BREASTFEEDING IN THE PHILIPPINES: TRENDS AND HEALTH ISSUES

MAYLING SIMPSON-HEBERT
Johns Hopkins University

An updated overview of research on breastfeeding in the Philippines, this paper draws together findings from qualitative and quantitative research to map out trends in breastfeeding practice and the demographic, socioeconomic and cultural factors that affect these trends. It examines the controversial role of infant formula companies in the observed behavioral shifts in infant feeding practices, and the related attitudes of the medical community in Metro Manila. Also analyzed are the public health impacts of breastfeeding and early weaning, as well as its contraceptive effects. The paper provides an assessment of the present state of knowledge and identifies directions for future studies.

Introduction

A great deal of effort is being expended worldwide to promote breastfeeding. Trends away from breastfeeding in the last century in developed nations have triggered concern in developing countries that, as they modernize and industrialize and as more of their women receive formal education and become employed outside the home, breastfeeding, with all of its health and birth spacing benefits, will gradually be replaced by bottlefeeding. The activities of multinational firms promoting breast milk substitutes and early weaning cereals have sparked criticism for promoting their products, especially to women who cannot prepare products hygienically.

The Philippines has been in the forefront of the bottlefeeding controversy and in efforts to curtail the marketing of breast milk substitutes. In 1981 the Department of Health drew up a code to regulate the promotional activities of infant formula companies in the Philippines and asked for voluntary compliance. Also, in the early 1980s, a nongovernmental organization, called the National Coalition for the Promotion of Breastfeeding, was formed to oppose the infant formula milk companies, and linked forces with the Department of Health in 1983 to form the National Movement for the Promotion of Breastfeeding (Honculada 1988a). The National Milk Code was finally enacted as law by President Aquino in November 1986. In 1987 the Nutrition Foundation of the Philippines published an extensive annotated bibliography of breastfeeding in the Philippines to provide researchers and policymakers with a literature data base (NFP 1987). Most recently, in 1989, a bill was presented to the Senate Committee on Health to require rooming-in of mothers and infants within a few hours of delivery in all public and private hospitals (Senate Bill 1044). The purpose of the bill is to bring together mothers and infants for early breastfeeding initiation and to obviate the need for nurseries and bottlefeeding.

Given the continuing climate of controversy and concern, the present paper was undertaken to provide an updated overview of research on breastfeeding in the Philippines. The paper brings together findings from qualitative and quantitative research about behavioral factors in breastfeeding, the role of infant formula companies in behavioral shifts in infant feeding practices, and the public health impacts of breastfeeding and early weaning. It provides some perspective for policymakers and identifies future research needs.

Difficulties in Infant Feeding Research

Infant feeding research is fraught with problems that should be borne in mind while reading this review. First, classifying feeding methods at one point in time and over time can be difficult. Infant feeding may be viewed as a changing continum from birth to weaning. Most infants are breastfed at birth and gradually move from an all breast milk diet in the early weeks of life to one that includes other liquids, other milks and a variety of weaning foods. Finally, complete weaning from breastmilk occurs.

Problems in terminology arise when trying to define these different stages. Some infants never receive any breast milk. Most are gradually weaned from breast milk to other nutritive foods, such as canned milks and cereals. Others are switched from breast to bottle and back again to breast, as the mother attempts weaning from the breast. Some mothers breastfeed most of the time but give a bottle when they go out, perhaps once a week. Other mothers mostly bottlefeed but do breastfeed once a day. And it is customary in the Philippines, as in many other societies, to give infants "tastes" of adult foods from the early months, without those tastes making up an important part of the diet.

As a result, definitions of breastfeeding have had to be developed to encompass these various infant feeding realities. The most basic definition of breastfeeding, and the easiest to measure, is "ever breastfed." This definition, often mentioned in the research reviewed here, is not concerned with how long an infant was breastfed or whether other foods were fed to the infant. Mixed feeding is often defined as feeding the infant both breast milk and nonhuman milk, but a recent more sophisticated definition of mixed feeding has emerged that includes feeding the infant breast milk and any other nutritive substance. Other terms frequently seen in the literature are "pure breastfeeding," "partial breastfeeding," and "supplementary feeding." In the past, owing to a lack of agreement on definitions, researchers had to devise their own definitions, and this has led to problems in comparing findings from unrelated studies.

Second, studies of infant feeding and illnesses usually rely upon mothers' recall (both in single-interview survey research and in periodic visits in longitudinal research) and/or self-reporting. Putting observers in homes for long periods of time is not only expensive but can also be a nuisance to the family participation in the study. Studies of infant morbidity under different feeding regimes would ideally require a physician's examination of every illness occurrence for a medical diagnosis, but such close following of large samples is usually impossible. On the other hand, mothers' recalls of feeding and illnesses are subject to error and personal interpretation, and only women with literacy skills can keep self-reporting charts. As a result, strict and consistent definitions of feeding methods and morbidity are required.

Third, breast milk cannot be easily quantified. Researchers trying to understand the meaning of "insufficient milk," so frequently reported in studies, and its true incidence cannot actually do so. Insufficient milk can be caused by nutritional deficiencies, fatigue, illness, and too infrequent nipple stimulation through sucking. Sufficient breast milk quantity is a matter of individual interpretation. Judgments of insufficient milk must be based upon how the infant is growing, how much the infant cries, and how empty the breasts feel.

Fourth, there are many confounding variables that must be controlled for when conducting research on infant feeding. The homes of breastfed and non-breastfed infants are surely different, and thus researchers must often control for socio-economic and demographic variables. In the literature reviewed,, some researchers do not control for exogenous variables which limits the scientific value of such studies.

Also it is often difficult to compare research findings from different studies of the same research questions because many different methodologies have been used. Some studies are cross-sectional with large sample sizes randomly drawn, some are prospective or longitudinal with both small and large sample sizes, and others are simply documentary or descriptive.

Finally, there is the problem of the sensitivity of the infant feeding issue itself. Aware of the breastfeeding-bottlefeeding controversy, medical personnel often do not want to be interviewed on their beliefs and practices, hospital administrators do not want to be quizzed on their infant feeding policies for normal newborns, and infant formula companies often prefer to steer clear of research on their marketing methods. Researchers themselves often feel emotional about their research findings and are often asked to take a stand on what they "believe" while trying to remain objective about their research.

Despite these difficulties, a picture of breastfeeding practice in the Philippines, factors influencing it and its effects on infant health and birth spacing are beginning to emerge through scientific research. The remainder of this paper attempts to summarize major findings to date.

