

Breast-feeding initiation and exclusive duration at 6 months by social class – results from the Millennium Cohort Study

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Abstract

Objectives: To assess breast-feeding initiation and rates of exclusive breast-feeding for the first 6 months after birth, and to examine social class differences in breast-feeding rates.

Design: First sweep of a longitudinal population-based survey, the Millennium Cohort Study.

Setting: Four countries of the UK.

Subjects: Subjects were 18 125 singletons born over a 12-month period spanning 2000–01. Data were collected by parental interview on the initiation of breast-feeding and exclusivity at 1, 4 and 6 months after birth.

Results: Overall breast-feeding was initiated for 71% of babies, and by 1, 4 and 6 months of age the proportions being exclusively breast-fed were 34%, 3% and 0.3%, respectively. There were clear social class differences and mothers with routine jobs with the least favourable working conditions were more than four times less likely (odds ratio (OR) 0.22, 95% confidence interval (CI) 0.18–0.29) to initiate breast-feeding compared with women in higher managerial and professional occupations. Women in routine jobs were less likely to exclusively breast-feed their infants at 1 month (OR 0.42, 95% CI 0.36–0.50) and 4 months (OR 0.5, 95% CI 0.31–0.77) compared with women in higher managerial and professional occupations.

Conclusions: Clear social class differences in breast-feeding initiation and exclusivity for the first 4 months were apparent in this large UK sample. By 6 months, less than 1% of babies were being exclusively breast-fed. A co-ordinated multi-faceted strategy is required to promote breast-feeding, particularly among lower-income women.

Keywords
Breast-feeding initiation
Breast-feeding exclusivity
Social inequalities

A wealth of scientific evidence has highlighted the benefits of breast-feeding for infants and mothers^{1–6}. Recently, the UK Department of Health modified its breast-feeding recommendations and now advocates that wherever possible infants should be fed exclusively on breast milk from birth until 6 months of age. These recommendations are in support of the World Health Organization's infant feeding guidance⁷. The promotion of breast-feeding has been highlighted in a range of policy developments as a means of improving health, and in particular as a way of reducing health inequalities among mothers and children⁸. The Department of Health recently set a target on breast-feeding for Primary Care Trusts to 'deliver an increase of two percentage points per year in breast-feeding initiation rates, focusing especially on women from disadvantaged groups'⁹.

Despite the recognised benefits and the implementation of a range of initiatives to promote the initiation and duration of breast-feeding, rates in the UK remain low compared with many other parts of the world. The UK Infant Feeding 2000 survey reported initial breast-feeding

rates at 70% in England and Wales, 63% in Scotland and 54% in Northern Ireland¹⁰. By 6 months, 21% of babies in the total sample were still being fed breast milk. However, precise figures on exclusive breast-feeding were not collected in the survey. Since the previous Infant Feeding Survey in 1995 little change had occurred in breast-feeding rates in England and Wales, although significant increases took place in both Scotland and Northern Ireland. Marked inequalities are apparent in breast-feeding. Mothers most likely to initiate breast-feeding are those who reach higher educational levels, are in Social Class I or II, are aged over 30 years, and are feeding their first as opposed to subsequent babies¹⁰.

The Millennium Cohort Study (MCS) is a longitudinal survey of a large sample of babies born in 2000–01 across the UK. The first wave of data collection assessed a range of health and developmental outcomes in a sample of over 18 000 infants¹¹. This dataset provides a valuable source of information from a large representative sample of UK children. The aim of the present paper was to assess breast-feeding initiation and rates of exclusive

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breast-feeding for the first 6 months, and to examine social class differences in breast-feeding rates.

Methods

The MCS sample was drawn from babies born in the UK during a 12-month period spanning the years 2000–2001. The survey design, recruitment process and fieldwork have been described in detail elsewhere¹¹. Briefly, 18 553 households agreed to participate in the survey. Households were identified through the Department of Work and Pensions Child Benefit system and were selected on the basis of where the family was resident just after the time of birth. The sample is clustered at the electoral ward level, and disadvantaged residential areas are over-represented.

