

Binge Eating Predicts Excess Gestational Weight Gain: A Pilot Prospective Cohort Study

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Abstract

Objective: One half of women's gestational weight gain (GWG) exceeds the recommended amount. In attempting to prevent this, randomized trials targeting diet and/or exercise have been generally unsuccessful. In response, study of psychological factors has been called for. We aimed to determine the feasibility of a full-scale prospective cohort study examining psychological and other factors affecting GWG and to obtain prospective pilot data.

Methods: We conducted a prospective cohort feasibility study in seven clinics in southwestern Ontario. Women with a singleton pregnancy were recruited between May and September 2013 and subsequently completed a questionnaire. GWG was abstracted from medical records and was categorized as below, within, or above guideline-recommended limits.

Results: All clinics and 89.7% of women approached (n = 525) agreed to participate, and 514 were eligible for analysis. For the prospective analysis, we included participants enrolled during their first or second trimester (27%), because only 11% were less than 21 weeks' gestation. Planning GWG predicted excess GWG (adjusted RR [aRR] 9.44; 95% CI 2.64 to 33.80), as did binge eating (aRR 6.51; 95% CI 1.03 to 41.18). Dietary restraint was not significantly associated with excess GWG (aRR 2.74; 95% CI 0.67 to 11.22) or inadequate GWG (aRR 3.86; 95% CI 0.82 to 18.11).

Conclusion: This prospective pilot study demonstrated the feasibility of a full-scale study and identified a need for additional strategies to permit recruitment before 21 weeks, such as a longer recruitment period and involvement of more clinics. Previously identified knowledge factors, particularly planned weight gain,

were predictive of excess GWG. However, psychological factors identified in this study, especially binge eating (which was found to be independently predictive for the first time) and dietary restraint, are areas requiring further study.

Résumé

Objectif : Dans la moitié des cas, le gain pondéral gestationnel (GPG) dépasse les recommandations. Des essais randomisés ont constaté que les efforts qui ont cherché à prévenir cette situation en ciblant le régime alimentaire et/ou l'exercice se sont, d'ordre général, soldés en échec. En guise de réponse, l'attention s'est tournée vers des facteurs psychologiques. Nous avons donc cherché à déterminer la faisabilité d'une étude de cohorte prospective exhaustive examinant les facteurs psychologiques et autres qui affectent le GPG, ainsi qu'à obtenir des données préliminaires en menant un essai pilote prospectif.

Méthodes : Nous avons mené une étude de cohorte prospective de faisabilité auprès de sept cliniques du sud-ouest de l'Ontario. La participation de femmes connaissant une grossesse monofoetale a été sollicitée entre mai et septembre 2013; nous avons par la suite demandé à ces femmes de remplir un questionnaire. Le GPG a été tiré des dossiers médicaux et a été réparti en trois catégories : en deçà, à l'intérieur ou au-delà des limites recommandées par les lignes directrices.

Résultats : Toutes les cliniques et 89,7 % des femmes sollicitées (n = 525) ont consenti à participer, et 514 d'entre elles se sont avérées admissibles à l'analyse. Aux fins de l'analyse prospective, nous avons inclus les participantes admises au cours de leur premier ou de leur deuxième trimestre (27 %), car seulement 11 % des participantes en étaient à moins de 21 semaines de gestation. Le fait d'avoir procédé à la planification du GPG constituait un facteur permettant de prédire l'obtention d'un GPG excessif (RR corrigé [RRc], 9,44; IC à 95 %, 2,64 - 33,80), tout comme l'hyperphagie (RRc, 6,51; IC à 95 %, 1,03 - 41,18). Les restrictions alimentaires n'ont pas été associées de façon significative à l'obtention d'un GPG excessif (RRc, 2,74; IC à 95 %, 0,67 - 11,22) ou d'un GPG inadéquat (RRc, 3,86; IC à 95 %, 0,82 - 18,11).

Key Words: Gestational weight gain, binge eating, restraint, planned gain, feasibility, prospective cohort study

Competing Interests: None declared.

