

Ethnic Differences in the Initiation and Duration of Breast Feeding – Results from the Born in Bradford Birth Cohort Study

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Abstract

Background: Initiation of breast feeding and duration of any breast feeding are known to differ by ethnic group, but there are limited data on differences in exclusive breast feeding. This study aimed to determine if there are ethnic differences in the initiation and duration of any and exclusive breast feeding.

Methods: Breast-feeding data were obtained from a subsample of 1365 women recruited to a multi-ethnic cohort study (Born in Bradford) between August 2008 and March 2009. Poisson regression was used to investigate the impact of socio-economic, life style and birth factors on ethnic differences in the prevalence of breast feeding.

Results: Compared with white British mothers, initiation of breast feeding was significantly higher in all ethnic groups and this persisted after adjustment for socio-economic, life style and birth factors [Pakistani: prevalence rate ratio (PRR) = 1.19 (95% confidence interval 1.10, 1.29); Other South Asian: PRR = 1.29 (1.18, 1.42); Other ethnicities: PRR = 1.33 (1.21, 1.46)]. There were no differences in exclusive breast feeding at 4 months [Pakistani: PRR = 0.77 (0.54, 1.09); Other South Asian: PRR = 1.55 (0.99, 2.43); Other ethnicities: PRR = 1.50 (0.88, 2.56)]. Any breast feeding at 4 months was significantly higher in mothers of all non-white British ethnicities [Pakistani: PRR = 1.27 (1.02, 1.58); Other South Asian: PRR = 1.99 (1.52, 2.62); Other ethnicities: 2.45 (1.86, 3.21)].

Conclusions: Whilst women of ethnic minority groups were significantly more likely to initiate breast feeding and continue any breast feeding for 4 months compared with white British women, the rates of exclusive breast feeding at 4 months were not significantly different once socio-economic, life style and birth factors were accounted for.

Keywords: *breast feeding, ethnicity, cohort study, socio-economic.*

Breast feeding is associated with a range of health benefits for mother and child,^{1–3} which is reflected in current recommendations that babies should be exclusively breast fed for the first 6 months of their lives.^{4,5} In the UK, breast-feeding initiation rates have increased over the past decade from 69% in 2000 to 81% in 2010.⁶ However, the prevalence of any breast feeding declines rapidly in the first 2 months and exclusive breast feeding declines even more rapidly; recent data show that by 6 weeks of age, only 50% of babies received any breast milk and just 22% were exclusively breast fed.⁷

A disadvantaged socio-economic background is negatively associated with the initiation and duration of breast feeding.^{8–13} However, in Western societies, mothers from ethnic minority groups, despite gener-

ally being more socio-economically disadvantaged, tend to have higher rates of breast feeding compared with white women.^{8–10,14–17} There is, however, heterogeneity within ethnic groups: in the UK South Asian population, the incidence of breast feeding is highest in Bangladeshi mothers, with rates in Indians and Pakistanis being around 5% and 10% lower respectively.^{8,9}

The aim of this study is to investigate the relationship between initiation, and duration of any and exclusive breast feeding with ethnicity, after adjusting for socio-economic, life style and birth factors.

Methods

Study design

Born in Bradford (BiB) is a longitudinal multi-ethnic birth cohort study aiming to examine the impact of environmental, psychological and genetic factors on maternal and child health and well-being.¹⁸ Bradford is a city in the north of England with high levels of

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socio-economic deprivation and ethnic diversity. Women were recruited at the Bradford Royal Infirmary at 26–28 weeks gestation. Those who consented completed a baseline questionnaire. The full BiB cohort recruited 12 453 women between 2007 and 2010. Ethical approval for the data collection was granted by Bradford Research Ethics Committee. A subsample of the BiB cohort recruited between August 2008 and March 2009 that completed a baseline questionnaire were invited to participate in more detailed follow up at around 6, 12, 18 and 24 months post-partum (BiB 1000, $n = 1735$). Participants were excluded from the analysis if they had multiple births ($n = 28$), had not given birth at Bradford Royal Infirmary ($n = 18$) or had missing breast-feeding ($n = 250$) or covariate ($n = 74$) data. One thousand three hundred and sixty-five singleton infants for whom we have breast-feeding data in either the 6- or 12-month post-partum questionnaire were included in these analyses.

Breast feeding

Initiation was defined as breast feeding for at least 1 day. Exclusive breast feeding was defined as the infant receiving breast milk with no other liquids (including water) or solids, and any breast feeding as the infant receiving breast milk with or without formula, other drinks or solids.⁵ We assessed continuation of exclusive and any breast feeding to 4 months of age, as previously recommended by World Health Organization (WHO).¹⁹

Ethnicity

Ethnicity was self-assigned by the mother at the baseline questionnaire using the same ethnic group classification as the 2001 UK census²⁰ and categorised into white British, Pakistani, Other South Asian (Indian, Bangladeshi and Other South Asian) and Other ethnicities (white other, Black, mixed race, other unspecified).