Trends in Breastfeeding Practice

No one knows when declines in breastfeeding first began to occur in the Philippines. Many assume that breastfeeding was nearly universal at the turn of the century, but it is doubtful that this was the case. Filipinos travelling to Europe in the latter half of the 19th century had been introduced to artificial feeding of infants[1], and by 1907 a group of prominent citizens had set up La Gota de Leche, a philanthropic organization which distributed sanitary bottled milk for indigent infants in Manila who were suffering from malnutrition and whose mothers were having difficulty feeding them

(Jocano 1980). The Nestlé Corporation set up its first permanent office in Manila in 1903 (Heiser 1936), and by 1910 concern was being expressed in the medical literature about a small proportion of urban infants being bottlefed and suffering disproportionately from diarrheal disease (McLaughlin and Andrews 1910).

An earlier review of mostly small unrelated surveys from 1955 to 1975 (Simpson-Hebert 1983) showed that during that period approximately 90 percent of Filipino women initiated breastfeeding at delivery. Fewer than 70 percent were exclusively breastfeeding at delivery, about 20 percent were mixing bottle and breast, and about 10 percent were just bottlefeeding. A 1958 study (Anonymous 1959) of mothers attending hospitals and health centers in Manila reports the use of infant formula as second only to evaporated milk.

The best description of recent trends in breastfeeding in the Philippines comes from National Demographic Surveys conducted in 1973 and 1983 and the 1978 Republic of the Philippines Fertility Survey. An analysis of the National Demographic Survey data by Popkin et. al. (1989b) revealed a 5.4 percent decline in breastfeeding between 1973 and 1983, from 88.9 percent to 83.5 percent. Zablan (1985a), examining all three national surveys, estimates a decline of four percentage points from 1973 to 1978, from 86.8 percent to 82.6 percent, and no further decline to 1983. This decline was steeper among urban than rural mothers, decreasing from about 94 to 90 percent among rural mothers and from about 78 to 72 percent among urban mothers. It was also more pronounced among less educated women. Breastfeeding incidence increased among women with 10 or more years of education, from 66 to 74 percent, and among those having more "modern" occupations, from 53 to 63 percent (Popkin et. al. 1989b). There was no change in the average duration of breastfeeding over this time, which remained at about 12.5 months. Whether women breastfed for longer durations prior to the 1970s is not known; however, the review of earlier studies (Simpson-Hebert 1983) showed that the average duration of breastfeeding in 1960 was about one year.

These findings are encouraging to those who feared that a dramatic decline in breastfeeding was occurring. Also encouraging is the fact that more of the better educated women are breastfeeding. In many countries it is this group of women who have led the way to a revival in breastfeeding practice.

Factors Affecting Breastfeeding Practice

A number of studies have asked women why they chose to breastfeed and bottlefeed (Gabucan-Dulay 1970; Guthrie 1962, 1964, 1967; Paredes 1977; Rivera and Marso 1979; NMPC 1983; Simpson-Hebert et. al. 1986). The predominant reasons for choosing breastfeeding are: best food for baby, convenient, economical, and makes the baby feel close to the mother. The primary reasons for complete bottlefeeding are: the mother is working, insufficient breast milk and the mother is weak or sick. Mixed-feeding was chosen because it provides freedom for the mother and because of insufficient breast milk. Very few women ever replied that they bottledfed upon the advice of medical personnel, owing to small or inverted nipples or to preserve their figures. Nowhere do women claim that bottlefeeding is superior to breastfeeding. Rivera and Marso (1979) report that 6 percent of the mothers in their survey said that mixedfeeding is superior to breastfeeding.

A number of variables are associated with breastfeeding prevalence, including age of mother, rural/urban residence, education, household income, employment outside the home, place of delivery and type of attendant, influence of other people, knowledge about breastfeeding and maternal nutritional status.

Age, residence and education. Based on findings from the 1978 and 1983 national surveys, the women most likely to breastfeed were young (15 to 24 years), lived in rural areas, and had little or no formal education. Metro Manila had the lowest prevalence of breastfeeding at 68 percent (in 1983) and the Visayas had the highest at 88 percent. About 90 percent of women with little or no education breastfed as compared to about 68 percent of college educated women. A similar relationship between education and breastfeeding has been found in smaller local studies (Ignacio et. al. 1980, Rivera and Marso 1979).

Higher education is also associated with a shorter duration of breastfeeding. In rural Laguna (Popkin 1978), women who had attended high school and

college had a shorter duration of breastfeeding (9.5 months) as compared to others (11.4 months). Likewise, in Metro Manila breastfeeding lasted 4 months among college educated women as compared to 12 months among women with an elementary education (Osteria 1978). Consistent with this, four times as many mothers in Cebu in the upper education group (their husbands had completed college) reported insufficient breast milk as women in the lower education group (their husbands had completed elementary or high school) (Guthrie 1967).

Income. Lower household income is also associated with higher breastfeeding prevalence. The better able the family to afford artificial feeding, the more likely they will bottlefeed. Among Metro Manila's poor, bottlefeeding families had a mean household income of 409 pesos per month, as compared to 379 pesos among those who breastfeed (Ignacio et. al. 1980). Similarly, in rural Laguna, the mean annual income of bottlefeeding families was 9,387 pesos and of breastfeeding families 4,351 pesos (Popkin 1978).

An anthropological study in Metro Manila found that women most likely to breastfeed lived in nuclear families and their husbands had steady jobs, though as a group these families were poorer. In extended families, mothers, mothers-in-law and other relatives were just as likely to influence the new mother to bottlefeed as to breastfeed, depending upon the economic conditions in the family. If the extended household was especially poor and needed the cash, family members would often pressure or even shame the new mother to take a job outside the home and give up breastfeeding. These women were made to feel that they had produced yet another mouth to feed. Husbands in nuclear households, however, preferred to support their families alone and have their children breastfed, no matter how poor they were. Women explained that method of infant feeding was very much influenced by household economic factors, whether to save money by breastfeeding the infant, or to increase the family income by working and bottlefeeding, depending upon the particular circumstances (Simpson-Hebert and Makil 1985).

