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Breastfeeding amongst mothers in a non-English speaking community in Wollongong

Deanne Condon-Paoloni
University of Wollongong, deannecp@uow.edu.au

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**BREASTFEEDING AMONGST MOTHERS
IN A NON-ENGLISH SPEAKING COMMUNITY
IN WOLLONGONG**

A thesis submitted in fulfilment of the requirements for the award of the degree

MASTER OF SCIENCE (HONOURS)

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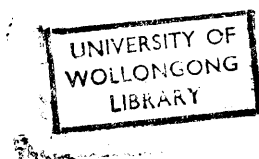
UNIVERSITY OF WOLLONGONG

by

Deanne Condon-Paoloni, B.A.(Hons)

Department of Public Health and Nutrition

October 1990



DECLARATION

This thesis is submitted to the Department of Public Health and Nutrition, University of Wollongong, in fulfilment of the requirements for the Honours Degree of Master of Science (Community Health). It does not incorporate any material previously published or written by another person except where due reference is made in the text. The work described in this thesis is original work and has not been previously submitted for a degree or diploma in any university. Some findings have been presented at the Annual Conference of the Public Health Association of Australia, Melbourne, Victoria, September 1989.

Deanne Condon-Paoloni.

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SUMMARY

The study investigated infant feeding practices among mothers of a predominantly Macedonian-speaking community in Wollongong. An initial survey of Early Childhood Health Centre records revealed that initial breastfeeding rates were high but declined rapidly during the first 3 months postpartum. The study aimed to investigate reasons for the decline to 3 months and to determine whether there were differences in infant feeding patterns between the Macedonian-speaking and the non-Macedonian speaking mothers. Fifty five mothers were interviewed during their first 3 months postpartum about their infant feeding practices, attitudes and experiences. Macedonian-speaking Ethnic Health Workers and Interpreters, and Early Childhood Health Sisters were also interviewed. The rapid decline in breastfeeding during the initial 3 months postpartum mirrored changes in mothers' attitudes to breastfeeding and bottlefeeding. Initial positive attitudes about breastfeeding reversed during the initial 3 months postpartum. The Health Belief Model is used as a framework to develop a model of the process of decision-making about infant feeding that has implications for promoting breastfeeding. The perception of the health benefits of breastfeeding over bottlefeeding was not strong enough to outweigh the directly experienced problems. Stepwise Regression analyses distinguished 4 variables (mother's educational level, attitudes to convenience and duration of breastfeeding, and the introduction of complementary bottlefeeding) that identified those mothers most at risk of weaning their infants early, and could be used by Early Childhood Centre personnel to direct resources where they are most needed to promote breastfeeding.

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INTRODUCTION

This study examines the infant feeding patterns amongst mothers in a non-English speaking (NES) community in Wollongong. In view of the significantly lower morbidity and mortality of breastfed compared with bottle-fed infants, the promotion of breastfeeding is an important part of infant health care.

In the past decade there has been a marked increase in breastfeeding rates in Australia. Studies in Australia and overseas have shown that breastfeeding rates are high for middle class, well-educated mothers (Hitchcock et al. 1982, Rob & Lawson 1984, Martinez & Nalezienski 1981, Martinez & Dodd 1983), but amongst some groups rates are much lower, and inappropriate substitutes, especially cows' milk, are more frequently used. Information on infant feeding habits of non-English speaking (NES) mothers is sparse and to some extent conflicting. Some studies have found low breastfeeding rates among NES mothers, and it has been identified as a problem by infant health workers. The New South Wales Department of Health has set up a Working Party on Breastfeeding Promotion for Migrant Groups.

Many NES mothers appear reluctant to undertake breastfeeding, wean infants very early, and frequently offer inappropriate substitutes for breastfeeding. The reasons for this pattern of infant feeding are not well understood, but are thought to include cultural factors, the need for mothers to return to the paid workforce, and perhaps lack of support for breastfeeding from family and their own social group.

This study sought to investigate infant feeding practices, to collect baseline data on breastfeeding rates and to explore the factors associated with the initiation and continuation of breastfeeding amongst the predominantly Macedonian speaking mothers attending a Baby Health Clinic in Wollongong. No studies on the infant feeding patterns of the Macedonian-speaking community have been reported in Australia, although it comprises a significant proportion of the overseas-born members of Australia's population.

Because no baseline data exist on the infant feeding practices of mothers from Macedonian-speaking backgrounds, this study was exploratory, and aimed to establish a frame of reference for future studies in the area, and for the development of resources for the promotion of breastfeeding among mothers in this community. Programmes promoting breastfeeding could then be developed that addressed the particular needs of mothers in this community, and other similar communities, and offered to them at the time when they might have the best effect.

The first chapter of this thesis outlines briefly the public health benefits of breastfeeding for infants. This chapter also provides a synopsis of published research on infant feeding patterns in Australia over time, and a review of research on factors affecting mothers' decisions about infant feeding. Chapter Two describes the community in which the study took place, its setting, the people and some of its problems. The theoretical and conceptual framework which influenced the overall study formulation and interpretation, and the research design and method of the investigation are outlined in Chapter Three. Chapter Four describes the results of the

preliminary investigation to establish baseline data for the major part of the study. Chapter Five presents the quantitative results from the interview phase of the study, and develops a predictive model which is able to explain a significant proportion of the variation in breastfeeding duration amongst mothers in this sample. In Chapter Six, the mothers' attitudes to breastfeeding and their experiences during the study period are presented. Chapter Seven outlines the summary of findings, and proposes a model of the process of choosing to breastfeed or bottlefeed amongst mothers in the study community.

FIG 1.1 TREND OF BREASTFEEDING RATES, 1940-85

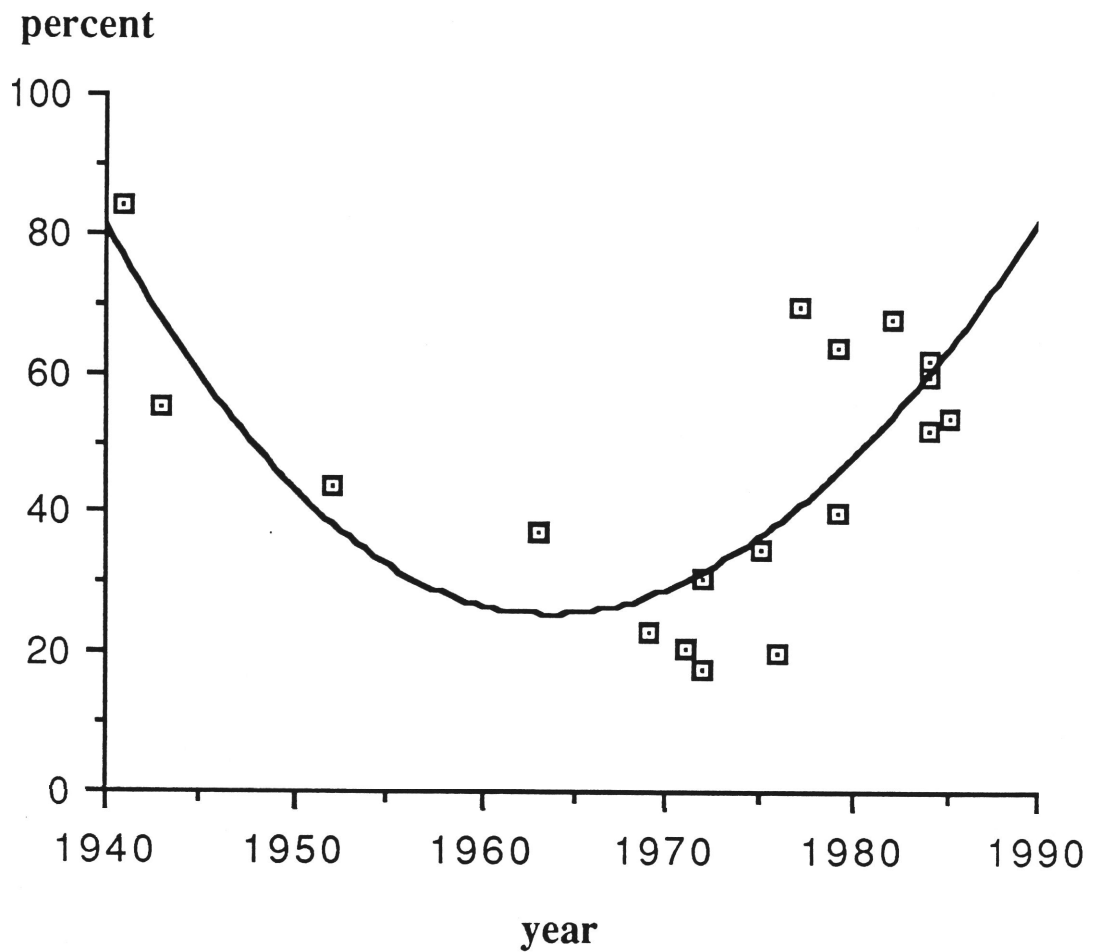


Figure 1.1 Trend of breastfeeding rates in Australia, 1940's to present
(A third order polynomial has been used to draw the trend)

(Allen & Heywood 1979, Boulton & Coote 1979, Coy et al. 1970, Coy & Lowry 1981, Hitchcock et al. 1982, Hitchcock & Coy 1988, Lawson et al. 1978, Newton 1966, Nowotny et al. 1986, Rob & Lawson 1984)

CHAPTER ONE

BREASTFEEDING BENEFITS, TRENDS AND ASSOCIATED FACTORS

1.1 HEALTH ADVANTAGES OF BREASTFEEDING

There is substantial evidence to support the benefits of breastfeeding. The benefits include immunological assistance, nutrient proportions that are appropriate for the human infant, and enhanced nutrient availability to the infant. Lower morbidity and mortality have been documented consistently for breastfed infants. Breastfeeding thus confers significant public health benefits. In the light of such evidence, current recommendations from the National Health and Medical Research Council and public health departments are that infants should be breastfed for the first 6 months of life (N.H.M.R.C. 1981).

1.1.1 Nutritional advantages of breastfeeding:

Human milk has unique nutritional characteristics when compared with common substitutes such as cow's milk. It is relatively low in protein and high in both carbohydrate and lipids. Colostrum in particular is high in the essential fatty acids. These nutrient proportions are related to the particular growth needs of the

human infant. During the first year of the human infant's life the growth of the central nervous system has priority over muscle growth. The most rapid period of brain growth occurs soon after birth. It is, therefore, significant that colostrum is so rich in the essential fatty acids that are important to brain development, cell proliferation and myelination (Crawford et al. 1978). The high fat and lactose content of human milk (including colostrum) thus supply the unique requirements of the early growth of the human nervous system. The relatively low protein content compared with the milk of other species is directly related to the low growth rate (other than brain growth) of human infants compared with the young of other species (Stini et al. 1980). These low breastmilk protein levels also result in a low solute load for the infant's immature kidney (Akre 1989, p26). Some formula fed infants may be receiving more protein than they require, which may lead to metabolic imbalance (Raiha 1985). The overall amino acid composition of human milk differs from cow's milk, and may relate to different amino acid requirements for protein synthesis in human infants. The relatively higher concentration of cystine in human milk as compared with cows' milk may relate to the relative inability of newborn infants to convert methionine to cystine (Gaul 1985).

Compared to even the best available formulae, human milk nutrients have extremely high bioavailability. Calcium is more efficiently absorbed because of the high calcium: phosphorus ratio (2:1) (Akre 1989, p29). Iron is also absorbed more completely by the breastfed infant than the bottlefed infant. Woodruff and his associates (1977) have shown that the intake of iron is lower for breastfed than

for bottlefed infants, but their levels of haemoglobin, serum iron, and transferrin saturation are as high or higher (see also Saarinen & Silmes 1979). Vitamin absorption shows a similar pattern (Akre 1989, Salmonpera 1984), as do a number of trace elements including zinc and copper (Lonnerdal et al. 1982, Walravens & Hambridge 1976). The efficiency of energy utilization for growth is also much higher in breastfed infants. Ratios of weight gain per 100 calories have been calculated to be approximately 10% - 30% higher among a group of breastfed infants compared with formula-fed infants (Fomon et al. 1971). It is widely recognised that infants absorb human milk fat more efficiently than they absorb cow's milk fat, partly due to the presence in human milk of a lipase that assists in digesting human milk fat, and the small size of the fat globules in human milk (Akre 1989, pp 26-27, Hamosh et al. 1985). Human milk has a unique fat composition which varies within and between feeds to match the infant's unique physiological needs. It is rich in long-chain polyunsaturated fatty acids which are important in brain development and myelinization (Clandinin & Chappell 1985).

1.1.2 Immunological benefits:

Human milk has a variety of immunological properties that cannot be duplicated by formulae or cow's milk. The presence of antibacterial and antiviral factors in human milk has been well documented (Akre 1989, pp 31-33). It is rich in immunoglobulins, particularly IgA. Colostrum contains significant levels of leukocytes, macrophages and both T and B lymphocytes. All these substances help control the microbial populations at mucosal surfaces (Lawton &

Shortridge 1977). In addition to an antibacterial function, there may be antiviral factors in human milk, including the secretion of interferon, direct phagocytosis, and the production of a specific IgA molecule (Welsh & May 1979). Human milk also contains other host defence factors such as lactoferrin and lysozyme which are antibacterial (Hanson et al. 1985). It has also been found that human milk, particularly colostrum, contains factors that facilitate intestinal maturation in the newborn infant (Heird & Hansen 1977, Udall et al. 1979). Breastfeeding also encourages the colonisation of the infant's gut by the benign microorganism *Lactobacillus bifidus*, which may prevent colonisation by other, harmful bacteria. The acid environment promoted by the presence of *Lactobacillus* also provides a buffer system which discourages the growth of many pathogenic organisms (Bullen et al. 1971, 1976, Goldman & Smith 1973). Breastfeeding thus provides a wide ranging system of protection against gastrointestinal infections. Other researchers have also noted specific protection against respiratory tract infections and otitis media, common infections of infancy (Hanson et al. 1985, Larsen & Homer 1978). Although it has been difficult to assign a precise biological significance to the factors in human milk that are active against bacteria and viruses, it seems likely that these factors are partially responsible for differences in the morbidity and mortality of breastfed and bottlefed infants.

1.1.3 Public health impact:

Early studies on the morbidity and mortality of infants showed significant health advantages for breastfed infants (Grulee et al. 1935a, 1935b, Robinson 1951,

Stewart & Westropp 1953). More recent studies have confirmed these earlier findings. Cunningham (1979) showed that during the first year of life the number of illness episodes for bottlefed infants was twice that of breastfed infants. The difference was 4-fold for the first 4 months, and 16-fold for the first 2 months of life. When factors such as parents' educational level, maternal age, family size, low birthweight and infant's sex were controlled, breastfeeding was still associated with lower morbidity, especially for males, and for infants of younger mothers, larger families and low birthweight. Thus the advantages of breastfeeding were greater for those infants whose health was most at risk. The advantages of breastfeeding were also apparent when hospitalizations were examined.

Cunningham (1979) found that the rate of hospitalization was 15 times greater among bottlefed infants. Other studies support these findings (Larsen & Homer 1978, Forman et al. 1984). Similar results have been found in Australia. A survey of infant feeding in Sydney's Northern Metropolitan Health Region (Rob & Lawson 1984) found fewer doctor's visits for breastfed infants.

1.1.4 Allergy risk reduction:

Cow's milk based formula or cow's milk are frequent substitutes for breastmilk. A small proportion of infants, perhaps 1% - 2% of children under 2 years (Foucard 1985), may develop allergy symptoms on exposure to cow's milk. Infants with documented cow's milk allergy have been shown to have more doctor's visits, and more hospital admissions than other infants (Gerrard et al. 1973). The risk of developing this sensitivity appears to be influenced by the

atopic constitution of the infant and the age at which cow's milk is introduced. Early exposure to cow's milk increases the risk of allergic disease (Burr 1983, Foucard 1985). Atherton (1983) suggested that infants with a family history of atopic disease should be breastfed exclusively for 4 months and continue to be breastfed after the introduction of other foods until 12 months of age. In the light of available evidence the N.H.M.R.C. has suggested that "exclusive prolonged breastfeeding reduces the likelihood of atopic disease in the first twelve months of life" (1984).

The consumption of whole cow's milk during the first year of life has been reported to be associated with iron deficiency anaemia and occult gastro-intestinal bleeding. Using a radioisotope technique and alternating periods of controlled diet, Wilson and his associates (1974) found that 17 of 34 infants with iron-deficiency anaemia had abnormal occult gastro-intestinal bleeding induced by a diet of whole cow's milk. Similar findings have been reported by other researchers (Anyon & Clarkson 1971, Fomon et al. 1981). The relative incidence of such cow's milk related gastro-intestinal bleeding, however, has not been established.

1.2 BREASTFEEDING TRENDS

1.2.1 Australia:

From a physiological and public health perspective, breastfeeding has been shown to be clearly advantageous, but this has not always been reflected in

breastfeeding rates. In many developed countries, including Australia, there was a substantial decline in breastfeeding during the post-war period. Figure 1 shows breastfeeding rates taken from Australian surveys of infant feeding from the early 1940's to the present. At the first survey point, Victoria in 1943, 55% of mothers were fully breastfeeding their infants at 3 months, and 42% still continued at 6 months (Nowotny et al. 1986). Through the 1950's and 60's, breastfeeding rates declined. In 1963 in Victoria, only 37% of infants were fully or partially breastfed until 3 months of age (Newton 1966). By 1971, rates had declined to 21% at 3 months, and only 9% at 6 months (Nowotny et al. 1986). These rates are matched by other Australian data. In Tasmania, in 1924, 85.5% of infants attending the Hobart Child Welfare Centre were still breastfed at 3 months, and in 1941 this figure was still 84% (Coy et al. 1970). In a state-wide survey in Tasmania carried out in 1952, 44% of infants were fully breastfed at 3 months of age. By 1969 only 23% of Tasmanian infants surveyed (including almost 6% who were partly breastfed) were breastfed at 3 months (Coy et al. 1970).

During the 1970's trends clearly reversed. In the 1969 survey in Tasmania, approximately 60% of infants were breastfed in hospital and only 23% were still breastfed at 3 months. By 1979 these figures had increased to 70% at hospital discharge and 40% at 3 months (Coy & Lowry 1981). Figures from Adelaide in South Australia show the same clear trend, with rates increasing from 18% of mothers continuing to breastfeed for at least 3 months in 1972-73, to 35% in 1975-76 (reported in Boulton & Coote 1979). A survey of 1972 baby health records from the northern metropolitan region of Sydney found 31% of mothers

FIG 1.1 TREND OF BREASTFEEDING RATES, 1940-85

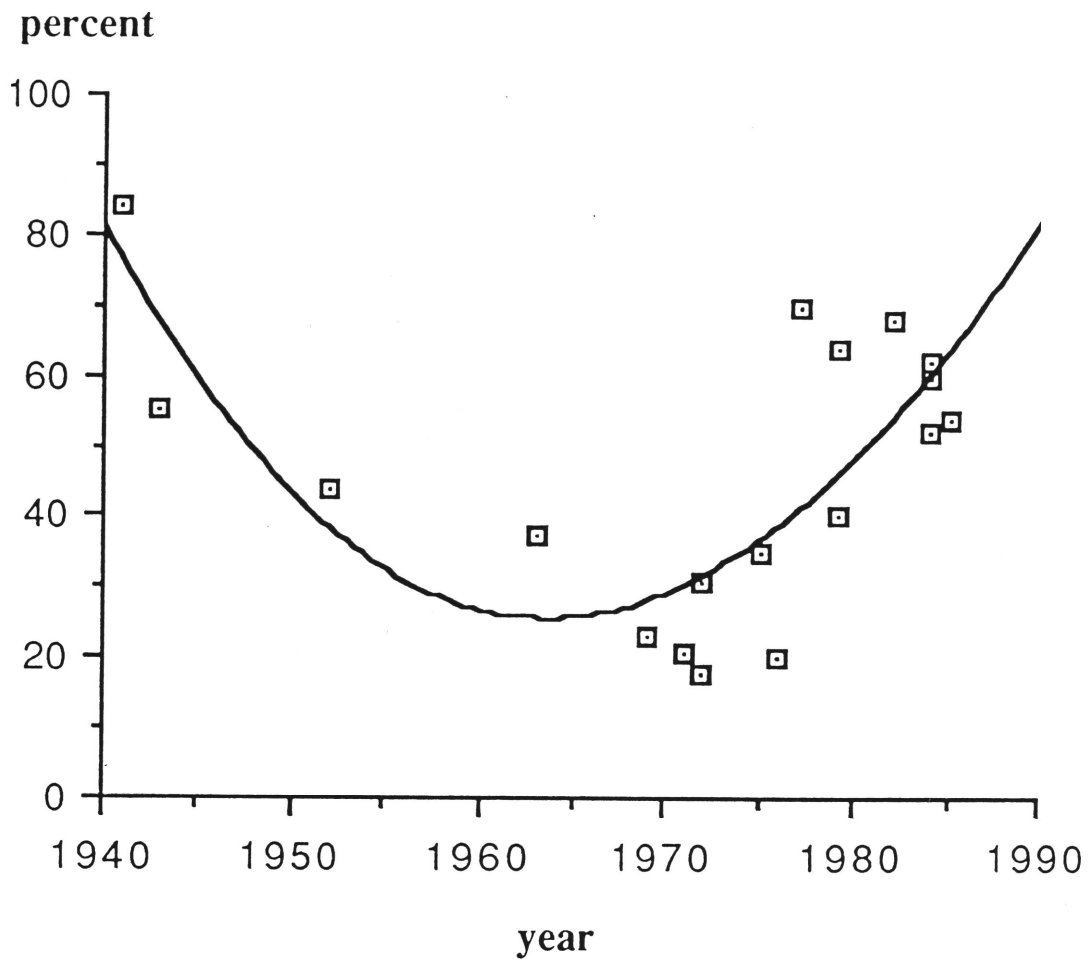


Figure 1.1 Trend of breastfeeding rates in Australia, 1940's to present
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(Allen & Heywood 1979, Boulton & Coote 1979, Coy et al. 1970, Coy & Lowry 1981, Hitchcock et al. 1982, Hitchcock & Coy 1988, Lawson et al. 1978, Newton 1966, Nowotny et al. 1986, Rob & Lawson 1984)

were breastfeeding their infants at 3 months, but only 12% at 6 months. By 1977 these figures had increased to 70% at 3 months and 48% at 6 months (Lawson et al. 1978). These figures are the highest reported for infant feeding surveys in Australia at the time. In contrast, a 1976-77 survey of Sydney, drawing data from all metropolitan health regions, found only 20% of mothers were still breastfeeding at the end of 3 months (Allen & Heywood 1979).

In the 1980's, this trend to higher rates and longer duration continued. A 1984 survey in Victoria found 52% of mothers were breastfeeding at 3 months, compared to 21% in the 1971 survey (Nowotny et al. 1986). In Tasmania in 1984, a statewide survey found 60% of mothers continued breastfeeding their infants for 3 months, compared to 40% from the 1979 survey (Hitchcock & Coy 1988). Data from Western Australia reveal a similar pattern. Records from 12 metropolitan and 6 country Child Health Centres in 1979 showed that 82% of mothers commenced breastfeeding and 64% continued to 3 months (Hitchcock et al. 1982). In 1984, 86.6% initiated breastfeeding, and 62% were still breastfeeding at 3 months (Hitchcock & Coy 1988). The relatively very high rates reported in the 1977 survey in the Northern Metropolitan Region of Sydney continued in a 1982 survey, which found 68% of infants were still breastfed at 3 months (Rob and Lawson 1984).

Palmer (1985) has published national averages for Australia derived from 1983 data from hospitals, state health departments' administrative statistics, special Health Department surveys, and independent surveys. Data indicate that 85% of

Australian mothers were fully breastfeeding their infants at hospital discharge. Fifty four percent of infants were being breastfed at 3 months, 40% at 6 months, and 10-12% at 12 months.

1.2.2 Overseas trends:

The trend to increasing breastfeeding in Australia since the early 70's mirrors trends overseas. Large scale surveys in the U.S. have confirmed a similar pattern there (Forman et al 1985). Martinez and Dodd (1983) carried out repeated large scale mail questionnaire surveys of milk feeding patterns of infants during the first six months, from 1971 to 1981. During that period breastfeeding rates in hospital more than doubled, from 25% to 58%, breastfeeding of infants 3 to 4 months of age increased from 8% to 35%, and at 6 months from 5.5% to 17%. Sarett and his associates (1983) also carried out similar large scale mail questionnaire surveys with similar results. It is important to note that this increased incidence of breastfeeding in the U.S. has occurred not only among mothers from higher socioeconomic circumstances, but also among lower income, less educated mothers (Martinez and Nalezienski 1981).

1.3 BREASTFEEDING RATES - ASSOCIATED FACTORS

While the trend in recent years has been to increasing rates of breastfeeding in all segments of the community, there are still large differences in breastfeeding incidence and duration amongst different socioeconomic and ethnic groups.

Mothers' demographic and socioeconomic characteristics have been found to be strongly associated with their choices about infant feeding, and this is reflected in the widely varying breastfeeding rates amongst different groups in the community.

1.3.1 Demographic factors

1.3.1.1 Ethnicity:

Information on the infant feeding habits of mothers from NES backgrounds in Australia is sparse and to some extent conflicting. A hospital survey in Sydney's Western Metropolitan Health Region found that breastfeeding rates were higher for migrant mothers than for Australian-born mothers (Webb 1985). Newton (1966) in a study in the early 1960's in Victoria, noted that Greek and Italian women were more likely to persist in breastfeeding than English-speaking mothers. In contrast, a later study (Boulton and Coote 1979) found that Southern European mothers in Australia were less likely to begin breastfeeding and to breastfeed for a shorter time, and more likely to feed cow's milk. Williams and Carmichael (1983) carried out a longitudinal study of 304 infants from birth to 44 weeks in a multi-ethnic lower socioeconomic community in Melbourne. The study found no significant differences between Australian, Greek, Italian and Lebanese-born mothers in commencing breastfeeding, but reported a trend for the overseas-born mothers to breastfeed for a shorter time and introduce solids earlier and more frequently. The researchers also reported a lower rate of breastfeeding in the community during 1965-1979 than in earlier periods, and attributed this to

demographic changes due to immigration. Sixty two percent of the study population in 1978 were overseas-born. Census data showed there had been an increase in the overseas-born in the community from 15% in 1954 to 39% in 1976.

Studies on mothers of South-East Asian backgrounds have shown more consistent results. Webb's hospital study showed low rates among the mothers of S.E. Asian background. Ward and associates (1981) in a study of the pregnancies of 76 Vietnamese refugee women in Adelaide who attended an antenatal hospital clinic, found that only 34% of mothers were breastfeeding their infants 6 weeks after birth, half the rate of a comparison group of 915 non-Asian mothers attending the same antenatal clinic. They reported that the Vietnamese mothers expressed an unwillingness to breastfeed because this could interfere with their jobs or chances to obtain one. Mathews and Manderson (1980) reported equally low rates for Vietnamese mothers in Sydney. Only 35% of mothers breastfed their infants at all. They also reported that employment was a major consideration in the mothers' choice of infant feeding.

Ethnicity has been found to be associated with low rates of breastfeeding in overseas studies as well. In the U.S., Hispanic and Black Americans have low rates compared with Anglo-Americans (Baranowski et al 1983, Gabriel et al 1986, Rassin et al 1984). In New Zealand, Maori mothers have lower breastfeeding rates than Anglo mothers (Gunn 1984). In contrast, Pacific Islanders in New Zealand have the highest breastfeeding rates of any ethnic group (Gunn 1984).

The exact reasons for the variations in rates by ethnic group are not well documented. Some of the differences relate clearly to socioeconomic factors. Numerous studies have demonstrated that more affluent segments of the population have higher rates (Borda et al. 1978, Williams & Carmichael 1983, Hitchcock & Coy 1988, Wright & Walker 1983, Jones & Belsey 1977, Sloper et al. 1975, Rousseau et al. 1982, Starling et al. 1979, Smith 1985, Martinez & Nalezienski 1981, Forman et al. 1985), but the ways in which socioeconomic factors affect mothers' decisions about infant feeding are not well documented and perhaps differ for each cultural group.

1.3.1.2 Maternal age:

Maternal age is associated with differences in breastfeeding rates. Newton, in an early study of infant welfare centre records, found that the age of the mother was associated with choice of feeding method. For mothers under 20 years of age, 25% breastfed to 3 months, compared with 42% of mothers aged 20 to 29, and 31% of mothers aged 30 and older (Newton 1966). Similarly, Webb's hospital survey in Sydney's Western Metropolitan Region found there was a trend for mothers in the median age group (25 - 29 years) to have higher breastfeeding rates. The oldest mothers (>35 years), however, had the highest rates, though numbers were low (n=7) (Webb 1985). Comparable findings have been reported in Queensland (Counsilman et al. 1983). Mothers within the median age range (26-30 years) tended to have the most favourable attitudes towards breastfeeding.

