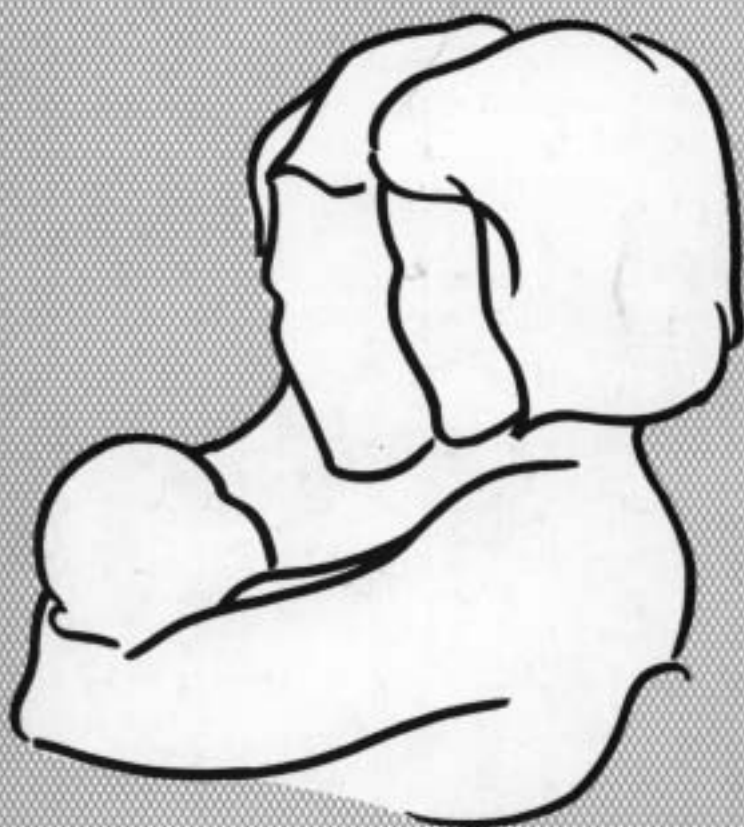


# Infant Feeding Practices in Ireland



Health  
Education  
Bureau

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# Infant Feeding Practices in Ireland

July, 1982

Mary McSweeney & John Kevany,  
Human Nutrition Unit,  
Dept. of Community Health,  
Trinity College,  
DUBLIN.



# Infant Feeding Practices in Ireland

Edited by  
Dr. M. J. O'Sullivan  
and  
Dr. J. J. O'Sullivan

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## FOREWORD

This publication is the second in the field, carried out by the Human Nutrition Unit at Trinity College, Dublin. It presents the results of a longitudinal study on infant feeding in Ireland. In our opinion it is a most valuable source of information to all those concerned with promoting sound infant feeding practices.

The Health Education Bureau clearly identifies sound nutritional practices as a major contribution to the health and well-being of society.

In 1982, the Health Education Bureau adopted a Life Cycle Model of health education as a framework for the future development of its programmes. This model identifies the key issues, phases and needs in health and illness throughout the life cycle, from birth to death and reflects the general aim of the Bureau, which is:

"To provide the means/opportunities for all vulnerable people to protect, maintain and improve their health as far as educational methods permit".

Infant welfare is one of the areas identified within the life cycle model. Our infant welfare programme places special emphasis on feeding practices, which is a major component of infant care and development.

The Health Education bureau feels that "Breast feeding should be widely promoted as the **normal** method of feeding infants, at least for the first three months of life. The hazards associated with bottle feeding should be identified including, specifically, the over-concentration of feeds and the introduction of cereals in the bottle".



M.B., D.P.M., M.R.C. Psych.  
Director  
Health Education Bureau

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Fig. 1. Floor plan of building.

Fig. 2. Section of building.

Fig. 3. Section of building.

Fig. 4. Section of building.

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## INTRODUCTION

The Health Education Bureau has among its duties the responsibility to provide accurate and up-to-date information on matters relevant to the protection of the Irish population. One of the major areas of importance is human nutrition, with special emphasis being placed on the needs of vulnerable subgroups, including mothers of young children.

In 1980 the Health Education Bureau decided that there was a need for accurate and up-to-date information on current nutritional practices of vulnerable subgroups in the Irish population. Consequently, it commissioned a study of this area and published a report in 1981 entitled "Nutrition Beliefs and Practices in Ireland".

It was evident from this and other reports, as well as from international health agencies including the World Health Organisation, that infant feeding practices represented a crucial area for health education intervention. Optimal infant feeding practices are fundamental to the health and development of infants and young children. In order to establish existing patterns of infant feeding in Ireland, the present study was planned and developed by the R. and I. Division of the H.E.B., in collaboration with the Human Nutrition Unit of T.C.D. The findings of this research, together with recommendations for future activities, are presented in this publication. It is hoped that this study will contribute to scientific knowledge in this area and provide the basis for effective health education for this stage in the life cycle.

Dr. Desmond J. O'Byrne, B.A., M.A. D.Phil. (Oxon)  
Head of Research and Information  
Health Education Bureau

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## Summary

This study was commissioned by the Health Education Bureau in Spring 1981 and was carried out by Mary McSweeney under the direction of Professor John Kevany in the Human Nutrition Unit, Department of Community Health in Trinity College, Dublin. It was completed in July 1982.

The first stage of the study sought to establish the national incidence of breast feeding. It monitored the feeding method of 90% of mothers discharged from maternity units in Ireland during one week. It related feeding method on discharge to background sociodemographic factors such as socioeconomic group, maternal age, parity, location, and type of hospital bed.

The second stage was a follow-up study of 402 primiparous mothers from Dublin and two rural areas. Half of them were breast feeders and half bottle feeders. Detailed interviews were conducted with the mothers in their homes six months after their babies were born.

From this information the study examined the factors which influence the initial choice of feeding method and the practices during the hospital stay and at home which related to infant feeding. The factors which affected the duration of breast feeding and the introduction of solid foods were also considered. Implications were drawn for the formulation of health education policy.

## INTRODUCTION AND BACKGROUND

We can date a new age in infant feeding from the mid 19th century. It was in this period that the search began to find some substitute for breast milk which would supply the nutritional needs of infants independently of the mother. The experiments with substitute foods were rudimentary at first but were improved

continuously from the beginning of the 20th century. It was not until after the Second World War that the most dramatic improvements in the production of breast milk substitutes were made to such an extent that there was an increasing confidence in the properties of bottle feeding. It could be used apparently without risk and in certain circumstances even served to save infant lives. From the late nineteen-sixties scientific research into the properties of breast milk increased enormously. As a consequence of clinical, epidemiological and chemical studies, there has been a dramatic reassessment of the role of breast feeding as a complex function in the health of the infant which is impossible to replicate in substitute form. Artificial formulas may provide one or other of the properties of breast milk but they cannot reproduce the unique combination of nutritional, anti-infective, immunological and psychophysiological characteristics associated with breast feeding. Not only is human milk unique in the properties it combines but it is also unique in its adaptability over time to the particular needs of the infant.

The properties of breast milk immediately after birth include protein rich in antibodies which provide particular protection to the vulnerable infant and afford resistance to intestinal infection. The composition of breast milk, in particular its low solute and protein concentration, is ideally suited to the nutritional needs of the infant and helps to protect against dehydration and obesity. Studies have shown that bottle fed babies have higher rates of intestinal, chest and ear infections and allergic disorders such as infantile eczema illustrating the immunological and anti-allergic character of breast milk.<sup>8, 14, 28</sup> Several long term disorders such as atherosclerosis and hypertension have been associated with bottle feeding and with the obesity resulting from over concentration of formula milk, though this association is not necessarily causal.<sup>29</sup> In addition to the physical properties of breast milk the contact between mother and child which breast feeding affords is conducive to successful bonding.<sup>4</sup>

The present state of scientific knowledge of the properties and characteristics of breast and bottle feeding leave little doubt in the minds of medical researchers and practitioners about the superiority of human milk. Health education agencies in most countries are recognizing this fact and initiating programmes to increase the incidence of breast feeding or to prevent its decline and to encourage the provision of optimum conditions to facilitate it. In most affluent and developed countries bottle feeding has become the norm over a period of 150 years and it is this which health educators seek to reverse.

Until the mid nineteenth century and the changed attitudes, values and lifestyle associated with the Industrial Revolution, substitute feeding was rarely attempted, generally only in circumstances of maternal loss. Society was predominantly rural and work home based. Care of children, including breast feeding of infants, was an unquestioned part of women's contribution to the economy of the family.

The move to city living, which was part of the Industrial Revolution, had dramatic consequences for the lifestyle of many. For women, from the manual class in particular, there was the opportunity and often necessity of employment outside the home in industry. Families were fragmented from the rural extended to the more urban type. Typically, living quarters were cramped and there was little opportunity to grow food. Under these circumstances the rearing of children, particularly the nursing of infants, became a problem for working mothers. Increasingly attempts were made at artificial feeding but neither the knowledge they had nor the circumstances in which mothers lived contributed to provide the level of hygiene made all the more necessary when breast feeding is substituted by artificial methods.

These conditions produced a well documented rise in infant mortality in Europe.<sup>38, 47</sup> In roughly the same period, developments in medicine were taking place, particularly in the field of bacteriology and biochemistry which made clear the importance of hygiene and

which helped to develop a way of modifying cows milk to suit the needs of the infant.

Complex and elaborate formulas were devised for the preparation of artificial feeds and it is from this period that the term 'formula' feed originated.<sup>47</sup> Rudimentary health services were developing to cater for needs created by urbanization and in part of Europe schemes were devised to distribute clean substitute milk to working mothers. The improvements offered by medical science at this time held out the possibility of reducing ill health and infant mortality by technological means. Great progress was made in the organisation of education of medical students, nurses and midwives. Occurring in the context of existing medical science this education became very laboratory oriented and hospital based. This orientation fostered the concept of childbirth as an illness rather than as a usually successful physiological event. To prevent infection families were excluded from the maternity unit and delivery rooms were designed like operating theatres. The mother and baby were cared for under separate routines, the first under the obstetricians and the second under the paediatricians. The emphasis on the superiority and social acceptance of the technical and scientific encouraged the view of breast feeding as obsolete.

The provision of health services, along with improved sanitation and water supply and increased knowledge of infant nutrition were factors which helped lead to a drop in infant mortality rates from the second decade of this century. In this atmosphere of confidence in the capacity to control hygiene and health the attitude developed that the feeding bottle was an inevitable part of the modernisation process.

Young mothers became progressively more dependent on the health services offered to them with good results for morbidity and mortality rates. However, practices within hospitals were not conducive to breast feeding. In a situation of social mobility, such as occurred after the second World War in Europe, where families are nuclear and where childbirth

is clinicalised, women will often receive little information on breast feeding. Experience of techniques to do with feeding will be gained from a short time in hospital where bottle feeding has become the norm. Scheduled intervals between feeds, delays in feeding the baby after birth and the separation of the mother from the newborn are not conducive to breast feeding but became routine practices in Western maternity hospitals. Similarly, there was minimal interest shown by health professionals at this time in solving breast feeding problems, with little attention paid to this subject in their education and training.

In this situation marketing techniques applied to infant formulas were very productive and rapidly escalated after World War II. The infant food industry has supplied the missing 'nutrition education' along with and through its advertising and sales promotions. Marketing techniques of the food companies have been particularly successful where they have been channelled through the health services producing a situation of 'endorsement by association'. Samples handed out at hospital clinics and literature carrying breast milk substitute advertisements given out by hospital staff, give a clear message to the mother.

In the nineteen-fifties, a convergence of demographic, social and economic factors contributed in large measure to a reluctance to breast feed in public. Communities such as Ireland, where traditional religious ideas negating the role of the body have been prevalent, are probably more vulnerable to these attitudes.

The decline in breast feeding in developed countries continued through the sixties but, in many of these countries a move back to breast feeding has been observed beginning in the early to mid nineteen seventies. In some areas - Scandinavia for example - the trend is advanced and well documented. In Norway, the percentage of mothers breast feeding at three months fell to just over 20% at the end of the sixties.<sup>29</sup> This figure rose sharply following increased attention in the media and in the health services and as a result of the consciousness raised by the formation

of organisations of breast feeding mothers. Today approximately 70% of mothers in Norway breast feed their infants for at least three months. Studies from the U.K. indicated that in the sixties around 30% of mothers started to breast feed, with a very rapid fall off after leaving hospital.<sup>60</sup> A comprehensive study in England and Wales, carried out in 1975 by Jean Martin and published in 1978, gave a figure of 51% of mothers who chose breast feeding, 24% continuing to breast feed at six weeks, and 15% at three months. In these countries, as well as in the U.S. studies have shown that the return to breast feeding is primarily led, if not confined to, educated women from the higher socioeconomic groups.<sup>18,36,51</sup>

In Ireland the distance from the Industrial Revolution and the demographic and economic features of it, particularly outside Dublin, were likely to encourage the continuance of traditional patterns of breast feeding. However, relatively little documentation of social trends, including feeding methods, have been made until fairly recently. Hospitals studies after the second World War have indicated a very low rate of breast feeding.<sup>32,33</sup> It is likely that by this time the cultural gap between other parts of Europe and Ireland had been narrowed and similar factors relating to the modernization process were at work in both areas.

In most Western countries agencies have been established to publish information on health matters and, as in other countries, several hospitals in Ireland have reassessed their own practices in relation to infant feeding and have initiated active and imaginative programmes to encourage breast feeding. The Health Education Bureau in Ireland undertakes a national role in disseminating information on health issues. In the light of the scientific reappraisal of the short and long term benefits of breast feeding, the H.E.B. has commissioned this study on infant feeding patterns in order to provide an information base for a programme of education to encourage a better awareness of the attitudes and practices of mothers, with a view to facilitating successful infant feeding practices.

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## OBJECTIVES OF THE STUDY

- (1) To establish the rate of breast feeding on a national level;
- (2) To describe the breast feeding and bottle feeding practices of primiparous mothers, from their initial choice of feeding method to the introduction of solid foods to their babies and to relate these to socioeconomic and maternal characteristics;
- (3) To investigate the factors which affect the duration of breast feeding by first time mothers;
- (4) To examine the role of health education in helping mothers to carry out successfully their feeding method of choice, both in terms of their own perceived needs and of the structure and organisation which help or hinder them to do so.

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## DESIGN AND SAMPLE

The study was divided into two main parts. The aim of the first part was to establish the incidence of breast feeding nationally. It was decided to obtain information on the method of feeding of all mothers leaving hospital during one week. Feeding method was then to be cross-tabulated against background variables of the mother which were readily accessible to nurses from hospital notes. A list of maternity units in Ireland was obtained and the thirty-one largest units, in terms of number of deliveries and hospital beds, were selected. It was estimated that these cover 90% of births in Ireland. It was considered that one week was a sufficient length of time to give an accurate overall figure though not necessarily sufficient to represent the rate of breast feeding in an individual hospital.

The second part of the study involved the collection of qualitative information on the mother's experience of infant feeding. It was envisaged that detailed interviews would be conducted with four hundred mothers, two hundred who had elected to breast feed and left the hospital doing so and two hundred bottle feeders. In view of

the limits to the study of time and money, it was decided to confine this section to first time mothers thus eliminating the need for much larger numbers in order to show the effect of this variable. The study was devised specifically with the role of health education in mind. It was felt that the new mother is in the most vulnerable position in terms of information and experience and is one on whom health education has the greatest potential impact. A study of the experiences and decisions which a mother faces at this time as well as the structures and constraints within which she acts would help to illuminate the potential role of health education in assisting her to make the right decisions for herself and her baby and in helping those involved in the health services to make it as easy as possible for her to carry out these decisions. As well as the initial choice and practice of feeding method the timing of introduction of solid foods was an area of concern.

With this in mind, it was decided to interview the mothers as near as possible to twenty-four weeks after the birth of their baby. It was recognised that this would place reliance on the mother's recall of events surrounding the birth and of problems encountered and how they were tackled. Pilot studies confirmed however, that this first experience of motherhood is especially vivid and times and details are particularly well remembered. Nevertheless, it is recognised that attitudes and behaviour may be reinterpreted in the light of later outcome or experience. A longitudinal study with interviews before and after birth and after weaning would avoid this problem but would have been excessively costly.