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Conclusion : Cette étude pilote prospective a démontré la faisabilité d'une étude exhaustive et a identifié un besoin quant à l'obtention de stratégies additionnelles qui permettraient de solliciter la participation de femmes dont la grossesse n'a pas encore atteint 21 semaines de gestation (comme l'utilisation d'une période de sollicitation prolongée et la participation d'un plus grand nombre de cliniques). Des facteurs ayant déjà été identifiés (plus particulièrement, le gain pondéral planifié) ont permis de prédire l'obtention d'un GPG excessif. Toutefois, certains des facteurs psychologiques identifiés dans le cadre de cette étude, particulièrement l'hyperphagie (identifiée comme étant un facteur prédictif indépendant pour la première fois) et les restrictions alimentaires, constituent des domaines qui nécessitent la tenue d'études plus approfondies.

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INTRODUCTION

Excess gestational weight gain contributes to maternal and fetal risk of obesity and obesity-related diseases,^{1,2} presenting a serious global concern.³ Excess gestational weight gain is particularly a problem for overweight and obese women, because more than one half of these women gain more than the amount recommended in guidelines.⁴⁻⁶ After pregnancy, women who have gained excess weight are more likely to retain it^{7,8} and become overweight or obese.⁹

Excess gestational weight gain also has adverse implications for children, as it is associated with having greater fat mass both at birth¹⁰ and throughout childhood,¹¹ and increases the likelihood of childhood overweight status.¹² The relation between gestational weight gain and infant adiposity extends into adulthood.^{13,14}

Interventions that have been used in efforts to limit weight gain during pregnancy have been primarily focused on dietary and/or physical activity.¹⁵ As these interventions have had limited success, researchers have called for a broader understanding of gestational weight gain, particularly in relation to non-biological predictors.¹⁵⁻¹⁷ Psychological factors associated in the non-pregnant population with being overweight and obese, such as binge eating¹⁸ and restraint (dieting),¹⁹ need to be explored during pregnancy.

Our aims were to determine the feasibility of a full-scale prospective cohort study examining psychological and other factors affecting gestational weight gain and to obtain pilot data on the prospective assessment of these factors.

MATERIALS AND METHODS

We performed a pilot prospective cohort study in accordance with the STROBE guidelines.²⁰ The study was conducted at five obstetric and two midwifery clinics in southwestern Ontario (Hamilton and Brantford, ON). Eligibility criteria

included women who had a viable singleton pregnancy, could read English sufficiently well to complete the survey, and had attended at least one prenatal appointment at the participating clinic (to avoid recruiting women who had had a prenatal visit solely to confirm pregnancy). Exclusion criteria were severe maternal morbidities with a known effect on weight gain (e.g., bariatric surgery, anorexia or bulimia), fetal demise, or a lethal fetal anomaly.

Eligible women were approached about the study by one of the clinic staff, and those who were interested were referred to a research assistant, who explained the study. Informed consent was obtained and a self-administered questionnaire was completed.

Participants were assigned unique study identification numbers to anonymize the electronically entered data.

Factors potentially associated with gestational weight gain were assessed on the self-administered survey, including psychological (e.g., binge eating, dietary restraint, self-efficacy, personality traits, knowledge factors including women's understanding of gestational weight gain and the risks of gaining outside the recommendations), physical (e.g., age, pre-pregnancy weight, ethnicity), and lifestyle (e.g., sleeping patterns, exercise) factors.

The research team, which included a psychologist with expertise in weight issues, included validated scales or subscales that assessed psychological constructs with plausible associations with weight gain or overweight/obesity in the general population, since few psychological scales on weight gain have been validated during pregnancy. To minimize missing data from incomplete surveys, we selected subscales or individual items from certain longer scales. We included items from a total of 10 scales, based on clinical relevance in the field of psychology, relevance to pregnancy, length, and the ease of comprehension, completion and scoring (the questionnaire is in the online eAppendix).

The primary outcomes for this study were total gestational weight gain, the clinic participation rate, enrolment rate, enrolment before 21 weeks and before 28 weeks, and the proportion of missing data; these variables would determine the feasibility of conducting a full scale prospective cohort study. Secondary outcome measures were the psychological, physical, and lifestyle factors associated with total gestational weight gain above or below national recommendations.

Gestational weight gain was extracted from medical records after the expected delivery date. Self-reported height, pre-pregnancy weight, and weights throughout

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