Employment. Women's employment outside the home, not employment itself, affects women's infant feeding choice. Among 319 low-income mothers in Quezon City, breastfeeding was practised by 11 percent of those employed outside the home, 90 percent of those gainfully employed at home, and 89 percent of those staying at home with no gainful employment (Ignacio et. al. 1980). Similarly, a study of 74 low-income breastfeeding women in Metro Manila showed that 68 percent of those unemployed or employed near or at home were still breastfeeding at six months, while only 29 percent of those employed far from home were still breastfeeding (Simpson-Hebert et. al. 1986). In another Metro Manila study of 794 low-income women (Osteria 1978), 68 percent of those employed outside the home breastfed their infants initially as compared to 78 percent of those unemployed. However, the employed women terminated breastfeeding prior to two months while the unemployed women continued for an average of 12 months.

Working women in Metro Manila give a number of personal reasons for never initiating breastfeeding and early termination (Simpson-Hebert et. al. 1986). Mostly, they fear that training the infant to a bottle when they return to work will be difficult. Others dread dripping engorged breasts and claim there is no good place at work to express milk. Those who plan to breastfeed in the morning and evening on work days find that it does not work so well in practice. A typical work day in Metro Manila, including transportation time, is very long, often lasting 10 to 12 hours. They experience discomfort and embarrassing let-downs. Once home, these mothers receive negative comments from their infant caretakers. Their infants, like all infants, catch colds, get diarrhea and have other illnesses that caretakers blame on the mother's milk. Caretakers say mothers are tired from work and that their milk is "weak," "watery," "lack vitamins," or even "spoiled," thus the baby becomes sickly. Such remarks discourage them from continuing.

Place of delivery. Using data from the 1983 National Demographic Survey, Zablan (1986) suggests that both the place of delivery and the type of attendant at birth are powerful influences on breastfeeding practice, with place of delivery being more important. Women who delivered at home were more likely to breastfeed (88 percent) than those who delivered in hospitals (67 percent).

More of those delivered by doctors at home (83 percent) ever breastfed than those delivered in hospitals by doctors (67 percent). Women most likely to breastfeed were those delivered at home by traditional birth attendants or with no attendant (91 percent).

However, it is unlikely that place of delivery or type of attendant are powerful influences on breastfeeding initiation. For example, Griffin et. al. (1984) found in their study of health personnel's knowledge and attitudes that traditional midwives have the least correct knowledge about breastfeeding and the least positive attitudes towards it, as defined by these researchers. It is more probable that bottlefeeding and hospital deliveries are linked because both are affordable to the same group of women. It is likely that women who select hospital deliveries are also working in more modern occupations or engaged in other activities that would cause them also to value breast milk substitutes. Zablan's analysis (1986) did not control for various socio-economic variables that influence place of delivery and birth attendant.

Influence of Others. Aside from Zablan's (1986) study where type of birth attendant was considered, studies on the influence of other people in the infant feeding decision have also been done in Metro Manila. Four studies (Rivera and Marso 1979, Ignacio et. al. 1980, NMPC 1983, Simpson-Hebert et. al. 1986) found that women in Metro Manila receive information on infant feeding from relatives, husbands, medical personnel, and from television.

In urban Philippines, husbands are an influence and they seem to be overwhelmingly in favor of breastfeeding. The National Media Production Center in Metro Manila (1983) found that 64 percent of husbands were both supportive and encouraging to their wives to breastfeed. Six percent were negative towards breastfeeding and the remaining 30 percent were neutral on the subject. Another Metro Manila study (Simpson-Hebert et. al. 1986) among low-income women found that 80 percent of husbands were supportive, 9 percent held negative attitudes and 11 percent had no opinion.

Relatives are a second important group providing information and advice to mothers, with about half of low-income urban mothers reporting to have discussed infant feeding with a relative (Rivera and Marso 1979, Simpson-Hebert et. al. 1986). Mass Media is also an influence. In 1979 only 18 percent of women said they were influenced by television (Rivera and Marso 1979), but by 1983 65 percent of low-income women reported learning about infant feeding from TV (Simpson-Hebert et. al. 1986). During the latter study, the Nestlé Corporation was running advertisements for Cerelac infant cereal that advised breastfeeding for three months, and an ad that was widely seen.

The influence of the medical profession in promoting breastfeeding or bottlefeeding remains unclear. Low-income women do not report that medical personnel are an important source of information or advice on infant feeding. In one Metro Manila study, only 12 percent of low-income hospital-delivered women said that they received infant feeding advice or information, either prenatal check-ups or after delivery (Simpson-Hebert et. al. 1986). An earlier study (Rivera and Marso 1979) found that 29 percent of low-income women had been advised by medical professionals. On the other hand, three studies imply that, among women who bottlefeed, their knowledge about bottlefeeding comes mostly from physicians. Peralta (1962) reports that among bottlefeeding women in her study, almost all of their knowledge about formula-making came from physicians. Similary, Bulatao-Jayme (1965) found in her survey that half of the rural and three-fourths of the urban bottlefeeding women in her study were doing so under the advice and guidance of a physician or paramedical personnel. Likewise, Guthrie (1965) informs us that only 12 percent of rural barrio women received infant feeding advice from physicians and 86 percent chose breastfeeding, while 77 percent of her urban middle class sample reported receiving infant feeding advice from physicians and 41 percent chose breastfeeding. Again, the relationship between bottlefeeding and contact with physicians may be linked because women who can afford to see a doctor can also afford to bottlefeed.

Knowledge. Little is known about women's knowledge of the advantages of breastfeeding in the Philippines and how that influences decisions. A study of urban-hospital-delivered women (Rivera and Marso 1979) found that those who had

chosen breastfeeding had higher knowledge scores about breastfeeding.

Erroneous beliefs about breastfeeding can be detrimental to breastfeeding continuation. In a study of 152 Metro Manila women followed prospectively, the second most important reason for terminating breastfeeding was a group of beliefs that illness, tiredness and weakness are transferred through the milk (Simpson-Hebert and Makil 1985).

Nutritional status. Two studies have examined the relationship between mothers' nutritional status and breastfeeding in the Philippines. Osteria (1977) compared 410 well-nourished with 194 malnourished low-income women in Metro Manila and found that more of the well-nourished women (78.5 percent) breastfed than the malnourished ones (71.3 percent). Also, the well-nourished women breastfed a month longer (11.78 months) than the malnourished ones (10.83 months). A second study (Simpson-Hebert et. al. 1986) that followed 153 women prospectively from delivery to 18 months found that about one-fourth of the women cut short their planned duration of breastfeeding because of insufficient milk. Milk maternal malnutrition was thought to be a possible explanatory factor, as dietary recalls indicated that most women received only about three-fourths of the nutritional requirements in calories and proteins recommended for lactating women.

When is the Infant Feeding Decision Made?

