

Infant feeding: an investigation into costs and practices.

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Index

	page
1.0 Introduction	
1.1 Advantages of breastfeeding	1
1.2 Epidemiology of breastfeeding	2
1.2.1 Government strategies	3
1.2.2 Influencing factors	4
1.2.3 Reasons for early cessation of breastfeeding	5
1.3 Attitudes towards breastfeeding	7
1.3.1 Sexuality	8
1.3.2 Embarrassment	8
1.3.3 Impact of artificial milk	9
1.3.4 Media portrayal	10
1.4 Promotion/support of breastfeeding	10
1.4.1 Maternity practices	12
1.4.2 Knowledge, attitudes and skills of health staff	13
1.4.3 Breastfeeding interventions	14
1.4.4 Support for employed mothers	14
1.4.5 Support in the workplace	15
1.4.6 Attitudes and behaviour	16
1.5 Economics of breastfeeding	16
1.6 Study aims and objectives	20
2.0 Methods	
2.1 Cost of breast and formula feeding	22
2.1.1 Infant feeding product database	22
2.1.2 Costing interviews	23
2.1.2.1 Sample	23
2.1.2.2 Procedure	24
2.1.2.3 Interview pro-forma	25
2.2 Pregnancy/baby magazine analysis	26
2.2.1 Sample	26
2.2.2 Procedure	27
2.3 Infant feeding experiences and attitudes	28
2.3.1 Sample	28
2.3.2 Procedure	28
2.3.3 Questionnaire	28
2.3.3.1 Questionnaire pre-test	31
2.4 Infant feeding support clinic	32
2.4.1 Sample	32
2.4.2 Procedure	32
2.4.3 Questionnaire	33
2.5 Statistical analyses	34
3.0 Results	
3.1 Cost of breast and formula feeding	35
3.1.1 Introduction	35
3.1.2 Method	35
3.1.3 Results	36
3.1.4 Discussion	49
3.1.5 Conclusion	56

3.2	Pregnancy/baby magazine analysis	58
3.2.1	Introduction	58
3.2.2	Method	58
3.2.3	Results	59
3.2.4	Discussion	70
3.2.5	Conclusion	76
3.3	Infant feeding experiences and attitudes	77
3.3.1	Introduction	77
3.3.2	Method	77
3.3.3	Results	78
3.3.4	Discussion	92
3.3.5	Conclusion	104
3.4	Infant feeding support clinic	105
3.4.1	Introduction	105
3.4.2	Method	105
3.4.3	Results	105
3.4.4	Discussion	111
3.4.5	Conclusion	116
4.0	Final Discussion and Conclusion	117
5.0	References	134
6.0	Appendices	
6.1	Costings information sheet	167
6.2	Costings consent form	169
6.3	Breastfeeding pro-forma	170
6.4	Formula feeding pro-forma	171
6.5	Infant feeding questionnaire	172
6.6	Infant feeding clinic information sheet	175
6.7	Infant feeding clinic consent form	177
6.8	Infant feeding questionnaire	178
6.9	Bounty pack contents – mother-to-be	179
6.10	Bounty pack contents – new mother	180

Publications

	page	
3.1.1	Breastfeeding equipment	36
3.1.2	Bottle feeding equipment	37
3.1.3	Sterilisation equipment	37
3.1.4	Formulae available in the UK	38
3.1.5	Demographic characteristics of respondents	39
3.1.6	Costs for exclusive breastfeeding mothers	40
3.1.7	Costs for partial breastfeeding mothers	41
3.1.8	Costs for formula feeding mothers	42
3.1.9	Type of formula purchased	43
3.1.10	Comparison of infant feeding costs	43
3.1.11a	High cost model – breastfeeding	45
3.1.11b	High cost model – formula feeding	45
3.1.12a	Low cost model – breastfeeding	46
3.1.12b	Low cost model – formula feeding	46
3.1.13	Summary of high and low cost models	46
3.1.14	Electricity costs	47
3.1.15	Number and length of feeds per day	48
3.2.1	Details of each of the magazines chosen for analysis	59
3.2.2	Key demographics of the magazines under analysis	60
3.2.3	Advertising and consumer content	64
3.2.4	Summary of breast and formula feeding content of each magazine	65
3.2.5	Percentage of total pages covered by breastfeeding, formula feeding and feeding advertisements	65
3.3.1	Demographic characteristics of respondents	78
3.3.2	UPA scores according to feeding method	80
3.3.3	Duration of breastfeeding	80
3.3.4	Choice of feeding method	81
3.3.5	Details of women who decided on feeding method once their baby was born	82
3.3.6	Reasons for breastfeeding	82
3.3.7	Reasons for formula feeding	83
3.3.8	Reasons for not breastfeeding	83
3.3.9	Feelings about seeing a breastfeeding woman	84
3.3.10	Women who planned to breastfeed but did not	86
3.3.11	Reasons for ceasing breastfeeding	87
3.3.12	Is your baby receiving any solid food?	88
3.3.13	Comparison of perceptions of breast and formula feeding mothers	89
3.4.1	Demographic characteristics of respondents	106
3.4.2	Reasons for attendance at clinic	108
3.4.3	Other reasons given relating to baby	108
3.4.4	Other reasons given relating to the mother	109

Index of Figures

3.1.1	Frequency plot of weekly amount spent	44
3.2.1	Advertising categories as a percentage of all advertisements	63
3.3.1	Timing of decision	81

Abbreviations used

ABM	Association of Breastfeeding Mothers
ADA	American Dietetic Association
ANOVA	Analysis of Variables
ASA	Advertising Standards Authority
BFHI	Baby Friendly Hospital Initiative
COMA	Committee on the Medical Aspects of Food Policy
DHSS	Department of Health and Social Security
DoH	Department of Health
EBF	Exclusively Breastfed
FF	Formula Fed
GP	General Practitioner
HDA	Health Development Agency
HBM	Health Belief Model
IBFAN	International Baby Food Action Network
ILCA	International Lactation Consultant Association
INFACt	Infant Formula Action Coalition
LLL	La Leche League
LWH	Liverpool Women's Hospital
NCT	National Childbirth Trust
NHS	National Health Service
NNBC	National Network of Breastfeeding counsellors
ONS	Office of National Statistics
OPCS	Office for Population, Censuses and Surveys
PBF	Partially breastfed
PCT	Primary Care Trust
RTF	Ready to Feed
RCM	Royal College of Midwives
SEM	Standard Error of the Mean
SES	Socio-economic Status
SPSS	Statistical Package for Social Scientists
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UK	United Kingdom
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UPA	Under Privileged Area score
USA	United States of America
WHA	World Health Assembly

WHO	World Health Organisation
WIC	Special Supplemental Nutrition Programme for Women, Infants and Children

Abstract

Numerous studies have shown the benefits of breastfeeding, however, the incidence and duration of breastfeeding in the UK is low and static, and breastfeeding rates in Liverpool in the North West of the UK are even lower. Breastfeeding is frequently promoted as being free yet little research has been carried out to substantiate this claim. Further, little is known about breastfeeding practices in Liverpool. Four inter-related studies were conducted to investigate the cost of infant feeding and associated practices. Initially a database was compiled of infant feeding products, this revealed a vast number of products marketed to both breast and formula feeding mothers. Semi-structured interviews were then conducted to identify all the items purchased for feeding infants up to the age of four months. The results of these interviews revealed that breastfeeding was more expensive than formula feeding but high and low cost models suggest that substantial savings could be made. Many mothers purchased items and subsequently did not use or need them. The suggestion that infant feeding and particularly breastfeeding has become unnecessarily commercialised was supported by content analysis of a wide range of UK pregnancy and baby magazines. These were consistent with parenthood being a consumer experience to be 'perfected', in addition to emphasising the need for 'expert' advice. Breastfeeding messages were undermined by formula company advertisements and breastfeeding was frequently presented as being painful and problematic.

With these conflicting messages, it may not be surprising that many women initiated breastfeeding but ceased within three months. Those who did initiate breastfeeding frequently gave 'baby-centred' reasons such as breast is best whilst those who initiated formula feeding gave 'mother-centred' reasons such as others could help with feeding. Many women who ceased breastfeeding would have liked to have continued, and cited reasons that could have been overcome with increased support and encouragement. The importance of being supported was further highlighted by the women who attended the infant feeding clinic.

This study has demonstrated that the materials needed for breastfeeding are clearly identified and health professionals are trained to support parents. In addition, the media needs to be persuaded to help create and support a breastfeeding culture, with the risks of formula feeding clearly communicated.

1.0 Introduction

1.1 Advantages of breastfeeding

Human milk is a species-specific fluid of great complexity, with more than 200 known constituents (Blanc 1981), and has evolved over time to optimise growth and development. It provides a balanced nutrient composition and at least 45 different types and classes of bioactive factors, such as enzymes, hormones and growth factors, which have a key role in supporting infant growth and development (Bates & Prentice 1994, Rodriguez-Palmero *et al* 1999). Many of the nutrients are secreted as bound components that can offer protection from digestion and facilitate their absorption and utilization (Picciano 2001). The health benefits of breastfeeding to both mother and baby are well documented with diverse and compelling advantages to infants, mothers, families and society.

Epidemiological research in both developed and developing populations provides strong evidence that breastfeeding decreases the incidence and/or severity of:

- gastrointestinal illness (Howie *et al* 1990, Beaudry *et al* 1995, Dewey *et al* 1995a)
- lower respiratory infections (Chen 1989, Wright *et al* 1995, Cushing *et al* 1998)
- otitis media (Saarinen 1982, Owen *et al* 1993, Paradise *et al* 1994)
- bacteraemia (Cochi *et al* 1986, Takala *et al* 1989)
- bacterial meningitis (Istre *et al* 1985)
- botulism (Arnon 1984)
- urinary tract infection (Pisacane *et al* 1992)
- necrotizing enterocolitis (Lucas & Cole 1990, Covert *et al* 1995).

In addition, there are a number of studies that show a possible protective effect of breastfeeding against:

- sudden infant death syndrome (Mitchell *et al* 1992, Ford *et al* 1993, Scragg *et al* 1993)
- insulin dependent diabetes mellitus (Virtanen *et al* 1991, Gerstein 1994, Pettitt *et al* 1997)
- Crohn's disease, and other chronic digestive diseases, (Koletzko *et al* 1989, Rigas *et al* 1993, Andiran *et al* 2003)
- ulcerative colitis (Rigas *et al* 1993)
- lymphoma (Davis *et al* 1988, Shu *et al* 1995)
- allergic diseases (Saarinen & Kajosaari 1995, Chandra 1998)
- dental caries (Erickson & Mazhari 1999, Davies *et al* 2001)
- obesity/overweight (von Kries *et al* 1999, Butte 2001, Dietz 2001, Gillman *et al* 2001, Dewey 2003, Reilly *et al* 2003)

These protective effects appear to persist beyond infancy into later childhood and adolescence, and possibly even adulthood. Breastfeeding has also been related to possible enhancement of cognitive development (de Andraca & Uauy 1995, Gale & Martyn 1996, Niemelä & Järvenpää 1996, Anderson *et al* 1999, Angelsen *et al* 2001, Reynolds 2001, Oddy *et al* 2003) and neurological development (Lanting *et al* 1998, Bouwstra *et al* 2003).

A number of studies have indicated health benefits for breastfeeding mothers. Breastfeeding increases levels of oxytocin, resulting in less postpartum bleeding and more rapid uterine involution (Chua *et al* 1994). Lactational amenorrhoea causes less menstrual blood loss in the months after delivery and delayed resumption of ovulation increases child spacing (Kennedy & Visness 1992, Labbock & Colie 1992, Hafez & Bagchi 1995). Lactating women have an earlier return to pre-pregnant weight (Dewey *et al* 1993), improved bone remineralization postpartum (Melton *et al* 1993) with reduction in hip fractures in the postmenopausal period (Cumming & Klineberg 1993), and reduced risk of ovarian cancer (Rosenblatt & Thomas 1993), premenopausal (Newcomb *et al* 1994, Zheng *et al* 2001) and postmenopausal breast cancer (Newcomb *et al* 1999). Breastfeeding may also protect against postnatal depression (Groer *et al* 2002, Mezzacappa & Katkin 2002).

Although some studies suffer from a retrospective design and limited generalisability, evidence continues to accumulate concerning the advantages of breastfeeding. Breastfeeding provides significant social and economic benefits to the nation, including reduced health care costs and reduced employee absenteeism for care attributable to child illness. The considerably lower incidence of illness in the breastfed infant allows the parents more time for attention to siblings and other family duties and reduces parental absence from work and lost income (Ball & Bennett 2001).

1.2 Epidemiology of breastfeeding

Successive Committee on the Medical Aspects of Food Policy (COMA) reports (DHSS 1974, 1980, 1988a) have highlighted the advantages of breastfeeding and the recommendation of breastfeeding as the best method of infant feeding is government policy (DoH 1999ab). In May 2003, the Department of Health (DoH) issued new guidance on breastfeeding in line with global advice from the World Health Organisation (WHO), recommending exclusive breastfeeding for the first six months of a baby's life. The WHO guidance was derived from a systematic review (Kramer & Kakuma 2002) and further recommended that after six months, breastfeeding should continue with the introduction of complementary foods.

However, the prevalence of exclusive breastfeeding in infants beyond four months of age may well be less than 50% in most countries of the world (WHO 1996). Vast differences are apparent in breastfeeding prevalence and duration both within and between European

countries (Yngve & Sjöström 2001); breastfeeding initiation and duration rates in the United Kingdom (UK) are amongst the lowest in Europe, having increased little in the past 20 years (Hamlyn et al 2002). In 1980, 65% of mothers breastfed their baby at birth and by 2000 this percentage had only increased to 69%. This compares to rates of nearly 100% in Scandinavian countries. At least 15 weeks of exclusive breastfeeding provides benefits in terms of disease prevention (Wilson et al 1998), however the percentage of mothers breastfeeding in the UK decreased to 28% at four months and 21% at six months (Hamlyn et al 2002). Similar rates are also seen in North America, which has a breastfeeding initiation rate of 64%, dropping to 29% at four months (United States Department of Health and Human Services 2000). In Liverpool in the UK (population 440,000) only 45% of women breastfeed at delivery, falling to 35% when discharged. One month later, only 25% of women are still breastfeeding (McFadden, 2004, personal communication).

1.2.1 Government strategies

The Health of the Nation white paper (DoH 1992) acknowledged the importance of breastfeeding in safeguarding and improving the health of infants and children and set two targets. These were to increase the proportion of infants who are breastfed at birth from 64% in 1985 to 75% by 2000 and to increase the proportion of infants aged six weeks who are wholly or partly breastfed from 39% in 1985 to 50% by 2000. However, results from the 2000 Infant Feeding Survey (Hamlyn et al 2002) demonstrate that these targets have not been achieved. The initial breastfeeding rate was 69%, and by six weeks post-partum, the rate had dropped to 42%.

The value of increasing breastfeeding upon public health was recognized in the Government's National Health Service (NHS) Plan where a commitment to increase support for breastfeeding by 2004 formed part of the proposed strategy to improve diet and nutrition (DoH 2000). The NHS Plan prioritised the reduction of health inequalities and drew attention to the wide variation in breastfeeding prevalence in the different socio-economic groups. The DoH document *Improvement, Expansion and Reforms: The Next Three Years Priority and Planning Framework 2003-2006* (DoH 2002a) required all Primary Care Trusts (PCTs) to increase breastfeeding initiation rates by two percentage points per year with particular focus on women from disadvantaged groups, since lack of breastfeeding contributes to the increased morbidity and mortality seen in the lowest socio-economic groups. Breastfeeding will also be included in the development of the national service framework for children (DoH 2003a), and further work is being undertaken by the Health Development Agency (HDA) who have set up two collaborating centres in maternal and child nutrition. Their work will include increasing the body of evidence on what encourages breastfeeding and moving that evidence into practice.

1.2.2 Influencing factors

To try and improve breastfeeding initiation, much research has attempted to identify the factors that influence mothers in their choice of infant feeding method, as well as the factors that influence the duration and termination of breastfeeding.

Breastfeeding is heavily influenced by cultural considerations, including media representation of artificial feeding as 'normal'. It is widely believed that until the 1930s the majority of babies were breastfed in Britain, although the move from breastfeeding to artificial feeding has been traced to the 1850s or even earlier (Smith 1989). By the mid 1960s around a third of mothers in Britain never breastfed and a further quarter stopped breastfeeding in the first month.

Women are more likely to breastfeed if they have a positive attitude toward breastfeeding (Tarkka *et al* 1999) and believe it to be healthier, easy, convenient and conducive to freedom (Libbus & Kolostov 1994). Conversely, women with negative breastfeeding attitudes, such as perceptions of lifestyle restrictions, physical discomfort and inconvenience are more likely to formula feed (McLorg & Bryant 1989, Avery *et al* 1998). Mothers' feelings of embarrassment, shame or modesty are particularly detrimental in relation to positive breastfeeding behaviours (Matthews *et al* 1998), especially among low-income women (Dix 1991, Gielen *et al* 1992, Perez-Escamilla *et al* 1998). Breastfeeding success is improved if women are more satisfied with midwifery care during and after birth (Rajan 1993).

In general, women from developed countries who initiate and continue to breastfeed tend to share a number of the following characteristics:

- White race (Jacobson *et al* 1991, Ryan 1997, Kum-Nji *et al* 1999)
- Higher socio-economic status (Bourgoin *et al* 1997, Ryan 1997, Matthews *et al* 1998)
- Better educated (Barber *et al* 1997, Evers *et al* 1998, Scott *et al* 1999, Chan *et al* 2000)
- Married (Pande *et al* 1997, Bick *et al* 1998, Evers *et al* 1998)
- Older (Pande *et al* 1997, Evers *et al* 1998, Hammer *et al* 1999)
- Non-smoker (Nolan & Goel 1995, Hill & Aldag 1996, Clements *et al* 1997, Haug *et al* 1998)
- Not employed outside the home (Kearney & Cronenwett 1991, Gielen *et al* 1992, Bick *et al* 1998, Chan *et al* 2000)
- Increased parity (Pande *et al* 1997, Ryan 1997, Hammer *et al* 1999)
- Attended antenatal classes (Piper & Parks 1996, Clements *et al* 1997, Evers *et al* 1998)
- Mother of a healthy full-term infant (Lawson & Tulloch 1995, Pande *et al* 1997, Ryan 1997)

- Friends or family members who have breastfeeding experience (Libbus *et al* 1997, Whelan & Lupton 1998, Wieman *et al* 1998, Dykes & Williams 1999)
- Successful previous breastfeeding experience (Barber *et al* 1997, Bourgoin *et al* 1997, Humenick *et al* 1998, Nagy *et al* 2001)
- Paternal support/approval (Jones *et al* 1986, Matich & Sims 1992, Littman *et al* 1994, Earle 2000, Scott *et al* 2001)

Of these variables, maternal age, socio-economic status, ethnicity, smoking status and employment are consistent predictors of breastfeeding behaviour. The lowest rates of breastfeeding are seen amongst mothers from the lowest socio-economic groups, and the impact of this on future health is probably substantial.

1.2.3 Reasons for early cessation of breastfeeding

A number of variables have been associated with premature cessation of breastfeeding:

- Intent to breastfeed for a relatively short duration (Coreil & Murphy 1988, Quarles *et al* 1994)
- Less favourable attitude towards breastfeeding (Janke 1994)
- Perception of lack of support for breastfeeding from "significant others" (Bryant 1982, Bryant *et al* 1992, Rowley & Dixon 1997)
- Perceived inconvenience of breastfeeding (Janke 1994)
- Low maternal confidence (Bryant *et al* 1992, O'Campo *et al* 1992, Papinczak & Turner 2000)
- Problems such as sore nipples (Buxton *et al* 1991, Rogers *et al* 1987)
- Actual or perceived insufficient milk supply (Hill 1992, Hill & Aldag 1993)

The Royal College of Midwives (RCM 2002) state that 97% or more women are physiologically capable of breastfeeding successfully, other reports suggest that a maximum of 1-5% of women may be unable to produce sufficient milk (Neifert 1983, Akre 1991). Akre (1991) stated that in societies where breastfeeding is highly valued, lactation failure was virtually unknown. However, many women cease breastfeeding in the early postpartum period. In the most recent UK Infant Feeding Survey (Hamlyn *et al* 2002), 53% of mothers with babies aged between two and six weeks gave "insufficient milk" as the reason for ceasing breastfeeding. Aggerwal *et al* (1998) found that the commonest reason (given by 49% of mothers) for starting formula before the age of four months was 'not enough milk', this is similar to other studies (Richard & Jeeson 1989, Hillervik-Lindquist 1991, Rahmathullah 1995). On questioning how mothers assessed the adequacy of breastfeeds, none gave reasons of poor weight gain or passage of an inadequate amount of urine (two reliable signs of inadequacy of breastfeeds). On the contrary, they cited subjective signs which they interpreted to mean that the milk was inadequate, for example, baby not satisfied with feeds, cries often, wants frequent feeds or bites on the nipple. Similar

signs have been reported from previous studies on perceived breast milk insufficiency (Hillervik-Lindquist 1991). Jones (1977) reported that whilst the most frequent reason for ceasing breastfeeding was "insufficient milk", this was more common in cases where none of the women's friends had breastfed, suggesting lack of support or confidence to be more important. Scott *et al* (1997a) found that breastmilk insufficiency was often self-diagnosed by mothers on the basis of a child crying more frequently, not sleeping through the night, or having changed its feeding patterns. This suggests an ignorance of the individuality of the breastfeeding experience and events, such as growth spurts, which may result in a change in feeding behaviour. Greiner *et al* (1981) suggest that in certain communities, women are socialised to lack confidence in their ability to lactate, with promotion of artificial milk being a particularly undermining factor. Dykes & Williams (1999) found that most of the women in their study had initial doubts about their ability to produce milk and to breastfeed. Greiner *et al* (1981) assert that insufficient milk is a socially acceptable reason for discontinuing breastfeeding. Low levels of motivation and feelings of ambivalence may lead some women to rationalise by claiming insufficient milk. This view is supported by Van Esterick (1988). McCarter-Spaulding & Kearney (2001) found that there was a moderate correlation between parenting self-efficacy and perceived milk supply, suggesting that mothers who perceive that they have the skills and competence to parent a young infant also perceive that they have an adequate breast milk supply.

Demographic variables related to earlier weaning from the breast include:

- Less education (Ford & Labbok 1990, Ryan 1997)
- Young age (Piper & Parks 1996, Ryan 1997)
- Single motherhood (Visness & Kennedy 1997)
- Maternal employment (Duckett 1992, Piper & Parks 1996, Ryan 1997, Visness & Kennedy 1997)

Early postpartum practices such as introduction of formula to supplement feeds (Coreil & Murphy 1988, Hill 1991, Mulford 1995, Piper & Parks 1996, Hill *et al* 1997, Chezem *et al* 1998) and pacifier use (Victora *et al* 1993, 1997, Riva *et al* 1999, Vogel *et al* 1999, 2001) have also been related to early weaning from the breast.

Thus some factors related to breastfeeding cessation are internal, personal factors, whereas other external factors relate to early breastfeeding experiences and certain physical problems that may occur in the first few weeks of breastfeeding (Duckett *et al* 1993). Avery *et al* (1998) found that most women who weaned very early had planned to continue breastfeeding longer. Hamlyn *et al* (2002) notes that 90% of mothers who had ceased breastfeeding claimed they would have liked to have breastfed for longer. Thus, helping women to overcome obstacles and achieve their intentions would be a valid way to increase the duration of breastfeeding.

Intention was significantly associated with variation in weaning from the breast (Coreil & Murphy 1988, Quarles *et al* 1994, Wylie & Verber 1994), but was just one of many influential variables. Concern about volume of milk produced and weight gain as well as comparisons with formula fed babies who may be perceived as being more contented and growing better, commonly undermine womens' confidence (Dykes & Williams 1999).

1.3 Attitudes towards breastfeeding

Silverton's midwifery text (1993, p.525) cites studies on the impact of cultural attitudes towards breasts and breastfeeding as being instrumental in a woman's decision to breastfeed, how long she maintains breastfeeding and in her actual physical ability to breastfeed. Some women are repulsed by the thought of breastfeeding, whereas others do not believe their milk is of adequate quality or quantity. This has especially been noted since the introduction of artificial milk, the intake of which can be measured and monitored, and the composition of which is known and guaranteed.

Studies of maternal attitudes toward breastfeeding have generally employed open-ended formats asking breast and formula feeding women their reasons for their infant feeding choice. Not surprisingly, this approach has resulted in separate descriptions of the breastfeeding and formula feeding mother such that it is not clear to what extent the two groups are mutually exclusive. Considerable overlap between these groups appears to exist. Mackey & Fried (1981) and Bryant (1982) found that both breast and formula feeding women believe that breastfeeding is best for the baby. Both groups seem to view their infant feeding method as more convenient and paradoxically give similar reasons for their views (Golub 1978, Mackey & Fried 1981). It has also been suggested that the issues surrounding the woman and her experiences of the breast and breastfeeding may be strongly tied to her psyche. Those who breastfeed have more of an 'infant-centred' attitude, giving reasons such as 'breast is best for baby'. Those who choose to formula feed usually give more 'self-centred' reasons highlighting the messiness, embarrassment or social restrictions of breastfeeding (Koçtürk & Zetterström 1989). It is interesting that negative aspects of breastfeeding are mentioned instead of positive aspects of formula feeding.

In a study conducted in the East End of London (Hoddinott & Pill 1999a), a strongly held view was that breastfeeding was seldom seen or talked about. Previous exposure to breastfeeding was either a positive or negative influence on a woman's decision to breastfeed, depending on the context in which it occurred, i.e. the relationship of the woman to the breastfeeding woman, the presence of other people and their reaction, the frequency of exposure, the perceived appropriateness of the setting, and their own level of body confidence. Embarrassment about breastfeeding in front of others, including close family was commonly mentioned, though issues about sexuality were seldom spontaneously articulated.

1.3.1 Sexuality

There is a deep-rooted cultural intolerance against breastfeeding in the developed countries of the world, and women have been harassed and even arrested (on grounds of indecent exposure) for breastfeeding in public (Saha 2002). For those who do breastfeed in public, advice seems to focus on how best to conceal one's breasts. For example, *The Breastfeeding Book* (Sears & Sears 2000 p. 142) states that "... in most social situations, most people are more comfortable when mothers nurse discreetly. Good manners suggest that you should take the feelings of others into account". This is reflected by findings from Scott *et al* (1997b) where there was a general acceptance of women breastfeeding in public as long as it was performed discreetly, that is, with a minimum of breast showing. The view of breasts as sexual objects is reinforced especially if women who are breastfeeding are made to feed in hideaway places such as the ladies toilets as if they are doing something distasteful (Green 1997). However, widespread tolerance of revealing images is exemplified by page three of the newspaper, 'The Sun', where a daily photo of a bare-breasted woman appears.

Sears *et al* (1957) found that for many women, breastfeeding had a sexual implication, and those who "have a strong sense of modesty or anxiety about sex in general, may avoid breastfeeding". Gregg (1989) found that most teenagers in her study thought that breastfeeding should be done in private. Some (15%) agreed that breastfeeding makes people think of "page three girls", making them embarrassed and less likely to breastfeed, whilst 11% thought breasts were rude, and 8% thought breastfeeding was rude.

Palmer (1988) believes that the mass media, through pornography and product-marketing, has led to the breast being 'appropriated' by men, leading some to actively discourage their partner from breastfeeding. It may not be surprising then that reconciling the idea of a woman giving nourishment and love to a baby through breastfeeding with the image of the breast as a symbol of female sexuality and submission is problematic.

1.3.2 Embarrassment

Lack of acceptance causes embarrassment about the subject of breastfeeding. Bacon & Wylie (1976) found that the commonest reason given by those who chose to formula feed was the embarrassment of breastfeeding. A decade later, Jones (1986) found that embarrassment was still associated with breastfeeding and the mother who could breastfeed anywhere without feeling embarrassed was rare. Scott *et al* (1997a) found that adolescent girls were least likely to approve of breastfeeding in public and said that whilst they *would* breastfeed, they would formula feed when in public, as breastfeeding was embarrassing. Stewart-Knox *et al* (2003) found that not only did mothers feel embarrassed, but they also perceived embarrassment in others, and Shepherd *et al* (2000) found that fathers were more embarrassed than their partners about breastfeeding in front of non-family members. Guttman & Zimmerman (2000)

found that embarrassment was the main reason for low-income women not to breastfeed, especially among the younger respondents. Whilst some of the respondents had breastfed, they thought others would think breastfeeding disgusting and that "nobody wants to whip out their breast in public". One respondent saw a woman breastfeeding at a clinic and thought nothing was wrong with it, but she believed that others thought it embarrassing and "nasty". Sheeshka *et al* (2001) showed that whilst breastfeeding women were more likely to get neutral looks from restaurant customers or even not be noticed breastfeeding in a mall, the mothers' perceptions were that they felt vulnerable and nervous about breastfeeding in public and sensed people's reluctance to approach them while breastfeeding. Lockey & Hart (2003) received a comment from one young man that 'you don't go to the toilet in public so you shouldn't breastfeed in public'.

1.3.3 Impact of artificial milk

The economic and political power wielded by the baby milk companies within our consumerist society cannot be underestimated, and has been blamed for the pervading formula feeding culture (Palmer 1988). The formula industry is a very profitable business, and boasts one of the greatest marketing successes of all time, with many people spending a lot of money for an inferior substance that, depending on living conditions, can be a death sentence for the baby. Even with adequate resources, formula fed babies will get sick a lot more often, will suffer from more allergies and have a higher risk of cancer. WHO (2002) and the United Nations Children's Fund (UNICEF 2001) estimate that between one to one and a half million babies die every year because they were not breastfed.

During the Second World War, national dried milk was provided to encourage women to return to work, resulting in a decline in breastfeeding (Silverton 1993), and formula feeding incidence peaked in the West by about 1970. In 1975 in the UK, the initiation rate for breastfeeding was only 51%, falling to 24% by six weeks and 9% by six months (Martin 1978). Western culture was so formula oriented that it was assumed that there were no differences, even psychologically, between formula feeding and breastfeeding, as long as the formula feeding mother looked at and fondled the infant. Jelliffe & Jelliffe (1978) illustrate this by citing a book on mother-infant attachment that does not even refer to breastfeeding (Bowlby 1969).

Disquiet began to develop in the 1970's over aggressive marketing by the formula companies and an increased understanding developed over the harmful effects of formula feeding in developing countries. In 1977, a boycott of Nestlé (the largest distributor of infant formula in developing countries) was initiated by the Infant Formula Action Coalition (INFACT). In 1981, the World Health Assembly (WHA) approved a resolution to adopt the WHO International Code of Marketing of Breast Milk Substitutes (WHO 1981); this aims to protect and promote breastfeeding. There are ten main provisions in the code including that there should be no

advertising of breast milk substitutes, feeding bottles or teats. Britain has publicly claimed to support this code, albeit through a voluntary code of practice drawn up by the Food Manufacturers' Federation (now the Food and Drink Federation). However, follow-on milks (suitable for infants over the age of six months) can be directly advertised to the public, and infant formulae (suitable from birth) can be advertised through the health care system. Many formula manufacturers violate the Code (Gerber, Mead Johnson, Milupa, Nestlé, Nutricia and Wyeth) for example by distributing free/low cost samples of formula, bottles or teats, illegal advertising of infant formula, 'functional' claims for their products, or by sponsoring medical seminars, conferences and associations of medical professionals (Taylor 1998, International Baby Food Network (IBFAN) 2004ab), with Nestlé responsible for more violations than any other company. Organisations such as Baby Milk Action are still pressing for the boycott of Nestlé products in the UK.

1.3.4 Media portrayal

Formula feeding is portrayed in the media as the socially acceptable way to feed babies. A one-month analysis of UK television and newspapers (Henderson *et al* 2000) found that formula feeding and breastfeeding were portrayed very differently. Not only was formula feeding shown more often than breastfeeding (170 scenes compared to 9) but it was also presented as socially acceptable, unproblematic and associated with 'ordinary' families. In contrast, breastfeeding was overwhelmingly portrayed as difficult or painful, embarrassing and associated with particular types of women e.g. 'hippies' or middle class 'earth mothers'. The health risks of formula milk and benefits of breast milk were rarely mentioned, nor the possibility that breastfeeding might be economical for families and governments. Henderson *et al*'s conclusion was that these limited and biased media portrayals may help perpetuate a lack of acceptance of breastfeeding in public.

Mothers' perceptions of unsuccessful breastfeeding may lead them to question their parenting abilities. Advice to pregnant and pre-pregnant women about how to ensure their child has the best start in life has spawned a growth industry in childcare books, magazines and videos (Furedi 2001). This emphasis on advice from 'experts' may undermine women's confidence in their mothering instincts and also in their body's ability to produce enough milk to satisfy their baby.

1.4 Promotion/support of breastfeeding

In many cultures, breastfeeding may be learned as a matter of course, first as a girl grows up observing others breastfeed and later in the normal social situation surrounding a new mother. When this is lacking, as in some urban settings, some training and counselling of a mother is probably necessary if breastfeeding is to be successful. In many developed countries, this 'art' of breastfeeding has been lost, and many promotional activities from several different

disciplines are being employed to try and regain it. If someone comes from a community where no one else breastfeeds, they have never seen anyone breastfeed and were not breastfed themselves, what reason is there for them to think of breastfeeding their own children? Artificial feeding will be seen as the normal, natural thing to do. In Western cultures breastfeeding is now a learned skill with both midwives and mothers attempting to overcome problems which are essentially physical, social, sexual, psychological and cultural in nature (Renfrew 1988).

Promoting breastfeeding is in direct competition with marketing of infant formula (Marcovitch *et al* 1998); for each baby born in the UK, the infant feeding industry spends at least £20 per baby promoting its products, while the Government spends £1.60 to promote breastfeeding (IBFAN 2004a). Infant formula use is an attractive alternative to breastfeeding for health professionals. It enables the specification of dosages and encourages patient adherence to a schedule that is compatible with a biomedical professional-control orientation and suggests scientific precision that breastfeeding typically lacks (Guttman & Zimmerman 2000).

The mother's decision to initiate breastfeeding is usually made before or during pregnancy but antenatal interventions can be logistically difficult, expensive and unlikely to increase initiation rates (Oxby 1994, Losch *et al* 1995). It is therefore suggested that health professionals should be involved with educating school children about breastfeeding to encourage increased rates in the future (Chapman 1993, De-Gale 1995), probably before the teenage years when girls (and boys) are coming to terms with their sexuality and the conflicts that arise (Gibson 1993). Also, it may be preferable to focus on improving duration and exclusiveness (i.e. no supplementation with formula) among women who have decided to initiate breastfeeding.

The promotion of breastfeeding has two broad aims: the promotion of breastfeeding within the general population, and the promotion of breastfeeding for at least three months by provision of support and encouragement to women who choose to breastfeed. During the late 1980s in the UK, there was an upsurge of activity to promote breastfeeding, including the launch of the Joint Breastfeeding Initiative (DHSS 1988b), the Royal College of Midwives' book *Successful Breastfeeding* (1988) and the Infant feeding initiative (DoH 1999b). This was launched as part of the Government's commitment to reduce health inequalities and aimed to increase the incidence and duration of breastfeeding among groups with the lowest rates and help all women make informed choices about how to feed their infant.

The initiative had a budget of nearly £3m enabling a range of activities:

- Appointment of two National Infant Feeding Advisors
- Evaluate best breastfeeding practice by identifying, funding and evaluating new and innovative projects.
- All NHS regions to develop a local infant feeding audit.

- Fund a small randomised controlled trial to assess whether active interventions by midwives in the first 24 hours after birth increase the duration of breastfeeding.
- Produce educational resources to promote breastfeeding. This includes materials produced for National Breastfeeding Awareness Week. This is the one week of the year when breastfeeding is 'advertised' with DoH funding. While this goes some way towards raising awareness, the formula milk companies spend about £4-5 million on advertising each year (Parliamentary Report 1995).

The DoH also provides some financial support to the four main voluntary organizations concerned with breastfeeding; La Leche League (LLL), Association of Breastfeeding Mothers (ABM), National Childbirth Trust (NCT) and the National Network of Breastfeeding Counsellors (NNBC). They all offer encouragement and support to women wishing to breastfeed and aim to promote a breastfeeding-friendly culture. They offer a 24-hour telephone help-line staffed by trained breastfeeding counsellors, hold regular meetings, run postnatal support groups, set up free lending libraries, provide books for sale, hire breast pumps and sponsor counsellors who liaise with local maternity services. Despite the grants, they are mainly reliant on the goodwill and dedication of volunteers. Many local groups do not have sufficient volunteers to meet the needs of women, and so would be unable to extend their activities even with funding.

1.4.1 Maternity practices

The WHO in conjunction with UNICEF (UNICEF 1998a, WHO 1998) have defined ten interventions ("steps") to encourage breastfeeding; the foundation of the Baby Friendly Hospital Initiative (BFHI), which is being implemented in many hospitals worldwide. These ten steps are:

Every facility providing maternity services and care for newborn infants should:

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement the breastfeeding policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within half an hour of birth.
5. Show mothers how to breastfeed and maintain lactation even if separated from their infants.
6. Give newborn infants no food or drink other than breast milk, unless *medically indicated*.
7. Practice rooming-in, allowing mothers and infants to remain together 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.

10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

The BFHI embraces the ten steps to support the establishment of breastfeeding within the maternity services. To achieve 'baby friendly' status, a service must evaluate its practice and change as necessary in order to meet the ten global standards. Of the 202 hospitals with maternity facilities in the UK, only two were designated baby-friendly in 1996-97 (WHO/UNICEF 1998). The corresponding figures for Sweden were 57 out of 57 (WHO/UNICEF 1998). The current number of UK hospitals designated as baby-friendly is 46 out of 318 (14%) with a further 47 committed to completing the process of becoming baby-friendly (www.babyfriendly.org.uk). Whilst midwives address mothers' needs antenatally and in the early puerperium, mothers look for support and advice thereafter from their general practitioners, health visitors and the community. In the UK, the Baby Friendly Initiative is therefore currently being extended into the community setting. Education for community health professionals, the development of peer group and lay support and the recording of breastfeeding statistics (to inform the monitoring process) are to be addressed (DoH 2003b). Collectively these should ensure that breastfeeding mothers are given more effective support.