1.3.1.3 Maternal parity:

Mothers' parity is also significantly associated with breastfeeding rates. A survey of mothers at a N.S.W. maternity hospital found that only 68% of the multiparous mothers breastfed their infants, compared with 89% of primiparas. Previous unsuccessful breastfeeding experience seemed to be a major factor in the decision of many of the multiparae not to breastfeed their new infant (Borda et al. 1978). Hitchcock and Coy, in their survey of infant feeding in Western Australia and Tasmania, found that breastfeeding rates at hospital discharge decreased significantly with family size. After 6 weeks, however, there was no association between family size and breastfeeding rate (Hitchcock and Coy 1988). A statistically significant negative association between parity and favourable attitudes to breastfeeding was reported in the Queensland survey (Counsilman et al. 1983). In the U.S., a 1976 large-scale national survey of families (Smith 1985) found that while firstborn children are more likely to be breastfed than later children, later children are more likely to be breastfed for longer. Martinez and his associates also found that primiparas had higher breastfeeding rates in hospital than multiparae (Martinez and Nalezienski 1981, Table 4).

1.3.2 Socioeconomic factors

Socioeconomic variables such as income, education and occupation, are used as indicators for a complex interconnected array of social, economic and cultural differences that result in health inequalities (Fitzpatrick and Scrambler

1984). They are employed because they are seen as principal indicators and are relatively easy to collect, measure, and analyse, not because they are seen to act independently of one another. It is helpful, however, to summarize studies which have used these indicators, in order to demonstrate the magnitude of the effect of socioeconomic differences. In this context, 'ethnicity' could also have been included as a socioeconomic factor, since it is also usually associated with differences in income, education, and access.

The inclusion of socioeconomic indicators in health related research is attributable to the central importance of 'social class' differences in many measures of health (Townsend & Davidson 1982, Marmot et al. 1987, Health Targets and Implementation Committee 1988). Such inequalities are the result of inequalities in access to resources and knowledge, participation, responsibility and options. Some researchers have suggested that health is primarily an outcome of socioeconomic structures, because of differences in mobility, choices, exposure to unhealthy environments, unemployment and concomitant problems of poor mental health and low self esteem (Labonte 1986, Kickbusch 1987).

1.3.2.1 Income and 'socioeconomic status'

In Australia and overseas, middle-class, well educated, affluent mothers have higher breastfeeding rates than mothers from poorer, less educated backgrounds. A 1982 survey of infants up to 16 weeks of age in Sydney's Northern Metropolitan Region, among a predominantly well-educated middle class

sample of mothers, showed high rates of breastfeeding. Eighty percent of babies were breastfed at 2 weeks and 63% of babies were still breastfed at 16 weeks (Rob and Lawson 1984). An earlier survey in the same region found almost identical rates with 87% of infants breastfed at hospital discharge (Lawson et al. 1978). In comparison a survey of infant feeding practices in hospitals of Sydney's predominantly lower socioeconomic Western Metropolitan Region found 76% of infants were breastfed in hospital (Webb 1985b).

Overseas studies present a similar picture. Martinez and his associates, in an analysis of a large mail questionnaire survey in 1979, found that income levels were significantly associated with breastfeeding. Mothers with lower family income had a lower breastfeeding rate in hospital, 37%, compared with 49 - 55% of mothers with higher family income (Martinez and Nalezienski 1981). A similar survey in 1981 found the same relationship, and that this statistically significant difference continued at 6 months and 12 months (Martinez and Dodd 1983). This series of mail questionnaire surveys also showed the increasing incidence of breastfeeding over time in the U.S., from 1971 to 1981. A survey of a group of less educated and lower income mothers in Galverston, Texas found that only 27% breastfed initially. At 6 months only 13% of those able to be contacted were still breastfeeding. Mexican-American mothers had particularly low rates. Interestingly, the least educated mothers had higher rates than those with low to middle range education levels. The rates reported for this less educated lower income group compared unfavourably with an overall breast-feeding rate in the U.S. of 54%, and upper SEC group rate of 74% (Martinez and Dodd 1983)

1.3.2.2 Maternal education:

The hospital survey in the Western Metropolitan Region of Sydney (Webb 1985) found that rates were lower for mothers with lower education levels. Eighty seven percent of mothers who had completed secondary schooling or had tertiary education were breastfeeding in hospital, compared with 74% of mothers who had only primary or some secondary education (Table 4, Webb 1985).

Williams and Carmichael (1983) report similar findings in their survey in a lower socioeconomic community in Melbourne. Ninety one percent of mothers with 11 or more years of schooling breastfed their infants, and 31% breastfed for more than 27 weeks. In contrast, 74% of mothers with less than 11 years of schooling breastfed their infants, and only 2% fed for more than 27 weeks.

A study in Queensland of mothers' attitudes to breastfeeding found increasingly favourable responses with increasing level of education both for the women and their spouses (Counsilman et al. 1983).

Overseas studies have also shown the association between maternal education and breastfeeding rates. Well-educated mothers in Sweden and Holland had the highest incidence of breastfeeding and were most successful at continuing breastfeeding (Florack et al 1984, Persson & Samuelson 1984). In the U.S., many researchers have found a strong association between years of education and incidence and duration of breastfeeding (Feinstein et al. 1986, Rassin et al. 1984,

Gabriel et al. 1986, Dusdieker et al. 1985). The Martinez and Dodd survey (1983), also found that maternal education levels were significantly associated with breastfeeding. Mothers with some tertiary education had a 74% initial rate compared with 50% of mothers with only primary or secondary education. At 6 months, mothers with higher education were breastfeeding at twice the rate of those with lower education levels (38% vs 20%). This pattern continued at 12 months (13% vs 7%). Forman and her associates, however, found that this relationship was not uniform across different ethnic groups. While years of education and incidence of breastfeeding were positively associated for white women, this relationship did not always hold for black women (Forman et al. 1985). Similarly, Smith and his associates in their survey carried out in four U.S. states on the border with Mexico, found that whilst there was a positive relationship between years of schooling and incidence of breastfeeding for Anglo mothers, this relationship was not so clear for Hispanic mothers (Smith et al. 1982).

1.3.2.3 Partner's occupation:

Occupation of the mother's spouse has been shown to be associated with breastfeeding rates (Borda et al. 1978). In a survey of mothers at a New South Wales maternity hospital 87% percent of mothers whose husbands were in professional occupations breastfed their babies, compared to 81% for trades, and 72% where husbands were unskilled. Webb's hospital survey in Sydney's Western Metropolitan Region also found that mothers whose husbands were professional, administrative or 'white collar' workers had higher rates (86%), than those whose

husbands were 'blue collar' workers (70%), or were unemployed (64%) (Table 5, Webb 1985).

The 1979 survey of 12 metropolitan and 6 country Child Health Centres in Western Australia found 87% of the infants of families where the father's occupation was graded in the upper half of a 4-point scale classification were breastfed initially. In comparison, 77% of infants from families in groups C and D of the same scale were breastfed. At 3 months these figures were 73% vs 57%, at 6 months 53% vs 36%, and at 12 months, 16% vs 7% (Hitchcock et al 1982). Differences were thus smaller initially but became greater the longer the duration of breastfeeding.

More recent surveys, in both Western Australia and Tasmania, confirm the continuing association between socioeconomic indicators and breastfeeding rates. Surveys of infant feeding in both states in 1984 have shown a clear positive relationship between husband's occupation and breastfeeding rates at all ages. All infants whose fathers ranked in the highest occupation class in the survey were being breastfed at hospital discharge, compared with 81% in the lowest social class. At 3 months the rates were 95% vs 50% in Western Australia, and 92% vs 39% in Tasmania. These clear differences continued up to 12 months of age. The survey also showed the trend to higher rates of breastfeeding continued in both states (Hitchcock and Coy 1988).

1.3.2.4 Mother's employment status:

Both the incidence and duration of breastfeeding have been found to be affected by mother's employment status. Manderson and Mathews reported on infant feeding among Vietnamese women in Sydney (Mathews & Manderson 1980, Manderson & Mathews 1981). They suggested that the low breastfeeding rate among these women was due principally to the women's desire to gain employment as soon as possible after their infants were born. Seventy two percent of the Vietnamese women cited return to the workforce as the major reason for not breastfeeding their infant born in Australia (Manderson and Mathews 1980). Similar findings are reported by Ward and his associates for Vietnamese women in Adelaide (Ward et al. 1981). Surveys in the U.S. found that mothers in full time employment when their infant was 6 months of age, had lower rates of breastfeeding in hospital when compared with mothers who were not employed outside the home. The difference between the two groups of mothers became greater over time (Martinez and Dodd 1983, Table 6).

Clear associations between mothers' sociodemographic characteristics and infant feeding choices have been demonstrated by the majority of studies on infant feeding rates, both in Australia and overseas. Many of these sociodemographic characteristics determine or influence the information mothers have, their access to information, services and assistance, the level of support and assistance they receive, and the other factors that impinge on the decision they make and their ability to act on it. Much of the variation in breastfeeding rates that is related to

sociodemographic factors may ultimately be dependent almost solely on economic factors, especially on the need for mothers to be in the paid workforce (Manderson 1982).

1.3.3 Sociocultural factors

Differences within socio-economic groups, however, indicate that other factors in the social and cultural context need also to be examined. There is a considerable body of research which relates to sociocultural factors and breast-feeding.

Sociocultural factors that have been shown to affect infant feeding practices include mothers' own health practices and perceptions of their role in the health care system, mothers' knowledge and attitudes to infant feeding methods, mothers' support networks, hospital practices, and the influence of health care personnel.

1.3.3.1 Cigarette smoking:

A number of studies have shown a negative association between cigarette smoking and incidence and duration of breastfeeding (Wright et al. 1983, Wright and Walker 1983, Rousseau et al 1982, Goodine and Fried 1984). The study of mothers' attitudes to breastfeeding in Queensland (Counsilman et al. 1983) found

more positive attitudes among non-smokers. This could be a reflection of a general predisposition towards "healthy" behaviours.

1.3.3.2 Social support and influences:

A number of studies have demonstrated the importance of family members and friends in mothers' decisions about infant feeding. A study of primiparas in Leeds, U.K., found a highly significant association between the mother's choice of infant feeding method and her perception of her husband's views on infant feeding (Wright et al. 1983). A Queensland study of mothers' attitudes to breastfeeding also found a strong relationship between a woman's attitude to breastfeeding and that of her partner (Counsilman et al. 1983). Other researchers have made similar findings (Bacon & Wylie 1976, Dusdieker et al. 1985, Mohrer 1979). Only weak associations between husbands' support and mothers' choice of feeding method, however, have been found in other studies (Jones and Belsey 1977, Mackey & Fried 1981).

The relative importance of the influence and support of family and friends, however, may vary according to the mother's cultural background. Baranowski and his associates investigated the importance of the support and influence of family members and friends on breastfeeding decisions among Anglo-, Black and Hispanic mothers in Galveston, Texas. For Anglo mothers the support of the husband was significantly associated with breastfeeding. For Black-American mothers, support of the 'best friend' was important in predicting breastfeeding.

Mother's support was the best predictor of breastfeeding for Mexican-American mothers. Their analysis also examined the influences that women had cited in their decision about infant feeding. Again, these varied by ethnic group, with previous breastfeeding being important for Anglo mothers, while doctor, mother and friend were important for Mexican-American mothers. No set of influences were good predictors for Black-American mothers (Baranowski et al. 1983). Bryant's study in Miami reported similar findings. The husband was an important factor for Anglo-American mothers, but for Hispanic women, their mothers were the most important source of influence (Bryant 1982). Another study on breastfeeding among Hispanic primiparas in Tijuana and San Diego found that the woman's mother had the most influence on the decision to breastfeed, but it was the support of the husband or male partner that was most important in predicting breastfeeding at 6 weeks postpartum (Sweeney and Gulino 1987). These studies indicate that cultural factors have to be considered when making predictions or assessing the importance of differing components in the decision about infant feeding.

1.3.4 Health care system

1.3.4.1 Hospital practices:

Several studies have demonstrated the importance of hospital practices on infant feeding. Sloper and his associates reported the results of a study in an Oxford hospital. Seminars on infant feeding among midwifery and nursing staff, and the discontinuation of the practice of offering complementary formula feeding,

increased the rate of breastfeeding at hospital discharge from 14% to 42%. The duration of infant feeding was not affected, however. Fifty percent of mothers who were breastfeeding at hospital discharge discontinued within 2 months (Sloper et al. 1975).

Other studies have shown that early initiation of breastfeeding after delivery is associated with longer duration of breastfeeding. Wright and Walker, in a study of primiparas in Leeds, found that the prevalence of breastfeeding at 4 weeks after birth was significantly higher among mothers who breastfed within 12 hours of the birth compared with mothers who started feeding later (Wright and Walker 1983). Other researchers have made similar findings (Bloom et al. 1982b, Hally et al. 1984).

Wright and Walker also found that mothers whose infants were with them all the time during their hospital stay had higher breastfeeding rates at 26 weeks than mothers whose access to their infants was more restricted (Wright and Walker 1983).

1.3.4.2 Health care personnel:

The research on the importance of the influence of health care professionals on mothers' infant feeding decisions shows widely differing effects.

Bryant, in his study of infant feeding among mothers in Miami reported that information about infant feeding was usually filtered through friends and neighbours, while health care professionals had a lower direct level of influence (Bryant 1982). The study by Sweeney and Gulino of Hispanic mothers in Tijuana and San Diego also found that nurses and physicians had least influence on the breastfeeding decision compared with friends or close relatives (Sweeney and Gulino 1987). Baranowski's study, however, found that the mother's doctor was an important influence on the breastfeeding decision, though the predictive value of the model was strengthened by adding in the influence of the mother's mother, friend and grandmother (Baranowski et al. 1983).

1.3.5 Summary:

The review of research related to infant feeding demonstrated a number of factors were consistently associated with variations in infant feeding. Some of these factors were sociodemographic, including mothers' education, age, parity, and economic factors (including mothers' employment, and economic status measured by husbands' occupations). Other factors related to the social support and influence of mothers' own social environments, to practices and influences within the health care system, or to mothers' own health-related behaviours, such as cigarette smoking. Questions exploring these factors were incorporated into the interviews with mothers that became the focus of this study of breastfeeding amongst Macedonian-speaking mothers in Cringila. Because this research was concerned with the breastfeeding practices of mothers from Macedonian-speaking

backgrounds, it was particularly important to determine how these factors varied between the mothers of Macedonian-speaking backgrounds compared with other mothers in the community, and also to explore their particular cultural values and traditions in relation to infant feeding.

Because no detailed background information on the infant feeding patterns of Macedonian-speaking mothers in Australia is available, however, no hypotheses were initially formulated for this study. It was intended that as interviewing progressed, patterns in the data would become clear, and particular trends would emerge that could be pursued in more detail. Propositions could then be developed and tested.

Glaser and Straus (1967) have developed an approach to exploring problems and phenomena in the social sciences that they have called "grounded theory". This approach uses the data itself and its emerging patterns and trends to develop propositions, and ultimately theory, about the problem being explored. The method uses constant comparative analysis of the data being collected to define categories, and relationships between categories. The patterns of relationships are used to develop hypotheses that can be tested in the field. Ultimately, a theoretical code can be developed that orders the relationships between categories, and theory can be formulated concerning the particular phenomena or problem being explored. In areas where little research has been done, grounded theory is particularly valuable because the relevant variables and their relationships have not yet been identified.

CHAPTER TWO

THE CRINGILA COMMUNITY

The Illawarra area of New South Wales, which is located 80 kilometres south of the city of Sydney and includes the City of Wollongong, has a large migrant population; 51% of residents have been born outside of Australia, and 35-40% are from non-English speaking (NES) backgrounds. Yugoslav migrants, of whom the majority in the Illawarra are Macedonian-speaking, comprise the third largest NES group in the region (Italians and Greeks constitute the other two), and are also among the more recent immigrant groups.

Cringila is an industrial working class suburb of the City of Wollongong. It is located about 8 km south of the Central Business District and borders the Australian Iron and Steel (AIS) processing works. Many of its residents work or have worked at the AIS steel works which are the primary source of employment for people in this community. Sixty nine percent of the workforce are employed by AIS (Mitchell & Seniuk 1984, p. 40). The majority of work available at the steel works is heavy, dirty, and unskilled, typical of the kind of employment that new, especially NES immigrants can obtain, because of poor language skills, low education levels or the lack of recognition of foreign qualifications.

For these reasons the Cringila area in Wollongong has attracted a large proportion of NES immigrants. Sixty percent of Cringila residents were born overseas, and 75% of households speak languages other than English. Twenty five percent of the people in the community speak little or no English (Stubbs & Seniuk 1989). In the past Italians and Greeks formed the majority of the population, but it is now predominantly Macedonian-speaking Yugoslav. There are also significant numbers of Arabic, Turkish, and Serbo-Croatian speakers, as well as others. Table 2.1 shows the main ethnic groups in the Cringila area (Stubbs & Seniuk 1989).

The majority of Italian and Greek immigrants arrived in Cringila (and other areas of Wollongong) before 1965. Many have moved on to other better established and more affluent areas of Wollongong. Yugoslav immigrants have arrived in Australia much more recently, predominantly in the late 60's and 70's, and Macedonian-speaking Yugoslavs have continued to arrive in significant numbers through the 80's.

Because of changed conditions in the overall economy, especially the lower demand for unskilled workers, the prospects have lessened for more recent immigrants to repeat the pattern of the past, to better their family circumstances and move out of Cringila.

Many of the immigrants to the Cringila area have come from rural backgrounds. A recent survey found that 77.7% of residents had spent the first 12 years of their life in either a farm or village, or a small town (Mitchell & Seniuk 1984).

TABLE 2.1

MAJOR ETHNIC/LANGUAGE GROUPS IN CRINGILA

	<u>percent</u>
English	25.0
Macedonian	41.5
Italian	5.6
Lebanese/Arabic	5.4
Serbo/Croatian	2.8
Greek	2.8
Maltese	2.6
Vietnamese	1.5
Other	12.0

Adapted from Stubbs & Seniuk 1989, Table 1, p. 4.

Unlike southern European emigrants, few Yugoslavs immigrated to Australia as members of extended family groups or as part of chain migrations (where one member of the family arrives followed by other relatives and friends). Most have come as individuals or members of nuclear families. Many of the Macedonian-speaking residents, therefore, do not have a network of family for social support. There is some indication, however, that more male residents may have come with relatives or joined relatives here, perhaps because of the possibility of employment at the steel works. While a survey in Cringila showed that 56% of males have family members living in Australia, of whom about half live either close by or in the region, women had fewer family members nearby. Only 37% of women had relatives in Australia, and more than half of these were living outside the region (Mitchell & Seniuk 1984, Table 27). It would appear that women, in particular, have fewer family support networks in this community.

The language skills of many Macedonian speakers in the community reflect their more recent immigration. The survey of Cringila residents conducted by Mitchell and Seniuk (1984) found that a significant proportion (2.4% of males and 9.5 - 11.9% of females) could not speak or understand English. An even greater proportion (39 - 41% of males and 50% of females) had only poor English speaking and listening skills. Less than 20% of males and 11% of females had good or very good English speaking and comprehension skills (Mitchell & Seniuk 1984). Women are particularly disadvantaged by inadequate English language skills.

In Yugoslavia, hospital births are the norm and community child health centres serve the needs of infants once they have been discharged from hospital (Migrant Health Unit, Health Commission of New South Wales, no date). The pattern of maternal and infant health care available in their home country would therefore seem to translate well to the Australian context, apart from the language barrier. Records indicate that registrations at the Baby Health Clinics correlated very highly with the number of births in the region. Ninety to ninety-five percent of infants born at Illawarra Area hospitals register at the Early Childhood Health Centres.

The Cringila Early Childhood Centre (formerly the Baby Health Centre) is located within the Area Migrant Health Centre (previously the Cringila Community Health Support Centre) and is backed up by a number of services which include Interpreter Services and Ethnic Community Health Workers. The interpreters are specifically trained to facilitate communication between the health professions and their NES clients, and to act as a cultural link between them (Health Information and Translation Services, 1984), so that parents can speak relatively freely with the Baby Health Sister. The Cringila Early Childhood Centre was chosen for the initial survey in this study because the presence of Macedonian-speaking interpreters during clinic hours ensured that it attracted a high proportion of Macedonian-speaking clients.

CHAPTER THREE

METHOD

The aim of the study was to explore the process of decision-making about infant feeding amongst mothers of the Macedonian-speaking community in Wollongong.

3.1 THEORETICAL FRAMEWORK

Because no detailed background information on the infant feeding patterns of Macedonian-speaking mothers in Australia is available, this investigation was conceived as a purely exploratory study. It was intended that as interviewing progressed, patterns in the data would become clear, and particular trends would emerge that could be pursued in more detail.

3.1.1 Grounded Theory

Glaser and Strauss (1967) have developed an approach to exploring problems and phenomena in the social sciences that they have called "grounded theory". This approach uses the data itself and its emerging patterns to develop propositions, and ultimately theory, about the problem being explored. The basis of the approach is "theoretical sampling" (Glaser & Strauss 1967, Chapter 3), where the researcher collects, codes, and analyses the data, and decides what data to collect next in terms

of emerging patterns and categories. The method uses constant comparative analysis of the data being collected to define categories, and relationships between categories. The patterns of relationships are used to develop hypotheses that can be tested in the field. Ultimately, a theoretical code can be developed that orders the relationships between categories, and theory can be formulated concerning the particular phenomena or problem being explored. In areas where little research has been done, grounded theory is particularly valuable because the relevant variables and their relationships have not yet been identified. The approach is seen by its authors as being generally applicable, however, and the most useful method of developing theory in social research that has practical application (Glaser & Strauss 1967, p.237ff).

3.1.2 The Health Belief Model

Glaser and Strauss have also pointed out that already existing theory can provide a basis "to build or further build" systematic theory, provided it remains grounded in the analysis of the data (1967, p.253).

The Health Belief Model (Becker 1974, Rosenstock 1974) has been widely used in health research to explain health related behaviour. It is based on the theory that the likelihood of an individual taking a particular health-related action depends on:

1. the desire to avoid illness;
2. the belief that the specific action will prevent illness.

This has been expanded to include the following components:

1. perceived susceptibility; i.e. the risk of suffering a particular illness;
2. perceived severity; i.e. evaluations of health and/or social consequences of an illness;
3. perceived benefits; i.e. beliefs regarding the effectiveness of a course of action;
4. perceived barriers; i.e. evaluations of the risks or obstacles that specific actions might entail.

Various social and demographic factors, labelled "Modifying Factors", are assumed to affect the individual's perceptions of these components, and thus indirectly affect the likelihood of the individual taking a particular course of action. Some of the modifying factors that have been found to be associated with mothers' decisions about infant feeding include 'social class' factors such as mothers' ethnic group, education, fathers' occupations, and income, as well as demographic factors such as mother's age, employment status, and family structure. A further component, "Cues to Action", has also been added, which is the stimulus which triggers the health action.

Janz and Becker (1984) have published a comprehensive review of studies of the Health Belief Model related to preventive health behaviours, sick-role behaviours and clinic utilisation. The studies covered a wide range of health behaviours, including frequency of breast self-examinations, obesity control, fertility control,

adherence to therapies, and utilisation of health services. They concluded that in the majority of studies, each of the four Health Belief Model dimensions (barriers, susceptibility, benefits and severity), was found to be significantly associated with the health related behaviours under study (p 41). A "significance ratio" was determined for each dimension of the Health Belief Model in the studies they reviewed. This was the ratio of positive statistically significant findings for the dimension to the total number of studies which reported significance levels for that dimension. The "barriers" dimension was found to be most powerful, followed by "benefits", "susceptibility" and "severity".

In the studies on preventive health behaviour, the dimensions "susceptibility", "benefits" and "barriers" were consistently associated with outcomes. "Severity" produced significant results in only one-third of studies. The authors suggested that the respondents in the studies of preventive health behaviour may have had difficulty in conceptualising this dimension because, since they were not suffering any disease, the health threat was long term, and were related to medical conditions of which they had little or no experience (p 36). Overall, the "barriers" dimension was the most powerful.

Breastfeeding could be regarded as a preventive health behaviour. Sweeney and Gulino (1987) used the Health Belief Model to predict the factors affecting breastfeeding outcome at six weeks postpartum of a group of Hispanic primiparous mothers from the US-Mexican border. The authors adopted a modified Health Belief Model (Pender 1982) which uses two additional components, the importance of health

and perceived control. The "importance of health" is the individual's general concern with health, while "perceived control" is described as the relationship between the individual's beliefs about internal and external control and decisions regarding health care (Pender 1982, pp 54-64). Perceived Benefits (defined by the variable "reasons for selecting feeding method") and Importance of Health/Perceived Control (defined by prenatal care) both made a significant statistical contribution to their regression model. Among Modifying Factors, mother's age, head of household and husband's influence, made statistically significant contributions. Their "barriers" variables made no significant contribution to the model. Among "Cues to Action" components, timing of the infant feeding decision, and husband's opinion of the feeding method selected, were significant predictors of the outcome variable. The authors concluded that the Health Belief Model was useful in identifying significant variables in the mothers' decision to breastfeed. The variables, however, accounted for only thirteen percent of the variance in the dependent variable, breastfeeding at 6 weeks postpartum and the authors suggested that more empirical studies are needed (Sweeney & Gulino 1987).

Janz and Becker have suggested that it may be useful to add other components to the model. Ajzen and Fishbein (1980) have developed a behavioural model which emphasises the importance of considering a social approval component, that is, whether "significant others" approve or reject a certain health behaviour. Janz and Becker suggest that this "social approval" variable may be viewed as a logical development of the "benefits" or "barriers" dimension of the Health Belief Model (Janz & Becker 1984, p.44).

"Self efficacy" has also been suggested as a component which would fit conceptually onto the Health Belief Model framework. This is defined as an individual's conviction that they can successfully undertake and maintain a particular health behaviour (Bandura 1977). This component can fall into the "barriers" or "benefits" dimension of the Health Belief Model.

Because this study on infant feeding among Macedonian-speaking women in Wollongong was conceived as exploratory in nature, no attempt was made initially to develop a model and use the data to test its predictive value. There existed no database on the infant feeding patterns of Macedonian-speaking mothers in Australia, or on the factors that might affect their infant feeding decisions. As the research progressed, however, it became apparent that the Health Belief Model provided a useful conceptual framework which helped organise the information being gathered. At the same time, it is acknowledged that the Health Belief Model assumes that individuals have responsibility in decision making concerning health, and does not explicitly take into account external social variables that limit an individual's ability to take action (for example, in this case, the mothers' need for paid employment), or the individual's perceptions about being able to take action in health related domains (for example, previous lack of success in breastfeeding). The Health Belief Model is used here then as a conceptual framework for explaining some aspects of the decision-making process among the mothers in this sample, rather than as an all-encompassing model of their infant feeding behaviour.

3.2 RESEARCH OUTLINE

3.2.1 Data sources

Initially, it was necessary to define the pattern of infant feeding in the community, and then to examine how and why this pattern occurred. The records of the Early Childhood Health Centre at Cringila were the first source of information about the pattern of infant feeding in the community.

To determine how mothers made their decisions concerning infant feeding, it was necessary to seek information from the mothers themselves. This was achieved through structured interviews with the mothers, which explored their perceptions of the benefits and problems of breastfeeding, their sources of support and information, feeding practices, and other sociodemographic and sociocultural data.

Initial interviews with mothers began at Cringila. Numbers being interviewed at Cringila were very small and the sample fairly homogeneous, and it was decided to elicit information from a broader spectrum of mothers, in order to determine whether certain patterns appearing in the data were characteristic only of Macedonian-speaking mothers in the community, or were relevant for non-Macedonian speaking mothers as well. A centre in close proximity, the Warrawong Early Childhood Health Centre, was chosen as a second site for interviewing mothers. This centre drew clients who were from a similar sociodemographic population, but predominantly non-Macedonian speaking.

Discussions with the Early Childhood Health Sisters before interviewing began, and during the interview phase of the study, elicited clarifying or confirmatory information on topics that arose during the course of mothers' interviews, gained an overview of their perceptions of the issues, and helped to establish categories or add detail to categories derived from other sources.

Deciding when sufficient data has been collected can pose particular problems, especially in an exploratory study. Glaser and Strauss have suggested that the appropriate time to stop is when no new information is being collected, when categories are "saturated" (1967, p. 225). Fifty five mothers were interviewed. During the final interviews it was apparent that no new information was being generated. Certain categories of information, however, appeared incomplete, especially with regard to the influence of extended family and husband's support on the decision to breastfeed. Further sources were needed to check these areas.