Covariates

We examined covariates identified as potentially influencing the initiation and duration of breast feeding:^{5,6,12,21–25} Socio-economic factors: mother's age, maternal education and marital status (obtained from baseline questionnaire); life style factors: maternal body mass index (BMI) and smoking during

pregnancy (from maternity records and baseline questionnaire) and birth factors: parity, gestational age, birthweight and mode of delivery (from maternity records).

Statistical analysis

Chi-squared tests were used to assess overall differences in breast feeding stratified by ethnicity. We used Poisson regression with robust variance estimates to investigate the relationship between ethnicity and breast-feeding outcomes. The unadjusted model examined the relationship between breast feeding and ethnicity, with white British mothers as the reference category. A multivariable model adjusted for the covariates described earlier. We estimated missing maternal BMI in 114 (12%) cases using 50 imputed datasets. Sensitivity analyses conducted on a restricted dataset which excluded cases with missing maternal BMI data ($n = 1251$) showed a similar pattern to the findings in the imputed dataset. We present results from imputed models only. Goodness of fit testing confirmed that the Poisson distribution was appropriate for these analyses. Two-tailed P -values of less than 0.05 were considered to be significant. We present prevalence rate ratios (PRR) with 95% confidence intervals. All statistical analyses were conducted using STATA/IC version 11.2 (StataCorp LP, College Station, Texas, USA).²⁶

Results

Table 1 shows the characteristics of the study sample stratified by ethnicity.

Initiating breast feeding

Overall, 75.5% of mothers initiated breast feeding, with significant differences observed between ethnic groups (white British 64.6%, Pakistani 79.9%, Other South Asian 91.7%, Other ethnicities 90.6%, $P < 0.001$). In the unadjusted model, initiation was significantly higher in Pakistani [PRR = 1.24 (1.15, 1.33)], Other South Asian [PRR = 1.42 (1.30, 1.55)] and Other ethnicities [PRR = 1.40 (1.28, 1.33)] compared with white British mothers. This relationship was attenuated in the adjusted model but all differences remained statistically significant (Table 2).

Exclusive breast feeding at 4 months

Overall, only 11% of babies were exclusively breast fed by 4 months of age. However, the rates in women

Table 1. Characteristics of the study population by ethnicity. Values are *n* (%) unless otherwise specified

	All <i>n</i> = 1365	White British <i>n</i> = 526 (38.5%)	Pakistani <i>n</i> = 658 (48.2%)	Other South Asian ^a <i>n</i> = 96 (7.0%)	Other ^b <i>n</i> = 85 (6.2%)
Maternal age					
Mean (SD)	27.3 (5.6)	26.8 (6.2)	27.6 (5.1)	29.3 (5.1)	27.5 (6.2)
Education					
<5 GCSE equivalent	298 (21.8)	102 (19.4)	169 (25.7)	16 (16.7)	11 (12.9)
≥5 GCSEs equivalent	451 (33.0)	197 (37.5)	214 (32.5)	21 (21.9)	19 (22.4)
A-level equivalent	193 (14.1)	85 (16.2)	79 (12.0)	15 (15.6)	14 (16.5)
>A-level equivalent	345 (25.3)	104 (19.8)	177 (26.9)	37 (38.5)	27 (31.8)
Foreign unknown/other	78 (5.7)	38 (7.2)	19 (2.9)	7 (7.3)	14 (16.5)
Marital status					
Married/cohabiting	1178 (86.3)	396 (75.3)	623 (94.7)	93 (96.9)	66 (77.7)
Single/not cohabiting	187 (13.7)	130 (24.7)	35 (5.3)	3 (3.1)	19 (22.4)
Smoked during pregnancy					
Yes	217 (15.9)	172 (32.7)	23 (3.5)	3 (3.1)	19 (22.4)
BMI					
Mean (SD)	25.9 (5.8)	26.8 (6.2)	25.3 (5.4)	26.0 (6.2)	25.0 (4.8)
Missing	114 (8.4)	48 (9.1)	48 (7.3)	7 (7.3)	11 (12.9)
Parity					
Primiparous	531 (38.9)	252 (47.9)	201 (30.6)	36 (37.5)	42 (49.4)
Multiparous	834 (61.1)	274 (52.1)	457 (69.4)	60 (62.5)	43 (50.6)
Gestation					
<37 weeks	71 (5.2)	31 (5.9)	32 (4.9)	4 (4.2)	4 (4.7)
Weight at birth					
<2500 g	104 (7.6)	35 (6.7)	56 (8.5)	9 (9.4)	4 (4.7)
Mode of delivery					
Vaginal	1077 (78.9)	406 (77.2)	535 (81.3)	73 (76.0)	63 (74.1)
Caesarean section	288 (21.1)	120 (22.8)	123 (18.7)	23 (24.0)	22 (25.9)

^aIndian = 57, Bangladeshi = 31 and other = 8.

^bWhite other = 23, mixed white and Black = 12, mixed white and South Asian = 6, Black = 24, Other = 20.