The survey involved home visits by interviewers when the cohort member was aged on average 9.2 (standard deviation (SD) 0.5) months. During the interview questions were asked about the socio-economic circumstances of the family and the health and well-being of the baby, including the initiation and duration of breast- and bottle-feeding. Rates of exclusive breast-feeding were determined by identifying babies whose carer reported that breast-feeding had been initiated and had not been given formula, cow's or any other sort of milk/fluid or solid foods at 1, 4 and 6 months of age.

Data analysis

Data were analysed for all singleton births ($n = 18\,125$). Breast-feeding initiation and exclusivity at 1, 4 and 6 months were examined by social class of the mother by occupation (National Statistics Socio-Economic Classification (NS SEC) in seven categories: 1, Higher managerial and professional; 2, Lower managerial and professional; 3, Intermediate; 4, Small employees and self-employed; 5, Lower supervisory and technical; 6, Semi-routine; 7, Routine). This social class schema was first used in the 2001 census and is based on the following principles, which are markers of working conditions: timing of payment (monthly, weekly, daily or hourly); presence of incremental pay; job security; degree of autonomy; promotion opportunities; degree of planning own work tasks¹². Breast-feeding rates were also stratified by the following potential confounders: parity (first or subsequent child), sex of baby, mother's age in five bands (<20, 20–24, 25–29, 30–34, ≥ 35 years), smoking (non-smoker, 0–9, 10–19, ≥ 20 cigarettes per day), household income in equivilised quintiles of the distribution and family structure (one- or two-parent).

Logistic regression models were run with initiation of breast-feeding and exclusivity at 1, 4 and 6 months of age as the dependent variables. Independent variables were entered into the model in two stages: first, social class and second, sex of baby, parity and mother's age, cigarette smoking, family composition and income. Data were

weighted to take account of the sampling framework, ensuring that the study sample was representative of the population of 9-month-old babies resident in the UK during the recruitment period. All analyses were performed using Stata version 8.2 (StataCorp, College Station, TX, USA).

Results

Table 1 shows the social and demographic characteristics of the sample. The mean age (SD) of the mothers interviewed was 29.7 (5.8) years and 36% of the sample

Table 1 Social and demographic characteristics of the population sample

	<i>n</i>	%
Sex of baby		
Female	8807	48.6
Male	9317	51.4
<i>Total</i>	<i>18 125</i>	
Mother's age (years)		
< 20	1304	7.2
20–24	3019	16.7
25–29	4949	27.3
30–34	5700	31.5
≥ 35	3128	17.3
<i>Total</i>	<i>18 101</i>	
Parity		
First child	7736	42.7
Second or subsequent child	10 389	57.3
<i>Total</i>	<i>18 125</i>	
Number of cigarettes smoked by mother per day		
Non-smoker	12 966	71.6
< 10	2027	11.2
10–19	2211	12.2
≥ 20	910	5.0
<i>Total</i>	<i>18 113</i>	
Country of residence		
England	14 829	81.8
Wales	947	5.2
Scotland	1720	9.5
Northern Ireland	630	3.5
<i>Total</i>	<i>18 125</i>	
NS SEC by mother's occupation		
Higher managerial and professional	1307	7.8
Lower managerial and professional	4272	25.6
Intermediate	3287	19.7
Small employers and self-employed	764	4.6
Lower supervisory and technical	950	5.7
Semi-routine	3688	22.1
Routine	2403	14.4
<i>Total</i>	<i>16 672</i>	
Equivilised household income in quintiles of the distribution		
Highest	4178	24.9
Second highest	3807	22.7
Middle	2895	17.3
Second lowest	2878	17.2
Lowest	3021	18.0
<i>Total</i>	<i>16 799</i>	
Family structure		
Two-parent	15 241	84.2
One-parent	2858	15.8
<i>Total</i>	<i>18 099</i>	

NS SEC – National Statistics Socio-Economic Classification.

worked in semi-routine and routine occupations (NS SEC).