The environment in which decisions are made impinges on decision-making. Those who make the decisions may or may not be aware of, or may not verbalise, the way in which their physical and social environments influence their actions. Other members of the community who interact with mothers, or have a different perspective on the community, may provide a different perspective. In this study the Macedonian-speaking Ethnic Health Workers and Health Care Interpreters provided further information. Because these two groups mediate between the Macedonian-speaking community and the Health Care system, as well as being members of the community

themselves, they provide a perspective that derives from being part of both the Health Care System and the community which it serves.

The Macedonian-speaking Interpreters and Health Workers were ultimately consulted formally using the Nominal Group technique (Van den Ven & Delbecq 1972). This technique helped to fill in detail, especially in the area of extended family support, and husband's support, that had been incomplete in the mothers' interviews.

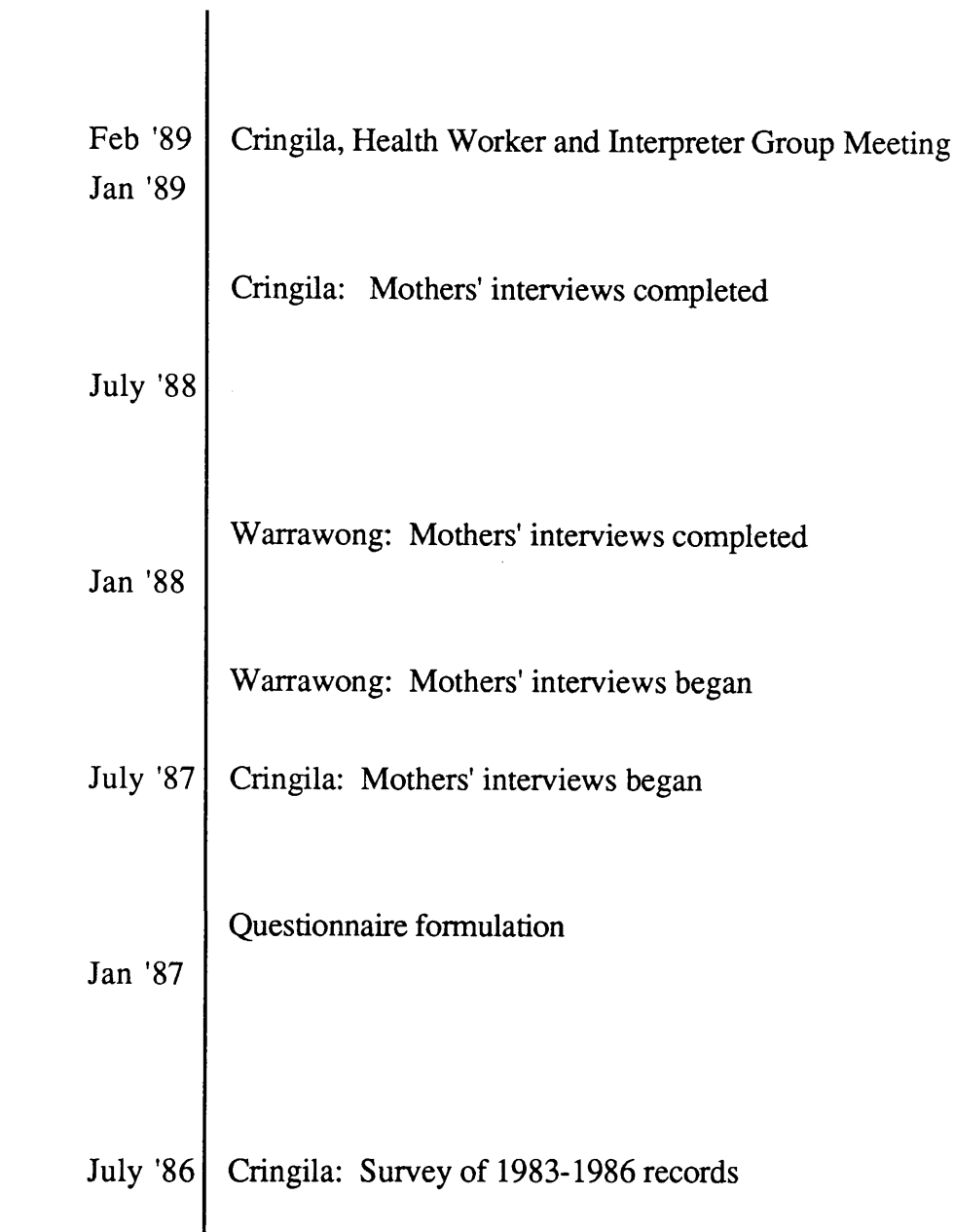
Several data sources were thus used to increase the validity of the data, and verify categories that emerged. An accepted approach to cross checking qualitative data in studies such as this is triangulation: examining the same phenomenon from many perspectives. If a proposition can be confirmed by two or more independent measurement processes, then there is greater confidence that the conclusion is valid (Kirk & Miller 1986, Webb et al. 1966). The underlying assumption is that weaknesses in any single method will be compensated by counter-balancing strengths in others (Jick 1979). Such procedures check the external validity of conclusions. As well as contrasting methods to examine a single proposition, the term has also been used to describe the comparison of multiple techniques within a single method, and the use of multiple data sources focusing on a single topic, to check for internal consistency or reliability (Denzin 1978). It has also been suggested that by using multiple perspectives, triangulation can achieve a more complete and detailed portrayal of the field of study (Jick 1979), revealing aspects that might not arise using only one technique or data source.

3.2.2 Data collection

Figure 3.1 provides a timeline of the study. After initial contact with the Clinic Sister at Cringila, to explain the project and enlist her support, three years of Clinic records at Cringila were analysed. The records contain information on infants' feeding, growth data and some medical history. This information is collected on infants brought to the Centres, from soon after birth for periods of up to several years. Registrations at the Centres correlate very highly with the number of births in the region, and therefore represent a large proportion of the infants in the region. The baseline information on infant feeding patterns, including breastfeeding rates, age of weaning from breast to bottle, complementary feeding, cows' milk feeding, the introduction of solid foods, and the use of the early Childhood Health Centre as a source of feeding advice, were obtained from a survey of these clinic records. The analysis of these records determined the formulation and direction of the questions to be used in the structured interviews with mothers. A particularly important aspect of the initial records survey was to establish the focal period for the interview phase of the study.

For the structured interviews, the Clinic Sister's assistance in introducing mothers to the researcher was obtained. Because of the layout and functioning of the Cringila clinic, and Early Childhood Health Centres generally, there is no other means of determining when mothers in the target group might visit the centre, or of approaching them in private, to enlist their support as participants in the study. During each mother's visit, the Clinic Sister could determine which mothers had

FIGURE 3.1 TIMELINE OF THE STUDY



infants in the appropriate age range and introduce these mothers to the researcher. The researcher then explained the study to the mothers and sought their participation. The first of the interviews with each mother was carried out at that point. The Early Childhood Health Sister was thus very important in helping to recruit mothers to the study. As well as being the only means of determining which mothers belonged to the target group, her introduction made the initial contact with mothers much easier, and perhaps gave the study added legitimacy for the mothers. One mother approached at the Cringila centre did not wish to participate.

The initial interviews were considered a pilot phase, and as a result some aspects of the interview, especially the sequence of questions, were altered. The changes were minor and information obtained in these initial interviews was included in the final analysis, though with some missing data (for example, a question concerning which persons influenced a mother's feeding decision was found to elicit few responses, so mothers were asked instead whether they had spoken about infant feeding with certain categories of persons. The question on cigarette smoking was also added after interviewing began). By the third month of the study the interview format was established in its final form, and the interviews with mothers were flowing smoothly, but the number of mothers being interviewed at Cringila was very small. This was not unexpected since the records survey had shown that client numbers at Cringila were small, and the Early Childhood Health Centre is only open on one day per week. Because the majority of clients at the Cringila centre are Macedonian speaking (75% of mothers in the records survey), it also appeared unlikely that enough non-Macedonian speaking mothers would be recruited into the study. It was therefore

decided to include another centre, which drew clients from a similar sociodemographic population, but who were predominantly non-Macedonian speaking.

The centre at Warrawong was ideally suited (as will be described below), and the Early Childhood Health Sister was approached to enlist her support. An introduction from the Sister at the Cringila centre made the initial contact easier. Interviews with mothers at Warrawong began, on one day a week, as at Cringila. All mothers approached at the Warrawong centre agreed to participate. Again the assistance of the Early Childhood Health Sister in introducing mothers in the target group was very important. Interviews with mothers at the Warrawong centre proceeded more rapidly than at Cringila, because of the much larger client population.

During the period of interviews at both Cringila and Warrawong, informal interviews with the Clinic sisters were carried out to elicit information on topics that arose during the course of mothers' interviews, or to gain an overview of their perceptions of the issues. There was also considerable informal conversation with the Macedonian-speaking Interpreters and Ethnic Health Workers about the project. Where these conversations added detail to an aspect of mothers' interviews or suggested some new area to consider, notes were kept in a log book. It is acknowledged that these entries cannot be regarded as systematic in the way that the mothers interviews were, but they were important in raising aspects of the problem that might otherwise not have appeared. The Health Workers and Interpreters were formally interviewed when mothers interviews were completed.

3.3 RESEARCH DESIGN

The study was divided into two major phases: an analysis of the Cringila Early Childhood Health Centre records, and the interviews with mothers which comprise the main focus of this thesis

3.3.1 The Survey of Records

The initial survey was carried out on the records maintained by the clinic Sisters at the Cringila Early Childhood Health Centre. The survey included all infants seen at the centre whose initial visit was made between the beginning of 1983 and September 1985 (with their 9 month visit in July 1986).

3.3.1.1 Aims of the records survey

The initial aim of the records survey was to establish baseline data for this sample and compare it with other available Australian and overseas data. The data related to initial breastfeeding rates; rates over time up to 9 months; the use of supplements; weaning ages; formulae and cows' milk feeding; the introduction and timing of solid food to infants' diets; clinic usage; advice sought from the clinic Sister; and anthropometric information relating to growth.

The specific objectives of the records survey were:

1. to determine the prevalence and duration of breastfeeding among mothers visiting the Clinic;
2. to determine the timing of feeding changes;
3. to determine whether there were differences between the rates for mothers of Australian background and those from NES backgrounds;
4. to compare these rates with those from other Australian and overseas studies.
5. to determine the most effective target group for the proposed subsequent investigation into why mothers made particular choices about infant feeding and what problems they faced that affected these choices.

3.3.1.2 Method of the records survey

One hundred infants were included in the records survey, 47 boys and 53 girls. Seventy five infants came from migrant families, i.e. where at least one parent is born overseas and a language other than English is spoken in the home. Nineteen of the infants were from non-migrant families, and 6 were from families whose migrant status could not be determined. (All of these were born in 1983, when there was a different Clinic Sister at the centre, and the families were not known to the current

Clinic Sister. Family names suggested that these unknowns were also from migrant families of NES backgrounds). Sixty five infants were from Macedonian-speaking households.

Infants born overseas, or who were older than 2 months at the time of their first visit, were not included in the study. Most infants were about 2 weeks of age when they were first brought to the centre. Two infants who had serious medical problems were excluded from the study.

The data was collected from card records kept by the Baby Health Sister for each infant. The Sister records initial visit data, including birthweight, length, and head circumference, hospital feeding, clothed weight at each visit, length at approximately 3 month intervals, and current feeding mode at each visit. General health problems, feeding problems mentioned by the mother, and feeding advice offered by the Sister are also noted. The Clinic card records thus contain an ongoing record of each infant's feeding from soon after birth until 9-12 months of age, when most mothers cease their visits, or come only rarely.

From the Clinic card records, data was systematised and coded for analysis. Information was coded on each infant at the first visit, at subsequent intervals of two weeks up to 8 weeks of age, and thereafter at 4 weekly intervals up to the 9 months screening visit routinely carried out on all babies at the time. Because mothers visit at times that are convenient to themselves, these intervals are not exact for each child,

and most infants have some missing visits. Exact ages for each visit, however, were calculated and used in the data analysis.

In this study, the term breastfeeding is used for any case where a mother breastfeeds her infant, whether or not she is also using complementary feeds. Complementary feeding refers to the practice of feeding bottled infant formula or cows' milk to the infant between breastfeeds.

Frequency tables were compiled of breastfeeding rates at 2, 4, 6, 8, 12, 16, 20, 24, 28, 32, 36, 40 weeks. The same intervals were also used to determine rates of cows' milk feeding at each time point, the use of complementary feeding, as well as the feeding of solid foods. Frequencies at each interval were compared for the overall sample, migrant and non-migrant, and Macedonian-speaking. Tabulations were also made of overall clinic usage. Information on some of the demographic characteristics of mothers, including mothers' ages, countries of origin, and family size, were also tabulated where possible. This information was not available from the card records for many mothers.

The results of this survey of records are presented in chapter 4. The first 3 months appeared to be the critical period for breastfeeding among mothers in the Cringila community, since it is the time of the most rapid decline in breastfeeding. The rate of decline is almost 3 times that of a group surveyed in the Northern Metropolitan Region of Sydney (Rob & Lawson 1984). After 3 months, however, the rates of decline of the two samples are the same.

The first three months, therefore was chosen for the second phase of the study, in which the factors associated with the rapid decline would be explored.

3.3.2 The Interview Phase

3.3.2.1 Aims of the interview phase

The main aim of the study was to explore why, from a relatively high initial breastfeeding rate (79%), there was such a rapid decline during the ensuing 3 months (to 37%).

The specific aims of the interviews with mothers were to:

1. collect sociodemographic data for comparison with other studies;
2. explore the reasons why mothers made their initial decisions about infant feeding:
3. examine the hospital feeding experience to see whether there were any associations with subsequent feeding history;
4. examine the early weeks at home after hospital discharge in relation to subsequent feeding history;

5. investigate mothers' information and support networks to determine how these were associated with subsequent feeding history;
6. investigate mothers' attitudes to different infant feeding methods to see how these related to subsequent feeding history.

With this information obtained from the mothers' interviews, the study had two overall objectives: to determine whether there were any factors or combination of factors that were associated with breastfeeding outcomes at 3 months; and whether there were differences in these factors between Macedonian-speaking and non-Macedonian speaking mothers in the community that made a difference to breastfeeding outcomes.

3.3.2.2 The formulation of the questionnaire

The period from birth to 3 months was divided into smaller time frames in order to facilitate data analysis. The initial decision about infant feeding was the first point of analysis: how, why, and when mothers made their decisions about the method they would use to feed their newborn.

The hospital period was the next focus of analysis. Areas explored included: the kinds of problems mothers faced in hospital; the support they received from the nursing staff; whether they felt that feeding was well established by the completion

of their hospital stay; information they received about feeding during the hospital stay; the feedback they received from contact with other mothers.

The third focal period was the first 3 weeks at home after hospital discharge. Areas investigated included whether the mother made any changes to her feeding when she went home after hospital discharge, and if so why she made these changes; whether there were any particular feeding problems during this very early period; support and information sources; feedback from other women; whether household and social activities caused any feeding problems and how the mother handled them.

The final focal period was the second and third month after the birth. Information collected was essentially the same as for the period after hospital discharge.

There is overwhelming published evidence of the strong association between mothers' sociodemographic characteristics and breastfeeding rates (see Chapter 1). Because of these associations, sociodemographic information was also collected from mothers in this sample, including mother's age, parity, country of birth, migration age (if applicable), language spoken in the home, education, occupation, current employment status and future employment intentions, housing, household structure, and father's occupation.

3.3.2.3 Format of the structured interviews

The interviews were structured around the questionnaire developed from the results of the Survey of Records. A copy of the questionnaire is included as Appendix A.

The questionnaire acted as a framework for the interview. As well as questions eliciting personal and medical history data, the questionnaire included both closed and open questions in series. Such series have been suggested as the appropriate way to elicit information about key variables (Gallup 1947, de Vaus 1985). A closed question is used to see whether a respondent has thought about the particular area of concern, or it helps to focus their attention on it, and then an open question is used to elicit general feelings on the matter. This may be followed by more closed and open questions to focus more and more narrowly on the issue (Gallup 1947). In the interview, for example, a mother was asked whether she had thought, before her baby was born, about what feeding method she would use, and then she was asked an open question about the kinds of things she had thought about infant feeding. A personal or medical history question also was used often to focus the issue first before asking a more wide ranging question.

Because the study was predominantly exploratory, face-to-face interviews were used to allow the interviewer to pursue side-issues as they arose, or delve more deeply into areas that emerged during the interview, but were not initially included among the questions. Moreover, many mothers were non-English speaking, and not literate in

English. There was also the possibility that some mothers would not be literate in their own language. Oppenheim (1966) has pointed out also that self-administered and mail-questionnaires must be very much simplified, and no additional explanations or probes can be undertaken. Self-administered questionnaires were, therefore, unsuitable.

Ideally, interviews with mothers would have been prospective, each being interviewed before the birth concerning her feeding decision, an interview at the end of her hospital stay concerning the hospital experience, and subsequently during the next 3 months. Earlier data could thus be used to predict outcomes and test whether these predictions were accurate. This was not practical, however, within the framework of time, access and financial constraints. There was no means of making prenatal contact with a sufficient proportion of likely candidates for this study. Macedonian-speaking women, like other women in the community, utilise a variety of prenatal health-care resources, such as private medical practitioners as well as hospital prenatal clinics. Thus there is no central location prenatally to act as a source of likely interviewees.

Each mother was interviewed, where possible, at two points: at around 3-4 weeks post-natally, which is usually the time of the first or second visit to the Clinic, and again at 3 months, which ended the study period.

Within the framework of the five focal points outlined earlier, the first interview concentrated on :

The initial decision;

the hospital experience;

the first 3 weeks at home after discharge.

Sociodemographic data was also obtained at this first interview, in case there were problems with mothers attending the follow-up interview.

The follow-up interview, at 3 months examined the final focal period, the period from 4 weeks to 3 months; and the feeding outcome at 3 months after birth.

For various reasons, mothers were not always available for the first interview, because of the timing of their first visit with their 'newborn' to the Centre (Among some Lebanese mothers, for example, the mother and infant stay out of public view for 70 days), or because they did not have time at that visit for the interview. Where this occurred, recall data, especially about infant feeding, was verified by using questions which sought the same information in different forms, and by checking Clinic data records. The time gap was not great and this recall data proved accurate. Other researchers have found that mothers' recall of infant feeding and weaning information is highly reliable, even after long periods of time have elapsed (Kark 1984).

The interview phase, therefore, was partly retrospective, and partly prospective. It allowed some exploration of how mothers made their decision about infant feeding,

some of the factors affecting their initial and ongoing decisions about feeding, and finally, allowed predictions about breastfeeding outcomes at 3 months from earlier data.

The questions were translated into Macedonian, and mothers interviewed by one of the Macedonian-speaking Ethnic Health Workers. A pilot test of this method proved too cumbersome, because it did not allow flexibility to seek further information or question mothers about subjects that arose during the course of the interview. The Macedonian-speaking Health Care Interpreters offered, instead, to interpret for the interviewer during their rostered sessions at the Clinic. This was an efficient means of interviewing mothers and, at the same time, maintaining flexibility during the interview to pursue other information. Because of the use of interpreters, however, a certain amount of information in the mothers' responses was probably lost in the translation. Since the translators were all trained health interpreters, and understood the study, the reliability was as high as could be achieved by a non-Macedonian speaking interviewer.

Interviews carry with them a number of problems, including the fact that the situation is new and unfamiliar for the subjects, and often, one in which they feel unequal. The kinds of responses subjects make in these situations are different from the responses they might make among their friends or more familiar acquaintances (Goffman 1959, Laslett & Rappaport 1975). Cornwell (1984) has emphasised that a strong distinction should be made between such 'public accounts' and the 'private

accounts' that people might give of events when they are among more familiar people and in a more equal relationship.

In order to lessen the effects of these factors, an effort was made to make the interview as informal as possible, allowing time for the mothers to recount personal experiences or ask questions of the interviewer. It was also anticipated that mothers would be comfortable being interviewed in the setting of the Early Childhood Health Clinic, where they were accustomed to discussing their infant feeding.

3.4 THE INTERVIEW SAMPLE

Table 3.1 presents the numbers of mothers interviewed at Cringila and Warrawong Early Childhood Health Clinic for the four week and three month interviews. All mothers interviewed only at 3 months were asked all items on the questionnaire, being asked to recall the hospital period and the early weeks after. Clinic card records were later checked to confirm infant feeding information.

3.4.1 Cringila Early Childhood Health Centre

As described in Chapter 2, the Cringila Community Health Support Centre in Wollongong is situated in an area with a high migrant population, where the majority of migrants are from Yugoslavia (Seniuk 1985), and predominantly Macedonian speaking. The Early Childhood Health Centre is situated within the centre and is

TABLE 3.1

MOTHERS' INTERVIEWS
CRINGILA AND WARRAWONG
EARLY CHILDHOOD HEALTH CENTRES

	Cringila	Warrawong	Total
Both interviews	18	10	28
4 week interview only	4	3	7
3 month interview only	13	7	20
TOTAL	35	20	55

supported by a number of services which include trained Macedonian-speaking Health Care Interpreters and Community Health Workers.

Thirty five mothers were interviewed at the Cringila centre, 20 (57%) of whom were found to be Macedonian-speaking. Thirteen of the mothers were non-English speaking, and were interviewed using the Health Care Interpreters who were rostered to attend during Baby Health Clinic sessions. Interview timing and numbers are presented in Table 3.1. Of the four mothers who were interviewed at 4 weeks who did not return for the second interview 2 had moved out of the area, and 2 did not make a return visit to the Cringila Centre within 4 months. Clinic records were later checked to confirm infant feeding information.

3.4.2 The Comparison Group -

Warrawong Early Childhood Health Centre

The second Clinic, the Warrawong Early Childhood Health Centre, serves the same geographical and socioeconomic area as the Cringila centre, but its clients are almost all English speaking. The Centre also handles a much larger number of clients, partly because it is centrally located on the major bus routes in the area, and partly because there is more high density housing nearby.

Twenty mothers were interviewed at the Warrawong Centre (see Table 3.1), all of whom were English-speaking. None were Macedonian-speaking. Of the three mothers who were not able to be followed-up at the 3 month interview, one mother

(who had chosen to bottle-feed from birth) had returned to work, one mother had already ceased breastfeeding at the time of the first interview, and one was still breastfeeding at 8 months post-partum. All mothers approached at the Warrawong Centre agreed to be interviewed.

The sociodemographic characteristics of the non-Macedonian-speaking mothers attending the Cringila centre and the sample of mothers interviewed at Warrawong, were compared to determine whether there were any statistical differences in their sociodemographic characteristics that would make an assumption of similarity invalid. Mother's parity, education, and whether overseas- or Australian-born were tested using Pearson's Chi-Square to determine whether the two groups were similar. There was no significant difference in the distributions between the two groups. Fisher's Exact Test was used (because of the 0 observations in one cell) to test whether there was any difference between the 2 groups for husbands' occupation group. Again there was no significant difference between the two groups. A t-test of the difference between the means of mothers' ages for the two groups found no significant difference ($t = -0.8807$, $d.f. = 32$, using a two-tailed test, probability > 0.2). Thus no significant differences between the two groups were found for the variables tested, and it was decided to combine them as a comparison group to the Macedonian-speaking mothers interviewed at Cringila.

3.4.3 Interviews with Interpreters and Ethnic Health Workers

Mothers using the centre are key figures in the decision about infant feeding, and therefore key sources of information. Other sources of information, including Ethnic Health Workers and Interpreters, were also important in establishing the validity of interview data.

The Macedonian-speaking Health Care Interpreters and Health Workers were members of the community, sharing its values and traditions, and mediated on a daily basis between health professionals delivering care to mothers and infants and the parents themselves. Since the Interpreters were translating in the face to face interviews with mothers, they were also able to fill in material, in a general sense, that might have been lost during the course of translation.

During the course of collecting data from the Clinic records, and the subsequent interview phase of the study, I had many contacts with the Interpreters and Health Workers. My more familiar relationship with the Interpreters and Health Workers made it likely that I might get 'private accounts' from them of factors that are important in mothers' decisions to start and to continue breastfeeding. Interviews with mothers themselves tended to be more 'public' events which may have generated 'public' accounts of practices.

The interviews with the Interpreters and Health Workers were carried out after the mothers' interviews. Preliminary analysis of the mothers' interviews indicated the need for more information in two areas: the perceived benefits of breastfeeding, and the barriers for mothers in this community.

The Nominal Group Process (Van den Ven & Delbecq 1972) was used as a structured technique for eliciting expert opinion from the interpreters and health workers. Participants in the process are asked to compile individual lists of factors relating to a given issue or problem. These are then compiled into a master list, to which further items are added. This master list is then discussed by all participants in the meeting and items ranked in importance by the group. The process allows groups with special interest or knowledge of a problem area to help define its dimensions, in a group situation where the problem of 'the expert' is minimised and all can potentially contribute equally. The group discussion of items can also help identify critical areas for analysis by survey and interview research (Van den Ven & Delbecq 1972, p. 341).

A group meeting was arranged with the three Health Workers and three Interpreters. All members of the group are English as well as Macedonian-speaking. I acted as presenter and recorder during the meeting. Because it was important to record as much as possible of the information obtained during the meeting sections of the session were tape recorded, with the permission of the participants.

The information in the transcription was used to provide both enriching detail to elaborate on some of the information derived from the interviews with mothers, and to generate some of the propositions about infant feeding outcomes at three months which were tested using quantitative analyses.

3.4.4 Clinic Sister Interviews

Informal interviews were carried out on a regular basis with the two Clinic sisters at the Warrawong and Cringila centres. Both Sisters had long experience in their field, and had worked at their centres for some time. General information was sought from them on a regular basis concerning the population of mothers who used their centres, their specific views on the factors affecting infant feeding among their clients, as well as any information that might have been missed during an interview. Notes were regularly entered into a log book of Clinic sessions. This information also helped to elaborate on the information derived from the mothers' interviews.

3.5 DATA ANALYSIS

Where possible, data from the mothers' interviews were coded for computer analysis. The SAS system, version 6.03 (SAS Inc. 1988) was used to apply standard statistical procedures to this data, for descriptive and analytic purposes. Results are outlined in Chapter 5.

Thematic content analysis of the records of the mothers' interviews and the taped record of interview with the Macedonian-speaking Health Workers was used to provide qualitative and descriptive information to support the quantitative analyses. This is presented in Chapter 6.

CHAPTER FOUR

THE SURVEY OF RECORDS

The project began with an exploratory analysis of Baby Health Centre records at the Cringila Early Childhood Health Centre. The design of this records survey has been outlined in Chapter Three. This chapter outlines the results of this records survey.

The Survey of Records compared data from mothers of Yugoslav background with data from mothers of non-Yugoslav backgrounds, rather than using the category Macedonian-speaking, because the data on language spoken in the home was not always available in the card records. The category Yugoslav-background was defined as Yugoslav-born; mothers recorded as needing a Macedonian interpreter on their infant's card record; or mothers identified as Yugoslav-background by the Clinic Sister if no other information was available.

4.1 SUMMARY OF RECORDS SURVEY RESULTS

The analysis of the clinic records for the 3 year period from 1983 to 1986 showed that the first three months appeared to be a critical period for breastfeeding among mothers in this community. Differences in the breastfeeding rates at 6 months, between mothers attending the Cringila centre and mothers in the Northern

Metropolitan Health Region surveys (Lawson et al. 1978, Rob & Lawson 1984) who had much higher rates of breastfeeding, are chiefly the result of:

- the initial difference in hospital breastfeeding rates;
- the very rapid decline in breastfeeding during the first 3 months.

The analysis of clinic records also revealed that the introduction of complementary feeds (the practice of feeding bottled infant formula or cows' milk to an infant between breastfeeds) resulted in the cessation of breastfeeding within 3 weeks for the majority of mothers (see Chapter 5, Table 5.4). Almost 30% of the mothers, however, successfully combined complementary feeding and breastfeeding for quite long periods of time.

A further finding was that cows' milk was introduced to infants much earlier and at higher rates by Yugoslav mothers than by other mothers at the Cringila centre. There were no differences, however, by 40 weeks.

While attendance at the Clinic was regular and frequent, mothers did not usually seek the clinic Sister's advice with regard to the milk feeding of their infants, though they did seek her advice in other areas. Changes to infant milk feeding practices, therefore, may not be best mediated through the clinics.

4.2 BREASTFEEDING

Breastfeeding rates of mothers at the Cringila Early Childhood Centre were compared with those from a hospital survey in Sydney's Western Metropolitan Health Region (Webb 1985), surveys of Baby Health Centres in Sydney's Northern Metropolitan Health Region (Lawson et al. 1978, Rob & Lawson 1984), and a nationwide Australian survey (Palmer 1985). The hospital survey collected information only for the first week after birth, but provides a sample of similar socioeconomic circumstances to the Cringila sample. The Northern Metropolitan Health Region survey provides a sample from a higher socioeconomic group. Data on hospital feeding in the nationwide survey represents a proportional sample of the 84,000 live births in Australia in 1982, but figures for later periods are based on more diverse sources: administrative statistics and special surveys of State Departments of Health, and independent surveys of individual investigators.

