

# Weight Gain in Pregnancy and Weight Retention after Birth

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## Abstract

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**AIM:** Our study aims to determine the weight gain of pregnant women and their body weight one year after delivery. We compared these changes in body weight with education and place of residence (urban/rural).

**METHODS:** Secundigravidae women (N = 113) filled out the structured checklist regarding anthropological characteristics, such as body weight (the current and before and after the first pregnancy). Some sociodemographic characteristics were also obtained.

**RESULTS:** Average weight gain in pregnancy was 16.9 kg (Sd 6.1, median 16 kg; range 6-40 kg). Women with high school education only gained 2 kg more than women with college/university degree (F (1, 108) 4.11, p ≤ 0.05). There was no significant difference in weight gain when the place of residence was compared (F (1, 111) 2.86, p ≥ 0.05). The average weight difference one year after delivery was 3.3 kg (Sd 4.3, median 2 kg; spread -5 to 20 kg). There was no significant difference in weight difference one year after delivery in different educational groups. Women from rural area retained 2.5 kg more than women in an urban area (F (1, 109) 7.50, p ≤ 0.01).

**CONCLUSION:** Our research has shown that women with higher education level gain less weight than women with lower degrees. They had more possibility to get access to information about health risks. The overall impression is that women do care about weight gain in pregnancy and actively work on getting back to desirable weight after delivery. This is even more important if we know that body weight before pregnancy, weight gain in pregnancy, pregnancy overweight and pregnancy obesity impact later life of mother and child. Therefore, the need for weight control in pregnancy and between pregnancies should be properly addressed.

## Introduction

The increase in body weight is to some extent physiological process in pregnancy. At the beginning of pregnancy, women are often hypoglycemic due to the proinsulin's effect of hormones [1], [2]. Also, they often have hyperemesis, and there is usually a no sudden increase in body weight in the first trimester. Towards in the third trimester, more water accumulates in the body, and some women can get quite a bit of body weight.

Weight gain depends on hormonal changes, but the most important is the intake of nutrients.

High weight in pregnancy increases the risk of metabolic syndrome and obesity in later life of a child. Overweight and obesity before pregnancy have

stronger correlations with metabolic syndrome and obesity in later life of a child than weight gain in pregnancy or postpartum weight retention [1], [2]. According to the World Health Organization classification obesity is defined as BMI ≥ 30 kg/m<sup>2</sup> and BMI 18.5-24.9 kg/m<sup>2</sup> is considered normal [3].

Weight retention after pregnancy can have serious consequences for women like postpartum depression, complications in later pregnancies and chronic conditions like diabetes and hypertension [4]. It is important to stress that overweight and obesity are risk factors for several gynaecological cancers [5].

Our study aimed to determine the weight gain of pregnant women and their body weight one year after delivery. We compared these changes in body weight with education and place of residence (urban/rural).

## Material and Methods

The study was designed as a cross-sectional study conducted in the Department of Gynecology and Obstetrics, University Hospital Center Sestre milosrdnice, Zagreb, Croatia. Inclusion criteria were: all women were secundigravidae and time between pregnancies was more than a year. The study was approved by the Hospital Board of Ethics.

One-hundred and thirteen women participated in the study, of which there were 66 pregnant women (58.4%) in a second pregnancy and 47 parturient women (41.6%) that were admitted to the maternity ward for the delivery of their second child. Women anonymously filled out a structured checklist with anthropometric characteristics with an open-ended question on the current body weight, body weight before the current pregnancy, body weight before the first pregnancy, weight gain during the first pregnancy, and body weight after delivery of the first child.

### Statistical analysis

Descriptive analyses were used to examine the average weight gain in pregnancy and one year after the delivery. ANOVA was used to test the differences in the weight gain and weight difference one year after delivery concerning education level, place of residence. P value was set to 0.05. All statistical analysis was performed using the SPSS version 20.0 for Windows.

## Results

Average weight gain in pregnancy was 16.9kg (Sd 6.1, median 16 kg; spread 6-40 kg). Women with high school education only gained 2 kg more than women with college/university degrees. e (F (1, 108) 4.11,  $p \leq 0.05$ ). There was no significant difference in weight gain when the place of residence was compared (F (1, 111) 2,86,  $p \geq 0.05$ ), (Figure 1).