It was considered important to include in this study the experience of women in a rural situation, whose opportunities for contact with the health services are potentially different from those in large urban centres like Dublin. The samples were therefore drawn from five hospitals — two in Dublin and three from provincial hospitals in two areas, the latter providing 38% of the sample. These hospitals were contacted and they agreed to allow a sample to be drawn from their records and to make first contact with the mothers regard-

ding an interview. The sampling frame covered women who had delivered during a period of ten weeks. All married first time mothers whose babies were discharged with them were included up to the required number designed to yield two hundred each of bottle and breast feeders. In the case of the two provincial areas addresses in the city were excluded and in one area addresses beyond thirty miles and in the other beyond seventy miles, were excluded on grounds of transport costs. In the Dublin area any addresses beyond twenty miles from the centre were excluded for similar reasons.

## PROCEDURE

### **1: A NATIONAL SURVEY OF CURRENT FEEDING PRACTICE**

Thirty-one maternity units were contacted and it was estimated that 90% of births in Ireland occurred in these units. A communication to the matron and senior obstetrics consultant in each hospital explained what was involved and asked for co-operation in completing a simple questionnaire relating to all discharges from their units during the week 27th April to 4th May 1981 inclusive. A 'kit' of forms and prepaid return envelopes along with a letter of explanation to the nursing staff was sent to each hospital. It was requested that a form or 'report sheet' be filled for each mother discharged or transferred from the hospital during the survey week. The sheet elicited information on method of feeding during hospital stay and on discharge or transfer as well as the age of the mother, home location, birth order of the baby, husband's occupation and type of hospital bed occupied. In order to minimise the demands on the time of the nursing staff and to avoid using the staff as interviewers, only information available from charts was requested and excessive writing was eliminated by providing, as far as possible, precoded responses. A complete response was achieved from the thirty-one units and information obtained

on 1,195 mothers. This corresponds well with the expected figure estimated from the annual birth rate. Frequencies on a nationwide and hospital basis were computed in relation to selected variables. Each hospital was sent information on its own data and on the national data as soon as possible.

### **2: A STUDY OF PRIMIPAROUS BREAST AND BOTTLE FEEDERS**

Structured questionnaire schedules including some open-ended questions were drawn up for this part of the study. They were piloted using a sample of thirty primiparous and multiparous women who had delivered babies in a Dublin hospital. It was decided at this stage to confine this part of the study to primiparous mothers and some modifications were made to the questionnaire schedules. Much help and useful information was gained from the staff of the hospital departments involved. Contact was made with the mothers via a letter from the hospital consultants explaining the purpose of the study and asking if they would be willing to give an interview about their experiences.

A time for interview was fixed for a date two weeks ahead and a reply postcard for refusal or rearrangement of appointment was included. The interviews were spread over a period of eleven weeks so that the babies were as near as possible twenty-four weeks old at the time of interview.

Five interviewers were involved and they were fully briefed in the use of the questionnaire. The interviews lasted forty minutes on average and were generally received with great cooperation and interest.

The interview schedules were coded and transferred to magnetic punch tapes and stored in the T.C.D. computer. BMDP was used for analysis of the data.

## RESPONSE RATES

### Breast feeders:

Sets sample	295
Total non response	82
— non contact	48
— moved away	19
— interviews withdrawn	8
— refusals	7

Interviews completed	213
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### Bottle feeders:

Sets sample	270
Total non response	81
— non contact	32
— refusals	28
— moved away	20
— interviews withdrawn	1

Interviews completed	189
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The main reason for non-response was 'non-contact' which meant that no one was in when called on at least twice. In some cases the mothers may have moved but they were not categorized under 'moved away' unless this was established with neighbours or a new occupant.

There was a higher refusal rate by bottle feeders than breast feeders (twenty-eight compared to seven). Refusal was made by the return postcard which had a category 'do not wish to be interviewed'.

## Part 1 National Survey of Infant Feeding Practices

### 1. Description of the sample

Information was obtained on 1,195 mothers in this initial survey. 39% of the mothers lived in the larger urban centres (Table 1), 80% were between twenty-one and thirty-five years (Table 2), and 74% were having their first, second or third baby (Table 4). Socioeconomic group was classified by the recorded occupation of the husband. Those recorded as 'farmers' were grouped together in the absence of other information, though it is recognised that there may be a considerable variation of economic condition within this group. The 6% 'unmarried' (Table 3) is probably an underestimate, as single mothers are often not recorded as such. The classification by public/non-public bed (Table 5)

reflects the manual/non-manual groupings fairly closely. For 76% of mothers, their hospital stay after the birth of their baby was six days or less (Table 6).

**TABLE 1**  
**Home location of mother**

Village of isolated rural	31%
Small town	29%
Dublin, Limerick, Cork, Galway or suburbs	39%
	100%

**TABLE 2**  
**Age of mother**

<20	7.2%
21-25	26.3%
26-30	31.5%
31-35	23.5%
36-40	8.5%
41-45	2.2%
46+	0.8%
	100%

**TABLE 3**  
**Socioeconomic group of mother  
(by occupation of husband)**

Non-manual	27%
Skilled manual	27%
Non-skilled manual	26%
Farming	10%
Unmarried	6%
Not recorded	4%
	100%

**TABLE 4**  
**Birth order of baby**

1	27%
2	26%
3	21%
4	12%
5	7%
6-14	6%
Not recorded	1%
	100%

**TABLE 5****Type of hospital bed occupied**

Public	62%
Semi-private	14%
Private or personal	22%
Not recorded	2%
	100%

**TABLE 6****Length of hospital stay**

1-4 days	21%
5-6 days	55%
7-14 days	20%
14+ days	1%
Transfers	2%
Not recorded	1%
	100%

**2. Results**

The national distribution by feeding method, together with sub-categories of supplementary and complementary feeding are shown in Table 7.

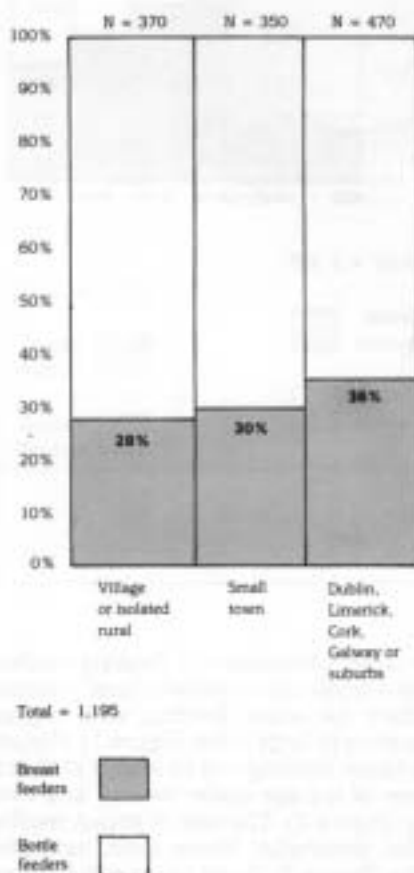
**TABLE 7****Method of feeding on discharge**

Breast only	29%	32%
Breast and Complementary	2%	
Breast and Supplementary	1%	
Bottle Only	68%	
	100%	

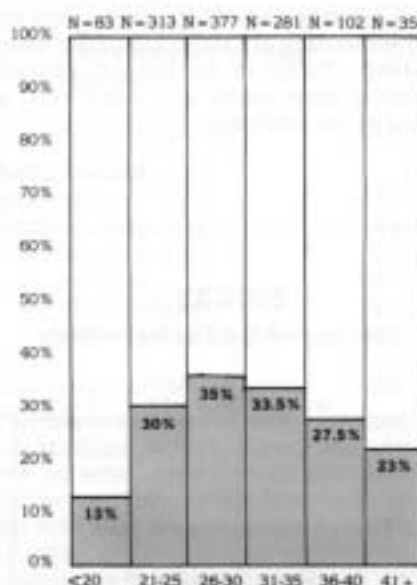
On discharge from the units, 32% of the mothers were breast feeding; 3% of these were either also giving some bottle feeds or 'topping up' with bottle feed after breast feeding. 3% were recorded as having changed from breast to bottle during their hospital stay. This may be an underestimate as the questionnaires were completed on discharge of the mother and the fact that some mothers may have initially attempted to breast feed may not have been known or recalled by the nurse recording the data.

The distribution of feeding method was analysed in terms of location, age of mother, parity, socioeconomic group and hospital bed and the results are presented in Figures 1-5.



The sub-categories of complementary and supplementary are included under breast feeding. Failures to record specific variables were small and have been ignored in the analysis.

**FIGURE 1****Method of feeding by location**

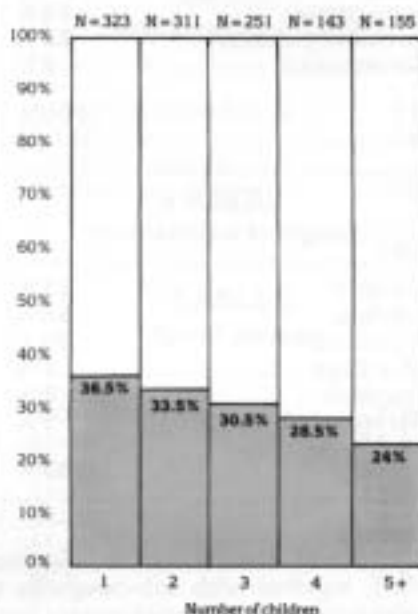
**FIGURE 2**  
Method of feeding by age group





Total = 1,195

Breast feeders   
Bottle feeders 

**FIGURE 3**  
Method of feeding by parity



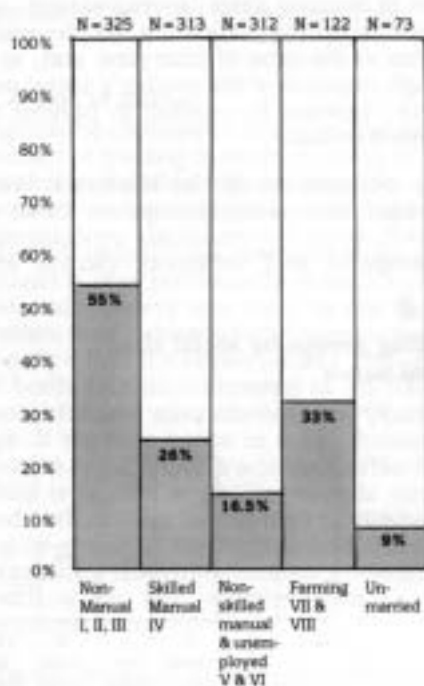
Total = 1,183

Breast feeders   
Bottle feeders 

The cross tabulations of feeding method show a small but consistent rural — urban gradient for breast feeding with highest frequency in large cities (Figure 1). Percentage breast feeding is at its lowest at the extremes of the age under twenty and over forty (Figure 2). The rate of breast feeding is also somewhat lower with increased parity (Figure 3). It can be seen in Figure 4 that the method of feeding is strongly related to socioeconomic group, only 16.5% in the non-skilled manual group

breast fed, compared to 55% of the non-manual group. The figures for public and non-public bed are consistent with this finding (Figure 5). The percentage of unmarried mothers recorded as breast feeding is very low, but these figures include mothers whose babies were discharged to await adoption. Some studies in England<sup>59</sup> have indicated a high rate of breastfeeding amongst single mothers who kept their babies.

**FIGURE 4**  
Method of feeding  
by socioeconomic group



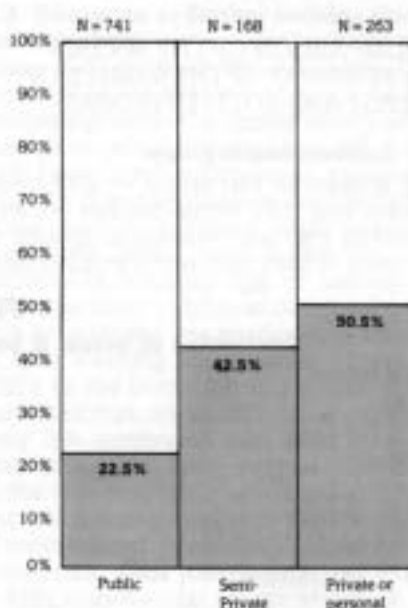
Socio economic group

Total = 1,148

Breast feeders

Bottle feeders

**FIGURE 5**  
Method of feeding in relation to  
type of hospital bed



Total = 1,172

Breast feeders

Bottle feeders

## PART 2

# A Study of Primiparous Breast & Bottle Feeders

### A COMPARISON OF THE SOCIAL BACKGROUND OF THE SAMPLE OF BREAST AND BOTTLE FEEDERS

#### 1.1 Socioeconomic group

The women in this study — 213 breast feeders and 189 bottle feeders — were classified into socioeconomic groups on the basis of their husband's employment.

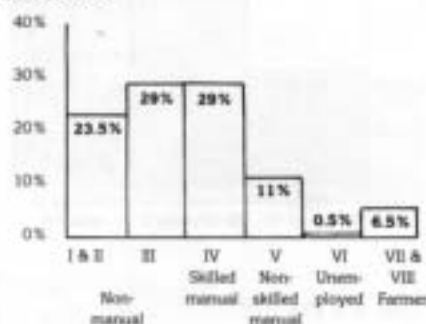
made by the mother which are likely to be influenced by her own background. Responses, therefore, have also been classified by the respondents' background factors such as school leaving age, education or training since leaving school, occupation during pregnancy, employment status at the time of interview and, as a rough measure of the mother's social network, location in relation to parents or parents-in-law.

The occupations of the husbands were divided into seven groups — three of which were non-manual: professional, managerial and technical, clerical and

**FIGURE 6**

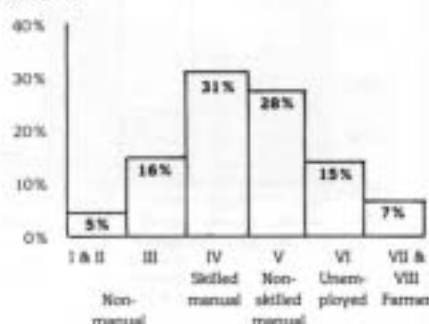
#### Distribution of breast & bottle feeding groups by social class

##### Breast feeders



N = 213

##### Bottle feeders



N = 189

This follows the usual practice of classifying men according to their own occupation and women according to the occupation of their father or husband. This practice is useful in that it is more generally inclusive than other methods of classification. Respondents could be classified according to their own occupation or last occupation but, in the case of women whose occupations tend to cluster in the non-manual 3 group, this would be less discriminating and also problematic since a sizeable segment works full-time in the home. In this study 19% of the breast feeders and 32% of the bottle feeders were not employed at the start of their pregnancy. Classification by the husband's occupation as 'head of the household' does assume, that cultural and social as well as economic differences will coincide with the income and status of the husband. The study focuses on decisions generally

minor supervisory, two of which were skilled manual, semi and unskilled manual, and separate groups for unemployed and for farmers. Professional and managerial were subsequently merged into one group as there were few in the former category among breast feeders and none among bottle feeders. The distribution of feeding method by socioeconomic grouping is given in Figure 6. The distribution for the two feeding groups reveals the predominance of breast feeders in the non-manual groups. 53% of the breast feeding group were in the non-manual class compared to 21% of the bottle feeders and only 11% were in the unskilled manual group compared to 28% of the bottle feeders. One husband of the breast feeders was unemployed compared to 13% (24) of the bottle feeders. These observations are similar to those in most studies carried out in Europe and in

the United States which show a higher incidence of breast feeding among women of higher socioeconomic group than among women from the manual classes.<sup>18,36,51</sup> The reverse of this situation applies in the Third World countries.

### 1.2 Age of mother

Age can be considered as a potential determinant of feeding method in terms of the mother's variable opportunity for experience and extra familial socialization.

The difference in age structure of the two groups is seen particularly at each end of the scale. Nearly one third of the bottle feeders were below twenty-one compared to only 4% of the breast feeders. Only 8% of bottle feeders compared to 16.5% of breast feeders were above thirty years of age. It must be borne in mind, however that the age at which a woman has her first child is related to socioeconomic status and both of these factors may have a bearing on choice of feeding method. Table 8 examines the distribution of feeding method by age within each socioeconomic group.

The age structure noted reflects the social class structure of the two groups, the breast feeders coming predominantly from the non-manual classes and the bot-

tle feeders from the manual. Women from the higher social classes tend not only to marry later but also to delay having their first child.

