

Birthweight and placental weight are much higher in pregnancies with diabetes type-1 compared to pregnancies with gestational diabetes. A population-based study of 183,646 pregnancies.

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Objective

We studied whether birthweight and placental weight differ in pregnancies with different types of diabetes, using pregnancies without diabetes as the reference.

Methods

We performed a population study of 183,646 singleton pregnancies by using data from the years 2009-2014 in the Medical Birth Registry of Norway. By applying linear regression analysis, we estimated differences in birthweight and placental weight (in grams) between pregnancies with diabetes type-1 (n=790), pregnancies with diabetes type-2 (n=424) and pregnancies with gestational diabetes (n=4891). We used pregnancies without diabetes (n=177,541) as reference, and we made adjustment for maternal body mass index and gestational age at birth.

Results

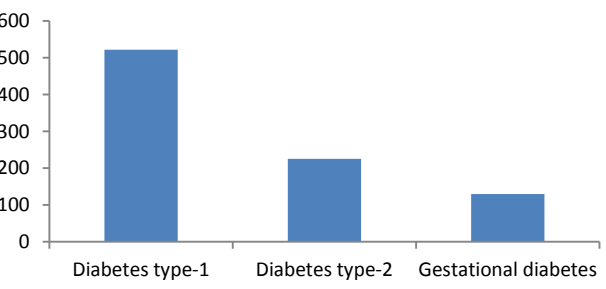
Mean birthweight in pregnancies without diabetes was 3528.9 g. Adjusted mean birthweight was 522.0 g ($p < 0.001$) higher in pregnancies with diabetes type-1 than in pregnancies without diabetes. The birthweight was 224.6 g and 130.1 g higher in pregnancies with diabetes type-2 and gestational diabetes, respectively. Mean placental weight in pregnancies without diabetes was 670.2 g. Placental weight was 109.4 g ($p < 0.001$) higher in pregnancies with diabetes type-1 than in pregnancies without diabetes. Also in pregnancies with diabetes type-2 and gestational diabetes, placental weight was higher than in pregnancies without diabetes (54.7 g and 35.7 g, respectively). All above estimates are adjusted for differences in maternal body mass index and gestational age at birth.

| | <i>n</i> | Crude B | 95% CI | Adjusted B | 95% CI |
|-----------------------------------|----------|----------------------|-------------|----------------------|-------------|
| Changes in birthweight (g) | | | | | |
| Diabetes status | | | | | |
| No diabetes | 177,541 | 0.0 | | 0.0 | |
| Diabetes type-1 | 790 | 142.9 ^{†††} | 104.1-181.8 | 522.0 ^{†††} | 492.0-552.0 |
| Diabetes type-2 | 424 | 57.8 | 4.8-110.8 | 224.6 ^{†††} | 183.7-265.5 |
| Gest diabetes | 4,891 | 75.4 ^{†††} | 59.6-91.2 | 130.1 ^{†††} | 117.8-142.4 |

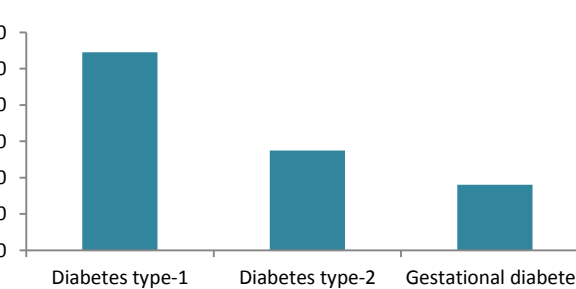
| | <i>n</i> | Crude B | 95% CI | Adjusted B | 95% CI |
|--|----------|---------------------|-----------|----------------------|------------|
| Changes in placental weight (g) | | | | | |
| Diabetes status | | | | | |
| No diabetes | 177,541 | 0.0 | | 0.0 | |
| Diabetes type-1 | 790 | 66.6 ^{†††} | 56.1-77.0 | 109.4 ^{†††} | 99.5-119.4 |
| Diabetes type-2 | 424 | 48.6 ^{†††} | 34.3-62.8 | 54.7 ^{†††} | 41.1-68.2 |
| Gest diabetes | 4,891 | 38.9 ^{†††} | 34.3-62.8 | 35.7 ^{†††} | 31.6-39.8 |

95% CI, 95% confidence interval; BMI, body mass index (kg/m²); g, gram
 Adjustments were made mutually for maternal diabetes status, maternal BMI, and gestational age at birth
[†] $p < 0.05$, ^{††} $p < 0.005$, ^{†††} $p < 0.001$

Excess birthweight (grams) compared to offspring of women without diabetes¹



Excess placental weight (grams) compared to offspring of women without diabetes²



¹Birthweight and ²placental weight of offspring in women without diabetes were the references (mean 3528.9 grams and 670.2 grams)

Conclusion:

Birthweight and placental weight were highest in pregnancies with diabetes type-1. This was a surprising finding since specialized antenatal care for women in Norway with diabetes type-1 is accessible to all and free of charge. Our findings such encourage further research to understand the different growth patterns according to type of diabetes.