GCSE, General Certificate of Secondary Education; SD, standard deviation.

of Other South Asian (22.9%) and Other ethnicities (18.8%) were double that of white British and Pakistani women (both 9.9%, $P < 0.001$). In the unadjusted model, rates were comparable in white British and Pakistani mothers [PRR = 1.00 (0.71, 1.41)] although a lower rate was seen in Pakistani's in the adjusted model [PRR = 0.77 (0.54, 1.09)]. The PRRs in Other South Asian and Other ethnicities were significantly higher in the unadjusted model [PRR = 2.32 (1.48, 3.63) and PRR = 1.90 (1.14, 3.18) respectively], but these differences were accounted for after adjustment for covariates (Table 2).

Any breast feeding at 4 months

By 4 months of age, 28% of infants were receiving any breast milk. The highest prevalence was in Other ethnicities (54.1%), followed by Other South Asian (51.0%), Pakistani (28.7%) and white British (18.6%)

mothers ($P < 0.001$). In the unadjusted model, the PRRs were higher in all ethnic groups compared with white British mothers [Pakistani PRR = 1.54 (1.24, 1.91), Other South Asian PRR = 2.74 (2.10, 3.57) and Other ethnicities PRR = 2.90 (2.23, 3.79)]. This association was attenuated in all ethnic groups in the adjusted model, but remained statistically significant (Table 2).

Comment

Compared with white British mothers, we found that mothers of all other ethnic groups examined were significantly more likely to initiate breast feeding and continue any breast feeding until 4 months of age, which is consistent with previously reported findings from the UK.^{9,27} However, we found no significant differences in the rates of exclusive breast feeding at 4 months by ethnicity after adjustment for covariates. To our knowledge, this is the first time that rates of

Table 2. Unadjusted and adjusted prevalence rate ratios (PRR) with 95% confidence intervals (95% CI) for breast-feeding outcomes

	<i>n</i> (%)	Unadjusted PRR [95% CI]	Adjusted PRR [95% CI] ^a
Initiating breast feeding			
White British (Reference)	340 (64.6)	1.00	1.00
Pakistani	526 (79.9)	1.24 [1.15, 1.33]	1.19 [1.10, 1.29]
Other South Asian	88 (91.7)	1.42 [1.30, 1.55]	1.29 [1.18, 1.42]
Other ethnicities	77 (90.6)	1.40 [1.28, 1.54]	1.33 [1.21, 1.46]
Exclusive breast feeding at 4 months			
White British (Reference)	52 (9.9)	1.00	1.00
Pakistani	65 (9.9)	1.00 [0.71, 1.41]	0.77 [0.54, 1.09]
Other South Asian	22 (22.9)	2.32 [1.48, 3.63]	1.55 [0.99, 2.43]
Other ethnicities	16 (18.8)	1.90 [1.14, 3.18]	1.50 [0.88, 2.56]
Any breast feeding at 4 months			
White British (Reference)	98 (18.6)	1.00	1.00
Pakistani	189 (28.7)	1.54 [1.24, 1.91]	1.27 [1.02, 1.58]
Other South Asian	49 (51.0)	2.74 [2.10, 3.57]	1.99 [1.52, 2.62]
Other ethnicities	46 (54.1)	2.90 [2.23, 3.79]	2.45 [1.86, 3.21]

^aModel adjusted for maternal age, educational level, marital status, maternal smoking during pregnancy, BMI (at booking; imputed in 114 cases), parity, gestational age, birthweight and mode of delivery.

exclusive breast feeding in a large sample size of Pakistani women in the UK have been reported. We also found that overall rates for breast-feeding initiation were 10% higher in the BiB 1000 cohort than routinely available data for Bradford,²⁸ possibly due to the BiB 1000 cohort having higher prevalence of South Asian, primiparous and older women, – all of which are known to have higher breast-feeding rates.^{6,9} – compared with the maternal population of Bradford as a whole.

A potential limitation of the study is that breast-feeding data were self-reported; however, previous studies have shown this to be a valid and reliable measure.²⁹ Due to small numbers, we had to combine mothers of Other South Asian and Other ethnicities into two overarching categories, and it is acknowledged that the small numbers of mothers and the heterogeneity of ethnic background in these categories mean that these results may not be generalisable to other populations with different ethnic group distributions. In addition, there are likely to be other social factors that influence breast-feeding rates that we have not accounted for, such as income, occupation/returning to work, family support and sociocultural norms that are likely to have influenced the results for women of all ethnic groups.

In summary, this study shows that breast-feeding patterns vary by ethnicity, and thus the importance of

accounting for ethnicity when describing breast-feeding rates. Health professionals must be made aware that despite higher rates of breast-feeding initiation and continuation to 4 months in minority ethnic groups, there is no evidence that they will continue to exclusively breast feed by the time their babies are 4 months of age.

Acknowledgements

We are grateful to all the families who took part in this study, to the midwives for their help in recruiting them, the paediatricians and health visitors and to the Born in Bradford team which included interviewers, data managers, laboratory staff, clerical workers, research scientists, volunteers and managers.

Funding statement

This paper presents independent research commissioned by the National Institute for Health Research Collaboration for Applied Health Research and Care (NIHR CLAHRC) and the Programme Grants for Applied Research funding scheme (RP-PG-0407–10044). The views expressed in this publication are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health.

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