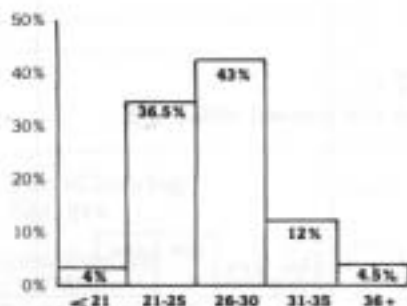
### 1.3 Education or further training since leaving school

Some indication of the educational experience of the breast and bottle feeding groups is given in the figures which set out the age at which respondents left school and their later educational experience (Figures 8 and 9). Data was collected on these two categories and analysed separately rather than under the comprehensive heading 'age of leaving full time education'. This was designed to take into account the less academic gradations of later learning and training experience likely in the bottle feeding group. It was surmised that, within this group, in which only 5% continued into third level full time education, there may be differences in the way that those who have and have not had training deal with the experience of motherhood. Accordingly, three further categories were developed; secretarial course, commercial course at school and short in-service training (e.g. machinist). The number in this last group was small and, as the training entailed was very limited, the group was amalgamated for the purposes of cross-tabulation into the 'no training' category.

**FIGURE 7**

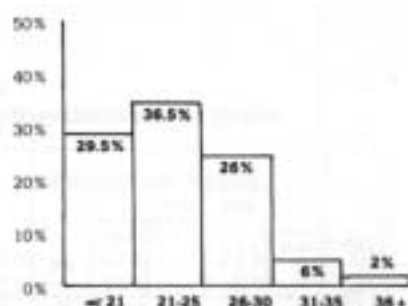
**Distribution of breast & bottle feeding groups by age of respondent**

**Breast feeders**



N = 213

**Bottle feeders**



N = 189

**TABLE 8****Distribution of social class by age in breast and bottle feeding groups**

Social Class	Age (yrs) <21		21-25		26-30		31-35		35 +	
	Breast	Bottle	Breast	Bottle	Breast	Bottle	Breast	Bottle	Breast	Bottle
1-2	0	3.5%	9%	3%	33%	10%	40%	0	30%	25%
3	25%	3.5%	38.5%	13%	28%	28.5%	12%	45.5%	10%	0
4	37.5%	30.5%	35%	35%	28%	24.5%	16%	36%	20%	50%
5	37.5%	41%	14%	29%	6.5%	16.5%	16%	9%	10%	25%
6	0	14.5%	0	17%	0	8%	0	0	0	0
7	0	7%	4%	3%	4.5%	12%	16%	9%	31%	0
N	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	(8)	(56)	(78)	(69)	(92)	(49)	(25)	(11)	(10)	(4)

**FIGURE 8****Age at which respondents in breast and bottle feeding groups left school**

Breast feeders = 213

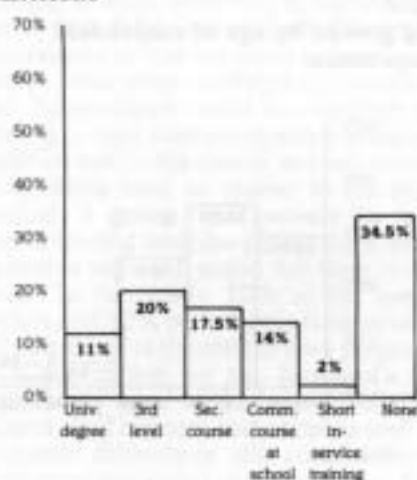
10%	12%	78%
13-15 yrs.	16 yrs.	17 + yrs.

Bottle feeders = 189

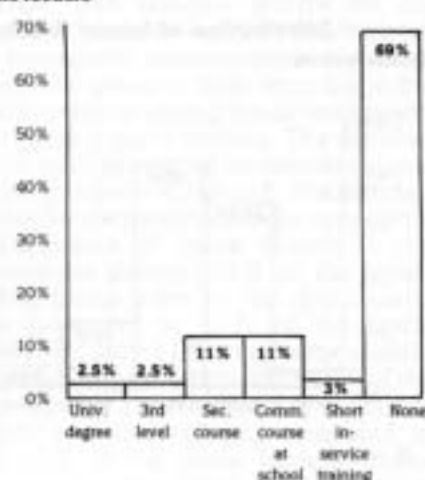
33%	25%	42%
13-15 yrs.	16 yrs.	17 + yrs.

**FIGURE 9****Education or further training since leaving school of breast and bottle feeding groups**

Breast feeders



Bottle feeders



N = 213

N = 189

Figures 8 and 9 indicate the very different educational experiences of the two groups. One-third of the bottle feeders left school at or before fifteen years of age compared to only 10% of the breast feeders. The great majority (78%) of the breast feeders stayed at school until seventeen years old and beyond compared to 42% of the bottle feeders.

Over two-thirds (69%) of the bottle feeders and one-third (34%) of the breast feeders had no education or training since leaving school. 31% of breast feeders and only 5% of bottle feeders had completed either a university degree or third level education such as nursing or teaching.

It is clear that education is an important variable in distinguishing between breast and bottle feeders. The physiological and psychological advantages of breast over bottle can only be availed of to the extent that information is accessible and psychological difficulties can be overcome. It is towards the higher education groups that literary material which details the advantages of breast feeding is mostly

directed. Furthermore, it is the higher educated mothers who are more capable of seeking out other sources of knowledge and useful information which influences them to breast feed and facilitates their circumstances. In general the positive attitude to literature of the more educated and the current interest in the superiority of breast feeding inevitably encourages a high motivation to breast feed in this group.

Current fashion, as distinct from knowledge within the higher educated group, also encourages a trend to breast feeding. The middle class concern with environment and ecology, the increasing sympathy with naturalism and antipathy towards certain types of high technology and commercialism encourages an attraction to the simpler lifestyle symbolised in breast feeding. Breast is not only best, it is also fashionable.

The tables 9, 9a, 10, and 10a indicate the overlap between the school leaving age, post school education and training and social class.

**TABLE 9**  
**Age breast feeders left school in each socioeconomic group**

School Leaving Age, yrs.	Socioeconomic Group				
	1-2	3	4	5/6	7
Less than 16	2%	3%	18%	32%	0%
16	10%	13%	6%	24%	21.5%
More than 16	88%	84%	76%	44%	78.5%
	100%	100%	100%	100%	100%
	(50)	(62)	(62)	(25)	(14)

**TABLE 9a**  
**Age bottle feeders left school in each socioeconomic group**

School Leaving Age, yrs.	Socioeconomic Group					
	1-2	3	4	5	6	7
Less than 16	0%	13%	34%	41%	71%	0%
16	40%	17%	22%	38%	8%	23%
More than 16	60%	70%	44%	21%	21%	77%
	100%	100%	100%	100%	100%	100%
	(10)	(30)	(59)	(53)	(24)	(13)

In both the breast and bottle feeding groups, it is those in the higher social classes who left school later and were more likely to have substantial post school education. The tables suggest too that breast feeders in the skilled and unskilled manual groups (classified, of course, by husband's occupation) were more likely than bottle feeders in the same social class groups, both to have left school later and to have had some experience of education or training since leaving school. 76% of breast feeders stayed on at school after sixteen from the skilled manual group compared to 44% of the bottle feeders from the same group. Similarly 44% of breast

feeders in the unskilled manual group stayed at school after sixteen compared to only 21% of bottle feeders. Of the bottle feeders, 2% of the skilled manual and none of the unskilled manual or unemployed group received 3rd level education compared to 18% (skilled manual) and 12% (unskilled manual) of the breast feeders. It seems that, in distinguishing between bottle and breast feeders educational level may be a more powerful discriminator than social class. Unsurprisingly they overlap substantially, reflecting not only the different opportunities for education between the social groups but also patterns of social mobility.

**TABLE 10**  
**Further education/training by breast feeders in each socioeconomic group**

School Leaving Age	Socioeconomic Group				
	1-2	3	4	5/6	7
University Degree or 3rd Level	64%	27%	18%	12%	29%
Secretarial/Commercial course	22%	42%	37%	20%	14%
None or short training	14%	31%	45%	68%	57%
	100%	100%	100%	100%	100%
	(50)	(62)	(62)	(25)	(14)

**TABLE 10a**  
**Further education/training by bottle feeders in each socioeconomic group**

School Leaving Age	Socioeconomic Group					
	1-2	3	4	5	6	7
University Degree or 3rd Level	60%	7%	2%	0%	0%	8%
Secretarial/commercial course	20%	30%	24%	17%	12.5%	38%
None or short training	20%	63%	74%	83%	87.5%	54%
	100%	100%	100%	100%	100%	100%
	(10)	(30)	(59)	(53)	(24)	(13)

#### 1.4 Respondent's occupation during pregnancy

It was decided to ask the mothers for details of their occupation at the time of pregnancy as an indicator of their experience. These occupations were listed under the headings shown in table 11 but were combined for purposes of cross-tabulation. They cluster in the clerical, secretarial, retail and nursing occupations, typical of women's employment patterns.

**TABLE 11**  
Occupation during pregnancy of respondents in breast and bottle feeding groups

	Breast Feeders	Bottle Feeders
	%	%
1.		
Teaching	10	1.5
Nursing and Paramedical	13	2
Other	4	0.5
Studying	1	0
2.		
Clerical and Secretarial	40	29
3.		
Shop Assistant, Waitress	5	16.5
Factory	5	10.5
Domestic	3	8
4.		
None	19	32
	100% (213)	100% (189)

#### 1.5 Respondent's employment status at time of interview

The employment status of the mothers at the time of interview is summarised in Table 12. The percentage in each group returning to work within ten weeks, twelve weeks and sixteen weeks after delivery is listed in Table 13.

**TABLE 12**  
Respondents employment status at time of interview (24 weeks post natal)

	Breast Feeders	Bottle Feeders
At home	57%	77%
Full-time	36%	18%
Part-time	7%	5%
	100% (213)	100% (189)

**TABLE 13**  
Percentage of those who were going back to work returning by ten, twelve and sixteen weeks post natal

	Breast Feeders	Bottle Feeders
By ten weeks	26%	42%
By twelve weeks	49%	67%
By sixteen weeks	79%	88%

77% of bottle feeders and 57% of the breast feeders were not working outside the home at the time of interview. By then most who fully intended to return to work had done so. Some others did indicate an interest in looking out for part-time work in the near future and a few had planned to return, had worked for a month and then given up.

The social class distribution of employment within each feeding group (Tables 14 and 14a) reveals a much higher rate of employment outside the home among the non-manual groups. Of the breast feeders in groups 1-2 outside employment is substantially higher than home employment (60% versus 40%). This suggests both the opportunities and perhaps the pressures on this group, created by their educational and pre-natal occupational experience.

**TABLE 14**  
**Percentage of breast feeders employed outside the home in each socioeconomic group at time of interview**

	<b>1-2</b>	<b>3</b>	<b>4</b>	<b>5/6</b>	<b>7</b>
At home	40%	52%	69%	65%	86%
Full or part-time	60%	47%	31%	33%	14%
	100%	99%	100%	98%	100%

**TABLE 14a**  
**Percentage of bottle feeders employed outside the home in each socioeconomic group at time of interview**

	<b>1 - 2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
At home	50%	67%	81%	81%	67%	100%
Full or part-time	50%	33%	19%	19%	33%	0%
	100%	100%	100%	100%	100%	100%

The employment figures for the two groups suggest that an intention to return to work, sometimes given as a reason to bottle feed, is not in fact a decisive or prohibitive factor in choosing to breast feed, though it may affect the duration of breast feeding. However, of those who do work, those from the non-manual groups in which breast feeders predominate, tend to be in occupations which allow them to plan maternity leave and a return to work (usually fourteen weeks post-natal) and therefore to plan a feeding and weaning schedule. The figures in Table 13 indicate that the bottle feeders who returned to outside employment tended to do so rather earlier than the breast feeders.

### **1.6 Proximity to family**

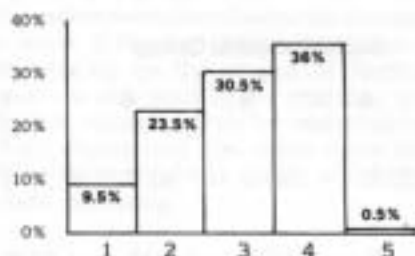
The first few weeks of motherhood are a period when support and help of the right kind can make the difference between an anxious and exhausting time and a time of congratulations and enjoyment. Many of the mothers who had family near who

were helpful and available to them, particularly their own mothers, acknowledged what a difference it had made to their confidence and ability to relax. Apparently in many societies it is customary for mothers to have a female assistant for some time after the birth; this would be someone familiar to the mother such as a local midwife or the new mother's own mother.<sup>28</sup>

In Western urbanized societies new families are often widely separated geographically. A new breast feeding mother may return home from hospital to a rather isolated position having had very little previous experience of or even never having seen breast feeding in practice. Even when family is near the lack of experience of breast feeding in some sections of the community may expose her to a range of conflicting opinion and uninformed advice. In some cases in the study sample, the ready availability of family support seemed to have encouraged the mother to decide to bottle feed in order to maximise the benefits of having someone to hand to look after the baby.

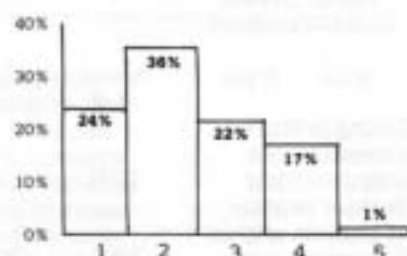
**FIGURE 10****Proximity to family of breast and bottle feeders group**

Breast feeders



N = 213

Bottle feeders



N = 189

- 1 = Living with parents or parents-in-law.  
 2 = Both parents and parents-in-law living within 5 miles.  
 3 = Either parents or parents-in-law living within 5 miles.  
 4 = Both parents and parents-in-law further than 5 miles.  
 5 = Other (e.g. not alive).

As a rough guide to patterns of family contact the respondents were asked how far they lived from their parents or parents-in-law. Almost a quarter of the bottle feeders actually lived with one or other family, compared to only 10% of breast feeders. Proximity to family correlated particular-

ly with socioeconomic group rather than with age of respondent, as might have been expected. A high percentage of the farming group lived with their parents and the manual groups were predominantly 'local' (Tables 15 and 15a).

**TABLE 15****Proximity to family of breast feeders in each socioeconomic group**

	Socioeconomic Group				
	1-2	3	4	5/6	7
Living with parents/ parents-in-law	6%	5%	5%	20%	43%
Both or one set of parents within 5 miles	42%	58%	64%	56%	28.5%
Neither sets of parents within 5 miles	52%	37%	31%	24%	28.5%
	100%	100%	100%	100%	100%
	(50)	(62)	(62)	(25)	(14)

**TABLE 15a**  
**Proximity to family of bottle feeders in each socioeconomic group**

	Socioeconomic Group					
	1-2	3	4	5	6	7
Living with parents/parents-in-law	10%	7%	20%	30%	42%	31%
Both or one set of parents within five miles	30%	70%	61%	57%	50%	61%
Neither sets of parents within five miles	60%	23%	19%	13%	8%	8%
	<u>100%</u> (10)	<u>100%</u> (30)	<u>100%</u> (59)	<u>100%</u> (53)	<u>100%</u> (24)	<u>100%</u> (13)

The large number of bottle feeders actually living with their family and having family within frequent calling distance may have had an effect on the choice of feeding method considering the inhibition felt about breast feeding which is reported in the next section.

## Summary

The breast and bottle feeding mothers in the sample were distinguished fairly consistently in terms of the variables examined. Breast feeders typically were having their first babies at a later age than bottle feeders and were from a higher socioeconomic group. They were more likely than the bottle feeders to have continued school after fifteen years of age and to have had experience of some sort of education or training since leaving school.

A slightly higher percentage of breast than bottle feeders were in employment at the

start of their pregnancy and a higher percentage returned to employment after having their babies.

Within the same manual socioeconomic group those who continued school education after fifteen years and also those with some further education experience were more likely to breast feed.

A considerably higher percentage of primiparous bottle feeders than breast feeders were living in or within a short distance of their parental home.

Some of the advantages of breast feeding are cumulative and long term. The better educated mothers are more able to avail themselves of information about these advantages and indeed may have done so even before pregnancy. An awareness of the physiological and psychological superiority of breast feeding is a good motivation to breast feed as well as a preparation for an understanding of the techniques of successful breast feeding.

## 2: CHOICE OF FEEDING METHOD

The different social and economic background distinguishing breast from bottle feeders was described in the last section. Some of these variables clearly have some bearing on the choice of feeding method. In this section we examine the subjective reasons given by respondents for their choice and also some more immediate factors which might affect the mothers' decisions.

The mothers were asked when they decided how they were going to feed their babies. The results are tabulated in Table 16 and summarised under the heading 'always knew', 'during pregnancy', and 'after baby was born' in Table 16a.

### 2.1 Timing of decision

Of the breast feeders 54% came to pregnancy with breast feeding in mind, only 5% decided to breast feed after their baby was born and the remainder decided at some stage during pregnancy. A rather different picture emerges from the responses of the bottle feeders. Again, a large proportion (43%) had decided on the method of feeding even before pregnancy but a far greater proportion than the breast feeders (33%) made the decision to bottle feed after the baby was born.

