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Lactation nurse increases duration of breast feeding

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SUMMARY In a randomised controlled trial a lactation nurse assisted mothers during the early weeks after parturition both in hospital and at home. All mothers who started breast feeding were entered into the trial. The lactation nurse significantly extended duration in the study group compared with controls, particularly during the first four weeks and among women of lower social class.

Breast milk is considered to be the milk most suitable for the health and wellbeing of most babies.¹ Researchers and experts, however, have drawn attention to the paucity of advice on breast feeding within and without hospital, and the lack of consistency of such advice.²⁻⁴ Inadequate assistance for mothers wishing to breast feed has contributed to the unacceptably high rate of premature cessation of breast feeding and consequently to disappointment of mothers. There was therefore a need to evaluate the benefits of employing a specially trained midwife whose role was to assist and encourage mothers in the early days of breast feeding both in hospital and in their own homes. The most rigorous evaluation is by means of a randomised controlled trial.

Methods

A total of 1525 mothers (98.7%) delivering in the maternity department of a district general hospital over a period of 18 months were interviewed as soon as possible after delivery. All mothers who attempted to breast feed at least once (the study group, n=678) were entered into a randomised controlled trial to evaluate the effectiveness of a lactation nurse on

establishing and maintaining breast feeding. She worked in the maternity wards in two week shifts followed by two week shifts visiting the same mothers at home, so that mothers were randomised in terms of two week periods. Intervention group mothers were those who gave birth and left hospital during the 'intervention period' when the nurse was in hospital. Controls were those who gave birth and left hospital during a 'control period' when the nurse was visiting cases at home. It was decided previously that those whose confinement overlapped both intervention and control periods should be excluded in order to avoid 'contamination' between cases and controls.

The nurse's role was to assist mothers to establish and maintain successful breast feeding in hospital and at home. This required assisting mothers to 'fix' babies on the breast, thereby preventing complications that often lead to cessation of breast feeding such as sore nipples and engorgement, and advising on treatment of these problems if they occurred. As well as these specific activities she provided support, encouragement, and consistent advice.

Table 1 *Duration of breast feeding in intervention and control groups (number (%)) still feeding at each point in time)*

Time	Intervention group (n=228) No (%)	Control group (n=355) No (%)
1 wk	215 (94)	307 (86)
2 wks	208 (91)	289 (81)
4 wks	191 (84)	255 (72)
3 mths	138 (61)	175 (49)
6 mths	86 (38)	98 (28)
9 mths	34 (15)	51 (14)
12 mths	9 (4)	25 (7)

Table 2 Duration of breast feeding in intervention and control groups in relation to social class (% breast feeding at each point in time)

Time	Social Class							
	I & II		III		IV & V		Unclassified	
	Intervention (n=68)	Control (n=83)	Intervention (n=120)	Control (n=193)	Intervention (n=29)	Control (n=57)	Intervention (n=11)	Control (n=22)
1 wk	99	86	93	89	93	79	91	91
2 wks	96	82	89	83	90	70	91	91
4 wks	84	73	84	74	86	58	73	82
3 mths	65	55	63	50	45	33	45	64
6 mths	40	35	38	26	31	21	36	32
9 mths	16	22	15	11	10	14	18	18
12 mths	6	7	5	5	3	9	—	18

Each mother in the study group was visited in her own home 12 months post partum by an independent interviewer to establish the duration of breast feeding, attitudes to and practices of infant feeding, and problems she had encountered. Only duration is reported here. Statistical comparisons were by χ^2 test.

Results

A total of 678 mothers started breast feeding (study group); 42% of all mothers interviewed. Altogether 649 (96%) of these were interviewed again 12 months later. More than half (55%) of the study group were primiparae and 61% of multiparae had breast fed previously. The personal characteristics (including age and social class) of intervention group mothers and controls were similar, confirming that randomisation was successful and that the groups were comparable and not biased before intervention.

The duration of breast feeding in the two groups are compared in Table 1. Significantly more intervention group mothers than controls were breast feeding at four weeks ($P<0.005$). Differences were consistent at each point in time up to six months. Analysis by social class showed that the most striking difference in the proportion of mothers still breast feeding at four weeks was in the lower social classes (Table 2). Similarly there was a difference for women described as 'previously failed breast feeders'.