1.4.2 Knowledge, attitudes and skills of health staff

Although hospital policy may be in line with current thinking on aiding the initiation and continuation of breastfeeding, actual practice may be far removed from this (Beeken & Waterston 1992). If professionals are unconvinced of the advantages of breastfeeding they may feel less inclined to implement relevant policy. Health workers play an important role in the initiation and success of breastfeeding, but poor attitudes and practices of health workers have been noted (Helsing & Randa 1993, Gill 2001). Midwives' attitudes to breastfeeding are as varied as the rest of the population (Welford 1995) and these are likely to be conveyed to women during verbal and non-verbal communication.

Professionals can give conflicting feeding advice, and the resulting confusion may undermine the confidence of the mother (Michelman *et al* 1990, Chalmers 1991, Dykes & Williams 1999, West & Topping 2000). Poor attitudes and practices of health care workers may be due to lack of knowledge on their part (Bradley & Meme 1992, Dermer 1995, Bella 1998, Eden 2000). In 1993, WHO and IBFAN (Courant *et al* 1993) evaluated the coverage of breastfeeding by 180 textbooks used in medical schools in over 90 countries, scoring the books on a scale of 0 to 1.00. The results ranged from 0.04 to 0.76, with only four books receiving a score of 0.5 or more. Practical management of breastfeeding received much less attention than theoretical aspects of lactation and its problems. Parker (1994) suggests that midwives were largely unaware of research findings relating to the benefits of breastfeeding as they did not read the

appropriate journals. She claimed they neither understood research nor how to apply its findings, preferring to base their practice on attitudes, beliefs and traditions.

Routine maternity hospital stays are brief, making early and accurate breastfeeding support even more important. Women should be instructed whom to contact for support after discharge. Hoddinott & Pill (1999b) found that most women felt inadequately prepared for motherhood, particularly practical skills like feeding, comforting and bathing, but also emotionally. Most women had low levels of exposure to newborn babies and coming home was a time of high anxiety and unmet expectations. Most women initiating breastfeeding had low levels of exposure to breastfeeding and were dissatisfied with their learning experience, and those committed to breastfeeding had the greatest mismatch between their antenatal expectations and reality. This demonstrates the need for a woman-centred approach by health professionals, rather than focusing on professional agendas.

1.4.3 Breastfeeding interventions

Breastfeeding women sometimes need skilled help and expertise as well as support. A Cochrane systematic review, incorporating 13 controlled trials of approximately 3,600 women in seven countries, was conducted to evaluate the effect of enhanced breastfeeding support interventions on breastfeeding duration (Sikorski & Renfrew 1999). Interventions using face-to-face support showed a benefit on breastfeeding duration whereas those using mainly telephone contact did not. No clear advantage was found from an antenatal element to the support intervention. Studies evaluating the effect of professional support on low-income populations did not demonstrate a significant benefit.

Given the powerful effects of role models and peer groups, there has been an increased trend towards lay support in postpartum care and a number of studies have evaluated the effect of peer (mother-to-mother) support on breastfeeding duration among new mothers (Kistin et al 1994, Long et al 1995, Arlotti et al 1998, Caulfield et al 1998, Morrow et al 1999, Haider et al 2000, Dennis 2002, Dennis et al 2002). These studies demonstrate a positive effect of peer support, especially among socially disadvantaged women. The importance of peer support has been further emphasized in a review by Fairbank et al (2000).

1.4.4 Support for employed mothers

Population-based investigations have indicated that intention to return to paid employment is not associated with breastfeeding *initiation*, whereas returning to paid employment is negatively associated with breastfeeding *duration* (Visness & Kennedy 1997). This has led to growing concerns about the possible negative effects of maternal employment on infant health. Not surprisingly, the length of maternity leave was positively associated with the duration of breastfeeding. A study of middle-class mothers (Fein & Roe 1998) has shown that the duration

of breastfeeding was only marginally shorter among mothers employed part-time at three months after the birth, than for non-employed mothers, but was reduced more substantially among those employed full-time.

Experience from Scandinavian countries in the 1970s and 1980s suggests that improvements in breastfeeding practices were due, at least in part, to changes in government legislation that gave greater support to breastfeeding mothers (Helsing 1990). In Sweden, current maternity leave is 1.5 years almost fully paid (Hornell *et al* 1999), and in Norway, mothers may receive 100% pay for 42 weeks maternity leave or 80% pay for 52 weeks (United Nations Development Programme (UNDP) 1999). The UK currently has the shortest period of maternity leave in Europe. Women who have worked longer than 15 months for their employer receive up to 52 weeks maternity leave, otherwise, they receive a statutory 26 weeks; 6 weeks of which is at 90% of their average earnings, for the remaining 20 weeks they receive £102.80 or 90% of their average earnings if this is less than £102.80 per week. Legislation that improves maternity leave and allowances and promotes more flexible working hours for mothers and better crèche and nursery facilities in the workplace is likely to have a major influence on breastfeeding rates.

1.4.5 Support in the workplace

It has been shown that providing breastfeeding support in the workplace may diffuse some of the stress for breastfeeding employees who desire a balance between family life and work (Brown *et al* 2001). Participants in this study believed that employers who support breastfeeding employees contribute to mothers' peace of mind, which makes mothers more productive and less likely to miss work or quit their jobs. Few of the employers in the study had breastfeeding policies or lactation facilities, although employer support for breastfeeding had grown. Following the strong desire among some women from higher socio-economic backgrounds to breastfeed, there is a growing trend among corporations in the United States of America (USA) to offer benefits associated with breastfeeding to women in upper-level positions as an incentive for returning to work. Such offers are less common for women in lower positions (Guttman & Zimmerman 2000). Support can be provided in the form of providing facilities for expressing and storing breast milk, giving the woman time to express her breast milk and allowing her baby to be brought to the workplace to be fed. If the transition from leaving her baby and returning to work is smooth, she is more likely to continue breastfeeding (Bocar 1997).

1.4.6 Attitudes and behaviour

The attitudinal theory of the Health Belief Model (HBM) (Becker 1974, Rosenstock 1974, Becker et al 1977) includes two constructs demonstrated to be significant in relation to breastfeeding behaviour: perceived benefits (i.e. health of infant and mother, bonding etc) and perceived barriers (i.e. lack of confidence in milk supply, returning to work, embarrassment).

Knowing the relationships between attitudes and behaviour does not necessarily mean that attitudes can be changed though, or that changed attitudes will result in changed behaviour. In fact, serious conceptual problems arise in relating knowledge, attitudes and beliefs to actual practice. The links between knowledge and beliefs, beliefs and attitudes, and attitudes and practice are poorly understood and ambiguous. However, numerous studies have found that behavioural intentions assessed before the birth of a child are closely linked to actual feeding practices (Mackey & Fried 1981, Entwistle et al 1982, Holt & Wolkind 1983, Manstead et al 1983, Manstead et al 1984, Stein et al 1987, Baisch et al 1989ab). Campaigns based on improving knowledge, attitudes and beliefs about the benefits of breastfeeding have not, by themselves, proved to be an effective means for changing infant-feeding patterns. The fact that behaviour change is seldom brought about by focusing on the adverse effects of a specific health risk is neither a recent finding nor specific to the promotion of breastfeeding.

Programmes that aim to educate women about the benefits of breastfeeding will remain of limited value, unless they are accompanied by wider social, cultural and economic change. Information that minimizes the perceived social, personal and physical inconveniences of breastfeeding, or that presents simple, practical and acceptable strategies for overcoming them, would be more helpful (Baranowski et al 1986).

1.5 Economics of breastfeeding

An obvious difference in cost between feeding methods might affect the selection of feeding method. Very little research has investigated the economic implications of breastfeeding. Most studies tend to concentrate on savings to the health care system of not treating illnesses in formula fed babies. In 1995, the DoH estimated that £35 million per year was spent in treating gastro-enteritis in formula fed babies, and that for each 1% increase in the breastfeeding rate at 13 weeks, a saving of £500,000 in the treatment of gastro-enteritis would be achieved (DoH 1995).

In the USA it has been estimated that a minimum of \$3.6 billion would be saved if breastfeeding were increased from present levels (64% initiation, 29% at 6 months), to those recommended by the US Surgeon General (75% and 50%). This figure is likely to be an underestimation of the total savings because it represents savings from the treatment of only three childhood illnesses: otitis media, gastro-enteritis, and necrotizing enterocolitis (Weimer 2001). Ball & Wright (1999) found that in the first year of life, there were 2033 more paediatric

office visits, 212 more days of hospitalisation, and 609 more prescriptions for three illnesses (lower respiratory tract illnesses, otitis media and gastro-intestinal illness) per 1000 never-breastfed infants compared with 1000 infants exclusively breastfed for at least three months. These additional services cost the managed health care system between \$331 and \$475 per never-breastfed infant during the first year of life. Montgomery & Splett (1997) demonstrated that for infants enrolled in the Special Supplemental Nutrition Programme for Women, Infants and Children (WIC), breastfeeding each infant saved \$478 in WIC and Medicaid expenditures during the first six months of the infant's life compared to formula fed infants. Furthermore, WIC participants who exclusively breastfed and received the basic food supplement package saved WIC slightly more than \$2.5 million in formula costs each year (WIC is the largest purchaser of artificial infant milk – purchasing 40% of all formula sold in the USA) (US General Accounting Office 1993).

Jelliffe & Jelliffe (1978) believe that human milk has economic significance on three different overlapping levels: the large scale (national or community level), the family level, and the commercial level. Bundrock (1992) states that potential savings and economic benefits arising from the promotion and support of breastfeeding include: (1) lower food costs, (2) improved short- and long-term health, well-being and intelligence of breastfed children and adults, (3) improved health and well-being, and reduced menstruation and fertility in mothers and (4) reduced ecological costs.

According to Almroth *et al* (1979), breast milk can in many respects be regarded like any other food commodity i.e. in terms of the benefits it brings versus the costs it incurs. They state that breastmilk comes 'ready-to-feed' and the equipment needed for its delivery is supplied free. Therefore, the only cost for breastfeeding is for the additional food the mother has to eat to produce the milk. Some of the benefits of breastfeeding can be more satisfactorily quantified in non-monetary terms, for example morbidity, mortality, or population growth. Others, such as psychological benefits, are difficult to quantify. The cost of artificial feeding includes not only the cost of the formula, but also the costs of the equipment and fuel needed. Indeed, the few studies that have looked at the cost of infant feeding have taken this approach. Ball & Bennett (2001) estimate that the cost of purchasing formula may be almost twice the cost of the additional food intake required by breastfeeding women, amounting to a net cost of \$885 during the first year of infant life. Guttman & Zimmerman (2000) found that although their study sample consisted mainly of women with limited income, monetary cost of formula was not important to most formula feeders in their choice of method yet it mattered to those who breastfed. Messages that refer to economic advantages of breastfeeding or to the high cost of formula may, therefore, have little influence on this population, a large majority of whom rely on welfare benefits to cover formula cost.

The financial cost of human milk for feeding babies has been consistently over-estimated in the Western world because of an unrealistic and unnecessary emphasis on the absolute need for large amounts of expensive animal protein foods in the diet of the lactating woman (Jelliffe & Jelliffe 1971). Also, there is an under-appreciation of the importance to lactation of the physiological energy reserves laid down in pregnancy in the form of subcutaneous fat. Studies dating back to the 1970s suggest that the energy cost of lactation is about one half of what was previously believed (Thomson *et al* 1970). Many studies (Butte *et al* 1984, Brown *et al* 1986, Villalpando *et al* 1992, Prentice *et al* 1994, Dewey 1998, Lovelady *et al* 2000) have indicated that the quality of breast milk does not depend on the mother's nutritional status, at least not in terms of energy and macro-nutrients, thus the cost of the extra food required is likely to be minimal.

Only one estimate of the cost of formula feeding appears to have been made in the UK by the Joint Breast Feeding Initiative - £350 pa (Inch 1994), no details of the methodology employed were given. Most studies relate to developing countries and seem quite crude in approach since they do not add in all the indirect costs some of which may not be obvious, and rely heavily on assumptions, giving hypothetical cost savings. In a study carried out in Honolulu (Jarosz 1993), the cost of infant formula and the cost of food a mother would consume to produce milk was calculated for the first 62 days of an infant's life. They calculated that it cost at least an extra \$45 to \$70 to feed a newborn formula rather than to breastfeed them. These figures however did not take into account feeding accessories such as bottles, teats, sterilisers, breast pumps etc, and so the cost of both methods is likely to be much higher. An additional factor is that the need for economy may result in undesirable practices, for example leftover feeds may be stored (perhaps under poor conditions) and used at a later time, endangering infant health.

In summary, a search of the data concerning and surrounding infant feeding was performed using various search engines including medline and pubmed. The starting point was the evidence for breastfeeding and these benefits were well documented as recognised by the UK Government which recommends breastfeeding for six months and seeks to increase breastfeeding rates as laid out in the NHS Plan. However, these benefits are not enough to influence women to breastfeed and this led to trying to understand the reasons for this and any influencing factors. Factors such as personal, cultural and social issues seem to be more important when deciding to initiate and continue breastfeeding. It became evident that these should be placed in the context of the consumerist society in which we live; more successful promotion of breastfeeding would not only be of great benefit to the health of children and women but would also carry substantial financial benefits.

The current study was based on post-modern concepts of behaviour and the patterns of behaviour that result from a capitalist/consumerist society. Cost may be a major component in such a society – despite breastfeeding being frequently promoted as free, the literature revealed a lack of evidence for this and so estimating the cost of infant feeding formed the basis for the first two study objectives. Linked to this, no studies were found that investigated the commercial messages being portrayed to new mothers; this formed the basis for the third objective of analysing pregnancy and baby magazines. It was also decided to determine how these magazines portray breast and formula feeding, as only one study (Henderson *et al* 2000) appears to have investigated media portrayals of breastfeeding in the UK. This did not include magazines directed specifically at expectant and new mothers; these may form the basis on which these women make infant feeding decisions. Much is known about why women do or do not initiate breastfeeding, but only two published studies (Gregg 1989, Dewan *et al* 2002) were found to have looked at infant feeding attitudes and practices in Liverpool. These both focused on teenagers. This lack of information regarding 21st century infant feeding practices in Liverpool (the fifth most deprived city in England and Wales) informed the basis for the first and fourth study objectives. Liverpool has very low breastfeeding initiation and duration rates and the literature search revealed the importance of support for breastfeeding success. The recent provision of a drop-in advice clinic at LWH recognizes this, yet little is known about the use of such support clinics and this formed the basis for the final objective.

1.6 Aims and objectives

The aim of this study was to:

Investigate feeding practices in infants under the age of four months in Liverpool, with particular reference to the cost of infant feeding.

The objectives of this study were to:

1. Establish how infants under the age of four months in Liverpool are being fed by interviewing breast and formula feeding mothers to discover which brands they use and any expenses incurred up to the age of four months e.g. sterilisation equipment, feeding bottles, teats, breast pads etc.
2. Document the cost of all these items identified and calculate the absolute and relative costs of breast and formula feeding.
3. Determine how breastfeeding is portrayed in pregnancy/baby magazines and to what extent these magazines promote spending on infant feeding products.
4. Investigate the factors associated with mothers' feeding intentions and feeding practices adopted, including support and advice available.

2.0 Methods

There are various methods of collecting information about people, including unstructured interviews, semi-structured interviews, group discussions, interview administered questionnaires, self-reported questionnaires, self-recorded behaviour and observation behaviour. The decision concerning which method is used depends on the type of information being gathered and constraints such as time, cost and the sample population. Good study design is essential to provide data that can be interpreted and meet the objectives of the study (Kemm & Booth 1992).

In order to meet the aim and objectives of this study, four inter-related studies were carried out, each with a methodology appropriate to the type of data required:

1. Cost of breast and formula feeding
2. Pregnancy/baby magazine analysis
3. Infant feeding experiences and attitudes
4. Infant feeding support clinic

2.1 Cost of breast and formula feeding

The main aim of this study was to determine the cost of both breast and formula feeding by documenting the costs of different brands of infant formula and determining any other expenses incurred by mothers feeding their infants under four months of age e.g. sterilisation equipment, feeding bottles, teats, nursing bras, breast pads, breast pumps etc.

2.1.1 Infant feeding product database

The aim was to document the range of infant feeding products currently available, showing the total number of products on the market, together with the variety of costs within product ranges. This enabled a greater understanding of the types of product available; this information was then available during the costings interviews, in case the mothers were unsure about the cost of any items purchased.

Using Microsoft AccessTM, a database of infant feeding products was developed. Products were categorised as either for breastfeeding, formula feeding, formula, or sterilisation. Product information such as brand name, pack size and wattage (for electrical products), and prices were recorded from all the main suppliers of infant feeding products in Liverpool (these were ascertained from a pilot study carried out during summer 2000, details of this are given in section 2.1.2.3). The retailers included:

- Mothercare (Aintree retail park)
- Boots (city centre)
- Babies R Us (city centre)
- John Lewis (city centre)
- Major Supermarkets (Asda, Kwiksave, Sainsburys, Tesco)
- Pharmacy chains (Lloyds and Numark)

The products available and prices were recorded during January 2002, and re-checked in January 2003; no price increases were apparent over this period.

2.1.2 Costing Interviews

2.1.2.1 Sample recruitment

The sampling frame consisted of all women delivering singleton babies at Liverpool Women's Hospital (LWH) from February – April 2002. Due to time and travel constraints, only women who lived in Liverpool central and south PCT areas were invited to take part in the study. These women were identified (by their post codes) from a database of live births provided by LWH, and sent a letter inviting them to take part following the birth of their baby (usually when the baby was six – eight weeks old). They were asked to return a form in a pre-paid envelope stating whether they wanted to take part or not. If they wanted to take part, they were then contacted (usually by telephone) to arrange a suitable time for an interview to take place (in their own home) when their baby was between 12 and 16 weeks old. These age parameters were chosen as by 12 weeks the method of infant feeding would have been well established, but after 16 weeks many women may be returning to work and therefore not available. Sixteen weeks is also the minimum age at which weaning onto solids was recommended in the UK (DoH 1994), and so infant feeding patterns may be changing at an older age; this would affect the results. Women were excluded from the study if their baby was premature or had congenital abnormalities that may affect feeding. Five women (four of whom were formula feeders) who agreed to take part were uncontactable or frequently missed appointments. They were called at different times of the day and different days of the week to try and maximise contact and after three missed appointments attempts to contact them were stopped.

Due to the very low response rate (14%), the recruitment process was repeated for births from June – August 2002 where the response rate was even lower (9%). Low response rates for postal recruitment rather than face-to-face recruitment have frequently been reported (Goyder 1988). The low response rates in the present study may have been influenced by several factors. This population of new mothers may perceive that they do not have time to take part due to the demands of a new baby. Due to the large number of research studies that take part at LWH, it may be that they are subject to multiple requests to take part in research projects. Alternatively, due to the media coverage of organ retention at Alderhey Children's Hospital in Liverpool, they may be wary of taking part in any research, regardless of its nature. An alternative approach would have been to recruit mothers face-to face from the maternity wards before discharge. This was not deemed practical due to time constraints (length of time for ethical approval to be gained, followed by length of time to be screened by police and occupational health to gain access to the wards). Recruitment would further be delayed by waiting for the infant to reach four months of age before the interview could take place.

Problems associated with low response rates are that respondents and non-respondents may differ from each other in certain respects, and so results may not be truly representative of the sample population (Bryman & Cramer 1994). Buckell & Thompson (1995), who had a response rate of 36% to their postal survey of infant feeding decisions, found that breastfeeders were more responsive to their questionnaire than formula feeders. Shepherd *et al* (1998) found that non-responders were more likely to formula feed, be of lower socio-economic status and a smoker. The fifth quinquennial UK infant feeding survey (Hamlyn *et al* 2002) also found that response rate differed by social class with higher response rates from those in higher socio-economic groups. At least in the present study, respondents closely matched the profile of all women delivering at LWH in terms of age, ethnicity and parity. Socio-economic details were not available from LWH. However, the number of women who breastfed initially (68%) was much higher than all women delivering at LWH (45%); this suggests a higher number of breastfeeders responding than formula feeders, (and hence more women from higher socio-economic groups), thus any conclusions drawn from the results should take this into account.

2.1.2.2 Procedure

Permission for the study was granted from Liverpool John Moores University Ethics Committee, Liverpool Women's Hospital Research and Development Committee, and Liverpool Research Ethics Committee. Information letters about the study (appendix 6.1) were sent to all mothers at the time of recruitment and then a consent form (appendix 6.2) was signed at the time of the interview. All women were assured of confidentiality and were given code numbers to prevent their identification.

The study was cross-sectional; only one interview was conducted with each mother, and this was retrospective in nature. A prospective approach could have been taken with women followed from before birth up to four months postpartum to ascertain items purchased. This was ruled out due to it needing a greater time commitment and being more invasive and inappropriate for this population of women. It would also have meant recruiting women at either their 12 week booking-in or 20 week scan appointment. Upon the advice of a midwife, this was decided against as between this appointment and the due date, the mother could miscarry or suffer a stillbirth. Contacting women once they had given birth was deemed to be more appropriate, however, it did not guard against contacting those women whose babies died in the post-partum period. This risk could have been minimised by including birth weight and length of gestation on the live birth list supplied by LWH. Those women who gave birth to babies less than 2500g or 37 weeks gestation would have been immediately excluded prior to recruitment, rather than being excluded once the mother had replied and given this information.

2.1.2.3 Interview pro-forma

A semi-structured interview approach was undertaken, and a pro-forma used to ensure standardization of questions asked, thus reducing error in intra-interviewer variability (Bowling 2002). Only one person conducted all the interviews, thus removing interviewer bias. The interviewer was careful not to lead the women, allowing them to answer in their own words and time. This face-to-face method of obtaining data is good for establishing a rapport with the subject and allows gentle probing to obtain any additional information. An informal relaxed atmosphere was also created by the mother being in her own home (Czaja & Blair 1995, Green & Thorogood 2004), which meant that the mother could more easily tend to her baby if necessary (in contrast with giving a telephone interview). If the mother was unsure about any products she had purchased, she could easily show them to the interviewer rather than try to describe them (perhaps inaccurately). However, this method of collecting data was quite time intensive (each interview lasted between 30 and 45 minutes) and so interviews were scheduled with women who lived in close proximity to each other as far as was possible to minimise travelling time between women.

In order to determine all the costs involved in feeding a baby, an interview proforma was devised to ask mothers about items they had purchased or were given as gifts for feeding their baby. This was based on the results of a pilot study carried out during summer 2000 (Berridge *et al* 2002). This pilot study was exploratory in nature and involved interviewing five formula feeding mothers and five breastfeeding mothers to ascertain any items they had purchased for feeding their infant up to four months of age. For the present study, a separate proforma was devised for breastfeeding and formula feeding mothers (appendices 6.3 and 6.4). Both contained information about number and length of feeds, age of the baby, delivery mode, whether baby was receiving any solid food, whether mother was eating any differently since the birth, whether menstruation had resumed, cost of sanitary products per month and whether baby had been ill since birth. The breastfeeding proforma asked details about clothing, breast pads, breast creams, breast pump or anything else purchased, whilst the formula feeding proforma asked details about bottles, teats, formula, sterilisation or anything else purchased. Details included brand name of product, where purchased from and cost. Where women were partially breastfeeding (i.e. giving some formula as well as breast milk), both a breastfeeding and formula feeding proforma were completed. Everything purchased up to the date of the interview was recorded, including items purchased before the birth. Where the mother was using an item purchased for feeding a previous child, this was costed at current retail prices, as were any gifts. Using prices given by the mothers and the infant feeding product database, the total cost of feeding was calculated for each mother-infant pair. This was then divided by the age of the infant to give the average cost per week.

2.2 Pregnancy/baby magazine analysis

The aim of this study was to ascertain the extent of consumer messages, particularly regarding infant feeding products in pregnancy/baby magazines in the UK and to determine how these magazines portray breast and formula feeding.

Content analysis (Herzog 1996) was used, as it is an approach to the analysis of documents and texts that seeks to quantify content in terms of predetermined categories and in a systematic and replicable manner. The categories are determined by the research question i.e. the construct of interest, and are limited only by the imagination of the researcher. The application of rules is applied in a consistent manner so that bias is suppressed. Content analysis has the advantage of being very flexible and can be applied to a variety of different media. This approach is an unobtrusive method and does not require the recruitment or participation of subjects. It is able to give a general impression about media content, and can be the basis of theoretical work or policy and programme development. There must be mutually exclusive categories so that coders know how to code each item thus limiting confusion. Content analysis is a very transparent research method – the coding scheme and sampling procedures can be clearly set out so that replications and follow-up studies are feasible, therefore it is objective, and can allow a certain amount of longitudinal analysis with relative ease. By using content analysis, it can be difficult to ascertain answers to 'why?' questions and it may be argued that importance is placed on what is measurable rather than on what is theoretically significant or important (Bryman 2001).

2.2.1 Sample

The period of July to September 2003 was chosen opportunistically for analysis, and every issue of a total of seven different pregnancy/baby magazines were purchased for analysis (nineteen magazines in total). These included five monthly publications (Baby & You, Mother & Baby, Practical Parenting, Pregnancy & Birth and Prima Baby) and two bi-monthly publications (Junior Pregnancy & Baby and Pregnancy). The selection chosen included all the main UK magazines according to the Audit Bureau of Circulations (www.abc.org.uk), with the exception of store's own magazines, available at major retail outlets such as WH Smiths, Borders and most supermarkets, and covered both pregnancy and early motherhood. Parenting magazines aimed solely at mothers of toddlers were not included.

2.2.2 Procedure

Coding schemes should be discrete i.e. they consist of mutually exclusive categories. In order to fulfil the aim of this study, a coding frame was produced to include the following categories: articles mentioning breastfeeding, articles mentioning formula feeding, visual depictions of breastfeeding, visual depictions of formula feeding, advertisements for breastfeeding equipment, advertisements for formula feeding equipment and advertisements for infant formula companies. The space in each magazine allocated to these categories was measured (cm^2), and the frequency that each appeared was recorded. Each magazine was read at least six times to ensure that each of the above categories were included in their entirety. One person completed all the coding; this was not checked by anyone else.

The assumption was made that measuring the space in the magazines enabled fair comparisons in numerical terms to be made between different categories and different magazines. Whilst classified advertisements were not included in the analyses, the number of pages of classified advertisements were included in the number of pages of advertisements in total found in each magazine. After the quantitative coding, a qualitative approach was used, looking at the language used in the breast and formula feeding articles. Each article was coded according to whether it presented breast or formula feeding in a positive, negative or neutral way. This was in order to attempt to summarise the overall meaning of the text as quantification alone says nothing about its significance within the document (May 2001).

In addition, the brand profiles of each magazine were recorded to ascertain the market they were being targeted at. These profiles summarised the focus of each magazine and the brand image each magazine portrayed and were accessible from each publisher's website. Finally, the editor of each magazine was contacted by telephone and asked the following question "would you say that your magazine was pro-breastfeeding?" The responses to this question were noted down verbatim and compared to the content analysis for the magazine.

2.3 Infant feeding experiences and attitudes

The aim of this study was to establish how infants under the age of four months in Liverpool were being fed and to investigate the factors associated with mothers' feeding intentions and with the feeding practices adopted.

2.3.1 Sample recruitment

This was the same as for the costings interviews. All women who were interviewed also completed an infant feeding questionnaire following the interview.

2.3.2 Procedure

This was the same as for the costings interviews. The interviewer remained with the mother whilst she completed the questionnaire, and in some cases, the researcher went through the questionnaire with her and entered her responses, for example in cases of poor literacy, or if she had to feed her baby. This ensured that all questions were completed and no missing data generated. If the mother did not fully understand what the question was asking, then the researcher explained but maintained a neutral perspective. As with the interviews, confidentiality was assured, and in accordance with ethics guidelines the mother could not be identified by any of the answers she gave in the questionnaire.

2.3.3 Questionnaire

The descriptive social survey using questionnaires is widely recognised as a standard method of collecting information. Its purpose is to generate information in a systematic fashion by presenting all respondents with questions in a similar manner and record their responses in a methodical way (Hall & Hall 1996). It addresses the issue of reliability of information by reducing and eliminating differences in the way in which questions are asked and how they are presented. The use of questionnaires is less time consuming than interviews and focus groups for collecting large amounts of information from individual respondents. As Czaja & Blair (1995) explain "The survey questionnaire is the conduit through which information flows from the world of everyday behaviour and opinion into the world of research and analysis". With regard to breastfeeding, quantitative survey approaches may oversimplify what is generally accepted to be a very complex phenomenon (Maclean 1989), and the reasons behind the responses given in surveys are seldom well understood, and may, in fact, reflect socially acceptable rationalizations (Van Esterik & Greiner 1981). As the present study was exploratory in nature, a quantitative approach was considered to be the best method. In future, a qualitative approach could address the findings of this study by putting breastfeeding in the context of women's

everyday lives, rather than treating it as a discrete event; reducing it to a series of variables (Taylor & Bogdan 1998).

The cross-sectional nature of this study enabled the collection of a body of quantitative data which could then be examined to detect patterns of association between different variables (Bryman 2001). Unlike other methods, it facilitates statistical analysis, especially investigating associations between responses and differences between groups. However, surveys can only yield estimates of association, which may deviate from the true underlying relationships due to the effects of confounding variables (Bowling 2002). This can be allowed for by using multi-variate statistical techniques.

The questionnaire (appendix 6.5) was based on the 1995 Infant Feeding Survey (Foster et al 1997). The value of using questions from the infant feeding survey meant that they had been piloted and therefore should be reliable and valid, and it enabled comparisons to be made between those and the present study findings (Czaja & Blair 1995). Not all questions from the infant feeding survey were used as it included infants up to one year of age and was also very long (36 x A4 pages). Therefore, questions relating to solid foods, weaning practices and follow-on formulae were not included. Detailed questions about the mother's stay in hospital or her alcohol usage before, during or after pregnancy were not included either, as these were not thought relevant.

The study questionnaire comprised of 11 x A5 pages; this format was thought to be more reader friendly and attractive than traditional A4 size questionnaires. This clear presentation is said to increase the ease of answering questions and reduce respondent fatigue where questions are missed because they are laid out in a confusing manner (Bryman 2001). Sections of the questionnaire included:

- details of children (1 page)
- antenatal care (1.5 pages)
- methods of feeding/attitudes (3 pages)
- breastfeeding experiences (1.5 pages)
- formula feeding experiences (1.5 pages)
- demographic questions (2.5 pages)

There was also space for the women to write in any further comments relating to anything raised in the questionnaire. The order of questions followed a logical progression, with demographic questions at the end. Socio-economic status (SES) was classified by the occupation of the mother according to the Registrar General's classification of occupations

(OPCS 1991). Where the mother did not work the occupation of her partner (if applicable) was used.

Questions were both open- and closed-ended. Open-ended questions allow respondents to answer in their own terms. This can allow for unusual responses to be derived that the researcher may not have contemplated or where responses may be too numerous to pre-code. They can however be difficult to analyse and require greater effort from the respondent. Some respondents may not be able to express themselves and so information can be lost (Kumar 1999, Bowling 2001). Four open-ended questions were used (10% of the whole questionnaire). These related to why respondents thought they would feed their baby in a particular way, how they felt if they had seen someone breastfeed in public, why they chose to breastfeed, and why they had stopped breastfeeding. Responses to these questions were then coded for analysis.

The majority of questions (90%) were closed-ended which improved ease of completing the questionnaire and of analysis. However, there can be some loss of spontaneity in respondent's answers and the information obtained can lack depth and variety (Kumar 1999). Respondents may find it annoying if they cannot find a category that applies to them. For this reason, the inclusion of an 'other' category was included where applicable.

For the statements regarding women's attitudes towards breast and formula feeding (question 18), a five point Likert scale was used for each of the 14 statements. Respondents were asked to indicate their level of agreement/disagreement by selecting the appropriate number on the scale. Whilst the Likert scale does not measure attitude *per se*, it does help to place different respondents in relation to each other in terms of the intensity of their attitude towards an issue, in this case breastfeeders compared to formula feeders (Kumar 1999).

The questionnaire was worded to avoid ambiguous terms, long-winded questions, double-barrelled or leading questions, very general questions, questions that include negatives and technical terms (Czaja & Blair 1995, Bryman 2001). Simple written instructions were provided for answering the questions.

2.3.3.1 Questionnaire pre-test

A draft questionnaire was piloted on ten new mothers (five of whom were breastfeeding and five of whom were formula feeding). This was to assess face and content validity, i.e. that the questionnaire was a valid measure of the factors of interest, elicited acceptably accurate information and was easy to understand and complete in that respondents would have the information to answer it and be willing to answer it (Czaja & Blair 1995).

The women interpreted the questions as intended. Following the pre-test, a change in the wording of one question was made to improve clarity. Question 5 was previously worded 'how long was this pregnancy?' This was changed to 'what was the due date for this last child?' As this was only a minor change to the overall questionnaire, it was not considered necessary to re-test it.

Any comments the mother made in addition to her responses in the questionnaire were also noted down during the interview, after asking permission to do so (as these comments were given spontaneously, recording them was deemed inappropriate). Due to the exploratory nature of this research, these comments were analysed thematically (Green & Thorogood 2004) to identify prominent themes and categories (Glaser & Strauss 1967, Strauss & Corbin 1990, Taylor & Bogdan 1998).

2.4 Infant feeding support clinic

This study aimed to describe infant feeding difficulties and experiences reported by women who attended the infant feeding clinic at LWH.

LWH provides a drop-in clinic one morning a week to support women who are having problems/need advice with any aspect of infant feeding (breast, formula feeding and weaning). A telephone help line is also provided, and women can be seen by an infant feeding advisor during the week if necessary. These advisors (midwives at the hospital) have undergone the UNICEF UK Baby Friendly Initiative Breastfeeding Course (Lang & Dykes 1998) as well as lactation consultant courses and some have taken the International Board Certified Lactation Consultant examination. The drop-in clinic was held in the antenatal parentcraft room. This was a large room; women all sit together, and screens are provided for privacy should women require it.

2.4.1 Sample recruitment

The researcher attended the clinic weekly between May and September 2003 (21 weeks). All women attending the clinic for the first time were approached to complete the questionnaire after they had been seen by one of the infant feeding team at the clinic. Women were only asked to complete a questionnaire the first time they attended, this was to prevent duplication of results (women could return on consecutive weeks for follow-up).

2.4.2 Procedure

Permission for the study was granted from Liverpool John Moores University Ethics Committee, Liverpool Women's Hospital Research and Development Committee, and Liverpool Research Ethics Committee. An information sheet about the study (appendix 6.6) was given to the mothers to read in the clinic and informed consent was gained (appendix 6.7) at this time. All women were assured of confidentiality and were given code numbers to maintain their anonymity. They were also assured that they were free to refuse to take part and this would not affect the nature of care they would receive either now or in the future. The researcher stayed in the room whilst the women completed the questionnaire, this was to maximise the number of women asked to complete questionnaires (with it being a drop-in clinic, women were arriving throughout the morning). It is possible that this may have affected the responses given i.e. the women had just been seen and their infant feeding problems had been alleviated, so they may have been more likely to respond positively about the clinic.

Due to the informal nature of the clinic, some of the women also took this opportunity to talk to the researcher about their experiences with feeding, or just about life with a new

baby in general, and their comments were noted after asking permission to do so. Due to the exploratory nature of this research, any comments made were coded according to categories and themes (Glaser & Strauss 1967, Taylor & Bogdan 1998, Green & Thorogood 2004). Codes were assigned according to emerging themes, and as relatively few women gave comments (35 in total), this categorisation was completed manually rather than with computer software. Taylor & Bogdan (1998) state that what informants say to an interviewer will depend on how they view the interviewer and how they think the interviewer views them. This was not thought to be a problem in the present study as the comments made were opportunistic rather than interviewer led and so it was more likely that they were a true reflection of the women's thoughts and feelings.

2.4.3 Questionnaire

A short questionnaire (4 x A5 pages) was devised to identify reasons why women attended the clinic (appendix 6.8). Due to the lack of published studies that have investigated this area, a unique questionnaire was devised, using information gained from the infant feeding experiences and attitudes study, and also from consultation with a dietitian. Reasons for attendance pertained either to the baby, for example not latching on properly, not taking enough milk, advice about making up bottles, advice about what formula to use, advice about weaning or other, or to the mother, for example cracked/sore nipples, mastitis/breast abscess, not producing enough milk, advice about expressing milk, advice about own diet, or other. Women could tick as many responses as were appropriate. The questionnaire also asked about the number of visits to the clinic, whether the support was helpful, questions relating to the baby (i.e. when born, the due date, their birth weight), how the baby was being fed, and demographic questions relating to the mother. SES was classified by the occupation of the mother according to the Registrar General's classification of occupations (OPCS 1991). Where the mother did not work, the occupation of her partner (if applicable) was used. In addition, women were asked whilst completing the questionnaire how they had travelled to the clinic. The questionnaire was assessed for face and content validity by a State Registered Dietician and head infant feeding co-ordinator at LWH. This helped to determine whether the questions appeared to be relevant, reasonable, unambiguous and clear. It was then piloted at the clinic during one of the drop-in sessions by eight mothers. Following the pilot, no changes were judged necessary to the questionnaire.

2.5 Statistical Analyses

All data were analysed using the software package Statistical Package for Social Sciences (SPSS) v10. Frequencies and cross-tabulations were computed to describe the data and investigate any association between variables by using:

- Chi-square test. This test was used to analyse nominal (frequency) data, where subjects were assigned to categories. Only results from the Chi square tests which gave contingency tables with expected frequencies greater than one and had no more than 20% of cells with a frequency less than five were used.
- Independent Student's t-test. This was used to analyse ordinal data where means were generated.
- One-way ANOVA

In all tests, where $p>0.05$, the result was said to be not significant, where $p<0.01$, the result was said to be highly significant, and where $p<0.05$, significant.

