The Impact of Maternal Obesity on Breastfeeding

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Abstract

Objective: To compare the rate of any breastfeeding at the time of postpartum hospital discharge between obese women (BMI $\geq$ 30.00 kg/m^2) and women with a normal BMI (18.50 to 24.99 kg/m^2).

Methods: We conducted a retrospective cohort study of women with live, singleton pregnancies who delivered in St. John's, Newfoundland and Labrador between 2002 and 2011, using data from the Newfoundland and Labrador provincial perinatal registry. The primary outcome was any breastfeeding at the time of discharge from hospital. Secondary analysis included comparison of breastfeeding rates by class of obesity. We compared additional maternal and neonatal outcomes between women who were breastfeeding at discharge and those who were not. Univariate and multivariate logistic regression analyses were performed, and adjusted odds ratios (aORs) and 95% CIs were calculated.

Results: We included 12 831 women with BMI data available in the study: 8676 were breastfeeding and 4155 were not at the time of postpartum discharge. Obese women were less likely to breastfeed than women with normal weight (60.0% vs. 71.7%) (aOR 0.63; 95% CI 0.55 to 0.71). Multivariate analysis showed a significant effect on the primary outcome of a mother's age (aOR 1.03; 95% CI 1.02 to 1.05), nulliparity (aOR 1.73; 95% CI 1.51 to 1.98), being partnered (aOR 1.57; 95% CI 1.34 to 1.84), working (aOR 1.10; 95% CI 1.02 to 1.19), having higher education (aOR 1.48; 95% CI 1.38 to 1.60), smoking (aOR 0.35; 95% CI 0.29 to 0.43), having gestational diabetes (aOR 0.70; 95% CI 0.5 to 0.92), pre-existing hypertension (aOR 0.58; 95% CI 0.39 to 0.87), gestational hypertension (aOR 0.67; 95% CI 0.55 to 0.82), and undergoing general anaesthesia (aOR 0.41; 95% CI 0.22 to 0.77).

Conclusion: Obesity is an independent risk factor for not breastfeeding at the time of postpartum discharge from hospital. It is important to counsel women on the benefits of breastfeeding, emphasizing these particularly in women with a high pre-pregnancy BMI.

Key Words: Obesity, breastfeeding, pregnancy outcome

Competing interests: None declared.

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Résumé

Objectif : Comparaison des taux d'allaitement après l'accouchement chez les mères obèses (IMC $\geq$ 30,00 kg/m^2) et les femmes qui ont un IMC normal (entre 18,50 kg/m^2 et 24,99 kg/m^2), au moment du congé de l'hôpital.

Méthodes : Nous avons effectué une étude de cohorte rétrospective auprés des femmes qui ont accouché à St. John's (T.-N.-L), entre 2002 et 2011, et qui ont donné une naissance vivante à un fœtus unique, selon les données du registre des données périnatales de Terre-Neuve-et-Labrador. Le premier critère d'évaluation des résultats a pris en compte l'existence de tout allaitement au moment du congé de l'hôpital. L'analyse secondaire portait sur la comparaison des taux d'allaitement par classe d'obésité. Nous avons comparé d'autres issues maternelles et néonatales chez les femmes qui allaitaient au moment du congé de l'hôpital et chez celles qui n'allaitaient pas. Nous avons effectué des analyses de régression logistique univariées et multivariées et nous avons aussi calculé les rapports de cotes ajustés (RCA), ainsi que l'intervalle de confiance à 95 %.

Résultats : L'étude a porté sur 12 831 femmes dont les données relatives à l'IMC étaient disponibles: 8676 femmes allaitaient et 4155 femmes n'allaitaient pas, après l'accouchement, au moment de congé de l'hôpital. La probabilité d'allaitement chez les femmes obèses était inférieure à celle relevée chez les femmes qui avaient un poids normal (soit, 60,0 % c. 71,7 %) (RCA: 0,63; IC à 95 %: entre 0,55 et 0,71). L'analyse multivariée a mis en évidence un effet important sur le résultat principal lié à l'âge de la mère (RCA: 1,03; IC à 95 %: de 1,02 à 1,05); nulliparité (RCA: 1,73; IC à 95 %: de 1,51 à 1,98); la mère a un conjoint (RCA: 1,57; IC à 95 %: de 1,34 à 1,84); la mère travaille (RCA: 1,10; IC à 95 %: de 1,02 à 1,19); la mère a un diplôme d'enseignement supérieur (RCA: 1,48; IC à 95 %: de 1,38 à 1,60); la mère fume (RCA: 0,35; IC à 95 %: de 0,29 à 0,43); la mère a eu le diabète gestationnel (RCA: 0,70; IC à 95 %: de 0,5 à 0,92); la mère avait une hypertension préalable (RCA: 0,58; IC à 95 %: de 0,39 à 0,87); la mère a eu une hypertension artérielle gravidique (RCA: 0,67; IC à 95 %: de 0,55 à 0,82); la mère a été mise sous anesthésie générale (RCA: 0,41; IC à 95 %: de 0,22 à 0,77).

