

# Low maternal pre-pregnancy body mass index and mid-trimester weight gain: Risk of preterm birth

Hyewon Hur, Maria Lee, Ja Young Kwon, Young Han Kim, Yong Won Park

Department of Obstetrics & Gynecology, Yonsei University College of Medicine, Seoul, Korea

## Objectives (목적)

The objective of this study was to evaluate if low pre-pregnancy body mass index (BMI) and mid-trimester weight gain increase preterm birth risk.

## Methods (연구 방법)

We retrospectively reviewed the medical records of 1452 patients who delivered singleton live births between 25 and 42 gestational weeks at Severance Hospital from October 2005 to March 2009. Pre-pregnancy BMI ( $\text{kg}/\text{m}^2$ ) was categorized as underweight (under 18.5), normal (18.5-24.9), overweight (25-29.9), and obese (above 30). Gestational weight gains ( $\text{kg}/\text{week}$ ) were measured between 14 and 28 weeks of gestation, and categorized as  $<0.15$ , 0.16-0.25, 0.26-0.35, 0.36-0.45, 0.46-0.55, and  $>0.55$   $\text{kg}/\text{week}$ . Delivery before 37 weeks of gestation was considered preterm birth and delivery before 33 weeks of gestation was considered as early preterm birth.

## Results (결과)

Women with low pre-pregnancy BMI were at increased risk of preterm delivery. Odds ratio of underweight mothers for preterm birth was 1.91 (1.52-1.98), and for early preterm birth was 2.3 (1.6-3.5). The risks for spontaneous preterm birth increased in women with very low weight gain ( $<0.15$   $\text{kg}/\text{week}$ ) during pregnancy with odds ratios of 3.4 (1.8-3.8) for underweight women, 2.0 (1.1-3.0) for normal weight women, and 1.4 (0.7-2.8) for overweight women compared to normal weight women with normal weight gain during pregnancy. In contrast, odds ratios of underweight women with normal weight gain was 1.3 (0.8-1.8) for preterm birth and 1.1 (0.6-1.5) for early preterm birth.

## Conclusions (결론)

Low pre-pregnancy maternal BMI and failure to gain adequate weight during mid-trimester are risk factors for preterm delivery. These suggest normal pre-pregnancy BMI and adequate level of gestational weight gain are important in order to reduce the risk of preterm birth, especially in pre-conceptional counseling with underweight women.