One study that looked at the infant feeding decision prior to delivery interviewed 78 women in the first and third trimesters of pregnancy during their prenatal check-ups at a large charity maternity hospital in Metro Manila (Simpson-Hebert et. al. 1986). The women were mostly under thirty years, low-income, and all first and second parity. All but one woman had decided by the last trimester of pregnancy how to feed her coming infant. After delivery, 90 percent of the women carried out their decisions for at least a month. The influences of hospitals and medical personnel were minimal, as few women received any advice at all prenatally on infant feeding.

Breastfeeding and Filipino Culture

Studies of infant feeding practices have revealed some of the cultural beliefs and practices of Filipino mothers that influence initiation and duration of breastfeeding in the Philippines.

Infant Feeding in the First Three Days

Infant feeding in the first three days of life are important in two respects. Colostrum, a pre-milk secretion rich in antibodies, is produced primarily the first three days and is considered to be important for infant health. Pre-lacteal feedings, such as sweetened and unsweetened water, rice-water, tea, and infant formula, place infants at risks for early diarrhea through contamination.

The timing of the first breastfeeding after delivery and pre-lacteal feeds are not well known in the Philippines. However, studies suggest a pattern of pre-lacteal feeds on the first day of life consisting of mostly infant formula, sweetened and unsweetened water, teas and other brews used as purgatives. In a prospective survey of 3,080 infants representative of rural and urban areas of Metropolitan Cebu, Fernandez and Popkin (1988) found that most rural and urban infants were given pre-lacteal feeds on the first day of life. By the second day, breastfeeding was predominant. More urban women with hospital deliveries were giving pre-lacteal feeds, mostly infant formula and sugared water, than were rural women. Thus, while these Filipino infants were not being deprived of colostrum in the first days of life, they were unnecessarily exposed to risk of contamination. The authors suggest that hospital practices where infants are given glucose water and infant formula lead urban mothers to believe that such feeding is preferable to breastfeeding on the first day. A smaller study of hospital-delivered urban women found that half of them gave their infants sugared water in the first three days of life (Simpson-Hebert et. al. 1986).

Indigenous cultural beliefs, in addition to hospital practices, may also influence the early feeding pattern. In a study of 152 hospital-delivered urban women (Simpson-Hebert et. al. 1986), 82 percent did not know about colostrum but 45 percent said that the first milk that comes from the

breast is "dirty," "spoiled" or unnutritious and should not be fed to infants. Some described it as milk that has been there since childhood, and others said it is "stocked-up milk since the beginning of pregnancy." It was observed that these urban low-income women remove the first few drops of milk from their breasts before initiating breastfeeding for the first time. A second belief encountered was that mothers do not have milk until the fourth day. They claim they must "wait for their milk to flow," that is, literally to drip from their breasts.

Another cultural belief influencing early feeding patterns is that infants' digestive tracts need to be purged of the "food eaten while in the mother," called *taon*. In the same urban study (Simpson-Hebert et. al. 1986) women described *taon* as not only the dark meconium in the intestinal tract but also pointed to the dark bluish colored spots found on the buttocks and thighs of Filipino newborns. Twenty percent of the mothers in this group fed their infants ampalaya juice, castor oil, Tiki-Tiki vitamins, water, oregano juice, and other brews to bring out the *taon*. Many other researchers have reported this practice from rural and urban mothers (Bulatao-Jayme 1965, Balderrama-Guzman 1971, and Guzman et. al. 1977).

Beliefs Leading to Early Weaning

Qualitative research has identified a number of indigenous beliefs about infant feeding that seem to influence breastfeeding success in the Philippines. Based on similar findings from four studies (Valdecanas et. al. 1981, Guthrie et. al. 1980, 1983, Dalisay et. al. 1986; and Simpson-Hebert et. al. 1986), the following beliefs are thought to be important.

Maternal Illnesses. When a breastfeeding mother is sick, she cannot breastfeed her baby because the illness (whaever it may be) will pass through her milk to her baby.

Unsuitable Milk. Unsuitable milk is one that has become temporarily altered through changes in the mother's physical or emotional state, and feeding this milk to an infant can cause gas pains and diarrhea. Fatigue, hunger and anger are passed through the milk. Mother's milk becomes "cold" when she does the laundry in cold water and "hot" when she has been out in the sun. The adverse condition must be reversed before she can breastfeed. She must rest, calm down, eat, or reach the correct body temperature by drinking a cold or hot beverage. Reversing the condition may take anywhere from a few minutes to two hours. So that the infant will not have to wait, he may be given a bottle of rice water (*am*) or milk.

Spoiled Milk. Breastfeeding mothers believe that their milk spoils in their breasts if they are away from their infants for several hours. Some women express an amount of milk before breastfeeding (as they do for the first feed when initiating lactation after delivery). Spoiled milk is also given as a reason for terminating breastfeeding if the infant suffered from diarrhea.

"Milk Is What You Eat." Many mothers believe that the quality of their breast milk depends upon what they eat. As a result, some mothers will blame their infants' illnesses on having eaten spicy foods, cold foods or beverages and foods cooked in oil. Some women have been observed to restrict their own diets of certain fruits and vegetables believed to be harmful.

"Salty" and "Thin" Milk. Some mothers believe the permanent quality of their milk is not quite right. When infants reject breastfeeding, some mothers claim it is because their milk is "salty." When babies do not grow as they should, some explain it is because their milk is "thin," lacking in nutrients, "like rice-washing water." They taste the milk for saltiness, and to determine thinness, they put drops into a glass of water and watch the dispersion. If they deem their milk salty or thin, they terminate breastfeeding.

"Breast Milk Causes Diarrhea." Some mothers and even some medical personnel report that mothers' milk can cause diarrhea in infants, but the specific cause is not offered. Infants with repeated diarrhea are sometimes weaned for this reason.

Right Breast "Rice," Left Breast "Water." Some Filipino mothers report that the right breast contains the food or rice, and the left contains the water. The actual terms *kanin* and *tubig* are used by them to describe the two milks. This bit of folk wisdom is used to encourage mothers to nurse from both breasts at the same feeding. Some mothers reported that if a baby develops a breast preference, then the child's diet needs to be supple-

Two studies of similar design (Verzosa 1984,

mented with the appropriate missing food. If the child prefers the right breast, then the breastfeeding must be followed by a bottle of water. If the left breast is preferred, the mother must supplement the child's diet with canned or powdered milk.