3.0 Results

3.1 Costings

3.1.1 Introduction

A difference in cost between feeding methods might affect a family's selection of feeding method but very little research has been carried out on the economic implications of breastfeeding. Those studies that have looked at economics tend to concentrate on savings to the health care system of not treating illnesses more common in formula fed babies. Only one estimate of the cost of formula feeding appears to have been made in the UK by the Joint Breast Feeding Initiative- £350 pa (Inch 1994), although no details of the methodology used were given. There is a lack of accurate information available to health workers and parents regarding the cost of infant feeding, or to substantiate the frequently made claim that breastfeeding is free. The aim of this study therefore was to investigate these costs.

3.1.2 Method

Women were recruited from LWH and invited to take part by letter once their baby was born. If they returned the form in the pre-paid envelope stating they wanted to take part, they were then contacted by telephone to arrange a suitable time for an interview to take place (in their own home) when their baby was between 12 and 16 weeks old.

In order to determine all the costs involved in feeding a baby, an interview proforma was devised to ask mothers about items they had purchased or were given as gifts for feeding their baby (appendices 6.3 and 6.4). Product information and prices were noted from retail outlets, including Boots, Mothercare, John Lewis, Babies "R" Us, local pharmacy chains and all the major supermarkets. A database was compiled of all these items. Everything purchased up to the date of the interview was recorded, including items purchased before the birth. Items given as gifts were also costed as were items that been purchased for feeding a previous baby and were being used to feed the present baby. The average cost per week was calculated by dividing the total cost by the age of the infant.

For the purpose of this study, exclusively breastfed (EBF) was defined as never having been given any formula, partially breastfed (PBF) as being given some breastfeeds and some formula feeds, and formula fed (FF) as never having been breastfed.

SES was classified by the occupation of the mother according to the Registrar General's classification of occupations (OPCS 1991). Where the mother did not work the occupation of her partner (if applicable) was used.

3.1.3 Results

Product database

The database lists 450 products, which were manufactured by 22 different companies and sold through 16 different retailers. The range of products is large and by no means exhaustive, tables 3.1.1 - 3.1.4 indicate the range of product types.

Table 3.1.1. Breastfeeding equipment.

Product	Type	Pack size	Available at
Bras		1,2	C, JL, M, M&S
Nightwear		1,2	C, EA, M
Breastpads	Washable	6	B, JL, M, TrU
	Disposable	12,24,30,40,50,100	A, B, Ch, JL, M, SD, T, TrU
Soothing gel pads		2	B, M
Breast pump	Electric		B
	Battery		TrU
	Manual		A, B, C, JL, M, S, T, TrU
Br pump bottles/storage		4	B, JL, M, T
Breast milk freezer bags		40	B
Breast shells/nipple shields		2	B, JL, T
Breast/nipple creams		50g,50ml,150ml	B, M
Support pillow			M
Muslin cloths		1,3,6,12	EA, JL, M, TrU

Key:	A – Asda	M – Mothercare
	B – Boots	M&S – Marks and Spencer
	C – Catalogue	S – Sainsburys
	Ch – Chemist	SD - Superdrug
	EA – Ethel Austen	T – Tesco
	JL – John Lewis	TrU – Toys R Us
	K – Kwiksave	

A wide variety of breastfeeding products were available at many different retailers as shown by table 3.1.1. Breast pads and manual breast pumps were the two items available at the most number of retailers. Breast pads were available in many different pack sizes; the cheapest were Toys R Us own brand packs of 50, at £0.03p per pad. The most expensive were Avent packs of 30 purchased at Toys R Us at £0.13p per pad and Boots own brand packs of 12, also at £0.13p per pad, making these 433% more expensive than the cheapest pads.

Table 3.1.2. Bottle feeding equipment.

Product	Type	Sizes	Pack size	Available at
Bottles	Anti colic	1	1	B, M
	Patterned	3	1,2,3	A, B, EA, K, T
	Angled	1	1	A, M
	Wide neck	4	1,2,3,4,6	A, B, EA, JL, M, S, SD, T, TrU
	Narrow neck	3	1,3,6	A, B, M, TrU
	Heat sensor	2	1,2	B, M
	Disposable	2	1,2,4,6	B, M, T
Teats	Silicone	4	2,3	A, B, M, S, T
	Latex	4	3,6	A, B, M
	Orthodontic	1	3,6	M
Bottle bags	Disposable		40	B, JL, S, T
Bottle carrier	Insulated		1,2	A, B, EA, M, S, T, TrU
Bottle warmer	Electric			A, B, C, JL, M, S, SD, T, TrU
Powder dispenser				B, JL, M
Bottle discs & caps			4,6	JL, M, TrU

Key: as before

Table 3.1.2 shows that there were a large number of different bottles available in four different sizes: 125ml, 175ml, 250ml and 260ml. There were also four different teat sizes: slow flow, medium flow, fast flow and variflow; these flow rates refer to how fast the milk is transferred through the teat and how hard the baby needs to suck. Teats were usually bottle-specific i.e. Avent teats would only fit Avent bottles and vice versa. The cheapest bottles were unbranded and available at Kwiksave for only £0.99 each. The most expensive were Avent from Boots at a cost of £3.50 each, making them 354% more expensive than the Kwiksave bottles.

Table 3.1.3. Sterilisation equipment.

Product	Type	Pack size	Available at
Steriliser	Cold water		C, M
	Microwave		B, C, JL, M, T, TrU
	Electric steam		A, B, C, JL, M, T, TrU,
Teat/bottle brush		1,3	A, B, EA, K, M, S, SD, T, TrU
Sterilising fluid		0.5l, 1l, 1.2l, 1.25l	A, B, K, S, T
Sterilising tablets		28, 56,64	A, B, M, S, T

Key: as before

Microwave and steam sterilisers were more readily available than the traditional method of cold water sterilisation, however, sterilising tablets and fluid (used with cold water sterilisers) were widely available.

Formula

There are five companies manufacturing infant formula in the UK. These are shown in table 3.1.4, which also details the types of products available and cost. There are four main types of formulae available: whey dominant (i.e. Cow & Gate Premium, SMA Gold) and casein dominant (i.e. Cow & Gate Plus, SMA White) which are classified according to the dominant protein type, specialist formulae (i.e. Cow & Gate Omneocomfort) for babies with special feeding needs or diagnosed medical conditions and follow-on formulae. Follow-on formulae are not included here as all babies in this study were under six months of age (the minimum age at which follow-on formulae are recommended).

Table 3.1.4. Formulae available in the UK.

Company	Product	RTF 200ml	RTF 500ml	Sachets	Powdered 450g	Powdered 900g
Cow & Gate	Plus 1	£0.49 (6)	£0.99 (4)		£3.59 (3)	£5.57 - £6.17 (7)
	Premium 1	£0.49 (7)	£0.99 (5)		£3.59 (4)	£5.57 - £6.17 (8)
	Omneocomfort 1					£7.49 (3)
	Omneocomfort 2					£7.49 (2)
	Infasoy					£8.29 (3)
Farleys				8x20floz		
	First		£0.99 (3)	£3.99 (5)		£5.89 (6)
	Second		£0.99 (3)	£3.99 (4)		£5.89 (5)
	Ostersoy					£8.00 (1)
Hipp				1x7oz		
	Organic			£0.39 (1)	£3.49 (1)	£5.99 (3)
Milupa	Aptamil First	£0.59 (4)				£7.29 - £7.49 (7)
	Aptamil Extra	£0.59 (4)				£7.29 - £7.49 (6)
	Milumil					£5.99 - £6.69 (5)
SMA		250ml	1000ml	18x4oz		
	White Cup	£0.59 - £0.69 (5)	£1.99 - £2.25 (6)	£3.95 (1)	£3.49 (1)	£5.89 - £6.89 (8)
	Gold Cup	£0.59 - £0.69 (6)	£1.99 - £2.25 (6)	£2.25 - £2.49 (2)	£3.59 (1)	£6.09 - £6.89 (8)
	Wysoy					860g £8.99 (3)

(Figures in brackets indicate the different number of retail outlets the product was available at)

RTF: Ready to Feed

Cow & Gate and SMA have the most comprehensive range of formulae in different pack sizes, Cow & Gate with 11 products and SMA with 10. These were also the two brands available at the most number of outlets. The cost of formula did not vary much between outlets; this is because the Infant Formula and Follow-on Regulations (1995) state that formula cannot be distributed free of charge or as a free sample, or sold at a discounted price or through the use of coupons. In addition, advertising and promotional activity of baby milk are tightly controlled in the UK, advertising of infant milk directly to parents is

prohibited; it can only be advertised through the scientific and trade press, as distributed through the healthcare system.

Interviews

A total of 149 women were interviewed, table 3.1.5 shows their demographic characteristics.

Table 3.1.5. Demographic characteristics of respondents.

	Total n %	EBF n % of EBF	PBF n % of PBF	FF n % of FF
Age				
Under 30	45 30	5 14	19 30	21 44
30 and over	104 70	32 86	45 70	27 56
Education				
None	12 8	2 5	3 4	7 15
School	57 38	5 13	26 41	26 54
Vocational	24 16	8 22	9 14	7 15
Degree or above	56 38	22 60	26 41	8 16
SE status				
High (SE I & II)	75 50	30 81	30 47	15 31
Middle (SE III & IV)	37 25	6 16	13 20	18 38
Low (SE V & not working)	37 25	1 3	21 33	15 31
Ethnicity				
White	141 95	36 97	58 91	47 98
Black	5 3	1 3	3 5	1 2
Asian	2 1	0 0	2 3	0 0
Other	1 1	0 0	1 1	0 0
Marital status				
Single/separated	22 15	0 0	14 22	8 17
Married/living together	127 85	37 100	50 78	40 83
Number of children				
1 child	73 49	22 60	34 53	17 35
More than 1 child	76 51	15 40	30 47	31 65
PCT				
Central	81 54	16 43	35 55	30 63
South	68 46	21 57	29 45	18 37

Key: EBF - Exclusive breastfeeders

SE status – socio-economic status

PBF - Partial breastfeeders

PCT – primary care trust

FF - Formula feeders

The mean age of mothers responding (31 yrs) was similar to all mothers delivering at LWH (29 yrs), as well as their ethnicity – 95% of respondents were white European compared with 90% of all mothers delivering at the LWH being white European. Exclusive breastfeeding women were significantly more likely to be a non-smoker ($\chi^2 = 18.4$, $p=0.00$, df 2), educated to degree level ($\chi^2 = 23.6$, $p=0.00$, df 4), married or living with partner ($\chi^2 = 9.1$, $p=0.010$, df 2), to have been breastfed as a baby ($\chi^2 = 16.3$, $p=0.012$, df 6), belong to a higher social class ($\chi^2 = 25.0$, $p=0.00$, df 4), older ($\chi^2 = 9.1$, $p=0.011$, df 2), and to have one child ($\chi^2 = 6.5$, $p=0.038$, df 2).

Exclusive breastfeeders

A summary of the amount of money spent by exclusive breastfeeding women (n=37) is given in table 3.1.6. 'Savings from before' were items that were purchased for feeding a previous child and were being used for feeding the current child. These items were costed at current retail prices. 'Savings from gifts' was the amount of money saved from items purchased by family or friends. The 'amount spent' was the figure that the parent(s) spent on items for feeding their baby. The addition of these three categories gives the 'total amount'; this was divided by the age of the baby to give the 'amount per week'.

Table 3.1.6. Costs for exclusive breastfeeding mothers.

	Number of women	Mean age of baby (wks)	Mean savings from before	Mean savings from gifts	Mean amount spent	Mean total amount	Mean amount per week
1 child	22	12.9	£0.00	£18.09	£144.72	£162.82	£12.89
> 1 child	15	12.6	£29.55	£11.50	£78.64	£119.68	£9.66
Total (Mean)	37	12.8	£11.98	£15.42	£117.93	£145.33	£11.58

(Amount per week: range £3.13 - £23.15 SD: 4.49)

The mean total amount spent per week was £11.58, with primiparous women spending 25% more than multiparous women. With the exception of two women, all the exclusive breastfeeding women purchased a minimum of one nursing bra (maximum of eight), with an average of 3.3 bras purchased. The cost of these varied from £14 to £26 each (depending on the retail outlet), with an average total cost of nursing bras of £46.17 per mother. The majority of mothers used breast pads; only one woman did not use them. The number of breast pads used varied from two to 16 per day. One woman had spent £60.48 on breast pads during the first 12 weeks of her baby's life, while the average amount spent on these items was £24.03. One woman got a breast pad stuck in her washing machine and had to call the engineer out at an additional cost of £60.00 (this was not included in the figures). Other items purchased by the breastfeeding mothers included breast pumps (only three of the women did not have a pump), breast milk freezer bags, muslin cloths (for winding the baby), nipple shields, breast shells, breast and nipple creams/sprays, breast milk storage bottles, sterilisers, and support pillows. All the mothers purchased branded items with Avent, Mothercare and Boots being the most popular brands. Many items were purchased before the baby was born, particularly by primiparous women and then were not needed or not used – 12 (32%) exclusive breastfeeding mothers spent money in this way (three quarters of whom were primiparous, although this was not significant, p=0.536). Items purchased but not used included breast and nipple creams and sprays, breast shells and shields, and breast pumps. The average total

amount of money spent needlessly on products not used by the 12 mothers was £10.42 per mother (£0.90 per week).

Partial Breastfeeders

Table 3.1.7 shows the amount of money spent by partial breastfeeding women (n=64). This group included women who had exclusively breastfed when their baby was born, but at the time of the interview had stopped and were giving only formula milk (n = 43), and also women who were giving both breast and formula milk (n = 21) at the time of the interview. The costs were calculated as for the exclusive breastfeeding women.

Table 3.1.7. Costs for partial breastfeeding mothers.

	Number of women	Mean age of baby (wks)	Mean savings from before	Mean savings from gifts	Mean amount spent	Mean amount total	Mean amount per week
1 child	34	13.3	£0.00	£18.44	£164.11	£182.64	£14.01
> 1 child	30	13.8	£38.41	£18.43	£130.13	£187.44	£13.73
Still brf	21	13.4	£21.33	£27.87	£115.21	£164.41	£12.33
No longer brf	43	13.6	£16.38	£13.84	£164.29	£194.89	£14.63
Total (Mean)	64	13.5	£18.00	£18.44	£148.18	£184.89	£13.87

(Amount per week: range £4.01 - £27.24 SD: 4.71)

The mean total amount spent per week was £13.87. Primiparous women spent 2% more than multiparous women, and those who were no longer breastfeeding spent 19% more than those who were still breastfeeding. Partial breastfeeding mothers purchased fewer nursing bras than the exclusive breastfeeders (mean 2.5 compared to 3.3); only 32.8% of partial breastfeeding women were still breastfeeding, and 27% had ceased breastfeeding within the first week. Of all partial breastfeeders, 17% did not purchase any nursing bras, perhaps because they anticipated not breastfeeding for very long. All the women apart from one purchased branded goods. The most frequently mentioned brand was Avent, with 75% of mothers purchasing Avent feeding bottles and 58% purchased an Avent steriliser. Age and socio-economic status were both significant with regards whether women purchased Avent or not. Those aged over 30 were more likely to purchase Avent ($\chi^2=3.93$, $p=0.047$, df 1), and those of higher socio-economic group ($\chi^2=9.61$, $p=0.008$, df 2). Other popular brands were Maws, Mothercare, and Boots own brands. Money was spent on items that were not used by 45 (70%) of all partial breastfeeding mothers of whom 53% were primiparous (although this was not significant, $p=0.959$). The average amount spent needlessly on products not used was £17.59 in total per mother (£1.31 per week), mostly on breast pumps (31% of mothers), breast and nipple creams and sprays (31%) and bottle warmers (22%).

Formula Feeders

A summary of the amount of money spent by formula feeding women (n=48) is shown in table 3.1.8. The costs were calculated as for the exclusive and partial breastfeeding women.

Table 3.1.8. Costs for formula feeding mothers.

	Number of women	Mean age of baby (wks)	Mean savings from before	Mean savings from gifts	Mean amount spent	Mean total amount	Mean amount per week
One child	16	14.0	£0.00	£15.93	£104.74	£120.66	£8.71
> 1 child	32	13.3	£15.40	£7.25	£110.28	£132.93	£10.04
Free milk	17	13.4	£3.53	£5.76	£60.87	£70.15	£5.27
Pay for milk	31	13.6	£13.96	£12.54	£134.52	£161.02	£11.97
Total (Mean)	48	13.5	£10.27	£10.14	£108.43	£128.84	£9.60

(Amount per week: range £2.43 - £17.66 SD: 4.16)

The total mean amount spent per week was £9.60. Multiparous women spent 15% more than primiparous women, and those who paid for their milk spent 127% more than those who received free milk. Items purchased by formula feeding women included bottles, teats, formula, sterilisers, bottle brushes, bottle carriers, bottle warmers, and travel flasks. As with the partially breastfeeding women, the majority of formula feeding women purchased branded goods; 67% purchased Avent feeding bottles and 50% purchased Avent sterilisers. Those of higher socio-economic status were significantly more likely to purchase Avent goods ($\chi^2=6.21$, $p=0.045$, df 2). Steam or microwave sterilisation was the most frequent choice with 90% of women choosing this method. The remaining 10% of women used cold-water sterilisation systems. An average of 10 feeding bottles were purchased by formula feeding mothers (range 4-22), at an average cost of £20.12 per mother. Of all formula feeders, 13 (27%) spent money on items that were either ineffective (for example plug in bottle warmers which took too long to warm the bottle) or were not used (extra bottles and teats). The average amount spent needlessly on products not used was £15.19 per mother during the first four months of the baby's life (£1.15 per week). This did not differ significantly with regards number of children, or socio-economic group.

Table 3.1.9 shows which formulae the mothers purchased. The most frequently used brands were Cow & Gate (purchased by 48% of formula feeding and 28% of partial breastfeeding mothers) and SMA (purchased by 40% of formula feeding and 61% of partial breastfeeding mothers). Whey based formulae were purchased by 35% of formula feeding and 63% of partial breastfeeding mothers whilst casein based formulae were

purchased by 65% of formula feeding and 39% of partial breastfeeding mothers (casein based formulae are marketed as being suitable for 'hungrier babies' as the casein is less easily digested compared to whey and stays in the baby's digestive system for longer, thus supposedly giving a feeling of 'fullness').

Table 3.1.9. Type of formula purchased.

Formulae	Type	Purchased by	
		%FF	%PBF
Cow & Gate Premium	Whey	17	16
Cow & Gate Plus	Casein	31	11
Cow & Gate Omneocomfort	Specialised	0	2
SMA Gold	Whey	17	30
SMA White	Casein	23	23
Farleys 1	Whey	0	2
Farleys 2	Casein	6	5
Milupa Aptamil	Whey	2	13
Milupa Milumil	Casein	4	0
Hipp Organic	Whey	0	3

A comparison of the infant feeding costs between exclusive breastfeeding, partial breastfeeding and formula feeding is given in table 3.1.10. Partial breastfeeding was the most expensive way to feed an infant. Exclusive breastfeeding was 21% more expensive than formula feeding.

Table 3.1.10. Comparison of infant feeding costs.

		Mean Age of Baby	Average Total Amount	Average Weekly Amount
Exclusive breastfeeders	n = 37	12.8 wks	£145.33	£11.58
Partial breastfeeders	n = 64	13.5 wks	£184.89	£13.87
Formula feeders	n = 48	13.5 wks	£128.84	£9.60

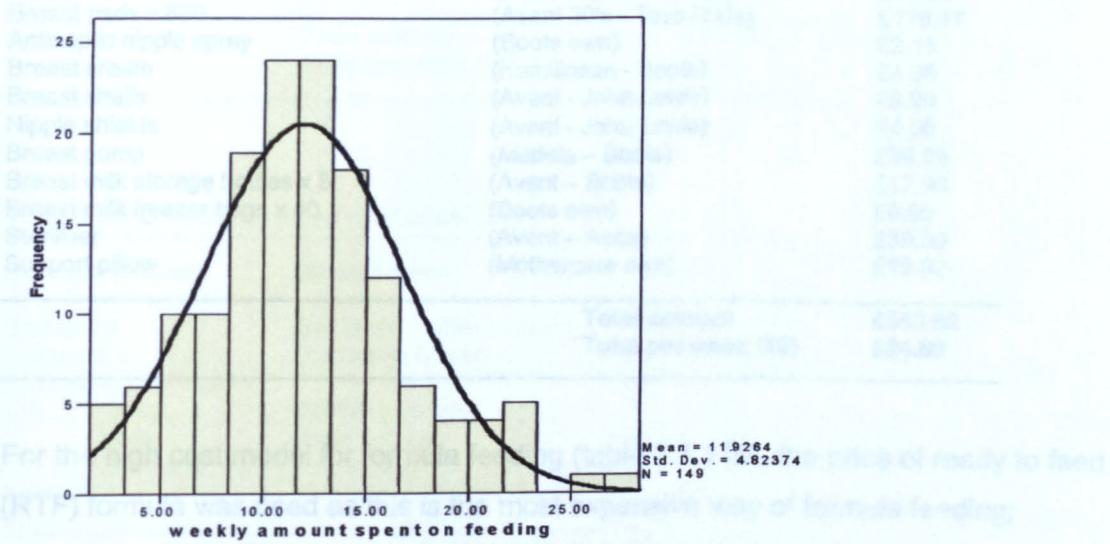
Predictors of high, medium, or low spending

The women were coded as either high, medium, or low spenders to discover which maternal characteristics were associated with higher spending.

The women were divided into tertiles according to the weekly amount spent. 50 (33.6%) were classed as low spenders (£0.00 - £9.88), 49 (32.9%) as medium spenders (£9.89 - £13.42), and 50 (£13.43 - £27.24) as high spenders (figure 3.1.1).

Figure 3.1.1.

Frequency plot of weekly amount spent.



Characteristics significantly associated with higher spending were:

- Feeding method – mothers that had or were partially breastfeeding ($\chi^2 = 19.11$, $p=0.001$, df 4)
- Education – those educated to degree level ($\chi^2 = 14.11$, $p=0.028$, df 6)
- Social class – those in SE I and II ($\chi^2 = 16.54$, $p=0.002$, df 4)
- Age – those 30 years and over ($\chi^2 = 11.38$, $p=0.003$, df 2)

For the low cost model (tables 3.1.12a and 3.1.12b), the minimum number of items purchased by subjects was used and costing (using the cheapest brands at the cheapest outlets). The price of formula was included in the formula feeding models. For the low cost breastfeeding model, the price of a breast pump was included as 92% of exclusive breastfeeding mothers had a breast pump, and the price of sterilisation was included as

'High' and 'Low' cost models

High and low cost models for breast and formula feeding were then constructed. For the high cost model (tables 3.1.11a and 3.1.11b), the maximum number of items purchased by subjects was used and costed (using the most expensive brands at the most expensive outlets).

Table 3.1.11a. High cost model – breastfeeding.

Item and number	Retail Source	Cost
Nursing bras x 8	(John Lewis own)	£208.00
Nightshirts x 4	(Blooming Marvellous)	£79.96
Breast pads x 896	(Avent 30's - Toys R Us)	£119.17
Antiseptic nipple spray	(Boots own)	£2.15
Breast cream	(Kamillosan - Boots)	£4.95
Breast shells	(Avent - John Lewis)	£9.99
Nipple shields	(Avent - John Lewis)	£4.50
Breast pump	(Medela - Boots)	£39.95
Breast milk storage bottles x 8	(Avent - Boots)	£17.98
Breast milk freezer bags x 40	(Boots own)	£6.99
Steriliser	(Avent - Asda)	£39.99
Support pillow	(Mothercare own)	£19.99
Total amount		£553.62
Total per week (16)		£34.60

For the high cost model for formula feeding (table 3.1.11b), the price of ready to feed (RTF) formula was used as this is the most expensive way of formula feeding; approximately 3.5 times more expensive than powdered formula; one of the formula feeding mothers fed her infant this way.

Table 3.1.11b. High cost model - formula feeding.

Item and number	Retail Source	Cost
Bottles x 20	(Avent - Boots)	£63.00
Teats x 20	(Avent - Boots)	£22.90
Steam steriliser	(Avent - Asda)	£39.99
Formula	(C+G Premium RTF)	£329.28
Bottle warmer	(Lindam Night & Day system – Mothercare)	£29.99
Bottle carrier	(Avent - Boots)	£9.99
Powder dispenser	(Avent - Boots)	£3.99
Bottle/teat brushes	(Boots own)	£3.75
Total amount		£502.89
Total per week (16)		£31.43

For the low cost model (tables 3.1.12a and 3.1.12b), the minimum number of items purchased by subjects was used and costed (using the cheapest brands at the cheapest outlets). The price of formula was included in the formula feeding models. For the low cost breastfeeding model, the price of a breast pump was included as 92% of exclusive breastfeeding mothers had a breast pump, and the price of sterilisation was included as

78% of these women had a steriliser. Arguably, neither is essential. Without either of these items, the low cost model for breastfeeding would be £17.08 or £1.07 per week.

Table 3.1.12a. Low cost model – breastfeeding.

Item and number	Retail Source	Cost
Bras x 1	(No brand – Dept. store)	£7.00
Breast pads x 224	(Asda own brand 30s)	£10.08
Breast pump	(Boots own brand)	£15.99
Cold water sterilisation:		
Tongs	(Mothercare own)	£0.99
Bowl	(Pound shop)	£1.00
Steri tabs	(Asda own)	£3.32
	Total amount	£38.38
	Total per week (16)	£2.40

Table 3.1.12b. Low cost model - formula feeding.

Item and number	Retail Source	Cost
Bottles x 6	(No brand - Ethel Austens)	£4.50
Teats x 6	(Asda own brand)	£1.88
Cold water sterilisation:		
Tongs	(Mothercare own)	£0.99
Bowl	(Pound shop)	£1.00
Steri tabs	(Asda own)	£3.32
Formula	(C+G Premium Powdered)	£89.12
	Total amount	£100.81
	Total per week (16)	£6.30

As table 3.1.13 shows there was little difference between the cost of breast and formula feeding estimated by the high cost model, with breastfeeding estimated at 10% more than formula feeding (just under half the difference of 21% between the two feeding methods calculated from the costings interviews). There was a greater difference between the cost of breast and formula feeding when using the low cost model, with formula feeding 163% more expensive than breastfeeding. This difference would be reduced if the mother received milk tokens; the formula feeding cost would only be 73p per week rather than £6.30, making breastfeeding 229% more expensive than formula feeding.

Table 3.1.13. Summary of high and low cost models.

	High Cost (per wk)	Low Cost (per wk)
Breastfeeding	£34.60	£2.40
Formula feeding	£31.43	£6.30

Additional costs/savings

1. Electricity

The cost of electricity for preparing, warming and sterilising bottles and breast pumps was calculated for each subject using the following equation:

$$\text{Power of appliance (kW)} \times \text{time (h)} \times \text{cost per kWh (p)} = \text{cost of electricity used.}$$

The cost per kilowatt hour was taken as 6p (as per British Gas and Scottish Power tariffs).

Table 3.1.14. Electricity costs.

Feeding group	Mean cost per day	Mean cost per week
EBF	£0.004	£0.03
PBF all	£0.034	£0.24
PBF still brf	£0.019	£0.13
PBF no longer brf	£0.042	£0.29
FF	£0.035	£0.25

Exclusive breastfeeders used less electricity than formula feeders who were using electricity to boil a kettle to prepare feeds, warm feeds and then sterilise bottles afterwards (table 3.1.14). Exclusive breastfeeding mothers used electricity to sterilise their breast pump if they were expressing milk and warm feeds if they were using stored expressed breast milk. Using one-way analysis of variance, the electricity costs were found to be significantly different between those who were still breastfeeding compared to those who were no longer breastfeeding ($p=0.000$) and those who had never breastfed ($p=0.000$).

The electricity costs whilst applicable at the time of interview will have differed during the course of the baby's life. For example, some exclusive breastfeeding women reported beginning to express milk only in preparation for going back to work, and the number of feeds a baby received would vary with age, thus the number of feeds being prepared and number of bottles being sterilised would vary. Therefore the weekly electricity costs could not be extrapolated with the baby's age and so were not included in the main costings. They do give an indicator that formula feeding women would be faced with the additional cost of approximately 25p per week.

2. Menstruation

Breastfeeding can delay the resumption of menses and so all subjects were asked whether they had resumed menstruation and how much they would typically spend each month on sanitary protection. Formula feeding women were significantly more likely ($\chi^2=61.5$, $p=0.000$, df 2) to have started menstruating than exclusively breastfeeding women with 92% of formula feeding and only 8% of exclusive breastfeeding mothers having resumed menses. Of partial breastfeeding mothers (64% had resumed menses), 93% were no longer breastfeeding. The majority of women were unsure how much they spent each month on sanitary protection as they purchased it at the supermarket along with their weekly shop. Therefore, this was not included in the main costings, although an arbitrary figure of £5 per month may be suggested as an additional saving for those women who were predominantly breastfeeding.

3. Time

Subjects were asked how many feeds per day they were giving and on average, how long these feeds lasted (table 3.1.15).

Table 3.1.15. Number and length of feeds per day.

Feeding group	Mean no of feeds per day (range)	Mean length of feeds in mins (range)
EBF	7 (5-10)	20 (10-40)
PBF all	6.2 (4-10)	21 (5-60)
PBF still brf	7 (5-10)	20 (10-51)
PBF no longer brf	5.8 (4-10)	21 (5-60)
FF	5.7 (4-10)	19 (5-35)

One-way analysis of variance revealed that there were no significant differences ($p>0.05$) between the mean length of feeding time of each group. The time spent feeding varied with the age of the baby and also the mother's perception of how long a feed took. A breastfed baby for example may feed from one breast, have a rest and then feed from the other breast, some of the time of which may be comfort feeding (particularly in the evening) rather than nutritive feeding. Similarly, formula fed babies may take half a bottle, have a rest and then finish the rest. Thus it was difficult to time exactly how long the feed lasted. From these results, there would not appear to be a different time cost between the different feeding methods.

3.1.4 Discussion

The sample size for this study was relatively small and may not be representative of infant feeding practices in Liverpool overall. However, women from a wide variety of backgrounds took part (although not from ethnic minority groups) and a wide range of practices were observed. Thus a variety of issues were highlighted. Breastfeeding is frequently promoted as being free, but the most striking feature of this study is that it was more expensive to breastfeed than to formula feed. This is of particular importance to women on low incomes (who may be entitled to free formula) who may try breastfeeding because they have been told it is free, only to discover this is not the case. This further supports media portrayals that breastfeeding is a lifestyle choice primarily for the middle classes, as reported by Henderson *et al* (2000).

It was surprising to discover the full extent of goods marketed not only to formula feeding women, but also to breastfeeding women. This may not be remarkable considering that 621,000 babies were born in the UK in 2003 (Office of National Statistics (ONS) 2004). If all these babies were breastfed according to the high cost model, their parents would spend £21.5 million per week compared with £1.5 million for the low cost model, and if they were all formula fed, £19.5 million per week for the high cost model compared with £4 million per week for the low cost model. Therefore the potential for companies to profit is huge. According to Mintel (2002a), the baby milk market was valued at an estimated £175.8 million in 2002, and the infant feeding and hygiene market at £50 million (Mintel 2002b). The range marketed to breastfeeding women alone included: nursing bras, sleep bras, nursing night-shirts, inflatable support pillows, breast pads (disposable and washable), breast shells, nipple shields, nipple and breast creams and sprays, breast pumps (manual, battery or electrically operated), breast pump bottles, breast milk freezer bags, breast milk storage kits, back-to-work breastfeeding kits and soothing breast gel packs. Some of these items may actually be detrimental to successful breastfeeding, for example, nipple shields inhibit the baby's sense of smell which reduces direct sensory tactile stimulation of the breast, milk production and removal (Woolridge *et al* 1980, Lang 1997). Breast shells are sometimes worn by women to collect drip milk and prevent leakage onto clothing. However, drip milk is predominantly foremilk, not the higher calorific hind milk (Wilson & Allen 1999). Wearing shells for prolonged periods, may enable multiplication of micro-organisms, and Lang (1997) warns that they create pressure on the lactiferous sinuses predisposing them to blockage and mastitis. Items such as breast pumps can be hired from hospital maternity units or alternatively, women can be taught to hand-express, thus negating the need to spend money on a breast pump and associated accessories.

Information on some products was misleading, for example on a pack of nursing bras manufactured by a company called Emma-Jane was a quote from the Royal College of Midwives stating that "breastfeeding is free" – whilst ignoring the £18 to purchase that bra. It is debatable whether all the items purchased for breastfeeding were truly essential, and it is suggested that breastfeeding has become unnecessarily commercialised. This may reflect the society we live in where breasts are used to sell a variety of products (Plous & Neptune 1997), and the market for bras is worth £725 million (Mintel 2003) with maternity and nursing bras accounting for 6% of this market. Of the maternity clothing market, nursing and maternity bras account for £31 million of sales (Mintel 2001).

Many of the mothers (especially primiparous mothers) purchased items before they had the baby 'just in case' they needed them, which in many cases they did not, or if they did, used only once or twice. The only significant variable relating to this was the feeding method with partially breastfeeding women ($p=0.000$) or those who breastfed for less than three months ($p=0.006$) spending money on such items. Typical of these items were: breast creams, plug in bottle warmers and more bottles and teats than needed. The amount of money 'wasted' on these items may be due to ignorance of what is required and so increased information, particularly for primiparous mothers, may help to reduce the cost of infant feeding. This would particularly benefit mothers with little disposable income available. The NHS Pregnancy Book (DoH 2004a) which is given free of charge to all primiparous women in England at their 12-week antenatal booking-in appointment gives some indication of what is needed for breastfeeding – it states that "you will probably want nursing bras and a supply of breast pads may also be useful". This is in contrast with three of the main retailers of baby equipment; John Lewis, Boots and Mothercare. These retailers provide lists of 'essential' baby products; the use of the word 'essential' may suggest to some parents that they *must* buy these items. John Lewis for example list breastfeeding 'essentials' as: nursing bras, breast pads, nipple protectors/cream, breast pump, 3-4 bottles, teats and covers and breast cooling pads. Additionally, items they list would be 'nice to have' include milk storage bags and clips, insulated bottle carrier and a nursing pillow. Mothercare states that breastfeeding is free, yet in their catalogue there is one page of breastfeeding 'essentials' and the Boots Guide to Pregnancy and Early Parenthood gives two pages of breastfeeding 'essentials'.

With these commercial messages, it may not be surprising that parents are spending more than is necessary on breastfeeding products. Everyday life in the developed world appears to be dominated by our relationship with consumer goods (Miles 1998) and they play a potentially important role in who we are and how we construct our social lives. Who we are has become defined more and more through what we have as individuals: material

possessions have become symbols of personal and social identity (Dittmar 1992) and consumer goods can act as bridges to our hopes and ideals (McCracken 1988). Thus, a first time parent may feel that in order to display to the outside world that they are a good parent, they need to have all the gadgets/equipment available. This is supported by Braun & Wickland (1989) who found increasing use of material symbols where insecurity in identity was lacking, for example, law students attached more importance to the outer manifestations of their identities such as clothing/cars etc than did practising attorneys who already had them. Increasingly, people are moving away from their place of origin and may not have the support and advice of family members at hand to help them with a new baby, so confidence in parenting skills may come from the purchase of consumer goods instead. Miles (1999) states that consumers may actually use consumption as a means of introducing some sense of stability into an unstable world, and certainly, first time parents are experiencing a new unstable world with the arrival of their first baby, the reality of which may not meet their preconceived expectations (Bottorff 1990). Whether this is true for all cultures is not clear. The majority of women in the present study (95%) were white European. It would be interesting to note if women belonging to ethnic minorities purchased infant feeding goods to the same extent. Of the eight women in this study who were not white European, only two (25%) were high spenders; this could be an area for further research.

New mothers are a key target audience for advertisers, and from the moment a woman's pregnancy is confirmed, she is inundated with direct marketings (primarily through the postal system) from all the main companies in the baby food and drink market. As Domosh (1996) argues, women constitute the major class of consumers in modern Western society. Consumption has often been seen as a defining characteristic of femininity and has played a key role in shaping women's social and economic activities. Cook (2003) states that since the 1900s, retailers, marketers and advertisers have observed, theorized and merchandised the mother-child bond as a primary market relationship. Gabriel & Lang (1995) state that what makes you a mother is not having had a baby, but the fact that you shop at a specialist shop called Mothercare. The 'Emma's Diary' and 'Bounty' schemes have been developed to offer advertisers and retailers access to core targets. The Emma's Diary pack reaches 81% of primiparous mothers and 78% of all expectant mothers in the UK, with a monthly distribution of 30,000 packs (www.baby-marketing.co.uk). It is a guide to pregnancy and birth and takes the reader through the experiences of 'Emma', as well as being a vehicle for the distribution of baby product samples (women exchange a card with their details on for a bag of free samples). Bounty packs reach between 90% and 95% of all new mothers (Hope 1999) and are given away both antenatally and in hospital after the birth. The Bounty antenatal pack (see

appendix 6.10 for contents) has a monthly distribution of 48,000 and the postnatal pack (see appendix 6.11 for contents) of 54,000 (www.baby-marketing.co.uk). In addition, the major retailers have clubs that pregnant women and mothers can join, for example Tesco Baby Club claims to have around 500,000 members, giving the retailer valuable access to its target population (Mintel 2002b). The women in the present study were not asked whether their purchase decisions had been influenced by these direct marketings; this could be an area to develop further. For example, the Bounty antenatal pack contains an Avent guide to breastfeeding. This is a 20 minute video, which, whilst providing good information about breastfeeding is also a showcase for all Avent's products. At the start of the video, it states that 'breastfeeding is of course free', but if you were to purchase all the items featured, you would spend approximately £176. It even states that if you express your breast milk, you could try using two pumps at the same time, one on each side.

Branding

Brands (products or services made distinctive by their positioning relative to the competition and by their personality: Hankinson & Cowking 1993) have long been associated as an important factor for parents; the results of the present study support this with all the women buying at least one branded item. In today's market having a well thought through brand strategy is a key contribution to corporate success (Martinez & de Chernatony 2004). O'Shaughnessy and O'Shaughnessy (2002) comment that consumers discover community through the community of shared brands; brands link consumers via promotion to similar others. In the present study, popular brands were Avent, Mothercare and Boots. This is in accordance with findings reported by Mintel (2002b) where Avent dominates the feeding and hygiene market with a 44% share, followed by Boots with an 18% share for its own brand, with Mothercare's own-label sales accounting for 10% of the market. Avent (which was purchased by significantly more women aged over 30 and of higher socio-economic status) may be popular due to successful marketing (through free samples in Bounty Packs, and advertising in pregnancy/baby magazines), or because of the reputation it has built up over the years.