Table 4.1 gives breastfeeding rates for the Cringila sample at 3 month intervals, compared with rates from the surveys in the Sydney's Western Metropolitan Health Region, Northern Metropolitan Region and the Australia-wide survey. Breastfeeding rates were comparable with the 1984 survey of hospitals in Sydney's Western Metropolitan Region (Webb 1985), but were below those of mothers in the Northern Metropolitan Region survey (Lawson et al. 1978) and the Australia-wide survey (Palmer 1985) at all ages.

TABLE 4.1**BREASTFEEDING RATES**

	Hospital	3 Months	6 Months
Australia ¹	85%	54-55%	40-42%
North Sydney ²	87%	69%	42%
Western Sydney ³	76%	-	-
Cringila '83-86 ⁴	79%	36%	11%

1. Palmer 1985
2. Rob & Lawson 1984
3. Webb 1985
4. Lawson et al 1978

Figure 4.1 shows the percentage of infants still breastfed from birth to 9 months in the Cringila sample, compared with the North Sydney sample. Data on the North Sydney sample are available for only 6 months. From hospital discharge to 3 months, the rate of decline in breastfeeding in the Cringila records sample was more than twice that of the Northern Metropolitan sample. A comparison of the rates of decline from 3 to 6 months for the Cringila and North Sydney sample, however, showed they were exactly comparable (see Table 4.2). Thus, differences in breastfeeding rates at 6 months would seem to reflect the difference between them at 3 months. The decline in breastfeeding rates from 6 to 9 months was much slower than during earlier periods (Table 4.2).

4.3 COWS' MILK FEEDING

Cows' milk was introduced to some infants in the Cringila records sample at a very young age. At their first visit with babies around 2 weeks of age, 7 of the mothers (7%) were feeding cows' milk to their infants. All of these mothers were Yugoslav.

Figure 4.2 shows the rate of introduction of cows' milk to infants' diets from weeks 0 to 40, for Yugoslav mothers compared with the non-Yugoslav mothers in the sample. Mothers from Yugoslav backgrounds introduced cows' milk to their infants at younger ages than did others. By 40 weeks, however, there was no significant difference in the cows' milk feeding rates.

FIG 4.1 BREASTFEEDING RATES TO 9 MONTHS

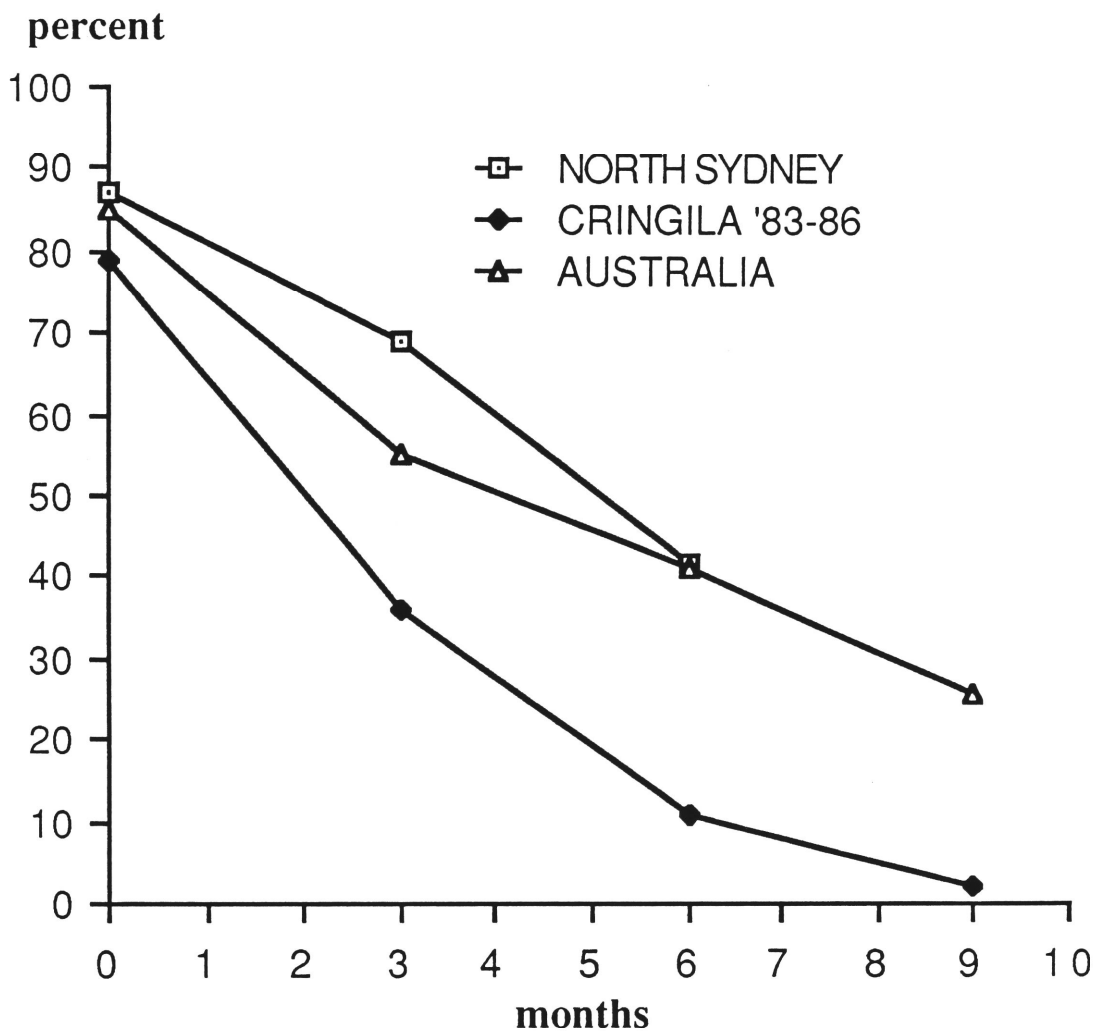


Figure 4.1 Percentage of infants still breastfed, birth to 9 months, Cringila 1983-86, Northern Sydney^a and Australia-wide^b.

a Lawson et al. 1978, Rob & Lawson 1984.

b Palmer 1985.

TABLE 4.2

**FREQUENCY DISTRIBUTION: MOTHER ACTED WITHOUT ADVICE
VS BABY HEALTH SISTER ADVISED
MILK FEEDING VS SOLID FOODS**

	Mother Initiated	BHS Advised	
Complement feeds	42 (39.51)	12 (14.49)	54
Cow's milk	66 (62.19)	19 (22.81)	85
Weaning	67 (55.60)	9 (20.40)	76
Solids	54 (71.70)	44 (26.30)	98
	229	84	

(Expected values)

$\chi^2 = 17.44$ d.f. = 3 $p < .001$

FIG 4.2 COWS MILK FEEDING RATE, CRINGILA 1983-86

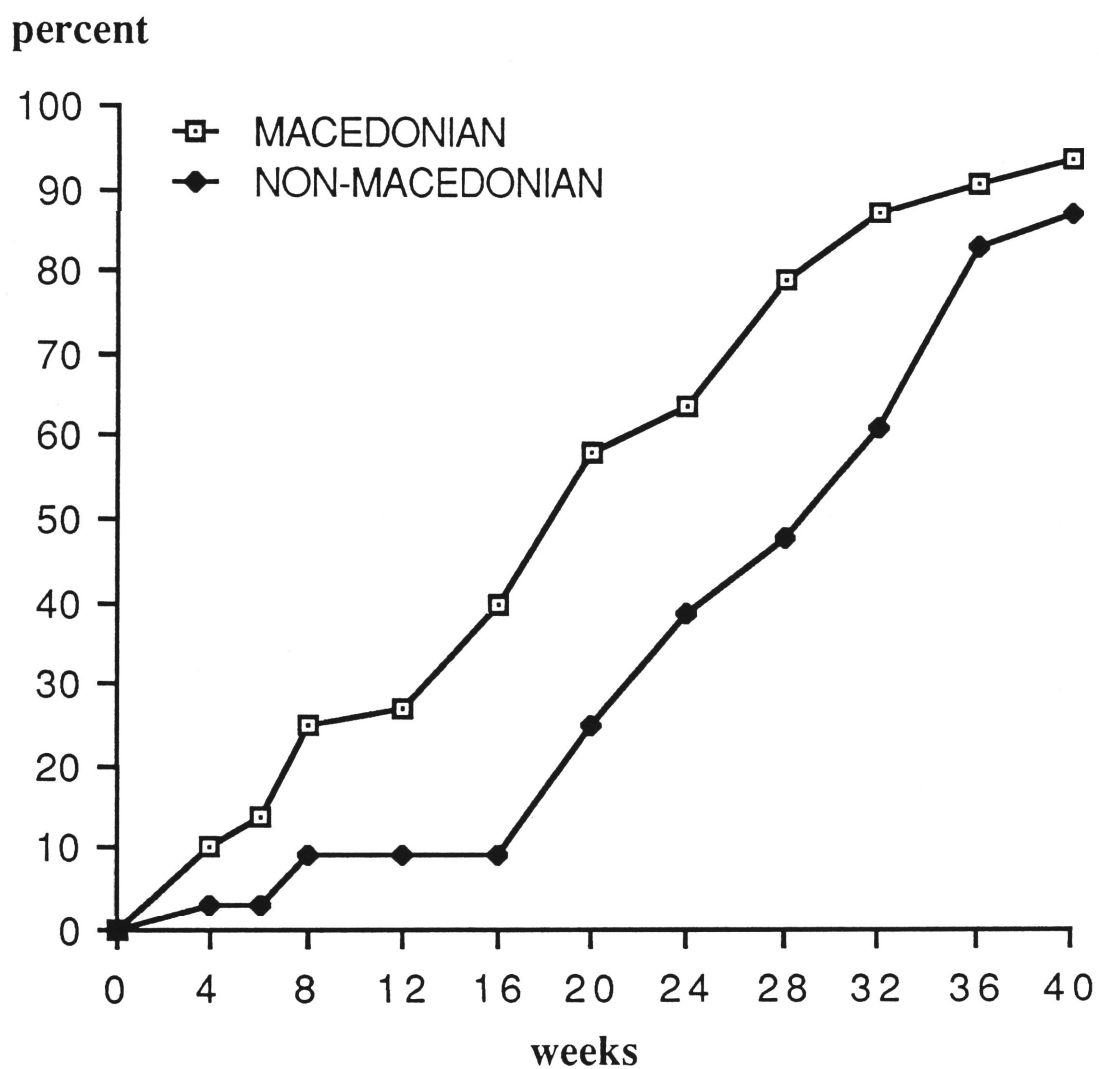


Figure 4.2 Rate of cows' milk feeding, weeks 0 to 40.
Yugoslav vs non-Yugoslav mothers, Cringila 1983-86.

4.4 COMPLEMENTARY FEEDING

Information on the use of complementary feeding (where mothers offer their infants bottled milk to supplement breastfeeding) was analysed by examining the number of weeks mothers continued to breastfeed after they introduced a supplement.

Thirty seven percent of mothers stopped breast-feeding within 2 weeks of beginning complementary feeding. One reason for this is that mothers intending to wean would introduce a bottle gradually, slowly decreasing breastfeeding and increasing bottlefeeding. Mothers who introduced bottlefeeding to supplement breastfeeding after they had reported their breast milk supply was insufficient or felt their infant was 'hungry' (as recorded on Clinic cards) also rapidly gave up breastfeeding.

While most mothers, both Yugoslav and others ceased breastfeeding within 4 weeks of introducing complement feeding, 28%% supplemented their breastfeeding with a bottle for quite long periods of time (>8 weeks and as long as 16 weeks). All these mothers were from Turkish or Lebanese backgrounds. This group of mothers generally introduced the supplement on their own initiative.

4.5 SOLID FOODS

Mothers usually sought or took the clinic Sister's advice on introducing solid foods to their infants' diets. Few infants were offered solid food before 12 weeks.

At 12 weeks 27% of infants had begun eating solids (usually cereal) but the majority began around 16 weeks, the age recommended by the N.S.W. Department of Health.

4.6 CLINIC USAGE

Information is not available on how many mothers living in an area actually enrol at a particular Early Childhood Health Centre. Comparison of hospital birth records and overall registrations of new clients at area Early Childhood Health Centres, however, show that there is a high rate of attendance in the Illawarra region.

In the records survey sample, clinic usage by those who registered at the Cringila Centre corresponded well with recommendations made by the Clinic Sisters at the Early Childhood Health Centres. Mothers made an average of 6 visits during the first 3 months (i.e. weekly to bi-weekly); 3 visits between 3 and 6 months; and 2 visits during the 6 - 9 month period. NES background mothers tended to visit slightly more often than ESB mothers, but the difference was not statistically significant. Eighty five percent of the sample brought their infants to the 9 month screening where a series of different health indices are measured. There appears, therefore, to be a high level of compliance with clinic attendance among mothers in this community.

As well as information on number of visits, the card record data was analysed to determine the kinds of advice on infant feeding that mothers sought from the Sister at the Centre. The number of times a mother introduced a change in feeding mode without asking the Baby Health Sister for advice was compared with the number of

times mothers sought advice or the clinic Sister offered advice. Table 4.3 presents frequency distributions of infant feeding change vs Baby Health Sister advised or mother initiated action. A clear pattern emerged from a Chi Square analysis. Mothers more frequently than expected initiated change when milk feeding was involved. When the feeding of solid foods was involved, they initiated change less frequently than expected. The probability of this association occurring solely by chance is $<.001$. This remained when weaning, complement feeding, and cows' milk feeding were tested separately. Thus, mothers themselves usually initiated changes in the milk feeding of their infants: when to wean from the breast, whether to introduce complementary feeds, and when to introduce cows' milk. The advice of the Baby health Sister was usually sought and followed regarding the feeding of solid foods.

Problems with milk feeding are more immediate and require more immediate attention than concerns about the introduction of solid food, since milk is the primary food source for a young infant. The centre at Cringila is open only one day per week. If problems arise, therefore, mothers usually have to seek a solution themselves, which may account for the high rate of mothers initiating action on milk feeding.

4.7 COMPARISONS BETWEEN YUGOSLAV AND NON-YUGOSLAV MOTHERS

Table 4.4 presents the breastfeeding rates for Yugoslav compared with other mothers in the Cringila records survey sample. Mothers from Yugoslav backgrounds in our sample had lower breastfeeding rates at hospital discharge and at 3 months

TABLE 4.3

**BREASTFEEDING RATES AND PERCENTAGE DECLINE,
BIRTH TO 9 MONTHS
CRINGILA VS NORTH SYDNEY**

	<u>Cringila Records Survey</u>	<u>Northern</u>
<u>Sydney</u>		
Hospital discharge	79.2%	87.5%
weekly decline	- 3.8%	- 1.5%
3 Months	37.5%	68.8%
weekly decline	- 2.1%	- 2.1%
6 Months	11.8%	42.0%
weekly decline	- 0.6%	- N.Avail
9 Months	2.29%	- N.Avail

TABLE 4.4

**BREASTFEEDING RATES
YUGOSLAV VS NON-YUGOSLAV-BORN MOTHERS
CRINGILA 1983-86**

	Yugoslav-born	non-Yugoslav	Total
	%	%	%
Hospital	75	88	79
3 months	34	43	38
6 months	12	12	12
9 months	0	6	2

postpartum, but the differences were not statistically significant. There were no differences at 6 months. At 9 months only 2 mothers were still breastfeeding, both Arabic speakers.

As already noted, Yugoslav background mothers introduced cows' milk into their infants diets much earlier than other mothers in the sample.

4.8 CONCLUSIONS

The survey of records thus revealed several areas that needed further investigation. The analysis showed, firstly, that a significant percentage of mothers in this community (21%) chose not to breastfeed initially. Secondly, the first 3 months after birth seemed of primary importance in maintaining breastfeeding among mothers in this community. The results of the survey of records suggest that a mother who is breastfeeding at 3 months in this sample is as likely to continue to breastfeed her infant to 6 months as mothers in other Australian samples. A detailed exploration of this first 3 month period was therefore the focus of the subsequent investigation. Another area for further inquiry was the mothers' use of the Early Childhood Centre and the purposes they perceived for it, and its role in effecting change in mothers' infant feeding habits.

Further exploration of the differences in breastfeeding between the Yugoslav and other mothers was needed. The results also suggested a need for further investigation of the use of complementary feeding. The reasons why some mothers

were able to continue breastfeeding and supplementing for quite long periods of time, when it resulted in rapid termination of breastfeeding by the majority, need further study. The greater use of cows' milk in infant feeding by mothers from Yugoslav backgrounds also emerged as an important area for further investigation. The survey of records was thus an important starting point for the subsequent exploration of infant feeding among the predominantly Macedonian-speaking mothers in the Cringila community.

CHAPTER FIVE

QUANTITATIVE RESULTS

This chapter presents the quantitative analysis of interviews with mothers at the Cringila and Warrawong centres. It outlines the infant feeding patterns of mothers in the Interview sample. Comparisons with the Survey of Records are made where these help to reveal patterns in the data that might have not otherwise been obvious.

The analysis is then directed at the two main objectives of this study: firstly, determining which factors or combination of factors were associated with breastfeeding outcomes at 3 months. A model which accounts for over 50% of the variation in duration of breastfeeding is developed from the analyses of sociodemographic and sociocultural variables and their relationship with breastfeeding outcomes. Secondly the analysis examines whether there were differences in infant feeding patterns between Macedonian-speaking mothers and other mothers in the community.

5.1 INFANT FEEDING PATTERNS: 1987-88 INTERVIEW SURVEY

There were some differences between the infant feeding patterns revealed by the Survey of Records data of 1983-86, and the Interview data collected in 1987-88. The breastfeeding rate in the later period was higher, both in hospital and at 3 months, and the incidence of cows' milk feeding and complementary feeding were lower. Underlying patterns, however, remained the same.

5.1.1 Breastfeeding

Figure 5.1 and Table 5.1 show breastfeeding rates for mothers in the interview survey, compared with rates from the earlier survey of records and the North Sydney sample. Overall rates in the interview survey are higher than in the earlier Cringila survey, but the rate of decline is parallel. The breastfeeding rate at 3 months in the interview sample mirrors the general trend in Australia for increasing rates of breastfeeding, but in this sample this appears to be solely the result of more mothers making the decision to breastfeed initially. The precipitous decline in breastfeeding during the first 3 months revealed in the earlier records survey is still apparent.

5.1.2 Cows' milk feeding

Figure 5.2 and Table 5.2 show cows' milk feeding rates for the earlier survey of records sample compared with data obtained from mothers in the interview survey. There has been a marked reduction in the use of cows' milk reported by mothers in this sample. By 3 months only 3 mothers reported feeding cows' milk to their infants. All these mothers were Macedonian-speaking, a similar finding to that in the earlier survey of records where 16 of the 19 mothers feeding cows' milk at 3 months were Yugoslav-born. The category 'Yugoslav-born' from the earlier survey of records may not be exactly comparable to the category 'Macedonian-speaking' in the interview sample, but they are likely to be very similar since 19 of the 20 Macedonian-speakers in the interview sample were born in Yugoslavia, and there were no Yugoslav-born among the non-Macedonian speakers. In both surveys, the association between the

FIG 5.1 BREASTFEEDING RATES TO 6 MONTHS

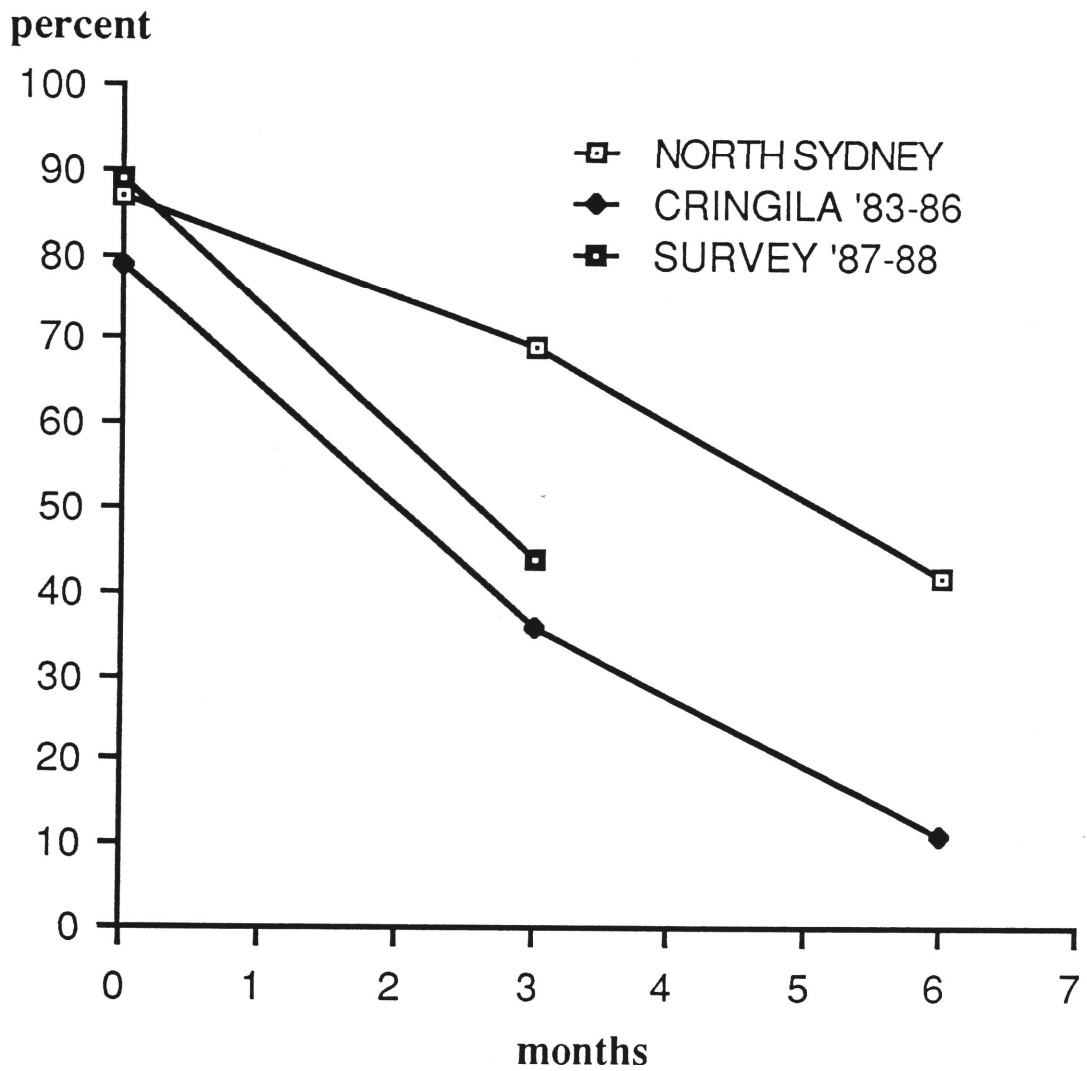


Figure 5.1 Breastfeeding rates to 6 months, North Sydney^a, Cringila 1983-86, and Interview Survey 1987-88.

a Rob & Lawson 1984.

TABLE 5.1

BREASTFEEDING RATES

	Hospital	3 Months	6 Months
Australia ¹	85%	69%	42% ⁴
North Sydney ²	87%	54-55%	40-42%
Western Sydney ³	76%	-	-
Cringila '83-86	79%	36%	11%
Interview Survey '87-88	87%	44%	Not available
Macedonian speaking *	95%	35%	Not available
non-Macedonian speaking *	83%	49%	Not available

* Differences not statistically significant

1. Palmer 1985
2. Rob & Lawson 1984
3. Webb 1985
4. Lawson, Mays & Oliver 1978

FIG 5.2 COWS MILK FEEDING RATES TO 3 MONTHS

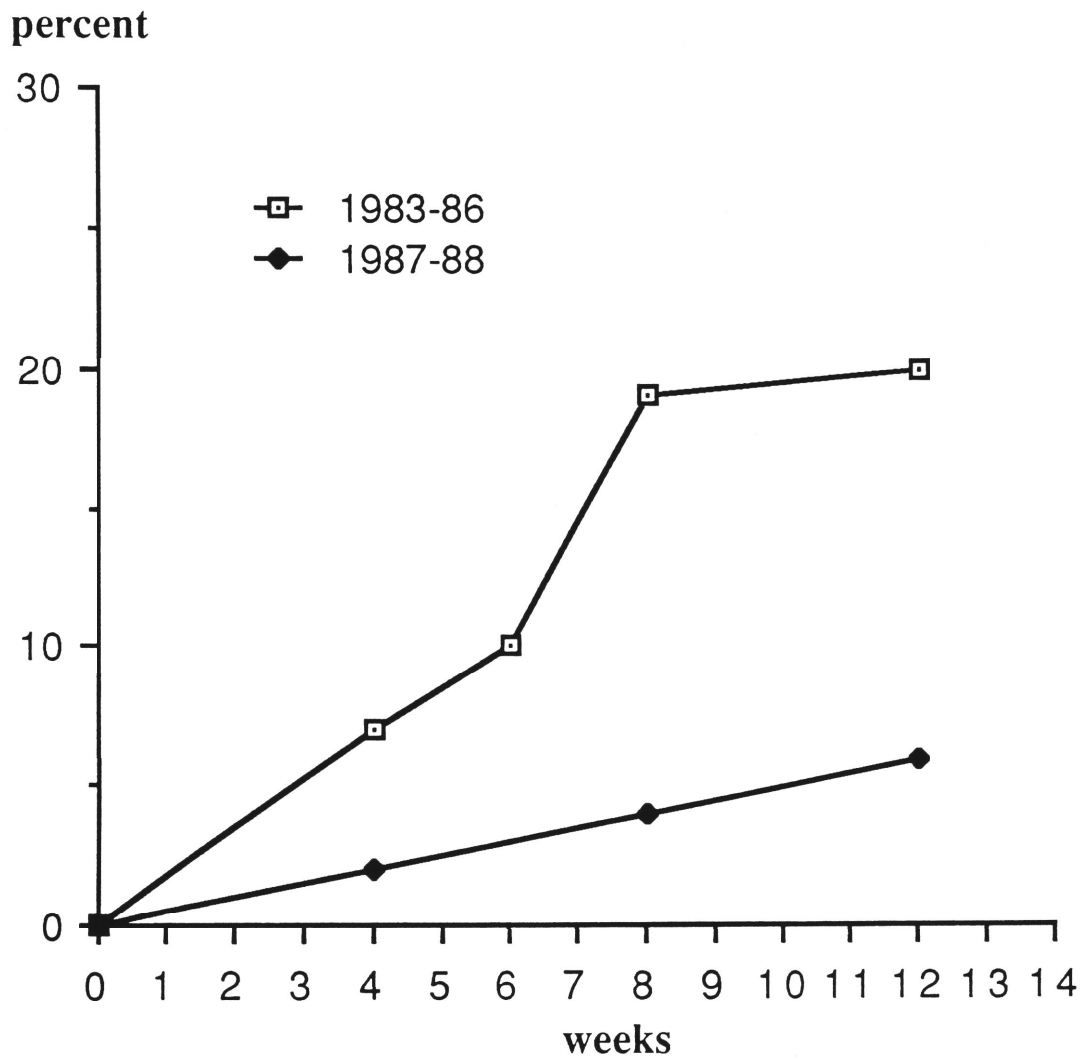


Figure 5.2 Cows' milk feeding rates to 3 months, Cringila 1983-86 vs Interview Survey 1987-88.

TABLE 5.2

**COWS MILK FEEDING RATES TO 3 MONTHS,
'83-86 VS '87-88**

	1983 - 1986*			1987 - 1988		
	Total n	n	%	Total n	n	%
Whole sample	94	19	20%	49	3	6%
Macedonian-speaking	59	16	27%	18	3	17%
non-Macedonian-speaking	35	3	9%	31	0	0

* Comparison between Yugoslav-born vs others, rather than Macedonian-speaking vs non-Macedonian speaking.

category Macedonian-speaking (or Yugoslav-born) and cows' milk feeding at 3 months was statistically significant (Fisher's Exact Test, $p=.004$ in the interview survey; $p=.003$ in the survey of records).

Figure 5.2 reveals a steep rise in cows' milk feeding immediately following week 6 in the Survey of Records sample. This may be related to a shift to bottlefeeding occurring at the same time among the Yugoslav-born mothers.