A longitudinal qualitative study (Fernandez and Guthrie 1964) that followed mothers living in a squatter area of a Philippine city from three months before delivery to three months after delivery found that mothers restricted their diets during pregnancy, which had the effect of limiting fat reserves for later milk production; but they then carried out rituals after delivery to assure adequate flow of good quality milk. The researchers emphasize that local beliefs are important to breastfeeding continuation, as family members and neighbors prompt women to stop breastfeeding based on these beliefs.

Methods of Terminating Breastfeeding

A number of researchers have noted the customary methods Filipino mothers use to terminate breastfeeding (Bulatao-Jayme 1965, Balderrama-Guzman 1971, Gabucan-Dulay 1970, Guthrie 1962, 1964, 1967; Guzman et. al. 1977, Ignacio et. al. 1980, Peralta 1962). The most commonly reported method is the application of bitter or hot substances (like ginger and Vicks Vaporub) to the nipples. Other methods found in the literature are: the mother hides from the baby; the child is sent away to stay with relatives for a few days; weaning may be gradual or abrupt; the child is given a pacifier; the child sleeps with someone else; the breast is painted with a dark substance, like dark red lipstick, and the child is told that the breast is dirty or bloody; and a band-aid is placed over the nipple.

Weaning Foods

The most common first solid food given infants is *lugao*, a rice or corn porridge. *Lugao* is low in calories and nutrients because it is mainly starch in a water base. *Lugao* is often preceded for some weeks by the daily feeding of rice water (*am*), a very diluted form of the same, in a bottle. *Lugao* is usually started between 4 and 6 months. Between 6 and 12 months, fruits, principally bananas, sweet potato, biscuits and egg yolk are added to the diet. At around one year fish, meat, seafoods and chicken are added in small amounts (Anonymous 1959, Bulatao-Jayme 1965, Guthrie 1967, Gabucan-Dulay 1970, Barranda-Bautista and Cruz 1979, Simpson-Hebert 1986).

Filipino mothers believe that rice or corn is the single most important food for babies. Despite mothers reporting a variety of foods fed to their infants, Balderrama-Guzman (1971) emphasizes that rural weanlings ages 1-4 years are fed almost exclusively rice mixed with fish broth and a small amount of fish. They are given almost no fruits and vegetables and rural families rarely eat meat. At one year, milk, whether from breast or canned, is usually completely dropped from the diet and replaced with rice in various forms. It is commonly believed in rural areas that giving fish to babies can cause worms, and it too is often withheld from the diet, even beyond one year of age (Guzman et. al. 1977). In modern Metro Manila the same general patterns are evident, with rice replacing milk from 6 to 12 months. These urban low-income mothers also frequently feed their infants other starches, such as sweet biscuits and commercial infant cereals, and they sometimes buy soy bean curds sold by street vendors (Simpson-Hebert et. al. 1986).

Infant Formula Promotion In and Out of Hospitals

The promotion of infant formulas, through various marketing practices, is thought by some to be a main determinant of breastfeeding declines, though this has never been conclusively shown to be the case.

Infant formula companies use two main vehicles to promote their products. First, they try to influence mothers directly through mass media advertisements, visits by their medical representatives to newly delivered mothers either in hospital rooms and wards or at home, the distribution of promotional materials through hospitals, clinics and physicians, and through point-of-purchase marketing activities. Second, they try to reach mothers indirectly by influencing the policies of hospitals where they deliver and the attitudes of medical personnel who serve them. They provide posters and stickers for nurseries, pamphlets and

free formula samples for distribution to clients; they provide excessive numbers of free samples for physicians to sell and thereby increase their income; they support professional conferences and seminars, pay expenses to meetings, donate equipment and supplies for maternity wards and even contribute to constructing and renovating maternity wings in hospitals.

Griffin et. al. (1984) report the infant formula promotional activities in the Bicol region in 1981. The project surveyed health facilities and stores selling infant foods in 100 sample communities (barangays). About 83 percent of the inhabitants were rural and the region was the third poorest in the country. The sample consisted of 518 government, private, and traditional medical facilities and 73 stores. Found in 90 percent of the stores surveyed, infant formula was widely available. Other milk products that could be used for feeding infants, such as powdered milk and sweetened condensed milk, were available in all stores. Rural residents had the same choice of products at similar prices as did urban residents.

Of the 518 medical facilities surveyed, 417 facilities of modern practitioners and traditional midwives were found to treat healthy pregnant women. Of those, 95 percent of private hospitals, 67 percent of government hospitals and about 70 to 73 percent of government and private clinics received free infant formula samples to distribute to their patients. About half received samples on a regular basis and over 80 percent distributed those samples some or all of the time. The clinics of traditional midwives were rarely supplied (5 percent) and only one-third of the offices of nurse midwives received supplies.

Infant formula companies also distributed equipment and supplies to clinics. Ninety-five percent of infant identification bracelets, 41 percent of infant growth charts, 25 percent of tape measures and 24 percent of prescription pads came from infant food or formula companies, mainly Nestlé and Wyeth. Many facilities also gave out the names of mothers to infant formula companies or allowed them to make contact with mothers at the facility. About 28 percent of private hospitals and 20 percent of government hospitals allowed this. However, an earlier 1978 survey in the same region showed that only 8 percent of mothers delivered in hospitals and health clinics. Of those delivering at home, only 3 percent were contacted by industry representatives.

Another study that surveyed a representative sample of 21 hospitals and lying-in clinics in Metro Manila, found that 70 percent of pediatricians, obstetricians and nurses in public and private facilities were visited from 1 to 20 times per month by "med reps," 68 percent received from one to 18 cans of infant formula per month, and 62 percent received literature and other promotional materials during 1982 (Simpson-Hebert 1986).

Honculada's survey of milk company activities in Metro Manila health institutions in 1988 found that, despite the newly-enacted Milk Code, there were many violations of the code. Formula companies were very active in visiting women in the wards and promoting their products to them, providing booklets on their products to patients, giving gifts of formulas to health personnel and paying for major renovations to maternity wards and nurseries.

To determine the effects of infant formula promotional activities on women's infant feeding choice, researchers on the Bicol study analyzed responses from 632 women, interviewed in 1978, with at least one child under the age of two. They found that one major economic factor affecting women's infant feeding practices is the accessibility, but not price, of infant formulas. The further the distance to a store selling breast milk substitutes in these largely rural communities, the more likely the woman were to breast-feed. The study also found that receiving an infant formula sample at delivery did not affect the initial breastfeeding decisions but did increase the probability of introducing breast milk substitutes at three, six and nine months. Said another way, it increased the probability of mixed feeding at three months thereafter. Surprisingly, receiving a free sample at delivery was associated with an increase in the probability of continuing breastfeeding to three months (Griffin et. al. 1984).