Figure 1 shows the proportion of babies for whom breast-feeding was initiated and the duration of exclusive breast-feeding by social class. Seventy-one per cent of the total sample was initially breast-fed. A clear social class gradient in breast-feeding initiation was evident. For example, 93% of mothers from the higher managerial and professional occupational group initiated breast-feeding compared with 53% of mothers in routine occupations. A social gradient in breast-feeding initiation was apparent apart from those in the small employees and self-employed group. At 1 week, 50% of the sample was being exclusively breast-fed. By 1 month this had dropped to 34%, and at 4 months 3% was exclusively breast-fed. By 6 months, only 0.3% of the sample was still being exclusively fed breast milk. Clear social class differences in exclusive breast-feeding were apparent over time.

Table 2 shows the proportion of babies for whom breast-feeding was initiated and was exclusive at 1, 4 and 6 months by social and demographic factors. Initiation and exclusive feeding rates were higher among mothers aged 30 or over, who were non-smokers, living in higher-income households, who lived with a partner and who were first-time mothers. Rates were highest in England and lowest in Northern Ireland.

Table 3 shows odds ratios (ORs) and 95% confidence intervals (CIs) estimated using logistic regression analysis for the effect of occupational social class on the initiation and duration of exclusive breast-feeding. The adjusted figures reveal that women with routine occupations with the least favourable working conditions were over four times less likely to initiate breast-feeding than women with the most favourable working conditions in higher managerial and professional occupations. The adjusted OR for exclusive breast-feeding at 1 and 4 months was 0.42 and 0.50, respectively. The rates of exclusive breast-feeding at 6 months were too low to undertake further analysis.

Discussion

The results from this study provide an up-to-date insight into the extent of breast-feeding initiation rates across a socially diverse, large UK sample of babies born at the beginning of the new millennium. Moreover, using data collected in the MCS allowed us to assess exclusive breast-feeding rates. Seventy-one per cent of the sample initiated breast-feeding. Exclusive rates of breast-feeding at 1 week following the birth were 50%. By 1 month this had dropped to 34%, and by 4 months only 3% of the sample was exclusively breast-fed. At 6 months, the recently recommended period for exclusive breast-feeding by the Department of Health, only 0.3% of the sampled mothers were still feeding their infant exclusively on breast milk.

There were clear social class differences in rates of breast-feeding, with mothers in occupations with the least favourable working conditions being more than four times less likely to initiate breast-feeding, and twice as likely not to exclusively breast-feed their babies at 1 and 4 months of age, compared with women working in occupations with the most favourable conditions.

Similar rates of breast-feeding initiation were reported in the most recent Infant Feeding Survey¹⁰, but in contrast to the Infant Feeding Survey the use of MCS data has allowed us to estimate the proportion of babies who were being exclusively breast-fed. A clear picture of exclusive breast-feeding rates is particularly useful in light of the recent Department of Health recommendations. By 4 months, only 3% of the babies were being exclusively breast-fed and by 6 months this had dropped to 0.3%. Furthermore, in this paper we have moved beyond a purely descriptive analysis to assess the independent effect of social class on breast-feeding rates.

The MCS has collected high-quality data from a large, socially diverse UK sample and the NS SEC provides social class data based upon the mother's occupation. The NS