**TABLE 16**  
Timing of choice of feeding method  
by breast and bottle feeders

	Breast Feeders	Bottle Feeders
Always knew	54%	43%
As soon as pregnant	27%	15%
1st trimester	4%	4%
2nd trimester	5%	1%
3rd trimester	3%	4%
Before birth	2%	0%
After baby born	5%	33%
	100% (213)	100% (189)

**TABLE 16a**  
Timing of choice of feeding  
method summarized

	Breast Feeders	Bottle Feeders
Always knew	54%	43%
During pregnancy	41%	24%
After baby was born	5%	33%
	100% (213)	100% (189)

**TABLE 16b**  
Breast feeders timing of choice of feeding method in each  
socioeconomic group

	1-2	3	4	5/6	7
Always knew	72%	50%	51%	40%	50%
During pregnancy	22%	42%	45%	60%	50%
After baby born	6%	8%	4%	0%	0%
	100%	100%	100%	100%	100%

**TABLE 16c**  
**Bottle feeders timing of choice of feeding method in each**  
**socioeconomic group**

	<b>Socioeconomic Group</b>				
	<b>2-3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Always knew	27.5%	42%	57%	50%	23%
During pregnancy	20%	19%	28%	17%	54%
After baby born	52.5%	39%	15%	33%	23%
	100%	100%	100%	100%	100%

A breakdown of the timing of this decision amongst bottle feeders by socioeconomic group suggests that a larger percentage of the non-manual group than the manual were more open to the idea of breast feeding even after the birth (Tables 16b and 16c).

It is evident that attitudes to breast feeding, along with attitudes to sexuality and the body are likely to have been developed, if not fully formulated, during the period of adolescence. Education and information impinges in varying degrees on these attitudes. The figures suggest that if health education aims to encourage mothers to a positive attitude to breast feeding it must start to do so in these formative years. In doing so it must also be kept in mind that one third of those who bottle fed left school at age fifteen or less. The figures underline the possibilities for health education during pregnancy for those who had yet to make up their mind about the feeding method they would use.

## **2.2 Reasons given for the choice of feeding method**

The respondents were asked to give the reasons which they felt were decisive in their choosing to breast or to bottle feed. Questions seeking the cause of a certain course of behaviour can be very difficult to answer and responses may vary from an attempt to rationalise a course of action to trying to express what seemed natural and inevitable and in no need of explanation.

Nevertheless, it appears important to investigate the considerations which the mothers took into account.

**TABLE 17**

### **Reasons given by breast feeders for their choice of feeding method**

1. BEST:
  - Best for baby 50%
  - Best and other relatives positive 4%
  - Natural 15%
  - Attracted by emotional closeness 5.5%
  - Convenience 3%
  - Relatives in favour 9.5%
  - Wanted to experience breast feeding 6.5%
2. PERSUASION:
  - Decided after baby was born — advised to 2.5%
  - Best — convinced by health personnel 10%
  - convinced by midwife in particular 1.5%
3. MEDICAL REASONS:
  - Allergies in family 2%
  - Reinforced by baby being light 2.5%
  - Because of immunity given 3%
  - Fear of cot deaths 2%

The reason given for their choice of breast feeding are listed in Table 17 under three general headings: 'Breast is Best', 'Persuasion' and 'Medical Reasons'. The percentages do not sum to 100% because some gave more than one reason for their choice. The most frequently mentioned reason for choosing to breast feed was simply that it is the best for the baby. Some (only 9.5%) mentioned specific medical advantages as being decisive for them and 14% said they were specifically influenced by the advice of health personnel.

**TABLE 17a**

**Reasons given by bottle feeders for their choice of feeding method**

1. Tried/intended to breast feed Exhausted/weak after birth — decided not to	23%
2. Wanted to bottle feed/never thought of anything else	31%
3. Embarrassment about breast feeding.	10.5%
Living in one room/lack of privacy for breast feeding	7%
4. Breast feeding did not appeal	16%
5. Breast feeding 'too much'.	
Too much with caesarian	1.5%
Too much with family business/ farming/invalid mother	2.5%
Others had not been able to manage it	2.5%
Afraid would not be able to manage it	6%
Easier/more convenient to bottle feed	7%
Too restricting, would never get out	5%
Thought smoking/lump in breast/ chest infection would affect baby	1%
Going back to work	8.5%
Bottle — easier for husband to share in the feeding	1%

In order to avoid any impression of judgemental pressure on the bottle feeders the question on the reasons for their choice of feeding method was asked after establishing their babies present diet and before other questions about breast feeding were mentioned. A large number of the responses were framed in terms of the negative appeal of breast feeding rather than the positive attributes of bottle feeding (Table 17a). One third said that they had always thought of bottle feeding and 16% indicated a distaste for breast feeding. Nearly 25% gave reasons which indicated that they felt that breast feeding is too demanding, or too difficult in their set of circumstances. 10.5% mentioned embarrassment as the factor which prevented them from choosing to breast feed and 7% the lack of privacy in their circumstances. At the time of interview a quarter of this group were living with their parents or parents-in-law and a considerable number were living in one roomed flats where they would not always have the choice of feeding in private.

A surprising 23% said that they had intended to breast feed and had decided against it only after the birth when they felt low and exhausted or were under the impression that they had left it too late because they had not fed their baby straight away.

The bottle feeders were asked in a separate question if they ever considered breast feeding and 48% said they had. For those for whom breast feeding is not a taken for granted option but rather a tentative decision, easy access to information as well as supportive advice and procedures may be crucial.

### 2.3 Embarrassment and breast feeding

It was noted that 10.5% of the bottle feeders specifically mentioned embarrassment about breast feeding as the reason they chose to bottle feed and another 7% mentioned lack of privacy to breast feed. In a separate question the respondents were asked what they felt were the disadvantages of breast feeding. 13% mentioned embarrassment and

17% either the need for privacy in the home (8.5%) or the lack of special facilities for breast feeding outside the home (8.5%). Mothers in both groups were asked whether they would mind breast feeding in various situations, for example in front of their husband in their own home or in a park or restaurant in public. The percentage of breast and bottle feeders who would not wish to breast feed in these situations are listed in Table 18.

The two groups differed quite clearly in their levels of embarrassment regarding breast feeding. A surprising 9.5% of bottle feeders would feel embarrassed to breast feed in front of their husbands. Nearly 40% of bottle feeders would be embarrassed to breast feed in front of their mothers and 80% in front of their fathers. 45% would not like to breast feed in front of a girlfriend in their own home. The 'embarrassment rates' are lower for breast feeders (13% with mother, 15% with girlfriend) but still fairly substantial in some situations. Several breast feeding respondents elaborated on the problems this caused particularly in the period after return from hospital. They complained of the difficulty of trying to attend to and

satisfy the needs of their baby and of frequent visitors in this period. They resented the choice of either letting the baby cry and get upset or 'disappearing upstairs' in order to feed them. Some bottle feeders felt that they would have found breast feeding too difficult to manage in this way because they lived near large families and people would always be going in and out of their home.

In all cases a higher percentage from the manual than the non-manual group were embarrassed about breast feeding in the different situations. Many breast feeding mothers expressed the feeling that their inhibition was more in response to anticipated embarrassment of others than actual embarrassment on their own part. Several breast feeders emphasised how discreetly and unobtrusively they were able to feed.

## 2.4 Feeding method and reference groups

It seems likely that mothers will be influenced in their choice of feeding method by the opinion and responses of those with whom they are in regular contact as

**TABLE 18**  
**Percentage in breast and bottle feeding groups embarrassed to breast feed in various situations**

	Breast Feeders	Bottle Feeders
At home in front of		
Husband	0.5%	9.5%
Mother	13%	39%
Father	not recorded	80%
Girlfriend	15%	45%
Male friend	64%	82%
	(+ 4% 'depends')	(+ 5% 'depends')
Mixed company	64%	81%
	(+ 3% 'depends')	(+ 5% 'depends')
In Friend's Home:		
— with girlfriend	29%	54.5%
— with girlfriend and her husband	59%	83%
In Public:		
In Restaurant/Park	73%	97%
	(+ 3% 'depends')	

well as by the information they have gathered themselves and are given by health personnel.

It would seem hard for a mother to persist with breast feeding if her husband were negative to the idea. On the other hand, one ante-natal sister suggested that in her experience many mothers felt pressured to breast feed by their husbands though they did not persist for long with breast feeding unless they themselves wanted to.

Many respondents mentioned the influence on their choice of feeding method of other mothers they knew who succeeded or failed in their attempts to breast feed.

#### Feeding method of respondent's mother/ her attitude to respondent's choice

Rather more of the breast feeders than of the bottle feeders were breast fed themselves. (Table 19).

**TABLE 19**

**Feeding method by which respondent was fed as a baby**

	Breast Feeders	Bottle Feeders
Breast Fed	50%	31%
Bottle Fed	42%	61.5%
Don't know	8%	7.5%
	100% (213)	100% (189)

51% of the breast feeding respondents' mothers were positive to breast feeding compared to 18% of the bottle feeders (Table 20).

**TABLE 20**

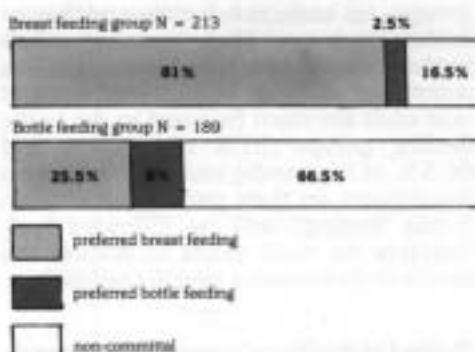
**Respondents' mothers' attitude to feeding method**

	Breast Feeders	Bottle Feeders
Preferred Breast Feeding	51%	18%
Preferred Bottle Feeding	11%	22%
Non committal	31%	51%
Not alive	7%	9%
	100%	100%

Amongst the breast feeders, the mothers in socioeconomic groups 5 and 6 and the farming group were more likely to be negative to their daughters choice of feeding method.

**FIGURE 11**

**Attitude to feeding methods of husbands in breast and bottle feeding groups**



#### Husband's attitude to breast feeding

The respondents were asked for information about their husband's views on breast feeding. 25% of the bottle feeders said that their husbands actually preferred breast feeding (Figure 11). These were more likely to come from non-manual groups (Table 21). Only 8% reported their husbands as preferring bottle feeding. 81% of the husbands in the breast feeding group were said to prefer breast feeding and only 2% were negative to it.

**TABLE 21**

Percentage of husbands of breast and bottle feeders preferring breast feeding in each socio-economic group

	Breast Feeders		Bottle Feeders
<b>Preferred breast feeding</b>			
S.E.G. 1/2	92%	2/3	30%
3	87%	4	32%
4	77.5%	5	19%
5/6	60%	6	21%
7	64%	7	15%

Of the bottle feeders 66.5% of husbands were said to be non committal and 5% did not discuss the subject at all, only 16% of the breast feeders' husbands were non committal.

It seems that on the whole the women in the breast feeding group felt their husbands endorsed and supported their choice of feeding method in contrast to a minority of the bottle feeders. The manual groups in both the bottle and breast feeders were most likely to describe their husbands attitude as non committal. 'Non committal' attitudes in both mothers and husbands are more frequent in the bottle feeding groups (51% of mothers and 66.5% of husbands) and may reflect an assumption on their part that the norm (bottle feeding) will be followed and, therefore no need exists to discuss the choice or to express a specific opinion.

#### Method of feeding of respondents' friends

Respondents were asked how most other mothers they knew with young children had fed their babies. 16% of the bottle feeders and 37.5% of the breast feeders said they were mostly breast feeders (Table 22). About 20% in each group said they knew roughly equal numbers of breast and bottle feeders.

The remainder, 63.5% in the case of the bottle feeders and 40% amongst the breast feeders, were mainly in contact with bottle feeders.

**TABLE 22**

Method of feeding used by other mothers known to respondents

	Breast Feeders	Bottle Feeders
Breast	37.5%	16%
Bottle	40.5%	63.5%
About equal	21.5%	20.5%
	99.5%	100%

#### 2.5. Contact with health personnel and choice of feeding method

Most mothers take advantage of the routine ante-natal care which is available to them in Ireland. 97% of all the mothers in the study said that they had kept all their ante-natal appointments. This care is available through private visits to an obstetrician, through hospital clinics, through G.P.s and through local health clinics or through a combination of any of these (Table 23).

Most mothers in Dublin went for confirmation of pregnancy to their G.P.s and then to a hospital clinic or private obstetrician for regular care. In the rural areas most mothers continued attending their G.P. for a substantial number of appointments and attended a hospital clinic or obstetrician late in pregnancy.

**TABLE 23**

Source of ante-natal care for Respondents

	Breast Feeders	Bottle Feeders
Private Obstetrician	40%	11.5%
Hospital Clinic	23%	41%
G.P. and Obstetrician	14%	7.5%
G.P. and Clinic (hospital or local)	21.5%	38%
G.P. only	1.5%	2%
	100% (213)	100% (189)

There is a problem at ante-natal clinics in that they are generally very busy and unless they are seeing an obstetrician privately, expectant mothers often see different staff from one appointment to another. They are routinely screened for complications or abnormalities. A number of respondents complained of the lack of information given to them after these checks. In an attempt to prepare and inform expectant mothers most hospitals offer mothercraft or ante-natal classes and some include classes which are also open to fathers. These classes are particularly useful to the first time mother and include information on all aspects of pre-natal care and preparation for labour and delivery and on feeding and care of the infant. They usually combine instructions from a physiotherapist and a midwife.

Some respondents attended private ante-natal classes in their area. Many of these felt they were not as comprehensive as those offered by the hospitals and in relation to this study missed out on full discussion of feeding methods.

**FIGURE 12**

**Percentages in breast and bottle feeding groups which attended optional ante-natal classes**

Breast feeders N = 213

73% attended	20% did not attend	7%
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Bottle feeders N = 189

49% attended	41% did not attend	10%
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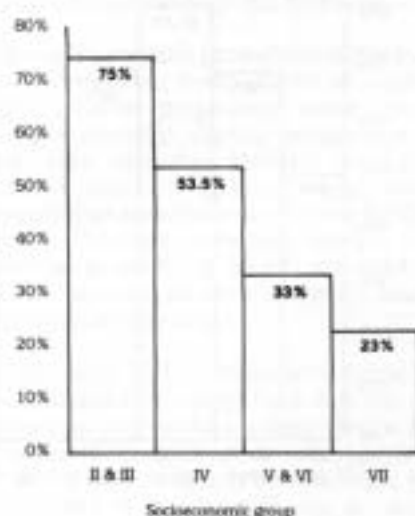
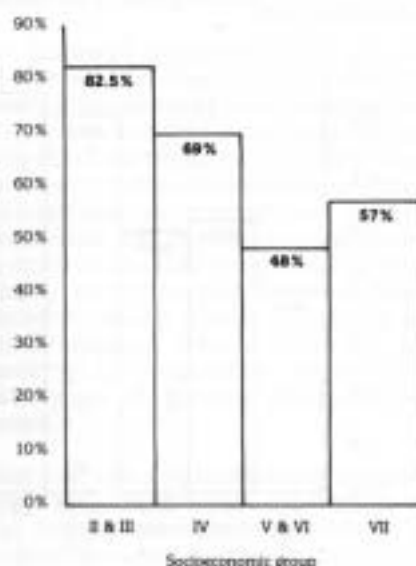
\*Classes "not available"

**FIGURE 13**

**Percentage of breast and bottle feeders attending ante-natal classes in each socio economic group**

Breast feeders: 213

Bottle feeders: 189



Figures 13 and 14 indicate the percentage attending ante-natal classes in the socioeconomic groups and in the age groups. The under twenty one groups and those in the manual bottle feeding groups were the least likely to attend. Surprisingly a smaller proportion of those who did not work outside the home attended classes than those who did.

There was a lower attendance of these classes in the rural sample. For many in the country areas attendance would have entailed a long journey and difficult transport conditions. There is some overlap between those in the 'did not attend' category and 'not available' category according to what the respondent felt was an impossible journey.

For some in Dublin, attendance involved a considerable bus journey and the different attendance rates in the socioeconomic groups may be explained to some extent by the availability or lack of availability of transport.

87% of the respondents reported that they were asked at their ante-natal appointments how they intended to feed their

baby. 22% of both breast and bottle feeders discussed their decision with the doctor.

71% of breast feeders and 74% of bottle feeders said they were given literature on feeding babies. Some ante-natal staff said they handed out literature produced by the infant food industries in the absence of any alternative. Some literature was well produced but carried advertisements, and those advising on weaning were particularly oriented to sales of ready prepared infants foods.

