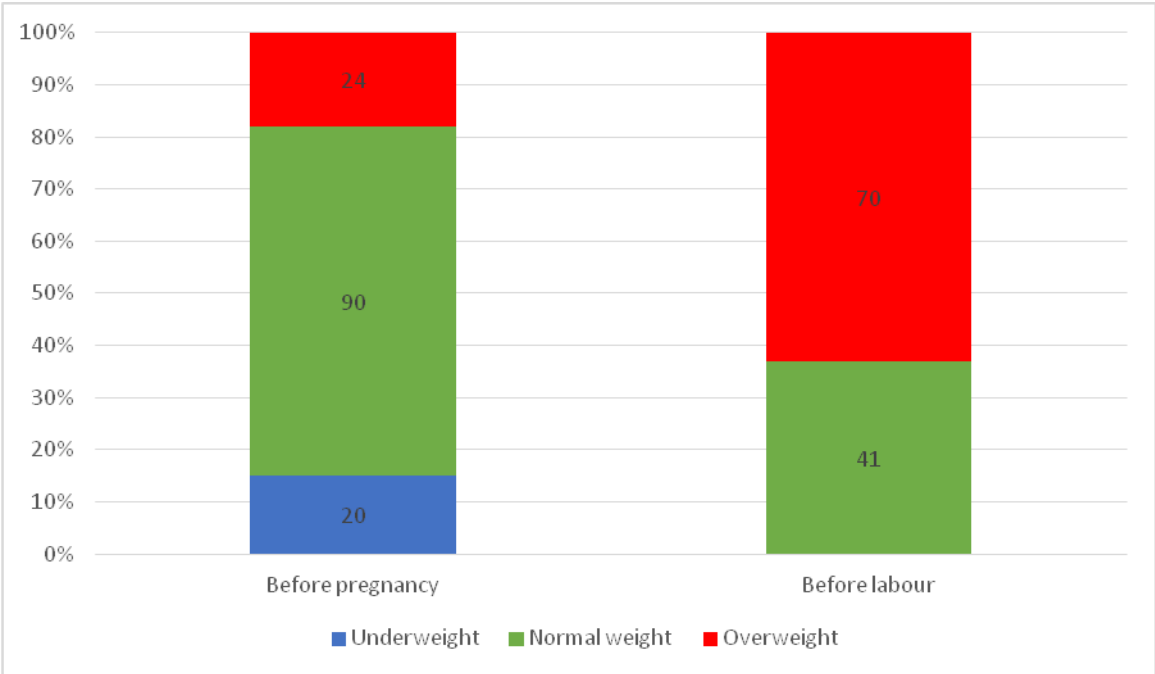
SQUARE) were used. The indicator degree of probability (p) between the two comparative values was considered significant at  $P < 0.05$ .

**RESULTS AND DISCUSSION**

The average age of women who participated in the study was  $28.3 \pm 5.2$ . Among them, 20 women (14.9 %) were underweight, 90 women (67.2 %) had normal mass, 24 women (16.8 %) were overweight (Figure 1). To the end of pregnancy, the BMI distribution was as follows: there were no women with underweight, 41 women (36.9 %) had normal BMI at the time of birth, and 70 women (63 %) were overweight.

Figure 1

Quantitative Distribution of Women’s Weight at the Beginning and at the End of Pregnancy



The result of the research discovered that there is a dependency between the pre-eclampsia and anemia occurrence and the body weight. However, the dependence of pyelonephritis and the SSS diseases on the weight gain was not demonstrated. In addition, the dependence on probability of pathological conditions on the BMI before pregnancy was not found either.

