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A prospective study of breastfeeding intentions of healthy weight and overweight women as predictors of breastfeeding outcomes

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ABSTRACT

Objective: Women with a higher BMI are at increased risk of breastfeeding for a shorter duration, however it is unclear if weight status itself or other factors such as feeding intentions are responsible for early breastfeeding cessation. The aim of this study was determine the influence of maternal pre-pregnancy weight status on infant feeding intentions during pregnancy using a validated scale and assess whether high intentions to exclusively breastfeed measured during pregnancy predicted feeding mode at discharge and at 4 months postpartum in both healthy weight (Hwt) (BMI < 25 kg/m^2) and overweight (Owt)(BMI ≥ 25 kg/m^2) women.

Design: This prospective, observational study commenced when participants were < 20 weeks gestation, continuing until four months post partum. Self-administered questionnaires assessed pre-pregnancy weight, infant feeding intentions at 36 weeks gestation, and breastfeeding practices at hospital discharge and 4 months postpartum. Hospital records provided details of delivery mode, gestation and breastfeeding during hospital stay. Binary logistic regression analyses were used to compare weight groups on the breastfeeding beliefs and practices adjusting for selected covariates

Participants and setting: A consecutive sample of pregnant women ($n = 715$) were recruited from an Australian metropolitan hospital between August 2010 and January 2011. All women < 20 weeks gestation were eligible unless they had pre-existing Type 1 or 2 diabetes or insufficient English language skills to complete questionnaires.

Measurements and findings: Of 715 women recruited, 402 had complete data at 4 months post-partum. There were no differences in high breastfeeding intentions (66% vs 53%, $p = 0.10$) or initiation (96% vs. 98%, $p = 0.33$) between Hwt and Owt women. Owt women were less likely to be exclusively breastfeeding at hospital discharge AOR [95%CI] 0.57 [0.33,0.98] and 4 months post-partum 0.62 [0.40,0.97]. High intention to breastfeed was positively associated with exclusively/fully breastfeeding at hospital discharge in Hwt 3.24 [1.52,6.89] but not Owt women 1.73 [0.75,4.00] and 4 months post partum in both weight groups (Hwt 4.1 [2.4–7.2], Owt 6.5 [2.9–14.3]).

Key conclusions: Healthy and overweight women appear to have similar antenatal intentions for infant feeding but overweight mothers are less likely to be exclusive breastfeeding at hospital discharge. High antenatal intentions for breastfeeding are related to exclusively/fully breastfeeding at 4 months post partum in both healthy and overweight women.

Implications for practice: Investigation of early hospital practices that support and hinder the establishment of successful breastfeeding in overweight mothers may help to identify effective strategies to protect breastfeeding relationships between mother-infant dyads, particularly those who have experienced a caesarean delivery.

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Introduction

Despite international recommendations for exclusive breastfeeding until 6 months of age (World Health Organization, 2003), very few women achieve this recommendation. In Australia 96% of mothers initiate breastfeeding, however at 3 months only 39% of infants are exclusively breastfed with this rate declining to 15% at 5 months of age (Australian Institute of Health and Welfare, 2011).

Breastfeeding confers a range of health benefits (Rollins et al., 2016), is associated with reduced risk of future overweight in children (Yan et al., 2014) and accelerated weight loss and return to pre-pregnancy weight for mothers (López-Olmedo et al., 2015). Supporting mothers to successfully initiate, establish and continue breastfeeding is a public health imperative (Rollins et al., 2016).

Having a higher body mass index (BMI) is associated with delay in establishing lactation post-delivery and an increased risk of early breastfeeding cessation (Hilson et al., 2004; Rasmussen and Kjolhede, 2004; Amir and Donath, 2007; Turcksin et al., 2014). Failure to establish breastfeeding increases the risk of formula feeding, which independently increases the risk of childhood obesity (Owen et al., 2005) and hence further enhances the risk conferred by maternal obesity (Hediger et al., 2001).

Reasons for poorer breastfeeding outcomes in women with a higher BMI are multifactorial with possible influences including anatomical and physiological issues, medical conditions, and sociocultural and psychological factors (Amir and Donath, 2007). Health behaviour theories provides a framework to examine the psychosocial influences on behaviour (Armitage and Conner, 2000). Motivational health behaviour theories often assess intention with the view that having motivation to perform a certain behaviour is sufficient to achieve the desired health outcome (Armitage and Conner, 2000). Breastfeeding intentions prior to and during pregnancy are strong predictors of breastfeeding initiation and duration when BMI is not considered (Donath and Amir, 2003; Forster et al., 2006). Whether lower breastfeeding intentions among women with a higher BMI in part account for lower rates of breastfeeding in obese women is not frequently studied. Indeed, it is still unclear if intentions to breastfeed are significantly lower among women with a higher BMI compared to women with a healthy BMI. A systematic review (Turcksin et al., 2014) identified two papers (Hilson et al., 2004; Guelinckx et al., 2012) suggesting that obese women may be less likely to intend to breastfeed and intend to do so for a shorter duration that women in other weight status categories (Turcksin et al., 2014). However, a more recent study of 2824 US women did not find a difference between intended method of infant feeding or intended duration of breastfeeding according to maternal BMI category of obese, pre-obese or healthy/underweight (Hauff et al., 2014). Methods of assessing infant feeding intentions in these papers were variable and none appear to have used a validated measure (Hauff et al., 2014; Guelinckx et al., 2012; Hilson et al., 2004).