Discussion

This study has shown the feasibility of initiating a service that is provided both within a hospital and in a community and of evaluating that service by a randomised controlled trial. The method of randomisation employed was successful: trial groups were

similar in respect of age, social class, other personal characteristics, and birth order. The exclusion of 66 women, because they delivered during the weekend or because their hospital stay overlapped both control and intervention periods, contributed to an imbalance of numbers, exacerbated by sickness absence of the nurse.

A 'Hawthorne effect' was apparent, in that other hospital midwifery staff increased their interest in breast feeding. The magnitude of this 'beneficial' effect may be estimated by comparing the duration of breast feeding in this study with that reported by Martin.⁵ Fifty one per cent of her sample started to breast feed and 54% of those were feeding at four weeks and 30% at three months, considerably fewer than controls in this study. It is highly likely that the presence of the nurse affected the controls.

The nurse altered the duration of breast feeding significantly among the intervention group mothers, particularly over the first four weeks: she enabled a higher proportion of mothers who started breast feeding to establish successfully and to continue for as long as they thought desirable. The beneficial effect was greatest among social classes IV and V and among those previously unsuccessful at breast feeding. The second interview throws some light on possible mechanisms. It was not so much that the nurse initiated feeding earlier, increased frequency of feeds, or discouraged supplementary feeding, but more that she encouraged mothers and supported those with problems. Intervention group mothers greatly appreciated her support and assistance and their positive comments were profuse both in hospital and at interview. Few reported insufficient help and many reported enjoyable and satisfying experiences. By consistent advice and encouragement the nurse enabled mothers to cope more successfully with difficulties and consequently significantly fewer ended breast feeding prematurely.

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Pathogenesis of liver damage during parenteral nutrition: is lipofuscin a clue?

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SUMMARY Lipofuscin develops in cells when peroxidation damage occurs. Its development in the liver of patients receiving prolonged parenteral nutrition suggests that peroxidation damage by free radicals has occurred. Deficiencies in antioxidants such as vitamin E may be an important contributing factor.

Peroxidation damage by free radicals can cause disease of the liver—for example, carbon tetrachloride poisoning¹ and alcoholic cirrhosis.² The pathogenesis of the damage to the liver in patients receiving parenteral nutrition is unknown. Lipofuscin found often in hepatic cells may be an important clue. Lipofuscin, a complex of lipids, proteins, and malonaldehyde, develops when sub-cellular membranes are damaged by peroxidation of free radicals.^{1 3}

Case report

A 930 g girl was born at 27 weeks' gestation after her mother had developed amnionitis. She was electively ventilated and treated for pneumonia with intravenous ampicillin and gentamicin for 14 days. No bacteria were cultured, and on day 10 treatment with intravenous fluorocytosine and amphotericin were started after *Candida albicans* had been cultured in urine obtained by bladder puncture. Continuous positive airway pressure was required for recurrent apnoeic attacks.

Cardiac failure developed due to a patent ductus

arteriosus. This did not respond to fluid restriction or treatment with frusemide and indomethacin, and surgical ligation was performed (on day 60).

The baby received total parenteral nutrition for the first 20 days. Repeated attempts to introduce expressed mother's milk or formula feeds failed, and a further 40 days of total or partial parenteral feeding was needed. The regimen (150 ml, 372 KJ/Kg/24 hours) included 7% Vamin (Kabivitrüm, Stockholm, Sweden) (30 ml/Kg/24 hours) and 10% Intralipid (Kabivitrüm, Stockholm, Sweden) (30 ml/Kg/24 hours) with added fat soluble vitamins A, D, and K (Vitalipid; Kabivitrüm, Stockholm, Sweden). Water soluble vitamins and trace elements were added to the 10% glucose and electrolyte infusion. Enteral vitamin E (alpha tocopherol acetate, 10 mg/Kg/24 hours) was given when milk feeds were tolerated.

The initial physiological jaundice (highest level on day 5; total serum bilirubin concentration 181 µmol/l; and conjugated bilirubin concentration 14 µmol/l) resolved after phototherapy. On day 30 the baby developed cholestatic jaundice with a 2 cm hepatomegaly. The bilirubin (total concentration 200 µmol/l, conjugated bilirubin concentration 164 µmol/l), serum aspartate transaminase (122 U/l), and serum alanine transaminase (42 U/l) concentrations had increased. Serology showed no evidence of infection—for example with cytomegalovirus. The serum α₁ antitrypsin concentration and concentration of chloride in sweat were normal, and no reducing substances were present in the urine when the baby was given milk feeds. Ultrasound study of the liver and biliary tree showed normal