We have found that the probability of the impact of the BMI on detecting the conditions, when studied in regression, was controlled by the women’s age, the variables related to the obstetric and gynecological history, and the presence of STIs. The research data available showed pathological effect of the BMI and weight gain as predictors that mostly

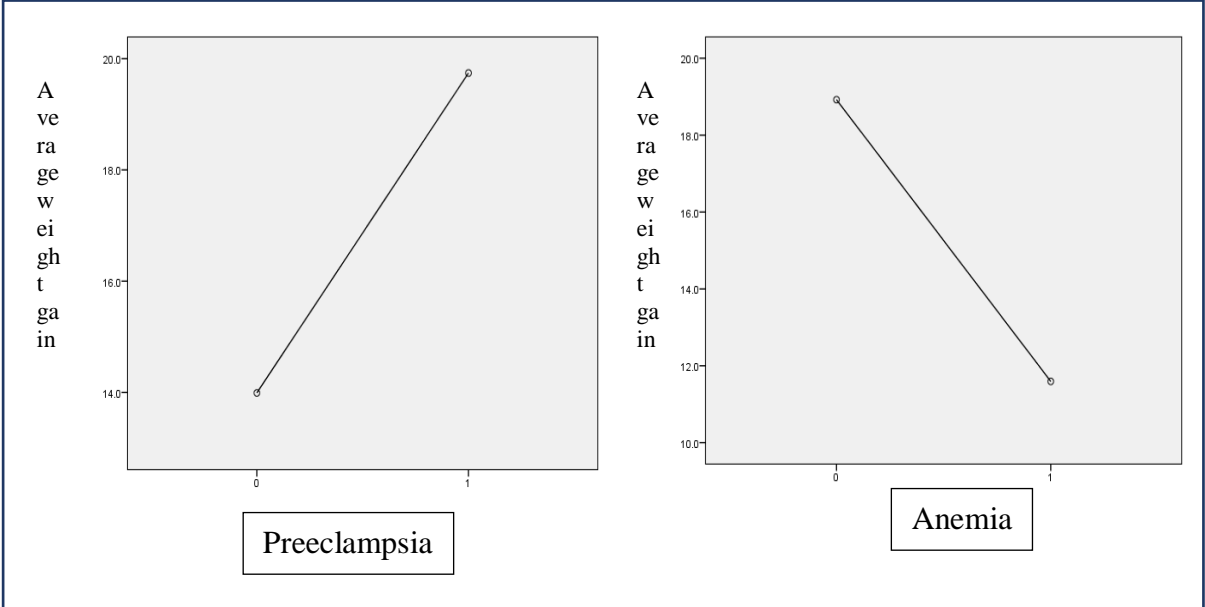
contribute to the formation of mild pre-eclampsia in the pregnant women ( $p < 0.0001$ ) (Table 2).

Moreover, one of the factors of pre-eclampsia development was the place of woman's living. In the rural areas, the pre-eclampsia was observed more often than in the urban areas, which require further elucidation (Table 2).

The mild and moderate anemia was noted among the women with deficient body weight ( $p < 0.0001$ ) (Table 2).

Table 2

The Risk Groups of Preeclampsia and Anemia Appearance in Pregnant Women With Different Weight Indexes



The impact of weight gain on the probability of extragenital pathologies was also controlled using a paired t-test and the bivariant chi-square analysis. These methods also indicated the increase in the body weight and the BMI as the factors that may contribute to the development of pre-eclampsia and anemia.

In the course of comparative relative risk analysis, it was found that the probability of anemia in the women with deficient body weight was low as well as the mild to moderate pre-eclampsia in the overweight women.

Relative risk analysis:

1. Anemia in women with underweight during pregnancy

**Relative risk** 2.8794  
**95% CI** 2.0734 to 3.9989  
**z statistic** 6.312

**Significance level**  $P < 0.0001$

2. Pre-eclampsia is overweight women during pregnancy

**Relative risk** 2.0260  
**95% CI** 1.0196 to 4.0257  
**z statistic** 2.015

**Significance level**  $P = 0.0439$

## CONCLUSIONS

On the basis of obtained results and their analysis, it was found that the overweight women are in the risk group of pre-eclampsia development. The underweight women in our study had anemia during pregnancy, which is an unfavorable factor. The women living in the rural areas should be paid more attention by the family physicians to prevent the occurrence of perinatal loss. The prospects for the development in the chosen direction is to study the peculiarities of pregnancy and their final result in the women with various obstetric histories, ways of life, the background of pathological body mass, and other factors that may affect the pregnancy and the newborn baby.

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