Similar findings come from a study of infant formula sampling on mothers' subsequent breastfeeding practice in three hospitals in Cebu City (Guthrie et. al. 1985). Mothers were divided into two groups, those receiving samples and those not receiving samples at delivery. One group of

273 mothers was followed for eight months and a replicate sample was followed for two months. In both groups no statistically significant difference was found between those who received samples and those who did not. Mothers were found to shift to mixedfeeding schedules depending upon the availability from day to day of money to buy milk, the mother's health, and her plan to be away from home. After two to three months mothers almost invariably used sweetened condensed milk as a supplement or substitute for their own milk. While they are pro-breastfeeding, folk beliefs often led to early termination of breastfeeding but formula sampling in the hospital has no measurable effect on their breastfeeding practices.

Health Institution Policies on Newborn Feeding

The active marketing practices of infant formula companies are thought to influence the policies of hospitals and lying-in clinics on the feeding of newborns. Although this is very hard to prove, the current policies of hospitals and health centers can be documented. Two recent studies examined women's opportunities to breastfeed their infants after delivery in Metro Manila hospitals and lying-in centers (Honculada 1988 and Simpson-Hebert et. al. 1986). Hospitals in both studies were large and small, public and private.

Both studies found that few hospitals actually had stated policies on infant feeding of newborns, but most promoted bottlefeeding. The attitudes and values of hospital directors regarding breastfeeding, not whether the institution was public or private, large or small, were the main determining factors on whether institutions provided for breastfeeding of newborns. Thus, results were quite mixed. Few institutions provided rooming-in for some or all new borns or would allow it on request; many provided breast feeding rooms. Most hospitals allowed infant formula company baby books to be distributed to patients, and most allowed the distribution of free infant formula samples to newly delivered mothers.

Many psychological impediments to breastfeeding existed in the institutions surveyed. Apart from the Dr. Jose Fabella Hospital, a public charity maternity hospital, which had a clear policy on breastfeeding promotion and was at the time converting all of its wards to rooming-in, most institution directors did not see the importance of promoting breastfeeding right after delivery. Personnel cited many problems with rooming-in, such as danger of infection, more staff required, and women needing rest after childbirth. Health workers felt that women who want to breastfeed will do so when they get home and what happens the first three days after delivery is not important. Bottlefeeding was often permitted in rooming-in wards. Breastfeeding rooms often had very restricted hours for nursing and required the mother to wear a sterile gown.

A distinct class bias is evident in promotion of breastfeeding, both in institution policy and in the attitudes of health personnel (Simpson-Hebert 1986). Breastfeeding was associated with poverty while bottlefeeding with affluence. Rooming-in was usually permitted only for charity patients (and for foreigners who demanded it), while breastfeeding rooms were usually available only for paying patients and not for charity. Health personnel more often promoted breastfeeding for charity patients than paying patients.

The two studies together show that the medical community in Metro Manila vary enormously in attitudes toward early infant feeding, and that health institutions, whether public or private, also vary enormously in their policies, whether stated or unstated. The bias toward bottlefeeding in these hospitals remains, but a concerted movement among some medical personnel and in some hospitals is being made toward the promotion of breastfeeding.

Knowledge and Attitudes of Health Personnel

While it may seem logical that hospital policies and health personnel knowledge and attitudes might influence women's infant feeding decisions at delivery or their ability to initiate lactation, such a relationship has not been clearly shown in Philippine research to date, or anywhere else. As Popkin et. al. (1985) point out, "it has been assumed that a connection exists between the two, but this has never been established rigorously."

Studies of the knowledge and attitudes of health personnel have consistently shown that, whereas health personnel have positive attitudes towards

breastfeeding, in general their knowledge about breastfeeding is inadequate to provide supportive information and advice to new mothers. Research conducted in 1977 among health personnel in Pasay City (Burgess 1980) revealed that health workers have rigid ideas about when suckling should start, are not aware of the immunological protection and contraceptive effects of breastfeeding, and do not know how to manage the initiation and maintenance of lactation owing to a lack of basic information on the subject.

In a Bicol study, health personnel in general were found to have positive attitudes towards breastfeeding. These attitudes had little connection with their education, training or contacts with the infant food industry (Popkin et. al,. 1984). Although their attitudes were pro-breastfeeding, their knowledge of human lactation was judged to be inadequate. Traditional midwives were the least well-informed and were judged to have the most negative attitudes. They probably reflect the knowledge and attitudes of the culture in general while some physicians and nurses had received specialized knowledge through training. Since, as the authors point out, the connection between knowledge, attitudes and practice is not well understood, this does not mean that traditional midwives necessarily discourage mothers in breastfeeding or that medical personnel encourage them.

Two studies of similar design (Verzosa 1984; Honculada 1988b) analyzed the knowledge and attitudes of health personnel in Metro Manila hospitals and health centers. Verzosa (1984) surveyed 175 doctors, nurses and midwives from 13 hospitals and 9 health centers. She determined that health professionals in general had an inadequate knowledge of breastfeeding. Better informed personnel were doctors, especially pediatricians, and those affiliated with government institutions and teaching hospitals. Those attached to institutions practicing rooming-in did not have better knowledge scores.

In Honculada's (1988b) study of the breastfeeding knowledge of 35 health personnel, pediatricians and nurses were judged to be better informed than obstetricians. More pediatricians and nurses had received training on breastfeeding than obstetricians, although few had been trained in all categories. Most pediatricians and nurses believed it was their role to promote breastfeeding but obstetricians generally did not think it their role. However, since a study in Metro Manila (Simpson-Hebert et. al. 1986) showed that most women decide in early months of pregnancy about how to feed their infants, obstetricians and other prenatal care-givers should perhaps rethink their roles in this regard.

Breastfeeding and Infant Health

Child survival is dependent upon at least three main variables: nutritional intake, birth spacing, and immunological and environmental protection against disease (Huffman and Lamphere 1984). Breastfeeding enhances child survival because its nutrient quality is perfectly suited to infants' requirements, it has a natural birth spacing effect, and it protects infants against diarrheal disease through immunologic protection and reduced contamination from the environment.

The questions to be examined here are (1) the extent to which breastfeeding in the Filipino context meets the nutritional requirements of infants and whether or not artificial feeding is detrimental to infant growth, and (2) whether the breastfed infant is better protected from disease than the bottlefed infant in this cultural setting.