## 2.6 Satisfaction with choice of feeding method

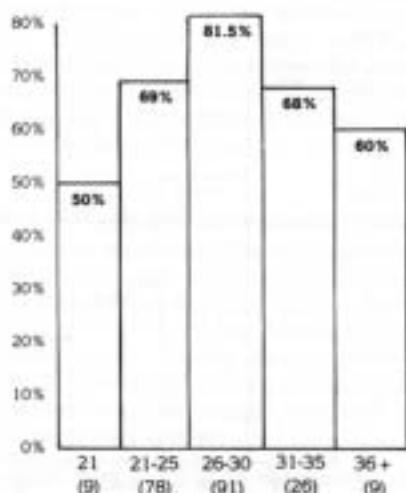
The respondents were asked what method of feeding they would choose if they had another baby.

Of the breast feeders, 87% would breast feed again, 7% would not and 6% said they were not sure.

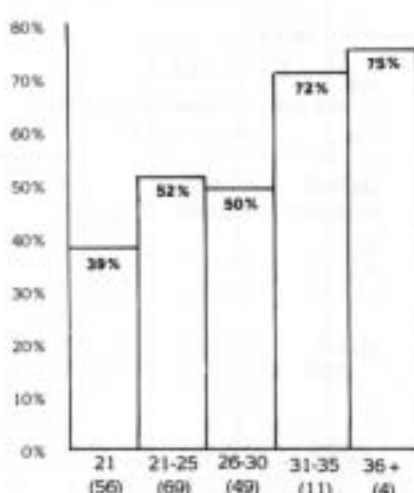
52% of the bottle feeders said they would bottle feed again. 10% intended to breast feed and 38% said they would consider breast feeding.

**FIGURE 14**  
**Percentage of breast and bottle feeders attending ante-natal classes in each age group**

Breast feeders: 213



Bottle feeders: 189



## Summary and Discussion

Well over half of the sample had settled on their choice of feeding method before the opportunity for contact with ante-natal personnel was available. 31% of the bottle feeders had dismissed breast feeding without considering it, 16% expressed an actual distaste for it, and 17.5% felt socially inhibited from choosing to breast feed.

These findings indicate that we form our attitudes to breast feeding, as we form general attitudes to the body and sexuality, rather early in life and they may make us relatively resistant to pressures in another direction in adulthood. Health education might be more effective if there were an input in early adolescent years on this topic and the issues included. It is not the function of ante-natal staff to cajole or badger young mothers into something for which they have no motivation, nor would it be successful in many cases. It would seem that some discussion and information about the subject at a time when attitudes are still forming may at least present breast feeding as a positive option.

The findings suggest embarrassment about breast feeding is a handicap in a society where rates of breast feeding have fallen so low and where the breast as a sexual symbol has been emphasized so much that it can be seen as immodest, unnatural and even immoral to breast feed. This embarrassment will presumably decrease as the occurrence of breast feeding increases. In our present situation, however, health education should take this shyness and embarrassment into account by emphasizing in informative literature the possibilities of feeding discreetly and modestly.

Ward staff can also be aware of the possibilities for sensitive management in this area. Several mothers found that in the vulnerable period following the birth of their baby, the question of drawing or not drawing the curtains for feeding became a

significant one. This particularly affected breast feeding mothers in public wards where bottle feeders were in a majority. Some would welcome the privacy of the curtains while others might feel that curtains created a barrier with their fellow patients.

Health education literature must tackle the problem, which was mentioned by many mothers in relation to embarrassment, of the lack of facilities for breast feeding out of the home. This problem is particularly acute for mothers who have no private car which offers more reliable time scheduling than public transport and a chance to breast feed in reasonable privacy if necessary. Strategies and techniques for coping with these difficulties can be suggested in health education literature. Pressure and encouragement for stores and hotels to provide a facility for nursing mothers would be helpful.

The figures for the number of mothers intending to attempt breastfeeding for the first time with their second baby are encouraging. Some earlier studies have seemed to indicate that mothers use the feeding method for the first child for the subsequent children. It may be that in this time of a possible increase in the popularity of breast-feeding second time mothers will have gained the confidence and impetus to breast feed for the first time.

Although a sizeable proportion of the sample had decided their choice of feeding method before pregnancy, quite a large number decided during pregnancy or even after delivery. Mothers generally, and first-time mothers in particular, are interested and anxious to do the best for their babies. They are in regular contact with potential sources of health information and as such are an ideal target for health education at this stage.

A surprising 23% of those who bottle fed had intended to breast feed and did not succeed in implementing their choice. It is important for health personnel to be aware of all the factors which can facilitate this choice and of their crucial role as health educators in preparing and informing the mothers.

### 3. HOSPITAL EXPERIENCE

Increasingly it has been recognised that many routine practices in maternity units have not been conducive to the initiation and successful establishing of lactation. This realization has been underlined by the use of newly developed techniques which make it possible to measure circulating hormones in lactating mothers.<sup>19</sup> This research has provided more exact information about the processes entailed in lactation. It is apparent that successful breast feeding involves the interaction and interplay of maternal and neonatal reflexes.

Babies are born with three instinctive reflexes which enable them to breast feed. These are the rooting reflex, the sucking reflex and the swallowing reflex. The rooting reflex causes the baby to turn its head and search for the nipple when its cheek is touched. The sucking reflex leads to a milking action with the tongue against the palate.

On the mother's side, there are two major reflexes involved. One is the prolactin reflex which results from the infant sucking the breast. Prolactin causes the milk producing alveoli in the breast to secrete milk. It is released into the blood from the anterior pituitary as a result of the sucking stimulus. The amount of milk produced is directly related to the frequency, intensity and duration of the sucking stimulus, thus creating, in effect a supply and demand system.

The second important maternal reflex is the 'let down' or 'milk ejection' reflex. The sucking on the breast passes nerve impulses to the hypothalamus and from there to the posterior pituitary which, as a result, secretes oxytocin. The oxytocin in the blood then affects the basket-like cells surrounding the alveoli in the breasts. The contraction of these cells squeezes the milk out of the alveoli and lets it down into the terminal lacteals.

This reflex is different from the prolactin reflex in that it is 'psychosomatic', that is, it can be affected by the mothers emotions and worries. Stress, anxiety or pain can cause adrenalin to be released into the bloodstream which in turn make the

blood vessels constrict and decreases the amount of oxytocin reaching the basket-like cells surrounding the alveoli. In healthy babies the rooting and sucking reflexes which initiate the let-down effect are strongest about twenty to thirty minutes after birth.

In order to maximise the likelihood of successful lactation it is important that hospital practices, and ward routines, should be established which facilitate and take advantage of these reflexes. Mothers should be as relaxed and confident about feeding as possible. Of course this is easier to achieve when breast feeding is the norm and not a feat which a mother may or may not be able to perform. Pre-natal counselling can do much to inform potential mothers and fathers, and supplement and correct the often small amounts of information and misinformation on breast feeding that they have.

Ideally the baby should be put to the breast soon after birth when the rooting and sucking reflex is strong and most likely to initiate the let-down reflex. The oxytocin secreted as a result also benefits the mother by causing contraction and involution of the uterus. At this stage some mothers feel too weak to feed as a result of strenuous effort or lack of food or drink after a long labour, or too confused as a result of medication. Clear information, pre-natal instruction allowing the mother to predict or to avoid this state and a consistent hospital policy can help the mother to achieve early feeding.

Initially, at least, frequent feeding is necessary since lactation increases in response to sucking. Because of this it has been suggested, that, as far as possible the newborn infant should stay with the mother. It is important too to avoid supplementary or complementary feeding of breast fed babies as it interferes with both the let down and prolactin reflexes. Frequent early feeding stimulates a sufficient supply of milk and helps to avoid the need for supplementation.

Delay in feeding can lead to congested swollen breasts which make it difficult for the baby to grasp the nipple and can set off a spiralling problem. An inhibited let down reflex can result in a hungry

dissatisfied crying baby. This crying and discomfort in the breasts causes anxiety and tension and lack of confidence in the mother which further inhibits the reflex mechanism. If supplementary feed is then given this may drain the mother's confidence even more and prevent the supply and demand system of breast feeding from working

### 3.1 Length of hospital stay

**TABLE 24**  
Length of Hospital Stay

	Breast Feeders	Bottle Feeders
3-4 days	11%	12%
5-6 days	62.5%	64%
7-9 days	15.5%	12%
10-14 days	11%	12%

Most of the respondents had a five to six day stay postnatally in hospital. The management of infant feeding in this period in hospital is very important, particularly for the breast feeders. Most were satisfied with their length of stay. 11% of respondents said they would have liked a longer stay.

### 3.2 Feelings about labour

There is no objective assessment of an easy or difficult labour but in this study we tried to get some idea of the mothers' feelings about their labour by asking them if they felt it was worse, the same or less difficult than they had expected. One third had found it easier than they had anticipated and nearly 40% more difficult than they had anticipated. A small number of mothers talked about the great need they felt after the birth to go over and talk about what had happened, particularly if they felt it had been difficult. The respondents' assessment of their labour as more difficult than expected did not correlate with a shorter duration of breast feeding.

### 3.3 How soon after birth baby was (1) held; (2) fed

**TABLE 25**  
How soon after birth baby was held by mother

	Breast Feeders	Bottle Feeders
Immediately	82%	80%
1-2 hours	7%	5%
3-6 hours	3%	1%
7-12 hours	3%	3%
13-15 hours	2%	3%
16-18 hours	0.5%	0
19-24 hours	0.5%	1%
24+ hours	2%	7%
	100%	100%

**TABLE 26**  
How soon after birth baby was put to the breast or bottle fed by mother

	Breast Feeders	Bottle Feeders
Immediately	22%	1%
1-2 hours	8%	3%
3-6 hours	23%	19%
7-12 hours	22%	37.5%
13-15 hours	5%	1.5%
16-18 hours	3%	4%
19-24 hours	10%	3%
24+ hours	7%	30%

Table 25 shows how soon after birth the mothers had contact with their babies. 81% of them held or had their babies laid by them for a short while immediately after birth. Mothers delayed holding the baby because it was going to a special unit, because they had a Caesarian section, or because they were 'too dopey' or exhausted. Only 22% of the mothers put their babies to the breast soon after birth (Table 26) and only a further 8% of the breast feeding sample started to feed in the following two hours.

**TABLE 26a**  
How soon after birth babies breast fed in each socioeconomic group

	Socioeconomic Group				
	1-2	3	4	5/6	7
Immediately-1 hour	50%	16%	13%	12%	7%
2-6 hours	23%	39%	34%	28%	14%
7-24 hours	23%	37%	43%	52%	71%
24 hours +	4%	8%	10%	8%	6%
	100%	100%	100%	100%	100%

**TABLE 27**  
Reasons for delay in putting baby to breast after birth

Baby fed intravenously or in intensive care unit	7%
Mother had Caesarian section and did not feel up to it	5%
Mother did not feel like it before — too sleepy or unwell	23.5%
Waited until feeding time in ward	16%
Waited to feed until returned to ward	3%
Mother does not know why — not helped to feed	17%
No reason recorded	7%
No delay (baby fed immediately)	21.5%

### 3.4 Help with Feeding

**TABLE 28**  
Assessment of help and support given to respondents on first feeding their babies

	Breast Feeders	Bottle Feeders
Did not need help	5%	5%
Sufficient help given	68%	53%
Would have liked more help	27%	40%

Socioeconomic group was the most clear discriminator between those who fed immediately and the majority in the sample who first fed between three and twelve hours after the birth (Table 26a). 50% of those in social class 1 and 2 fed their babies immediately, a markedly higher percentage than in other groups. The bottle feeders first fed their babies considerably longer after birth than the breast feeders; presumably many of these babies were given feed by the nurses previous to being fed by their mothers.

Respondents were asked if they felt they had enough help when they fed their babies at first in hospital. Their experience differed considerably. The attention given to them presumably varied according to the staff available on the ward and by staff assessment of the mother's ability to cope. Some were given very explicit and adequate help but others were handed the baby with no further advice or reassurance. This advice and reassurance is particularly important for the mother and baby in the case of breast feeders as the whole supply system can in fact depend on a confident and relaxed mother. There are, too, techniques of positioning and supporting the baby which can be taught to great effect.

A higher percentage of bottle feeders than breast feeders felt they had not had enough initial support with feeding their

**TABLE 28a**

**Percentage of respondents in each socioeconomic group who would have liked more help**

	<b>Breast Feeders</b>	<b>Bottle feeders</b>
1-2	<b>14%</b>	2-3 <b>47.5%</b>
3	<b>24%</b>	4 <b>39%</b>
4	<b>40%</b>	5 <b>40%</b>
5-6	<b>32%</b>	6 <b>42%</b>
7	<b>21%</b>	7 <b>23%</b>

baby. This might reflect a feeling among the nursing staff that there was less to teach bottle feeders or it may be that bottle feeding mothers were less verbally expressive of their need for help. Amongst the breast feeders a higher percentage of the manual group felt they had had inadequate help, though this difference did not hold in the bottle feeding group. There was no significant difference in adequacy of help between the different age groups.

20% of the breast feeding mothers asked if there was any time perinatally that they would have liked more help or advice, said they would have liked more understanding and encouragement of breast feeding during their hospital stay. They wanted information to be more consistent from one nurse to another.

### **3.5 Feeding on demand or to schedule**

A study in Birmingham Maternity Hospital in 1979 demonstrated that a four hourly regimen for breast fed babies provides insufficient stimulus to lactation for the babies needs in the first week of life.<sup>13</sup> Human milk has a relatively low protein level and as such is very easy to digest. In the early weeks breast fed babies are likely to require frequent short suckling periods.

Artificial feeds are usually given on a four hourly basis and the ward routine may encourage mothers to adhere to this schedule of feeding. If 'demand' breast feeding is regarded as the physiological norm, then scheduled bottle feeding represents the most extreme departure from this in nutri-

tional terms. Of the breast feeding mothers nearly half (46%) fed on demand in hospital. Some who fed on schedule said that it just worked out that way. 79% were satisfied with their feeding regime but 17% said that they felt a pressure to be in a routine from the hospital staff. This pressure may not be explicit but at this time mothers are very sensitive as to the correctness of their feeding on demand. 89% of the bottle feeders fed to schedule, the usual practice for artificial feeding which has had an influence on ward routines.

Close contact between mother and baby is a precondition for demand feeding and is increasingly felt to be beneficial in emotional terms both for the mother and her baby. The design of some hospitals does not easily facilitate the practice of 'rooming-in', a term to describe a situation in which a mother is normally in the same room as her baby or at least has easy access to it for twenty four hours a day. This practice is particularly desirable for first time mothers giving them a time when they are responsible for their baby's nurture whilst help and advice is easily available. A problem arises when several mothers are in one room or ward and may be awakened at night, not only by their own but also by each other's babies. A compromise solution applies in many hospitals, by which infants are kept with the mother in the day and are removed to a nursery at night to allow for rest and sleep. For mothers with a private room there is a choice of arrangements.

### **3.6 Location of baby during hospital stay**

In the two Dublin hospitals in the sample, mothers have their babies with them either all day or all the time. In two of the three rural hospitals a substantial number of babies were with their mothers only at feeding time (Hosp. No. 3 — 29%; Hosp. No. 4 — 79%). Table 29 indicates the percentage in each feeding group which had their babies with them all the time, during the day or only at feeding time. There was no correlation in the sample between the location of the baby and the length of time a mother breast fed.

**TABLE 29****Location of baby in relation to mother during hospital stay**

	Breast Feeders	Bottle Feeders
With Mother all the time	17%	24%
With Mother all the time after an initial period	4%	6%
With Mother during the day	57%	57%
With Mother just at feeding/visiting time	20%	13%

**3.7 Supplementary feeding of breast fed babies**

The main physiological reasons for avoiding the practice of giving artificial feed to breast fed babies have been described. The risk that babies will get used to the different, less vigorous sucking technique required for bottle feeding is further reason to avoid this practice. 30% of the breast feeders in the sample said their babies had been given artificial feed during their hospital stay. The reasons for this are listed in Table 30. The mothers were not always very precise about how often their babies had been given feeds as they were usually fed by hospital staff.

**TABLE 30****Reasons reported by mothers for breast fed babies being given artificial feeds**

1. Mother does not know reason	33%
2. Needed extra fluid and feeding at night	17.5%
3. Mother not well	17.5%
4. Not to disturb mother at night	14%
5. Baby hungry	10%
6. Mother not enough milk	4%
7. Slow baby — would not suck	4%
	100%
	(64)

50% were reported as having had 'just a few feeds'. The practice of supplementary feeding varied to some extent with socioeconomic group, but more particularly with hospital (Table 31 and 31a).