There have been four published interventions designed to support overweight and obese women establish and continue breastfeeding and they have shown mixed results (Rasmussen et al., 2011; Carlsen et al., 2013; Chapman et al., 2013) with only one demonstrating a positive impact on feeding outcomes(Carlsen et al., 2013).With around a third to half of women in Australia entering pregnancy pre-obese (BMI 25–29.9 kg/m^2) or obese (BMI $>30.0\ kg/m^2$) (McIntyre et al., 2012), identifying factors impacting on breastfeeding outcomes in these women at high risk of lactation failure is integral to developing appropriate support strategies for them to establish and continue a successful breastfeeding relationship with their baby. Establishing whether intentions to breastfeed are lower among Australian women who enter pregnancy above a healthy weight, and how intentions translate into achieving breastfeeding recommendations have important clinical implications. While it is clear that women with an increased BMI are less likely to continue breastfeeding even if initiated, it is unclear whether poorer breastfeeding outcomes are related to higher weight status itself (Amir and Donath, 2007) or other factors such as lower socioeconomic status/education, caesarean delivery and separation of mother and infant after birth (Jevitt et al., 2007).

The aim of this study was to determine the influence of maternal pre-pregnancy weight status (healthy weight BMI $<25\ kg/m^2$ vs. overweight BMI $\geq 25\ kg/m^2$) on infant feeding intentions using a validated measure, and to assess whether intentions to breastfeed predicted exclusive breastfeeding at discharge and at 4 months postpartum in both healthy weight and overweight women.

Methods

Study design

The New Beginnings Healthy Mothers and Babies study was a prospective cohort study examining the influence of pre-pregnancy weight status on lifestyle factors and psychosocial factors during the pregnancy and the postpartum period. Details of study recruitment have been reported elsewhere (de Jersey et al., 2012). Briefly, a consecutive sample of eligible women were recruited from a major metropolitan tertiary hospital in Australia between August 2010 and January 2011. Women were either recruited via study information being mailed out in hospital registration packs prior to their first hospital visit or by research staff at the initial antenatal appointment (around 16 week's gestation). Women excluded from the study were those who had pre-existing type 1 or 2 diabetes and/or insufficient facility with English to complete the questionnaires. Women who delivered preterm (less than 32 weeks gestation) or experienced neonatal death were withdrawn from the study. Sample size was calculated based on primary study categorical variables, and has been described elsewhere (de Jersey et al., 2012). The recruiting hospital was in preparation for Baby Friendly Hospital Accreditation (World Health Organization, 1998), but had not been assessed at the time this study was conducted.

Data were collected at four time points, 16 weeks and 36 weeks gestation, and 4 months postpartum using self-administered questionnaires and at hospital discharge using routine data sources. Participants were considered to remain in the study unless they actively withdrew or became ineligible through a miscarriage or early delivery (<32 weeks gestation), or did not have a 36 week appointment booked at the hospital. Therefore, non-response at baseline or 36 weeks did not preclude a participant being sent a post-partum questionnaire. This study was conducted according to the guidelines laid down in the Declaration of Helsinki and all procedures involving human subjects were approved by the Human Research Ethics Committee for both the recruiting hospital (HREC/10/QRBW/139) and collaborating university (10000058). Written informed consent was obtained from all participants.

Measures

Participant characteristics

At baseline (16 weeks gestation) data on maternal age (years), education (university vs. no university), parity (nulliparous vs. multiparous), marital status (married/*de facto* vs. other), country of birth (Australia vs. other), and possession of a Health Care Card indicating low socioeconomic status (yes vs. no) were collected. Method of delivery (vaginal [including assisted] vs. caesarean section), infant gestational age, gender and birth weight were collected from hospital perinatal records. Information on postpartum depressive symptomatology (Edinburgh Postnatal Depression Scale (Cox et al., 1987)), and smoking status (smoker vs. non-smoker) were collected via self-report at 4 months postpartum.

Weight status

Self-reported pre-pregnancy weight and measured height were used to calculate pre-pregnancy BMI (kg/m^2). The World Health