5.1.3 Complementary feeding

Table 5.3 gives a summary of complementary feeding by mothers in the interview sample and in the earlier Records Survey sample. Significantly fewer mothers in the interview survey introduced complementary bottlefeeding during the study period. In all cases mothers did so because they perceived their infants were not getting enough breast milk. Crying was cited as the main symptom. In the interview sample, there was a tendency (but not statistically significant) for mothers who had introduced complementary feeds to wean earlier than mothers who did not complement feed (median test, $z=-1.8179$, $p=.069$).

Table 5.4 presents information on the pattern of complementary feeding in the 1983-86 Records Survey and 1987-88 Interview Survey. Although fewer mothers in the later survey introduced complement feeds, the pattern of use in both groups was very similar. Mean duration of breast-feeding after introducing a bottle supplement was 4 weeks, and the majority of the mothers in both samples ceased breastfeeding

TABLE 5.3**COMPLEMENT FEEDING, 1983-86 & 1987-88 SURVEYS**

	1983-86	1987-88
Total	100	55
Breastfeeding at hospital discharge	79 (79%)	48 (87%)
Complement during first 3 months *	40 # (51%)	16 (33%)
Mean duration of breastfeeding after comp.	4.0 weeks	4.2 weeks

* Difference between '83-86 & '87-88 Surveys significant, $p < .05$,
Pearson Chi Square = 4.52

1 set of twins excluded.

TABLE 5.4

**DURATION OF BREASTFEEDING
AFTER INTRODUCING COMPLEMENT FEEDING
1983-86 RECORDS SURVEY AND 1987-88 INTERVIEW SURVEY**

	1983 - 86			1987-88	
	Weeks	Freq.	Cumulative %	Freq.	Cumulative %
Weaned before 3 months	1	5	21%	5	33%
	2	6	46%	1	44%
	3	3	58%	-	-
	4	3	71%	1	56%
	5	2	79%	1	67%
	6	-		1	78%
	7	2	89%	1	89%
	8	-		-	
	> 8	1	100%	1	100%
		—		—	
		22		11	
Weaned after 3 months	4	1		-	
	6	1		-	
	8	3		-	
	> 8	9		4	
			—		—
		14		4	

in 4 weeks or less. Some mothers in both samples, however, were still breastfeeding, with complement feeding, at 3 months. The great majority of these mothers breastfed for a least 8 weeks after introducing complement feeding.

For some mothers, therefore, long periods of complement feeding appeared to be part of their infant feeding strategy. A period of 8 weeks or more of complement feeding was used here to denote a 'long period', because all mothers who complement fed and were still breastfeeding at 3 months did so for at least this amount of time.

An examination of the feeding methods of those who used complement feeding for a long period and those who weaned early after introducing complement feeds did not reveal any particular pattern. Of those who managed to combine breastfeeding and complement feeding for long periods, one mother fed the complement, as recommended, after breastfeeding; some of the mothers fed alternated breast and complement feeds; and some mothers substituted a complement feed at particular times each day (e.g. in the morning or evening). There was no difference in the number of feeds per day between mothers who successfully combined breastfeeding and complement feeding and those mothers who ceased breastfeeding soon after introducing complement feeding.

The only significant difference was the mothers' cultural background. In the interview survey, all the mothers who successfully combined complement feeding and breastfeeding were Arabic speakers (Fisher's Exact Test, $p=.0002$). A re-examination of the earlier Survey of Records data, in the light of the interview data, revealed the

same pattern. More mothers of Turkish and Lebanese origin (Arabic speakers) used complement feeds for long periods of time (8 weeks or more) than did mothers of Yugoslav or Australian backgrounds (Fisher's Exact Test, $p=.05$).

5.2 SOCIODEMOGRAPHIC FACTORS AND BREASTFEEDING

5.2.1 Sociodemographic Profile

In many studies, outlined in Chapter One, mothers' sociodemographic characteristics have been shown to be strongly associated with their choices about infant feeding. During the course of the mothers' interviews, information on a number of sociodemographic variables was collected, and the results of the analyses are outlined below.

Table 5.5 gives frequency values for a number of mothers' sociodemographic variables and provides a brief summary of the sample. Notable features include the high proportion of overseas-born mothers in the sample, the great majority of whom come from NES countries, and concomitantly, the high proportion of non-English speakers, especially among the Macedonian-speaking mothers. Also noteworthy is the high proportion of mothers living in extended families, again predominantly the Macedonian-speaking mothers, but also a significant proportion of the non-Macedonian speaking group.

TABLE 5.5

FREQUENCY VALUES
WHOLE SAMPLE AND BY MACEDONIAN-SPEAKING

Variable	Whole sample		Macedonian Speaking		non-Macedonian Speaking	
	n	%	n	%	n	%
Sample size	55		20	36%	35	64%
Cringila	35	64%	20	57%	15	43%
Warrawong	20	36%	0		20	100%
Overseas born	38	69%	19	95%	19	54%
Overseas born (NES countries)	33	60%	19	95%	14	40%
Non-English speaking	14	25%	11	55%	3	9%
Language other than English at home	35	64%	20	100%	15	43%
Primiparas	26	47%	10	50%	16	46%
Living with relatives	26	49%	14	74%	12	35%
Cigarette smokers *	11(39)	28%	2 (16)	13%	9 (23)	39%
Schooling:						
Primary/Some Secondary	37	69%	10	50%	27	79%
Finished Secondary	17	31%	10	50%	7	21%
Tertiary Educated	22	41%	9	45%	13	38%

* Total n = 39, 16 respondents have missing data

Further summary statistics are presented in Table 5.6, of mothers' ages, parity, age of weaning for those breastfed infants who were weaned during the 3 months of the study period, and overseas-born mothers' years of residence in Australia and age at migration. Data are shown for the whole sample, and for Macedonian-speaking compared with non-Macedonian-speaking mothers.

Differences between the means of the 2 groups, Macedonian-speaking vs non-Macedonian speaking, were tested using the Mann-Whitney U test, because assumptions about the normality of the variable's distribution or the homogeneity of the variances could not be made. The results of this analysis are included in Table 5.6. There were statistically significant differences between Macedonian-speaking and non-Macedonian speaking mothers in age and, (for the overseas born) years of residence in Australia. The Macedonian-speaking mothers were younger and had lived in Australia for fewer years. There was no difference in parity between the two groups. This suggests that the Macedonian-speaking mothers began their child-bearing earlier than the non-Macedonian speaking mothers.

Table 5.7 provides a summary of the proportion of mothers still breastfeeding at 3 months postpartum, for each of the sociodemographic variables tested. This is provided as an overview of the association between the sociodemographic variables and breastfeeding outcomes among mothers in this sample. Some of the sociodemographic variables that have been found in other studies to be associated with breastfeeding incidence or duration were not statistically significant in this study. Separate tables are provided in Appendix B (Tables B.1-5), for these variables, which

TABLE 5.6

SUMMARY STATISTICS

Variable	n	Spread of Values	x	s.d.	p (Mann Whitney U test)
<u>Mother's age</u> (Years)	54	17-41	25.8	5.7	
Macedonian speaking	19	19-32	23.5	3.1	P = .029 (1-tailed)
non-Macedonian speaking	35	17-41	27.0	6.3	
<u>Parity</u>	55	1-5	2.0	1.2	
Macedonian speaking	20	1-3	1.7	0.9	p = .459, n.s.
non-Macedonian speaking	35	1-5	2.1	1.3	
<u>Years of Residence</u> #	37	.3-25	11.1	7.1	
Macedonian speaking	19	.3-20	7.7	6.9	p = .003
non-Macedonian speaking	18	4-25	14.7	5.4	
<u>Age at Migration</u> #	36	2-30	14.7	8.0	
Macedonian speaking	18	2-24	15.7	7.4	p = .526, n.s.
non-Macedonian speaking	18	3-30	13.7	8.6	

Overseas born, n=37

TABLE 5.7

**SOCIODEMOGRAPHIC VARIABLES AND BREASTFEEDING RATES
AT 3 MONTHS**

	Breast- feeding	%	p
<u>Mothers' Age Group</u>			n.s.
< 25 years	9	35	
25-29 years	6	40	
> 30 years	8	62	
<u>Maternal Parity</u>			n.s.
Primiparas	10	38	
Multiparas	14	48	
<u>Mother's Schooling</u>			n.s.
Primary/some secondary	16	43	
Finished secondary	7	41	
<u>Mother's Tertiary Education</u>			p = .042
None	10	31	
Tech or Uni	13	59	
<u>Father's Occupation</u>			n.s.
Blue Collar	18	49	
White Collar	2	100	
Professional/self employed	1	20	
Pension	2	29	
<u>Migrant Status</u>			n.s.
non-migrant	7	41	
Migrant	17	45	
<u>Age at Migration</u>			n.s.
Before 14 years	8	44	
14 Years or more	8	42	
<u>Macedonian Speaking</u>			n.s.
Yes	7	35	
No	17	49	

included mother's age, parity, migration status, years of residence in Australia (for mothers born overseas), husband's occupation and infant's gender. Only one sociodemographic variable, mother's education, was significantly associated with feeding choice at 3 months.

5.2.2 Mother's education

The relationship between mother's education and breastfeeding was examined by comparing incidence and duration of breastfeeding between different levels of schooling, and between tertiary and non-tertiary educated mothers. Mothers were divided into 2 groups according to their level of schooling: primary / some secondary schooling, and finished secondary schooling. There were 3 groups of tertiary educated: no tertiary education, Technical, and University. No mother appeared to have any difficulty responding to these distinctions during the interviews. Because the number of mothers who had attended University was very small, they were combined with the group who had attended a Technical College, for comparison with the mothers who had no tertiary education.

There was a statistically significant association between mothers' school education and breastfeeding incidence (Table 5.8). Significantly more mothers who finished their secondary schooling were breastfeeding at hospital discharge. This difference disappeared at 3 months.

TABLE 5.8

MOTHER'S EDUCATION & BREASTFEEDING

		Hospital Feeding Mode		3 Month Feeding Mode	
		Breastfeeding	Bottle feeding	Breastfeeding	Bottle feeding
<u>Schooling</u>					
Primary/Some Secondary	a	31	6	b 16	21
Finished Secondary		17	0	7	10
<u>Tertiary Education</u>					
None	c	26	6	d 10	22
Tech/University		21	1	13	9

- a. Schooling x Hospital Feeding, p = .058, Fisher's Exact Test
- b. Schooling x 3 Months Feeding, p > .8, Pearson's Chi Square
- c. Tertiary x Hospital Feeding, p = .132 Fisher's Exact Test
- d. Tertiary x 3 Months Feeding, p = .042, Pearson's Chi Square

There was no statistically significant association between tertiary education and initiation of breast-feeding, but a significantly higher number of mothers who had some tertiary education were still breastfeeding at 3 months postpartum (Table 5.8). The distribution of weaning ages was significantly higher for mothers who had some tertiary education compared with those mothers with no tertiary training ($p < .001$, median test).

5.3 SOCIOCULTURAL FACTORS AND BREASTFEEDING

5.3.1 Mothers' attitudes to breastfeeding

5.3.1.1 Convenience

Mothers were asked during the course of the first interview at around 4 weeks, and at the 3 month interview whether they found their current method of infant feeding convenient, and whether there were aspects that were inconvenient or caused problems. Mothers' responses to these questions were then coded into 3 categories for the two time points: breastfeeding more convenient, bottle feeding more convenient, mother ambivalent. This made it possible to analyse the association between the mother's perception of the convenience of her feeding method at two time points with current and subsequent feeding outcomes, and to examine changes in mothers' attitudes during the period.

Table 5.9 shows the frequency distributions of mothers' statements of the convenience of breast or bottle feeding compared with their feeding status initially and at 3 months, for those mothers who were interviewed at both 4 weeks and 3 months postpartum. Not surprisingly, there are significant associations between their perceptions of the relative convenience of breast and bottlefeeding at a particular time point, and their feeding mode at that time.

Table 5.10 shows the mothers' statements of the relative convenience of breast or bottle feeding at both 4 weeks and 3 months, for those mothers interviewed at both times. There is a significant correspondence between mothers' responses at the two interviews. An examination of the distribution, however, suggests there is a change in attitudes over the period. Only 12 of 17 mothers who cited breastfeeding as more convenient at 4 weeks, still did so at 3 months. No mother who cited bottlefeeding as more convenient, changed her mind. At the first interview, a majority of mothers (59%) cited breastfeeding as more convenient. At 3 months only 41% of mothers cited breastfeeding as more convenient.

The same trend is apparent when looking at the distribution of responses related to the two periods for the whole sample, including those interviewed only at 3 months. Sixty six percent of the total group cited breastfeeding as more convenient for the hospital period and initial weeks after hospital discharge, but only 45% cited breastfeeding as more convenient when their infant was 3 months old.

TABLE 5.9

CONVENIENCE OF FEEDING MODE VS BREASTFEEDING
1987-88 SURVEY

	<u>Hospital Feeding</u>		<u>3 Month Feeding</u>	
	Breastfeeding	Bottlefeeding	Breastfeeding	Bottlefeeding
<u>Week 4 Responses</u>				
Breastfeeding convenient	21	0	9	12
Bottlefeeding convenient	6	4	1	9
Ambivalent	3	0	2	1
	p = .008 *		p = .081 *	
<u>3 Month Responses</u>				
Breastfeeding convenient			7	5
Bottlefeeding convenient			1	15
Ambivalent			1	0
			p = .003 *	

* Fisher's Exact Test, 2 - tailed

TABLE 5.10

**RELATIVE CONVENIENCE OF BREAST & BOTTLE FEEDING
WEEK 4 RESPONSES VS 3 MONTH RESPONSES**

		Week 4 Responses			
		<i>Breastfeeding</i>	<i>Bottlefeeding</i>	<i>Ambivalent</i>	
3 Month Responses					
<i>Breastfeeding</i>		12	0	0	12 (41%)
<i>Bottlefeeding</i>		5	10	1	16 (55%)
<i>Ambivalent</i>		0	0	1	1 (3%)
		17	10	2	29
		(59%)	(34%)	(7%)	

p = .00005, Fisher's Exact Test, 2- tailed

5.3.1.2 Preferred duration

During their first interview mothers who were breastfeeding were asked how long they thought they would continue breastfeeding. Table 5.11 presents a summary of mothers' preferred duration of breastfeeding, for those mothers interviewed at 4 weeks postpartum, and for the whole sample. Almost 30% of mothers indicated no preferred duration but stated instead that they would "see how things went". A significant majority of these mothers were Macedonian-speaking (Fisher's Exact Test, $p=.01$).

Fisher's Exact Test was then used to test whether there was an association between mothers' reported preferred duration and their actual duration of breastfeeding (Table 5.12). The group of indefinite responses was excluded from the analysis. Preferred duration was divided into 3 categories, less than 6 months (this is less than the 6 month period of breastfeeding recommended by the National Health and Medical Research Council, 1981), 6 to less than 12 months, and 12 months or more. There was a statistically significant association between preferred duration and whether a mother was breastfeeding at 3 months (Fisher's Exact Test, $p=.04$). Mothers who expressed a preference for shorter duration of breastfeeding were more likely to have weaned by 3 months postpartum ($p= .02$, Fisher's Exact Test, 1-tailed). Similar results were obtained by Loughlin and his associates (1985), who found that mothers who anticipated breastfeeding for less than 6 months were significantly more likely to have ceased breastfeeding at 8 weeks post partum.

TABLE 5.11**PREFERRED DURATION - INTERVIEWS '87-88**

Months	Whole Sample	Week 4 Interview
	Frequency	Frequency
3	2	2
4	2	2
5	1	1
<hr/>		
6	12	8
7	1	-
8	2	1
9	1	1
<hr/>		
12 or more	11	4
<hr/>		
Indefinite *	12	8
Total	44	27

* Mother reported "depends on how it goes".

TABLE 5.12

**PREFERRED VS ACTUAL DURATION OF BREASTFEEDING
WEEK 4 INTERVIEWS ONLY**

Still Breastfeeding at 3 months

No Yes

Preferred Duration

< 6 months	5 (2.6)	0 (2.4)	5
6-11 months	4 (5.3)	6 (4.7)	10
12 months or more	1 (2.1)	3 (1.9)	4
	10	9	91

(expected frequency)

p = .0404, Fisher's Exact Test, 2 tailed

5.3.1.3 Previous experience of breastfeeding

The data for multiparous mothers in the sample were tested for a relationship between a mother's previous breastfeeding history and current breastfeeding practice (Table 5.13). Mothers who had breastfed their previous infant for more than 3 months were significantly more likely to be still breastfeeding their current infant at the end of the 3 month study period, while mothers who breastfed their previous infant for less than 3 months were likely to have ceased breastfeeding this infant before 3 months.

5.3.2 Other sociocultural factors

5.3.2.1 Social support

Previous research (Bryant 1982, Raphael 1976) has indicated that mothers require a support network of some kind to breastfeed successfully.

Mothers were asked during the interview whether they had talked about infant feeding with family members or friends before their baby was born, and their accounts of infant feeding. Later in the interview they were asked whether their husbands wanted them to breastfeed their infants. They were also questioned about the hospital stay after the birth, and whether other mothers found breastfeeding easy or difficult, and the lengths of time they might breastfeed. When interviewed about the weeks at home following the birth they were further questioned about their friends' attitudes to different feeding methods.

TABLE 5.13

PREVIOUS BREASTFEEDING EXPERIENCE AND BREASTFEEDING DURATION

MULTIPAROUS MOTHERS

Previous child breastfed more than 3 months

		0	1	
Current infant breastfed	0	11 (6.2)	4 (8.8)	15
More than 3 months	1	1 (5.8)	13 (8.2)	14
		12	17	29

(Expected frequency)

p = .0003, Fisher's Exact Test, 1 tailed

These responses were coded into 3 categories: the attitudes of other mothers in the hospital ward about infant feeding; the mother's friends' attitudes to infant feeding; and the husband's attitude to the mother's decision about infant feeding.

A further potential source of support for mothers is the extended family, since there is at least one other adult female to help with organising household duties and other children while the mother attends the new infant. Forty nine percent of the mothers lived in an extended family household.

The attitudes to breast or bottle feeding of other mothers in the hospital ward, and the mother's friends and acquaintances, were coded into 3 levels: positive about breastfeeding, negative about breastfeeding (or positive about bottlefeeding), or ambivalent. These codings were based on how the mother reported the attitudes or experiences of other mothers of her acquaintance. If the mother reported these attitudes or experiences as being mostly encouraging, or that friends had continued breastfeeding for a relatively long time (e.g. one mother reported that her neighbours had fed for 8 months and more), then 'support' was coded as positive. If the mother reported that her friends or acquaintances had mostly complained (one mother, for example, reported that other mothers in the hospital ward "all had a bit of a whinge"), or had suggested that she give her infant the bottle, or that she had breastfed long enough, then 'support' was coded as negative. Some mothers however, recounted stories of mixed success among their friends with breastfeeding, and were unsure which method their friends thought was better. In this case 'support' was coded as ambivalent.

During pilot testing of the question of the husband's support it quickly became clear that mothers responded universally in 2 ways: "yes", or "left it to the mother". No mother reported that her husband objected to her chosen method of infant feeding.

No statistically significant association was found between the four support variables (hospital ward mothers support, friends' support, husband's support, and living in an extended family) and breastfeeding status at 3 months (See Appendix B, Table B.6).

5.3.2.2 Prenatal classes and other prenatal information

Mothers were asked whether they had attended prenatal classes or read or seen any information about infant feeding before the birth of their infant, or that of a previous child. Forty three percent of mothers had attended prenatal classes, and 64% of mothers had been exposed to some kind of information, chiefly books or pamphlets, about breastfeeding before the birth of their infant.

There was no statistically significant association between infant feeding mode at birth or 3 months and attendance at prenatal classes, or exposure to information about infant feeding (See Appendix B, Table B.7).

Macedonian-speaking mothers, however, were less likely to have attended prenatal classes or have been exposed to breastfeeding information prenatally (Table 5.14). Because of this difference, the association between breastfeeding and

TABLE 5.14

PRE NATAL CLASSES AND OTHER INFORMATION,
BY MACEDONIAN SPEAKING

	Macedonian Speaking		non-Macedonian Speaking	
<u>Pre Natal Classes</u> ^a				
Yes	5	25%	18	55%
No	15	75%	15	45%
<u>Pre Natal Information</u> ^b				
Yes	8	40%	27	77%
No	12	60%	8	23%
<u>Doctor's Advice</u> ^c				
Yes	6	35%	7	28%
No	11	65%	18	72%

- a. p = .033, Fisher's Exact Test, 1-tailed
- b. p = .007, Fisher's Exact Test, 1-tailed
- c. p = .738, Fisher's Exact Test, 2-tailed

attendance at prenatal classes and prenatal exposure to information about breastfeeding was analysed, controlling for the variable Macedonian-speaking. Again, there were no significant associations.

Only 31% of mothers in the sample sought the advice of, or were offered advice about infant feeding by their doctor before the birth of their infant. Half the mothers reported they did not know which method of infant feeding their doctor thought was best. This was not significantly different for the Macedonian-speaking mothers. There was also no statistical association between these variables and infant feeding outcomes.

5.3.2.3 Mothers' knowledge of breastfeeding practices and maintenance of supply

Mothers were asked some questions on the benefits of breastfeeding, and the importance of several factors (diet, rest, fluid intake) in maintaining their milk supply. A question on the importance of frequent feeding in increasing the mother's breastmilk supply was also included. Almost all mothers recognised the beneficial aspects of breastfeeding, when these were listed for them, but only a few were able to list the benefits spontaneously when asked. They were also familiar with the importance of rest, diet and fluids in maintaining their milk supply. Forty percent of mothers, however, were unaware of the effect of frequent breastfeeding and short intervals between feeds for increasing their supply. Many mothers reported postponing breastfeeds because they knew there was not enough milk, and frequently

substituted a formula feed. The result of this, physiologically, is to diminish the supply even further. Mothers' knowledge of breastfeeding management in this area, however, was not statistically associated with duration of breastfeeding.

5.3.2.4 Hospital Practices

All interviewees gave birth at two hospitals in the Illawarra area, The Wollongong Hospital and Shellharbour Hospital.

The practice at both hospitals at the time of the Interview Survey was for infants to stay with mothers during the day, but return to the hospital nursery at night. No supplemental feedings were offered to infants except where there were clear indications that the mother had insufficient milk and then only with the mother's permission. Breastfeeding mothers were expected to feed their infants, if they woke, during the night, but mothers could choose to have their infants bottlefed for night feeds. The decision whether to demand-feed or feed to a set schedule was left to the mother. Test weighing of infants was not carried out. The hospital provided no regular classes or discussion groups on infant feeding for breastfeeding mothers, but a representative of the Nursing Mothers Association visited one day a week to distribute a contact number to all mothers in the maternity ward and to talk to any mothers who might wish to discuss infant feeding. Thus many of the practices that are recommended for encouraging breastfeeding mothers were in place in the hospitals.

The effect of hospital practices on breastfeeding outcomes was tested only in only one area, the time elapsed after the birth before mothers first breastfed their infants. Several researchers have found that initiation of breastfeeding within 12 hours of the birth is associated with longer duration (e.g. Wright & Walker 1983). No such association was found in this study.

5.3.2.5 Cigarette smoking

A question on cigarette smoking was not included in the initial interview , but was added after interviewing had started. Data on cigarette smoking was collected from 39 of the mothers (71% of the total sample), 16 of the Macedonian-speaking (80%), and 23 of the non-Macedonian speakers (66%). Twenty eight percent of the mothers were smokers. A significantly smaller proportion of mothers who smoked were breastfeeding their infants in hospital, and at 6 weeks postpartum (Table 5.15).

There was also a non significant trend for fewer Macedonian-speaking mothers to smoke. The data were analysed separately for non-Macedonian speakers. The relationship between smoking and breastfeeding could not be tested for the Macedonian-speaking mothers because so few were smokers. For non-Macedonian speaking mothers the differences in proportions of breastfeeding between smokers and non-smokers were statistically significant at birth, 6 weeks and 3 months postpartum.

TABLE 5.15

**BREASTFEEDING AND CIGARETTE SMOKING,
INTERVIEW SURVEY '87-88**

	<u>Breastfeeding</u>		<u>Bottlefeeding</u>		Total
	n	Subgroup n	n	Subgroup n	
<u>Hospital Discharge</u>					
Smokers ^a	8		3		11
Macedonian speaking		2		0	2
Non Mac. speaking ^b		6		3	9
Non Smokers ^a	28		0		28
Macedonian speaking		14		0	14
Non Mac. speaking ^b		14		0	14
Whole sample	36		3		39
<u>Week 6</u>					
Smokers ^c	4		7		11
Macedonian speaking		2		0	2
Non Mac. speaking ^d		2		7	9
Non-smokers ^c	23		5		28
Macedonian speaking		10		4	14
Non Mac. speaking ^d		13		1	14
Whole sample	27		12		39
<u>3 Months</u>					
Smokers ^e	3		8		11
Macedonian speaking		1		1	2
Non Mac. speaking ^f		2		7	9
Non Smokers ^e	15		13		28
Macedonian speaking		4		10	14
Non Mac. speaking ^f		11		3	14
Whole sample	18		21		39

a. $p = .0181$ Fisher's Exact Test
b. $p = .0474$

c. $p = .0092$
d. $p = .0011$

e. n.s., $p = .13$
f. $p = .0122$

Note: Because of the small number of Macedonian-speaking smokers, comparison between smokers and non-smokers not made for Macedonian-speaking mothers

5.3.3 Summary - Sociodemographic and sociocultural differences associated with breastfeeding

One aim of this study was to determine which factors or combination of factors were associated with the rapid decline in breastfeeding rates that occurs amongst mothers in this community during the first three months postpartum.

A number of variables emerged as significantly associated with breastfeeding outcomes. These factors constituted 3 groups: those associated with a mother's initial choice; those associated with early weaning; and those associated with continued breastfeeding at the end of the study period.

Mothers who smoked cigarettes, and those who had not completed their secondary school education were less likely to initiate breastfeeding. Mothers who expressed a preference for a relatively short duration of breastfeeding (less than six months); who perceived bottlefeeding as more convenient than breastfeeding at their first interview; who introduced complementary bottle feeds; or who had breastfed their previous child less than 3 months were likely to wean earlier than other mothers. Mothers with some tertiary education or who had breastfed their previous child for more than 3 months were more likely to be still breastfeeding at 3 months postpartum.

A number of sociodemographic and sociocultural variables that have been shown to be associated with higher breastfeeding rates in other studies were not associated with breastfeeding incidence or duration in this study. These included

mothers' ages, parity, husbands' occupations, social support variables, hospital practice, mothers' knowledge of breastfeeding benefits and management, and attendance at prenatal classes.

5.4 A PREDICTIVE MODEL OF BREASTFEEDING DURATION

Seven variables were associated with initial choice of feeding method, and duration of breastfeeding. These variables were: mother's reported preferred duration of breastfeeding; complementary feeding; perceived convenience of breastfeeding or bottlefeeding at 4 weeks postpartum; high school and tertiary education; cigarette smoking; and previous breastfeeding for more than 3 months. A stepwise regression was used to test how well these variables, in combination, predicted the age at which a breastfeeding mother in this sample totally weaned her infant to bottlefeeding. The dependent variable was weaning age (in weeks). Because this variable was right-censored (that is, no measurements were made beyond 3 months), the rank of weaning age was tested as well as the raw score, to minimise error and check consistency. Because of the highly significant association between a mother's previous breastfeeding history and her current breastfeeding practice, the model was tested separately for multiparous mothers, with the variable, previous breastfeeding for more than 3 months, included as well. The model was also applied to the sample of primiparous mothers.

5.4.1 The whole sample analysis

Table 5.16 presents the results of the Stepwise Regression analysis of the model for the whole sample of breastfeeding mothers:

$$\begin{aligned} \text{WEANING AGE} = & \text{PREFERRED DURATION} + \\ & \text{COMPLEMENTARY FEEDING} + \\ & \text{CONVENIENCE} + \\ & \text{TERTIARY EDUCATION} + \\ & \text{FINISHED SECONDARY SCHOOL} + \\ & \text{CIGARETTE SMOKING} + \\ & \text{PREVIOUS BREASTFEEDING >3 MONTHS} \\ & \text{(multiparous mothers only)} \end{aligned}$$

In the stepwise regression analysis, no variables are initially included in the model. For each of the independent variables, the analysis calculates F statistics that reflect each variable's contributions to the model if it is included. The technique then adds the variable that has the largest F statistic to the model, provided it makes a statistically significant contribution. F statistics are calculated again for all the variables still outside the model, and variables are added to the model, one by one, until no variables produce a significant F statistic. At each step in the model building process, the technique reexamines the variables already included in the model to ensure that they still produce a significant F Statistic (SAS Institute 1988, p.818).

