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Original Research

Predictors of supplementation for breastfed babies in a Baby-Friendly hospital

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ABSTRACT

Problem: Supplementation of breastfed babies is common during the hospital stay.
Background: The Baby Friendly Hospital Initiative (BFHI) optimises practices to support exclusive breastfeeding, yet supplementation is still prevalent.
Objective: To determine predictors for supplementation in a cohort of breastfed babies in a Baby-Friendly hospital.
Methods: Electronic hospital records of 1530 healthy term or near term singleton infants and their mothers were examined retrospectively and analysed to identify factors associated with in-hospital supplementation using Poisson regression (unadjusted and adjusted).
Findings: Fifteen percent of breastfed infants were supplemented during their hospital stay. Analysis by multivariable Poisson regression found that supplementation was independently associated with overweight (reference normal weight) (aRR [adjusted relative risk] = 1.46; 95% CI: 1.11–1.93); primiparity (aRR = 1.40; 95% CI: 1.09–1.80); early term gestation (37–37^{6} weeks, aRR = 2.79; 95% CI: 1.88–4.15; 38–38^{6} weeks, aRR = 2.03, 95%CI: 1.46–2.82); birthweight less than 2500 grams (reference 3000–3499 grams) (aRR = 3.60; 95% CI: 2.32–5.60) and use of postpartum uterotonic (aRR = 2.47; 95% CI: 1.09–5.55). Greater than 65 minutes of skin-to-skin contact at birth reduced the risk of supplementation (aRR = 0.66; 95% CI; 0.48–0.92).
Conclusion: These identified predictors for supplementation, can inform the development of interventions for mother-infant pairs antenatally or in the early postpartum period around increased breastfeeding education and support to reduce supplementation. It may also be possible to reduce supplementation through judicious use of postpartum uterotonics and facilitation of mother-infant skin-to-skin contact at birth for greater than one hour duration.

Statement of significance

Issue

Supplementation of breastfed babies in hospital can impact on the establishment and duration of breastfeeding. Little is known about what is associated with supplementation in hospitals with well-established BFHI practices.

What is already known

The BFHI has been adopted globally to support breastfeeding best practice and has been shown to reduce in-hospital supplementation.

What this paper adds

This paper identifies predictors of supplementation in a Baby-Friendly hospital and highlights modifiable factors to enable targeted support for new mothers and babies to reduce supplementation.

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1. Introduction

New Zealand has a relatively high breastfeeding initiation rate of 96%.[1] However, since early last century, the use of breast milk substitutes has been prevalent[2] and babies have been given 'top-ups' during the hospital stay. This supplementation can impact the mother's and the infant's health,[3] the establishment of lactation[4] and the duration of breastfeeding,[5] especially when it occurs in hospital.[5–7] There is evidence that avoiding supplementation in hospital is a key factor for breastfeeding success.[8]

Implementation of the Baby-Friendly Hospital Initiative (BFHI) has been shown worldwide to improve exclusive breastfeeding rates.[6,8–12] In 2001, the New Zealand Ministry of Health directed all hospitals to become Baby-Friendly and formed the New Zealand Breastfeeding Authority (NZBA) to co-ordinate and administer this process.[1] Under the BFHI there are strict guidelines around supplementation; in particular, staff must fully explain the benefits of exclusive breastfeeding and the risks of breast milk substitutes, and parents are then required to sign a consent form. In 2001, before implementation of the BFHI into New Zealand hospitals, the average exclusive breastfeeding rate on hospital discharge was 56.6%.[1] Following the implementation, with 96% of hospitals being Baby-Friendly accredited, the average exclusive breastfeeding rate on discharge has risen to 84.4%.[1] In resource-high countries, the reported prevalence of supplementation during the maternity stay is between 10%[13] and 78%.[14] In New Zealand, supplementation is generally at the lower end of the spectrum with some primary (level I) units reporting rates as low as 8% (J. Stufkens, NZBA, personal communication, 2014).