Nutritional Status

The generally poor nutritional status of Filipino children is wisely recognized in the Philippines. A national survey of 2,837 Filipino pre-schoolers discovered that 74 percent are malnourished at the first, second or third degree (Corpuz and Nunez 1982). Similarly a government nutrition education program determined that by 18 months only 15 percent of low-income children are normal weight for age (Ministry of Agriculture 1981). At birth Filipino infants are of satisfactory weight by international criteria, and they grow well the first four to five months. In the remaining months of the first year, they slip to 80 percent of expected weight on average (Guthrie 1982, Corpuz and Nunez 1982). Two studies have attempted to identify factors leading to high rates of pre-schooler malnutrition in the Philippines, and both put particular emphasis on whether the children were breastfed or

bottlefed and for how long (Zeitlin et. al. 1978; Aguillon et. al. 1982).

A study of children aged 0-3 years in ten severely depressed areas of Metro Manila found that whether an infant had ever been breastfed made no difference in nutritional status (Zeitlin et. al. 1978). Their report states that "In locations with relatively high (nutritional) status, more infants (21 percent) were bottlefed than in locations with the lowest nutritional status (12 percent). . . Even in locations in which nutritional status is lowest, there is no difference between the (nutritional) status of the bottlefed and breastfed infants." The mean weight for age of the bottlefed infants was 76.8 percent and of the breastfed was 76.2 percent of expected. Duration of breastfeeding also had no bearing on later nutritional status of the study children. The authors state that "Early weaning per se is not a significant cause of malnutrition among the most malnourished, who are deprived with respect to many other variables which affect nutritional status." Those variables deemed most important in affecting nutritional status of infants and young children are mother's education, birth order, morbidity, relative degree of socio-economic deprivation and neighborhood location.

The researchers suggest that quality of maternal care is a major factor in infant nutritional status. They found that mothers lacked knowledge about proper nutrition for their infants and, owing to their very low incomes, cut costs on everything rather than give priority to feeding their infants.

A second study of causes of malnutrition among 729 Filipino pre-school children (Aguillon et. al. 1982) found that fewer normal children were completely bottlefed or had been weaned from milk at 1 to 6 months. However, the researchers' overall conclusion is that "the substitution of the bottle for the breast, under certain circumstances, can be less important than such factors as sanitation, income of parents, education of the mother and access to health services."

Studies by Balderrama-Guzman (1971) and Osteria (1977) lend support to these findings--that in the Philippine context, method of feeding is not so important to infant nutritional status as other variables that can affect the quality of feeding. The first study involved following 68 rural children from birth to age three. Since only two children were bottlefed, they made no comparison of the breastfed and bottlefed children. On the other hand, they did find that most of the breastfed children grew well for the first 6 months (57 percent were normal weight for age) but by 12 months only 18 percent were normal. The authors conclude that the cause of malnutrition in breastfed infants is that they are weaned largely to rice. Likewise, Osteria (1977), who followed 591 urban breastfed infants from birth, found that by age two 61 percent were malnourished. She suggests that the most important variable in infant nutritional status is the birth interval. When the birth interval was less than 12 months, 85 percent of the younger children were malnourished. When the birth interval was more than 12 months, about 50 percent were malnourished by two years. A second important factor was parity. Mothers with more than four children had the highest percentage of malnourished two years olds (87 percent).

Whether the promotion of breastfeeding in the Philippines would result in raising the nutritional status of Filipino infants is not clear. Longer breastfeeding may raise nutritional status since early weaning from all milk products, customary in the Philippines, is probably a factor in high rates of malnutrition by one year. Balderrama-Guzman (1971) found in her study of 585 rural children that by 12 months of age, 33 percent were receiving no milk. Because the weaning diet was largely carbohydrates, the protein content of their diets was only 20 percent and the calorie content was 60-70 percent of the recommended amounts. These children exhibited height and weight retardation so that on average a 36-month old rural child attains the weight of an 18-month old child from Manila's middle class. Similarly, Zeitlin et. al. (1978) found that 64 percent of urban poor infants were off milk by 12 months and 83 percent by 18 months. Thus, it is suggested, by between 6 and 18 months, low-income rural and urban Filipino infants are weaned too early to a largely rice diet, too low in calories and protein to sustain growth.

Food beliefs among Filipinos appear to restrict weanlings' diets mainly to rice. A Metro Manila study (Simpson-Hebert et. al. 1986) gathered mothers' beliefs about what should not be fed to infants less than a year old. These include oily, salty, and sour foods because they cause loose bowel move-

ments; "cold" fruits such as papaya, mango, some types of bananas and watermelon because they cause indigestion and gas pains; meats because the babies cannot chew them; fish because they cause worms; certain vegetables such as sweet potatoes, corn, string beans and turnips because they cause indigestion and foods with a "cold" temperature because the children catch respiratory diseases and tonsilitis from them.

Morbidity and Mortality

Using data from the 1983 National Demographic Survey, which questioned mothers on all their children born since 1978, Zablan (1986) examined the immunologic protection and reduced contamination that breastfeeding offers. The analysis, conducted on findings from 12,771 children, did not control for socio-economic status or other variables that contribute to infant survival in homes where breastfeeding is practiced or not practiced.

Water Source. Zablan found that among families having only surface water as their main water source, breastfed infants had a 15.6 percent greater chance of survival than non-breastfed infants. Among families with piped water supply, breastfed infants had a 7 percent greater chance of survival than non-breastfed infants. She also found that water source alone was important for child survival. Comparing breastfed infants, those with piped water supply had a 2.1 percent greater chance of surviving than those with surface water supplies. However, among non-breastfed infants, those with piped water supply had an 11.2 percent greater chance of surviving than those with surface water supply. Thus, for infants never breastfed and those already weaned, piped water supply may be an important factor in child survival, while for breastfed infants it may be a less important factor.

Sanitation. Similar results were attained when examining presence of a toilet in the home. Among families without toilet facilities, breastfed infants had a 16.7 percent greater chance of surviving than those not breastfed. Among families with toilet facilities, breastfed infants had a 7.2 percent greater chance of surviving than non-breastfed infants. As for water supply, Zablan found that presence of a toilet is more important for non-breastfed infants than breastfed ones. Breastfed infants with toilets in the home had 2.2 percent greater chance of survival than breastfed infants without a toilet. Non-breastfed infants had a 12.2 percent greater chance of survival if their family had a toilet. Thus, in areas where sanitary latrines and toilets are absent, breastfeeding becomes very important in survival. In areas with toilets, breastfed infants still have a greater advantage for survival.