**TABLE 31****Percentage of breast fed babies in each socioeconomic group given artificial feed during their hospital stay**

Socioeconomic Group				
1/2	3	4	5/6	7
22%	26%	34%	40%	43%
(11)	(16)	(21)	(10)	(6)

**TABLE 31a****Percentage of breast fed babies in each hospital given artificial feed during hospital stay**

Hospital				
1	2	3	4	5
22%	18%	75.5%	10%	12.5%
(15)	(10)	(34)	(3)	(2)

**3.8 Problems with feeding in hospital****TABLE 32****Percentage encountering problems with feeding in hospital\***

<b>Breast Feeders</b>	
No problems	61%
Sore nipples	40%
Worry that milk not enough	26%
Baby not sucking properly	10%
Nervous or worried	2.5%
<b>Bottle Feeders</b>	
No problems	43.5%
Difficulties with getting baby to feed (baby 'slow', windy or inclined to vomit)	23%
Changed from breast to bottle	9.5%
Nervous, depressed, worried	4%

\*Percentage may sum to more than 100% as some mothers experienced more than one type of problem

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## Summary

The findings of this section indicate that the more educated mothers from the higher socioeconomic groups fare better in terms of practices conducive to establishing lactation. They were more likely to feed their babies soon after birth, to avoid them being given complementary bottle feeds, to obtain satisfactory help from ward staff and to experience less problems with feeding at this stage.

A minority of mothers fed their babies within one hour of birth. A fairly high proportion of babies received complementary feeds; it was not possible to determine how necessary these were.

Half of the breast feeders fed on demand and most mothers had their babies with them at least for the day. About a third of both feeding groups experienced problems with feeding the baby in hospital. These problems were mostly related to anxiety about getting the baby to feed adequately. A majority of mothers were given sufficient help and guidance at this stage, but, where this was not forthcoming there was frequently a need for consistency of advice from staff — many of whom were in training.

Successful infant feeding certainly involves a lot of factors other than health education. Unless the quality of ante and post-natal care as well as the organisation and practices obtaining in maternity units facilitate breast feeding, health education will not be effective. Health educators can work to make these practices forthcoming by informing and enthusing health workers such as G.P.s, obstetricians and nursing staff in hospitals and local clinics. It can also inform mothers as comprehensively as possible of the factors which may interfere with the initiation of lactation and adversely affect the length of time they are able to breast feed.

Rather more bottle than breast feeders said they had problems with feeding their babies in hospital (Table 32). Both breast and bottle feeders worried about their babies getting enough milk, the breast feeders because they could not see the amount they were taking and the bottle feeders because they could see how much was left in the bottle. Sore nipples are a problem for first time breast feeders and need careful management and advice. Social groups 1 and 2 had the lowest percentage of mothers encountering problems at this stage; apart from that, difficulties during hospitalization were not associated with any particular group.

#### 4 INFANT FEEDING AT HOME

When a mother is discharged home from hospital a letter is sent to her G.P. informing him or her of the mother's and baby's condition. The relevant health board is also notified and through it the public health nurse is informed. Ideally the mother is visited by the public health nurse fairly soon after discharge to help her with any problems or queries and to ensure that she is informed of local services such as the child health clinic. If the nurse considers it necessary, particularly with the first time mothers, she may call again. The system of communication between hospital and community nurse is not always efficient, however, and not infrequently the public health nurse receives information of a mother's discharge some time after it has occurred, and therefore her visit to the mother is much later than desirable. Child health centres, except in some rural areas are usually accessible to mothers, but first time mothers are not always sufficiently aware of them or of their easy access to them.

Some hospitals have a very open policy of advising mothers to contact them with any problems to do with their babies up to the six-week check-up appointment. In some cases mothers can talk to the mothercraft nurses direct or by telephone or they may attend a clinic. Some hospitals, conscious of a time lapse between the mother's discharge and the visit from the public health nurse, have a nurse

**TABLE 33**

**Awareness by respondents of sources of help on discharge from hospital**

	<b>Breast Feeders</b>	<b>Bottle Feeders</b>
None known	22%	29%
Hospital	63%	56%
G.P.	9%	7%
Public Health Nurse or Clinic	4%	7%
La Leche League	1%	0%

who visits mothers within a limited distance from the hospital — very soon after discharge. Those within city limits are most likely to benefit from this. This form of immediate help from those experienced in the type of problems presented is very effective. Mothers reported it as often preferable to the alternative of seeing a G.P., which can often involve financial cost and an appointment and often does not seem appropriate for the kind of reassurance they needed about outwardly small worries. Table 33 shows whom the mothers were advised by the hospital to contact if they experienced any problems soon after discharge. Mothers in rural areas were less likely to have the opportunity of contacting the hospital at this stage.

#### 4.1 Help at home on return from hospital

**TABLE 34**

**Percentage of respondents in each socioeconomic group having no help at home on return from hospital**

<b>Breast Feeders (19% of total)</b>					<b>Bottle Feeders (11% of total)</b>				
1/2	3	4	5/6	7	2/3	4	5	6	7
28%	11%	18%	12%	36%	15%	12%	6%	8%	23%

19% of the breast feeders and 11% of bottle feeders did not have anyone helping them, or their husbands on holiday from work, when they returned home from hospital. Very few in the manual socioeconomic groups — especially of the bottle feeders — did not have help, reflecting perhaps their location near their family.

only described as 'help' if he took time off work. 40% of the bottle feeders had their mother to help them, breast feeders were rather more likely than bottle feeders to have their husbands at home to help them for some time. Table 36 indicates for how long after they left hospital respondents had comprehensive help available.

Respondents were asked if they felt they had had enough help at this time. 28% of breast feeders and 17% of bottle feeders felt they had not. Adequate rest is particularly important for lactating mothers as tiredness can affect the supply of milk.

26% of breast feeding mothers had problems with their own health in this period; these were mostly problems of tiredness or birth related problems such as urinary infection, thrush infection, constipation or sore throat. 13% of them said they felt emotionally low and exhausted from the strain during this period. Some felt, as one mother put it, that they had not expected to feel 'tired and lousy and left out'. Bottle feeders were not excluded from these feelings; 7% of them felt that they had experienced post-natal depression at this time and 20% complained of problems with their physical health similar to those of the breast feeders.

#### 4.2 Problems experienced in the first few weeks at home

In general, breast feeders suffered more from personal problems (38.5% versus 28%) while bottle feeders encountered more infant problems (22% versus 16%).

Some breast and bottle feeders alike were worried about the sufficiency of the babies' feed. Those complaining of such problems at this period were not distinguished by socioeconomic or age-related variables. For a breast feeding mother there is always the danger that these problems undermine confidence in her feeding method and she will look to a change of method as a solution. Some of these problems were also given as the reasons for terminating breast feeding. (This is discussed in the section on duration of breast feeding).

**TABLE 35**

**Source of help at home for respondents on return from hospital**

	<b>Breast Feeders</b>	<b>Bottle Feeders</b>
Husband	34%	28.5%
Mother	17%	40%
Mother-in-law	8%	6%
Husband & Mother or Mother-in-law	11%	5.5%
Husband and other relative	3%	0%
Other relative	8%	9%
No help	19%	11%
	100%	100%

**TABLE 36**

**Length of time respondent's had help after return from hospital**

	<b>Breast Feeders</b>	<b>Bottle Feeders</b>
None	19%	11%
Less than one week	9%	9%
One week	25%	21%
Eight-fourteen days	17%	13%
Fifteen-twenty one days	9%	4%
'Indefinitely'	17%	31%

Table 35 indicates who was at home with the respondents to help them when they returned from hospital. The husband was

**TABLE 37**  
**Feeding problems experienced**

**Breast Feeders**

Very tired, or ill (sore throat, constipation, thrush/urinary infection)	16%
Breast infection, blocked duct, sore, bleeding or inverted nipples	9.5%
Worried, low and exhausted, baby crying a lot, etc.	13%
Baby colicky, crying a lot, no routine	7%
Baby not feeding enough, worried about intake	9%
No problems	45%

**Bottle Feeders**

Respondent ill, bladder infection, headaches, very sore stitches	20%
Post-natal depression/exhaustion	7%
Worried about making up feeds	1%
Baby a bad feeder — slow, vomiting, constantly crying	17.5%
'Something wrong' with baby — over-weight, diet, infection, eczema	7%
No problems	53.5%

**4.3 Visit from public health nurse**

Of the mothers who breast fed 39% received a visit from the public health nurse in the first seven days after discharge. 18% had their visit in the following eight-fourteen days, 35% were visited three to eight weeks after getting home. 7% of breast feeders said they received no visit, though it was possible they may have been out when a nurse called. 23% of the breast feeders would have liked their first visit to have been earlier. Generally the visit was very much welcomed and appreciated but 8% felt that the nurse was not sufficiently informed to help them with their breast feeding. 25% of the breast feeding mothers and 20% of the bottle feeders specifically mentioned a great need for more advice and information on baby feeding and weaning in particular. They wanted comprehensive detailed advice, not just general principles.

35% of bottle feeding mothers were visited by the public health nurse during the first seven days after discharge from hospital, 19% in the second week and 35% three to eight weeks after discharge, a pattern similar to breast feeding mothers. 23% felt they had needed an earlier first visit. 8% received no visit but, several mentioned that they had spent a lot of time at the nearby home of their parents and relatives and might not have been at home for the nurse. Over half of all the mothers were visited more than once by the nurse (Table 38).

**TABLE 38**  
**Number of visits from public health nurse**

	<b>Breast Feeders</b>	<b>Bottle Feeders</b>
None	7%	8.5%
One	40%	38%
Two	23.5%	24%
Three	8.5%	17%
Four	4%	9%
Five	5%	4%
Not recorded	12%	12%
	<b>100%</b>	<b>100%</b>
	<b>(213)</b>	<b>(189)</b>

**4.4 Other contact with health personnel**

By the age of twelve weeks 92% of breast fed babies and 95% of the bottle fed babies had been seen by health personnel at the local clinic, hospital or by the G.P.

By the time of interview, 56% of the breast feeders had had their babies' weight checked at the local clinic, 13% had attended for injection or B.C.G. check and 15% had gone to the clinic with a particular worry about their infant, such as a cold or cough or feeding problem.

**4.5 Babies' night sleeping pattern**

It is commonly felt that breast fed babies wake at night for a longer period than bottle fed, because artificial feed is 'heavier' than breast milk, and satisfies the

baby longer. Broken nights are a common experience of mothers while their infants are small and can cause considerable stress and fatigue. The respondents were asked at what stage their baby started to sleep regularly through the night.

**TABLE 39**

**Age baby started to sleep through the night**

	<b>Breast Feeders</b>	<b>Bottle Feeders</b>
By four weeks	17%	30%
By eight weeks	54%	59%
By eighteen weeks	85%	82%
Still waking at night at time of interview (twenty four weeks)	10%	9%

In this sample, a higher percentage of bottle fed babies slept through the night at an earlier age. The figures for those sleeping through the night at eight and eighteen weeks are similar but are complicated by the fact that, at this time, many of the breast feeding babies were also receiving bottles.

For a true comparison it would be necessary to acquire data on purely breast fed babies to compare with the bottle feeders on the introduction of solid foods. One compensation for breast feeding mothers, if indeed they do have to wake up at night for a longer period, is the convenience of breast feeding at night compared to bottle feeding with the preparation and warming required.

#### **4.6 Choice of artificial feed by bottle feeders**

Hospitals exercise considerable control by their decisions on the type of formula feed provided for babies during their hospital stay. Some hospitals make a policy of rotating the brands available in order to avoid giving the impression of officially endorsing a particular product. In the

study 93% of the mothers said they chose the first brand used at home because it had been used in hospital. By the age of six weeks 34% had changed to a different kind of milk or to cow's milk. The main reason for the change of feed was the feeling that it did not suit the baby in some way, it had wind or constipation or vomited or seemed always to be hungry. Only four mothers fed their babies boiled diluted cow's milk on discharge, 17% by eight weeks and 30% by sixteen weeks. All but a few of them boiled and diluted the milk in some way. A few of the farming mothers used their own un-pasteurised milk.

#### **4.7 Preparation of feeds**

Very few of the mothers had the opportunity to practice making up the feeds before discharge from hospital. 19% saw demonstrations (apart from films) during pregnancy and 27% were taught about sterilisation and preparation of feeds during their stay in hospital. This teaching was very much appreciated by mothers, obviously coming at a time when they were anxious to hear it and learn from it.

26% of mothers found the preparation of the formula feed a problem at first, the main worry was getting the right amount of powder. All except four, however, thought the instructions on the packet were easy to follow and only 11% found the preparation of feed more troublesome than expected. 35% of the mothers prepared the day's feeds at one time, 42% prepared just a few feeds ahead and 22% made up each feed separately. It is preferable that the prepared milk should be dispensed into the bottle and stored in the fridge ready for use after warming. 20% of the mothers who prepared the feeds ahead stored it in a jug. Extra care is necessary by this method as there is a greater possibility of contamination before it is dispensed into a bottle. All except 5% said they stored the feed in a fridge.

The classes on preparation of the feeds emphasise the need for extreme cleanliness as there is a danger of relying too heavily on the sterilisation process. In

Dublin there is a high hospital admission rate of infants with gastroenteritis, indicating their vulnerability to infection, and the need for high standards of hygiene. As first time mothers, the respondents generally seemed impressed with the need for careful hygiene. Many had been given sterilisation kits as birth gifts or had the opportunity to buy them at reduced cost at the hospital. 97% had a separate container and lid for sterilisation, 88% a special jug and 98% a brush, which is necessary for cleaning teats and bottle before sterilisation. 83% used the Milton sterilisation method, 13% chemical tablets and 5% used the boiling method of sterilisation.

#### **4.8 Introduction of solid foods**

The age at which babies are given food other than breast milk or formula food has varied considerably in our society. At the beginning of the century nine to twelve months was the usual age. Subsequently it became progressively earlier until it was not uncommon for babies to be given solid foods in their first few weeks of life. Today, three to four months is the age generally recommended to start mixed feeding.

Physiologically most full-term babies needs are met by breast milk or formula feed until they are four to six months of age. Semi-solids can be tolerated by babies much earlier but there is no nutritional reason for their introduction. In certain circumstances supplementation with vitamin D or ascorbic acid might be necessary before six months.

The main disadvantages of the early introduction of solids are the dangers of calorie overload causing excessive weight gain and predisposing to obesity, and an increased risk of food allergy. It seems likely that pancreatic amylase production is inadequate for the proper digestion of starch until the age of four to five months. Before this time, feeding with solids may result in allergy because of absorption of unaltered protein by an immature or, in the case of infection, inflamed gastrointestinal wall.

Another indication of the optimum time to introduce solid foods is the baby's neuromuscular development. At three to four

months babies develop the ability to control the head and sit in an upright position. Delaying spoon feeding until this time seems consistent with this development. After six months too their iron stores are depleted and need to be replenished with appropriate foods.

Puréed vegetables and fruit, egg yolk, strained meat and vegetables and cereals are ideal foods to introduce gradually to the baby after four to six months of age. It is recommended that salt should not be added to food in the first year of life as it is possible that a high salt intake in infancy may predispose to hypertension in later life or may help to cultivate a taste for well-salted foods. Ideally also sucrose should be limited to avoid the risk of caries in the first teeth and the development of a high 'sweetness' taste threshold. Commercially prepared infant foods have been available since the early nineteen twenties and have been modified in response to criticism of risk factors, such as excessive salt intake.

Recently there has been an increasing recognition of how far industry has taken over responsibility for infant feeding and in the process has been in danger of subtly undermining the mother's confidence in home prepared foods and her understanding of the nutritional needs of infants. The introduction of fruit drinks at an early age is regarded by some as an example of the manufacture of need by industry. Much of the information on weaning and nutrition is supplied to mothers by companies through hospitals and clinics. Many health agencies have tried to balance this trend by emphasizing the acceptability of home prepared foods for infants, while recognising the convenience that canned or dried foods can supply.

#### **4.9 Timing of introduction of mixed feeding**

At the time of interviews (six months) only seven of the original breast feeders had not introduced their baby to solid foods, five were still fed only with breast milk and two with breast and supplementary formula feeds. Only one of the bottle feeding group had not introduced solids into the baby's diet. Table 40 shows at what age solid foods were introduced into the babies' diets.