Conclusion : L'obésité est un facteur de risque indépendant pour ce qui est de l'allaitement après l'accouchement, au moment du congé de l'hôpital. Il est important de conseiller les femmes sur les bienfaits de l'allaitement, surtout celles qui ont un IMC élevé avant la grossesse.

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INTRODUCTION

The problem of rising rates of obesity in developed countries, including Canada, has been well established. Of particular concern is the increasing rate of class III, or morbid, obesity.[1] In 2011, Newfoundland and Labrador had the highest Canadian provincial rate of obesity and overweight,[2] at 25.3% and 37.2% respectively, compared with national rates of 17.1% and 27.1%; women were more likely than men to fall into obesity classes II and III.[2] Unfortunately, along with the increasing trend in obesity in the general population, rates of overweight and obesity in pregnancy are also rising.[3,4]

Obesity in pregnancy significantly affects obstetric, maternal, and perinatal outcomes, increasing the risk of complications.[4–6] Obese and overweight women have also been found to have lower rates of breastfeeding than their normal weight counterparts.[7] Women who are obese pre-pregnancy are less likely to breastfeed, and when they do, it is for a shorter period of time.[7–14] Obese and overweight women also have a significantly lower intention to breastfeed than normal weight women.[15]

Not only does Newfoundland and Labrador have the highest rate of obesity in Canada, but it also has the lowest rate of breastfeeding; in 2014, the rate was 72%, compared with the national average of 90%.[16] Exclusive breastfeeding at six months postpartum in Newfoundland and Labrador is also the lowest in Canada, at 15.4%.[17]

The primary objective of our study was to compare the rate of any breastfeeding at the time of hospital discharge between obese women (BMI $\geq$ 30.0 kg/m^2) and women with normal weight (BMI 18.5–24.99 kg/m^2). Secondary outcomes included evaluation of additional maternal and neonatal outcomes and their association with breastfeeding at the time of hospital discharge as well as a comparison of breastfeeding rates by obesity class.

ABBREVIATIONS

aOR	adjusted odds ratio
PPNL	Perinatal Program Newfoundland and Labrador

METHODS

We performed a population-based, retrospective, cohort study of women with live singleton pregnancies who delivered at the Women's Health Centre, Eastern Health, St. John's, Newfoundland and Labrador between January 1, 2002 and December 31, 2011. The cohort was identified using the Perinatal Program Newfoundland and Labrador's Provincial Perinatal Registry, a computerized database that collects information on pregnancy outcomes for several regions of the province. Although no validation study of the database has been published, quality assurance and data quality are ensured through the PPNL Program Newfoundland and Labrador's routine checking process on extracted data.

Women were included in the study if they had a recorded pre-pregnancy calculation of BMI or had a recorded pre-pregnancy height and weight to allow calculation of BMI and had their breastfeeding status recorded at the time of discharge. Women were excluded if they did not have a recorded BMI (or a recorded pre-pregnancy height and weight), if they had a multiple pregnancy, or if they had a stillbirth. For the purposes of further analysis by obesity class, apart from the primary outcome groupings of obese (BMI $\geq$ 30.00 kg/m^2) versus normal weight (BMI 18.50–24.99 kg/m^2), pre-pregnancy BMI classes were grouped taking into consideration the Health Canada guidelines and World Health Organization recommendations. These categories were underweight (BMI $<$ 18.50 kg/m^2), normal weight (BMI 18.50–24.99 kg/m^2), overweight (BMI 25.00–29.99 kg/m^2), and obese (BMI 30.00–39.99 kg/m^2), with Class III obesity divided into morbidly obese (BMI 40.00–49.99 kg/m^2) and extreme obesity (BMI $\geq$ 50.00 kg/m^2).

Maternal characteristics were described and compared between women who were breastfeeding and women who were not breastfeeding at postpartum discharge. These included BMI, maternal age, parity, partner status, work status, maternal education level, smoking status during pregnancy, alcohol exposure, prenatal class attendance, pre-existing diabetes, pre-existing hypertension, previous preterm birth, and pre-conception folic acid use.

The primary outcome was any breastfeeding at the time of postpartum hospital discharge, using obesity (BMI $\geq$ 30.00 kg/m^2) as the primary exposure variable of interest compared with having a normal BMI (18.50–24.99 kg/m^2). Sample size was a convenience sample based on the number of women meeting the study's inclusion criteria within the given time period. Using $\alpha = 0.05$ and $\beta = 0.20$ (power 80%) to detect a difference in the primary outcome (any breastfeeding at discharge) from 70% (women with a