An increasing percentage of sales are now being made through out-of-town sites. MacDonald (1987) identified sustained population dispersal, accelerating technological change and the continuing evolution of retail forms as key driving factors in the continued growth of out-of-town retailing. Mothercare typifies this development having, over the past decade, shifted its attention away from high street locations to larger stores located on the edge of town or at dedicated shopping centres. This disadvantages parents with no access to a car who may rely on public transport. In Liverpool, the only Mothercare store is situated in a retail park nine miles north of the city centre, the next closest is 20 miles east of the city centre. This did not seem to deter the mothers in this study as 63% had

purchased at least one item from Mothercare. Whilst mothers were not asked why they purchased items from here, it may be due to the long-standing reputation Mothercare has – its first store opened in 1969 in London, and so the present generation of mothers may remember their own mothers shopping in Mothercare. With large out-of-town sites, it has become a one-stop shop catering for all baby-care needs.

Working mothers

Of all mothers in this study, 71% had either already returned to work or were currently on maternity leave, and many items were purchased by these women in anticipation of return to work. This was particularly true of breast pumps and breast milk storage bottles/breast milk freezer bags. Returning to work inevitably creates difficulties for breastfeeding, and despite the advocacy of bodies such as the NCT and the Maternity Alliance for expressing breast milk for feeding later, it has been shown that most babies are switched to formula feeding (Chye *et al* 1997, Hamlyn *et al* 2002). Of the women who were still breastfeeding (either exclusively or partially) 70% were on maternity leave, and trying to get their baby used to taking a bottle in preparation for leaving him or her with a child-minder or at nursery. This was a cause of anxiety for many of these women and was the main reason for early cessation of breastfeeding. The time spent either breastfeeding or formula feeding was not found to be significantly different; this is in contrast with the findings of Fok *et al* (1998) where the time spent formula feeding was longer than breastfeeding and was a major contributing factor to the economic savings of breastfeeding. This difference may be accounted for by womens' differing perceptions of how long a feed takes and whether the time spent preparing formula feeds and sterilisation were included; these additional time factors were not included in the present study.

Government statistics (ONS 2004) showed that the average number of children per woman is now 1.6 compared to 1.8 ten years ago, and the average age of a woman giving birth has risen from 26 years in 1976 to just below 30 by 2001. The women in the present study had a mean age of 31 and 1.76 children on average. Women who have chosen to pursue their careers prior to starting a family are more likely to have a higher disposable income than those starting their families earlier. This was true of the mothers in this study – women aged 30 years and over and in socio-economic groups I and II were significantly more likely to be high spenders (spending between £13.43 and £27.24 per week). Thus, while the decreasing number of children may make competition between manufacturers more intense, the fact that families generally contain fewer children will mean that parents are able to spend more on each child.

Convenience

Modern working mothers require equipment that helps them, and so products that save time will be popular for the added convenience they offer, i.e. microwave sterilisers and disposable single use products. Breast pads are available either as washable re-usables or as disposables, but in this study, only seven women used washable pads (12% of all breastfeeding women, n=58). A worrying consequence of the increasing use of such disposable items is the environmental impact of disposing of these items, either in landfill sites or by incineration, both of which increase pollution.

Plastic feeding bottles and other feeding equipment cannot be recycled as there is such a vast range of plastics in circulation that the collection, separation and reprocessing of different plastics is not cost-effective. One or two bottles are sufficient for a baby's needs, but the use of multiple bottles so that the day's feeds can be made up in advance was common practice (average 10 bottles each) in this study. This increases the burden on waste disposal systems. Susan Strasser (1999) talks of this "disposable society"; how affluent societies dispose of perfectly serviceable products simply because newer models have come along, with marketing promoting psychological obsolescence. Fromm (1978) deplores the accelerating speed of consumption and the throw-away mentality that goes with it, and states that today, consumption is emphasized rather than preservation.

Whilst it is debatable whether many of the items purchased in this study were 'necessities', they may make life easier, such as breast pumps and steam sterilisers. Haug (1986) warns that the introduction of new products brings destruction of skills, and these new commodities make themselves indispensable; they create their own necessity. This dependency on marketable goods and services generated by the absence of social skills quickly turns into market dependency and goods and services introduce themselves as the solutions to genuine human problems. The cumulative effect is the conviction that for every human problem there is a solution waiting somewhere in the shop, and that the one skill that men and women need more than anything else is the ability to find it, whether they can afford it is secondary (Bauman 1987).

Use of formula

The market value of bottle-feeding equipment was worth £34 million (Mintel 2002b), and the value of baby milk sales was an estimated £175.8 million in 2002 (Mintel 2002a). SMA was the brand leader in the powdered infant formula market, as confirmed by the findings of this study (used by 47% of partial and exclusive formula feeding mothers), followed closely by Cow & Gate (used by 37% of partial and exclusive formula feeding mothers). This is perhaps not surprising considering that these are the two brands routinely used in

hospital maternity units. The majority of partial breastfeeding mothers used a whey based formula whilst the majority of formula feeding mothers used a casein based one. Whey based formulae, like Cow & Gate Premium and SMA Gold are designed to be as nutritionally close to breast milk as possible, in terms of protein composition and renal solute load (Belton 2002), whilst casein dominant formulae like Cow & Gate Plus and SMA White are often recommended for hungrier babies as the protein is mainly from curd. Some of the partial breastfeeders said they were told by health professionals that SMA Gold was closest to breast milk and so this may be why the majority used this formula. Formula feeding mothers may perceive their baby to be hungrier (see chapter 3.3) and thus are more likely to give a casein based formula.

Mintel (2002a) note that within the formula market, the highest growth rate has been in the RTF sector, with all the major manufacturers now offering this expensive product (which is not available with milk tokens). However, the sector remains relatively small, with its 2002 value being estimated at £7.5 million as compared to standard infant formulae with its 2002 value at £124.5 million. In this study, only 8% of formula feeding mothers used RTF all the time, and these were women who were giving formula feeds as top ups to breast feeds.

Low-income parents

In this study, 17 of the formula feeding women (35%) and 11 (17%) of the partially breastfeeding women received free milk. Currently under the Welfare Food Scheme, parents in receipt of income support or income based job seeker's allowance (£30.95-£51.40 per week for a lone parent or £61.35 - £80.65 per week for a couple) are entitled to tokens which can be exchanged for 1 x 900g tin powdered infant formula per week (this would cost between £5.57 and £6.09 to purchase), or seven pints of liquid milk per week for the mother (costing approximately £2.20) (DoH 2002b). This represents a greater cost saving for formula feeding women compared to breastfeeding women, and therefore offers no material incentive for breastfeeding. Parents in receipt of working family tax credits can purchase formula slightly cheaper than the retail price at some health centres. The 1997/8 Family Expenditure Survey showed that the 20% of single parent households with the lowest income spent £28.20 per week on food (ONS 1998). The weekly retail cost of 900g infant formula averages £6.23, thus if they had to pay for the formula, it would account for 22% of their food expenditure. McInnes & Tappin (1996) found that choice of feeding method was unaffected by the receipt of tokens, though a few women remarked they would not be able to afford to formula feed if they did not receive tokens. The Welfare Food Scheme is at present being reviewed to include a greater material incentive for those on low incomes to breastfeed, most likely to be in the form of vouchers that can be exchanged for 'healthy' foods such as fruit and vegetables and to cease offering reduced

cost formula at health clinics (DoH 2002b). However, offering breastfeeding women tokens only for healthy foods (and thus having the potential to improve their health) does not address the financial cost of breastfeeding as demonstrated by the present study.

Extra energy intake for lactating women

The DoH (1991) recommend the consumption of an extra 450kcal per day for lactating women (equivalent to 1.25 pints full-fat milk). The cost of this was not taken into account in this study. However, a number of studies looking at energy balance in lactating women both in developed and developing countries show that women are highly variable in the way they meet the energy cost of lactation (either through mobilization of fat stores, decrease in energy expenditure, increase in dietary intake, or a combination of all three), and that lactation can be sustained on intakes similar to the non-pregnant, non-lactating state (Butte *et al* 1984, Chou *et al* 1999 & Lovelady *et al* 2000). Increased appetite during lactation is automatically adjusted physiologically and it is claimed can be compensated for by larger helpings of usual foods (Jelliffe & Jelliffe 1978). To investigate this element of costing would require a very different study design and so was not attempted, but is clearly long overdue.

3.1.5 Conclusion

In conclusion, breastfeeding was not found to be 'free' and should not be promoted in this way. The results demonstrate the need for advice given to parents to be based on objective evidence rather than beliefs or commercial information. Better information needs to be given to women, particularly primiparous mothers about items that are necessary, useful or likely to be considered a waste of money. Commercial claims that products are 'essential' should be prohibited. The high and low cost models suggest that it is possible for large cost savings to be made, simply by buying non-branded goods at discount style shops. The low cost model for breastfeeding shows that it can be cheaper than formula feeding, although it should never be described as being free. These low and high cost models could be used by midwives and health visitors to enable women to make informed choices about the infant feeding products they purchase, and hopefully, avoid wasting money on unnecessary or ineffective products. In addition, teaching skills such as hand-expressing would further reduce the cost of breastfeeding.

Greater financial incentives for breastfeeding could be adopted by the UK government, for example removing value added tax (VAT) on commonly used breastfeeding items such as nursing bras and breast pads, or providing tokens for these rather than for fruit and vegetables. Longer maternity leaves would enable women to breastfeed for longer, thus

removing the need to purchase items in anticipation of return to work such as breast pumps, bottles and sterilisers.

It is clear that further research is needed in this area, particularly focusing on women from ethnic minority and low-income backgrounds to ascertain their infant feeding purchase behaviour. Whilst some parents will want to celebrate the birth of their baby by buying every product available, many others need to be helped to recognise manipulation by companies for commercial ends, and so be empowered to make informed and objective choices concerning the infant feeding products they purchase.

3.2 Magazine content analysis

3.2.1 Introduction

As chapter 3.1 has indicated, infant feeding has become unnecessarily commercialised, aimed particularly at primiparous mothers, who may have little or no knowledge of looking after a baby.

Pregnancy/baby magazines offer themselves as the 'perfect' solution to these parents, offering reassuring, practical and "expert" advice at a crucial receptive information-seeking time of their lives. As such, these magazines can be powerful ideological forces. They present ideals i.e. have the perfect nursery, perfect birth plan etc. and ascribe to motherhood a variety of ideological meanings, for example feeding the growing obsession with improving the 'parenting experience' through consumption. These magazines are directed mainly at young middle-class women because such women have more disposable income (Trowler 1996). It was therefore decided to analyse pregnancy and baby magazines for the consumer content (i.e. number/type of advertisements and editorial features on products), breast and formula feeding content, and to discover whether they present breastfeeding in a positive or negative way.

3.2.2 Method

Every issue of a total of seven different pregnancy/baby magazines were purchased for analysis during July to September 2003. These included five monthly publications (Baby & You, Mother & Baby, Practical Parenting, Pregnancy & Birth and Prima Baby) and two bi-monthly publications (Junior Pregnancy & Baby and Pregnancy). The selection chosen included all the main UK magazines according to the Audit Bureau of Circulations (www.abc.org.uk), with the exception of store's own magazines, available at major retail outlets such as WH Smiths, Borders and most supermarkets, and covered both pregnancy and early motherhood. Parenting magazines aimed solely at mothers of toddlers were not included.

A coding frame was produced to include articles mentioning breastfeeding, articles mentioning formula feeding, visual depictions of breastfeeding, visual depictions of formula feeding, articles on consumer products and advertisements. The advertisements were assigned to categories: feeding equipment, food and drink (including infant formula), travel, health and beauty, entertainment (toys, books, cds and videos), nursery equipment, clothing, hygiene, shops and other.

In addition, the brand profiles of each magazine were recorded and the editor of each magazine was contacted by telephone and asked the following question "would you say

that your magazine was pro-breastfeeding?" The responses to this question were noted down verbatim and compared to the content analysis for the magazine.

3.2.3 Results

The cost of the magazines varied from £1.99 to £2.99 per issue, and the percentage of advertisements in the magazines varied from 29 to 46% (table 3.2.1). One might assume that the higher the percentage of advertisements in the magazines, the cheaper the cover price, however, there was no correlation between the cost of magazine and number of advertisements they contained, nor was there any correlation between the cost and the number of pages, although there was a highly positive correlation between the total number of pages and number of pages of advertisements ($r = 0.883$). Seven of the nineteen magazines reviewed (Prima: July, August and September, Mother & Baby: July and September and Practical Parenting: August and September) were placed inside sealed plastic wrappers so that the buyer could not browse before buying. Each of these seven issues were sealed as they contained free gifts including books, changing mat, cuddly rabbit, baby sunhat and baby t-shirt.

Table 3.2.1. Details of each of the magazines chosen for analysis.

Title	Publisher	Issued	Cost per issue	mean no of pages/issue	cost/page (p)	mean no of pages of ads/issue	% of ads
Baby & You	Highbury	Monthly	£2.30	124	1.86	36.5	29
Mother & Baby	EMAP	Monthly	£1.99	169	1.18	69	41
Practical Parenting	IPC	Monthly	£2.40	132	1.82	60.5	46
Pregnancy & Birth	EMAP	Monthly	£2.30	122	1.89	42	34
Prima Baby	National Magazine Company	Monthly	£1.99	143	1.39	55	38
Junior Pregnancy & Baby	Beach Magazines	Bi-monthly	£2.90	132	2.20	38	29
Pregnancy	Highbury	Bi-monthly	£2.99	124	2.41	37.8	30

As Table 3.2.2 suggests, the magazines are marketed to older primiparous women who are likely to be more affluent (and therefore more likely to spend money on the items advertised in the magazines). The total circulation amounts to 349,039 over six months (698,078 over one year). This compares to 668,777 live births in the UK in 2002 (ONS 2003) just under half of which were to primiparous women. Whilst not all women purchase these magazines, the discrepancy between birth figures and circulation figures may be

caused by women purchasing more than one issue and more than one type of magazine throughout the duration of her pregnancy.

Table 3.2.2. Key demographics of the magazines under analysis

Title	Strap-line	Target Readership	Circulation (Jan-Jun 2003)
Baby and You	Your baby care monthly	ABC1 first time mothers. Average age 29 years.	40,000
Mother and Baby	Your favourite baby magazine	C1, C2 first timers. Average age 27 years.	88,217
Practical Parenting	Expert advice you can trust	ABC1 first timers. Average age 25-35 years.	45,564
Pregnancy and Birth	None	C1, C2 first timers. Average age 27 years.	53,674
Prima Baby	For every mother and mother to be	ABC1, C2 first timers. Average age 28 years.	52,570
Junior Pregnancy and Baby	The World's finest parenting magazine	ABC1 first timers.	40,000
Pregnancy	The number 1 guide to your 9 months.	ABC1 first timers. Average age 29.	29,014

Key:

Strap-line – one line of text on the front cover that the magazine uses to describe itself

Target readership:

- A high managerial and opinion leaders
- B middle management
- C1 lower management, administrative workforce
- C2 skilled manual workers
- D unskilled/semi-skilled manual workers
- E low waged/unwaged

The strap-lines suggest that each of the magazines (with the exception of Pregnancy & Birth) pride themselves on being the 'best' on the market. Practical Parenting is explicit in claiming that it offers 'expert' advice; for the other magazines, this is more implicit.

The following are brand profiles for each of the magazines chosen for analysis, as described *verbatim* on each of the publishers' websites.

"Practical Parenting is aimed at mothers with kids 0-5y, plus pregnant women who want the very best for their children. These mothers are information junkies, who think and plan ahead. It is the must-have read for any parent, giving them the very best for their child. Truly understanding the issues facing today's mothers, it contains all the must-have comprehensive information and up-to-date advice on all stages of being a parent, from pregnancy and birth, through to pre-school. The strength of the Practical Parenting brand has seen it move into the world of TV with a series on the Living Channel".

"Pregnancy and Birth is the UK's leading pregnancy magazine for expectant women. It provides comprehensive advice and information on all aspects of pregnancy and birth through to the first weeks of motherhood".

"Mother and Baby is the UK's leading parenting magazine for expectant and new mothers. It offers authoritative advice on pregnancy, birth and your child's first 3 years. Warm, friendly and reassuring – Mother and Baby is good for mother and good for baby. It is a well-loved and trusted brand. That is why it is the UK's number one baby magazine. The essence of Mother and Baby is the loving bond between a mother and her child, and features take the reader through the first two years of life with a new baby. Mother and Baby has over 40 years of experience of advising mothers how to care for their babies".

"Prima Baby is the vital guide to pregnancy, birth and early parenthood for women who have grown up reading magazines and who expect a parenting magazine which supports their emotional and practical needs. It focuses on the woman herself as well as her new role as a mother. As the reader enters this exciting, life-changing time she requires practical information and advice she can trust plus emotional support for her. Faced with an entirely new consumer market, major purchase decisions to make and high aspirations, she requires more than ever before, edited information in a 'tried and trusted' format which is both credible and impartial. Prima Baby recognises and heralds the fact that women contemplating, or who are in this lifestage, are first and foremost intelligent, busy, spirited, family oriented and self-aware".

"Baby and You is the essential guide for new mothers, covering newborn care through the first year. Every health, emotional, nutritional, and family issue is dealt with, plus we carry product reviews of all the latest baby equipment, as well as great competition and giveaways".

"Pregnancy – Expert advice for mother-to-be, covering every health and parenting issue she will need to know about during her pregnancy. We take her from conception through to delivery and early newborn care".

"Junior Pregnancy and Baby – Reflects the shift in today's society towards older mothers and fathers who have established their careers and homes before embarking on parenthood and so are more financially secure with higher levels of disposable income. Such parents combine a career with parenthood and so have the power to spend more money on their children's clothes, childcare, education, overseas holidays, homes etc. They also have a keen interest in fashion – both for themselves and their children. As parents, they first and foremost care for their children, spending on children's fashion,

books, toys and equipment. They also tend to change their home, car, appliances after becoming parents. In short, they celebrate parenthood, rather than being bound by it".

The brand profiles of the magazines illustrate that each covers a slightly different time frame; some from conception through to the early newborn period (*Pregnancy & Birth*, *Pregnancy*), from birth to the first year (*Baby & You*) and others from pregnancy up to the first few years (*Practical Parenting*, *Mother & Baby*, *Prima Baby*). Each magazine (with the exception of *Junior Pregnancy & Baby*) emphasizes how it offers advice and information, with two (*Baby & You*, *Pregnancy*) stating they cover *every* issue relating to pregnancy and parenting. *Mother & Baby* is explicit in stating how it has 40 years of advising mothers how to care for their babies. In addition, emotional support is offered by three of the magazines (*Baby & You*, *Prima Baby*, *Mother & Baby*).

Prima Baby, *Baby & You* and *Junior Pregnancy & Baby* all mention the consumer marketing aspect of parenting. *Junior Pregnancy & Baby* focuses particularly on this, stating that parents care for their children by spending money on them and celebrate parenthood through consumption.

Responses to the question "would you say that your magazine is pro-breastfeeding"?

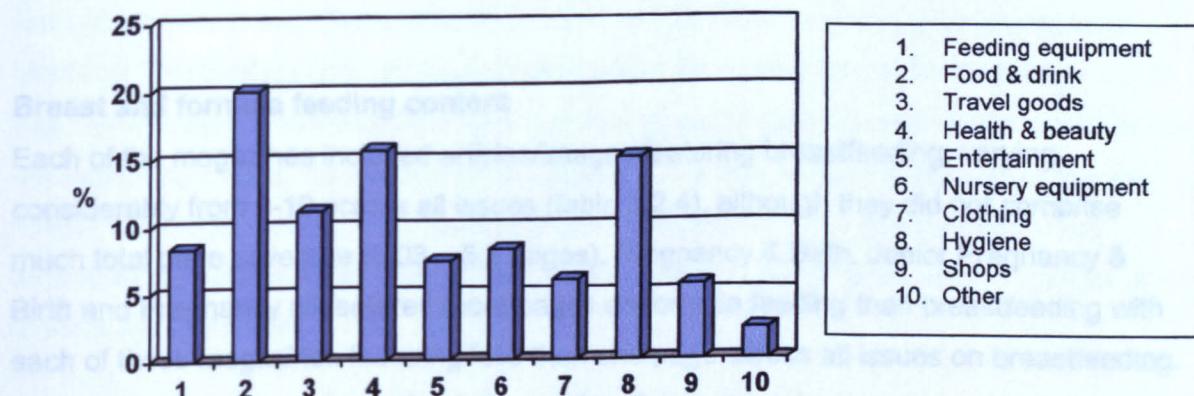
Baby & You	"Yes, we are pro-breastfeeding"
Mother & Baby	"We support both forms of feeding"
Practical Parenting	"We are told that breastfeeding is best but support both forms – whatever is best for mother and baby"
Pregnancy & Birth	"We support both forms but would give DoH recommendations that breastfeeding is best"
Prima Baby	"We are absolutely pro-breastfeeding – breast is best but we don't want to make mothers feel guilty if they can't breastfeed"
Junior Pregnancy & Baby	"We are pro-breastfeeding as the DoH says it is best but would support those that can't breastfeed"
Pregnancy	"Yes, we're pro-breastfeeding"

Four of the magazines stated they were pro-breastfeeding, although two (Prima Baby, Junior Pregnancy & Baby) qualify this by saying they would support those who cannot (rather than do not want to) breastfeed and do not want to make those mothers feel guilty. Two of the magazines mentioned the DoH advice that 'breast is best' although they state they would support both forms of feeding. Practical Parenting seemed the most ambivalent towards breastfeeding – they were told breastfeeding is best (they do not mention by whom, nor do they seem to agree), and would support whatever is best for mother and baby, but do not give any examples of specific instances where one method might be better than another.

Advertising/consumerism

The different categories of advertisements as a percentage of total advertisements for all magazines are shown in figure 3.2.1. Food and drink (including follow-on formulae which comprised of 51% of all food and drink advertisements) comprised the largest percentage of advertisements (20%), followed by health and beauty (perfume, vitamin tablets, creams) with 16% and hygiene (nappies, wash powders, fabric conditioners etc) with 15%. 'Other', advertisements included the National Canine Defence League, finance companies, cameras, stem cell storage and air purifiers.

Figure 3.2.1. Advertising categories as a percentage of all advertisements.



Each of the magazines varied in the percentage of types of advertisements they contained. Of all advertisements in Junior Pregnancy & Baby for example, 32% were for clothing/fashion (compared to 6% for all magazines) and 26% were for travel goods (compared to 11% for all magazines). Prima Baby contained the most food and drink advertisements (27% compared to 20% for all magazines), whilst Pregnancy contained the most health and beauty advertisements (29% compared to 16% for all magazines).

In addition to the number of advertisements each magazine contained, the number of pages of consumer content was also calculated (table 3.2.3). Consumer content (CC) included articles about products on test, new product information, best travel buys,

clothing (maternity and baby), outdoor toys, beauty treats, books and toys, 'must haves' (products the magazines marketed as being essential), nursery furniture and gifts. The percentage of consumer content within the magazines varied from 5% (Mother & Baby) to 29% (Junior Pregnancy & Baby). Each issue of each magazine (except Prima Baby July) featured at least one page and up to nine pages of products on test. These included baby monitors, travel cots, baby carriers, pushchairs, nappies, travel cots, outdoor toys, highchairs, car seats, changing bags, bottles, nursery furniture, sterilisers and bottle warmers. It can be seen from table 3.2.3 that by combining the percentage of advertisements with the percentage of consumer content, each magazine comprised of between 40% (Baby & You) and 58% (Junior Pregnancy & Baby) of consumer subject matter with a mean of 49% per issue.

Table 3.2.3. Advertising and consumer content (cc).

Magazine	Mean no of pages of ads/ issue	% ads	Mean no of pages of CC/ issue	% CC	% ads & CC
Baby & You	36.5	29	13.6	11	40
Mother & Baby	69	41	9	5	46
Practical Parenting	60.5	46	13.6	10	56
Pregnancy & Birth	42	34	12	10	44
Prima Baby	55	38	18	13	51
Junior P & B	38	29	38	29	58
Pregnancy	37.8	30	22	18	48

Breast and formula feeding content

Each of the magazines included articles/images featuring breastfeeding, varying considerably from 2-10 across all issues (table 3.2.4), although they did not comprise much total page coverage (0.03 – 5.3 pages). Pregnancy & Birth, Junior Pregnancy & Birth and Pregnancy all featured more pages on formula feeding than breastfeeding with each of these magazines featuring less than one page across all issues on breastfeeding. This contrasts to the statements about whether these magazines were pro-breastfeeding, with both Junior Pregnancy & Baby and Pregnancy stating they were pro-breastfeeding, and Pregnancy & Birth stating it supported both. The number of formula advertisements was considerable with five out of the seven magazines featuring ten or more pages of advertisements by infant formula companies. Across all the magazines, formula advertisements comprised 10% of all advertisements and 3% of all pages. Of the feeding equipment advertisements, only seven in total featured breastfeeding items – two for the Avent breast pump, two for Mothermates gel pads, two for Kamillosan nipple cream and one for Bravado nursing bras.

Table 3.2.4. Summary of breast and formula feeding content of each magazine.

Magazine	Total images of brf (no of pages)	Total articles on brf (no of pages)	Total images of ff (no of pages)	Total articles on ff (no of pages)	Total formula ads (pages)	Total feeding equipment ads (pages)
Baby & You (3 issues)	5 (2)	10 (4.1)	1 (0.04)	1 (0.09)	10.75	7
Mother & Baby (3 issues)	5 (1)	7 (5.3)	0	0	18	10
Practical Parenting (3 issues)	7 (0.7)	7 (2.17)	3 (0.38)	3 (0.65)	14	3
Pregnancy & Birth (3 issues)	2 (0.6)	2 (0.12)	0	3 (1.38)	12	10
Prima Baby (3 issues)	5 (0.53)	7 (0.40)	0	3 (0.5)	19.5	11
Junior Pregnancy & Baby (2 issues)	2 (0.03)	9 (1.34)	1 (1)	2 (1.13)	4	3
Pregnancy (2 issues)	2 (0.29)	4 (0.26)	0	3 (5.13)	7.5	3.5

Code: brf – breastfeeding
ff – formula feeding

A summary of the percentage of pages devoted to breastfeeding, formula feeding and formula/feeding equipment advertisements is shown in table 3.2.5. Adding the total number of pages of each issue of each publication, then subtracting the total number of advertisements in each issue of each publication gave the number of pages allocated to 'content'. The total number of breastfeeding pages (images plus articles from table 3.2.4) was then divided by the total number of content pages to give the percentage of pages on breastfeeding over all issues of each publication. This was repeated for formula feeding. Finally, the number of pages of formula and feeding equipment advertisements was divided by the total number of advertisements pages to give the percentage of pages of feeding advertisements.

Table 3.2.5. Percentage of total pages covered by breastfeeding, formula feeding and feeding advertisements.

Magazine	% of content pages on brf	% of content pages on ff	% of advertising pages on feeding equipment/formula
Baby & You	2.30	0.05	21.3
Mother & Baby	2.09	0.00	14.7
Practical Parenting	1.34	0.48	10.2
Pregnancy & Birth	0.30	0.58	20.2
Prima Baby	0.35	0.19	19.9
Junior Pregnancy & Baby	0.73	1.13	11.4
Pregnancy	0.32	2.97	19.1

It can be seen that Baby & You and Mother & Baby both had the highest percentage of breastfeeding pages, and fewest formula feeding pages although Baby & You did contain the highest percentage of all advertisements for formula/feeding equipment. Whilst Prima Baby stated that they were “absolutely pro-breastfeeding”, they contained the third lowest percentage of breastfeeding content, and third highest percentage of feeding equipment advertisements. Similarly, Pregnancy contained the second lowest breastfeeding content, highest formula feeding content and fourth highest feeding equipment advertisements despite being “pro-breastfeeding”.

Portrayal of breastfeeding

Types of breastfeeding articles covered in all 19 issues:

- | | |
|--------------------------------|----------|
| • News item | 8 times |
| • Reader's question and answer | 19 times |
| • Feature article | 9 times |
| • Review of a product | 6 times |
| • Reader's letter | 4 times |

Half the news items presented the DoH recommendations that mothers should exclusively breastfeed for between four and six months in accordance with WHO guidelines (WHO 2001). Two of these news items presented some benefits of breastfeeding such as lower incidence of respiratory and gastro-intestinal infections, and lower risk of breast cancer. There was no mention of the benefits of breastfeeding in any specific detail. The dangers of formula feeding were only mentioned in one article (Junior Pregnancy & Baby: June/July – health risks of soy based formulas). Two news articles presented findings of research suggesting that exclusively breastfed infants were less likely to become obese in later life. The other two news items were reports of research findings that the initial incidence of breastfeeding had increased over the past five years (this comprised 3% page coverage), and of a study that showed women who had decided to breastfeed before their baby was born were more likely to succeed with breastfeeding (this comprised 9% page coverage).

The reader's questions and answers generally focused on the negative aspects/problematic aspects of breastfeeding – questions such as what if I'm too shy to breastfeed in public? Am I running out of milk? Is he getting enough milk? What can I do about recurring mastitis? Why won't my baby latch on? How can I prevent sore nipples? How do I know he's taking enough milk? Will she get enough milk? The responses to these questions were mostly factual/neutral rather than overtly positive.

Feature articles about breastfeeding occurred six times across the 19 issues. They included information about positioning and latching on, what's safe when you're breastfeeding, a reader's story of the first breastfeed, expressing milk at work, breastfeeding basics, and whether it is safe to diet whilst breastfeeding. Most of the articles were factual rather than positive; for example, one article mentioned that breast was best, but did not state why (Prima Baby: August) and two of the articles implied that you had to eat healthily in order to breastfeed (Baby & You: July, and Junior Pregnancy & Baby: June/July). Baby & You stated that "it's important that we watch our diets and lifestyles so that we maintain the quality of our breast milk...because whatever nutrients you take in will end up in your breast milk". One article in Practical Parenting (August) said that you shouldn't feel guilty about bottle-feeding as some women can't breastfeed, perhaps for medical reasons (although it does not state how many women). In other articles there were suggestions that breastfeeding was challenging and that breasts *will* become sore.

Product reviews of breastfeeding items appeared six times. These were for a breastfeeding book (£8.99), Avent soothing nipple cream (£4.99 for 30 mls – featured twice), The First Year's Breast Pump (£20.00), Avent Isis Breast Pump Set (£39.99), and nursing bras (ranging from £14.00 -£30.00). Breastfeeding items that appeared in advertisements included Kamillosan nipple cream, Bravado nursing bras, Avent breast pump and Mother mates soothing gel pads.

Letters from mothers about breastfeeding appeared four times. One was about donating milk to milk banks to save babies lives, one was about how breastfeeding was worth it for a woman who breastfed for fourteen months including when she went back to work, one was about how it was a good idea to have your breast pump by the bed so it was handy to express in the morning and the final letter was from one mother who felt she was being made to feel guilty for not breastfeeding because of the 'advertisements I see everywhere' and that the Government should realise this in light of their recommendations. She did not refer to which advertisements made her feel guilty and the editor's response (Prima Baby July) was 'try to remember when Mollie is six and charging up and down on her bike, it won't matter a bit to you' which directly contradicts the magazine asserting they "are absolutely pro-breastfeeding".

Images of breastfeeding women

In total there were 27 images of breastfeeding women across the 19 magazines, the fewest being in Pregnancy & Birth (two images across the three monthly issues), Pregnancy (two images across the two bi-monthly issues) and Junior Pregnancy & Baby (two images across the two bi-monthly issues). Most images appeared in Practical

Parenting with seven images across the three monthly issues. However, the total page coverage of these images only amounted to 5.15 pages (equivalent to 0.2% of all pages across the 19 magazines). Only one of the 27 images featured a black mother (this was a 'real' mother who was breastfeeding twins), the remainder featured white mothers and babies. Whilst it was beyond the scope of this study to analyse the ethnic diversity portrayed in these magazines, it was interesting to note that all 19 magazine covers featured smiling white mothers and babies (none of whom were breastfeeding).

Only three of the 27 images featured 'real' mothers as identified by the feature in which they appeared. Five of the 27 images showed mothers and babies who were naked; this is not a true indicator of real life, and may imply that in order to successfully breastfeed, it is necessary to be near naked. None of the images showed women breastfeeding in a public setting, or even with a partner or other child present. Two images showed mothers in hospital, and two in their own home, the rest were neutral backgrounds. All the images showed contented babies. This was in direct contrast to many of the items featuring breastfeeding that focused on the problematic/painful aspects.

Portrayal of formula feeding

Types of formula feeding articles covered:

- | | |
|--------------------------------|------------|
| • News item | twice |
| • Reader's question and answer | twice |
| • Feature article | once |
| • Review of a product | nine times |
| • Reader's letter | once |

Feature articles on formula feeding did not appear very often (only once). Most articles were product reviews. As previously mentioned, only one article (a news item) pointed out the dangers of formula feeding although this referred only to the dangers of soy formula and how it posed a risk to some babies. The other news item (*Baby & You*: August) was pro formula feeding, reporting findings from a study that found supplementing formula with fatty acids can prevent heart disease in later life to a similar extent as in breastfed infants. The news item did not report the sample size, where the study had taken place, where published or who carried it out, and was placed opposite an advertisement for SMA Careline (one of the largest formula companies in the UK) which mothers could call with their infant feeding queries.

Readers' questions and answers were regarding whether a mother could be giving her three month old daughter too much formula and about a ten month old who would not drink her formula.

The only formula feeding article (Practical Parenting: August) was half a page mentioning that "while the general consensus is that breast is best ... you shouldn't feel guilty about bottle feeding your baby". It did not mention any of the benefits of breastfeeding, nor did it on the opposite page about breastfeeding. The article further stated that formula is designed to mimic breast milk, you can see how much your baby is getting, it has more protein so baby will go longer between feeds, your partner can help and it frees you from the *hassle* (italics author's own) of having to express breast milk if you are going to be away from your baby. Whilst this article identified what was needed to bottle feed, it did not reveal how to make up bottles of formula safely nor what the differences were between different formulae on the market.

Four of the product reviews were for travel items (the issues analysed were all published in the summer months); these included microwave steriliser bags, disposable bottles and insulated bottle warmers. Other product reviews included bottles on test, sterilisers and bottle warmers.

Images of formula feeding babies

There were very few photos of babies with a bottle. Only five images appeared across the 19 magazines, one in Baby & You (August), two in Practical Parenting (August), one in Practical Parenting (September), and one full page in Junior Pregnancy & Baby (June/July). Two pictures depicted a baby alone with a bottle, one with a father feeding a bottle to the baby and two with a mother feeding a bottle to the baby. All the images were of white babies and parents. All the babies were fully clothed except one who was wearing just a nappy. The picture of the father showed a young handsome man wearing a dressing gown (all the images were posed by models rather than 'real' parents). One of the images of a mother feeding her baby showed her smiling face next to the baby (who was looking at the camera) whilst the other did not show the mother's face, just her torso. This was the only image in which the baby's eyes were closed. All five images had neutral backgrounds and so depicted bottle-feeding in an abstract way.

3.2.4 Discussion

The brand profiles of the magazines clearly indicate they are marketed primarily to older primiparous middle-class mothers who are likely to be information hungry with regards to this new stage in their lives. Such mothers are likely to have more disposable income to spend on their families, a fact that has appeared not to have escaped the attention of the advertisers, with each of the magazines comprising between 29 and 46% advertisements. These older primiparous mothers of higher socio-economic status are more likely to breastfeed (Hamlyn *et al* 2002), and the way breastfeeding is portrayed in these magazines may affect expectations and breastfeeding duration in these women.

The analysis of the magazines revealed that whilst providing factual information and a heavy emphasis on marketing of goods, the majority of the magazines presented parenthood as a quest for being “perfect”. Article titles such as “finding the perfect buggy” (Practical Parenting: September), “choose the perfect furniture” (Practical Parenting: August), “create the perfect nursery” (Pregnancy: June/July) “3 steps to a perfect home birth” (Pregnancy & Birth: September) suggest that perfection can be attained. The use of other words such as “essential”, “magical”, “ultimate” also reinforce this idea that parenting is an “experience” to be achieved by foresight, knowledge acquisition and purchasing relevant items – but what happens when parents’ experiences do not match up to these ideals? What happens if having the perfect nursery does not make you the perfect parent? Does the fact that your nine months were not magical mean that you can never possibly be this image of the perfect mother who manages to juggle a successful career and parenthood and still have time to look beautiful and composed? A report by the Advertising Standards Authority (ASA 2002) revealed that consumers recognised that advertising does create aspirations and can increase social pressure, making people want ever more items. Criticism was widespread of advertising overload in magazines, with consumers feeling they were paying a high cover price for a magazine full of paid for advertising. The Advertising Standards Authority is the independent self-regulatory body for non-broadcast advertisements and administers the British Code of Advertising, Sales promotion and Direct Marketing (The CAP Code) to ensure that advertisements are legal, decent, honest and truthful (www.asa.org.uk). The CAP Code does not refer to infant feeding products, these are covered by the WHO International Code of Marketing of Breast Milk Substitutes (WHO 1981) and the UK Infant Formula and Follow-on Regulations (1995).