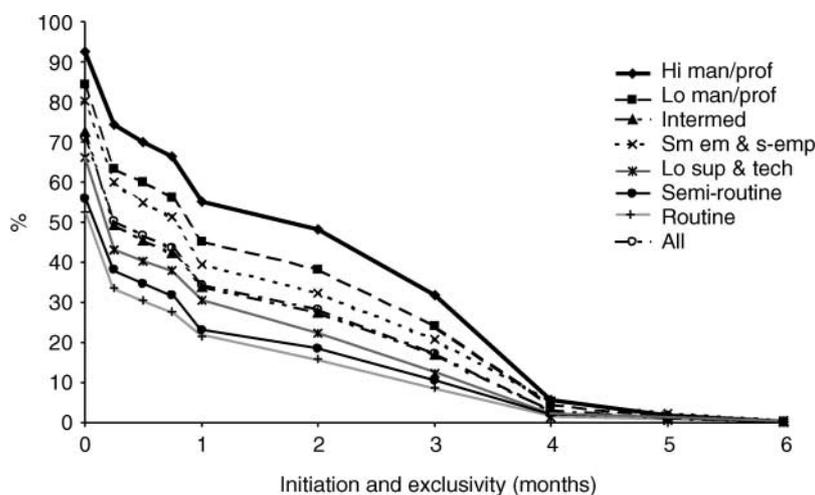


Fig. 1 Breast-feeding initiation and exclusivity by social class (National Statistics Socio-Economic Classification: Hi man/prof – Higher managerial and professional; Lo man/prof – Lower managerial and professional; Intermed – Intermediate; Sm em & s-emp – Small employees and self-employed; Lo sup & tech – Lower supervisory and technical; Semi-routine; Routine)

Table 2 Breast-feeding initiation and exclusivity by social and demographic factors

	Breast-feeding							
	Initiated		Exclusive at 1 month		Exclusive at 4 months		Exclusive at 6 months	
	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>
Sex of baby								
Female, <i>n</i> = 8800	69.9	6151	34.0	2992	3.5	308	0.3	26
Male, <i>n</i> = 9306	70.5	6561	32.7	3043	3.0	279	0.3	27
Mother's age (years)								
< 20, <i>n</i> = 1301	45.7	594	12.6	164	1.0	13	0.2	2
20–24, <i>n</i> = 3018	58.0	1751	20.8	628	1.7	51	0.1	3
25–29, <i>n</i> = 4945	69.9	3455	32.3	1595	3.0	146	0.3	13
30–34, <i>n</i> = 5697	77.0	4383	39.1	2225	3.4	195	0.3	18
≥ 35, <i>n</i> = 3127	80.5	2515	45.3	1417	5.7	177	0.5	16
Parity								
First child, <i>n</i> = 7730	75.0	5798	32.6	2520	2.5	193	0.2	12
Second or subsequent child, <i>n</i> = 10 382	66.7	6924	33.9	3519	3.7	384	0.4	40
Number of cigarettes smoked by mother per day								
Non-smoker, <i>n</i> = 12 953	76.6	9909	38.8	5025	3.9	505	0.4	46
< 10, <i>n</i> = 2026	63.8	1292	26.0	526	1.9	38	0.2	5
10–19, <i>n</i> = 2211	49.8	1101	15.9	351	0.9	20	0.0	0
≥ 20, <i>n</i> = 910	42.9	390	13.9	126	1.3	12	0.2	2
Country of residence								
England, <i>n</i> = 14 820	72.1	10 673	34.3	5088	3.2	481	0.3	43
Wales, <i>n</i> = 945	62.8	593	27.2	257	2.5	24	0.2	2
Scotland, <i>n</i> = 1716	64.9	1111	32.6	558	4.0	69	0.3	6
Northern Ireland, <i>n</i> = 629	51.4	323	20.3	120	1.1	7	0.0	0
NS SEC by mother's occupation								
Higher managerial and professional, <i>n</i> = 1307	92.6	1210	55.1	720	5.7	74	0.3	4
Lower managerial and professional, <i>n</i> = 4271	84.4	3604	45.1	1926	4.4	188	0.3	12
Intermediate, <i>n</i> = 3288	72.6	2385	33.9	1114	2.8	91	0.3	10
Small employers and self-employed, <i>n</i> = 764	80.2	612	39.4	301	5.4	41	0.5	4
Lower supervisory and technical, <i>n</i> = 950	66.1	627	30.4	288	1.2	11	0.0	0
Semi-routine, <i>n</i> = 3688	58.8	2169	23.2	855	2.0	74	0.2	9
Routine, <i>n</i> = 2403	52.4	1260	21.2	510	1.7	42	0.2	6
Equivalised household income in quintiles of the distribution								
Highest, <i>n</i> = 4178	85.8	3584	47.2	1973	4.7	197	0.2	8
Second highest, <i>n</i> = 3808	77.7	2958	38.2	1455	3.3	126	0.3	12
Middle, <i>n</i> = 2895	66.3	1915	30.2	875	2.8	82	0.4	12
Second lowest, <i>n</i> = 2878	59.2	1701	24.4	701	2.3	66	0.3	8
Lowest, <i>n</i> = 3021	53.8	1618	19.8	599	2.1	64	0.2	7
Family structure								
Two-parent, <i>n</i> = 15 240	74.0	11 280	36.1	5497	3.5	534	0.3	44
One-parent, <i>n</i> = 2858	49.9	1413	18.6	530	1.6	47	0.3	8