TABLE 5.16

STEPWISE REGRESSION - WHOLE SAMPLE

stepwise reg, breastfed

wna=prd comp conven1 mosc ter

Stepwise Procedure for Dependent Variable WNA

Step 1 Variable TER Entered R-square = 0.21567999 C(p) = 23.70683749

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	137.56788711	137.56788711	11.00	0.0019
Error	40	500.26544622	12.50663616		
Total	41	637.83333333			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	8.52173913	0.73740544	1670.26086957	133.55	0.0001
TER	3.63615561	1.09636253	137.56788711	11.00	0.0019

Bounds on condition number: 1, 1

Step 2 Variable PRD Entered R-square = 0.34841660 C(p) = 15.26370682

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	2	222.23172077	111.11586039	10.43	0.0002
Error	39	415.60161256	10.65645160		
Total	41	637.83333333			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	4.67177488	1.52609469	99.86503782	9.37	0.0040
PRD	1.40554250	0.49865632	84.66383367	7.94	0.0075
TER	3.78732379	1.01344273	148.82608827	13.97	0.0006

Bounds on condition number: 1.002808, 4.011233

Step 3 Variable CONVEN1 Entered R-square = 0.43751702 C(p) = 10.25367912

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	3	279.06293720	93.02097907	9.85	0.0001
Error	38	358.77039613	9.44132621		
Total	41	637.83333333			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	8.25571573	2.04872361	153.31184775	16.24	0.0003
PRD	1.34230603	0.47007304	76.98487379	8.15	0.0069
CONVEN1	-2.53054005	1.03142164	56.83121643	6.02	0.0188
TER	3.56626637	0.95816012	130.79296237	13.85	0.0006

Bounds on condition number: 1.011755, 9.087022

TABLE 5.16

continued

Step 4 Variable COMP Entered R-square = 0.54241051 C(p) = 4.00112181

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	4	345.96750450	86.49187612	10.96	0.0001
Error	37	291.86582884	7.88826564		
Total	41	637.83333333			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	9.10903776	1.89543841	182.18271913	23.10	0.0001
PRD	1.77974736	0.45517201	120.59995342	15.29	0.0004
COMP	-2.84408734	0.97657546	66.90456729	8.48	0.0060
CONVEN1	-3.13519608	0.96537101	83.19982972	10.55	0.0025
TER	3.22369183	0.88367903	104.97828282	13.31	0.0008

Bounds on condition number: 1.197496, 17.66689

All variables in the model are significant at the 0.1500 level.
 No other variable met the 0.1500 significance level for entry into the model.

Summary of Stepwise Procedure for Dependent Variable WNA

Step	Variable Entered	Removed	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	TER		1	0.2157	0.2157	23.7068	10.9996	0.0019
2	PRD		2	0.1327	0.3484	15.2637	7.9448	0.0075
3	CONVEN1		3	0.0891	0.4375	10.2537	6.0194	0.0188
4	COMP		4	0.1049	0.5424	4.0011	8.4815	0.0060

In the analysis of the whole sample, 4 variables proved to contribute significantly to the prediction of breast-feeding duration ($p < .0001$). These variables were: whether a mother had some tertiary education; her statement of preferred duration of breastfeeding at the first interview; her statement as to the relative convenience of breastfeeding or bottlefeeding; and whether she introduced complementary feeding during the first 3 months. These variables accounted for 54% of the variance in weaning age in this sample. When the rank of weaning age was used instead of weaning age, to minimise error inherent in the right-censored nature of the dependent variable, results were very similar.

Two variables, completed secondary school and cigarette smoking, did not meet the .15 significance level for entry into the model, and were deleted. These variables were associated with the initial choice of breastfeeding, rather than duration, so the result is consistent with previous analyses.

5.4.2 The model for multiparous mothers

In the analysis of the sample of multiparous mothers (Table 5.17), the variable which made the most contribution to the model was whether a mother had breastfed her previous infant for more than 3 months. This variable accounted for almost 47% of the variance in weaning age, and is the most significant contributor to the prediction of weaning age of any variable included in the analysis. Three other variables also made a significant contribution to the predictive value of the model for the multiparous mothers in this sample ($p < .0001$). These three variables were:

TABLE 5.17

STEPWISE REGRESSION - MULTIPAROUS MOTHERS

stepwise reg, breastfed, multipars

wna= prevbr prd comp conven1 mosc ter

Stepwise Procedure for Dependent Variable WNA

Step 1 Variable PREVBR Entered R-square = 0.46956693 C(p) = 11.94560538

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	203.26123188	203.26123188	18.59	0.0003
Error	21	229.60833333	10.93373016		
Total	22	432.86956522			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	5.62500000	1.16906641	253.12500000	23.15	0.0001
PREVBR	6.24166667	1.44762965	203.26123188	18.59	0.0003

Bounds on condition number: 1, 1

Step 2 Variable TER Entered R-square = 0.58909981 C(p) = 6.97202521

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	2	255.00338077	127.50169038	14.34	0.0001
Error	20	177.86618445	8.89330922		
Total	22	432.86956522			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	5.20614828	1.06855850	211.10564654	23.74	0.0001
PREVBR	4.87341772	1.42348994	104.23699015	11.72	0.0027
TER	3.35081374	1.38918394	51.74214888	5.82	0.0256

Bounds on condition number: 1.188773, 4.755091

Step 3 Variable CONVEN1 Entered R-square = 0.68445052 C(p) = 3.40923983

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	3	296.27779969	98.75926656	13.74	0.0001
Error	19	136.59176553	7.18904029		
Total	22	432.86956522			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	9.37543615	1.98763962	159.94791701	22.25	0.0002
PREVBR	4.19469644	1.31081877	73.61845345	10.24	0.0047
CONVEN1	-2.82205164	1.17776849	41.27441892	5.74	0.0270
TER	3.86113050	1.26703133	66.76135947	9.29	0.0066

Bounds on condition number: 1.247004, 10.58215

TABLE 5.17

continued

Step 4	Variable PRD Entered		R-square = 0.72381887	C(p) = 3.11247979	
		DF	Sum of Squares	Mean Square	F Prob>F
Regression		4	313.31916107	78.32979027	11.79 0.0001
Error		18	119.55040415	6.64168912	
Total		22	432.86956522		
Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	6.16486198	2.76898292	32.92188596	4.96	0.0390
PREVBR	4.29098673	1.26136337	76.86213763	11.57	0.0032
PRD	0.96492298	0.60239281	17.04136138	2.57	0.1266
CONVEN1	-2.37090133	1.16655579	27.43433720	4.13	0.0571
TER	3.86853744	1.21785139	67.01678042	10.09	0.0052
Bounds on condition number:		1.249843,	18.63956		

All variables in the model are significant at the 0.1500 level.
 No other variable met the 0.1500 significance level for entry into the model.

Summary of Stepwise Procedure for Dependent Variable WNA

Step	Variable Entered	Number Removed	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	PREVBR		1	0.4696	0.4696	11.9456	18.5903	0.0003
2	TER		2	0.1195	0.5891	6.9720	5.8181	0.0256
3	CONVEN1		3	0.0954	0.6845	3.4092	5.7413	0.0270
4	PRD		4	0.0394	0.7238	3.1125	2.5658	0.1266

whether the mother had any tertiary education; her statement of the relative convenience of breastfeeding or bottlefeeding at the first interview; and her stated preferred duration of breastfeeding. Together with mother's previous breastfeeding history, these variables accounted for 72% of the variance in the dependent variable, age of weaning. The model for multiparous mothers was thus highly consistent with the model for the overall sample, and explained a very high proportion of the variation in weaning age amongst multiparous mothers in this sample.

5.4.3 The model for primiparous mothers

When the model was applied to the sample of primiparous mothers, three variables made a significant contribution to the model: the mothers statement of the relative convenience of breast or bottle feeding at 4 weeks; her statement of preferred duration of breastfeeding; and whether she introduced complement feeding during the first 3 months ($p < .0005$). These accounted for 68% of the variance in the dependent variable, age of weaning. Whether a mother had undertaken tertiary education did not appear to be a significant predictor of breastfeeding duration amongst the primiparous mothers in this sample.

5.5 DIFFERENCES BETWEEN THE MACEDONIAN AND NON-MACEDONIAN SPEAKING MOTHERS

The second aim of this study was to determine whether there were any factors associated with infant feeding that were particularly related to being Macedonian-speaking.

5.5.1 Sociodemographic differences

There were a number of sociodemographic differences between the Macedonian-speaking and non-Macedonian speaking mothers in this sample (Tables 5.5, 5.6). More than half of the Macedonian-speakers did not speak English, compared to 9% of the non-Macedonian speakers. They tended to be significantly younger than the non-Macedonian speaking mothers interviewed, but their parity was not significantly different, suggesting they had begun their childbearing at a younger age. Almost all the Macedonian-speaking mothers had been born overseas, and in comparison to the overseas-born amongst the non-Macedonian speakers, had lived in Australia for a significantly shorter time (a mean of 8 years compared with 15 years). More Macedonian-speaking mothers were living in extended families. A significantly greater number of the Macedonian-speaking mothers had completed their secondary schooling. There was no difference, however, between the tertiary education rates of both groups. There were also no differences in the husbands' occupations.

The majority of these factors, however, were not significantly associated with either breastfeeding incidence or duration. Only education was associated with breastfeeding outcome, and this association was the same for both Macedonian speakers and non-Macedonian speakers alike.

5.5.2 Sociocultural differences

Significantly more of the Macedonian-speaking mothers lived in extended families and could call on the support of other female relatives in their household. This had no significant effect, however, on their breastfeeding rates. The attitudes to breastfeeding of the Macedonian-speaking mothers also differed from the other mothers in the survey. The Macedonian-speaking mothers ranked convenience of breastfeeding much lower amongst the reasons they chose breastfeeding than did the non-Macedonian speaking mothers. The Macedonian speaking mothers were less likely to commit themselves to a specific period of breastfeeding, or a long duration. Sample size was, however, too small to analyse the relationship between the variable preferred duration and breastfeeding duration. Macedonian-speaking mothers were less likely to have attended prenatal classes, or have been exposed to information about infant feeding before the birth of their infant (Some mothers who had given birth to a previous infant in Yugoslavia indicated they had obtained information, but had not attended prenatal classes there).

There were no differences between the Macedonian and non-Macedonian speaking mothers in the frequency distributions of the variables husband's support,

friends' support, and hospital ward mothers' support. There were also no statistically significant differences between the two groups in their perceptions of the relative convenience of breast and bottle feeding, or whether they had breastfed their previous infant for 3 months or more, or their knowledge of breastfeeding management. The frequency of cigarette smoking did not differ between the Macedonian and the non-Macedonian speaking mothers.

5.5.3 The Predictive Model - Differences between Macedonian and non-Macedonian Speaking Mothers

When the model was applied to the Macedonian-speaking and non-Macedonian speaking mothers separately, some differences emerged. For the whole sample of non-Macedonian speaking mothers, the same four variables, preferred duration, complementary feeding, mother's statement of convenience and tertiary education were all significant predictors of breastfeeding duration. These variables, together, explained 68% of the variation in the variable weaning age. For the sample of multiparous mothers who were non-Macedonian speaking, only one variable, previous breastfeeding history, proved a significant predictor of breastfeeding duration. This variable accounted for almost all the variation in weaning age in this sample. For the primiparous mothers, preferred duration and the perceived convenience of breast feeding, were significant predictors of breastfeeding duration, and together accounted for 80% of the variance in weaning age.

For the Macedonian speaking mothers in the sample, three variables were significant predictors: tertiary education, complementary feeding, and mother's preferred duration of breastfeeding. These accounted for 66% of the variation in the dependent variable weaning age. For the multiparous mothers among the Macedonian-speaking mothers, only tertiary education was a significant predictor of breastfeeding duration, and accounted for 48% of the variation in the variance of weaning age. For the primiparous mothers, no variable met the significance level for entry into the model. Sample size, however, was very small.

5.5.4 Infant Feeding amongst the Macedonian-speaking mothers

5.5.4.1 Cow's milk Feeding and Complementary Feeding

Significantly more Macedonian-speaking mothers introduced cows' milk to their infants at earlier ages in both the earlier Records Survey and the later Interview survey. The incidence of cows' milk use, however, had greatly declined in the later survey.

There were no differences between the Macedonian and non-Macedonian speaking mothers in the incidence of complementary feeding.

5.5.4.2 The incidence and duration of breastfeeding amongst the Macedonian-speaking mothers

At hospital discharge there was no significant difference between the breastfeeding rates of Macedonian-speaking and non-Macedonian speaking mothers (Table 5.1).

Differences in the length of time that Macedonian-speaking mothers breastfed in comparison to the non-Macedonian speaking mothers were then analysed. Because the data on breastfeeding in this sample are survival-type data, with not all mothers finished breastfeeding by the time the study was completed (at 3 months postpartum), the data was analysed using a variation of the Wilcoxon-Mann-Whitney test to compare samples that are censored (that is, measurements were not made beyond a certain time point) at a fixed time-point (Halperin 1960). Mothers who bottlefed initially, were excluded from the analysis. No statistically significant differences existed between the two distributions (Macedonian- vs non-Macedonian speaking) of lengths of time mothers breastfed.

The interview with the Macedonian-speaking Health Workers and Interpreters, however, suggested that it might be worthwhile to look at the data in a slightly different way. A strong cultural tradition in the Macedonian-speaking community that mothers should breastfeed for at least 6 weeks postpartum had been strongly emphasised by the Health Workers and Interpreters. A number of cultural prescriptions and proscriptions about mothers' behaviour and her interactions with others

during that period exist that serve to emphasise the importance of breastfeeding for at least 6 weeks. It was also suggested that this cultural value can help to promote breastfeeding amongst mothers in the community for that first 6 weeks, but subsequently it can act as a barrier to continued breastfeeding, because it can also represent a goal, which once achieved, has no further leverage. It was suggested that, once the infant has reached 6 weeks of age, if there are any problems with feeding, the mother feels she has fulfilled her responsibility and can choose an alternative feeding method.

It could be hypothesised, then, that Macedonian-speaking mothers who want to wean their infants during the early period postpartum, will wait until the 6 week boundary is reached and then wean, while the non-Macedonian speaking mothers will wean as the circumstances arise.

This hypothesis was tested, using the sample of mothers who began breastfeeding but weaned to bottlefeeding before 3 months. Mothers who had not weaned before 3 months were not included. Two statistical tests were used for the analysis, the Mann-Whitney U-Test of the distribution of weaning ages for those breastfed infants weaned before three months amongst Macedonian-speaking compared with non-Macedonian speaking mothers, and a contingency table of the distribution of the variables Macedonian-speaking vs weaned before or after 6 weeks postpartum (Table 5.18).

Because the hypothesis was that the age of weaning of the Macedonian-speaking mothers would be greater (because it would tend to cluster in the latter half of the time period) than for the non-Macedonian speaking mothers, the null hypothesis tested was that there was either no difference or the weaning age would be less for Macedonian-speaking mothers.

Table 5.18 presents the contingency table for the variables Macedonian-speaking vs weaning group (before 6 weeks or 6 weeks or later) for all mothers who weaned before 3 months, including those mothers who were bottlefeeding in hospital. There was a significant association between Macedonian-speaking and weaning group, with fewer Macedonian-speaking mothers than expected weaning before 6 weeks and more weaning after 6 weeks ($p=.009$).

A comparison of the distributions of weaning ages of Macedonian-speaking mothers vs the non-Macedonian speaking mothers interviewed confirmed the significant difference between the two groups (Mann-Whitney U-Test, $p=.026$, 1-tailed).

Since the null hypothesis can be rejected in this case, it would appear that the strong cultural tradition to breastfeed for at least 6 weeks acts to maintain breastfeeding amongst the Macedonian-speaking mothers in this community for this at least this period of time.

TABLE 5.18

**WEANING BEFORE OR AFTER 6 WEEKS
BY MACEDONIAN-SPEAKING**

	Macedonian	non-Macedonian	Total
Weaned 0-5 weeks	3	13	16
Weaned 6-12 weeks	10	5	15
	13	18	31

p = 0.008, Fisher's Exact Test, 1-tailed

After 6 weeks, however, factors operate on both Macedonian and non-Macedonian speaking mothers in this community to discourage mothers from breastfeeding, and breast-feeding rates are much lower at 3 months for this whole group of mothers (35% amongst the Macedonian-speaking mothers, and 49% amongst the non-Macedonian speaking mothers) than the national 'average' (69%) reported by Palmer (1985).

5.6 CONCLUSION

The first major aim of the study was to determine which factors or combination of factors were associated with breastfeeding outcomes at 3 months. The quantitative analysis revealed several factors which were associated with continued breastfeeding amongst mothers in this study. Mothers who smoked cigarettes, and those who had not completed their secondary schooling were less likely to initiate breastfeeding. Of the mothers who chose breastfeeding initially, those with some tertiary education; a long preferred duration of breastfeeding; who perceived breastfeeding as relatively more convenient; and who had breastfed their previous child for more than 3 months were more likely than other mothers to be still breastfeeding at 3 months postpartum. A model of breastfeeding duration was tested using a stepwise regression to predict weaning age. The four variables accounted for 54% of the variance in weaning age. For multiparous mothers, one variable, previous breastfeeding history, accounted for almost 50% of the variance in weaning age, and the addition of the variables tertiary education, perceived convenience and preferred duration further strengthened the predictive value of the model.

The second principal objective was to determine whether there were significant differences between the Macedonian-speaking mothers compared with others in the study, and whether these differences were associated with differences in infant feeding patterns. There were some differences between the Macedonian and non-Macedonian speaking mothers in this study. Significantly more of the Macedonian-speaking mothers did not speak English. This was most likely related to their more recent migration to Australia than the other overseas-born mothers. The Macedonian-speaking mothers tended to be younger than other mothers in the study. More Macedonian-speaking mothers were living in extended families, which could have acted as a source of physical support while breastfeeding and increased its duration, but this was not found to be the case. More of the Macedonian-speaking mothers had completed their secondary schooling.

There were no differences, however, in the incidence or overall duration of breastfeeding. The only significant difference that was found in the infant feeding patterns was that the Macedonian-speaking mothers, if they weaned within the first 3 months, tended to postpone weaning to bottlefeeding until 6 weeks after the birth. This may have been related to their traditional value, which the Macedonian-speaking Health Workers and Interpreters emphasised, to breastfeed their infants for at least 6 weeks. In the longer term however, the breastfeeding rates of the Macedonian-speaking mothers were not different from other mothers in the study.

CHAPTER SIX

MOTHERS' ATTITUDES AND EXPERIENCE OF BREASTFEEDING

Ninety-five percent of the Macedonian-speaking mothers and 83% of the non-Macedonian speaking mothers in this study chose to breastfeed their newborn infant, because they perceived it as best for their infant, and as the more convenient method of feeding. Subsequently, however, there was a rapid decline in breastfeeding rates so that only 50% of the mothers were still breastfeeding at the end of 3 months.

It would appear that the rapid decline in breastfeeding was accompanied by considerable change in attitudes to infant feeding over the same three month period. One of the most striking features to emerge from the study was the inconsistency between the mothers' expectations about infant feeding and their actual experiences of it. At 4 weeks postpartum, 84% of mothers interviewed were breastfeeding their infants, and 60% of mothers cited breastfeeding as being more convenient than bottle feeding. By the time of the second interview at 3 months postpartum, however, only 50% of mothers were still breastfeeding, and only 40% of mothers still perceived it as more convenient than bottlefeeding.

It would appear, therefore, that a mother's decision about how to feed her infant is not a once-only decision. The decision to continue one kind of feeding or adopt another, is continually re-evaluated, and attitudes to the convenience or

appropriateness of a particular feeding method change over time, partly in response to the changing needs and demands of the infant itself.

6.1 MOTHERS' ATTITUDES TO BREASTFEEDING

6.1.1 Reasons for choosing initial feeding method

Mothers were asked their reasons for choosing their method of feeding their newborn infant (Appendix A, Questionnaire page 2). Of the 7 mothers who chose bottle feeding, 3 cited physical problems that prevented them breastfeeding, rather than the positive aspects of bottlefeeding, and one of these mentioned the benefits of breastfeeding. Only two mothers mentioned positive aspects of bottlefeeding. One mother cited the importance for her husband of sharing in the feeding of their infant, and for the other, bottlefeeding was easier when 'going out'. Two mothers who chose bottlefeeding indicated that employment was the major consideration in choosing to bottlefeed. One of these mothers wanted to both breast and bottlefeed in hospital, but was not allowed, so the mother chose bottlefeeding so that the infant would be used to the bottle when she returned to work. The remaining two mothers said they chose bottlefeeding so they would not transmit 'nerves' while breastfeeding, and that a mother would have to be careful about what she ate while breastfeeding. All the mothers first mentioned why they did not breastfeed, and subsequently mentioned other factors in their motivation. These findings are similar to those of Bloom and

associates (1982a) who found that mothers who bottlefed, more frequently cited the 'necessity' category as the reason for choosing to bottlefeed.

Table 6.1 summaries the reasons for choosing breastfeeding among the 48 mothers who were breastfeeding at hospital discharge. The major categories of responses are ranked in order of frequency, for the whole sample and for Macedonian-speaking compared with non-Macedonian speaking. The category 'Other' includes: mother's milk is more economic; breastfeeding worked with previous children; "If you have milk, why give anything else?"; achievement; and breastfeeding is better for the mother's health. Some mothers cited only one reason for choosing their infant feeding method (including "better for baby" without further qualification) even when asked if there were any other good features about that feeding method that made them choose it. Other mothers responded with several factors that were important for them. Response frequencies, therefore, total more than 100% of the mothers who breastfed.

There were some differences between the Macedonian and non-Macedonian speaking mothers. For Macedonian-speaking mothers, "better for baby" was the overwhelming response, followed by responses that have been grouped together as being related particularly to the health of the baby. These included "more vitamins", "develop better", "healthier", "helps baby's digestive system", "protects from diseases", and mother's milk is "sterile". Other responses were made by comparatively small numbers of mothers.

TABLE 6.1

REASONS FOR CHOOSING TO BREASTFEED,
INTERVIEWS '87-88

	Whole Sample	Macedonian speaking		non-Macedonian speaking	
		Frequency	Rank	Freequency	Rank
"Better for baby"	35	13	1st	22	1st
(No other factor mentioned)		11	6		5
Convenience	15	2	5th	13	2nd
Baby's Health	14	4	2nd	10	3rd
Bonding	7	1	8.5th	6	4th
No reason	5	2	5th	3	6th
Normative	5	2	5th	3	6th
Concern with Mechanics	5	2	5th	3	6th
Natural	4	2	5th	2	8th

Note: Tied frequencies are given the average rank of the positions they occupy

For non-Macedonian speaking mothers, "better for baby" was the major response, but many also cited convenience and factors relating to the "health" of the baby. "Bonding" ranked next for non-Macedonian speaking mothers but was only mentioned by one mother among the Macedonian speakers.

Twenty one percent of mothers gave no positive reasons for choosing their infant feeding method, or reported that breastfeeding was "the thing to do", or "everyone does" (normative category). There was no difference in the proportion of Macedonian-speaking and non-Macedonian speaking mothers included in this category. Some expressed only a concern about the mechanics of breastfeeding, worrying over whether they would be able to continue, or about their previous experience of breastfeeding. Two of the three mothers who did not report any positive aspects of breastfeeding had ceased to breastfeed by the end of week 4.

It would appear from an examination of the reported reasons for choosing breastfeeding, that its specific health benefits were not perceived strongly by mothers in this sample. While 73% of mothers reported they chose breastfeeding because it was "better for baby", 31% of these gave no further qualification of this response even when asked to expand on their reasons for choosing their feeding method. Only 29% percent of mothers cited specific infant health reasons for choosing breastfeeding. Twenty one percent of the mothers chose breastfeeding for no reason or because it was "the thing to do" or "everyone does".

6.1.2 Mothers' experiences of breastfeeding and change in attitudes

Two of the four significant factors in the predictive model for age at weaning were related to mothers attitudes to breastfeeding at the time of the first interview: the mother's reported preferred duration of breastfeeding, and her statement of the relative convenience of breastfeeding or bottlefeeding in the early period postpartum.

During their first 3 months postpartum, however, mothers' experiences of breastfeeding appeared to change their attitudes considerably. Sixty one percent of mothers who began breastfeeding said they would like to breastfeed for at least 6 months, and 75% said they would like to breastfeed for at least 3 months. Only 50% of mothers who began breastfeeding, however, were still doing so at 3 months postpartum. All the mothers who reported a specific time period for which they would like to continue breastfeeding expressed their preference in terms of months, but for many of these mothers, their actual duration of feeding was only a few weeks.

While 65% of mothers had cited breastfeeding as more convenient than bottlefeeding during the early period postpartum, by 3 months only 43% did so.

Forty-eight percent of the breastfeeding mothers made negative comments about their own or friends' breastfeeding experience (as distinct from specific feeding difficulties reported by 80% of mothers), even if they were still breastfeeding at the end of the study period. Comments about their breastfeeding experience could be categorised into several domains: difficulties with feeding the baby in 'public';

difficulty with coping with other household demands while breastfeeding; worries about the quantity and quality of their milk; difficulties with feeding while mother is away from the baby; a small amount of resentment that health professionals were pressuring mothers to breastfeed. In some of these categories there were few differences between Macedonian-speaking and non-Macedonian speaking mothers. In other categories, there were clear differences.

6.1.2.1 "Feeding in public"

The most frequently reported difficulties that mothers experienced were related to problems of feeding in public. For mothers of Australian backgrounds, this related principally to when they were out with their infant, finding somewhere to breastfeed. "With breastfeeding you have to sit somewhere and feed". "With bottlefeeding, you can feed where you want. People don't want to see breastfeeding, even if they support it." "When you're out, there are no places to feed...It's not nice to feed when people are going by in public places."

For Macedonian mothers, the problems of feeding in public were less related to going out, and more related to social obligations at home, and particular categories of persons with whom a mother could breastfeed. The problem of feeding when visitors came was mentioned by mothers. "A friend was embarrassed to feed when the baby wanted to sometimes". Another Macedonian-speaking mother commented that it was "difficult with visitors. I had to go to another room to feed". This point was strongly emphasised by the Macedonian-speaking Health Workers and Interp-

reters. "You don't feed in front of your father or anyone else." "If there was a group of women... you would feed, but if there were other men, even if it's your husband or your whatever, you won't do it". "I wouldn't do it in front of my father-in-law, or my brother-in-law." "No." "Brother or..." "None." "Father-in-law, even in front of my mother-in-law, I don't feel, you know...". The problems of feeding in public were compounded by the demands placed upon mothers during visits by relatives and family friends. "All the people used to come, I used to be stuck in the bedroom breastfeeding, And they'd be on their own..." "They expect you to be there." "You have to do the things that are expected." "...you go to feed them [the babies] just a little bit to shut them up, a few minutes. You break the feeding habit."

Problems with breastfeeding when "going out" were also related to the difficulty of leaving their breastfed infant with someone else and organising feeding. this category was similar for both Macedonian and non-Macedonian mothers. Mothers tried to organise their outings around their expected feeding schedule, or left it to whoever was minding the infant to provide something for the infant, usually water, occasionally cows' milk because "that's what's in the house". Where a mother expected to be away for a considerable time, such as for a family wedding, then formula was the usual substitute for breastmilk. Few mothers in this sample reported expressing milk for their infants.

Mothers' perceptions of public attitudes to breastfeeding were not only concerned with embarrassment at feeding in public, and the categories of persons with whom the mother was comfortable breastfeeding. There was also a perception among

some mothers that breastfeeding was not always appropriate, because of an infant's age, or that it was not the modern way. Mothers of English-speaking backgrounds as well as the Macedonian-speaking mothers expressed these attitudes. "Bottlefeeding saves embarrassment when the child is older. It's embarrassing for a child to ask for [mother's] milk", commented a mother of Australian background. For mothers of Macedonian-speaking backgrounds, however, feelings of embarrassment about continuing to breastfeed an infant concerned much younger babies. "I'm a bit embarrassed about feeding so long [i.e. continuing to breastfeed for 3 months or more]. Friends think the baby is too old to be breastfed. They fed only 6 weeks". "Friends say why breastfeed when there are so many other things to feed the baby with".