**TABLE 40**  
**Age solid foods first given**

	<b>Breast Feeders</b>	<b>Bottle Feeders</b>
Two-six weeks	<b>4.5%</b>	<b>7%</b>
Seven-ten weeks	<b>9.5%</b>	<b>19%</b>
Twelve-fifteen weeks	<b>59%</b>	<b>36.5%</b>
Sixteen +	<b>25%</b>	<b>37.5%</b>
	<b>98%</b>	<b>100%</b>

A larger percentage of bottle feeders than of breast feeders started mixed feeding before twelve weeks (26% bottle feeders compared to 14% of breast feeders). 20% of the bottle feeders gave the first mixed feeds in the bottle, 73% by spoon and 5% by both methods. Of those bottle feeders who started mixed feeding before their baby was twelve weeks old, 36% gave them rusks in milk and 40% gave baby-rice.

Mixed feeding before ten weeks was not significantly correlated with any particular group though a lower percentage did so in the twenty six-thirty age group and in the upper non-manual groups. When asked why they decided to start mixed feeding most mothers either said the baby seemed hungry or that they were advised to do so at about twelve-sixteen weeks. 53% of both breast and bottle feeders received professional advice on introducing solid food; 14% of those used the weaning sheet given to them at the hospital. 17% of breast feeders and 37% of bottle feeders said they received no advice at all. Just over a third of breast and bottle feeding mothers gave commercially prepared baby rice as the first baby food. 28% of bottle feeding mothers started mixed feeding with rusks compared to only 10% of the breast feeders. This practice of introducing cereals into the gut at an early age has been implicated as a factor in the development of coeliac disease.<sup>17</sup> 10.5% of breast feeders and 2.5% of bottle feeders started their babies on solid foods with fruit and vegetables

puréed at home and 8.5% of breast feeders and 6.5% of bottle feeders started with egg yolk.

## Summary

Most of the mothers had help at home in the form of their husband or a close relative for at least one week after leaving hospital, though 20% of breast feeders and 11% of bottle feeders were entirely without help at this time.

Almost one third of the respondents perceived their babies as having had feeding difficulties or said they had been worried or confused by constant crying. Nearly a quarter had suffered from problems with their own health in the early post-natal weeks, reflecting the physical and emotional demands of this period.

There was a frequently expressed demand for clear, precise advice and information at this time. It is important that this advice should be consistent and itself informed by recent research and developments. Less than half of the mothers were visited by the public health nurse during the first week after discharge. This visit would seem most useful in this first week, when mothers were most likely to experience problems and may not be confident in the care they are providing. A detailed handbook on the management of breast feeding would help mothers to anticipate and deal most effectively with common problems which arise.

Nearly one third of the bottle feeding mothers benefited greatly from classes in the post-natal ward on the sterilisation of feeding equipment and the preparation of feeds. They were very receptive to this information which clearly had relevance to them.

26% of the bottle feeders and 14% of breast feeders introduced solid food to the baby before the age of twelve weeks. Twelve to fourteen weeks is the age generally recommended by health professionals. Over one third of the bottle feeders said they received no professional advice at all on weaning. There was a high demand for more detailed advice including specific information on foods and recipes.

## 5. DURATION OF BREAST FEEDING

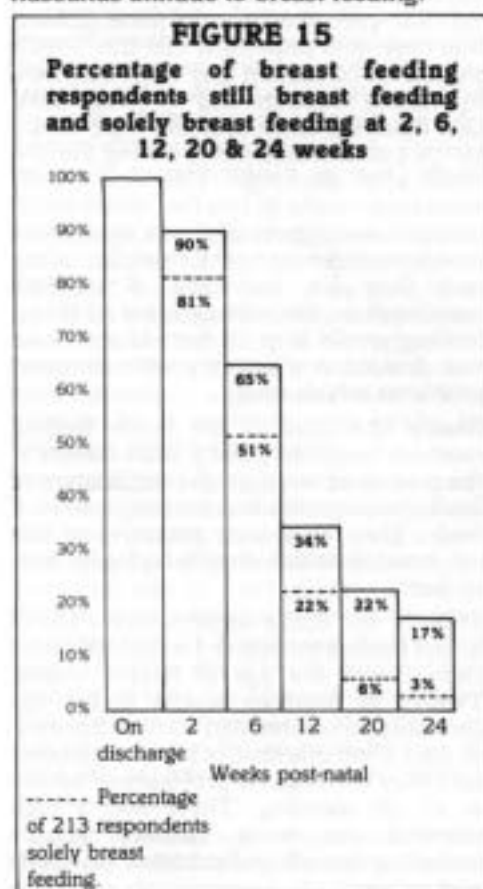
The trend towards bottle feeding in this century was accompanied by a tendency by those who still chose to breast feed to wean their infants at an increasingly early age.<sup>26</sup> In the last five-ten years there is evidence from the United States and several European countries of a reversal of this tendency so that mothers have begun to breast feed for longer periods again.

This section reports on the length of time the respondents breast fed their infants and the socioeconomic variables associated with duration of breast feeding. It looks at the duration of feeding in relation to other factors, which might more directly affect the length of time the mother breast feeds such as her husband's attitude to breast feeding.

### 5.1 Breast feeding at two, six, twelve, twenty and twenty-four weeks

Figure 15 indicates firstly the percentage of respondents still breast feeding at intervals up to the time of interview at six months post-natal and secondly the percentage still giving only breast milk at these times and not supplementing at all.

A comparison of the two sections of percentages in Figure 15 shows that at each stage a percentage of mothers were supplementing either with formula feed, cow's milk or semi solids. This percentage increased sharply between twelve-twenty weeks when many babies were introduced to solids. 35% of the respondents gave up breast feeding at or before six weeks. Out of these only one respondent said she had planned to finish breast feeding then.



### 5.2 Reasons for stopping breast feeding

Table 41 below summarizes the reasons given by the respondents for stopping breast feeding and Table 41a gives an indication of when these reasons caused the mother to discontinue breast feeding.

**TABLE 41**  
**Reasons given by respondents for discontinuing breast feeding**

Hadn't enough milk - baby hungry	28.5%
In order to return to work	13.5%
Breast discomfort (mastitis, abscesses, bleeding nipples)	11%
Could not cope with breast feeding anymore	8.5%
Respondent felt baby breast fed long enough	7.5%
Breast feeding never effectively established	4%
Incidental factors (husband in hospital, had to travel herself, sick)	4%
Lack of privacy/living with mother who disapproved	1.5%
Not recorded	2%
(Still breast feeding)	18%

4% of the respondents felt they had not really been established in breast feeding before they left hospital. Some of these and others who said they did not have enough milk, found that on returning home their routine was upset, the baby cried persistently and they were worried and anxious and had no time to relax to allow their breast to 'fill up'. They changed to formula feed as a great relief from the anxiety this caused. These respondents were asked what their feeding intentions were with another baby. Those who breast fed for two weeks or less were the least likely to say they would definitely breast feed again — one third either would not or were not sure that they would (see Figure 16).

Insufficient milk was the most common and persistent reason given for terminating breast feeding. This conclusion by the mothers was reported as a result of several different experiences. Some had already tried supplementing with formula feed and found the baby more settled and therefore concluded it had not been getting sufficient milk. For some the baby would not suck or settle to feeding 'properly'. For others at a later stage the baby fed very satisfactorily from the breast but seemed restless and 'hungry' in between. Pressure of some kind, visitors staying and moving home for example

had caused breast milk supply to diminish for some respondents and they had changed to formula feed or cow's milk. Breast discomfort caused 11% to discontinue feeding. In some cases this was quite severe involving mastitis, an abscess or cracked and bleeding nipples. 65% of respondents found that their breast leaked at times for the duration of feeding. Only one respondent however gave persistent and heavy leaking of breasts as a reason for ceasing to breast feed.

It seems that a decision to return to work did not deter many from choosing to breast feed — a higher percentage of breast feeders returned to work than did bottle feeders. This decision does, however, appear to affect the duration of breast feeding, 13.5% stopped breast feeding when they did because of their decision to return to work (17% of the sample had returned to work at the time of interview). Some stopped breast feeding a week or two before work in order to establish a new routine for the baby and some carried on breast feeding for a short while after going back to soften the transition period.

8% of the respondents stopped breast feeding because they found it very wearing and tiring, they had 'had enough' and could not cope with it any more.

**TABLE 41a**  
**Time after birth when breast feeding discontinued**  
**according to reason given**

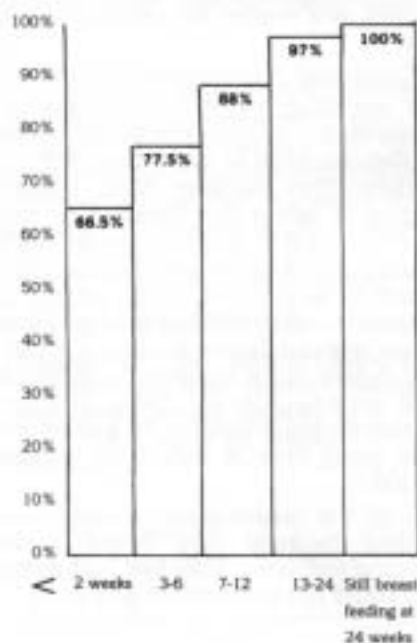
	<b>3 weeks</b>	<b>3-6 weeks</b>	<b>7-12 weeks</b>	<b>12 + weeks</b>
Hadn't enough milk	4%	10%	11%	3%
To return to work	0%	1%	8.5%	4%
Breast discomfort	1.75%	5%	3.75%	0.5%
Could not cope	1.5%	3%	3%	0.5%
Felt sufficiently long	0%	0.5%	2%	5%
Breast feeding never properly established	4%	0.5%	0%	0%
Incidental factors	0%	0.5%	0.5%	2%
Lack of privacy	0.5%	0.5%	0.5%	0%

\* Percentages are of the whole sample including in the total those still breast feeding and those whose reasons for stopping were not recorded (5)

### 5.3 Duration of feeding and feeding intention for a second baby

**FIGURE 16**

**Percentage of breast feeding respondents intending to breast feed a second baby according to duration of breast feeding**



N = 213 Time in weeks baby breast feed

Respondents were asked if they would breast feed a subsequent baby if they had one; it was felt that this was some measure of their satisfaction with the experience of breast feeding. The percentage which would definitely breast feed again varied directly with the duration of breast feeding.

### 5.4 Sociodemographic variables and duration of feeding

It is clear that certain sociodemographic factors are associated with the choice of feeding method. An association of these

sociodemographic factors with the duration of breast feeding was also investigated.

This relationship is not necessarily causal and some of the variables (education and socioeconomic group for example) are independently related to each other. An association however makes it possible to predict for instance those who may not breast feed for as long as they would like to and thus to target a more adequate programme of education. To simplify and clarify the cross tabulations the respondents were divided into those who gave up breast feeding during the first two weeks and those who breast fed for over twelve weeks. Although the former group was only small (twenty one respondents compared to seventy three), it was considered important to find out the characteristics of this particular group who presumably were not able to establish breast feeding and who would be particularly in need of support.

### 5.5 Socioeconomic group, school leaving age and education and training after leaving school

Tables 42, 43 and 44 show those who fed for two weeks and over twelve weeks cross tabulated by socioeconomic group, school leaving age, and education/training since leaving school.

**TABLE 42**  
**Duration of breast feeding by socioeconomic group**

S.E.G.	Base	Under Two Weeks	Over Twelve Weeks
1/2	(50)	2%	52%
3	(62)	10%	30.5%
4	(62)	14.5%	29%
5/6	(25)	12%	16%
7	(14)	14%	43%

**TABLE 43**  
Duration of breast feeding by  
school leaving age

Leaving Age, yrs.	Base	Under Two Weeks	Over Twelve Weeks
15 or less	(22)	23%	9%
16	(26)	8%	27%
17 or more	(165)	8.5%	39%

**TABLE 44**  
Duration of breast feeding by  
education/training since leaving  
school

Education/Training	Base	Under Two Weeks	Over Twelve Weeks
None after school	(79)	11%	26.5%
Secretarial or commercial course	(67)	8%	21.5%
University or 3rd Level	(37)	6%	57%

twelve weeks. A higher percentage of those living in their family home gave up breast feeding in the first two weeks however. Inevitably there is a loss of privacy in this extended family context. A mother, reticent about feeding in front of others, is typically confronted in this situation not only with parents and siblings but also with their friends and visitors whose comings she cannot control. In addition the wider company available and the possibilities of help with feeding increase the incentives to move from breast to bottle feeding.

**TABLE 45**  
Duration of breast feeding by  
proximity to family

Proximity	Base	Under Two Weeks	Over Twelve Weeks
Living with parents/ in-laws	(20)	20%	35%
One or both sets of parents within five miles	(115)	9.5%	36%
Neither within five miles	(78)	8%	32%

Women in the manual socioeconomic group were more likely to give up breast feeding early and not to continue beyond twelve weeks. Women who left school were clearly less likely to breast feed for a long time. Those with 3rd level education were more likely to breast feed for longer than average.

#### 5.6 Proximity to parents, parents-in-law's home and duration of breast feeding

The figures shown in Table 45 suggest that proximity to family did not affect the persistence with breast feeding over

Three respondents who gave up in the first two weeks gave lack of privacy as their reason for doing so and one specifically mentioned her mother and father as disapproving of her feeding in this way.

#### 5.7 Mother's age

The number of respondents under twenty one and over thirty five was too few to analyse. It appears that those in the twenty six-thirty age group are not only, as we have seen, most likely to choose to breast feed, but more likely to persist with breast feeding for a longer period (Table 46).

**TABLE 46**  
Duration of breast feeding by respondents age

Age, yrs	Under Two Weeks		Over Twelve Weeks
	Base	Weeks	
21-25	(78)	10%	24%
26-30	(92)	6.5%	40%
31-35	(25)	16%	40%

### 5.8 Mother's employment status

Table 47 indicates the duration of breast feeding of those who went back to employment compared to those who stayed at home after birth. Full and part time work is distinguished though numbers in the second category are rather small (12). It has been noted that a higher percentage of breast feeding than bottle feeding mothers returned to outside employment after having their baby. On other counts — socioeconomic group, school leaving age and education for example, mothers who returned to work might be expected to persist longer with breast feeding. Table 47 shows that this is not the case however, and suggested that a return to full time work affected the duration of breast feeding for those mothers. Indeed 13.6% gave this as a reason for terminating breast feeding, half of them between the seventh and twelfth week (see Table 41).

**TABLE 47**  
Duration of breast feeding by respondents employment status

Employed	Under Two Weeks		Over Twelve Weeks
	Base	Weeks	
At home			
Employed (121)	11%		35%
full-time (76)	9%		30.5%
Employed			
part-time (12)	8%		49%

### 5.9 Timing of decision to breast feed, attendance at ante-natal classes and duration of breast feeding

Those who 'always knew' they would breast feed were more likely to do so for longer than those who decided during pregnancy (see Table 48).

**TABLE 48**  
Duration of breast feeding by timing of decision to breast feed

Timing	Under Two Weeks		Over Twelve Weeks
	Base	Weeks	
Always knew	(115)	7%	41%
Decided during pregnancy	(87)	15%	25%

**TABLE 49**  
Duration of breast feeding by attendance at optional mothercraft classes

Attendance	Under Two Weeks		Over Twelve Weeks
	Base	Weeks	
Attended classes	(156)	11%	39%
Did not attend classes	(41)	10%	7%

Attendance at ante-natal classes was also associated with a higher percentage persisting with breast feeding longer. Of those who discussed their decision about feeding with a doctor 44% breast fed for over twelve weeks compared to 13% who did not have any such discussion.

### 5.10 Timing of first breast feed, pattern of feeding and duration of breast feeding

Forty six of the two hundred and thirteen respondents fed their babies immediately after birth and nearly half of these fed for over twelve weeks and very few gave up in the first two weeks (Table 50). There is a consistent decline in extended breast feeding (twelve weeks) in relation to the delay in the first breast feed. Some delays were unavoidable but some were associated with ward routines.

**TABLE 50**  
Timing of first breast feed in relation to duration of breast feeding

Timing	Under Two Twelve Base Weeks Weeks	
Put to breast immediately (46)	2 %	48 %
One-six hours post-natally (65)	11 %	37 %
Seven-twenty four hours post-natally (83)	14 %	25 %
Twenty four + (15)	0 %	20 %

78% of the breast feeding mothers fed their babies on demand on returning from hospital and this was associated with breast feeding longer than those who fed to a scheduled routine (Table 51).

