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Is twin pregnancy a risk factor for excess post-partum weight retention?

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Introduction

High pregnancy weight gain is a well-established risk factor for excess postpartum weight retention and longer-term maternal obesity [1]. Women with twin pregnancies gain more weight during pregnancy than women with singletons [2]. We examined if twin pregnancy is a risk factor for excessive maternal weight increase at 5 years postpartum.

Materials and methods

We used data from the Early Childhood Longitudinal Study – Birth Cohort, a five-year longitudinal, nationally representative U.S. cohort of births in 2001 that oversampled twins ($n = 10,700$ total births, $n = 1650$ twins) [3]. Of these, approximately 20% were not eligible for the age 5 assessment (because they were not starting school for the first time in the fall of 2006 or 2007, due to having already started in fall 2005, being homeschooled, or repeating the school-entry grade [kindergarten]), and 9% were lost to follow up. Our study included 6150 women who completed the 5-year interview (5550 mothers of singletons and 600 mothers of twins). Total pregnancy weight gain was ascertained from birth certificates. Postpartum weight change was calculated as the difference between a woman's self-reported prepregnancy weight and weight at the 5-year study visit (kg); excess postpartum

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Author agreement

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Ethical statement

The University of Pittsburgh, PA, USA, Institutional Review Board deemed this secondary data analysis project exempt from further ethical review.

Conflict of interest

All authors report no conflicts of interest.

weight increase was defined as a change ≥ 10 kg. Missing data for 200 heights (3.3%), 150 pre-pregnancy weights (2.4%), 50 total pregnancy weight gains (0.8%) and 900 5-year study visit weights (14.6%) were imputed using a multivariate normal imputation model (with 100 imputed datasets). We used negative binomial regression to estimate the rate ratio for excess postpartum weight increase in twins compared with singletons, controlling for maternal pre-pregnancy body mass index (BMI), height, age, education, parity, race/ethnicity, smoking, marital status, family socioeconomic status, family food security, and use of assistive reproductive technology. Models were further stratified by pre-pregnancy BMI (<25 , ≥ 25 kg/m²). Estimates were weighted using survey weights to produce nationally-representative figures that account for differential patterns of non-response and losses to follow-up. Number are rounded to the nearest 50 as required by the data use agreement. This project was exempt from review by our institutional review board.

Results

Total pregnancy weight gain was 2.0 kg higher in twin pregnancies compared with singletons (17 kg vs 15 kg, respectively). Mothers of twins had comparable rates of prepregnancy over-weight/obesity (40%) as mothers of singletons (41%). At 5 years postpartum, the median weight increase was 7.5 kg overall ($\pm$ standard error 0.31), and 7.2 kg in twins ($\pm$ standard error 0.80). The unadjusted prevalence of excess postpartum weight increase ≥ 10 kg was 41% [95% CI 39%, 43%] overall, and 40% [95% CI 34%, 46%] among mothers of twins. After controlling for confounders, twin pregnancy was not an independent risk factor for excess postpartum weight increase (Fig. 1). The rate ratio for excess postpartum weight increase comparing twin with singleton pregnancies was 1.1 [95% CI 0.94, 1.4]. Prepregnancy overweight did not modify this association (rate ratio 1.2 [95% CI 0.86, 1.5] for women with a prepregnancy BMI < 25 kg/m² and 1.1 [95% CI:0.90, 1.4] for women with a prepregnancy BMI ≥ 25 kg/m²). Conclusions were the same in sensitivity analyses limited to women with complete data (data not shown). When excess postpartum weight retention was defined as ≥ 5 kg, BMI-stratified results were the same, and the overall estimate was similar in magnitude (rate ratio 1.1) but confidence intervals excluded the null [95% CI:1.01–1.21].

Conclusion

Despite higher pregnancy weight gain, U.S. mothers with twin pregnancies were not at higher risk of excess postpartum weight increase at 5 years compared with singletons. Our findings highlight the high prevalence of excess postpartum weight increase among new mothers in the U.S., irrespective of plurality.

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Fig. 1.

Excess postpartum weight increase (>10 kg) at 5 years postpartum in twins compared with singletons in 5550 singleton and 600 twin pregnancies participating in the nationally-representative Early Childhood Longitudinal Study Birth Cohort, United States, 2001–2007. Grey lines are crude estimates and black lines are adjusted estimates.