6.1.2.2 Other household demands

The second principal area of difficulty was associated with the problems of coping with other household demands while breastfeeding. Both Macedonian-speaking mothers and non-Macedonian speaking mothers reported difficulties in this area, and their comments were very similar. "Breastfeeding can be difficult with a husband, other children ... Breastfeeding will work if you can sit and watch T.V. all day and do nothing but pay attention to the baby... Some people don't have hourly time" (non-Macedonian speaker). "I like my house spotless. Breastfeeding makes it difficult to organise the house" (non-Macedonian speaker). "When I was breastfeeding, I was feeding every 2 hours at one stage. All I seemed to do was feed the baby" (non-Macedonian speaker). "It's difficult with a toddler as well. It's hard

to prepare meals for both" (non-Macedonian speaker). "Time is a problem with other children and their requirements" (Macedonian-speaker). "Two kids make life difficult. It's difficult with this one because the other one interferes" (Macedonian-speaker). "I couldn't feed the baby all day long" (Macedonian-speaker). When faced with the burden of the household some mothers felt it was a disadvantage that only the mother could feed the baby. "If you have a lot of work, the bottle is better because my mother-in-law can do the feeding" (Macedonian-speaker). The non-Macedonian speaking mothers expressed similar sentiments, though they were less likely to depend on their mother-in-law to act as an alternate, since fewer lived in an extended household. "Social activities affect feeding. You rush, want to see visitors. It's hard when doing something or going out. With another child, it's hard to fit in school, and difficult to leave with other people. Breastfeeding is best for baby, but maybe not so convenient, and no one else can feed" (non-Macedonian speaker). Many of the Macedonian-speaking mothers lived with their mother-in-law, and perhaps could have drawn on her physical support in coping with household demands. Mothers' comments, however, suggest that mothers-in-law were more likely to want to feed the baby than tend to other household demands for the mother.

Interviews with the Early Childhood Health Sisters suggested that mothers in this community could expect little help from husbands in meeting household demands. This was true for both Macedonian-speaking and other mothers in the community. The Clinic Sisters also reported that husbands were unlikely to make allowances for the extra demands that a young infant makes on a mother's time. The interviews with mothers showed that they recognised the added demands of a young infant but none

reported their husbands taking on some of the household duties or physically assisting them.

The interviews with the Macedonian-speaking Health Workers and Interpreters suggested that they perceived Macedonian-speaking mothers as less likely than others to have physical assistance from their husbands, or understanding of the extra demands of a young infant. "Most of the husbands won't do anything around the house". "A lot of husbands have got shift work and it's so hard". But if you've got an Australian husband, he'll put up with more and he'll do more". "Ninety-seven percent of the Australian husbands wash dishes". "At least some of the time they'll wash dishes". "Not ours". "Eat and sleep". "Change a baby? Never". That's a big no, no". The strong definition of appropriate roles for women and men in the Macedonian-speaking community, therefore, may make the added burden of breastfeeding their infant too difficult.

6.1.2.3 "The milk"

Another area of difficulty reported by mothers of both Macedonian and non-Macedonian speaking backgrounds, was their worry about the quantity and/or quality of their milk. Almost 60% of the breastfeeding mothers interviewed reported problems with infant feeding, and 80% of these mothers had ceased breastfeeding by 3 months. The overwhelming proportion (81%) of the breastfeeding problems reported by the mothers related to the infant crying and feeding frequently, and the mother assuming that her breastmilk was deficient in quality or quantity. "There's

lot's of worry and hassle with breastfeeding...There's the worry, whether you've got enough [breastmilk], about the quality...With bottlefeeding you know the baby has had enough. You know that feeding is O.K." (non-Macedonian speaker). "Bottlefeeding's better, because you know what she's getting is better for the baby. When I was breastfeeding, she didn't settle and I didn't know whether she was getting enough. With the bottle, if the baby is unsettled, I know that if the baby has had a bottle, then feeding is not the problem" (non-Macedonian speaker). "When you're breastfeeding, if the baby's crying, you worry about the quality and quantity of your milk" (Macedonian-speaker).

Several of the Macedonian-speaking mothers also expressed the belief that breastmilk was suitable only for small babies, and that older babies needed something stronger. "It's better while they're small to have mother's milk, but as they get older they want more" (Macedonian speaker). "After 6 weeks you give formula because it's weaker. After two and half, three months you change to cow's milk, because it is stronger, gives more nourishment" (Macedonian speaker).

The problems of mothers' perceptions of breastmilk inadequacy were also raised by the Health Workers and Interpreters during their group interview. "A lot of babies have wind when they're breastfed...By the time 6 weeks comes...they have a lot of colic and wind...and then [mothers] think because of that the baby is starving and it's hungry...so they give cows' milk...So there goes the breastmilk". "...something is wrong with it [the milk], or the milk is weak".

Discussions with the Clinic Sisters also emphasised the importance of mother's perceptions of their breastmilk adequacy when problems with breastfeeding arose. One Sister remarked that one problem with breastfeeding was that breasts didn't come fitted with a gauge so that mothers could be reassured that their infant received sufficient milk at a feed. Eighty percent of mothers during the study period reported their infants were crying a lot, or wouldn't settle. This was most often interpreted as a problem with milk quantity or quality. Few of these infants, however, showed deficits in growth that would indicate a physical problem with their milk supply.

6.1.2.4 Body-image

Comments from some mothers during their interviews suggest that there may be a negative body-image associated with breastfeeding amongst mothers in this community. One mother commented that mothers who did not breastfeed wanted to "stay young and pretty". This is reinforced by comments from other mothers that, while you were breastfeeding, you always had to take infant feeding into account when choosing clothes to wear. The health worker and interpreter interviews also included body-image as a barrier to breastfeeding. "Modern days, the young mums, they don't believe too much in the breastfeeding, you know, they just want to be nice." "The diet". "They can't diet while they're breastfeeding." "Personal things. They say the shape of your breast changes and the size changes as well." "Well the younger ones these days, they just want to keep their own appearance up, their presentation. Like you've got to wear nursing pads, and nursing bras, and something

with buttons... Things like that." "They can't diet. You're limited in the things you can do.'

6.1.2.5 Social support

No relationship was evident between mothers' reports of friends' and associates' attitudes to, and experiences of breastfeeding, and mothers' own breastfeeding outcomes. The same was true for attitudes and experiences of other mothers in their hospital ward after the birth. The effect of peer pressure, however, is not necessarily predictable or consistent. While some mothers may have been influenced by friends' attitudes and experiences, other mothers reported continuing or choosing their feeding method in spite of strong peer pressure to act differently. This was true for both Macedonian-speaking and non-Macedonian speaking mothers. One Macedonian-speaking mother who was still breastfeeding at 3 months postpartum, reported that others said, "Why breastfeed when there are lots of other alternatives here [in Australia]". Another reported that her friends thought "her baby was too old to be breastfed [after 3 months]. They fed only 6 weeks and after that give formula", although she continued to breastfeed for well after 3 months. Some mothers regarded their peers' attitudes with obvious disapproval. One mother, for example, a non-Macedonian speaker, stated that, "A mother who doesn't breastfeed is selfish. She wants to stay young and pretty". A mother of Australian-background commented that she had decided to bottlefeed, although her friends chose breastfeeding, and their subsequent experiences of breastfeeding had confirmed for her that she had made the

right choice, "I didn't consider breastfeeding, and I'm glad I didn't. Friends all had trouble".

There was also some resentment from mothers about the increasing pressure to breastfeed which they perceived from some health professionals. "Breastfeeding is coming back in. Doctor's and nurses shove it down your throat." "At prenatal classes you're saturated with the pro-side. It made me feel worse about weaning early." These comments came exclusively from non-Macedonian speaking mothers, more of whom had been exposed to prenatal information or attended prenatal classes.

6.1.2.5 Coping strategies

Few mothers mentioned specifically how they coped with the problems they faced trying to breastfeed their infants, other than changing to bottle feeding, but some specific statements were made that help to throw light on the methods mothers in this community used to cope with the demands of breastfeeding. A few mothers, mostly Arabic speakers, reported that they offered the breast whenever their infant cried. Some mothers reported waiting longer for the next feed, in the hope that they might have more milk to feed a demanding infant. Complementary feeding was another strategy adopted by mothers to cope with a demanding infant, or enable mother to sleep longer at night.

Some of the remarks made by mothers about the problems they faced while breastfeeding also reveal coping strategies that mothers perceived would enable them

to continue breastfeeding, but were not options they could choose. "Breastfeeding will work if you can sit and watch T.V. all day and do nothing but pay attention to the baby" (non-Macedonian speaking mother). Comments such as the mother wanted the house "spotless", suggest that she perceived that she could continue breastfeeding if other household duties could be ignored, or relegated to another household member. This was not an option, however, for many of the mothers in this survey. "Most of the husbands won't do anything around the house". Other members of the household who might help with the household duties were more likely to want to help with the infant feeding. "If you have a lot of work, the bottle is better because my mother-in-law can do the feeding" (Macedonian-speaker). In general, therefore, mothers were not able to clearly define coping strategies that might have enabled them to continue to breastfeed.

6.2 EXPERIENCES OF THE MACEDONIAN-SPEAKING MOTHERS

Some problems the mothers in this sample faced were experienced predominantly by the Macedonian-speaking women. The Macedonian-speaking mothers interviewed in this study were younger, had started their families at a younger age, had migrated to Australia at a later age and had lived in Australia for fewer years than their non-Macedonian-speaking counterparts. A majority of the Macedonian-speaking mothers interviewed could not speak English. Many of them are living in an extended household with their husband's parents. Community studies have also shown that women in this community have few of their own close relatives living near them

(Mitchell & Seniuk 1984, Stubbs & Seniuk 1989). This combination of factors suggests that these mothers are likely to be socially isolated within the broader Wollongong community, and living within a household structure (the extended family of the husband's parents) that members of their own community suggest is often stressful.

6.2.1 The extended household

In theory, living in an extended household could have provided mothers with physical support in dealing with household duties, and might have allowed mothers more time for breastfeeding. There was no significant statistical association, however, between living in an extended household and breastfeeding duration. During the interviews, mothers reported that mothers-in-law were more willing to feed the baby (with a bottle) than take over household chores. The interview with the Macedonian-speaking Health Workers and Interpreters also suggested that parents-in-law were more likely to feel that a daughter-in-law should help them, rather than they should help her with the household duties. [Mother-in-law says] "we used to work..., feed the babies and ...we worked... and here, all you have to do is feed the baby and you say, 'I'm tired, I can't do this, I can't do that.' Then they expect you to run everything, on your own, without that support". "Even if you've got in-laws at home...they don't do anything for you. You have to look after them as well as your baby". "When the son gets married that's what's expected of the daughter-in-law, to look after the old people".

There are other reasons why living with in-laws may discourage mothers in the Macedonian-speaking community from breastfeeding. During the interview with the Macedonian-speaking Health Workers and Interpreters, it was suggested that mothers-in-law may regard breastfeeding as a burden on the mother, and one which is unnecessary, since there are easily obtained alternatives. "The older people used to breastfeed for years...They've changed here though". "The people that did that for so long, they're the ones that discourage it now". The older generation think breastfeeding is a chore "because of the difficulties they had, because of the unavailability of other products." "They think it is a burden on us." "Yes. Why should the baby suffer and cry and you get up sleepless nights when you can then stick a bottle in his mouth. It makes things the other way. Instead of encouraging, they discourage you" [from breastfeeding]. One mother reported, "My mother-in-law's generation also found babies unsettled, but they didn't have much choice". Another reported that her mother-in-law said that "her premature baby never had mother's milk, and now he's big and tall". Thus a factor that might have been expected to provide positive support for a breastfeeding mother appears, paradoxically, to exert negative influence.

6.3 SUMMARY OF MOTHERS' REPORTED EXPERIENCES AND ATTITUDES REGARDING BREASTFEEDING

Mother's reports concerning their infant feeding experiences, and those of their peers, over the period of the study reveal that initial positive attitudes about

breastfeeding changed very rapidly during the initial 3 months. This may be partly due to the fact that the benefits of breastfeeding were not perceived strongly by many of the mothers in this sample. The mothers themselves, the Early Childhood Centre Sisters and the Macedonian-speaking Health Workers and Interpreters all cited more frequently and more explicitly the difficulties of breastfeeding. These included the demands of other children in the family, time constraints, crying infants and mothers' perceptions that their milk was inadequate, problems of juggling social obligations with feeding, organising feeding when the mother is away from her infant, and perhaps the problems for Macedonian-speaking mothers of coping with the conflicting demands and opinions of the extended household. All of the informants were easily able to define breastfeeding problems, but had difficulty defining the benefits of breastfeeding for the mothers in this community. Clearly, perceived barriers to breastfeeding outweigh the perceived benefits for mothers in this community. As well, few mothers were able to identify coping strategies that they could use to enable them to continue breastfeeding.

CHAPTER SEVEN

CONCLUSION

7.1 SUMMARY

The study investigated infant feeding practices among mothers of a predominantly Macedonian-speaking community.

Baseline information on feeding practices was obtained from a survey of the Early Childhood Health Centre records of newborns enrolled from 1983 to 1986. Initial breastfeeding rates were quite high but declined rapidly during the first 3 months. From 3 months postpartum, the rate of decline was much slower. The study aimed to investigate reasons for the decline to 3 months and to determine whether there were differences in infant feeding patterns between Macedonian-speaking and the non-Macedonian speaking mothers.

Fifty five mothers were interviewed during their first 3 months postpartum at two Early Childhood Health Centres in Wollongong. Interviews explored the mothers' infant feeding practices, their attitudes and experiences. Twenty Macedonian-speaking mothers and 35 non-Macedonian speaking mothers were interviewed, as well as 6 Macedonian-speaking Ethnic Health Workers and Interpreters, and the Early Childhood Health Sisters.

A very high proportion of the mothers in the Interview Survey initiated breastfeeding (95% of the Macedonian-speaking mothers, and 83% of the non-Macedonian speaking mothers; 87% overall). These rates were higher than in the survey of records (1983-1986), but the decline in breastfeeding was equally rapid.

The rate of cows' milk feeding among Macedonian-speaking mothers had declined significantly since the 1983-86 survey, and can probably be attributed to a deliberate campaign by the Early Childhood Health Sister at one centre to discourage the practice. The use of complementary feeding also declined.

A model was developed for the whole sample using a stepwise regression. A combination of 4 variables (education, preferred duration, perceived convenience, and introduction of complementary feeds) was able to explain more than half of the variation in breastfeeding duration. This is quite high in comparison with other studies (e.g. Smith 1985, Sweeney & Gulino 1987).

For the sample of multiparous mothers, the most important predictor of breastfeeding duration, which accounted for almost 50% of the variance, was previous breastfeeding history (i.e. whether she had breastfed her previous infant for more than 3 months). Other significant predictors of breastfeeding duration which accounted for a further 25% of variation were tertiary education, and the two attitude variables, preferred duration of breastfeeding, mother's statement of convenience.

For the sample of primiparous mothers, the most significant predictors of breastfeeding duration were the mother's attitudes to infant feeding, indicated by her statement of preferred duration of breastfeeding, and her perception of the relative convenience of breast- or bottle feeding, and whether she introduced complementary feeding. Together, these accounted for almost 60% of the variation in breastfeeding duration.

Mothers' education was the only variable significantly associated with choice of infant feeding mode. Mothers who had completed their secondary schooling were more likely to initiate breastfeeding, and mothers who had some tertiary education were more likely to be still breastfeeding at the end of 3 months. There was no significant difference between Macedonian-speaking and non-Macedonian speaking mothers in either initiation or duration of breastfeeding.

The rapid decline in breastfeeding during the first 3 months is accompanied by considerable change in the mothers' attitudes to infant feeding over the same period. More than 90% of mothers who began breastfeeding said they would like to breastfeed for at least 3 months, but only half were still doing so at 3 months postpartum. One of the most striking features to emerge from the study was the divergence between the mothers' expectations about infant feeding and their actual experiences of it.

The accounts given by the mothers of their breastfeeding experiences and those of their peers indicate that initial positive attitudes to breastfeeding changed mostly in response to their experiences of the difficulties of breastfeeding. While the majority

of the mothers reported that breastfeeding was best for their infant, few were able to elaborate on its benefits, and 20% of mothers were unable to articulate a specific reason for choosing breastfeeding. In contrast, the mothers themselves, the Early Childhood Health Sisters, and the community Health Workers and Interpreters, were quite explicit about the problems the mothers faced while breastfeeding. These barriers included the demands of other children in the family, time constraints, crying infants and mothers' perceptions that their milk was inadequate, problems of juggling social obligations and feeding, or arranging feeding when the mother is away from her infant. For mothers in this community, barriers to breastfeeding appear to far outweigh the less clearly defined benefits.

7.2 THE PROCESS OF CHOOSING TO BREAST OR BOTTLEFEED

An increasing number of very young infants are being breastfed, but only a minority of infants will be breastfed until they wholly adopt their normal family diet. In Australia, for example, Palmer (1985) reports only 10-12% of infants are still breastfed at 12 months. Recommendations that infants be breastfed for their first six months (N.H.M.R.C. 1981) are still a long way from fulfilment. Palmer (1985) reports that 40-42% of Australian infants are still breastfed at six months. In this sample of mothers from two Early Childhood Health Centres in Wollongong only 44% of infants were still breastfed at 3 months postpartum.

The quantitative and descriptive analyses of the interviews revealed a process of decision making about infant feeding that seemed applicable to all the mothers in the survey, regardless of their language background. The decision to breastfeed or bottlefeed is not a once only decision, made at the infant's birth and adhered to until the child is old enough to consume the normal family diet. The decision is constantly reevaluated against the changing demands of the infant and the mother's household, and also other social groupings around her. Mothers' attitudes to the alternate infant feeding modes also change, in response to these demands and to their perceptions of social norms, and what is appropriate food for a particular age. Mothers who reported at four weeks that the best food for an infant was mother's milk did not necessarily make the same report when their infant was 3 months. The same was true for statements about the relative convenience of breast or bottlefeeding, or how long she might continue breastfeeding. A model of the decision making process about infant feeding needs to include this constant reevaluation over time as an integral component.

The Health Belief Model (Becker 1974, Rosenstock 1974) has been widely used to explain preventive health behaviours, including breastfeeding (Sweeney & Gulino 1987). Implicit in the framework of the model is that it is the balance between the different components of the model, **perceived benefits, perceived barriers, perceived susceptibility and perceived severity**, that determines the behavioural outcome. Another factor that needs to be considered, particularly in relation to preventive health behaviour, is **time**. The time dimension is integral to many preventive health behaviours (ceasing cigarette smoking, dietary modification, breast examination, therapy compliance) because the behaviours must be maintained for long

periods of time, or repeated periodically over long periods. This component has not been explicitly included in the studies of the use of the Health Belief Model in explaining preventive health behaviours, although time is an implicit dimension of such behaviours.

Pender (1982, p.54ff) has also proposed that components of the Health Belief Model change over time. He placed individual perceptions and modifying factors in the early phase of the health activity, and perceived barriers and behavioural cues in the later phase. The study of breastfeeding allows the inclusion of the time component in a model of preventive health behaviour, because the behaviour has a discrete beginning, the infant's birth, and an end, when the infant is weaned to the bottle, or the normal family diet. This study, while not following all infants until they were weaned, nevertheless includes a majority who had reached this closure point. The proposed model of the process of choosing breastfeeding or bottlefeeding developed here includes components of the health belief model, and may have wider application to other preventive health behaviours.

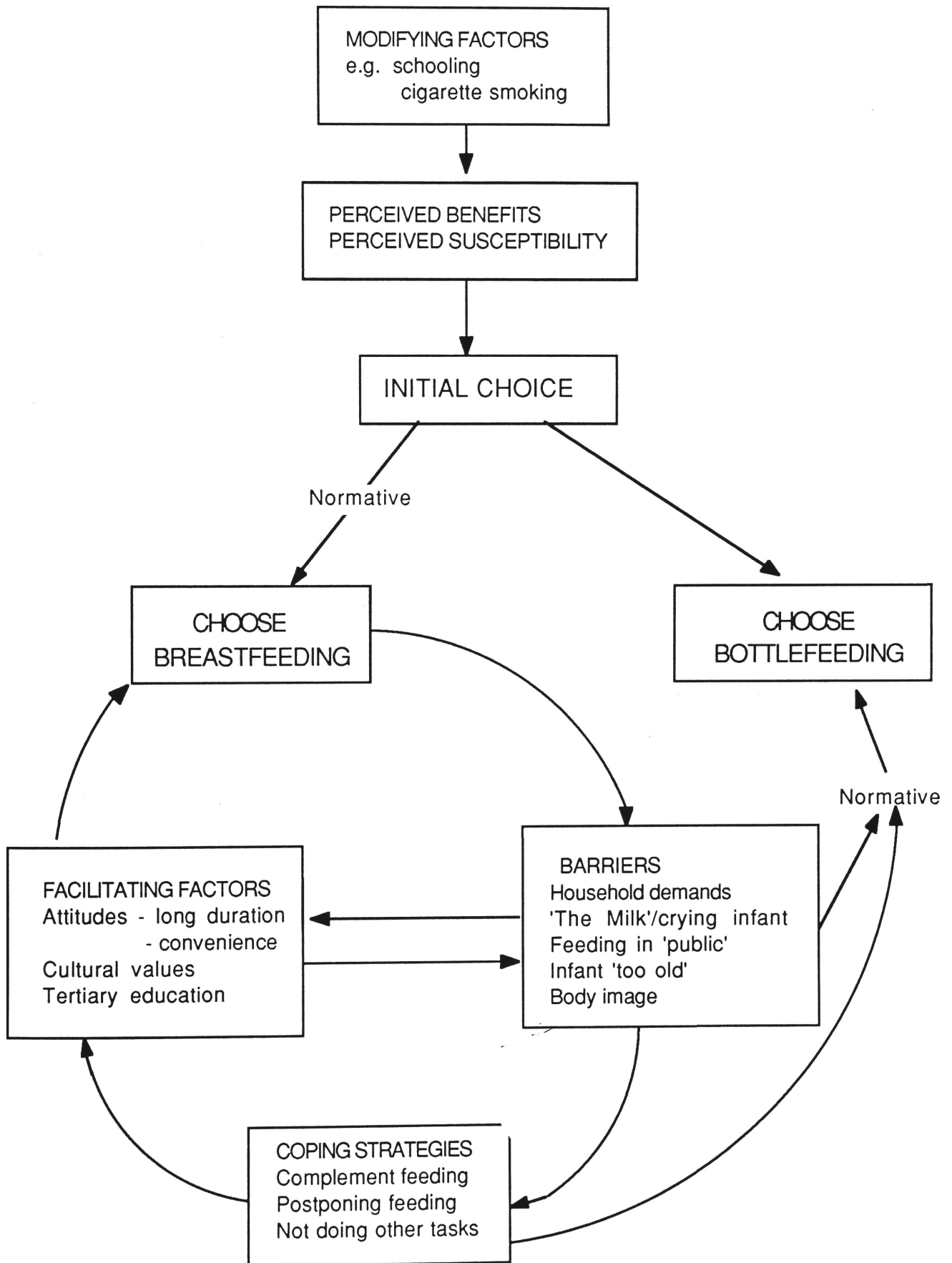
Glaser and Strauss (1967) have proposed that explanations of social phenomena should be 'grounded' in the data they attempt to explain. They propose that propositions and models should be developed from patterns and categories that develop from the data itself. During the course of this study, particular categories emerged from all the data sources.

Two key features of this data, and of breastfeeding rates in general, are the beginning and end points of the process of decision-making. The first feature is that breastfeeding is currently the normative choice of mothers of newborn infants. This pattern is clearly revealed by this study (87% of mothers chose to breastfeed their newborn infant), and other surveys in Australia and overseas (Gunn 1984, Martinez & Kreiger 1985, Palmer 1985). The second key feature is that, ultimately, bottlefeeding is the normative infant feeding choice. Only 44% of mothers interviewed were still breastfeeding at 3 months postpartum, and in the earlier Survey of Records, only 11% of mothers were still feeding at 6 months postpartum, and 2% at 9 months. The model presented here attempts to explain the process that produces this change from breastfeeding to bottlefeeding, as the normative choice.

7.2.1 A model of the process of decision-making

Figure 7.1 presents diagrammatically the process of decision-making about whether to breast- or bottlefeed that occurred amongst mothers in this study. The model incorporates some features of the Health Belief Model (Becker 1974, Rosenstock 1974) where these provide a useful conceptual framework for outlining particular components of the decision-making process. Components of the regression model that was developed from the data in this study are also incorporated into the model presented here, as well as the recurring themes that emerged from the interviews.

Figure 7.1 A MODEL OF THE PROCESS OF DECISION-MAKING



All mothers must choose either breastfeeding or bottlefeeding when their infant is born. Interviews with mothers suggest that breastfeeding and bottlefeeding are not seen as equal choices for feeding a newborn infant. As a generalisation, the responses of both breastfeeders and bottlefeeders indicated that breastfeeding was perceived as the best way to feed a newborn infant, but that there were inhibiting factors that discouraged some mothers from choosing breastfeeding. The majority of mothers, thus, chose to breastfeed their newborn infant, and did so because they perceived that it offered benefits for themselves or their infant.

Having chosen breastfeeding, however, barriers to breastfeeding became the dominant theme determining its continuation. Some facilitating factors did, however, enable mothers to continue to breastfeed for a little longer, and postpone the almost inevitable choice of bottlefeeding. A number of coping strategies also emerge. Some of these coping strategies enabled mothers to overcome perceived barriers to breastfeeding and continue breastfeeding. Others of these coping strategies led, paradoxically, to choosing bottlefeeding. Some potential coping strategies appeared not to be a real option for mothers in this community, principally, the option of leaving some household tasks undone, or leaving them to some other supportive adult, such as the husband or parents-in-law.

This process of decision making concerning infant feeding recurs cyclically from the time the mother makes the decision to breastfeed. The mother constantly faces problems that make breastfeeding difficult. Coping strategies are adopted and enhancing factors interact with coping strategies to overcome problems. Enhancing

factors include positive attitudes towards breastfeeding, attitudes which are themselves eroded by the barriers to breastfeeding. The barriers persist, and eventually coping strategies become inadequate, attitudes change, and the mother chooses bottlefeeding. The components of this cyclical process are described in the following section.

7.2.2 Components of the process of decision making

7.2.2.1 The initial choice

The model of the decision process described here proposes that the initial infant feeding decision is determined largely by a balance between mothers' **perceptions of the benefits of breastfeeding** a newborn infant, **perceived barriers to breastfeeding**, with a smaller impact of **perceived susceptibility and risk components**.

The majority of mothers cited health or other benefits, such as the relative convenience of breastfeeding, for their infant or themselves, as supporting their decision to breastfeed. The **perceived benefits** component was the most important dimension determining their initial decision about infant feeding.

More than 20% of mothers, however, cited no perceived benefit. Many of these mothers gave normative reasons for choosing breastfeeding ("everyone does"). "**Social approval**", the person's belief that their behaviour is, or will be, socially

approved, may also be considered a logical component of the **benefits** dimension of the Health Belief Model (Janz & Becker 1984).

The second important dimension in the initial choice of infant feeding was the **barriers** component. Some mothers indicated no perceived benefits of breastfeeding, but expressed strong concerns about the mechanics of feeding, and their ability to maintain breastfeeding. There is evidence from other research that the concept of **self-efficacy**, the conviction that one can successfully undertake and maintain a behaviour (Bandura 1977), is part of either the **benefits** or **barriers** dimension of the Health Belief Model. The model proposes that persons who perceive themselves to be unable to undertake a particular behaviour (a **perceived barrier**) will be less likely to succeed in performing that behaviour. In this study, mothers who had spoken only of their concerns in maintaining breastfeeding at their first interview had all ceased breastfeeding by 3 months. Other researchers have also found that a lack of confidence in breastfeeding was associated with shorter breastfeeding duration (Loughlin et al 1985). The concept has also been used to explain outcomes in smoking cessation programs (Condiotte & Lichtenstein 1981). **Self-efficacy** would appear to be an important component of the barriers dimension in this study.

The components of the Health Belief Model, **perceived susceptibility** and **perceived risk**, may also have had some impact on the initial decision to breastfeed, for some but not many mothers in this study. While mothers mentioned the protective effects of breastfeeding against infections and the risk of allergic reactions, the number of mothers who made these responses was relatively small (n=6, 11%).

7.2.2.2 The continuing process

Barriers to breastfeeding were a central theme in discussions with all informants: the mothers, the Ethnic Health Workers and Interpreters, and the Clinic Sisters, all raised barriers as key factors in the decision to continue breastfeeding. The experience of breastfeeding exposed a series of difficulties that in the long term resulted in the majority of mothers choosing bottlefeeding. These **barriers** have been outlined in Chapter Six, and include feeding in public (a problem that was perceived somewhat differently by the Macedonian-speaking mothers compared with the other mothers). Macedonian-speaking women perceived the problem as having to deal with the category of persons in whose presence one could breastfeed, even at home. For other women interviewed the problem was perceived as finding somewhere to feed while a mother was away from the home. Other difficulties involve the problem of managing time and other household demands, including the husband and children; a crying baby; mothers concerns with 'the milk'; and body image.

All mothers had to deal with these problems and used a number of **coping strategies** to manage their difficulties. Some of the coping strategies that mothers adopted, however, hastened the choice of bottlefeeding rather than postponing it. One coping strategy was **complementary feeding**. The usual result of complementary feeding, however, is the cessation of breastfeeding within a relatively short time. Another coping strategy which mothers used to deal with their perception that their breastmilk was deficient in quantity or quality, was to **lengthen the time between feeds**, perceiving this would increase the milk supply. This results, instead, in a

decrease in breastmilk production, and is likely therefore to result in more problems with feeding, and lead to the mother choosing to bottlefeed rather than continue breastfeeding.

