

# THE INCIDENCE AND SIGNIFICANCE OF BREAST FEEDING IN INFANTS ADMITTED TO HOSPITAL

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Most doctors believe that breast fed babies do better than those artificially fed, but this is difficult to prove, especially where the standard of living is high. Thus, Douglas (1950) followed up 4,848 of the infants whose early history had been reported in *Maternity in Great Britain 1946*, and found few striking differences between those who had been breast and bottle fed; the breast fed babies had a slightly lower mortality, though the difference was not statistically significant, and they had fewer attacks of pneumonia and of diarrhoea in the early months of life. On the other hand Naish (1951) found that in her practice bottle fed babies in all social classes were more often ill than breast fed ones, requiring on an average more than four times as many visits per baby during the first year of life. Crosse (1951) compared the mortality in breast and bottle fed premature and full term babies in Birmingham. Among 1,061 babies of birth weight 5½ lb. or less, the mortality between 1 and 6 months of age varied from 0·8% (wholly breast fed) to 5·6% (wholly bottle fed). The corresponding figures for 2,717 mature babies were 0·4% and 1·4%. The smallest babies had the highest mortality rates, but in each birth weight group the breast fed babies were more likely to survive. In a poor district of Liverpool, Robinson (1951) studied 3,266 babies attending a welfare clinic during the years 1936-1942; wholly breast fed babies had a mortality of 10·2 per 1,000, while 57·3 per 1,000 of those never breast fed died. The corresponding morbidity rates were 223·4 and 573·7 per 1,000. These figures are comparable with those of Grulee, Sanford and Herron (1934), who found that the mortality of bottle fed babies in the poorest parts of Chicago was over four times that of breast fed babies, and the morbidity twice as high. It is clear that the dangers of bottle feeding are greatest in poor homes and among premature babies.

The reported feeding histories of infants admitted to hospital show that sufferers from infantile diarrhoea have generally been weaned early (e.g. Smellie, 1939; Campbell and Cunningham, 1941; Gairdner, 1945). About other illnesses there is less agreement, although a comparatively high

incidence of bottle feeding in infants with various infections has generally been reported (e.g. Ebbs and Mulligan, 1942; Deeny and Murdock, 1944). It may be objected that such figures are unconvincing, for the knowledge of the incidence of breast feeding in the population at risk is meagre.

In this paper the feeding history of infants admitted to hospital for infective illnesses is compared with that of infants admitted with other conditions.

## Material

All infants aged 16 weeks or under admitted to Birmingham Children's Hospital during 1949 and 1950 were included in the investigation (1,044 admissions). Each case was classified as 'clean' or 'infected', according to the disease for which the child was admitted; if several conditions were present only the most important was considered. Clean cases were subdivided into 'pyloric stenosis' and 'other clean', and 'infected' into upper and lower respiratory tract infections, diarrhoea and vomiting, and other infections (pyelitis, meningitis, skin infections, etc.).

## Results

More clean cases than infected ones were breast fed on admission, especially among those aged 5-8 and 9-12 weeks, where the difference is statistically significant (Table 1 and Fig. 1).

The clean cases, however, included a large proportion where breast feeding would have been

TABLE I  
ANALYSIS OF CLEAN AND INFECTED CASES IN RELATION TO BREAST FEEDING

Age in weeks		0-1	1-4	5-8	9-12	13-16
All clean (690 cases)	No.	177	181	179	105	48
	B.F.*	41	86	42	13	4
	B.F.%	22·4	47·5	23·5	12·4	8·5
All infected (354 cases)	No.	18	81	100	84	71
	B.F.	2	29	6	2	7
	B.F.%	11	34	6	2·5	9
S.E. of difference		8·7	6·6	5·7	4·4	—

\* B.F. = breast-fed.

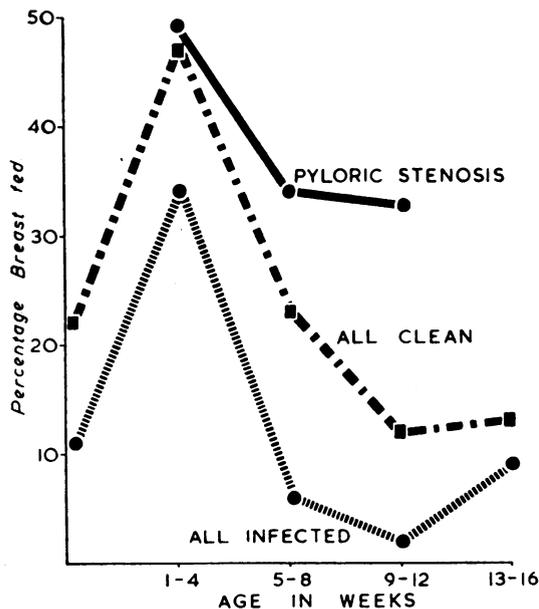


FIG. 1.—Incidence of breast feeding in pyloric stenosis, all clean and infected cases.

difficult or impossible, such as cases of harelip and prematurity, and numbers of cases of 'feeding difficulties' which were mostly bottle fed. The feeding histories of 'infected' cases have, therefore, been compared with those of babies with pyloric stenosis, a more homogeneous control group. Table 2 shows that these babies were much more

TABLE 2  
FEEDING HISTORIES OF INFECTED AND PYLORIC STENOSIS CASES COMPARED

Age in weeks		0-1	1-4	5-8	9-12
Pyloric stenosis (201 cases)	No.	2	85	90	24
	B.F.*	2	42	31	8
	B.F. %	—	49	34.5	33
All infections (283 cases)	No.	18	81	100	84
	B.F.*	2	29	6	2
	B.F. %	11	34	6	2.5
S.E. of difference		—	7.2	5.8	6.7

often breast fed than infected cases in the same age groups; the difference is greatest at ages 5-8 and 9-12 weeks, but is also significant at ages 1-4 weeks.