The brand profiles for each of the magazines also reinforces the idea that parenthood is something to be approached from a ‘cerebral’ and commercial perspective rather than as a natural and instinctive act of caring. They suggest that by reading their ‘expert’ advice one can be a successful parent. Most of the magazines pride themselves on being able to offer advice be it: ‘up-to-date advice’ (Practical Parenting), ‘comprehensive advice’

(Pregnancy & Birth), 'authoritative advice' (Mother & Baby) or 'expert advice' (Pregnancy). This emphasis on advice from 'experts' may undermine women's confidence in their mothering instincts and also in their body's ability to produce enough milk to satisfy their baby. According to Raphael (1976) a mother needs 'mothering' to be successful with breastfeeding. In much of the world a *doula* fulfils this role, encouraging, supporting and helping a new mother. This concept is less familiar in the UK, yet mothers seem to need this support and seek it from others (Bottorff 1990). Instead, fragmentation of family relations and the diminished sense of community have inevitably helped to make parents feel insecure. This lack of self-belief combined with an intense level of anxiety informs the parenting style of our times (Furedi 2001). Even before a child is born, parents are encouraged to study parent-craft skills and every aspect of conceiving, bearing and raising children is subject to professional advice (Britton 1998). A study of 1025 parenting articles and advice columns in the USA (McCaslin & Infanti 1998) indicated that parents were seen as the problem in 97% of the entries. In 68% of the entries, parents were advised to follow the advice of an expert, whilst parents were counselled to act on their own knowledge in just 29% of the entries. One of the defining features of contemporary child-rearing literature is the advice to seek more advice. Readers who are looking for solutions are offered long lists of help-lines (often run by commercial companies) and support networks and advice providers today not only assume that parents lack common sense and basic knowledge, but that they are unlikely to be able to cope on their own. This is reinforced by the medicalisation of natural events such as childbirth where women's bodies have been objectified as machines or 'passive containers' (Hewison 1993) and pregnancy, labour and birth were defined as mechanical processes. Knowledge relating to pregnancy and birth and its presentation in publications have also, until relatively recently, been controlled by the medical profession (Wagner 1994) thus reinforcing the power of medical 'experts' in society. In contrast, relationships and social support form core attributes of a social model of childbirth (Walsh & Newburn 2002a), with a focus on supporting and enabling innate skills and a focus on parenting (Walsh & Newburn 2002b).

Since parenting has been transformed from an intimate relationship, involving emotion and warmth (i.e. the social model), into a skill, requiring technical expertise (i.e. the medical model), the role of the expert thus assumes a special significance. Instead of leading to a more confident and informed generation of proud new parents, it would seem that today's parents are less secure and confident than their parents ever were, and more anxious to get the parenting 'experience' right. These magazines present themselves as being a solution for this, and market themselves as being a 'must have read' (Practical Parenting), 'good for mother and good for baby' (Mother & Baby), 'the vital guide' (Prima Baby) and 'the essential guide' (Baby & You). Trust in other people used to be based in the local community but,

according to Giddens (2001), living in a more globalized society means that our lives are influenced by people we never see or meet (i.e. the 'experts' from pregnancy and baby magazines). Sadly, many mothers and fathers who lack confidence in their own resources are prepared to defer to those claiming expert authority, instead of asking 'why should this person presume to know more than me about the needs of my child?' One magazine for example (*Mother & Baby*) explicitly stated that it had over 40 years experience of 'advising' mothers.

Many women (particularly from lower socio-economic groups) do not purchase these magazines, so where do they go for 'expert' advice? Or do they rely on their own judgements about what is best for their baby and don't get so worried about whether they are doing everything right according to the 'experts'? Perhaps they realise that parenting cannot be taught and they are likely to learn more from other parents and family members who have shared their experiences and whom they trust. Notably, these women are the least likely to breastfeed (Hamlyn *et al* 2002). This is confirmed by Murphy (1999) who found that many formula feeding women set the advice given by professionals against that of their family members. One woman appealed to the authority of family experts as opposed to official experts saying 'I know it might sound daft but I think my family knows best'.

Parenthood was presented in these magazines as being the ultimate consumer experience, with between 40 and 58% of each issue devoted to advertisements and consumer content. This may be seen as a social and cultural process, not just an economic utilitarian process, and is based increasingly upon desires, not simply upon need, through the use of signs and symbols in selling these products (Bocock 1993). The magazines reinforce the idea that 'to have is to be' (Dittmar 1992), and that what sets this modern consumption apart is not merely the growth of spending power across social classes and strata, but, more importantly, the experience of choice as a generalized social phenomenon (Gabriel & Lang 1995). This idea of choice was typified by there being 158 different companies advertising in the magazines.

Whilst it was beyond the scope of this study to investigate all the messages portrayed by the advertisements, this would be an interesting area for further research. Baudrillard (1988a) states that: "If we consume the product as product, we consume its meaning through advertising". Fine & Leopold (1993) argue that advertising preys upon the needs for emotional security, reassurance of worth, ego-gratification, creative outlets, love objects, sense of power, sense of roots and immortality – it is less about selling products and more about buying customers. It creates and serves false needs without necessarily generating greater happiness, satisfaction or harmony. The intention of advertising

extends far beyond simply selling goods and services to consumers. It provides important cues about a society's dominant values and culture (Fox 1975, Lasch 1979, Qualter 1991, Meijer 1998). Covert (2003) suggests that advertisements provide information about what is valued in society and how to obtain status through consumption. She further asserts that in the mass society, being a consumer may be the most important role that a citizen plays. Each of the magazines varied in the percentage of different advertisements they contained. Junior Pregnancy & Baby for example gave more prominence to clothing and fashion which reflected the brand profile statement that it's readers "have a keen interest in fashion". As each of these magazines have different markets and different agendas, it may be unrealistic to expect them to be a vehicle for health promotion with regards infant feeding, much less, offering impartial advice and information.

Portrayal of breastfeeding

Whilst breastfeeding items appeared quite frequently, the total page coverage was disappointingly small, and breastfeeding was most often portrayed as being problematic and painful. It may be argued that the magazines are merely reflecting the reality of what is being experienced, namely breastfeeding women's concerns about positioning and attachment and pain. This may simply reinforce the idea that breastfeeding is difficult and may not be worth the 'bother', and can put doubt into women's minds before starting. In the Western world, women are socialised to lack confidence in their ability to lactate, with promotion of artificial milk being a particularly undermining factor (Palmer 1988).

Despite all the magazines stating that they were pro-breastfeeding, each featured at least one page, and up to nine pages per issue (mean 4.4) of follow-on formula advertisements. Whilst not illegal, this does mean that the formula companies are ensuring awareness of their brands reaches a considerable target audience. This undermines articles on breastfeeding, particularly when such articles focus mainly on problems being experienced or likely to be experienced by breastfeeding mothers. Combined with advertisements of products such as the 'Tommee Tippee teat' which is "a teat so close to the real thing, this could be mummy", it is hardly surprising that many women abandon breastfeeding in the early days, or don't even start at all. Infant feeding has become a commodity that can be bought and sold for profit.

The magazine which asserted itself as being "absolutely pro-breastfeeding" (Prima Baby) featured the most number of formula company advertisements (mean 6.5 pages of advertisements across the three issues). It must be remembered that while all mothers have a right to feed their babies as they want, it is important to note that brand name advertising is not the same as giving impartial information. The aim of the WHO International Code of Marketing of Breast Milk Substitutes (WHO 1981) is to ensure that

all health workers, mothers and carers receive full and impartial information. The aim of brand name advertising is the opposite – it provides selective information, projecting only the qualities that advertiser chooses. If these magazines want to be truly pro-breastfeeding, they need to think about the mixed messages they are sending by the inclusion of so many formula advertisements. If the DoH wants to increase the incidence and duration of breastfeeding as stated in the NHS Plan (DoH 2000), it would be cost-effective (in terms of health benefits alone) to place advertisements in pregnancy and baby magazines informing readers not only of the many benefits of breastfeeding, but also of the many dangers and risks of formula feeding. The editor's comment in Prima Baby (July) in response to a woman who complained about feeling guilty about not breastfeeding shows a disregard of the risks of formula feeding – it may matter when Mollie is six and not charging up and down on her bike because she has asthma, or is obese or has insulin dependent diabetes mellitus or Crohn's disease or ulcerative colitis because she was not breastfed.

Information on breastfeeding was often selectively given, for example, Practical Parenting (August) stated "some women can't breastfeed". However, it did not state that only 1-5% of women have an actual physiological inability to produce sufficient milk (Neifert 1983, Akre 1991). Akre further asserts that in societies where breastfeeding is highly valued, lactation failure is virtually unknown. Perceived insufficient milk syndrome is an entirely cultural phenomenon according to Greiner et al (1981). They suggested that some women claim they have insufficient milk as a socially acceptable reason for discontinuing breastfeeding. Dykes & Williams (1999) found that women expressed initial doubts about their ability to both produce milk and breastfeed. The findings of the present study confirm this, and the portrayal of breastfeeding by the pregnancy and baby magazines was in common with Henderson et al's study (2000) where media coverage of breastfeeding implied it to be problematic, funny, embarrassing and associated with middle class or celebrity women. In contrast, bottle-feeding was portrayed as socially integrated, highly visual, unproblematic and associated with 'ordinary' families. Whilst it may not be surprising that the general media portrays breastfeeding in this way, it is disappointing that pregnancy and baby magazines which may form a major source of information for many new mothers portray breastfeeding in a similar way whether intentionally or not. Women need to know more than the 'mechanics' of how to position and attach a baby to the breast and the benefits to both her and her baby. By focusing instead on apprenticeship style learning and support rather than the current approach of providing women with theoretical knowledge could impact on many areas of maternal, family and child health (Hoddinott & Pill 1999b). It was beyond the scope of the present study to determine whether the portrayal of breastfeeding in the pregnancy/baby magazines affects breastfeeding initiation or duration rates; this would be an interesting area to develop further.

It was disappointing that none of the images of breastfeeding mothers showed them breastfeeding in a public setting – in order for our culture to re-embrace breastfeeding as the norm, we need to become more comfortable with seeing breastfeeding women in normal settings rather than hidden away. Indeed, embarrassment of breastfeeding in public has frequently been cited as a reason for not choosing to breastfeed (Bacon & Wylie 1976, Jones 1986, Scott et al 1997a, Guttman & Zimmerman 2000). Lockey & Hart (2003) received a comment from one young man that ‘you don’t go to the toilet in public so you shouldn’t breastfeed in public’. That many breastfeeding women were portrayed as naked also undermines efforts to portray breastfeeding as the norm. Stewart-Knox et al (2003) found that women agreed (whether they intended to breast or formula feed) that health promotion materials depicting women half-naked at home do not present real-world images of breastfeeding and may deter many women from breastfeeding, promoting the idea that it is socially isolating. Consistent with this is accumulating evidence that positive attitudes are associated with frequent exposure to breastfeeding within the social context (Janke 1988, Valaitis et al 1997, Riva et al 1999, Greene et al 2003). The media and especially pregnancy/baby magazines could play a crucial role in this.

Portrayal of formula feeding

Whilst there were not many articles about formula feeding, those that did mention it did so in a positive way, comparing it favourably to breast milk. Practical Parenting (August) stated that formula is designed to mimic breast milk, but not that it is not a living substance that changes throughout the duration of the baby’s feed or indeed with the baby’s age as breast milk does. Nor did it state that breast milk is a complex biological fluid composed of thousands of constituents, whilst formula only contains about 40 (Picciano 2001). The article stated that formula has more protein and therefore the baby goes for longer between feeds but who does this benefit – the baby or the mother? It was not mentioned that the protein is derived from cow’s milk and it has been shown that this early exposure to bovine protein may be responsible for causing age onset insulin dependent diabetes mellitus, as well as allergies to cow’s milk (Vaarala et al 1999, Høst et al 1995, Chandra 1998, Holt & Jones 2000). If women believe that formula is as good as breast milk, and that breastfeeding can be painful, problematic or even embarrassing, they may decide breastfeeding simply isn’t worth the ‘hassle’.

3.2.5 Conclusion

In order for women to make informed decisions about how they are going to feed their baby, they need to be given accurate, impartial advice about the benefits and dangers of the different feeding methods. If the DoH is to achieve its aim of increasing breastfeeding incidence and duration, then the media must play a part in creating a breastfeeding culture where women are able to breastfeed in public and where it is seen as being the norm. Pregnancy and baby magazines have a role to play by presenting information factually and without the current mixed messages from the profit driven formula companies. Women need to be empowered to feel confident to breastfeed in any situation and in their body's ability to breastfeed successfully without having to rely on 'experts' telling them what to do, or the necessity to purchase a myriad of products which seek to transform parenting into an expensive consumer experience to be perfected.

3.3 Infant feeding experiences and attitudes

3.3.1 Introduction

Many studies have explored mothers' reasons for not breastfeeding or early cessation of breastfeeding and have contrasted the attitudes of mothers who breastfeed with those who do not. Findings indicate that mothers who breastfeed tend to have more knowledge of and positive attitudes towards breastfeeding than mothers who formula feed (Dusdieker *et al* 1985, Baisch *et al* 1989ab), and are less likely to report their own embarrassment or disapproval of others breastfeeding in public. The benefits that are important to mothers who choose each method also differ: mothers who breastfeed tend to emphasize nutritional benefits, while mothers who formula feed seem to be more motivated by perceived convenience (Arora *et al* 2000). This study looked at infant feeding practices in Liverpool and how they compared with those reported in other studies.

3.3.2 Method

Women were recruited from LWH and invited to take part by letter once their baby was born. They were contacted by telephone to arrange a suitable time for an interview to take place (usually in their own home) when their baby was between eight and 16 weeks old. During this interview, the women completed a questionnaire (appendix 6.5) which included sections on antenatal care, decisions about feeding methods, experiences of feeding methods, attitudes and beliefs about different feeding methods and demographic questions. Content analysis was carried out to identify prominent themes for the open-ended questions.

For the purpose of this study, exclusively breastfed (EBF) was defined as never having been given any formula, partially breastfed (PBF) as being given some breastfeeds and some formula feeds, and formula fed (FF) as never having been breastfed.

SES was classified by the occupation of the mother according to the Registrar General's classification of occupations (OPCS 1991). Where the mother did not work the occupation of her partner (if applicable) was used.

3.3.3 Results

A total of 149 women completed questionnaires, table 3.3.1 shows their demographic characteristics. The sample consisted mainly of white, well-educated women over 30 years of age, who were mostly married or living with their partner and of high socio-economic status. Similar numbers of women lived in the central and south PCT areas. Almost half the women were primiparous (49%), and approximately equal numbers of male (47%) and female (53%) babies were born to the women (aged between eight and 16 weeks, mean 13.4 weeks, SD 1.79). The mean birth-weight was 3.48kg (range 2.50 – 4.90 kg, SD 0.49) and 75% of women gave birth vaginally, 13% by planned caesarean section and 12% by emergency caesarean section (compared with 22.7% caesarean section rate at LWH 2003-2004).

Table 3.3.1. Demographic characteristics of respondents.

	Total n %	EBF n % of EBF	PBF n % of PBF	FF n % of FF
Age				
Under 30	45 30	5 14	19 30	21 44
30 and over	104 70	32 86	45 70	27 56
Education				
None	12 8	2 5	3 4	7 15
School	57 38	5 13	26 41	26 54
Vocational	24 16	8 22	9 14	7 15
Degree or above	56 38	22 60	26 41	8 16
SE status				
High (SE I & II)	75 50	30 81	30 47	15 31
Middle (SE III & IV)	37 25	6 16	13 20	18 38
Low (SE V & not working)	37 25	1 3	21 33	15 31
Ethnicity				
White	141 95	36 97	58 91	47 98
Black	5 3	1 3	3 5	1 2
Asian	2 1	0 0	2 3	0 0
Other	1 1	0 0	1 1	0 0
Marital status				
Single/separated	22 15	0 0	14 22	8 17
Married/living together	127 85	37 100	50 78	40 83
Number of children				
1 child	73 49	22 60	34 53	17 35
More than 1 child	76 51	15 40	30 47	31 65
PCT				
Central	81 54	16 43	35 55	30 63
South	68 46	21 57	29 45	18 37

Key: EBF - Exclusive breastfeeders

SE status – socio-economic status

PBF - Partial breastfeeders

PCT – primary care trust

FF - Formula feeders

There were similarities in the mean age of mothers responding (31 yrs) compared to all mothers delivering at LWH (29 yrs), and ethnicity – 95% of respondents were white European compared with 90% of all mothers delivering at LWH being white European.

Only 14% of women who were exclusively breastfeeding were under the age of 30, this

compares with 30% of partially breastfeeding women and 44% of formula feeding. The age of mother was significantly related to feeding method ($\chi^2 = 9.1$, $p = 0.011$, $df=2$). Education level attained was also associated with feeding method ($\chi^2 = 23.6$, $p= 0.000$, $df=4$), with 38% of exclusive breastfeeding women educated to degree level or higher as compared with 16% of formula feeding women. Exclusive breastfeeding women were significantly more likely ($\chi^2 = 25.0$, $p=0.000$, $df=4$) to be of higher socio-economic status than formula feeding women: 81% of EBF women compared with 31% of FF women. Marital status was related to feeding method ($\chi^2 = 9.1$, $p = 0.010$, $df=2$), with 100% of EBF women married or living with their partner, compared with 78% of PBF and 83% of FF women. A significantly higher percentage of exclusive and partial breastfeeding women were primiparous, compared with formula feeding women who were more likely to have two or more children ($\chi^2 = 6.5$, $p = 0.038$, $df=2$).

Smoking was a highly significant factor with regard to method of feeding ($\chi^2 = 18.4$, $p= 0.000$, $df=2$), with 100% of exclusive breastfeeding women being non-smokers. It is well known, from surveys such as the General Household Survey, that there is a strong association between smoking, socio-economic classification and age. Women of higher socio-economic groups are less likely to smoke as are older women, and these factors may account for the 100% non-smoking rate seen in the present study among exclusive breastfeeding women. With regard to smoking, 80% of the mothers did not smoke at all before, during or after pregnancy. The average number of cigarettes smoked by the remaining mothers was 3.7 per day (range 1-30, SD 7.08). During pregnancy, the average number of cigarettes smoked was 1.72 per day (range 3-20, SD 4.69), with 18 of the mothers having ceased smoking. After pregnancy, the average number of cigarettes smoked was 2.2 per day (range 2-25, SD 5.27), and six of the women who had given up during pregnancy began smoking again. Non-smokers were significantly more likely to have been educated to degree level ($\chi^2 = 19.0$, $p=0.000$, $df=2$), belong to a higher socio-economic group ($\chi^2 = 26.5$, $p=0.000$, $df=2$) and aged over 30 ($\chi^2 = 19.6$, $p=0.000$, $df=1$).

PCT and feeding method

Liverpool is divided into three PCTs; north, central and south. Women were not recruited from the north PCT due to time and travel constraints. Whilst more exclusive breastfeeding and fewer formula feeding mothers lived in the south PCT area, this was not significant ($p=0.209$). The south PCT consists of eight wards (population 96,734) and has an average Jarman Under Privileged Area (UPA) score of 15.63 (range -4.48 to 37.92). This compares with the central PCT which consists of 18 wards (population 266,000) with an average UPA score of 28.31 (range -9.42 to 56.67). The UPA score is a measure of deprivation based on the following indicators taken from the 1991 census: elderly living alone, children under five years, unskilled workers, unemployed, over-

crowded households, highly mobile population and ethnic minorities. According to the Jarman definition, a higher score indicates increasing deprivation. Each mother was assigned an UPA score according to the ward in which they lived and these were compared with the method of feeding (table 3.3.2).

Table 3.3.2. UPA scores according to feeding method.

Feeding Method	n	Mean UPA Score	SEM
EBF	37	7.26	2.97
PBF (all)	64	17.73	2.22
PBF (still brf)	21	16.12	3.35
PBF (no longer brf)	43	18.52	2.89
FF	48	19.34	2.72

Exclusive breastfeeders had a lower UPA score than partial breastfeeders who had a lower UPA score than formula feeders. One-way analysis of variance (with Scheffe post-hoc test) revealed a significant difference at the 95% confidence level ($p=0.006$) between exclusive breastfeeders and both partial breastfeeders and formula feeders.

Incidence and duration of breastfeeding

In total, 48 women (32%) were exclusively formula feeding and had never given their baby any breast milk since birth. Of the remaining 101 women, 37 (25%) were exclusively breastfeeding and 64 (43%) were partially breastfeeding, of whom 21 were still giving some breastfeeds in conjunction with formula, while 43 had stopped giving breastfeeds altogether, and were solely feeding their infant with formula. Within the first month postpartum, 29 women (29% of all breastfeeders) had ceased breastfeeding and 45 (43% of all breastfeeders) had ceased within the first three months postpartum (table 3.3.3).

Table 3.3.3. Duration of breastfeeding.

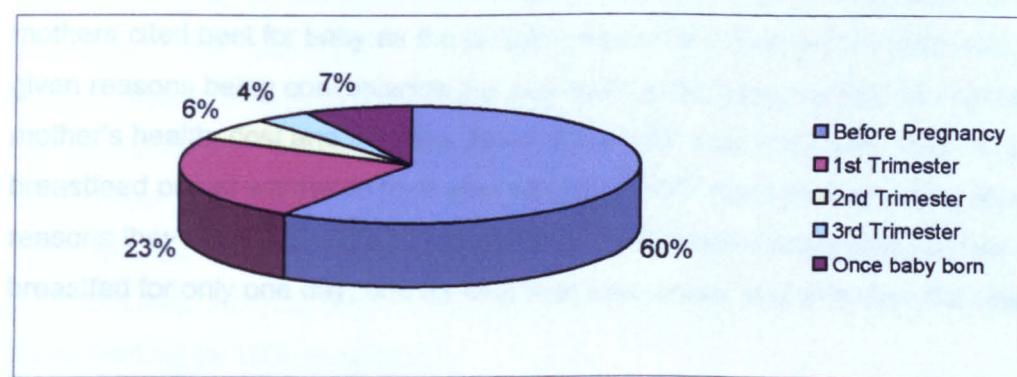
Duration	n	%
Never	48	32
1 day	3	2
less than 1 week	14	9
less than 1 month	12	8
less than 3 months	14	9
still partially breastfeeding	21	14
still exclusively breastfeeding	37	25

Table 3.3.4. Choice of feeding method.

Method	Planned		Actual	
	n	%	n	%
Had not decided	5	3		
Exclusively breastfeed	90	60	37	25
Exclusively formula feed	38	26	48	32
Combined breast and formula	16	11	64	43

Significantly fewer women exclusively breastfed than had planned to prior to the birth ($\chi^2 = 112.2$, $p=0.000$, $df=6$), and more partially breastfed. All those who had planned to exclusively formula feed did so (table 3.3.4).

Figure 3.3.1. Timing of decision.



The majority of women (88, 60%) had decided before they were pregnant how they wanted to feed their baby, and 35 (23%) had chosen within the first trimester (figure 3.3.1). Only 11 (7%) waited until the baby was born before deciding; their details are shown in table 3.3.5. These women varied in age (mean age 29y), and combined with those who decided in the second and third trimester were significantly less likely to exclusively breastfeed ($\chi^2 = 12.6$, $p=0.014$, $df=4$). This was related to socio-economic status with those in lower socio-economic groups more likely ($\chi^2 = 13.9$, $p=0.008$, $df=4$) to decide on feeding method once their baby was born.

The reasons given for formula feeding were convenience, lack of knowledge about benefits of breastfeeding, and the positive aspects of using formula feeding (table 3.3.2). The perception of convenience here relates to not being "tied" to the baby who then needs to be able to feed the baby. It was not clear why one woman believed that breastfeeding was easy.

Table 3.3.5. Details of women who decided on feeding method once their baby was born.

Subject no	age	feeding status
EBF22	31	still exclusively breastfeeding
FF38	21	no breastfeeds, only formula
FF39	37	no breastfeeds, only formula
FF46	29	no breastfeeds, only formula
FF47	33	no breastfeeds, only formula
PBF03	19	breastfed for less than 1 week
PBF17	36	breastfed for 1 day
PBF19	24	breastfed for 1 day
PBF49	21	still breastfeeding with some formula feeds
PBF60	34	breastfed for less than 1 week
PBF64	31	breastfed for less than 1 week

The reasons given for choosing to breastfeed are shown in table 3.3.6. The majority of women (76%) gave more than one reason; the maximum given was six. The majority of mothers cited best for baby as the primary reason for breastfeeding with other commonly given reasons being convenience (i.e. not having to make up or sterilise bottles), better for mother's health, cost and bonding. None of the EBF mothers stated they felt obliged to breastfeed or just wanted to try it whereas 6% of PBF mothers stated this was one of the reasons they breastfed; 75% of these women had ceased breastfeeding; two had breastfed for only one day, one for less than one month, and one was still breastfeeding.

Table 3.3.6. Reasons for breastfeeding.

Reason	EBF mothers % of mothers	PBF mothers % of mothers
Better for baby's health	95	92
Easy/convenient	41	39
Better for mother's health	30	14
Cheap(er)	16	11
Bonding/intimacy	16	19
Natural	14	8
Help mother regain figure	8	11
Enjoy it/previous good experience	8	11
Felt obliged/wanted to give it a go	0	6

The reasons given for formula feeding relate more to the perceived negative aspects of breastfeeding than to the positive aspects of using formula (table 3.3.7). The perception of convenience here relates to not being 'tied' to the baby and that others would be able to feed the baby. It was not clear why one woman believed that breastfeeding was lazy.

Table 3.3.7. Reasons for formula feeding.

Reason	%
Easier/convenient than bfr	24
Other children were ff	16
Didn't want to breastfeed	16
Father could be involved	13
Previous difficulties bfr	13
Not constantly feeding	8
More comfortable with idea of ff	8
Have good weight babies	3
Breastfeeding is lazy	3
Breasts sore after the birth	3

Note – women could tick more than one response, therefore percentages do not sum to 100.

Formula feeding women were also asked to state their reasons for not initiating breastfeeding (table 3.3.8). Women could tick as many boxes as they wished or give their response in their own words. Reasons for not breastfeeding encompassed socio-cultural factors, medical/biological factors and maternal beliefs/attitudes. The most common reasons were that the woman just 'didn't want to breastfeed' (56%) and that the baby's father could be involved in feeding (48%). Going back to work was seen as a reason for not initiating breastfeeding by 27% of women and 21% thought that formula milk was as good as breast milk. Formula feeding was seen as being easier/more convenient than breastfeeding by 19% of women.

Table 3.3.8. Reasons for not breastfeeding.

Reason	% of all FF women
Socio-cultural	
Could involve the father	48
Working mother	27
Formula feeding easier/convenient	19
Other children were formula fed	13
Previous difficult experience	13
Lack of privacy in home	8
Medical/Biological	
Not enough milk	10
Sore breasts	6
In pain following the birth	4
Baby wouldn't take breast	2
Maternal belief/attitude	
Didn't want to breastfeed	56
Formula as good as breast milk	21
Breastfeeding is embarrassing	10
Breastfeeding too time consuming	6
Had big baby so couldn't breastfeed	2
Smoked so couldn't breastfeed	2
Breastfeeding is lazy	2
Not accepted publicly	2

The majority of women in the present study (90%) knew other mothers with babies, half of whose babies were formula fed (52%), 24% were partially breastfed and 23% exclusively breastfed. Breastfeeding mothers were significantly more likely ($\chi^2 = 9.1$, $p=0.010$, $df=2$) to know breastfeeding mothers than formula feeding mothers. When the mothers were asked if they knew how they were fed as babies, 7% didn't know, 18% were breastfed, 56% were formula fed and 19% were both breast and formula fed. Those who were breastfed were significantly more likely ($\chi^2 = 16.3$, $p=0.012$, $df=6$) to breastfeed their own infant than those who were formula fed.

Having seen someone else breastfeeding in public was stated by 109 (73%) women and in 55% of cases this was someone they did not know. A higher percentage of exclusive breastfeeding women (78%) had seen someone breastfeeding in public compared to formula feeding women (69%) although this was not significant ($p=0.659$). Table 3.3.9 shows how each of the feeding groups felt about seeing a breastfeeding woman.

Table 3.3.9. Feelings about seeing a breastfeeding woman.

Feeding type	Negative n %		Ambivalent n %		Positive n %	
EBF	2	40	10	16	17	40
PBF	0	0	28	45	19	45
FF	3	60	24	39	6	14
Total	5	5	62	57	42	39

Only 5% of women expressed a negative emotion about seeing a woman breastfeeding in public with them feeling embarrassed, surprised or shocked. Two of these women were exclusive breastfeeders and three were formula feeders. A higher percentage of women (57%) felt ambivalent, stating they were "not bothered", "no objections", "fine", "no concerns", "no problems", "did not mind", "disinterested", "no strong feelings", "no particular thoughts", "no effect on me". Partial breastfeeders and formula feeders were more likely ($\chi^2 = 13.3$, $p=0.010$, $df=4$) to feel ambivalent than exclusive breastfeeders. Positive feelings were expressed by 39% of women, stating they were "proud and happy for both mother and baby", "proud she was able to do this openly", "good that she had the confidence to do this", "wanted to give her a pat on the back", "good example to other mothers", "looked natural and lovely", "pleased for them", "pleased that she felt comfortable and confident to feed in public", "quite happy – it's the natural thing to do", "delighted", "I thought 'good on her'... I admired her", "I think it's nice to see mums breastfeeding their babies", "it felt good seeing the bonding". Many women who were breastfeeding said they were pleased to see others breastfeeding, as this reinforced what they were doing: "encouraged to do so myself", "it felt quite liberating to be with someone who felt the same

way I do”, “I felt pleased and somewhat justified in feeding my baby the way I do”, “pleased as I do it as well”, “more confident about doing it myself”.

Antenatal period

Only two respondents (1%) did not have any antenatal check ups during their pregnancy (both were single, aged 18 and 19, were not working and left school with no qualifications at aged 14 and 16). Of the remaining 147 respondents, 118 (80%) said that feeding was discussed with them, primarily by the midwife, and 82 (69%) of these women said that breastfeeding was encouraged. The remaining women said that neither method was encouraged and that they were simply asked how they were going to feed their baby rather than having a discussion about feeding.

With regard to antenatal classes, only 58 women (39%) attended these classes, the majority of classes were run by the hospital with only seven women (12%) going to a NCT class, and three women (5%) going to a health centre class. Of those women who did not go to antenatal classes, 77% were multiparous; primiparous women were significantly more likely to have attended antenatal classes ($\chi^2 = 62.8$, $p=0.000$, $df=1$), as were those who were still breastfeeding (exclusively or partially) ($\chi^2 = 25.3$, $p=0.000$, $df=2$).

The birth and postnatal care

When asked if anyone had shown the mother what to do the first time they fed their baby, 40% replied no. Of these, 38% stated that they would have liked help, and significantly more ($\chi^2 = 4.8$, $p=0.029$, $df=1$) were primiparous. Of those women who would have liked more help, 4% were EBF, 48% FF and 48% PBF. Of the partial breastfeeders who would have liked help, 55% had breastfed for less than one month, 9% for less than three months and 36% were still breastfeeding. Age, education level and socio-economic status were not significant factors with regard to whether women would have liked help. Those who did receive help received it mainly from the midwife (92%).

When asked if they felt pressurized into breastfeeding their baby, 28 women agreed (19%). These were significantly more likely to be formula feeders and partial breastfeeders ($\chi^2 = 8.1$, $p=0.017$, $df=2$). Feeling pressurized into formula feeding was stated by 12 women (8%), and these were significantly more likely to be exclusive and partial breastfeeders ($\chi^2 = 6.2$, $p=0.013$, $df=1$).

Breastfeeding experiences

In total 101 respondents (68%) initiated breastfeeding, all immediately after delivery or within the first few hours. Prior to the birth 60% of women intended to exclusively breastfeed but only 25% did so following the birth; the majority switched to partial breastfeeding. Of those intending to breastfeed for over three months (60%), 57% still were (either exclusively or partially). Only eight women (8%) who had intended to breastfeed (exclusively or partially) before the birth were exclusively formula feeding after the birth. The characteristics of these women are shown in table 3.3.10.

Table 3.3.10. Women who planned to breastfeed but did not.

Subject no	age	smoker	Parity	SE class	reason didn't brf
FF07	21	yes	primip	low	didn't want to
FF12	19	yes	primip	middle	breasts were sore
FF20	22	no	primip	middle	pain after the birth
FF35	27	yes	multipip	low	sore breasts
FF37	18	yes	primip	low	baby wouldn't latch on
FF38	21	yes	primip	low	had no milk
FF39	37	no	multipip	middle	painful breasts
FF40	28	no	multipip	low	too exhausted post delivery

Most of these women (75%) were under 25 years of age and of lower socio-economic status. Half were not working, half were single and 63% were primiparous. Only one of these woman gave birth by caesarean section (subject FF39). The reasons given for not initiating breastfeeding seemed to be related to poor management of breastfeeding by health professionals following the birth in 63% of cases i.e. sore breasts, baby not latching on and perceived insufficient milk. In 88% of cases, the reasons were mother-centred rather than baby-centred.

At the time of being interviewed (mean age of baby was 13.5 weeks), 67% of PBF mothers had ceased breastfeeding; the reasons are shown in table 3.3.11. The majority of reasons related to the mother and her experience of breastfeeding rather than to the baby.

Table 3.3.11. Reasons for ceasing breastfeeding.

Reason	% of mothers (n=43)
Relating to the baby:	
Too demanding/not satisfied	19
Not latching on	12
Poor weight gain/weight loss	9
Preferred the bottle	2
Relating to the mother:	
Too painful	28
Too time consuming/tiring	25
Milk drying up	9
Return to work	7
Mother ill	7
Engorged/mastitis	4
Inconvenient socially	5
Could involve father with feeding	5
Couldn't brf as had poor diet	2
Didn't really want to brf	2

Women who breastfed for less than three months (compared with those who were still breastfeeding either exclusively or partially), were significantly more likely to be of lower socio-economic status ($\chi^2 = 20.3$, $p=0.000$, $df=2$), less than 30 years of age ($\chi^2 = 7.5$, $p=0.006$, $df=1$), single ($\chi^2 = 12.4$, $p=0.000$, $df=1$), less well educated ($\chi^2 = 8.4$, $p=0.015$, $df=2$), a smoker ($\chi^2 = 5.9$, $p=0.016$, $df=1$), giving their baby solid food ($\chi^2 = 14.8$, $p=0.000$, $df=1$), not to have attended antenatal classes ($\chi^2 = 4.3$, $p=0.039$, $df=1$), to have decided on feeding method late in pregnancy or once baby was born ($\chi^2 = 12.3$, $p=0.002$, $df=2$), to have felt pressured into breastfeeding ($\chi^2 = 7.7$, $p=0.006$, $df=1$), never to have seen anyone breastfeeding ($\chi^2 = 5.2$, $p=0.023$, $df=1$), not to have enjoyed breastfeeding ($\chi^2 = 22.2$, $p=0.000$, $df=1$), not to want to breastfeed another child ($\chi^2 = 11.8$, $p=0.001$, $df=1$) and would not encourage friends to breastfeed ($\chi^2 = 15.0$, $p=0.000$, $df=1$).

Despite some women experiencing difficulties with breastfeeding, overall, 83% found it an enjoyable experience and 90% would breastfeed again, with 90% stating they would encourage their friends to breastfeed. Only 20% stated they found it an embarrassing experience.

Formula feeding experiences

Exclusive formula feeding was practised by 48 women, whilst 64 partially formula fed their infants (112 (75%) of all infants in this study received formula). Prior to the birth, 79% of the formula feeding women had intended to formula feed (15% had intended to breastfeed and 6% were undecided).

The majority of women who gave their baby formula, either alone or in conjunction with breast milk, used either SMA or Cow & Gate (53% and 32% respectively). These two formulae are the ones routinely given in hospital, and some mothers reported that

midwives told them SMA was the closest formula to breast milk, and thus more suitable if partially breastfeeding. The remainder of mothers used Milupa (7%), Farleys (7%) or Hipp Organic (0.9%). Half the mothers (53%) were currently using the same formula that they had first given their baby, the remainder changing due to either availability/cost or baby still being hungry. Formula feeding mothers were significantly more likely to change formula because of the perception that their baby was still hungry/not satisfied ($\chi^2 = 5.0$, $p=0.025$, $df=1$), as did partially breastfeeding mothers who had ceased breastfeeding compared to those who were still breastfeeding ($\chi^2 = 4.5$, $p=0.034$, $df=1$).

The majority of mothers used powdered formula (76%), or powdered formula in conjunction with RTF formula. Only 8% of mothers used RTF all the time, and these were women who gave only top up formula feeds in addition to breastfeeds (RTF is more expensive than powdered and is not available with milk tokens).

Introduction of solid food

In total 58 babies (39%) were receiving solid food (table 3.3.12), and 69% of these were receiving solids before the minimum recommended age of 16 weeks (DoH 1994), some as early as 11 weeks. Formula fed babies were significantly more likely to be receiving solids than breastfed babies ($\chi^2 = 13.8$, $p= 0.000$, $df=1$). Of the 29 partially breastfed babies who were receiving solids, only three (10%) were still receiving some breastfeeds. The mothers of babies who were receiving solid food were significantly more likely to be of lower socio-economic status ($\chi^2 = 11.8$, $p=0.003$, $df=2$) and be less well educated ($\chi^2 = 12.1$, $p=0.002$, $df=2$). The sex of the baby was not significantly related to whether they were receiving solids or not ($p=0.555$). Types of solid food given were usually baby rice or rusks.

Table 3.3.12. Is your baby receiving any solid food?

	No		Yes	
	n	%	n	%
EBF	32	86	5	14
PBF	40	63	24	38
FF	19	40	29	60

Breast and formula feeding mothers' perceptions of infant feeding methods

In order to look at the perceptions of benefits and drawbacks associated with each feeding method, the mothers were asked to rate 14 statements about infant feeding according to a five point Likert scale ranging from strongly disagree to strongly agree. A statistical analysis of the 14 statements was then performed (see table 3.3.13), by recoding responses into either disagreed (D), neither (N) or agreed (A). The analysis compared ratings of each statement by mothers who breastfed, either exclusively or partially (BF) to those who exclusively formula fed (FF) using the χ^2 test.

Table 3.3.13. Comparison of perceptions of breast and formula feeding mothers.