**TABLE 51**  
Feeding pattern after return from hospital in relation to duration of breast feeding

Pattern	Under Two Twelve Base Weeks Weeks	
Fed on demand (166)	8 %	37 %
Scheduled feeds (45)	16 %	24.5 %

## Summary

The majority of mothers breast fed their babies for less than twelve weeks; about two thirds had stopped breast feeding at this stage. The commonest reason given for ceasing to breast feed was insufficient milk.

A high proportion of those who returned to work stopped breast feeding in the second or third month post-natal in order to work. Feeding intentions for a second baby correlated closely with the length of time the present baby was breast fed.

A longer duration of breast feeding was associated with higher socioeconomic status and an extended formal education. It was also associated with a determination to breast feed before pregnancy was confirmed and with attendance at ante-natal classes. Breast feeding for longer than twelve weeks was associated with early nursing at the breast after birth and with demand rather than scheduled feeding in the early weeks.

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## IMPLICATIONS FOR HEALTH EDUCATION POLICY

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The findings of the research indicate that to be effective health educators must take into account the differing backgrounds, capabilities and focus of interest of the mothers to whom their message is directed.

The study points to the less educated mothers (and in particular the younger mothers) as the most problematic group whose knowledge and behaviour most require modification from a nutrition point of view. This group also requires careful selection of the media of communicating information and motivation. By her background, training and education the middle class mother is generally health oriented in behaviour and open to literate health education material and information. She is also fairly discriminating between professional advice or authoritative opinion and local wisdom or hearsay. Health education material is highly relevant to these mothers and should be accessible to them but its prime target has to be the most vulnerable in terms of the practices which the education is designed to promote.

Given the fact that health agencies conventionally rely to a large extent on literate forms of communication and that these are not so accessible to the principal target group, the means of communicating message and motive needs to be diversified with this group particularly in mind. It is important also that the education material be available at a time when the information is at its most relevant and practical.

### General directions of education material

- 1 'Breast feeding is an integral part of the reproductive process, the natural and ideal way of feeding the infant and a unique biological and emotional basis for child development'. (Statement from joint WHO/Unicef Meeting on Infant and Young Child Feeding, Geneva October 1979).

It should be made clear that in terms of health it is recommended that normally all mothers should start nursing their babies and continue as long as possible.

- 2 Mothers should be educated in detail in the management of breast feeding in the hospital and in the home and on the questions and problems which may arise in connection with breast feeding. Health education should inform the mother of the techniques and practices which help to establish breast feeding. This is particularly important whilst breast feeding is a minority practice and when correct information about its management is at a premium in the community.
- 3 Given that a proportion of mothers will always choose to bottle feed health education should ensure that these mothers are informed about artificial feeding, in particular on hygiene and sterilisation methods and the correct making up of feeds. The provision of this material will avoid the need for hospitals to depend on infant food companies for advice literature.
- 4 Mothers should be informed of all aspects of correct weaning practices and be discouraged from a too early use of solid foods. Consistency of advice on this subject and information on practical strategies for coping with feeding difficulties are important. There is a demand for specific, detailed information on weaning foods.
- 5 Education in relation to the mothers own health should be provided as an important prelude to satisfactory infant feeding. Information should be given on the mother's pre-natal and lactation diet and on her post-natal health — both physical and emotional. Health education could help to develop the role of the father in infant care, both by encouraging the provision of access for him to clinics and health personnel where he is interested and by providing him with information by which he can share in important decisions relating to infant welfare.

### Specific directions for health education materials

1 The provision of ante and post natal literature for information and education programmes made available through local and hospital ante natal clinics and G.P.s, ward staff and public health nurses. This literature to include:

- a) A handout in **early** pregnancy, setting out the advantages of breast feeding and also information on maternal diet (possibly combined with or to go along with other necessary information e.g. maternity benefits, the dangers of smoking in pregnancy etc.).
- b) Posters for ante-natal clinics, to complement a).
- c) A comprehensive breast feeding handbook in late pregnancy for those intending to breast feed.
- d) A comprehensive leaflet on infant feeding at home — breast feeding, bottle feeding and in particular, weaning. This would include a section on the stresses and strains that can arise at this time, emphasizing the need for plenty of rest and a good diet, and of the husband's important role at this time. Mothers should be informed of the availability of help from the public health nurse and health clinics.

e) The development of audio-visual material for use in ante-natal classes and possibly in clinic waiting areas for mothers unable or unused to using written material.

2 At the level of hospital and community practice, health education can work by informing and enthusing health workers such as G.P.s, obstetricians and staff in hospitals and local clinics through seminars and educative material as well as the provision for them of teaching materials.

3 Some input on infant feeding into a schools health education programme should be an essential part of the overall plan.

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# TECHNICAL APPENDIX

## MULTIFACTOR ANALYSIS OF INFANT FEEDING PRACTICE

Alan Kelly,  
Department of Statistics,  
Trinity College, Dublin.

**TABLE 1**  
Variables included in the model<sup>1</sup>

Variable Name	Type	Values
1. Feeding method (FM)	Response	1. Breast 2. Bottle
2. Location (LOC)	Explanatory	1. Village/Rural 2. Town 3. City/Suburb
3. Age (AGE)	Explanatory	1. 25 or under 2. 26-35 3. 36 or over
4. Birth Order (BO)	Explanatory	1. First Child 2. Second or later child
5. Husband's Occupation <sup>2</sup> (OCC)	Explanatory	1. Non-manual 2. Skilled manual 3. Unskilled manual 4. Farming

1. See questionnaire for fuller details.
2. Single mothers have been excluded from this analysis.

### Summary

A predictive equation for infant feeding choice is derived. This equation provides the estimated odds of breast feeding for identified sub-groups. A possible application of the model during the antenatal period to discriminate between potential breast or bottle feeders is described.

### 1. Introduction

In Part One of this report the results of the national survey of infant feeding practice have been detailed in a series of two-way tables; this appendix will expand on the analysis provided therein.

Clearly, an individual mother's choice of feeding method has multiple determinants, information on some of these have been furnished by this study. Thus, if feeding method is viewed as a response and the remaining variables as explanatory, then an appropriate statistical model may be developed to examine the multivariate relationships among the data. In this instance, as the response variable is dichotomous we

investigate how the proportion breast or bottle feeding, depends directly on which combination of the explanatory variables are being observed. The form of the variables included in the subsequent analyses is set out in Table 1. Note that each variable has been categorized with two considerations in mind:

- i) a 'natural' and/or commonly used grouping, and
- ii) such that the number of cells in the multi-way table with zero sampling units is minimized.

The observed distribution of breast and bottle feeders is cross-tabulated by the above explanatory variables in Table 2. A casual appraisal of this table shows that in very few instances does the frequency of those breast feeding exceed those bottle feeding, and that these tend to occur in the non-manual and farming sub-groups. The independent and/or collective influence of the explanatory factors is very difficult to judge from this table alone. For a formal assessment of the effects of location, birth order, occupation and maternal age on

feeding method, a statistical procedure analogous to multiple regression analysis was adopted. In the next section the details of this procedure are outlined (this section may be skipped without loss of continuity). The section following that presents the results and interprets these, while the final section concludes with comments on the derived model and its application.

## 2. Statistical model for choice of feeding method

The form in which the data is set out in Table 2 suggests the following method of analysis. If the proportion (P) of mothers breast feeding is re-expressed by means of the logit transformation, i.e.  $L = \ln(P/1-P)$ , where L represents the natural log of the ratio—

$$\frac{\text{proportion of mothers breast feeding}}{\text{proportion of mothers bottle feeding}}$$

than a simple model relating L to the explanatory factors has the form—

$$L_{ijkl} = BO_i + OCC_j + LOC_k + AGE_l$$

This equation shows the dependency of L (here, the log-odds on breast feeding relative to bottle feeding) on the four independent variables. As each of the factors appears in the model without interaction terms, this is referred to as a 'main effects' model. The goodness-of-fit of any model to the data is measured by the 'deviance', which is distributed as a Chi squared variable with appropriate degrees of freedom. For the model shown the results are—

$$\text{deviance} = 56, \text{ degrees of freedom} = 52, \\ p > 0.3$$

This proves to be an adequate fit; alternative models involving interaction terms were investigated and discarded. The predicted log-odds from this model are shown on the right of Table 2.

## 3. Discussion

### A. Log-odds on breast feeding

The model fitted to the multi-factor data has provided estimated or predicted log-odds on breast feeding — these are tabulated in Table 2 and displayed qualitatively in Figure 1. A simple interpretation of these is that the more positive (negative) the result the higher the probability of breast (bottle) feeding. For example—

- Log-odds = 0.0 ... breast or bottle feeding equi-probable
- Log-odds = +0.2 ... odds favour breast feeding 1.2:1
- Log-odds = +0.5 ... odds favour breast feeding 1.6:1
- Log-odds = -0.2 ... odds favour bottle feeding 1.2:1
- Log-odds = -1.0 ... odds favour bottle feeding 2.7:1

Figure 1 below indicates the overall pattern of positive and negative log-odds. The +ive's can be seen to cluster in the first quadrant, i.e. for the Non-Manual, primiparous mother aged under thirty-five years and irrespective of location. For the multiparous suburban mother, the non-manual group also have a higher expected proportion of breast feeders over bottle feeders.

TABLE 2

Observed frequencies of feeding method by selected factors

Birth Order	Location	Occupation	Age	Observed Frequencies		Predicted Log-Odds for Breast Feeding <sup>1</sup>
				Breast	Bottle	
1st	Village	Non-manual	< 25	2	3	+0.2
			26-35	9	2	+0.4
			36+	0	0	-0.1
		Skilled manual	< 25	4	15	-1.0
			26-35	1	6	-0.8
			36+	0	1	-1.3
		Unskilled manual	< 25	5	10	-1.6
			26-35	1	5	-1.3
			36+	0	0	-1.9
		Farming	< 25	2	6	-0.4
			26-35	5	4	-0.2
			36+	2	0	-0.7
1st	Town	Non-manual	< 25	3	3	+0.3
			26-35	6	4	+0.5
			36+	0	0	0.0
		Skilled manual	< 25	6	16	-0.9
			26-35	3	6	-0.7
			36+	0	2	-1.2
		Unskilled manual	< 25	3	17	-1.5
			26-35	0	1	-1.3
			36+	1	0	-1.8
		Farming	< 25	0	1	-0.3
			26-35	1	2	-0.1
			36+	0	0	-0.6
1st	Suburb	Non-manual	< 25	11	8	+0.6
			26-35	13	7	+0.8
			36+	0	1	+0.3
		Skilled manual	< 25	7	18	-0.6
			26-35	11	2	-0.4
			36+	0	0	-0.9
		Unskilled manual	< 25	5	15	-1.2
			26-35	0	3	-0.9
			36+	0	0	-1.4
		Farming manual	< 25	0	0	0.0
			26-35	0	0	+0.2
			36+	0	0	-0.3
Later	Village	Non-manual	< 25	3	4	-0.3
			26-35	16	17	-0.1
			36+	3	4	-0.6
		Skilled manual	< 25	5	9	-1.5
			26-35	9	37	-1.3
			36+	1	6	-1.8
		Unskilled manual	< 25	2	16	-2.0
			26-35	3	36	-1.8
			36+	1	8	-2.3

		Farming	< 25	4	6	-0.9
			26-35	13	35	-0.7
			36+	6	18	-1.2
Later	Town	Non-manual	< 25	4	4	-0.2
			26-35	27	27	0.0
			36+	4	8	-0.5
		Skilled manual	< 25	7	9	-1.4
			26-35	10	43	-1.2
			36+	1	5	-1.7
		Unskilled manual	< 25	5	23	-1.9
			26-35	5	27	-1.7
			36+	0	6	-2.2
		Farming	< 25	0	1	-0.8
			26-35	7	10	-0.6
			36+	1	1	-1.1
Later	Suburb	Non-manual	< 25	7	7	+0.1
			26-35	56	34	+0.4
			36+	10	11	-0.1
		Skilled manual	< 25	3	17	-1.1
			26-35	14	35	-0.9
			36+	2	10	-1.4
		Unskilled manual	< 25	6	33	-1.6
			26-35	11	40	-1.4
			36+	0	9	-1.9
		Farming	< 25	0	0	-0.5
			26-35	1	0	-0.3
			36+	0	0	-0.8

Total frequency = 1062

<sup>1</sup>The predicted log odds are based on the model discussed in 2.

**FIGURE 1**  
Simple representation of predicted log-odds for four factors

BO	OCCUPATION												LOC
	Non-manual			Skilled manual			Unskilled manual			Farming			
	a	b	c	a	b	c	a	b	c	a	b	c	
1st	+	+	-	-	-	-	-	-	-	-	-	-	Village
	+	+	0	-	-	-	-	-	-	-	-	0	Town
	+	+	+	-	-	-	-	-	-	0	+	-	Suburb
.....													
Later	-	-	-	-	-	-	-	-	-	-	-	-	Village
	-	0	-	-	-	-	-	-	-	-	-	-	Town
	+	+	-	-	-	-	-	-	-	-	-	-	Suburb

1. Note for AGE — a = under 25; b = 26-35; c = 36+

2. Note — + favours breast feeding, - favours bottle feeding; 0 favours neither.

From the model the standardized percentage breast feeding for each level of each factor may be calculated, these are:

<b>Birth Order (standardized for occupation, location and age)</b>	
1st child .....	39%
2nd or later child .....	31%
<b>Occupation (standardized for birth order, location and age)</b>	
Non-manual .....	55%
Skilled manual .....	26%
Unskilled manual .....	16%
Farming .....	33%
<b>Location (standardized for birth order, occupation and age)</b>	
Village .....	28%
Town .....	30%
Suburb .....	39%
<b>Age (standardized for birth order, occupation and location)</b>	
under 25 .....	28%
26-35 .....	37%
36+ .....	26%

#### B. Classification

The construction of a statistical model may serve two distinct purposes:

- a) to determine the relative influence of certain socio-maternal factors on choice of feeding method;
- b) to supply a procedure which could be of value during the ante-natal period to objectively assign a mother-to-be to one of two groups — breast or bottle feeders.

This latter usage is termed a Classification problem and if a model of sufficient

reliability is available, then it may serve to enhance the 'diagnosis' of the health professional. If it is considered desirable that breast feeding be actively promoted, then the model could be used to identify those mothers with a low-to-very low probability of breast feeding, and thereby enable an attention/information campaign to be directed with maximum efficiency. In effect, the relevant maternal characteristics are fed into the model and an odds ratio or probability score is arrived at. A cutpoint is chosen and a mother whose score falls below this is considered a potential bottle feeder; the process is illustrated in Figure 2.

The choice of cutpoint depends on whether one considers that the sensitivity, specificity or efficiency of the procedure should be maximized.

In the context of this problem these terms imply:

- a) sensitivity: the proportion correctly identified as breast feeders.
- b) specificity: the proportion correctly identified as bottle feeders.
- c) efficiency: the proportion correctly identified for both feeding methods.

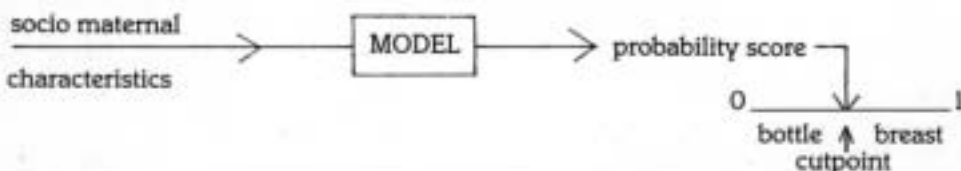
If, for example, the choice is c) then a cutpoint of 0.39 (log-odds = -0.4) provides maximum attainable efficiency equal to 71%, i.e. this percentage of cases would be expected to be correctly identified under the present model. The sensitivity at this point is 54% and the specificity is 79%.

#### 4. Conclusion

In the last section a model was described as having two functions:

- 1) to explore the interrelationships among variables, and

**FIGURE 2**  
Flow diagram showing assignment based on probability model.



2) to classify mothers according to expected outcome.

Both functions require that the chosen model be 'good', that is, that all influential variables be investigated and that sufficient data be available to accurately estimate the effect of each variable included in the model. For example, obstetric and peri-natal factors which are known to influence choice and duration of breast feeding must also be considered. On this occasion the survey covered a period of one week, resulting in approximately 1,000 cases for analysis, when cross-tabulated (as in Table 2)

certain combinations occur rarely if at all! Nevertheless, the analysis has shown the potential of a multi-factorial model in providing a 'diagnostic' aid to the health professional which could serve to direct efforts and resources efficiently, and thereby benefit mother and infant.

Clearly, further research in this area would prove highly productive in permitting the construction and testing of a reliable model, and a prospective study with the co-operation of the major maternity hospitals should receive immediate attention.