When the different groups of infection are considered separately it will be seen that scarcely any babies with diarrhoea and vomiting or with upper respiratory tract infections (including otitis media and mastoiditis) were breast fed. Between the ages of 5 and 12 weeks there were no breast fed

babies with such infections. Babies with lower respiratory and other infections were more often breast fed, though less frequently than clean cases (Table 3 and Fig. 2).

TABLE 3  
RELATION BETWEEN BREAST FEEDING AND CERTAIN DISORDERS

Age in weeks		0-1	1-4	5-8	9-12	13-16
Pylorics (201 cases)	Cases	2	85	90	24	0
	B.F.*	2	42	31	8	0
	B.F. %	—	49	34.5	33	—
Other clean (489 cases)	Cases	175	96	89	81	48
	B.F.	39	44	11	5	4
	B.F. %	22.5	45.7	12.4	6.2	8.3
Upper respiratory tract infections (89 cases)	Cases	3	19	25	20	22
	B.F.	0	9	0	0	1
	B.F. %	—	47	—	—	4.5
Lower respiratory tract infections (60 cases)	Cases	3	11	23	10	13
	B.F.	1	4	4	1	1
	B.F. %	33	36	17	10	7.7
Diarrhoea and vomiting (115 cases)	Cases	0	19	36	39	21
	B.F.	0	2	0	0	1
	B.F. %	—	10.5	—	—	4.5
Other infections (90 cases)	Cases	12	32	16	15	15
	B.F.	1	14	2	1	4
	B.F. %	8.3	44	12.5	6.1	2.6
All infections (354 cases)	Cases	18	81	100	84	71
	B.F.	2	29	6	2	7
	B.F. %	11	34	6	2.5	9
All clean (690 cases)	Cases	177	181	179	105	48
	B.F.	39	86	42	13	4
	B.F. %	22	47.5	23.5	12.5	8.3

\* B.F. = Breast fed on admission.

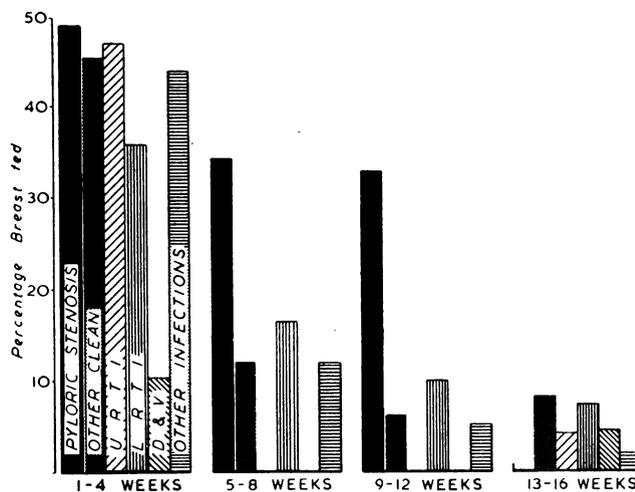


FIG. 2.—Incidence of breast feeding by diagnosis.

The child's place in the family was also studied. As might be expected more children with infections had older brothers and sisters, but the difference was not significant, nor did the incidence of breast feeding in the various disease groups vary with place in family.

### Discussion

Assuming that the 201 cases of pyloric stenosis and the 354 infected cases were equally representative samples of the infant population served by the hospital, these figures indicate that breast fed infants are less likely than bottle fed ones to suffer from infections, especially of the upper respiratory and alimentary tracts. The two samples are not comparable, however, for at least two obvious reasons. (1) The pyloric stenosis group included more babies whose parents were of social classes 1 and 2 (24.6%) than the infected group (7%). This was probably because better-off parents are unwilling to have their babies admitted to hospital, except when an operation is necessary. The breast-feeding record of social classes 1 and 2 is better than that of classes 3-5 (Royal College of Obstetricians and Gynaecologists and Population Investigation Committee, 1948). In this small series, though rather more babies from better-off families were breast fed the differences were not statistically significant. (2) The admission of a breast fed infant means an upheaval in the home, involving as it does the admission of the mother too. Here, again, parents would be more willing to agree to the admission of mother and child for a dramatic illness like pyloric stenosis than, say, for otitis media.

It seems unlikely that such factors would cause so large a difference in the feeding histories as we have found; at ages 5-8 weeks the percentage of cases of pyloric stenosis breast fed on admission was nearly six times that of infected cases. Moreover, a considerable number of babies with pyloric stenosis had been recently weaned with the mistaken idea that the mother's milk was the cause of the vomiting; were it not for this still more of these would have been breast fed.

It is instructive that upper respiratory tract infection, like infantile diarrhoea, should be so largely confined to the bottle fed. As the bottle fed baby may be fed by numbers of different people it runs more risk of contracting an intercurrent infection, but impaired nutrition or delayed

immunity may also play a part. This may be only surmise; the important point these figures emphasize is the considerably increased dangers of at least certain infections to which the artificially fed baby is exposed.

### Summary

In 1,044 admissions of infants aged 16 weeks or under the method of feeding on admission was recorded.

Patients admitted with an infective illness were less often breast fed than those with non-infective conditions, and very much less often than those with pyloric stenosis. The difference was most marked at ages 5-12 weeks.

Babies with upper respiratory tract or gastrointestinal infections were hardly ever breast fed on admission.

These figures suggest that breast fed babies are less likely to contract infections.

Certain qualifications to this statement are discussed.

The incidence of infections, etc., did not vary significantly with the child's place in family, nor did the incidence of breast feeding.

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