	Mothers who BF (%)			Mothers who FF (%)			p value
	D	N	A	D	N	A	
Bottle-feeding:							
is very convenient	34	25	42	0	10	90	0.000
is good way of fathers caring	18	24	59	0	10	90	0.000
greater freedom for mothers	16	17	68	2	18	53	0.036
is more expensive than brf	7	11	83	8	10	81	0.900
Breastfeeding:							
is very convenient	16	9	76	25	48	27	0.000
is pleasant for mother & baby	11	8	82	8	56	35	0.000
is painful	46	17	38	8	69	23	0.000
protects infants from diseases	5	11	85	17	38	46	0.000
is beneficial to mother's health	6	16	79	13	50	38	0.000
in public is unpleasant	51	29	21	40	38	23	0.430
Brf babies are happier	20	48	33	35	58	6	0.001
Brf babies need to be fed too often	29	34	38	10	58	31	0.007
Most mothers have sufficient breast milk	15	25	61	13	56	31	0.001
Breasts are made for brf	10	16	75	21	44	35	0.000

Key: D Disagreed
N Neither
A Agreed

Whether breastfeeding or formula feeding, mothers were significantly more likely to rate their own method of feeding as being very convenient (table 3.3.13, breastfeeding: $\chi^2 = 37.1$, $p=0.000$, $df=2$, formula feeding: $\chi^2 = 32.6$, $p=0.000$, $df=2$). Formula feeding women were more likely to agree than disagree that formula feeding is a good way of fathers caring for their babies ($\chi^2 = 16.1$, $p=0.000$, $df=2$), and gives greater freedom to mothers ($\chi^2 = 6.7$, $p=0.036$, $df=2$). Similar numbers of breast (81%) and formula feeding (83%) women believed that formula feeding was more expensive than breastfeeding.

Breastfeeding women were significantly more likely than formula feeding women to believe that breastfeeding is pleasant for mother and baby ($\chi^2 = 42.8$, $p=0.000$, $df=2$), is not painful ($\chi^2 = 41.7$, $p=0.000$, $df=2$), protects infants from diseases ($\chi^2 = 23.6$, $p=0.000$, $df=2$), is beneficial to mother's health ($\chi^2 = 24.2$, $p=0.000$, $df=2$), that breastfed babies need to be fed too often ($\chi^2 = 9.9$, $p=0.007$, $df=2$), that most mothers have sufficient breast

milk ($\chi^2 = 14.8$, $p=0.001$, $df=2$) and that breasts are made for breastfeeding ($\chi^2 = 21.1$, $p=0.000$, $df=2$). Significantly fewer formula feeding women believed that breastfed babies are happier ($\chi^2 = 13.3$, $p=0.001$, $df=2$).

Additional comments by mothers

The questionnaire included space for women to write in any additional comments about their experiences with feeding, or life with a new baby in general. In total, 44 women (30%) took this opportunity to comment (25% were EBF, 64% PBF and 11% FF). The overall theme seemed to be of feeling out of control and not doing what the women really wanted to with regards their feeding decisions. From this, four sub-themes arose: feeling vulnerable/guilty/isolated, going back to work, midwives/other health professionals very helpful, midwives/other health professionals not very helpful/ lack of support. These themes are expanded below.

1. Feeling vulnerable/guilty/isolated

Both primiparous and multiparous women experienced these emotions, particularly in relation to starting formula after having given breastfeeds. One woman stated that she "felt vulnerable and very upset when I gave the first bottle of formula", whilst another stated she "felt guilty about not breastfeeding for longer – vulnerable and pressure". Another said that she "felt guilty I couldn't breastfeed". These feelings of guilt and vulnerability may have been contributed to by the isolation that breastfeeding women felt as expressed by this 43 year old primiparous mother: "felt isolated in hospital and that I was the only one with problems (with feeding)".

2. Going back to work

Anticipation of returning to work was seen as a major obstacle to breastfeeding, with some EBF women stating they "may start with formula when go back to work" and that they were "having problems getting baby to take a bottle in preparation for going back to work". PBF women also stated that this was the time they "started formula feeding as going back to work", "only introduced formula as going back to work" and "didn't want to give up breastfeeding but going back to work".

Perceptions of support by health professionals were very mixed as demonstrated by the following two themes, with more women encountering negative experiences rather than positive ones.

3. Midwives/other health professionals very helpful

Receiving appropriate help and support was very important to this group of women; this support came from health professionals but also lay organisations, particularly the NCT. One mother stated that the “midwife was very good, lots of support, otherwise may have given up breastfeeding. Also saw an NCT support worker”. Another woman stated she “had lots of support from the midwife and friend is a midwife too. NCT classes were more helpful than hospital classes”. Multiparous women also valued this support: “very good support from the GP’s midwife. Health visitor good when had problems”.

4. Midwives/other health professionals not very helpful/lack of support

Unfortunately, positive experiences of support were outweighed by the number of negative experiences encountered by many women. Hospital practices seemed to have contributed to this as expressed by the following primiparous woman: “as a special care nurse (at LWH) was assumed that I knew what I was doing but was just left to get on with it, even though I was a first time mum”. Another stated that she felt there was “not much support – especially with expressing in hospital. Midwife not very encouraging. Baby wasn’t sucking properly and she said he might have a hole in his palate but she didn’t check”. Several women commented upon either not receiving help or not being able to ask for it as the midwives were busy: “breastfed first baby but no help this time as midwives were busy”, “not much support in hospital – were busy and felt I couldn’t bother them”, “not much support – too busy in hospital”, “under-resourced and short staffed on maternity ward. Told different things by different midwives. Breastfeeding counsellor wasn’t available”. The type of support offered was also seen as being important as expressed by these two primiparous women: “not much support from midwife. Knew the benefits (of breastfeeding) but needed practical support. Pressure from the doctor and health visitor as baby not conforming to growth curves and so I was told to put baby on formula”, “felt support wasn’t there – both in hospital and at home (was single). More information needed instead of general ‘don’t worry, you’ll be OK’. Emotional support and encouragement needed”.

As these themes show, being supported and encouraged and receiving practical help with breastfeeding were very important to these women, particularly at a time when they were feeling vulnerable, and emotions were mixed following the birth of their baby. Experiences of help by health professionals varied widely, and there was the perception that breastfeeding and returning to paid employment were incompatible.

3.3.4 Discussion

The purpose of this study was to provide insight into current feeding practices of women in Liverpool. Liverpool has the fifth highest UPA score in the UK and breastfeeding rates are low compared to elsewhere, with 45% of mothers breastfeeding at delivery, 35% at discharge and only 25% one month later (personal communication). In the present study, 68% initiated breastfeeding – this is much higher than expected for Liverpool and may reflect the recruitment process. Previous breastfeeding surveys have demonstrated that non-responders are more likely to have the characteristics of formula feeders than breastfeeders (Buckell & Thompson 1995, Shepherd *et al* 1998, Hamlyn *et al* 2002). Therefore, the findings from this study cannot be generalised to the population of Liverpool as a whole.

Exclusively breastfeeding women were significantly more likely to be a non-smoker, educated to degree level, married or living with partner, to have been breastfed as a baby, belong to a higher socio-economic group, older, to have only one child, and to have attended antenatal classes. Had the sample size been larger, multiway frequency analysis such as loglinear analysis could have been performed to develop models to give significant predictors of breastfeeding initiation and cessation. Nevertheless, the findings from the bivariate analyses are similar to those reported in the sixth quinquennial national survey of infant feeding practices in the UK (Hamlyn *et al* 2002), and other epidemiological surveys in developed countries (Gabriel *et al* 1986, Sikorski *et al* 2001, Donath & Amir 2000). Whilst maternal socio-demographic characteristics (age, education, marital status) cannot be changed, understanding their association with infant feeding practices may help health professionals to target breastfeeding promotion interventions more effectively. Avery *et al* (1998) states that women in specific age groups, for example, may be likely to have certain beliefs about the outcomes of breastfeeding that are common among members of their age cohort, or women in certain age groups may be more or less patient and persistent when actually engaging in breastfeeding. However, it has been suggested that maternal (De La Mora *et al* 1999, Dungy *et al* 1994) and paternal (Scott *et al* 2001, Giugliani *et al* (1994) infant feeding attitudes are often stronger predictors of both choice of feeding method and duration of breastfeeding than socio-demographic factors.

Incidence and duration of breastfeeding

Prenatal intentions have frequently been found to be a strong predictor of feeding behaviour (Entwistle *et al* 1982, Hally *et al* 1984, Coreil & Murphy 1988, Scott *et al* 1997a, Avery *et al* 1998, Arora *et al* 2000) and women who made their infant feeding decision at the time of booking tended to follow through on this decision at discharge (Quarles *et al* 1994, O'Campo *et al* 1992, Scott *et al* 2004). In the present study 60% of women had decided how they were going to feed their baby before pregnancy with a further 24%

deciding in the first trimester. Of all women, 61% adhered to their choice of feeding method, and of those deciding before pregnancy or during the first trimester, 65% adhered to their planned choice of feeding method. Those who left the decision until the baby was born were more likely to formula or partially breastfeed. Variables from the Theory of Planned Behaviour (TPB) (Ajzen & Madden 1986, Ajzen 1988) and its predecessor the Theory of Reasoned Action (TRA) (Fishbein & Ajzen 1975, Ajzen & Fishbein 1980, Fishbein 1980) have been significant predictors of breastfeeding initiation (Manstead *et al* 1983, 1984) and duration (Janke 1994, 1992). According to the TPB, intention is assumed to be highly predictive of behaviour. Specific beliefs about the outcomes of the behaviour influence attitude; perceptions about specific other individual's support, or lack of support for undertaking the target behaviour underlie perceived social norms and specific control beliefs, relevant to the target behaviour underlie the generalized perception of control (Ajzen & Madden 1986, Ajzen 1988). By using this theoretical perspective to guide research about the formation of breastfeeding intentions, health professionals might gain insight about potential efficacious interventions for breastfeeding women, for example, to increase breastfeeding rates, it may be necessary to change maternal attitudes to breast and formula feeding rather than changing real or perceived social norms and to change the primary beliefs underlying these attitudes.

Chye *et al* (1997) found that mothers who had either no intentions or were ambivalent about their breastfeeding commitments antenatally were least likely to exclusively breastfeed. The fact that the majority of women in the present and previous studies decided on their choice of feeding method before pregnancy and then followed through with that choice suggests that it is intrinsic to their belief and value system and supports the TRA which states that most actions of social relevance are under volitional control and that individual intention to perform an action is an immediate determinant of that action (Fishbein & Ajzen 1975, Ajzen & Fishbein 1980, Fishbein 1980). Additionally, it is important to realise that education or support programmes provided during a mother's postpartum hospital stay may be an important method of increasing breastfeeding duration, but are not likely to have a significant impact on initiation rates as most women have made their feeding decision before pregnancy, as supported by the findings of the present study.

Choice of feeding method

Kong & Lee (2004) found that personal, cultural, social and environmental factors are common influencing factors in the decision to breastfeed, and the findings of the present study correspond with this.

The most common reason given for breastfeeding was that it was best for baby, followed by convenience, findings which are similar to other studies (Brimblecombe & Cullen 1977, Yeung *et al* 1981, Baranowski *et al* 1986, Hamlyn *et al* 2002). In the present study, both breast and formula feeding mothers cited convenience as a reason for their choice of feeding method. Zimmerman & Guttman (2001) also found that mothers from each group claimed their method of choice to be relatively more convenient than the other. Therefore, promotional messages on convenience may not have an appeal to those who formula feed as their perception of convenience differs. Other reasons for breastfeeding included greater bonding and intimacy, and 6% of partially breastfeeding women felt obliged to or wanted to "give it a go", whilst 19% of women felt pressured into breastfeeding, although by whom they did not say. This is considerably higher than that found by Hamlyn *et al* (2002) where only 9% of women said they felt pressured into breastfeeding. The most common reason given for formula feeding was that it was easy/convenient followed by not wanting to breastfeed and father could be involved, again similar reasons to those found by Yeung *et al* (1981) and Hamlyn *et al* (2002). More women (8%) felt pressured into formula feeding than Hamlyn *et al* (1%), again, it was not known who or where this pressure came from or the form it took.

It is interesting to note that formula feeding mothers frequently gave mother-centred reasons for their choice of feeding method rather than reasons relating to their baby's welfare as in the case of breastfeeding mothers. These findings have also been described by previous studies (Adams 1959, Brown *et al* 1960, Maehr *et al* 1993, Wilson & Colquhoun 1998, Arora *et al* 2000 and Heck *et al* 2003). Manstead *et al* (1984) found that mothers who chose to formula feed did so not because it has any special merit, but rather because it avoids the perceived disadvantages of breastfeeding. They suggested that attempts to increase the incidence of breastfeeding should focus on increasing maternal awareness about differences between the two feeding methods.

However, knowing that 'breast is best' does not guarantee a mother will breastfeed, nor is it the same as knowing there are risks involved with formula feeding. Kaplowitz (1983) found that breastfeeding education increased the knowledge of the subject, but failed to affect feeding method. Dix (1991), Zimmerman & Guttman (2001) and Dewan *et al* (2002) found that whilst mothers thought breastfeeding was better for their baby, the majority chose to bottle-feed. In the present study, 9% of mothers who thought breast was best,

chose to formula feed as did 47% of mothers who partially breastfed but had ceased breastfeeding within three months. In addition 46% of formula feeding mothers agreed that breastfeeding protects infants from diseases. Black *et al* (1990) indicate that positive attitudes are more important predictors of initiation of breastfeeding than knowledge about breastfeeding. Losch *et al* (1995) state that women who chose to use formula are not so much embracing this method of infant feeding as they are rejecting breastfeeding; the most frequently cited reasons for rejecting breastfeeding are embarrassment (Mohrer 1979, Bacon & Wylie 1976, Gielen *et al* 1992), fear of pain or discomfort (Dix 1991, Bevan *et al* 1984), limitations on freedom and social life (Mackey & Fried 1981, Bacon & Wylie 1976, Gielen 1992, Bevan *et al* 1984, Yoos 1985, Brown *et al* 1960) and concerns that the father would not be involved in the feeding process (Adair 1983).

Reasons given by formula feeding women for not breastfeeding in the present study encompassed many different aspects such as socio-cultural, medical/biological and maternal beliefs/attitudes. However, incorrect knowledge was apparent; 21% of formula feeding women believed that formula milk was as good as breast milk. Dykes & Williams (1999) believe that this reflects the general tension in society between belief in the natural versus confidence in the scientific. As Carter (1995) asserts 'although the "natural" has come to have a very powerful appeal in modern Western society, particularly in its connection to health, it is very much a natural world mediated by science'.

These findings suggest that other factors are more important in the decision to breast or formula feed, and that breastfeeding promotion focusing on the health benefits of breastfeeding alone may not be the best way of persuading mothers to breastfeed. Gabriel *et al* (1986) proposed that a cultural value of self-reliance guides the different choices that women make about infant feeding. For women who formula feed, a value of reliance-on-others guides them in choosing artificial foods for their infant and include others to share in infant feeding. Zimmerman & Guttman (2001) found that despite formula feeding mothers' beliefs in the health benefits of breastfeeding, they perceived that it would limit their activities; therefore breastfeeding promotion must also address lifestyle issues.

Embarrassment as a reason not to breastfeed was given by only 10% of respondents; this is lower than in other studies (Hally *et al* 1984, Gregg 1989, Ineichen *et al* 1997), and only 20% of breastfeeding women said they found it embarrassing. Foster *et al* (1996) and Huang *et al* (2004) reported that formula feeding women had a higher level of body-shape concern and body dissatisfaction, and Kong & Lee (2004) found that 70% of respondents said they would feel embarrassed if someone saw them breastfeeding. The low levels of reported embarrassment in the present study may be explained by other reasons given by

women such as inconvenient socially, didn't want to breastfeed, more comfortable with the idea of formula feeding, lack of privacy in the home, and not accepted publicly, where embarrassment may be an implicit underlying factor in several of these responses. The women might even have been embarrassed to admit to embarrassment.

Antenatal period

Whilst the majority (80%) of women said that feeding was discussed with them at their antenatal booking-in appointment, only 69% of women said that breastfeeding was encouraged. It was not clear how much detail about each feeding method was discussed but Crafter (1997) states that in the middle of a busy antenatal clinic with many 'bookings' to complete, it is far less time consuming for midwives to give a woman a 'lecture' about the benefits of breastfeeding than to spend time exploring with her how she feels about it and building on what she thinks the advantages and disadvantages are for her. This approach may help women consider how breastfeeding can fit into their lifestyle and social situation, rather than just being presented with a list of breastfeeding benefits, which as previously shown, does not guarantee a woman will breastfeed.

Antenatal classes were attended by only 39% of women, with 12% of these attending NCT classes. This is in accordance with Hamlyn *et al* (2002) who found 36% attended classes, the majority at a hospital and 8% at NCT. It is generally believed that mothers belonging to the NCT tend to derive from higher socio-economic groups, undertake further education and are likely to breastfeed for longer (Dykes & Griffiths 1998). This was certainly true of the women attending NCT classes in the present study; all were over 30, primiparous, of a higher socio-economic group, 71% were exclusively breastfeeding and 29% partially breastfeeding. Attendance at antenatal classes was significantly related to feeding method as consistent with findings by Hally *et al* (1984) where intended breastfeeders were more likely to attend antenatal classes, and that breastfeeders who had talked about feeding to a health professional at a class continued to breastfeed for longer than those who had not. Hally *et al* (1984) suggested that whilst there was little evidence that health professionals influenced mothers in their choice of feeding method (as most had already decided before pregnancy), extended duration of breastfeeding was found among those who had discussed feeding at antenatal classes. This may be due to breastfeeding women being more likely to attend antenatal classes than formula feeding women.

The birth and postnatal care

The method of delivery was not related to initiation of breastfeeding, this corresponds with other studies (Hamlyn *et al* 2002, Patel *et al* 2003). However, mothers were not asked about the type of pain relief during labour; studies are inconclusive whether this has an effect on the initiation of breastfeeding, with some finding it does (Hally *et al* 1984, Ransjö-

Arvidson *et al* 2001, Hamlyn *et al* 2002) and others that it does not (Halpern *et al* 1999). Therefore, the method of delivery and type of pain relief used should not be used as an indicator of the likelihood of breastfeeding initiation.

It was disappointing that many women believed they did not receive the help they would have liked with feeding in hospital. Of those who did not receive help 38% would have liked to, compared with 62% in Hamlyn *et al*'s study (2002). It is not clear why these women did not receive help. A possible explanation may have been because the midwives were too busy or that the women felt they could not ask for help. Indeed, this was one of the themes that emerged from the additional comments made by several women (see later). Approximately 8000 births per year take place at LWH (20 per day) so it may not be surprising that some women perceive the midwives to be too busy to approach for help and support. This highlights the need for additional support networks that are as accessible as a "tin of formula" (Armstrong 1995). In recognition of this and to comply with step ten of BFHI 'Ten Steps' (UNICEF 1998a), LWH provides an infant feeding drop-in clinic with specially trained staff to support, encourage and provide information to women experiencing feeding problems (see chapter 3.4). Additional clinics have also been set up in the community, particularly in the more deprived areas of the city.

Breastfeeding experiences

A high proportion of women begin with a clear commitment to breastfeed, but 43% of those who had initiated breastfeeding had ceased within three months; similar to Bevan *et al* (1984). Lau (2001) states that maternal interest in initiating and maintaining breastfeeding is a function of her relationship with her infant. A constructive interaction will influence positively her drive to provide milk for her child. A negative experience on the other hand, quickly ends with the break-up of the nursing dyad and cessation of lactation. This was true of the mothers in the present study who had ceased breastfeeding, reporting negative experiences such as the baby being too demanding, the process being too painful, time consuming/tiring, the breasts being engorged or suffering from mastitis. These reasons are similar to those cited in other studies for mothers ceasing breastfeeding in the early weeks (Brimblecombe & Cullen 1977, Yeung *et al* 1981, Chye *et al* 1997, Hamlyn *et al* 2002). This further reinforces the necessity that women receive up-to-date hands-on practical support with breastfeeding in the early postpartum period and that they have some knowledge of the physiology of lactation so they can understand how breastfeeding works, with the key fact being that virtually no-one is incapable of producing sufficient breast milk.

Kloeben *et al* (1999) found that women planning to breastfeed and planning to do so for longer duration reported using a progressively greater number of strategies to modify their behaviours and environments to support breastfeeding than did women uncertain of their infant feeding plans or planning to exclusively formula feed. They state that by tailoring breastfeeding interventions and education to the unique characteristics of the stages of change model (Prochaska & DiClemente 1984, 1986, Prochaska *et al* 1992) might provide, through Processes of Change and Decisional Balance Constructs, more effective methods for moving women closer toward the intention to breastfeed. Breastfeeding intention was positively associated with greater perceived social support for breastfeeding, so health educators should consider inclusion of a woman's significant others, particularly her mother and baby's father in breastfeeding educational activities to help strengthen her social support for breastfeeding. Beske & Garvis (1982) and Hamlyn *et al* (2002) found that people who perceived support from others for breastfeeding had more successful experiences. This may also explain why breastfeeding mothers in the present study were significantly more likely to know other breastfeeding mothers; as found by other studies (Jones 1987, White *et al* 1992, Wilson & Colquhoun 1998). Several other studies have documented the importance of significant others in women's infant feeding decisions (Kessler *et al* 1995, Manstead *et al* 1983, O'Campo *et al* 1992). Kloeben *et al*'s (1999) findings suggest that rather than merely providing identical breastfeeding education to all women, instead they might benefit from a more theoretically based tailored intervention approach reflective of their stages of change and dependent on their unique stage-related attitudes, beliefs, skills and social situations. Support for employing behavioural theories in breastfeeding research and intervention development additionally comes from the awareness that merely increasing womens' knowledge about the benefits of breastfeeding is insufficient to prompt action (Humphreys *et al* 1998). A more holistic approach to breastfeeding research, education and promotion founded on a theoretical basis, integrating knowledge and other behavioural influences, is more likely to be effective.

Insufficient milk was reported by 9% of mothers as the reason for ceasing breastfeeding although 19% also stated that the baby was too demanding or not satisfied which may indicate a perception of inadequate milk supply. Insufficient milk has frequently been cited as a reason for ceasing breastfeeding (Loughlin *et al* 1985, Chye *et al* 1997, Dykes & Williams 1999), and refers to real and perceived inadequate breast milk. Whilst 97% of women are physiologically capable of breastfeeding (RCM 1988), inappropriate feeding routines that result in ineffective or incomplete removal of milk soon lead to diminished production (Neifert 2001). Woolridge (1996) states that breastfeeding fails far more commonly for cultural reasons than for biological reasons. Confidence in ability to

breastfeed is one such factor. Women who are confident in their ability to breastfeed are typically successful (Loughlin *et al* 1985, O'Campo *et al* 1992, Papinczak & Turner 2000).

Only one of the women who had ceased breastfeeding did so as she felt her diet wasn't 'healthy' enough for her to breastfeed and she could not afford to buy fruit and vegetables. This misconception about diet and breastfeeding has been reported by others (Dykes & Williams 1999, Pollock *et al* 2002), where women equated their milk in terms of quality and quantity with the composition of their diet and fluid intake, and anxiety about diet was contributed to by comments from health professionals. One health visitor advised a mother to eat two hourly to boost her milk supply, and a midwife told a mother she needed an extra 1500 kilocalories a day. Fortunately this was rectified by another midwife who told her she only needed an extra 500 kilocalories per day as currently recommended by the DoH (1991). Current evidence shows that, except in cases of severe malnourishment, it is the baby's feeding patterns rather than the mother's diet which is responsible for the volume and macronutrient content of the milk (Butte & Calloway 1981, Guillermo-Tuazon *et al* 1992, Villalpando *et al* 1992, Prentice *et al* 1994, Butte *et al* 1997, Neville 1999, WHO/UNICEF 2000). Consuming even the poorest quality foods, women can produce an infant food of unrivalled quality which involves very little waste of either maternal or infant energy (Prentice & Prentice 1988). Even dieting during lactation has been shown to have no detrimental effects on lactational performance in well-nourished or overweight women (Butte *et al* 1984, Strode *et al* 1986, Dewey & McCrory 1994, Dewey 1998, Lovelady *et al* 2000). This demonstrates the need that health professionals use evidence-based research as the foundation on which they give advice to mothers.

Return to work was cited by only 7% of women as the reason for cessation of breastfeeding, similar to Brimblecombe & Cullen (1977) whilst other studies have found this percentage to be higher (Chye *et al* 1997, Hamlyn *et al* 2002). Although only a small percentage of women in the present study had already ceased breastfeeding because of return to work, many were thinking about or trying to introduce formula in anticipation of return to work, and this was a source of guilt for some of these women as highlighted by the additional comments made. Additionally, 27% of formula feeding women cited the reason of 'working' for why they did not initiate breastfeeding. To overcome this, health providers can guide mothers in developing an individualized plan for combining lactation and employment, thus enhancing perceived control. Planning to work outside the home may contribute to early breastfeeding cessation because some women cannot imagine a way to continue breastfeeding after returning to work as seen in this study and others (Avery *et al* 1998). The International Lactation Consultant Association (ILCA 2000) believes that breastfeeding women should be protected legally and enabled financially either to stay at home with their infant or to return to paid employment whilst continuing to

breastfeed. Additionally, public health interventions should study how to modify the workplace so that women who choose to work and breastfeed have time, space and resources to support lactation (Dodgson & Duckett 1997).

Although women in the present study were not asked how long they intended to breastfeed for, the fact that 60% had planned to exclusively breastfeed and only 25% did so, and that 43% of all breastfeeding women had ceased within three months suggests that many women did not achieve their breastfeeding goals as found in previous studies (Loughlin *et al* 1985, Emery *et al* 1990, Buckell & Thompson 1995, Hamlyn *et al* 2002, Chezem *et al* 2003). Dykes & Williams (1999) found that only 30% of women had achieved their breastfeeding goals, the remainder had completely ceased breastfeeding before they had intended to, often because many factors discouraged them along the way (Thomson 1990). Such factors include personal perceptions (Chan *et al* 2000, Diong *et al* 2000, Blyth *et al* 2002), employment and employer support (Tuttle & Dewey 1994), husband involvement (Earle 2000), social attitudes (Henderson 1999), social support (Rossiter 1998), public facilities and advice given by health workers (Switzy *et al* 1979, Barber-Madden *et al* 1987, Barron *et al* 1988, Robin 1993, James *et al* 1994). These findings possibly reflect that women's expectations of breastfeeding do not match the reality, as found by Chezem *et al* (2003). A woman may be more experienced with the normal feeding behaviour of the formula fed infant and have similar expectations for her breastfeeding infant which can then create a dichotomy (Wagner & Wagner 1999). Maclean (1989) believes that the impact of changes following the birth and a woman's response to them play an important role in influencing the quality and duration of the experience of breastfeeding, and the response to these changes is influenced by a series of mediating factors that encompass psychological, social and cultural influences. Some of these factors are personal or psychological related to the attitudes, values and character traits of the mother, the baby and those close to them. Others are structural factors, such as the absence or presence of formal and informal support systems. Confusion and uncertainty during this time (as reported by some of these mothers) can undermine self-confidence and increase sense of vulnerability.

In the present study, longer duration of breastfeeding was associated with several variables including: maternal age, education and socio-economic status, being a non-smoker, having attended antenatal classes, deciding on feeding method before pregnancy, enjoying breastfeeding and having seen others breastfeed. These findings have been reported in other studies (Salt *et al* 1994, Eriksen 1996, Horta *et al* 1997, Najdawi & Faouri 1999, Dodgson *et al* 2003). Richardson & Champion (1992) found that mothers who perceived breastfeeding to be the easy, natural way to feed a baby, breastfed for longer. Avery *et al* (1998) state that although many of the above variables

cannot be changed, understanding their association with early cessation may help practitioners to target women who may need additional services in order to achieve their personal breastfeeding goals. It may be that younger women with fewer years of formal education who perceived that they had less support for and control over their ability to breastfeed may have been less able to mobilize the help they needed to meet their goals. Longer breastfeeding duration may also be related to self-efficacy levels. If people believe that they can take action to solve a problem instrumentally, they become more inclined to do so and feel more committed to this decision. Perceived self-efficacy pertains to personal action control or agency (Maddux 1991, 1993, Bandura 1992, Wallston 1994). This 'can do' cognition mirrors a sense of control over one's environment and self-efficacy levels can enhance or impede the motivation to act. Individuals with high self-efficacy levels, for example, choose to perform more challenging tasks (such as breastfeeding) and set themselves higher goals and stick to them (Locke & Latham 1990). Once an action has been taken, high self-efficacious persons invest more effort and persist longer than those with lower self-efficacy. When set backs occur, the former recover more quickly and maintain the commitment to their goals, in this case breastfeeding duration.

Wallace (1992) suggested that most breastfeeding problems could be prevented or easily managed by prenatal education, anticipatory guidance and early knowledgeable support from family or health care providers. This view is supported by the present study which indicates that many women intend to breastfeed but difficulties and early negative experiences hinder them from breastfeeding successfully. According to Greiner (1995) breastfeeding programmes should place priority on protection (marketing codes) and support (breastfeeding-friendly practices at delivery and support measures for women in the market labour force) before promotion (mass media). This should enable those who intend to breastfeed to be able to carry out their intentions successfully, rather than trying to persuade those who really do not want to breastfeed to try it.

Introduction of solid food

In the present study, 39% of mothers had introduced solids to their baby's diet by the age of 13.4 weeks. This compares to Hamlyn *et al* (2002) who found by three months 24% had introduced solids, and 85% had introduced solids by four months. Sikorski *et al* (2001) found that solids were introduced at, or before 15 weeks in 25% of infants, rising to 75% by four months, and the Glasgow longitudinal infant growth study (Savage *et al* 1998) found that even larger proportions of women reported weaning at these stages. Although the *Innocenti Declaration* (WHO/UNICEF 1990) recommends exclusive breastfeeding for four months, the World Health Assembly (WHA 1994) regards six months as the optimal duration and its recommendation has been adopted in over 60 countries, including the UK (DoH 2003c). Hamlyn *et al* (2002) reported that only 49% had introduced solids within the recommended window of four to six months (DoH 1994), the

remainder did so before four months, and in the present study, 69% of those infants receiving solids were doing so before 16 weeks. Those in lower socio-economic groups and mothers with lower educational levels were more likely to introduce solids earlier as did mothers of babies who were not breastfed. It is clear that reported weaning practices in this study population fall short of WHO and DoH recommendations, although the reasons for this are unclear. One possible explanation is that formula feeding mothers perceive that their infants are hungrier, and once they have reached the maximum amount of formula they can give in a day, the next option is to give solids to satisfy the baby. Another reason may be that the introduction of solids is seen as an important milestone and so if a baby is receiving solids, the mother may perceive it to be developmentally ahead of other infants, increasing the mother's pride in her 'advanced baby'. Wright *et al* (2004) found that weaning before three months was associated with male gender, deprivation and bottle-feeding while continued breastfeeding at four months and female gender predicted weaning after four months. Earlier weaning was associated with agreeing with the statements 'baby seemed hungry' and 'family & friends told me to'. Mothers who weaned before three months seemed aware that they were acting against recommendations as few cited written or professional influences and early weaning seemed to be associated with increased rates of diarrhoea over the weaning period. By teaching women to understand their infant's feeding cues, for example, that crying may not always be a sign of hunger, these unadvisable feeding practices may be avoided.

Comparison of perceptions of mothers who breastfed and those who formula fed

Newton (1971) states that "because breastfeeding involves a large measure of personal choice and because it is related to attitudinal and personality factors, no groups of breast and bottle feeders are likely to be equal in other respects". It was clear from the present study that formula feeding and breastfeeding women differed in their perceptions of both feeding methods. Wagner & Wagner (1999) states this is because women's attitudes about infant feeding reflect those of the society of which they are part. For example, as certain social variables change, such as the definition of the female role in society, social class, educational status and attitudes fostered by interaction with others in modern industrial culture, so too may a woman's attitudes towards breastfeeding. Woolridge (1996) states that women's attitudes and beliefs are shaped by their own experience but also fashioned by cultural pressures, and it may be difficult for health-care workers to exert much influence over these where media and commercial influences compete with messages from health professionals as found in the previous chapter (3.2).

In the present study 72% of mothers agreed that breastfeeding protects infants from diseases, whilst only 39% were still breastfeeding. Wagner & Wagner (1999) found that whilst 80% of women agreed that breastfeeding was healthier, only 60% breastfed. Uvnas-Moberg *et al* (1990) found that breastfeeding mothers four days postpartum were

less anxious and more tolerant to monotony than women of a similar age who were not pregnant or breastfeeding. Thus, promotional messages need to be specifically tailored to meet the needs of individual women and their lifestyles. For example, the DoH (2003d) commissioned an evaluation of 79 best-practice breastfeeding projects to understand how women from disadvantaged backgrounds can be supported and encouraged to breastfeed. These strategies need to be shared and disseminated to those supporting and encouraging mothers to breastfeed to assist them in delivering the NHS priority and planning framework target of increasing breastfeeding initiation rates by two percentage points, focusing on those from more disadvantaged backgrounds (DoH 2003b). This could then lead to two of the Government's priority areas for health improvement (cancer and coronary heart disease, DoH 1999a) being positively affected by increased breastfeeding rates as well as helping to tackle obesity (Dewey *et al* 1993, Rosenblatt & Thomas 1993, Newcomb *et al* 1994, 1999, von Kries *et al* 1999, Zheng *et al* 2001).

Additional comments by mothers

These comments highlighted the importance of support, particularly at a time when mothers were feeling isolated, vulnerable and under pressure. In the past, a supportive environment for the mother would have been provided by the extended family. In many cultures, family ties have been eroded and the extended family has become so fragmented that new parents may have little contact with relatives who would traditionally have provided help and support (Woolridge 1996). In those cultures where formula feeding has predominated over the past decades, a vast cultural expertise on breastfeeding has been lost. Instead, women may turn to 'unknown experts' such as those found in pregnancy and baby magazines (see chapter 3.2) and the vast proliferation of babycare books that exist on the bookshelves of many western stores that promise 'to teach parents how to understand what their babies are trying to tell them' (Hogg 2003).

Dykes & Williams (1999) state that the issue of support and confidence building is extremely important with the need to emphasise to pregnant women and their close relatives the value of continued support for six weeks or more to the establishment of lactation. With the disappearance of the extended family in this society, women are deprived of vital female social networks and support when recovering from childbirth, adapting to the role of new mother and nurturing a baby with their own milk. This was evidenced in the present study by the number of women who had intended to breastfeed but ceased, many for reasons that could have been overcome with support and encouragement.

There were mixed experiences of help from health professionals, similar to other studies. Buckell & Thompson (1995) found that the majority of those who discontinued breastfeeding in the first two weeks felt they did not receive enough professional help.

This is surprising as it is during this period that intensive help is available – but this may not always be accessible and there may be the added problem of conflicting advice. Valdés & Schooley (1996) state that health professional education is critical to making any kind of long-term change in the way breastfeeding is promoted, supported and protected. When health professionals are convinced that a breastfed child has the best start in life and really understand how breastfeeding works, they will send the right messages and give the needed support. The American Dietetic Association (ADA 2001) state that because so many people look to healthcare professionals for advice, it is critical for them to be knowledgeable about breastfeeding, whilst Crafter (1997) states that midwives are in an ideal position to extend support to expectant and new families and to provide a service which helps parents to access information and use it effectively to nurture the health of their family. In the present study, a number of women felt that they could not ask for help as they perceived the midwives to be too busy to ‘bother’. During the course of the research, it was observed that many of the successful breastfeeders were very confident, articulate women who were determined to breastfeed and ensured they got the support they needed. Dusdieker *et al* (1985) also identified that well-educated women with strong convictions about the advantages of breastfeeding and few specific worries were more likely to continue breastfeeding.

3.3.5 Conclusion

A woman's breastfeeding behaviour is related to her role in life, as determined by her cultural locale, education, social class, and work according to Wagner & Wagner (1999), although the decision to breastfeed involves more than just demographic factors. This was demonstrated by this sample of women in Liverpool. By placing these findings within health promotion theories such as the TPB, TRA and stages of change model, health professionals may be able to better target interventions to increase breastfeeding initiation and duration rates in specific populations of women, thus having the potential to increase health outcomes in these populations.

Many women intended to breastfeed but ceased very early on, with unrealistic expectations and lack of support being undermining factors. Increasing the support available and ensuring women can access this support may increase breastfeeding duration rates. Additionally, a cultural shift may be needed where breastfeeding is seen as the ‘normal’ way to feed an infant. Finally, health professionals have an important role to play, ensuring they are client-centred and give accurate and up-to-date advice, thus avoiding the conflicting advice given to some women in this study.

3.4 Infant feeding clinic

3.4.1 Introduction

The Eurodiet core report on nutrition and diet (Kaftos & Coddington 2001) states that for a longer duration of breastfeeding, reinforcing factors are important especially those found in the support systems that exist. A systematic review of support for breastfeeding mothers (Sikorski & Renfrew 1999) found that interventions most likely to be successful were those including face-to-face contact with a supporter with appropriate training and expertise in breastfeeding.

LWH provides a drop-in clinic one morning a week to support women who are having problems/need advice with any aspect of infant feeding (breast, bottle feeding and weaning). A telephone help line is provided, and women can be seen by an infant feeding advisor during the week if necessary.

3.4.2 Method

All women attending the clinic for the first time were approached to complete a questionnaire about their visit to the clinic (appendix 6.8) once they had been seen by one of the infant feeding team. Due to the informal nature of the clinic, some of the women also took this opportunity to talk to the researcher about their experiences with feeding, or just about life with a new baby in general, and their comments were noted after asking permission to do so. These comments were then analysed thematically (Green & Thorogood 2004).

3.4.3 Results

During the study period (21 weeks), 198 women in total attended the drop-in clinic (mean nine per week, range 2 - 16). The number of women who attended the clinic only once was 108 (54% of all attendees), the remainder returned more than once. Women were only asked to complete a questionnaire the first time they attended (to prevent duplication of results) and in total, 80 women completed questionnaires (74% of all first-time attendees). The remaining 28 women did not due to language difficulties or because the clinic was busy and the researcher had no chance to ask them.

Of the 80 women who completed questionnaires, half visited the clinic once, 35% subsequently visited two to four times and 15% subsequently visited five to ten times. The number of visits was not related to whether the mother was primiparous or multiparous.

The demographic characteristics of the women are shown in table 3.4.1.

Table 3.4.1. Demographic characteristics of respondents.

