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ORIGINAL ARTICLE

How common is substantial weight gain after pregnancy?

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KEYWORDS

Pregnancy;
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Summary

Background: Although population-based studies indicate that on average, women gain 1–2 kg between pregnancies, women with obesity often attribute its development to childbearing. There is little contemporary data available regarding how commonly this occurs, particularly in women of different body mass index (BMI) categories. The aim of this study was to examine inter-pregnancy weight changes among women at a tertiary obstetric hospital in Melbourne, Australia.

Methods: This was a retrospective review of data from the Birthing Outcomes System electronic record of 19,617 women aged 20 years or older, who delivered at least two consecutive singleton infants at ≥ 37 weeks' gestation at Mercy Hospital for Women between December 1994 and December 2015. A logistic regression model was used to assess the relationship between gain of ≥ 4 kg/m² between pregnancies and maternal BMI category in the first pregnancy, adjusting for covariates of maternal age, inter-pregnancy interval, and socioeconomic status.

Results: Gain of ≥ 4 kg/m² between the first two pregnancies occurred in 7.5% of normal weight women, 10.5% of overweight women, and 13.4% of women with obesity. One in five women who were normal weight in their first pregnancy increased to overweight or obese BMI categories in their second pregnancy.

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Conclusions: Substantial weight gain in relation to pregnancy affects a considerable proportion of women. Since inter-pregnancy weight gain is associated with several complications in the next pregnancy and longer term, avoiding excessive weight gain during and between pregnancies may prevent adverse health consequences in mothers and offspring.

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Introduction

Although large, population-based studies indicate that on average, women gain 1–2 kg between consecutive pregnancies [1,2], women with obesity often attribute its development to childbearing. Among women attending a Swedish weight loss clinic, 40–50% reported that pregnancy had been an important trigger for the development of their obesity [3], and a review of our hospital's obesity treatment clinic [4] found that 35% of the 825 women who attended between February 2004 and December 2012 reported the onset of their obesity to coincide with pregnancy (unpublished observation). Although these accounts are susceptible to recall bias, clearly some women do experience extreme weight gain in relation to pregnancy. Nearly 70 years ago, Sheldon wrote a descriptive account of 40 such women referred to him, with rapid-onset, sustained increases in weight which began during or shortly after one or more pregnancies [5]. There is little contemporary data available regarding how commonly this occurs, particularly in women of different body mass index (BMI) categories. The aim of this study was to address this question by examining inter-pregnancy weight changes among women receiving antenatal care at a tertiary obstetric hospital in Melbourne, Australia.

Subjects, materials and methods

This study was a retrospective review of data obtained from the Birthing Outcomes System electronic record of women aged 20 years or older, who delivered at least two consecutive singleton infants at term (≥ 37 weeks' gestation) at Mercy Hospital for Women between December 1994 and December 2015. Women were weighed

in the clinic at their first antenatal appointment. Data extracted from the electronic record included maternal weight at the first antenatal visit (mean \pm SD 15.1 \pm 4.9 weeks), height, parity, country of birth, postcode, and infant birthdate and sex. After exclusion of women for whom height was not recorded, or weight was not available at the first antenatal visit ($n=9269$), 43,126 deliveries to 19,617 women were available for analysis. Maternal BMI was calculated from height and weight, and used to categorise women according to World Health Organisation (WHO) definitions as underweight (<18.5 kg/m²), normal weight (18.5–24.9 kg/m²), overweight (25–29.9 kg/m²) or obese (≥ 30 kg/m²). Inter-pregnancy weight change was defined as the difference between maternal weights at the first antenatal visit in consecutive pregnancies, and expressed as change in BMI, in line with large epidemiological studies [2,6]. Substantial inter-pregnancy weight gain was defined as gain of at least 4 kg/m², corresponding to 10.7 kg for median height (163.7 cm) of 18–34 year old women in Australia [7]. Inter-pregnancy interval was calculated as the period between the date of one delivery and the estimated conception date of the next infant (calculated from date and gestational age at delivery). Ethnic background, household income, educational attainment, maternal smoking, and gestational weight gain were not available, as they are not routinely recorded. Socioeconomic status was assigned from postcode, using the Index of Relative Socio-economic Disadvantage (IRSD) component of the Socio-Economic Indexes for Areas (SEIFA) 2011 [8], which ranks geographic areas according to relative socioeconomic disadvantage based on a weighted combination of variables derived from the Australian Census (including household income, amenities, employment, and education). The study was approved by

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