Evidence from a range of literature suggests that supplementation of breastfed babies is associated with: high maternal body mass index (BMI), non-white ethnicity, smoking, primiparity, caesarean birth, use of analgesia, use of oxytocin and low birthweight baby.[11,15–17] There is mounting evidence suggesting that birth experiences such as mode of birth, labour medications and delivery room practices, may all impact on breastfeeding success,[17–23] but few of these studies are reported from Baby-Friendly facilities. One of the most crucial steps shown to support breastfeeding initiation is facilitation of skin-to-skin contact (SSC) between mother and baby at birth.[24–26] In New Zealand, the BFHI audit requirement for this step is, " . . . place the baby skin-to-skin within 5 min of birth for at least one hour" regardless of birth type.[27] Evidence is scarce on the separate effects of the timing of SSC initiation, and of the duration of early SSC on breastfeeding exclusivity.

The aim of our study was to determine predictors for breast milk substitute use during the maternity stay in a Baby-Friendly facility with a high rate of breastfeeding initiation.

2. Methods

2.1. Setting

The study was conducted at a tertiary (level III) hospital in the southern region of the South Island of New Zealand. The hospital has full resources for obstetric and neonatal intensive care, and is the only maternity facility within a 100 km (approximate) radius. It caters for all levels of care as well as receiving tertiary care patients from the provincial region. It was first certified Baby-Friendly in 2001 and recertified in 2004, 2007, 2010 and 2013.

2.2. Participants

All mother–infant pairs who birthed during January to December of 2012 (n = 1876) were considered for inclusion. Exclusion criteria were: admission to Neonatal Intensive Care Unit (NICU), multiple births, and infants who were exclusively fed with breast milk substitute. It was assumed that mothers who did not initiate breastfeeding nor gave their babies any breast milk during the hospital stay and were recorded as 'artificially feeding' on discharge, did not intend to breastfeed. If a mother initiated breastfeeding, she was included in the study irrespective of her use of breast milk substitutes on discharge.

2.3. Ethics

Approval for this research was obtained from the Southern District Health Board (SDHB) and ethical approval was granted from the University of Otago Ethics committee (project ID 00847).

2.4. Data collection

Data were obtained from the Maternity Plus (2011) electronic data collection system[28]. These data were entered by the attending midwife when the woman was admitted onto the maternity ward, at birth and on discharge from hospital. Demographic/biomedical variables of the mothers examined were, age, parity, BMI at initial booking visit, smoking status and ethnicity. BMI was divided into categories[29] commonly used to define underweight ($<18.5\ kg/m^2$), normal weight ($18.5–24.9\ kg/m^2$), overweight ($25–29.9\ kg/m^2$), obese ($30–39.9\ kg/m^2$) and high-risk obese ($\geq 40\ kg/m^2$). Infant variables examined were ethnicity, gestational age and birthweight.

Birthing and postpartum practices considered were birth method (normal vaginal, ventouse [suction], forceps, elective caesarean and emergency caesarean); labour/birth analgesia (pethidine, spinal, epidural); induction/augmentation with oxytocin during labour, and postpartum treatment with uterotonic; the timing of initiation of SSC with mother and the duration of SSC. Analgesia was coded as analgesia, yes/no. The main medications used in the epidural and spinal procedures were fentanyl, morphine (opiates) and bupivicaine (local anaesthetic). The current practice at an elective caesarean at this maternity facility is a spinal anaesthetic or a combined spinal-epidural where morphine is administered into the intrathecal space. SSC data were recorded during the first 0–3 h post birth. The timing of SSC initiation and duration was divided into categories for the analyses. Initiation of SSC after birth was divided into two time periods ($\leq$5 min after birth, $>$5 min after birth). Duration of the SSC was divided into three time periods ($<$55 min, 55–65 min [being approximately the hour recommended as a minimum], and $>$65 min).

2.5. Outcome variable

The primary outcome variable was a binary indicator (yes/no) for supplementing breastfeeding during the hospital stay. The New Zealand Ministry of Health defines exclusive breastfeeding as, "infant has received only breast milk, from the breast or expressed, no other food or fluids except prescribed medicines from birth".[27]

2.6. Analysis

Appropriate summary statistics are presented for all variables (means and standard deviations for normally distributed continuous variables, medians and IQRs for other continuous variables, and frequencies and percentages for categorical variables). Quantile regression was used to compare median delays and durations in initiating SSC. Poisson regression with robust standard errors was used to estimate relative risks of supplementation for

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