NS SEC – National Statistics Socio-Economic Classification.

SEC gives an indication of how favourable working conditions are for an individual and is based on a range of markers such as job security, promotion opportunities and level of autonomy. One potential weakness in the study is that data on feeding were collected when infants were 9 months old, and this may have led to some recall bias when recording the timing of infant feeding patterns.

The initiation and maintenance of breast-feeding is determined by a range of clinical, personal, social, cultural and environmental factors^{13,14}. To meet the revised Department of Health breast-feeding recommendations will require a radical shift in practice and policy in the National Health Service and across society as a whole⁷. The development of public policies and supportive health services are urgently needed to promote breast-feeding, particularly among lower-income groups. In Sweden, where initiation and duration of breast-feeding is

substantially higher than in the UK, multi-faceted interventions have been implemented nationally for the last 20 years¹⁵. A multi-sector approach is crucial for effective action. Further detailed research is required into the barriers that prevent the initiation and maintenance of breast-feeding, particularly among lower-income mothers.

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Table 3 Odds ratio (OR) and 95% confidence interval (CI) for effect of social class (National Statistics Socio-Economic Classification) on initiation and exclusivity of breast-feeding

	Unadjusted		Adjusted for sex of baby, mother's age and parity, cigarette smoking, family structure and income	
	OR	95% CI	OR	95% CI
Initiated breast-feeding				
Higher managerial and professional	–		–	
Lower managerial and professional	0.43	0.33–0.53	0.56	0.43–0.67
Intermediate	0.21	0.17–0.27	0.33	0.27–0.43
Small employers and self-employed	0.33	0.26–0.45	0.56	0.40–0.71
Lower supervisory and technical	0.16	0.12–0.20	0.32	0.25–0.42
Semi-routine	0.11	0.09–0.14	0.26	0.21–0.33
Routine	0.09	0.07–0.11	0.22	0.18–0.29
Exclusive breast-feeding at 1 month				
Higher managerial and professional	–		–	
Lower managerial and professional	0.67	0.59–0.77	0.77	0.67–0.91
Intermediate	0.42	0.36–0.48	0.56	0.48–0.67
Small employers and self-employed	0.56	0.48–0.67	0.71	0.59–0.83
Lower supervisory and technical	0.36	0.30–0.43	0.63	0.50–0.71
Semi-routine	0.24	0.21–0.28	0.43	0.38–0.53
Routine	0.21	0.18–0.24	0.42	0.36–0.50
Exclusive breast-feeding at 4 months				
Higher managerial and professional	–		–	
Lower managerial and professional	0.71	0.56–1.00	0.83	0.63–1.11
Intermediate	0.45	0.33–0.63	0.63	0.43–0.83
Small employers and self-employed	1.11	0.71–1.67	1.25	0.83–2.00
Lower supervisory and technical	0.20	0.10–0.38	0.30	0.16–0.59
Semi-routine	0.31	0.23–0.45	0.53	0.36–0.77
Routine	0.27	0.18–0.40	0.50	0.31–0.77

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