Another potential coping strategy is to **shed the burden of other household demands**, either by not doing some household tasks; or by enlisting the aid of someone else. The husband is one possible resource for sharing the burden of household duties, but this did not appear to be an option for mothers in this study. This emerged clearly from the interview with the Macedonian-speaking Health Workers and Interpreters for the Macedonian-speaking mothers; "Most of the husbands won't do anything around the house"... "If you've got an Australian husband, he'll put up with more and he'll do more". The Macedonian speakers perceived that they could not call on their husbands for physical support in carrying out household tasks, nor could they shed the burden by not carrying out some of these tasks themselves. The health workers' perception that 'Australian' husbands would do more and accept some tasks not being done, however, was not supported by other interview data. The non-Macedonian speaking mothers equally saw the problems of other household demands as being a barrier to their continuing to choose breastfeeding, and the Clinic Sisters also reported that husbands would complain strongly if the usual household chores were not carried out.

A further potential source of physical support for the Macedonian-speaking mothers is the husband's mother, since the majority of mothers interviewed lived with their husband's parents. Mothers-in-law, however, were reported to be more likely to

assist with feeding than with household duties. This source of support was also more likely to encourage the shift to complementary feeding and ultimately bottlefeeding.

Mothers in this study did not have a wide choice of options to manage the problems of breastfeeding, and were therefore likely to choose bottlefeeding much sooner than the recommended six months.

There were, however, a number of **facilitating factors** that promoted the choice to continue breastfeeding, and postponed the change to bottlefeeding. These facilitating factors interact with the barriers component to ameliorate problems, and at that same time are modified by the barriers component.

Mothers' **positive attitudes to breastfeeding**, indicated by a long preferred duration of breastfeeding and a statement of the relative convenience of breastfeeding over bottlefeeding, were associated with longer duration of breastfeeding for both primiparous and multiparous mothers. A previous positive experience of breastfeeding was also associated with longer duration of breastfeeding. During the study period, however, mothers' attitudes towards breastfeeding changed. The experience of breastfeeding, particularly the difficulties, eroded positive attitudes, and mothers ultimately chose bottlefeeding.

The **cultural background** of the mother also appeared to facilitate the decision to breastfeed. For Macedonian-speaking women, their strong cultural tradition that infants should be breastfed for at least 6 weeks, tended to postpone the decision to

bottlefeed for at least this period of time. The **perceived susceptibility** and **perceived risk** dimensions may have been important amongst Macedonian-speaking mother's postponement of weaning until after the infant was 6 weeks old. The fear that "something will happen to the baby" if the mother did not breastfeed for the first 6 weeks, was a category that emerged in the interview with the Macedonian-speaking Health Workers and Interpreters. Interviews with the Macedonian-speaking Health Workers and Interpreters suggested that there is a strong cultural value in the Macedonian-speaking community that mothers breastfeed for at least 6 weeks. An analysis of the distribution of weaning ages for those infants weaned during the initial 3 months, showed that significantly fewer infants of Macedonian-speaking mothers were weaned before 6 weeks compared with other infants in the sample. Thus, the cultural value amongst the Macedonian-speaking mothers that they should breastfeed for at least 6 weeks has a discernible impact on infant feeding during the early period postpartum, but no significant impact in the longer term.

At the same time, several of the Macedonian-speaking mothers commented that they were embarrassed to be still feeding at 3 months, because their friends all weaned at around 6 weeks. The 6-week tradition, therefore, may act against a long duration of breastfeeding, because of the perception that the infant's period of susceptibility is past.

For Arabic speaking mothers, strong traditional values about breastfeeding for long periods appeared to facilitate the breastfeeding decision despite adopting a coping strategy, complementary feeding, that resulted in other mothers ceasing breastfeeding.

All the mothers who breastfed and used complement feeding for long periods were Arabic speakers. Sample size was very small for this group, so it is unwise to make generalisations, but the Arabic speaking mothers in the Interview survey appeared to have very strong pro-breastfeeding attitudes. These mothers reported, for example, that they offered the breast whenever their infant cried, that they would offer the breast if the baby was teething or sick, and that breastfeeding would strengthen family ties. The negative effect that complement feeding had on the continuation of breastfeeding amongst mothers in this study, which has been found in other studies as well (Bergevin et al. 1983, Feinstein et al. 1986, Starling et al. 1979, West 1980, Whichelow 1982), appeared to be counteracted by the strong cultural values surrounding breastfeeding amongst the Arabic speaking mothers in this survey. For these mothers, the **perceived benefits** component appeared to be important in the decision to continue breastfeeding.

Tertiary education was a **modifying factor** in the process of choosing breastfeeding. Ewan (1989, p.17-18) has suggested that Piaget's theory of intellectual development might help to explain the association between education and health related behaviour. Piaget's theory proposes that the way in which an individual assimilates experience depends on already present mental 'schema'. The schema which characterise adulthood are the 'concrete operational stage', when knowledge and experience are incorporated into the person's belief system only to the extent they agree with the schema already constructed from concrete experience (Ewan 1989, p.18); and the 'formal operational stage', characterised by an ability to operate on hypothetical propositions, and utilise abstract, logical operations. This last stage is

also characteristic of the approach taken in formal, tertiary education. Ewan suggests that less educated individuals (non-tertiary educated) are less likely to be able to assimilate technical, clinical and statistical propositions into their mental schema. They are less likely to deal with possibilities not directly experienced. Abstract, statistically based health-related knowledge is likely to be assessed in the context of their own direct experience or that of family and peers.

Advice given to mothers about infant feeding is based on technical, clinical and statistical premises. Less educated mothers have not been trained in the concepts and may find it difficult to go beyond their direct experiences and incorporate this kind of knowledge into health belief systems. During their interviews, mothers frequently justified choices on the basis of their own experience or that of their friends. "I won't give this one cow's milk. My other one had allergy", or "I chose bottlefeeding, and I'm glad I did. All my friends had problems [breastfeeding]". When mothers were asked why they chose to breast or bottlefeed initially, many mothers could give no reasons at all for breastfeeding, or stated simply that it was "best for baby". This is further illustrated by the comments of a Macedonian speaking mother-in law that, "I fed my son cow's milk. Look at him. There's nothing wrong with him. He's as tall as the ceiling". Such statements indicate the importance of direct experience when mothers assess the statistically based information given to them at the Early Childhood Health Centres. The impact of direct experience may have been greater for the Macedonian-speaking mothers. The majority of the Macedonian-speaking mothers interviewed were living in extended families with their husband's parents. Few of this older generation have tertiary or other qualifications (Stubbs & Seniuk, 1989, report

that 85% of Cringila residents over the age of 15 have no tertiary or other training qualifications). The influence of the attitudes of the husband's parents on mothers who themselves lacked a tertiary education could be expected to be significant.

As noted earlier, the **perceived benefits** component in decision making was less influential amongst mothers in this study than the perception of the **barriers to breastfeeding**. The problems of breastfeeding were experienced directly in the day to day course of events, by the crying infant and consequent concerns about 'the milk', the demands of other children, the husband, household duties. The 'benefits of breastfeeding', particularly the health benefits to the infant and the mother, are, on the other hand, statistically based generalisations, that are not necessarily demonstrated by a mother's or her associates' direct experience. Mothers' attitudes towards breastfeeding were clearly predictive of mothers' choices about infant feeding in this study. Tertiary education may have enhanced the assimilation and accommodation of public health knowledge related to the importance of continuing breastfeeding, and enhanced mothers' positive attitudes about infant feeding.

Education has a wide variety of other impacts on an individual's ability to choose a particular course of action. Education is often associated with higher income and greater economic independence, with an individual's perception of 'control', as well as with the assimilation of abstract knowledge which can be used in the evaluation of risks and benefits of courses of action. All these factors enhance an individual's ability to make choices.

In summary, the process of decision-making about infant feeding appears to be cyclical. The majority of mothers chose breastfeeding when the infant is born, but subsequently encounter a number of barriers to breastfeeding. These barriers appear to be modified by positive attitudes to breastfeeding. A number of coping strategies are adopted which, paradoxically, often result in the cessation of breastfeeding. Ultimately, the direct experience of breastfeeding and its problems, erodes positive attitudes, and mothers choose bottlefeeding. Once this decision has been made, any problems with infant feeding which remain can no longer be attributed to 'the Milk', and at least one area of concern is eliminated. In that sense the decision to adopt bottlefeeding is adaptive and rational.

7.3 SOME CONCLUDING REMARKS

The model developed here is, potentially, a useful tool for the Early Childhood Health Centre personnel in promoting breastfeeding amongst mothers in this community.

The small number of diagnostic indicators included in the regression models, allows the identification of those mothers most at risk of weaning their infants early. Early Childhood Health Centre personnel can, therefore, direct their resources where they are most needed to promote breastfeeding. Mothers' educational level, and attitudes to convenience and duration of breastfeeding are relatively easy to elicit at the first visit to the Early Childhood Health Centres, and extra assistance could be provided when indicated. The fourth predictive variable, the introduction of

complementary feeding, could be used as a warning indicator of difficulties which might reduce breastfeeding duration. Early Childhood Health Centre personnel could then direct special assistance to those mothers to promote the continuation of infant feeding.

In the model for multiparous mothers, previous breastfeeding history made the largest contribution to the duration of subsequent breastfeeding. Resources should, therefore, be directed towards encouraging primiparas to breastfeed as long as possible, since this could have a significant long term impact on subsequent infant feeding and on breastfeeding rates overall.

The process of decision-making about infant feeding described here has implications for programs promoting breastfeeding. Although the majority of women reported breastfeeding as 'best for baby', the perception of the health benefits of breastfeeding over bottlefeeding was not strong enough to outweigh the directly experienced problems. Promotion programs to enhance the perceived benefits component should consider framing the message in terms of concrete events relevant to the particular community, rather than generalisations.

An inescapable conclusion is that many mothers in this study did not have a wide choice of options when they were trying to cope with the problems of infant feeding. Interventions aimed at increasing the period of breastfeeding should acknowledge that for the overwhelming majority of mothers, bottlefeeding will be the final outcome. Intervention should, therefore, continue to be directed at increasing the

duration of breastfeeding, but also should aim to educate mothers about maintaining milk supply, effective combination of complement and breastfeeding, and should stress the importance of hygiene, appropriate substitutes and correctly proportioned formulae, once bottlefeeding becomes inevitable.

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APPENDIX A

MOTHERS' INTERVIEWS

QUESTIONNAIRE

Do you know for how long? _____

What method did you use to feed this baby while you were in hospital?

- 1. Breast-feeding
- 2. Bottle-feeding formula
- 3. a combination of above (specify) _____

If breastfeeding, how long after the birth did you first feed your baby (hours)?

Did you demand feed or feed the baby to a set schedule?

- 1. demand feed
- 2. schedule feed

Before baby was born did you think about infant feeding and what method you would use to feed your baby after the birth?

- 1. Yes
- 2. No

What kinds of things did you think about infant feeding?

If a mother is breastfeeding her baby, how long do you think is a good time to keep on breastfeeding?

While everything was going well, would you breastfeed for:

3 months? _____

6 months? _____

12 months? _____

18 months? _____

2 years? _____

What do you think about breastfeeding for this long?

Did you talk about infant feeding with any of the following people before baby was born?

your husband? 1. yes 2. no

your mother or mother-in-law? 1. yes 2. no

your sister or sister-in-law? 1. yes 2. no

close friends? 1. yes 2. no

anyone else? 1. yes Who? _____ 2. no

Do you remember the kinds of things they said about infant feeding? What were they?

Did these friends and/or relatives have babies of their own?

1. yes 2. no

Did they talk about their experiences with feeding their own babies? What kinds of things did they say about infant feeding?

Did talking to other people affect your thoughts about how you would feed your baby?

- 1. yes.
- 2. no

If yes, in what way?

Whose opinions and experiences have had the most effect on you, do you think?

Did the need or desire for a job affect your decision about how you would feed your baby?

- 1. yes. In what way? _____

- 2. no.

Were there any other reasons for choosing the infant feeding method you chose?

Did your husband want you to breastfeed the baby?

- 1. yes
- 2. no
- 3. didn't mind / no opinion / left it to mother

Did you speak to your doctor during your pregnancy about how you would feed your baby after the birth?

1. yes 2. no

Did your doctor talk about or give you any information on infant feeding?

1. yes What kind? _____

2. no

What method do you think your doctor thought was the best way to feed your baby?

1. breastfeed 2. bottlefeed 3. don't know

Did you attend classes about pregnancy and childbirth before this baby was born? What about the birth of earlier children (if applicable)?

1. yes 2. no

Was breastfeeding talked about?

1. yes 2. no.

Before baby was born, did you read any books or pamphlets on infant feeding?

1. yes What kind? _____

2. no

If you read about infant feeding, in what language was it written? _____

Did you receive any written information about the benefits of breast-feeding, such as:

1. mother's milk is a better food for baby? yes / no
2. mother's milk protects baby against sickness and infection? yes / no
3. breastfeeding promotes closeness between mother and baby? yes / no

Did you receive any information about how best to maintain your milk supply, such as:

- 1. that feeding more often will increase your milk supply? yes / no
- 2. that you should drink plenty of fluids? yes / no
- 3. that you should eat well? yes / no
- 4. that you should get plenty of rest? yes / no

Did you think this information about the benefits of breastfeeding and ways to maintain a good supply of milk helped you make up your mind about infant feeding?

- 1. yes (in what ways?) _____
- 2. no (specify) _____

Are you aware of any organizations that can help you with infant feeding problems?

- 1. yes
- 2. no

If yes, which ones? _____

Did you join or seek advice from any of these?

- 1. yes
- 2. no

If yes, which ones?
_____ as a member? yes / no
_____ as a member? yes / no

Did you have any problems feeding your baby during your hospital stay?

- 1. yes
- 2. no

If yes, what kind? _____

If yes, did you seek any advice from anyone?

1. yes 2. no

If you sought advice, whom did you ask? _____

Did you talk about infant feeding with other mothers in hospital?

1. yes 2. no

Did other mothers talk about their experiences in feeding their babies?

1. yes 2. no

Did the experiences and opinions of other mothers in hospital have any effect on your thoughts about infant feeding? If YES is what way?

Do you think the mothers in hospital thought that breastfeeding was easy?

1. yes 2. no

Do you think the mothers in hospital mostly thought they would breastfeed their babies for a long time?

1. yes 2. no

How long were most going to keep on breastfeeding their babies?

In hospital, were there any classes, or group discussions with a sister or any one else, about breastfeeding, and any problems that might come up when you got home, and how to handle these problems?

1. yes 2. no

If you were breastfeeding in hospital, was breastfeeding well established by the time you went home with baby?

- 1. yes
- 2. no (specify) _____

On the whole were you satisfied with the way your baby fed in the hospital?

- 1. yes
- 2. no (specify) _____

WE WOULD NOW LIKE TO ASK YOU SOME QUESTIONS ABOUT HOW YOU WERE FEEDING YOUR BABY DURING THE 3 WEEKS JUST AFTER YOU CAME HOME FROM HOSPITAL WITH YOUR BABY.

Did you change the way you were feeding your baby when you came home from the hospital?

- 1. yes
- 2. no

If yes, in what way?

- 1. breast-fed only
- 2. breast-fed plus bottle of formula
- 3. breast-fed plus bottle of cow's milk
- 4. bottle of formula only
- 5. bottle of cow's milk only

If YES, why did you make this change? _____

If YES, when did you make this change (weeks)? _____

Did you ask advice from anyone about this change, or did anyone else suggest you make this change?

1. yes (who?) _____
2. no

If combining bottlefeeding and breastfeeding, can you say why you give a bottle as well as breast-feeding?

If combining breast- and bottle-feeding, when do you offer baby the bottle?

1. before breast-feeding
 2. after breast-feeding
 3. instead of breast-feeding
 4. with every feed
 5. only sometimes (specify) _____
-

How long do you expect to continue both breast- and bottle-feeding?

What feeding method will you use after that?

During the first 3 weeks after you came home from hospital did you

1. demand feed
2. feed baby to a set timetable (specify in hours or number of feeds per day)

If demand feeding, how many feeds a day were you giving baby during this first 3 weeks?

Did you have any problems feeding your baby in the first 3 weeks after you got home from hospital?

1. yes 2. no

If yes, what kind of problems?

Did you take your problems to the Baby Health Clinic?

1. yes 2. no

Did you seek advice from anyone else?

1. yes (who?) _____

2. no

Do you bring baby to the clinic

1. often 2. sometimes 3. only occasionally

Specify _____

What are some of the reasons you bring baby to the clinic?

In these first three weeks at home have you had lots of visitors to see the new baby?

1. yes 2. no

Have you gone out shopping or visiting?

1. yes (how often?) _____

2. no

How do you handle these social activities when you need to feed the baby?

Did you find your method of infant feeding usually convenient?

1. yes

2. no

In what ways? _____

Did you find anything inconvenient about the way you were feeding your baby?

In these first weeks after you and baby came home from hospital, do you talk about infant feeding with your relatives and friends?

1. yes

2. no

Have these friends/relatives had babies of their own?

1. yes

2. no

Do they talk about their experiences with infant feeding?

1. yes

2. no

Do you think they found breastfeeding easy?

1. yes (in what ways?) _____

2. no (in what ways?) _____

How long did most of them breastfeed their own babies?

If they breastfed their babies, do you think they breastfed for as long as they had first intended?

1. yes 2. no

What sort of things had caused them to stop breastfeeding?

(If mother is breastfeeding) How long do you think you will keep on breastfeeding?

During these first 3 weeks after you brought baby home from hospital, were you satisfied with the way baby was feeding?

1. yes 2. no (specify) _____

During these first few weeks were you satisfied with the way baby was growing?

1. yes 2. no (specify) _____

Were other close relatives, e.g. father, grandparents, etc., pleased with the way baby was feeding and growing?

1. yes 2. no (specify) _____

If you were visiting the Baby Health Clinic, was Sister pleased with the way baby was growing?

1. yes 2. no (specify) _____

Are you giving baby any solid foods now such as biscuit, cereal, fruit or vegetables?

1. yes What kind? _____

When did you first give this kind of food? _____

How often do you give it? _____

2. no

Are you giving baby cow's milk yet?

1. yes When did you start? _____
 2. no At what age do you want to start giving baby cow's milk?

What are the advantages of cow's milk?

Why wouldn't you give baby cow's milk before _____ (age as given above)

Follow-up Questionnaire: Later feeding history

Interview date _____

Feeding method at last interview (if applicable) _____

WE WOULD NOW LIKE TO ASK YOU SOME MORE QUESTIONS ABOUT HOW YOU ARE FEEDING YOUR BABY NOW.

How many feeds a day are you giving baby now? _____

Have you made any changes to what you are feeding your baby?

- 1. bottle-feeding infant formula
- 2. bottle-feeding cow's milk
- 3. combination of breast-feeding and formula
- 4. combination of breast-feeding and cow's milk

When did you make the change? _____

Can you describe briefly why you changed? _____

Did you seek advice from anyone about this change?

1. yes (specify) _____

2. no

Now, your method of feeding your infant is

1. only breast-feeding
2. breast-feeding combined with bottle-feeding formula
3. breast-feeding combined with bottle-feeding cow's milk
4. only bottle-feeding formula
5. only bottle-feeding cow's milk

If combining breastfeeding and bottle feeding, can you say why you give a bottle as well as breast-feed?

If combining breast- and bottle-feeding, do you offer the baby the bottle

1. before breastfeeding
2. after breastfeeding
3. with every feed
4. only sometimes (specify) _____

If combining breast- and bottle-feeding, how long do you expect to continue both breast-feeding and bottle-feeding?

If you gave up breast-feeding, why did you stop?

If bottle-feeding, what influenced formula or cow's milk?

Did anyone offer you advice concerning whether to feed formula or cow's milk?

1. yes Who? _____

2. no

Did you seek help from the Baby Health Clinic about whether to feed formula or cow's milk?

1. yes 2. no

Are you giving baby any solid foods now, such as biscuit, cereal, fruit or vegetables?

1. yes What kind? _____

When did you first give this kind of food? _____

How often do you give this food per day? _____

2. no

Are you happy with the way your baby is feeding now?

1. yes 2. no (specify) _____

Do you think your baby is growing well now?

1. yes 2. no (specify) _____

Does the Baby Health Sister think your baby's growth is good now?

1. yes 2. no (specify) _____

What about close relatives? e.g. father, grandparents, etc., do they think baby is feeding and growing well?

1. yes 2. no (specify) _____

When you are feeding baby, do you usually try to encourage baby to have more food at the end of the feed?

1. yes (specify) _____

2. no

Has baby been well since birth?

1. yes 2. no

If NO, has baby been hospitalized or seen by specialist, other than for the 6 week check-up

1. yes (specify) _____
 2. no

Have you been hospitalized or seen by a specialist, other than for the 6 week check-up?

1. yes (specify) _____
 2. no

Are you having problems feeding your baby now?

1. yes 2. no

If yes, what kind of problems?

Have you asked advice from anyone about these problems?

1. yes 2. no

If yes, who?

Do relatives or friends try to change the way you feed your baby?

1. yes 2. no

If yes, who?

If yes, what suggestions do they make?

Who was most helpful with your feeding problems?

Do any activities or social events interfere with infant feeding now?

How do you deal with each of them?

Do you find your current method of infant feeding convenient?

- 1. yes
- 2. no

In what ways? _____

Is there anything inconvenient about the way you are feeding your baby now?

If you are still breast feeding your baby, how long do you expect to keep on breast-feeding

Do you expect to introduce bottle-feeding at some stage?

- 1. yes
- 2. no
- 3. already bottle-feeding.

If yes, When? _____

If yes, do you have any reason for introducing bottle-feeding?

FINALLY, WE WOULD LIKE A LITTLE INFORMATION ABOUT THE MOTHERS IN OUR SURVEY

Mothers age in years _____

Place of birth _____

If overseas-born, how long here? _____

Language spoken predominately at home _____

Do you smoke cigarettes?

1. yes. How many per day?

2. no

How many years did you attend school?

1. primary
2. some secondary
3. finished secondary

Did you attend technical college or university after leaving school?

1. yes (specify) _____
2. no

Regarding housing, do you live in:

1. own home
2. rented house
3. rented flat

Do you live with relatives

1. yes Who? _____
 2. no

What is your usual occupation or job? _____

Have you been employed outside the home since the birth of this baby?

1. yes, full time (occupation) _____
 2. yes, part time (occupation) _____
 3. no

Did this employment affect your method of infant feeding?

1. yes 2. no

If yes, how did this affect infant feeding?

Do you intend to get a job outside the home in the next six months?

1. yes, full-time 2. yes, part-time 3. no 4. don't know

Is the need or desire for employment outside the home affecting your method of infant feeding right now?

1. yes 2. no

In what way?

What is the occupation of the baby's father?

APPENDIX B

TABLES

OF

NON-SIGNIFICANT SOCIODEMOGRAPHIC VARIABLES

AND BREASTFEEDING

TABLE B.1

MOTHER'S AGE GROUP & BREASTFEEDING
HOSPITAL DISCHARGE AND 3 MONTHS POSTPARTUM

	Hospital Feeding Mode				3 Month Feeding Mode			
	Breast-feeding		Bottle-feeding		Breast-feeding		Bottle-feeding	
<u>Mother's Age Group</u>	a				b			
Less than 25 yrs	23	88%	3	12%	9	35%	17	65%
25-29 years	12	80%	3	20%	6	40%	9	60%
30 years or older	12	92%	1	8%	8	62%	5	38%

a. $p = .666$, Fisher's Exact Test, 2-Tailed

b. $p = .269$, Fisher's Exact Test, 2-Tailed

TABLE B.2

**MOTHER'S PARITY & BREASTFEEDING
HOSPITAL DISCHARGE & 3 MONTHS POSTPARTUM**

	Hospital Feeding Mode				3 Month Feeding Mode			
	Breast-feeding		Bottle-feeding		Breast-feeding		Bottle-feeding	
<u>Parity</u>	a				b			
Primiparas	22	85%	4	15%	10	38%	16	62%
Multiparas	26	90%	3	10%	14	48%	15	52%

- a. $p = .696$, Fisher's Exact Test, 2-Tailed
- b. $p = .588$, Fisher's Exact Test, 2-Tailed

TABLE B.3

**HUSBAND'S OCCUPATION & BREASTFEEDING
1987-88 SURVEY**

	Hospital a Discharge	% Breast- feeding	3 Months b	% Breast- feeding	Total n
Unskilled Blue Collar	25	86%	13	45%	29
Skilled Blue Collar	7	88%	5	63%	8
White Collar	2	100%	2	100%	2
Professional	1	100%	0	-	1
Self-employed	3	75%	1	25%	4
Pension	6	86%	2	29%	7
					<u>51</u>

- a. No significant association between infant feeding method and husband's occupation (p = .943, Fisher's Exact Test)
- b. No significant association (p = .403, Fisher's Exact Test)

TABLE B.4

**HUSBAND'S OCCUPATION
WHOLE SAMPLE & BY MACEDONIAN SPEAKING *
1987-88 INTERVIEW SURVEY**

	<u>Macedonian Speaking</u>		<u>non-Macedonian Speaking</u>		<u>Whole</u>	<u>Sample</u>
Unskilled Blue Collar	13	65%	16	47%	29	54%
Skilled Blue Collar	1	5%	7	21%	8	15%
White collar	0	-	2	6%	2	4%
Professional	0	-	1	3%	1	2%
Self Employed	1	5%	3	9%	4	7%
Pension	5	25%	2	6%	7	13%
Not with Family	0	-	3	9%	3	6%
	<hr/>		<hr/>		<hr/>	
	20		34		54	

* Differences between Macadonian speaking and non Macedonian speaking not statistically significant (Fisher's Exact Test, p = .12)

TABLE B.5

INFANT CHARACTERISTICS & BREASTFEEDING
HOSPITAL DISCHARGE & 3 MONTHS

		Hospital Feeding Mode				3 Month Feeding Mode			
		Breast-feeding		Bottle-feeding		Breast-feeding		Bottle-feeding	
<u>Special Care</u>		*				*			
no		26	87%	4	37%	13	50%	13	50%
yes		18	90%	2	10%	10	56%	8	44%
<u>Gender</u>		*				*			
boys		21	84%	4	16%	10	48%	11	52%
girls		27	90%	3	10%	14	52%	13	48%

* differences not statistically significant

TABLE B.6

SOCIAL SUPPORT VARIABLES AND BREASTFEEDING AT 3 MONTHS
AMONGST MOTHERS WHO WERE BREASTFEEDING
AT HOSPITAL DISCHARGE

	<u>Breastfeeding</u>	<u>Bottlefeeding</u>	<u>TOTAL</u>
<u>Husband's attitude</u> ^a			
Positive	14	16	30
Left it to Mother	8	2	10
Total	22	18	40
<u>Hospital ward mother's attitudes</u> ^b			
Positive	5	6	11
Negative	4	3	7
Ambivalent	5	2	7
Total	14	11	25
<u>Friend's attitudes</u> ^c			
Positive	9	11	20
Negative	8	7	15
Ambivalent	4	1	5
Total	21	19	40
<u>Living with Relatives</u> ^d			
Yes	10	12	22
No	12	11	23
Total	22	23	34

- a. $p = .082$, Fisher's Exact Test
b. non-English speakers excluded, $p = .692$
c. $p = .227$
d. $p = .768$

TABLE B.7

PRE NATAL CLASSES, OTHER INFORMATION -
BREASTFEEDING

	Hospital Feeding Mode				3 Month Feeding Mode				TOTAL Classes Info. Advice
	Breast-feeding		Bottle-feeding		Breast-feeding		Bottle-feeding		
<u>Pre Natal Classes</u>	a				b				
Yes	21	91%	2	9%	11	48%	12	52%	23 43%
No	26	87%	4	13%	13	43%	17	57%	30 57%
									53
<u>Pre Natal Information</u>	c				d				
Yes	31	89%	4	11%	14	40%	21	60%	35 64%
No	17	85%	3	15%	10	50%	10	50%	20 36%
									55
<u>Doctor's Advice</u>	e				f				
Yes	12	92%	1	8%	6	46%	7	54%	13 31%
No	26	90%	3	10%	14	48%	15	52%	29 69%
									42

- a. p = .471, Fisher's Exact Test, 1-tailed
- c. p = .842, Fisher's Exact Test, 1-tailed
- e. p = .78, Fisher's Exact Test, 1-tailed

- b. p > .7, Pearson's Chi Square
- d. p > .4, Pearson's Chi Square
- f. p > .8, Pearson's Chi Square

Allbook Bindery
91 Ryedale Road
West Ryde 2114
Phone: 807 6026