	Total	
	n	%
Age		
Under 30	24	30
30 and over	56	70
Education		
None	1	1
School	21	26
Vocational	11	14
Degree or above	47	59
Work status		
Not working	14	18
Working full time	14	18
Full time but on mat leave	36	45
Working part time	2	3
Part time but on mat leave	14	16
SE status		
High (SE I & II)	59	74
Middle (SE III & IV)	15	19
Low (SE V & not working)	6	7
Ethnicity		
White	76	95
Black	1	1
Asian	2	3
Other	1	1
Marital status		
Single/separated	5	6
Married/living together	75	94
Number of children		
1 child	56	70
More than 1 child	24	30
PCT		
North	7	9
Central	35	44
South	31	39
Outside L'pool	7	9

Key:
 SE status Socio-economic status
 PCT Primary Care Trust

The mean age of women attending the clinic was 31 years (SD 4.9, range 18-41y); this is similar to the mean age of all women delivering at LWH (29 years). The majority of women (70%) were primiparous; their mean age was 30 (SD 5.1, range 18-41y). This is slightly higher than all primiparous women delivering at LWH (mean age 27, range 15-44y).

The women were a well-educated group with 59% being educated to degree level or higher, and 74% were of a high socio-economic status. Figures were not available from LWH for comparison, although 2001 census figures (www.statistics.gov.uk/census2001/profiles) showed that 15% of the whole population of Liverpool were educated to degree level or higher. Most of the women (95%) were white European; this compares with 90% of all women delivering at LWH being white European.

The majority of women (82.5%) lived in either the central or south PCT areas. Liverpool has three PCTs: north (population 112,000), central (population 266,000) and south (population 97,000). Each of these PCTs have areas with high levels of deprivation in terms of low incomes, unemployment, child poverty, poor housing, education and health services. The hospital is situated in central PCT and the seven direct bus routes that serve it are all based in the central and south areas of the city. Of all women attending the clinic, 88% used their own transport, whilst 5% walked (these all lived in central PCT) and 6% used public transport (half were from central PCT and half from south PCT). All those who lived in the north PCT used their own transport.

The majority of women attending the clinic (55, 69%) were giving their baby only breast milk, 23 (29%) were giving mixed feeds of breast and formula milk and two (3%) were giving their baby formula feeds exclusively. Only five (6%) women had started introducing other foods to the baby's diet (78 babies (97.5%) were under five months old). The average age of baby was 34 days (ranging from four days to 155 days). The average birth weight was 3.563 kg (range 2.325 - 4.827kg).

Reasons for attendance

Table 3.4.2 shows the reasons for attendance at the clinic. Women could tick as many responses as applied. Nearly half the women attending (46%) were concerned that their baby was not latching on properly, the majority of whom (68%) were primiparous, although this was not statistically significant ($\chi^2 = 0.194$, $p = 0.660$, $df = 1$). Of the 37 women who experienced difficulties with latching on, 17 (46%) also experienced sore nipples and 8 (22%) were concerned their baby was not taking enough milk.

Only four women visited the clinic to get advice about weaning their baby. These were all primiparous women with babies aged 4.5 months, 4.3 months, 3 months and 3.6 months. All four babies were receiving breast milk, and two were also receiving solids (these were aged 4.5 months and 4.3 months). Three of the mothers expressed concern that their baby was not taking enough milk or latching on properly, and the other mother wanted advice about getting their baby to take a bottle in preparation for going back to work.

Table 3.4.2. Reasons for attendance at clinic.

	All women		Primiparous women	
	N	%	n	% of all women
Relating to baby				
Not latching on properly	37	46	25	68
Not taking enough milk	11	14	9	82
Advice on making up bottles	1	1	1	100
Advice on what formula to use	0	0	0	0
Advice about weaning	4	5	4	100
Other	28	35	20	71
Relating to mother				
Cracked/sore nipples	26	33	15	58
Mastitis/breast abscess	3	4	1	33
Not producing enough milk	12	15	7	58
Advice about expressing milk	26	33	20	77
Advice about own diet	4	5	3	75
Other	15	19	11	73

The 'other' reasons for attendance at the clinic relating to the baby are shown in table 3.4.3. The majority of mothers were concerned about their baby's rate of weight gain. The concern about rate of weight gain was evidenced by the mothers wanting to get their babies weighed, indeed, one mother said she used the clinic for this sole purpose.

Table 3.4.3. Other reasons given relating to baby.

Reason	n	%
Poor weight gain/loss	8	29
Thrush	4	14
Colic/wind	4	14
Feeding too often	4	14
Feeding not enough	1	4
Baby refuses bottle	2	7
Baby refuses breast	2	7
Baby not settling	1	4
No reason given	2	7
Total	28	100

Reasons for attendance relating to the mother were mainly because of cracked/sore nipples (33%) or advice about expressing milk (33%). Primiparous mothers were more concerned about soreness and whether they were producing enough milk however neither of these were significant (soreness: $\chi^2 = 2.778$, $p = 0.096$, $df = 1$, producing enough milk: $\chi^2 = 0.915$, $p = 0.339$, $df = 1$). Few women were concerned about their own diet and few had experienced mastitis or a breast abscess.

The 'other' reasons stated relating to the mother are shown in table 3.4.4. The majority of women cited thrush (on the nipples) as being the reason for visiting the clinic. Many of these women had been advised by their General Practitioner (GP) or health visitor to get this checked at the clinic, as these midwives see frequent cases of it. One mother with

thrush returned to the clinic over a period of eight consecutive weeks, however the other five women with thrush visited the clinic only once or in one case twice.

Table 3.4.4. Other reasons given relating to the mother.

Reason	n	%
Thrush	6	40.0
Returning to work	1	6.7
Relactation	1	6.7
Breastfeeding in public	1	6.7
Managing with other children	1	6.7
Didn't think was brf properly	1	6.7
No reason given	4	26.7
Total	15	100.2

There were no significant differences between reasons for attendance and any of the demographic variables. This may be due to the relatively small sample size of 80 women.

Themes

The two main themes that emerged were the atmosphere of the clinic and the support available. Frequently used words to describe the clinic and its staff were: "friendly", "relaxed", "comfortable", "respectful", "open-minded", "understanding" and "welcoming". One woman (a 29 year old primiparous housewife) said that this meant it was "very easy to ask for advice".

The support given was frequently cited as being "useful", "helpful" and "valuable". Further analysis of the type of support offered revealed four main sub-themes:

1. Networking with other breastfeeding mothers

The fact that the room was large and women were all seen together (rather than being seen in individual rooms or cubicles) facilitated the mothers being able to talk freely with one another and meet other mothers. One woman said that it was "good to meet other breastfeeding mums" whilst another stated that it was "very useful talking to other mums".

It was also important for these women to meet other mothers who were either having similar problems or had overcome problems with feeding, as verbalised by one 38 year old: "Made me want to carry on trying, especially seeing other mothers and hearing problems being overcome". Similarly, a 28 year old primiparous mother stated that she "felt a lot better knowing that I was not the only person who was unsure about breastfeeding". Meeting other breastfeeding mothers seemed to counter the feelings of isolation that some of the breastfeeding women felt. One primiparous mother stated that she "didn't have any breastfeeding friends so felt a bit isolated – didn't know what was normal".

Not knowing what was normal with regard to breastfeeding led to the second theme of support identified:

2. Imparting of information

Several women commented that the clinic was “informative”, offered “good advice and ideas”, “helpful advice” and “excellent advice”. One woman stated that she had “now learnt that as well as my baby having thrush in his mouth, it goes through his body and that is why his bottom is a bit sore”. Knowing that you were being seen by health professionals who had detailed knowledge was important as acknowledged by one mother: “Whilst my health visitor was great, didn’t feel she had specific detailed knowledge”. Another woman commented that she was “in hospital for five days but staff on the ward were not very helpful”. Her experience was echoed by another woman who felt that “inconsistency of advice regarding breastfeeding caused initial problems before leaving hospital”.

The way that information was imparted led to the third theme of support:

3. Practical support

Women were observed feeding their baby, and shown how to correctly attach, position and detach the baby from the breast. One woman applauded this “practical hands-on help” that she received, which was done sensitively and “very respectfully”. Women were also taught to observe feeding cues from their babies, for example when they had received enough milk or were comfort feeding. One woman stated that because of this, she “felt better about breastfeeding”.

The impartation of information and practical support led to the fourth theme of support:

4. Esteem/confidence building

Receiving reassurance was very important for this group of women who expressed that they received “lots of reassurance”, “reassurance in regards to baby’s weight gain”, “found it very reassuring to know the support is available”. It was also important to feel listened to as expressed by one young woman who stated that by attending the clinic, it was “a chance to talk to people who understand what I’m going through”. Whilst this study did not investigate whether attendance at the clinic increased breastfeeding duration, some women stated that they would not have continued: “without this clinic, I would have found it difficult to continue”, “instilled confidence and made me want to carry on trying”.

3.4.4 Discussion

The infant feeding clinic provides support for all women regardless of whether they are breast or formula feeding, so it was surprising that only two women who attended (3%) were exclusively formula feeding, despite the majority of women in Liverpool choosing this method to feed their infants. This may suggest that breastfeeding requires more support to overcome initial problems. The majority of women attending the clinic were older, well-educated and of a high socio-economic status; this may not be surprising as these are the typical characteristics of breastfeeding women (Hamlyn *et al* 2002). In addition, Rosenstock (1974) identified that demographic variables such as socio-economic status, gender, ethnicity and age affected the extent to which people would adopt preventive health behaviours or use health services. Therefore, the findings of the present study cannot be generalised beyond this population of women. During the study period of five months, 108 women attended the clinic for the first time. This compares to 2500 births at LWH during that time of which 875 left hospital breastfeeding (35%), and 625 were breastfeeding one month later (25%). From these figures, it can be calculated that up to 17% of breastfeeding women visited the infant feeding clinic. This raises the question of whether the remainder do not encounter any problems and carry on breastfeeding, whether they get support from elsewhere (friends, relatives or other community health professionals), or whether they do not have access to any support and perhaps switch to formula feeding instead. Women were not asked directly how they had heard about the clinic although some volunteered that they had been referred by their midwife/health visitor/GP, heard about it through parentcraft classes/breastfeeding workshop, were recommended by a friend, read the details in the hospital discharge pack or had already seen one of the team on the ward during their postnatal stay.

The hospital setting may have prevented some women accessing the clinic. Simmons (2003) states that hospital settings facilitate hierarchical relationships between professionals and their clients, leading to lack of meaningful communication whereas effective positive communication is an essential element in supporting breastfeeding mothers. This might favour women from higher socio-economic or educational backgrounds. BFHI 'Ten steps' (UNICEF 1998a) emphasizes the importance of empowering women through fostering community level breastfeeding support groups, but at this level hospitals rarely have effective outreach and existing social structures may not be suitable for mother-to-mother help such as peer support programmes. These offer the opportunity of contact over time with a woman who has successfully breastfed. These experienced and/or trained peers have been shown to increase the numbers of women breastfeeding (NHS 2000). Graffy *et al* (2004) found that women valued the support of a counsellor in breastfeeding, but the intervention did not significantly increase breastfeeding rates, perhaps because some women did not ask for help. Graffy *et al* (2004) suggest that

cultural barriers may have made some women from manual social class groups reluctant to ask for help, thus highlighting the importance of having peer counsellors who work within rather than across cultural groups (Morrow *et al* 1999, McInnes & Stone 2001, Dennis 2002). In recognition of the constraints upon breastfeeding women, particularly in socially excluded communities, there has been a substantial increase in projects that aim to facilitate peer support networks for breastfeeding women (Dykes 2003). These schemes involve the provision of a programme of education, by one of the breastfeeding support organizations or health professionals with expertise in breastfeeding, to women in local communities. These women then act as peer supporters for women commencing breastfeeding. Evaluations of these projects highlight the potential for assisting women to overcome barriers to breastfeeding, in addition to broader community empowerment (Tuttle & Dewey 1995, McInnes *et al* 2001, Kirkham 2000, McInnes & Stone 2001, Battersby & Sabin 2002, Pugh *et al* 2002). In recognition that not all women will access the hospital clinic for whatever reason, satellite infant feeding clinics are being set up around Liverpool, mostly in deprived areas within each of the three PCTs. An evaluation of these, in addition to local peer support programmes would be a useful area of further research, and may help implement the NHS plan (DoH 2000) which made a commitment to increase support for breastfeeding, setting a target in the priorities and planning framework for 2003-2006 for all strategic health authorities and trusts to increase their breastfeeding initiation rates by two percentage points for each of the next three years, focusing in particular on women from disadvantaged backgrounds (DoH 2003b). There were no indications of how this could be achieved though.

That women in this study accessed the clinic would suggest they were highly motivated to persist with breastfeeding despite difficulties encountered. These findings reflect those in the Infant Feeding Survey 2000 (Hamlyn *et al* 2002) where mothers classified in higher socio-economic groups were more likely to report feeding problems compared to those in lower groups (21% compared to 13%). This may be because such women are better able to articulate what they are experiencing and have the confidence and motivation to seek out help. Many of the women had high profile professional careers such as solicitor, NHS manager, pharmacist and senior lecturer. They may approach parenthood in the same way as they approach their careers – as something to excel at and get ‘right’. If problems occur, then they will seek out support and advice in order to alleviate those problems. Bottorff (1990) states that to breastfeed in a society where exposure of breasts is only acceptable at the beach, ‘there is a need to succeed, to be tenacious of purpose and to remain determined’. When women talk of their breastfeeding experience, they have frequently recognized the importance of being persistent. Other researchers have recognized the importance of this concept of ‘commitment to breastfeed’ (Hoddinott & Pill 1999a, Sheehan *et al* 2003). Commitment is required to make the decision to breastfeed

in the face of the reality that breastfeeding is not always easy and can be problematic. Sheehan *et al* (2003) found that one woman stated she would give breastfeeding 100% even if she encountered problems whilst the knowledge that breastfeeding could be difficult and problematic made another woman fearful and added to her concerns about breastfeeding. She was willing to start breastfeeding but was not prepared to persevere if problems arose. Recognizing one's need for support and finding it is an important part of being persistent (Bottorff 1990). This type of health behaviour is characterized by the Health Locus of Control Theory (Rotter 1954) which emphasizes the importance of perceptions of control, including mastery (Pearlin & Schoder 1978), self-efficacy (Bandura 1982), personal causation (deCharms 1976), personal competence (Harter & O'Connell 1984) and perceived competence (Smith *et al* 1991). Locus of control was first measured in Rotter's (1966) internal-external scale, where internals would take a more active responsibility for their (and their baby's) health, and as a result would be more likely to engage in health-promoting activities, i.e. breastfeeding and seeking out support should it be required.

Types of problems encountered

Typical problems encountered by breastfeeding women in the present study included baby not latching on, concerns about how much milk the baby was getting and its weight gain, painful nipples/breasts and advice about expressing milk. These problems are well documented (Hamlyn *et al* 2002) and can be alleviated by support and correct advice (Bick *et al* 1998). Armstrong (1995) states that this "must be as accessible as the tin of formula".

There was a major emphasis (from the mothers) on getting their baby weighed. Because breastfeeding mothers cannot physically see how much milk their baby is getting, and because they may not trust their own instincts as to whether their baby is content and developing well, weight gain is seen as important reassurance. This may be likely to be so if their baby is being compared by friends or relatives to another baby who is formula fed and therefore likely to be putting weight on quicker (Butte *et al* 1982, Duncan *et al* 1984, Dewey *et al* 1992, 1995b, van't Hof & Haschke 2000). Women need to be made aware that breastfed babies will gain weight at a different rate to formula fed babies and that this pattern of weight gain is healthier for long term health (Butte *et al* 1990, Dewey *et al* 1992). Health visitors and GPs may exacerbate this preoccupation with weight gain as infant growth charts are currently based on the growth patterns of formula fed babies, and some women in the present study stated they were told to 'put their baby on the bottle' as they were falling below the prescribed growth curve. This problem is being remedied with the WHO currently undertaking to draw up growth curves based on breastfed infants (WHO 1998b). These are not yet available.

Emerging themes

The importance of the type of support offered was similar to the themes identified by Dykes *et al* (2003) in their study of adolescent mothers.

In the present study, the network support was important as a feeling of isolation was verbalised by many of the mothers attending the clinic and they valued the chance to meet other breastfeeding mothers. Following the birth, women have private rooms unless they have had complications and so may not get to meet other mothers, especially those who are breastfeeding (as they are in the minority). This could be remedied by providing communal day rooms.

Many women attending the infant feeding clinic found it very reassuring to discover that their baby was not the only one that followed a particular pattern of feeding or sleeping, and they enjoyed talking to mothers whose babies were older and therefore had passed the particular stage they were going through. Knowing that you are not the only one who is going through something can be empowering, hence the many support groups in existence for problems as diverse as drinking, smoking, dieting or illness/bereavement. Bottorff (1990) describes the 'aloneness' of breastfeeding experienced by mothers, and the importance of talking and being with other breastfeeding mothers, promoting a connectedness with others which strengthens oneself. Cobb (1976) defined social support as a 'person's belief that he (she) was cared for, esteemed and belongs to a network'. This acceptance by others would seem to be an important part of sustaining breastfeeding.

Feeling supported and being able to talk to someone who understood what they were going through, were very important for the mothers in the present study. Although the women were not asked whether they were originally born in Liverpool or had moved there at a later stage, it was evident that many did not originate from this city, and thus did not have their families close by to give support and advice. In the absence of this support, and in the absence of friends or neighbours who were breastfeeding, talking to someone who appreciated the experience of breastfeeding was invaluable.

Impartation of information and receiving practical 'hands-on' support were also highlighted as important to this group of women. Hospital stays can be short with primiparous mothers being discharged within 24 hours, and others discharged in as few as six hours. This gives little time to practice optimal techniques for breastfeeding or to ask questions or solve problems. Midwives may be busy and some women may feel that they cannot ask for help, especially if they need assistance with each feed. However, the length of

postpartum stay alone has not been shown to affect breastfeeding duration rates (Winterburn & Fraser 2000). Other studies have concluded that length of stay is less important than the quality and consistency of support and encouragement available to mothers while in hospital (Gagnon *et al* 1997, Mandl *et al* 1997, Quinn *et al* 1997, Svedulf *et al* 1998). Women require effective support and clear information before they go home; this needs to be offered within an increasingly short time frame (Woods *et al* 2001). If a mother can gain breastfeeding skills during her hospital stay she will be more likely to succeed afterwards (RCM 2002).

Inconsistent advice/lack of knowledge in health professionals has frequently been highlighted as an area of distress for breastfeeding mothers with conflicting advice reinforcing a woman's lack of self-confidence in her ability to breastfeed (Simmons 2002). This was noted in the present study, even though LWH is going through the process of becoming Baby Friendly accredited and has a breastfeeding policy in place. All nurses and midwives must complete an 18-hour breastfeeding course (Lang & Dykes 1998), and Health Care Assistants attend a one-day course. The training covers the BFHI 'Ten Steps' (UNICEF 1998a, WHO 1998a) and the International Code of Marketing of Breast Milk Substitutes (WHO 1981). Following this course the staff undergo clinical supervised practice with an Infant Feeding Advisor and should attend an annual update. However, inconsistencies were apparent and some staff did not appear to agree that 'breast is best', or provide support in the most appropriate way. For example, one young primiparous woman recounted how when she was in hospital for one week (her baby had jaundice), she needed help breastfeeding in the night and called for a midwife. A Health Care Assistant came in. She didn't check positioning at the breast, just said 'yeah, that looks OK' and asked whether the baby preferred chocolate or strawberry milk depending on which breast he was going on. This was not helpful to this mother who was struggling, not just with breastfeeding, but with lack of sleep and having to spend so long in hospital. Woods *et al* (2001) states that much care in the postnatal ward area may be provided by Health Care Assistants who may lack confidence and experience in the support required by breastfeeding mothers, or not have the necessary skills. Additionally, the BFHI 'Ten steps' may not always be adhered to by health care staff (Dodgson *et al* 1999, DiGirolamo *et al* 2001).

The final theme that emerged from the present study was that of esteem/confidence building. Words of encouragement and reassurance seemed to prompt the women to keep on trying with breastfeeding. Qualitative research has highlighted that women often lack confidence in their ability to breastfeed (Hoddinott & Pill 1999ab) and in particular their capacity to provide sufficient milk for their babies (Dykes & Williams 1999, Dykes 2002). The issue of support and confidence building is therefore extremely important.

Armstrong (1995) states that the challenge remains to move from motivating women to ensuring access to practical and confidence-building support. The infant feeding clinic was an excellent way of achieving this for some women.

3.4.5 Conclusion

Whilst this study focused on only a small group of women, the results suggest the importance of providing support in the form of networking with other mothers, receiving correct information and hands-on practical support, and confidence building. Promotion, protection and support should be provided to all breastfeeding women and their babies, in order not to perpetuate today's situation where a child may be denied the benefits of breastfeeding depending on nationality, economic circumstances, and their mother's educational level and age. However, provision of effective and consistent breastfeeding support is a challenge.

Health care providers have opportunities to help breastfeeding mothers, but the support they give must be the kind of support mothers want. The infant feeding clinic at LWH provides a warm, relaxed, friendly atmosphere with hands-on, one-to-one advice and support by experienced staff. The challenge is to make this more inclusive.

This study has demonstrated that not all women are accessing the support available. This was a hospital-based clinic; this may not be the best way of addressing the needs of the most vulnerable women who would potentially benefit most from breastfeeding. This is currently being addressed by the addition of satellite infant feeding clinics around the city, especially in many deprived areas.

4.0 Discussion & Conclusion

4.1 Discussion of results

The aim of this study was to investigate feeding practices in infants under the age of four months in Liverpool, with particular reference to the cost of infant feeding, using qualitative and quantitative methods. To accomplish this aim, four inter-related studies were carried out ensuring the study objectives were met.

Although the sample size for the costings interviews and infant feeding experiences and attitudes questionnaire was relatively small and may not be representative of infant feeding practices overall, women from a wide variety of backgrounds took part (although not from ethnic minority groups) and a wide range of practices were observed. In this study, 68% initiated breastfeeding – this is much higher than expected for Liverpool (45%, McFadden, 2004, personal communication) and may reflect the limitations of the recruitment process. Previous breastfeeding surveys have demonstrated that non-responders are more likely to have the characteristics of formula feeders than breastfeeders (Buckell & Thompson 1995, Shepherd *et al* 1998, Hamlyn *et al* 2002). Whilst Hally *et al* (1984) also found this to be the case, they state that data from hospital case-notes suggested that although there were higher breastfeeding rates among responders, differences between them and non-responders did not affect their findings. In the present study, ethical considerations prevented demographic details and feeding method data being collected from non-responders for comparison with responders. Therefore, the findings from this study cannot be generalised to the population of Liverpool as a whole but are still considered to be of value, particularly for the population of women studied.

Breastfeeding is frequently promoted as being free, but the most striking feature of this study is that it has demonstrated that as practised in Liverpool in the 21st century, breastfeeding was more expensive than formula feeding. The few studies investigating the cost of infant feeding to parents have focused on the cost of extra dietary intake for the mother compared to the cost of purchasing formula milk (Jarosz 1993, Ball & Bennett 2001), and do not give an account of the methodology employed (Inch 1994). The present study did not rely on hypothetical assumptions to calculate the cost of infant feeding as in the above studies, but instead used interviews with mothers and ascertained the cost of all items purchased for feeding their infants.

It was surprising to discover the full extent of goods marketed to both breast and formula feeding women, many of which were purchased and subsequently not used. These findings suggest that breastfeeding has become unnecessarily commercialised, with many women spending money needlessly on items that were either ineffective or not needed, such as breast and nipple creams and sprays, breast shells and shields and breast

pumps. Spending on such items may be part of the consumerist society in which we live where modern consumers 'identify themselves by the formula: I am = what I have and what I consume' (Fromm 1976). Bauman (1988, 1992) claims that the 'work ethic' has been dislodged by a 'consumer ethic' and Corrigan (1997) observes that competition among status groups which, according to Weber are organized around modes of consumption, now seems of more importance than the struggle among classes, which, according to Marx, are organized around modes of production. Solomon (2002) argues that consumers employ product symbolism to define not only themselves, but also their relations to others and Douglas & Isherwood (1979) state that people use consumer goods to make statements about themselves, their family and their friends. It has been suggested that 'in a culture in which the supreme goal is to have and to have more and more . . . how can there be an alternative between having and being? On the contrary it would seem that the very essence of being is having; that if one has nothing, one is nothing' (Fromm 1978). Further, money gives choice and choice gives freedom, this choice is unequally distributed across sections of the population (Gabriel & Lang 1995). Poverty places severe limits on the ability to exercise choice; as such, it is a fundamental index of the ability to participate in consumption (Lury 1996). In the present study, 37 women (25%) were from a lower socio-economic background and 28 received tokens for free milk. These women were significantly more likely to be low spenders, although the reasons for this were not investigated. This may be due to monetary constraints or because these women perceived that they did not need an abundance of products in order to feed their baby. In total 70 women (47%) spent money needlessly on items that they either did not use or were ineffective; these women were significantly more likely to be higher spenders. The consumer society glorifies choice, bombarding its consumers with information rationalized as an aid to choice, creating information overload which cannot possibly enhance their decision making (Gabriel & Lang 1995). People living in affluent consumer societies rarely live with extended families from whom they might learn about what to buy – they lack the knowledge base for making informed consumer choices. To address this, health professionals could make use of the high and low cost models formulated from the results of the costings interviews to advise women, particularly those from socially and economically deprived backgrounds, about those infant feeding products which are necessary and the cheapest outlets they are available from. This also applies to products purchased for formula feeding that were either not needed or ineffective such as bottle warmers and extra bottles and teats.

Whilst it is debatable whether many of the items purchased in this study were 'necessities', they may make life easier. Lury (1996) asserts that there are no direct relationships between an individual's economic standing and his or her ownership of goods, perceptions of which goods count as necessities or luxuries or understandings of

needs or wants. Fine & Leopold (1993) believe that beyond the bare minimum of physical survival, all needs are socially determined and it is arbitrary to divide them into those that are genuine and those that are not. Reasons for the purchase of certain products were not investigated although factors such as convenience (purchasing disposable breastpads rather than washables, or more bottles than necessary so feeds could be made up in advance for the whole day) or anticipated return to work or involvement of the baby's father (breast pumps and breast milk storage bottles/bags) are possible explanations. Murphy (1999) found that a number of women had invested in a breast pump and sterilising equipment in anticipation that they would express milk so their partners did not 'feel left out'; involving the father with the feeding routine was one of the most frequent reasons given for choosing to formula feed in the present study.

Higher spending was associated with education, socio-economic group and age. These women are likely to have more disposable income to spend on these products, a fact that has not escaped the attention of the marketers of pregnancy and baby magazines. Marketing managers have always been interested in lifestyle changes occurring among women because female consumers buy so many products – for themselves and for families. In fact, interest in female consumers continues to intensify because of greater numbers of women in the population, improved purchasing and employment status, and changed roles of women (Blackwell et al 2001). The results from the magazine content analysis confirm that parenting (including infant feeding) has become a consumer experience with between 40 and 58% of each issue devoted to advertisements and consumer content. As a consequence, it is possible that parents put their trust in these products, rather than in their own ability and natural instincts. It can be very difficult to trust your instincts when you are reminded of the grave consequences that your mistakes can have on the development of your child (Furedi 2001). The proliferation of formula company and formula feeding equipment advertisements in these magazines may also contribute to women's lack of confidence in their ability to breastfeed successfully (Palmer 1988, Thompson 1996), for example by furthering the belief that insufficient milk is common.

Changes in Government policy could help address the mixed messages currently found in pregnancy and baby magazines with regard to their advertising content. The UK claims to support the International Code of Marketing of Breast Milk Substitutes (WHO 1981) which bans all promotion of breast milk substitutes yet the UK has failed to implement it in full, for example by allowing promotion of breast milk substitutes through the health care system, advertising of follow-on formulae and advertising of feeding bottles and teats. New legislation could include the prohibition of promotional materials on infant and child-care that are produced or sponsored by companies with an interest in infant feeding,

implementing the International Code's provision for feeding bottles and teats and fully introducing all the revised EU directives. For example, the DoH (2003e) states that one of the ways to reduce smoking is to end tobacco advertising, promotion and sponsorship and to run extended mass media education campaigns, in addition to putting new health warnings and advice on tobacco products. A similar approach could be taken with the infant formula companies. The International Code (WHO 1981) states that labels on formula tins should explain benefits of breastfeeding, and the costs and hazards associated with artificial feeding. In the UK, there is one sentence on tins stating that breast milk is best for babies but does not state why. The only hazards mentioned are those of incorrectly making up a feed, leaving a baby alone with a bottle, and nursing bottle caries.

The DoH policy document *Tackling Health Inequalities: a programme for action* (2003e) states that it wants to increase breastfeeding initiation and duration especially for women in low-income groups through training health professionals and encouraging peer support programmes. However, formula company promotions have been shown to be a contributing factor to low breastfeeding rates (Palmer 1988, Thompson 1996). UNICEF UK (1999) state that many parents get a large amount of their feeding information from advertisements and other promotional material produced by the companies which make infant formula. This was true of the magazines in the present study which featured weaning guides by formula companies and nutritional help-line numbers. In the UK, the major formula manufacturers spend at least £20 per baby per year promoting its products, whilst the Government spends £1.60 to promote breastfeeding (IBFAN 2004a). However, advertising for infant formula and artificial feeding does not support informed choice as it only presents one viewpoint. Too few women in the UK have access to the full impartial information they need to make the decisions which will affect their own and their child's future health and it is debatable whether they have the knowledge, skills and motivation to implement that advice. Instead they are bombarded with commercial information which promotes formula feeding and minimises its risks. The simplest way to ensure that parents receive consistent and impartial advice is to remove the commercial promotion from magazines. A randomised trial in the USA (Frank et al 1987) showed that removing formula advertising had more impact on breastfeeding rates than intensive efforts to train staff in breastfeeding support. Other studies have demonstrated the complexity of providing infant feeding information and the negative messages which are subtly conveyed by commercial literature and labelling (Dungy et al 1992, Valaitis & Shea 1993, Valaitis et al 1997, Howard et al 2000, Donnelly et al 2001). In the current study only 1.8% of pages were devoted to feeding articles whilst 16.7% were devoted to advertising of formula and infant feeding products. This imbalance suggests that parents may be more likely to turn to these companies for feeding information so if the pregnancy and baby

magazines want to be truly pro-breastfeeding as many claimed they were, they need to rethink their advertising strategies and put principles before profit. Removing all advertisements by formula companies and formula feeding equipment companies would help prevent the current mixed messages that are being conveyed; these might be replaced by other advertisements to maintain the financial viability of these magazines.

In addition to promoting consumerism and formula feeding, this study has revealed that the pregnancy/baby magazines pride themselves on offering expert advice, this can further lead to parents' loss of confidence in their own ability and instincts. Dykes (1997) states that throughout the twentieth century, childbirth, like other aspects of health, has become increasingly controlled by the 'experts', with a resulting disempowering effect upon women. Lack of confidence is exhibited with regard to breastfeeding where the magazines portray it to be painful and problematic, further undermining women's confidence in their body's ability to produce enough milk to satisfy their baby. The risks of formula feeding were not mentioned and it was disappointing that none of the images of breastfeeding mothers showed them breastfeeding in a public setting. This has been described by Stewart-Knox *et al* (2003) with regard to breastfeeding promotion literature. Whereas those intending to breastfeed noticed contact between mother and baby, those intending to formula feed tended to notice the 'nakedness' of the mother and hence her vulnerability. These women irrespective of whether they intended to breast or formula feed, unanimously agreed that health promotion materials which portray women half-naked at home do not present real-world images of breastfeeding and therefore may deter many women from breastfeeding. Some women felt that the pictures on the leaflets were off-putting because they unintentionally promote the idea that breastfeeding is socially isolating (Stewart-Knox *et al* 2003). In the present study, women were not asked about their views of the images and articles in the magazines; this could be an area for further research in relation to their intended and actual feeding decisions prior to and following birth.

The magazines' portrayal of breastfeeding as likely to be painful and problematic may prevent some women from trying, or encourage them to give up when they experience problems, rather than seeking support and advice. In the present study, although most women initiated breastfeeding, many discontinued early because of perceived difficulties with breastfeeding rather than maternal choice. Significantly fewer women exclusively breastfed than had planned to and of those who initiated breastfeeding, 43% had ceased by three months. Sheehan *et al* (2003) found that the perception that breastfeeding could or would be difficult appeared to create a sense of fear among women and depending on the woman's decision, this perception had two main responses. Women who were 'definitely going to breastfeed', responded to the fear of breastfeeding difficulties by

committing themselves to breastfeeding and making plans for possible difficulties. Those who were 'playing it by ear' set limits to how much they would persevere with breastfeeding if they experienced difficulties. If the magazines want to be truly pro-breastfeeding as many stated they were, then they need to give a more balanced view of breastfeeding, including not just the benefits of breastfeeding (many failed to do even this), but also stating the risks and hazards of formula feeding, and depicting breastfeeding women dressed rather than naked or near naked, in public settings with other people in view, rather than isolated alone in their own home.

The present study helps highlight the personal, cultural, social and environmental factors that are common influencing factors in the decision to breastfeed. Whilst it would appear that the public health message of 'breast is best' is being received by mothers, this does not guarantee that they will breastfeed. The most common reason given for breastfeeding was that it was best for baby, whilst 9% of formula feeding mothers thought breast was best, but still chose to formula feed as did 47% of mothers who partially breastfed but had ceased breastfeeding within three months. In addition 46% of formula feeding mothers agreed that breastfeeding protects infants from diseases, and 38% agreed that it is beneficial to the mother's health, although these women did not perceive these benefits to be enough for them to try breastfeeding. These findings are in common with other studies where women stated the benefits of breastfeeding but still chose to formula feed, mainly because they perceived breastfeeding as limiting to their daily activities (Zimmerman & Guttman 2001, Sheehan *et al* 2003). The present study confirmed that women who breastfeed had more of an 'infant-centred' attitude, giving reasons such as 'breast is best for baby', whilst those who chose to formula feed usually gave more 'self-centred' reasons highlighting the embarrassment or social restrictions of breastfeeding. This is in common with other studies where women who choose to breastfeed tend to have more positive attitudes towards breastfeeding than do women who formula feed (Baranowski *et al* 1986, Jones 1986, Weller & Dungy 1986, Kurinij *et al* 1988, Beaudry & Aucoin-Larade 1989, Buxton *et al* 1991, Zimmerman & Guttman 2001, Rempel 2004). Theoretical perspectives linking attitudes to behaviour such as the TPB (Ajzen & Madden 1986, Ajzen 1988) and its predecessor the TRA (Fishbein & Ajzen 1975, Ajzen & Fishbein 1980, Fishbein 1980) have been significant predictors of breastfeeding initiation (Manstead *et al* 1983, 1984) and duration (Janke 1994, 1992) therefore to increase breastfeeding rates, it may be necessary to change maternal attitudes to breast and formula feeding rather than changing real or perceived social norms and to change the primary beliefs underlying these attitudes.

It is interesting that the negative aspects of breastfeeding were mentioned instead of the positive aspects of formula feeding. Therefore, the present study findings indicate that

breastfeeding promotion focusing on the health benefits of breastfeeding alone may not be the best way of encouraging mothers to breastfeed, it must also address lifestyle issues. Zetterström (1999) asserts that mothers may be more motivated to breastfeed when they find it to be an advantage for themselves, and programmes for the promotion of breastfeeding have been criticised for paying attention only to the needs of the infant and neglecting the reactions of the mother (Feachem & Koblinsky 1984, Koçtürk & Zetterström 1999). Breastfeeding requires investment of time, energy, attention and emotion and cannot be done well by a mother whose own health, psychological state or workload prevents her from this investment (Armstrong 1995). Bottorff (1990) explains that change rather than stability is normal with breastfeeding and that learning to breastfeed and continuing to breastfeed amidst this uncertainty is difficult for most mothers who must fight their own weariness, discomfort and self-doubt. Campaigns urging women to breastfeed without creating the circumstances making breastfeeding possible will not improve breastfeeding rates. Instead, they may increase parental guilt and raise anxiety levels, contributing to feelings of failure among women experiencing common difficulties without help.

Whilst the DoH seeks to increase breastfeeding initiation rates by two percentage points per annum (DoH 2003b), it does not mention increasing exclusiveness or extended duration of breastfeeding as recommended by the EURODIET report (Yngve & Sjöström 2001). Just under half the mothers in the present study who initiated breastfeeding had ceased within three months, with difficulties and early negative experiences hindering them from breastfeeding successfully. Other reasons for discontinuing breastfeeding appeared to be based on misconceptions about breastfeeding such as having a big baby, being a smoker or having a poor diet. In addition, just under one quarter of formula feeding women stated they did not initiate breastfeeding as they believed formula milk to be as good as breast milk. Murphy (1999) also found that women presented with misconceptions, the primary one challenged that breast is best, and suggested that formula was superior as it ensured the baby had a dependable, scientifically formulated source of food. These misconceptions were similar to those published by the DoH during National Breastfeeding Awareness week 2004

(<http://www.dh.gov.uk/PublicationsAndStatistics/PressReleases>) showing that serious misunderstandings may be stopping women from breastfeeding. In the present study attendance at antenatal classes was significantly related to feeding method as consistent with findings by Hally *et al* (1984) where intended breastfeeders were more likely to attend antenatal classes than formula feeders (and hence receive information about feeding) and Zimmerman & Guttman (2001) state that many mothers who formula fed did not seek information on infant feeding choices and hence might be basing their choice on misinformation (as is likely to be the case with women in the present study who initiated

breastfeeding but discontinued soon after). There is the need for health professionals to be proactive in their counselling of pregnant women in order for these women to be able to make truly informed decisions, using evidence-based research as the foundation on which to give advice to mothers and mothers-to-be.