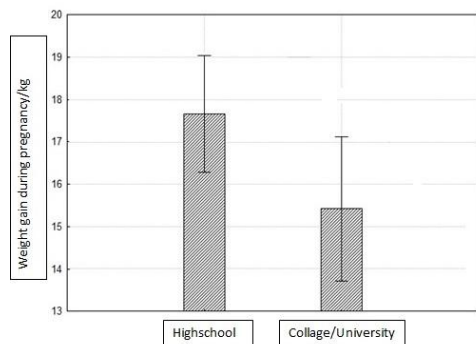


Figure 1: Weight gain in pregnancy in different education groups

The average weight difference one year after delivery was 3.3kg (Sd 4.3, median 2 kg; spread -5 to 20 kg). There was no significant difference in weight difference one year after delivery in different educational groups. Women from rural area retained 2.5 kg more than women in an urban area (F (1, 109) 7.50,  $p \leq 0.01$ ), (Figure 2).

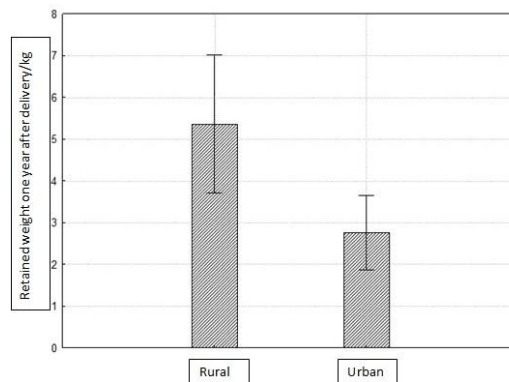


Figure 2: Retained weight one year after delivery in the rural and urban area

## Discussion

Weight gain in pregnancy is getting a great deal of attention lately. Optimal weight gain ensures the better outcome of pregnancy and fewer complications in delivery, while high weight gain increases the risk of gestational diabetes, hypertension, macrosomic child, the incidence of Caesarean section and perineal injuries [5], [6]. Our research has shown that women with higher education level gain less weight than women with lower degrees, probably because they were educated about the dangers and the risks of getting too much weight in pregnancy. There was no significant difference in weight gain when the place of residence was compared what can be attributed to the proximity of rural areas to the city and therefore similar eating habits.

Women that gain more weight in pregnancy or fail to lose gained weight after delivery have increased the risk for complications in later pregnancies and health difficulties later in life [7]. In our study, the average weight difference one year after delivery was 3.3 kg. These results demonstrate a high level of silverness and discipline in postpartum women that influence overall health condition. We also found that women from rural area retained 2.5 kg more than women in the urban area. This can be attributed to social elements in the postpartum period like employment and professional activities.

The Institute of Medicine's report suggests that approximately half of women have the excess weight of 5 kg or more and one quarter 10 kg or more at 6 months postpartum [4], [8]. Postpartum weight retention (over 4.5 kg at 6-12 months after delivery) affects one million women in the United States each year. Particularly high risk of weight retention is in African American and Hispanic women. Lower income or certain geographical regions (South and Midwest) are also a risk for weight retention [9]. Parity is another known risk factor for weight retention [10]. All the women in this study are pregnant for the second time, and weight retention and weight gain of the first pregnancy was analysed. For weight retention prevention and general fitness after pregnancy exercise in and after pregnancy is recommended. In pregnancy, exercise is a novelty and should be moderate and adjusted for pregnant women. Outdoor activities can have a very important role in weight loss after delivery [6], [11].

In terms of socioeconomic parameters, the only the level of education seems to be related to weight gain during pregnancy. Low education level is related to higher weight gain in pregnancy [12], [13]. This was confirmed in our results as well.

In conclusion, our research has shown that women with higher education level gain less weight than women with lower degrees. They had more possibility to get access to information about health risks. The overall impression is that women do care about weight gain in pregnancy and actively work on getting back to desirable weight after delivery. This is even more important if we know that body weight before pregnancy, weight gain in pregnancy, pregnancy overweight and pregnancy obesity impact later life of mother and child. Therefore, the need for weight control in pregnancy and between pregnancies should be properly addressed.

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