The additional comments made by some mothers from the infant feeding experiences and attitudes study provided evidence that this early postpartum period is a time when many feel vulnerable, isolated and guilty about not being able to breastfeed. Whichever way mothers decide to feed their babies, infant feeding carries considerable moral imperatives, with women judging themselves or feeling judged (Murphy 1999) and breastfeeding can become a way of validating womanliness and motherhood (Bottorff 1990). Health professionals can contribute to these negative emotions by giving conflicting feeding advice, and the resulting confusion is likely to undermine the confidence of the mother in her ability to breastfeed (Michelman *et al* 1990, Chalmers 1991, Dykes & Williams 1999, West & Topping 2000). Women in the present study appeared to feel very strongly about the midwife/other health professionals being either very helpful or very unhelpful. The issue of support and confidence building is extremely important with the need to emphasise to pregnant women and their close relatives the value of continued support for six weeks or more to the establishment of successful breastfeeding (Dykes & Williams 1999). Support needs may include emotional support, esteem support, instrumental support, informational support and network support (Dykes *et al* 2003). Providing support is of particular importance where urbanization and industrialization has changed the lives of women, with the destruction of many social and cultural norms and loss of the vital networks of traditional support offered by the extended family (Jelliffe & Jelliffe 1978, Ebrahim 1991). As Weber, Marx, Freud and many other prominent thinkers have argued, modernisation of Western society has contributed to a gradual decline in the sense of community and to an increase in alienation (Brown 1995). Not knowing where to turn in case of trouble can produce an intense sense of vulnerability, especially among lone parents who feel they are literally on their own (Furedi 2001). To address these issues, initiatives such as Sure Start and community development programmes have a valuable role to play. The Sure Start Programme is an area-based initiative to improve the health and well-being of children from before birth to age four years and their families, with local authorities, NHS, voluntary sector and other agencies working together in areas which are located in the 20% of the most deprived wards. In Liverpool, there are ten Sure Start projects all at different stages of development, providing services such as antenatal support, partnership with midwives and health visitors, breastfeeding support and training for parents. Community development aims to enhance the capacity of local populations to respond collectively to events and issues that affect them (Gilchrist 2003); this concept of 'community' invokes a sense of belonging, of solidarity and of shared identity and interests. With regard to health promotion, New Labour has explained that

'supporting community-based action . . . will serve to empower individuals and improve levels of self-determination' (DoH 1999a).

The importance of support for breastfeeding has been highlighted by the findings of the infant feeding clinic study. That women accessed this clinic would suggest they were highly motivated to persist with breastfeeding despite problems occurring. Other researchers have recognised this concept of 'commitment' to breastfeeding (Bottorff 1990, Hoddinott & Pill 1999, Sheehan *et al* 2003), and how it contributes to persistence when problems arise. Recognizing one's need for support and finding support is an important part of being persistent (Bottorff 1990). This may also be related to self-efficacy levels. If people believe that they can take action to solve a problem instrumentally, they become more inclined to do so and feel more committed to this decision (Maddux 1991, 1993, Bandura 1992, Wallston 1994). This 'can do' cognition mirrors a sense of control over one's environment and self-efficacy levels can enhance or impede the motivation to act. Once an action has been taken, high self-efficacious persons invest more effort and persist longer than those with lower self-efficacy. When set backs occur, the former recover more quickly and maintain the commitment to their goals; in this case breastfeeding duration.

The clinic was attended mainly by primiparous women who were educated beyond 18 years of age and of higher socio economic status. It was not possible to ascertain why other women did not attend the clinic, although it may be suggested that this was due to it being hospital based (which may have been intimidating for some people), not easily accessible for those without a car, or that some women do not ask for advice. Graffy *et al* (2004) found that women valued the support of a counsellor in breastfeeding, but the intervention did not significantly increase breastfeeding rates. The authors suggested that cultural barriers (such as language difficulties, mistrust of health professionals or obstruction by a partner) may have prevented some women from asking for help. This highlights the importance of having peer counsellors who work within rather than across cultural groups (Morrow *et al* 1999, McInnes & Stone 2001, Dennis *et al* 2002). In Liverpool, peer-support (mother-to-mother) programmes and infant feeding clinics are currently being set up around the city, including in some deprived areas, although it was beyond the remit of this study to evaluate whether they had a positive effect on increasing breastfeeding initiation and duration. Such schemes involve the provision of a programme of education by one of the organizations or health professionals with expertise in breastfeeding, to women in local communities. These women then act as peer supporters for women commencing breastfeeding. A number of studies have evaluated the effect of peer-support on breastfeeding duration among new mothers (Kistin *et al* 1994, Long *et al* 1995, Arlotti *et al* 1998, Caulfield *et al* 1998, Morrow *et al* 1999, Haider *et al* 2000, Dennis

2002, Dennis *et al* 2002) and have demonstrated a positive effect of peer-support, especially among socially disadvantaged women. The importance of peer-support has further been validated in a review by Fairbank *et al* (2000).

Although the Government plans to recruit more midwives, statistics from the NHS and RCM annual staffing survey reveal that they are not recruiting as many as are needed, and this shortage will have an impact on how much support they can offer women on acquiring skills such as breastfeeding. Food-workers might be used to support the role of midwives, health visitors and peer-supporters in increasing breastfeeding initiation and duration, especially in deprived areas where Sure Start programmes are in operation. In Sure Start areas, food-workers have complemented the work of dieticians, and with appropriate training, their role could also be extended to complement the work of midwives and health visitors in relation to infant feeding.

The women in the present study presented at the infant feeding clinic with a variety of problems, which are well documented (Hamlyn *et al* 2002) and many can be alleviated by support and correct advice. Armstrong (1995) states that the challenge remains to move from motivating women to ensuring access to practical and confidence-building support, and that this "must be as accessible as the tin of formula". Women need to know what support is available and be empowered to ensure they seek and get the support they need. Empowerment can only occur when individuals gain control over their own lives in the context of participating with others to change their social realities (Zimmerman & Rappaport 1988). Individuals do not experience powerlessness merely because of their own lack of skill or motivation, but also because they are socially and politically disadvantaged and thus lack the resources to change their natural environment (Bridgen 2004).

The main themes emerging from the present study were the positive and friendly atmosphere of the clinic and the type of support available. Networking with other breastfeeding mothers helped this group of women to overcome their feelings of isolation. Bottorff (1990) describes the 'aloneness' of breastfeeding experienced by mothers, and the importance of talking and being with other breastfeeding mothers, promoting a connection with others which strengthens oneself. Feeling supported and able to talk to someone who understood what they were going through was very important for the mothers in the present study. Health professionals need to be aware of the importance of network support and be able to direct mothers to mother and baby groups in their area, particularly for mothers who do not have a network of close friends and family who are supportive of breastfeeding.

Receiving information and practical hands-on support was also important to the group of mothers in the present study, with inconsistent and conflicting advice and information cited as contributing to breastfeeding difficulties. Policies need to be in place, both in hospital and the community to ensure that all health professionals advising mothers about breastfeeding are using up-to-date evidence-based information, and receive appropriate training such as the UNICEF 18 hour breastfeeding course (Lang & Dykes 1998). However, even with these policies in place, women do not always receive the support they require. Women giving birth in England are being let down by the health system due to a widespread lack of breastfeeding support according to UNICEF UK. Mothers giving birth in England are less likely to receive effective help with breastfeeding while they are in hospital than mothers in any other part of the UK (www.babyfriendly.org.uk/tables). It is argued that almost all mothers living under optimally baby-friendly conditions would make the choice to breastfeed. This is shown in countries as diverse as Norway and Tanzania, where almost all babies are breastfed. Therefore, actions are needed to remove obstacles to breastfeeding (Latham 1999). Midwives' attitudes to breastfeeding are as varied as the rest of the population (Welford 1995) and these are likely to be conveyed to women during verbal and non-verbal communication. When health professionals are convinced that a breastfed child has the best start in life and really understand how breastfeeding works, they will send the right messages and give the needed support. As health professionals' own embodied knowledge (about breastfeeding) influences their attitudes and encounters with women (Battersby 2002), health professional education should facilitate exploration of personal and vicarious experiences.

The final theme that emerged from the present study was that of esteem/confidence building; words of encouragement and reassurance seemed to prompt women to keep on trying with breastfeeding. Qualitative research has highlighted that women often lack confidence in their ability to breastfeed (Hoddingott & Pill 1999ab) and in particular their capacity to provide sufficient milk for their babies (Dykes & Williams 1999, Dykes 2002). The confusion from being given conflicting feeding advice may also undermine the confidence of the mother (Michelman et al 1990, Chalmers 1991, Dykes & Williams 1999, West & Topping 2000). The issue of support and confidence building is therefore very important (Armstrong 1995), as is the need for social approval and the infant feeding clinic was a good example of how this could be provided. The Wanless Report *Securing Good Health for the Whole Population* (Wanless 2004) states that individuals are ultimately responsible for their own and their children's health and that people need to be supported more actively to make better decisions about their own health and welfare. This support should come from local sources including local authorities, health organisations and community and voluntary groups. Infant feeding clinics at the LWH and in community

settings throughout the city will help to empower women to achieve their breastfeeding goals and ultimately enhance the health of themselves and their children.

4.2 Implications of the study findings

The implications of the results suggest that:

1. Breastfeeding was not free and has become highly and unnecessarily commercialised.
2. Lack of knowledge about which infant feeding items are necessary, useful or essential may have led many women to waste money on infant feeding products.
3. Media messages from pregnancy and baby magazines perpetuate commercialisation and imply that parenthood is a consumer experience to be 'perfected'.
4. Pregnancy and baby magazines may contribute to the belief that breastfeeding *will* be painful and problematic.
5. The risks of formula feeding do not seem to be communicated to mothers by anyone nor does the belief that 'breast is best' guarantee that a woman *will* breastfeed her baby.
6. The decision to breastfeed is made in the context of a woman's life and revolves around personal, cultural, social and environmental factors and is often made before she is even pregnant.
7. In order to achieve her breastfeeding goals, a woman needs appropriate support and encouragement from health professionals, family members, friends and employers. Many women for example believed breastfeeding to be incompatible with return to work.

4.3 Research needs

This study has identified areas that would benefit from further investigation, including:

1. Repeat the costings interviews focusing on women from ethnic groups and low-income backgrounds.
2. Investigate purchase decisions - why women purchased the items they did and their purchase of particular brands from particular stores. Investigate whether they were affected by any direct marketings they had received during their pregnancy.
3. Explore in depth the influences on women's infant feeding decisions taking a more qualitative approach – interview women to determine for example whether they are influenced by the consumer messages in pregnancy and baby magazines, whether they are affected by the portrayal of breastfeeding as being mainly problematic and how women perceive the images, articles and advertisements contained in these magazines and whether they affect decisions to breastfeed.
4. Evaluate whether the support at the infant feeding clinic does increase breastfeeding duration – compare to other feeding clinics around Liverpool and peer counsellor programmes.

4.4 Conclusion

This study is unique in investigating infant feeding costs and practices in Liverpool. Whether the findings are representative of all mothers is not known. However, with an absence of other research studies in this area, the present study provides the best information to date.

Results from the first two study objectives have highlighted that despite breastfeeding being frequently promoted as 'free', this was not the case for the women in this study and was in fact more expensive than formula feeding. In particular there appeared to be confusion about which items were necessary. This demonstrates the need for advice given to parents to be based on objective evidence rather than beliefs or commercial information. The use of the high and low cost models formulated from chapter 3.1 could greatly assist health professionals in advising women how cost savings could be made. Such models could be used when training midwives and health visitors, be used at antenatal classes when feeding is discussed and become part of the hospital discharge packs given to all women when they leave hospital. Community midwives and health visitors could also use these models when discussing infant feeding with women in their homes or at the baby clinic. In addition the Government could provide financial incentives for breastfeeding mothers such as removing VAT on items such as nursing bras and breast pads or providing vouchers for these items for women on low incomes.

In order for women to make informed decisions about how they are going to feed their baby, they need to be given accurate, impartial advice about the benefits and dangers of the different feeding methods. Pregnancy and baby magazines have a responsibility by presenting information factually and without the current mixed messages from the profit driven formula companies as identified by the third study objective. These mixed messages highlight the need for the Government to tighten legislation concerning marketing of formula milk. At the same time it is also important for women to have all the information they need to make informed choices, particularly in view of the massive promotional efforts by the formula companies. Pregnant women are being exploited at a very vulnerable time of life into spending large amounts of money unnecessarily and into feeding their children in a way which carries substantial health risks. This exploitation is embedded in social norms and pressure to conform to aspirations expressed in materialistic terms. As in so many other instances those most susceptible are those from the lowest socio-economic groups. Women need to be empowered to feel confident in their body's ability to breastfeed successfully without having to rely on 'experts' telling them what to do, or by purchasing a myriad of products which seek to transform parenting into a consumer experience to be perfected. Increased local funding could enable PCTs to

produce an information booklet/newsletter where infant feeding advice and information is not commercially driven.

This study helps highlight that health professionals need a thorough understanding of the factors that prompt women to initiate breastfeeding and how they can be best supported to continue for as long as they desire. The use of theoretical health promotion models can help with understanding these choices. Many women intended to breastfeed but ceased very early on, with misconceptions and lack of support particularly undermining factors. Women need to know how to access breastfeeding support services such as drop-in clinics and these must be tailored to meet the specific needs of different groups; the support needs of a well-educated married older woman with one child for example are likely to be very different to those of a young unemployed single mother with three children. Strategies such as involving family members (fathers and grandmothers in particular) in breastfeeding education and support programmes through to community based mother and baby groups can also contribute to increasing support networks for the mother.

In order to promote breastfeeding and move towards Government targets of increasing breastfeeding initiation rates, the results from objective four of this study show that it is essential that a supportive environment is created where breastfeeding is encouraged and accepted. Locally this could include provision of work place crèche facilities where women can take breaks to breastfeed their infant; nationally this could include increasing maternity leave and having positive media portrayals of breastfeeding. With many women deciding to breast or formula feed before they are even pregnant, including breastfeeding information in the national curriculum, for example at key stage 3 as part of Personal, Social and Health Education lessons may help change attitudes toward breastfeeding. In addition, breastfeeding must be encouraged in public places in order for it to become accepted as the 'normal' way to feed an infant. Legislation such as in Scotland where it is an offence to ask a woman to leave a public place if she is breastfeeding would reinforce the Government's priority to breastfeeding. At a local level, shops, cafes and restaurants could display 'we are breastfeeding friendly' stickers in their windows to promote a supportive breastfeeding environment; details of such establishments could be included in the locally produced PCT infant feeding booklets mentioned earlier.

As this study has shown, telling a woman that breast is best does not necessarily mean she will breastfeed and so advice needs to be tailored to women on an individual basis about how breastfeeding can fit in with their lifestyles. This means that midwives in particular will need to spend more time with each woman both antenatally and postnatally. The risks of formula feeding also need to be included in these discussions. Spending

longer with mothers may be difficult though with current national midwifery shortages; the Government needs to be aware of the impact these shortages are having and heighten their commitment to deal with these shortages.

Health professionals need to be aware of the importance of the role they play in how a new mother feels about feeding her baby – more needs to be done to ensure these health professionals receive appropriate training and that they actually implement that training. Inconsistent messages confuse and undermine women's confidence in their ability to successfully breastfeed their baby as highlighted by this study. By expanding the UNICEF Baby Friendly Initiative into the community setting, inconsistent messages from health visitors, midwives and GPs should be reduced.

Results from each of the four study objectives have identified that breastfeeding is a dynamic process rather than a static event; it does not occur in isolation and so needs to be linked to the larger framework of the mother's experience, including the socio-cultural context in which she lives. By understanding the complex interplay of each of these influences (economics, media portrayals, cultural norms, support networks) and by making breastfeeding a normal part of everyday life, more women are likely to 'give it a go'. Increasing breastfeeding incidence and duration in Liverpool will ensure that more children will be exposed to the benefits of optimal nutrition. The protective effects of breastfeeding against illness will result in healthier children and adults and have the potential to deliver large cost savings to the NHS.

5.0 References

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6.0 Appendices

How much does it cost to feed a baby?

Information Sheet (Version 1.0 January 2002)

You are being invited to take part in a research study. Before you decide to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with friends, relatives and your GP if you wish. Please ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

This sheet explains the reasons for doing this study, what we would like you to do, and what we will do with the information you give us.

Why are we doing this study?

There is very little information about how much it costs to feed a baby as he or she grows up. It would be useful to know this so that better advice can be given to parents. This is unlikely to benefit you or your baby directly. The study will take place over 1-2 years.

You have been invited to take part in this study as we are asking all mothers whose babies are due in February 2002 at The Women's Hospital. If you do decide to take part you will be given this information sheet to keep, and asked to sign a form of consent. If you do decide to take part, you are still free to withdraw at any time and without a reason. This will not affect the standard of care you receive. If you wish to complain about any aspect of the way you have been approached during the course of this study, the normal National Health Service complaints mechanism may be available to you.

What do we want you to do?

You will be asked to talk to a research student who will ask questions about how you feed your baby. The researcher will ask you about any expenses you have had in order to feed your baby, questions such as: how many feeding bottles do you have, where did you purchase them from, how do you sterilise them etc.

She will also ask you to fill in a questionnaire about your views regarding breast and bottle feeding.

The researcher will make notes of your replies. The initial visit might take up to an hour. We will not write down or record your name or address. Nothing you tell us will identify you or your baby.

The researcher will visit you at a place that is convenient to you and at a time to suit you.

If at any time, you change your mind about helping then please just tell one of us and you will not be bothered further by us.

What will we do with the information you give us?

Up to one hundred women who feed their babies in different ways i.e. only breast feeding, only bottle feeding, or those who do both, will be asked to help in this study. From the information you give us, we will then be able to work out the cost of feeding a baby in these different ways. We will write a report about the findings and hope that it will produce a better understanding of the expense of feeding a baby which should be useful to Doctors, Midwives, Health Visitors, Dieticians and Administrators. No individual (either mother or baby) will be identified in the report.

All information which is collected about you during the course of the research will be kept strictly confidential. Any information about you will have your name and address removed so that you cannot be recognised from it.

This study has been reviewed by the Ethics Committees of Liverpool Health Authority and Liverpool John Moores University.

Thank you for reading this.

For more information please contact:

1. Kirstin Berridge, Telephone: 0151 231 5271
 1. Dr Allan Hackett, Telephone: 0151 231 5266
 1. Ms Julie Abayomi, Telephone: 0151 231 5394
1. Liverpool John Moores University, IM Marsh Campus, Barkhill Road, Liverpool, L17 6BD.



JMU



Liverpool Women's Hospital

NHS

NHS Trust

John Moores University

Patient Information Number:

CONSENT FORM

Title of Project: An investigation into the relative costs of breast and bottle feeding in Liverpool

Name of Researcher: Kirstin Berridge

Name and number of independent person:

Please initial box

1. I confirm that I have read and understand the information sheet dated Jan 2002 for the above study.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without my medical care or legal rights being affected.
3. I understand that sections of any of my medical notes may be looked at by responsible individuals from Liverpool John Moores University where it is relevant to my taking part in research. I give permission for these individuals to have access to my records.
4. I agree to take part in the above study.

Name of Patient _____

Date _____

Signature _____

Name of Person taking consent
(if different from researcher)

Date _____

Signature _____

Researcher _____

Date _____

Signature _____

1 copy for patient, 1 copy for researcher.

Interview Pro-forma – Breastfeeding Mums

- Any other children?
 - How old is your baby? Normal delivery?
 - Has he/she been ill recently or not feeding properly?
 - How many feeds do you give per day? (once, twice, 3-4, 5-6, 7-8, more than 8)
 - Do you feed on demand, generally keep to set times, or does it depend on the circumstances?
 - Do you give your baby milk from a bottle at present (apart from expressed breast milk)?
 - How long on average does each feed last? (minutes)
 - How many nappy changes per day are needed? (solids) (wet)
 - What brand of nappy?

Equipment (type, make, cost, where purchased)

- Have you purchased any clothing i.e. bras, nightshirts?
 - Do you need to use breastpads/cream etc?
 - Do you use any bibs/muslins/wipes etc?
 - Do you have a breast pump/bottles/steriliser/freezer bags?
 - Have you purchased anything which you haven't used or don't use?

Diet

- Are you aware of eating or drinking differently since the birth of your child?
 - Do you take any vitamin/mineral supplements?

Other

- How much would you say you are saving in terms of not having to purchase sanitary protection?

Medical

- Since your baby was born has he/she been admitted to hospital or have you taken him/her to your doctor with any of the following complaints (if so, how long were they admitted for?):
 - Diarrhoeal episodes
 - Gastro-intestinal problems
 - Respiratory problems
 - Otitis media

Interview Pro-forma – Bottle feeding Mums

- Is this your first child?
 - How old is your baby? Normal delivery?
 - Has he/she been ill recently or not feeding properly?
 - How many feeds do you give per day? (one, two, 3-4, 5-6, 7-8, more than 8)
 - Do you follow the feeding schedule on the tin?
 - Do you feed on demand, generally keep to set times, or does it depend on the circumstances?
 - Do you give anything to supplement feeds?
 - How long on average does each feed last?
 - How many nappy changes per day are needed? (solids) (wet)
 - Which brand of nappy?

Equipment (type, make, cost, where purchased)

- How many bottles/teats?
 - What formula? How long does it last?
 - Does each bottle get used up? Are leftovers re-used?
 - Does each tin get fully used up?
 - How do you warm the bottle?
 - How do you sterilise the bottles? How many times per day?
 - Do you use a bottle brush? How often is it replaced?
 - Do you use bibs/towels/babywipes etc?
 - Any other items?
 - Have you purchased anything which you haven't used or don't use?

Diet

- Are you aware of eating/drinking any differently since the birth of your baby?
 - Are taking any vitamin/mineral supplements?

Other

- How much would you say you are spending each month on sanitary protection?
 - How much do you spend each month on contraceptives?

Medical

- Since your baby was born, has he/she been admitted to hospital (if so for how long) or have you taken him/her to your doctor with any of the following complaints:

Diarrhoeal episodes, gastro-intestinal problems, respiratory problems, otitis media



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Liverpool John Moores University

Infant Feeding Questionnaire

Subject Number:

Please answer all questions, either by ticking the relevant boxes or writing in the answer yourself in your own words. If unsure about anything, please write 'unsure'.

1. How many children do you have?

1 [] 2 [] 3 [] 4 [] 5+ []

2. What are their ages?

1st child 2nd child 3rd child 4th child 5th child

3. How did you feed them?

	<input type="checkbox"/> 1 st child	<input type="checkbox"/> 2 nd child	<input type="checkbox"/> 3 rd child	<input type="checkbox"/> 4 th child	<input type="checkbox"/> 5 th child
Breast fed	[]	[]	[]	[]	[]
Bottle fed	[]	[]	[]	[]	[]
Both	[]	[]	[]	[]	[]

4. What is the date of birth of your last child?

5. What was the due date for this last child?

6. While you were pregnant with this baby did you have any antenatal check ups?

- | | | |
|-----|-----|-------------|
| Yes | [] | go to Qu 6a |
| No | [] | go to Qu 7 |

6a. If you did, did anyone discuss feeding your baby with you?

- | | | |
|-----|-----|-------------|
| Yes | [] | go to Qu 6b |
| No | [] | go to Qu 7 |

6b. If yes, who discussed this with you?

- | | |
|----------------|----------------------|
| Doctor | [] |
| Midwife | [] |
| Health Visitor | [] |
| Nurse | [] |
| Someone else | [] (please say who) |

41. Which best describes your ethnic origin?

- | | |
|-------|-----------------------|
| White | [] |
| Black | [] |
| Asian | [] |
| Other | [] (please describe) |

Thank you for your time in filling in this questionnaire. All answers will be treated confidentially.

If you have any further comments about anything in this questionnaire, please write your comments below. Thankyou.

7. While you were pregnant with this baby did you go to any classes to prepare you for having the baby?

- | | | |
|-----|-----|-------------|
| Yes | [] | go to Qu 7a |
| No | [] | go to Qu 8 |

7a. If yes, who were the classes organised by? (please tick all that apply)

- | | |
|--|-----|
| A hospital | [] |
| A clinic/doctors surgery/health centre | [] |
| Voluntary organisation (i.e. NCT, La Leche League) | [] |
| Someone else (please say who) | [] |

8. With regards to this baby,

- a. On average about how many cigarettes a day were you smoking before you became pregnant (if none write '0')

[]

35. If married or living with partner, does he
- Work full time
- Work part time
- Not work
- 35a. If your partner is working please state his occupation

35a. If your partner is working please state his occupation

Methods of feeding

9. Thinking back to before you had this baby, how did you plan to feed him/her?

- Breast feed
- Bottle feed
- Breast and bottle feed
- Had not decided

10. When did you decide how you would feed this baby?

- Before pregnancy
- During first three months of pregnancy
- During second three months of pregnancy
- During last three months of pregnancy
- Once the baby was born

11. Why did you think that you would use this method?

39. Do you
- Own your own home
- Rent from the local authority
- Rent from housing association
- Rent from private landlord
- Live with parents

40. Please state the first part of your postcode, i.e. L15

12. Do you know any mothers with young babies?
- Yes go to Qu 12a
- No go to Qu 13

12a. If yes, would you say that most of the mothers you know with young babies mainly bottlefeed or breastfeed them?

- Most of them bottle feed []
About half and half []
Don't know []

13. Do you know how you were fed as a baby?

- Breast fed entirely []
Both breast and bottle fed []
Don't know []

14. The first time you fed your baby, did anyone give you any advice or show you what to do?

- Yes [] go to Qu 14b
No [] go to Qu 14a

14a. If no, would you have liked any help or advice?

- Yes []
No []

14b. If you did receive help/advice, who was this from?

- Doctor []
Midwife []
Health Visitor []
Nurse []
Someone else [] (please say who) _____

14c. Was this advice helpful?

- Yes []
No []

15. Did you ever feel you were being pressurised into breast feeding your baby?

- Yes []
No []

29a. If yes, who advised you?

- Doctor []
Midwife []
Nurse []
Health visitor []
Other (please say who) []

30. Thinking of the milk that you give your baby most of the time, do you normally use:

- Powdered []
Ready to feed []
Both []

Questions about yourself

31. How old are you?

32. At what age did you have your first baby?

33. Are you

- Married/living with partner []
Separated/widowed/divorced []
Single []

34. Are you

- Working full time []
Working full time but currently on maternity leave []
Working part time []
Working part time but currently on maternity leave []
Not working []

34a. If working, please state your occupation

Bottle feeding experience

16. Did you ever feel you were being pressurised into bottle feeding your baby?

- Yes []
No []

27. Please state your reasons for not starting breastfeeding (tick all that apply)

- Embarrassing []
Lack of privacy in the home []
Experienced difficulties in breast feeding i.e. not enough milk []
Inconvenience i.e. working mother []
Less fashionable to breast feed []
Artificial milk is as good as or better than breast milk []
Could involve the father in feeding routine []
Didn't want to []
Other (please say why) _____

28. Which formula did you use for the first time?

28a. Are you still using this formula?

- Yes [] go to Qu 29
No [] go to Qu 28b

28b. If no, why did you change?

- Baby was not satisfied/still hungry []
Baby kept being sick []
Baby was constipated []
Baby was allergic to the milk []
Preferred a different type to the one given in hospital []
Cost []
Availability []
Other (please say why) _____

17. Have you ever seen a women breast feeding her baby in public?

- Yes [] go to Qu 17a
No [] go to Qu 18

17a. If yes, was this somebody you knew?

- Yes [] (please say who this was)
No []

17b. Please describe how you felt about seeing this person breastfeeding in public.

18. For the following 14 statements about infant feeding, please score each statement on a scale of 1-5 (where 1=strongly disagree, 2=disagree, 3=neither disagree or agree, 4=agree, 5=strongly agree), depending on your level of agreement with the statement (tick the box that applies)

- a. Bottle feeding is very convenient 1 [] 2 [] 3 [] 4 [] 5 []
b. Breast feeding is very convenient 1 [] 2 [] 3 [] 4 [] 5 []
c. Bottle feeding is a good way of letting fathers care for the baby 1 [] 2 [] 3 [] 4 [] 5 []
d. Breast feeding is a pleasant experience for mother and baby 1 [] 2 [] 3 [] 4 [] 5 []
e. Bottle feeding allows greater freedom for mothers 1 [] 2 [] 3 [] 4 [] 5 []
f. Breast fed babies are happier 1 [] 2 [] 3 [] 4 [] 5 []

17c. Did you get any advice on which formula to use?

- Yes [] go to Qu 29a
No [] go to Qu 30

g. Breast fed babies need to be fed too often

1 [] 2 [] 3 [] 4 [] 5 []

h. Most mothers have sufficient breast milk

1 [] 2 [] 3 [] 4 [] 5 []

i. Bottle feeding is more expensive than breast milk

1 [] 2 [] 3 [] 4 [] 5 []

j. Breast feeding is painful

1 [] 2 [] 3 [] 4 [] 5 []

k. Breast feeding protects infants from diseases

1 [] 2 [] 3 [] 4 [] 5 []

l. Breast feeding is beneficial to mother's health

1 [] 2 [] 3 [] 4 [] 5 []

m. Breast feeding in public is unpleasant

1 [] 2 [] 3 [] 4 [] 5 []

n. Breasts are made for breast feeding

1 [] 2 [] 3 [] 4 [] 5 []

Breastfeeding Experience

19. When did you first breast feed your baby?

Never [] if never, go to Qu 27

After delivery

Within a few hours []

After 2 days

After 3 days []

After 5 days

[]

20. How long did you breast feed/intend to breast feed for?

0-2 weeks

[]

2-4 weeks

[]

1-3 months

[]

3-6 months

[]

6-12 months

[]

over 12 months

[]

21. If you breastfed/are breastfeeding, please state your reasons for doing so

1 [] 2 [] 3 [] 4 [] 5 []

1 [] 2 [] 3 [] 4 [] 5 []

1 [] 2 [] 3 [] 4 [] 5 []

1 [] 2 [] 3 [] 4 [] 5 []

1 [] 2 [] 3 [] 4 [] 5 []

1 [] 2 [] 3 [] 4 [] 5 []

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Issues relating to feeding a baby

Information Sheet (Version 1.1 May 2003)

You are being invited to take part in a research study. Before you decide to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with friends, relatives and your GP if you wish. Please ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

This sheet explains the reasons for doing this study, what will happen if you take part, what we would like you to do, and what we will do with the information you give us.

Why are we doing this study?

There is very little information about the issues faced by parents feeding their new baby. It would be useful to know this so that better advice can be given to parents. We are also interested in the support available for women who experience problems with feeding their baby. This is unlikely to benefit you or your baby directly. The study will take place over 1 year.

Why have I been chosen?

You have been invited to take part in this study as we are asking women who attend the Thursday morning infant feeding drop-in clinic at The Women's Hospital.

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep, and asked to sign a form of consent, a copy of which you will also be able to keep. If you do decide to take part, you are still free to withdraw at any time and without giving a reason. This will not affect the standard of care you receive. If you wish to complain about any aspect of the way you have been approached during the course of this study, the normal National Health Service complaints mechanism may be available to you.

What will happen to me if I take part?

I will ask you to complete a short questionnaire about your reasons for visiting the infant feeding clinic and the support/advice you received today.

What do I have to do?

You are not required to make any changes to your usual routine.

Will my taking part in this study be kept confidential?

I will not record any details that will identify you or your baby. All information that is collected about you during the course of the research will be kept strictly confidential.

What will happen to the results of the research study?

From the information we collect, we will be able to identify the issues relating to breast and bottle feeding. We will also be able to assess the support available at the infant feeding clinic. We will write a report about the findings and hope that it will produce a better understanding of infant feeding which should be useful to Doctors, Midwives, Health Visitors, Dieticians and Administrators. No individual (either mother or baby) will be identified in the report. A brief copy of the results and findings will be sent to you on completion of the study, should you request it.

Who is organising and funding the research?

This research is being organised and funded by Liverpool John Moores University.

This study has been reviewed by the ethics committees of Liverpool Health Authority, and Liverpool John Moores University.

Thank you for reading this.

For more information please contact:

- | | |
|---------------------|---------------------------------------|
| 1. Kirstin Berridge | Telephone: 0151 231 5271/07732 483859 |
| 1. Dr Allan Hackett | Telephone: 0151 231 5266 |
| 1. Ms Julie Abayomi | Telephone: 0151 231 5394 |

1. Liverpool John Moores University, IM Marsh Campus, Barkhill Road, Liverpool, L17 6BD.

If at any time, you change your mind about helping then please just tell one of us and you will not be bothered further by us.



John Moores University



Liverpool Women's Hospital

NHS

NHS Trust

Patient Information Number:

CONSENT FORM

Title of Project: An investigation into the relative costs of breast and bottle feeding in Liverpool

Name of Researcher: Kirstin Berridge

Name and number of independent person:

Please initial box

1. I confirm that I have read and understand the information sheet dated May 2003 for the above study.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without my medical care or legal rights being affected.
3. I understand that sections of any of my medical notes may be looked at by responsible individuals from Liverpool John Moores University where it is relevant to my taking part in research. I give permission for these individuals to have access to my records.
4. I agree to take part in the above study.

Name of Patient

Date

Signature

Name of Person taking consent
(if different from researcher)

Date

Signature

Researcher

Date

Signature

1 copy for patient, 1 copy for researcher.



JMU



19. What qualifications do you have? (Tick all that apply)

- None
- GCSE
- A level
- Vocational
- Degree or higher

20. Do you

- Own your own home
- Rent from the local authority
- Rent from housing association
- Rent from private landlord
- Live with parents

21. Please state the first part of your postcode, i.e. L15

22. Which best describes your ethnic origin?

- White
- Black
- Asian
- Other (please describe)

Infant Feeding Questionnaire**Subject Number:**

Please answer all questions, either by ticking the relevant boxes or writing in the answer yourself in your own words. If unsure about anything, please write 'unsure'.

22. Is this your first visit to this drop-in clinic?

- Yes
- No

23. If no, how many times have you been before with this baby?

3. What are your reasons for attendance today?

Relating to your baby:

- Not latching on properly
- Not taking enough milk
- Advice about making up bottles
- Advice about what formula to use
- Advice about weaning
- Other

Relating to yourself:

- Cracked/sore nipples
- Mastitis/breast abscess
- Not producing enough milk
- Advice about expressing milk
- Advice about own diet
- Other

Thank you for your time in filling in this questionnaire. All answers will be treated confidentially.

If you have any further comments about anything in this questionnaire, please write your comments below. Thankyou.

4. Who did you see today?

Health Visitor

[]

Midwife

[]

Dietician

[]

5a. Was their advice helpful?

Yes

[]

No

[]

5b. Any other comments about your visit to the clinic today?

15. Are you

Working full time

[]

Working full time but currently on maternity leave

[]

Working part time

[]

Working part time but currently on maternity leave

[]

Not working

[]

15a. If working, please state your occupation

6. When was your baby born?

7. What was their due date?

8. What was their birth-weight?

9. How are you feeding your baby?

All breast milk

[]

Some breast and some formula

[]

10. Is your baby receiving anything apart from milk i.e. baby rice etc.?

Yes

[]

No

[]

About yourself

11. How old are you?

12. How many children do you have?

13. At what age did you have your first baby? _____

14. Are you

Married/living with partner

[]

Separated/widowed/divorced

[]

16. If married or living with partner, does he

Work full time

[]

Work part time

[]

Not work

[]

16a. If your partner is working please state his occupation

17. Do you or your partner receive any state benefits?

Yes

[]

No

[]

18. At what age did you leave school? _____

Bounty Pack Contents: Mother-to-be (collected 19/06/03)

- > Avent breastfeeding video
- > Avent gift pack:
 - 2 disposable breast pads
 - 15ml sample of liquid baby talc
 - 15ml sample of relaxing bath & shower essence
 - leaflet about Avent bodycare range
- > 25cl bottle of Bottlegreen Elderflower presse and bookmark leaflet
- > 33.3g Jordans Cranberry and apple frusli bar with 20p coupon leaflet
- > Pampers pack:
 - 15 sensitive babywipes
 - 1 newborn disposable nappy book about child development
 - leaflet about pampers products
 - leaflet with £1.00 off coupon for new born nappies
 - leaflet with £2.00 off coupon for pampers changing mats
- > Dove gift set:
 - 50ml sample body wash
 - 25g bar soap
 - 10ml sachet shampoo
 - leaflet about Dove products
- > 15g sample Sudocrem and leaflet
- > 2 fairy wash powder tablets, leaflet and coupons for:
 - 30p off Bounty kitchen towels
 - 50p off Fairy washing up liquid
 - 50p off lenor fabric conditioner
 - 30p off Charmin toilet tissue
 - 50p off Flash floor disinfectant
- > leaflets:
 - Disney Babies books
 - Family Assurance baby bond
 - Vertbaudet children's clothing catalogue
 - Tens machine booking form
 - Having Babies information cards
 - Ace Christmas collection catalogue
 - Next Directory (maternity)
 - Incresto life cover
 - Social Security guide to benefits and tax credits



Bounty Pack Contents: New Mother (Collected 26/06/03)

- > Avent new mother gift box:
 - 2 disposable breast pads
 - 15ml sample All-in-1 magic cream
 - leaflet about Avent body care range
 - leaflet about Avent breast pump
 - guide to breastfeeding leaflet
- > 17ml sample Macleans milk teeth toothpaste
- > 15g sample Sudocrem and leaflet
- > box of 50 nappy sacks and 20p off coupon
- > 3.5g sample Bepanthen ointment and leaflet
- > 500ml sample Lenor concentrated fabric conditioner
- > Pampers gift pack:
 - 15 sensitive baby wipes
 - 1 newborn nappy
 - CD & instructions for baby massage
 - baby development booklet
 - leaflet about Pampers range
 - £1.00 off coupon for nappies
 - £2.00 off coupon for changing mats
 - Pampers baby wipe dispenser
- > Gift Box:
 - 2 Fairy wash powder tablets
 - 2 Ariel wash powder tablets
 - 30p off coupon for Bounty kitchen towels
 - 30p off coupon for any Fairy product
- > Leaflets:
 - Infacol
 - Dettol and 30p off coupon
 - Portrait Place
 - La Redoute catalogue
 - Disney babies books
 - Mothercare and £5.00 off coupon if spend £50.00 or more
 - Boots and advantage card points coupons
 - Studio Cards Christmas catalogue
 - Boots Hydrogel breastfeeding pads
 - Inresco life cover
 - Inland Revenue tax credits
 - Next Directory
 - Personal Presents catalogue
 - Inland Revenue claiming child benefit pack
 - Voucher book