Immunization status. Breastfeeding is suggested as important for child survival also among children who are not immunized against immunizable childhood diseases, although why this should be the case is not explained. [2] Among children not immunized, breastfeeding improved a child's chance of survival by 12.4 percent. However, among children immunized, breastfeeding did not improve chances of survival significantly (0.5 percent).

Prenatal care. Breastfeeding may also improve the chance of child survival in areas where prenatal attention is scarce. Among mothers who did not receive prenatal attention, breastfed infants had an 8.7 percent greater chance of surviving than non-breastfed infants. Among mothers who received prenatal attention, breastfed infants had 5.5 percent greater chance of survival over bottlefed infants.

Birth attendant. Likewise, breastfeeding for child survival may be more important when deliveries are attended by less trained personnel. Breastfed infants as compared to non-breastfed infants had a 15.6 percent greater chance of survival when infants were delivered at home by a family member, an 8 percent greater chance when delivered at home by a traditional birth attendant, and a 7.3 percent chance if delivered at home by a doctor or midwife, as compared to hospital delivery.

Popkin et. al. (1989a) examined the protective effect of breastfeeding against diarrheal disease. Data were collected prospectively on illnesses and feeding regimes of 3,080 infants born during 1983 and 1984 in Metropolitan Cebu. The researchers divided all foods given infants in the first six months into those potentially uncontaminated, namely breast milk, and those potentially contaminated, inclusive of non-nutritive liquids and nutritive foods (commercial milks, juices, cereals).

During the first six months, exclusively breastfed

infants, those who received only breast milk and no other fluids including water, teas or broths, had the least likelihood of developing diarrhea. Breastfed infants who were also fed non-nutritive liquids, such as water, teas and non-nutritive broths, had a 2.0 to 3.2 times greater likelihood of having diarrhea than exclusively breastfed infants. Infants who received breast milk plus other nutritive foods were 4.7 to 13.1 times more likely to have diarrhea. Similarly, non-breastfed infants, during the first six months, were from 4.7 to 16.8 times as likely to have diarrhea as were exclusively breastfed infants. The association between method of infant feeding and diarrhea has been documented in many other developing country settings (Popkin et. al,. 1989a).

This same study found that in Metropolitan Cebu about 19 percent of infants at two months were fed non-nutritive liquids in addition to breast milk and another 34 percent were fed breast milk and nutritive foods or liquids. About 15.7 percent were not receiving any breast milk. Only 31.3 percent of infants were still exclusively breastfed at two months.

Considering the health benefit of exclusive breastfeeding, the authors strongly urge health officials to encourage exclusive breastfeeding until such time as the infant requires complementary foods, somewhere between 3 and 6 months of age. The addition of non-nutritive liquids, such as water, is not necessary and shown by this study to be harmful rather than beneficial to infant health. The study also found that exclusive breastfeeding benefited urban infants slightly more than rural infants, probably because of the population density of urban areas and related problems of poor sanitation and crowding.

Popkin et. al. (1989a) conclude that the main beneficial effect of breastfeeding occurs when breastfeeding is exclusive or in combination with non-nutritive liquids. The addition of any nutritive foods or the cessation of breastfeeding altogether had nearly the same result in the increase in diarrhea morbidity. Thus "mixed feeding" or "partial breastfeeding" seems to offer little additional protection to infants from diarrhea. They suggest that after the age of 8 months, few infants can be exclusively breastfed anymore and the relative protection from diarrhea of any breastfeeding becomes quite small (Popkin et. al. 1989a). This is not to say that breastfeeding does not continue to be beneficial in other ways, such as its birth-spacing effect and its nutritive value and also that its protective effect after eight months may be more important than researchers can now document.

In the hospital setting, three studies (Relucio-Clavano 1981, Pangilinan 1980, and Deniega 1980) have shown that rooming-in of infants with their mothers results in lower infection rates among newborns. Rooming-in also usually results in higher rates of breastfeeding as well, but in none of the studies were the two variables, rooming-in and breastfeeding, segregated to determine the relative importance of each on infection rates.

The Clavano study compared the morbidity and mortality experiences of infants born before rooming-in was instituted in the Baguio General Hospital between 1975 and 1978, (N=4720 and after the changes, N=5166) were effected. After rooming-in, the incidence of breastfeeding increased from 40 percent to 87 percent of all newborns, the incidence of clinical infection of newborns dropped 87 percent, mortality due to infections dropped 95 percent, and the incidence of diarrhea was reduced 47 percent.

A similar study (Pangilinan 1980) at Manila Central University Hospital compared at the same point in time, 1977 to 1979, infants placed in the nursery (N=2390) with those roomed-in with their mothers (N=2842). Roomed-in infants had a much lower incidence of infection, but the feeding for both groups was primarily artificial. Forty percent of roomed-in infants were breastfed as compared to 17 percent of those in the nursery. Likewise, in the study (Deniega 1980) conducted at the Santo Tomas University Hospital among 474 babies roomed-in in 1975 and about the same number of infants nursery-cared in 1973, the morbidity rate of the roomed-in infants was 6.5 percent as compared to 16.7 percent among nursery-cared infants.

The Contraceptive Effect of Breastfeeding

In the Philippines, where contraceptive practice is still low, lactational amenorrhea is an important method of natural birth spacing. Zablan (1985a) has estimated that breastfeeding is the major deter-

bottlefed and for how long (Zeitlin et. al. 1978,

minant of fertility levels in the Philippines today, averting on average 4.4 children per woman. Each month of exclusive breastfeeding delays the onset of menstruation postpartum by .55 months while partial breastfeeding delays it by only .005 months. Thus, once supplementary foods are added to the infant's diet, such as commercial milk products, infant cereals and local foods, menstruation is likely to resume. For Philippine women, breastfeeding offers considerable protection from pregnancy for the first six months and is comparable to IUD use during the 7th-9th months. Thereafter protection decreases rapidly. These findings are not unique, as breastfeeding has been shown from many other studies world wide to be an important determinant of total fertility (Bongaart 1978).

A study of 2,102 rural Filipino mothers (Del Mundo 1970) discovered that half of the women who breastfed more than 6 months achieved a birth-spacing of two to three years, as compared with only 30 percent of the mothers who bottlefed.

A longitudinal study of 152 low-income women in Metro Manila (Simpson-Hebert et al. 1986) found by twelve months postpartum that a higher proportion of women who had bottlefed their infants from birth (50 percent) were pregnant than women who had breastfed (20 percent). This occurred despite the fact that more bottlefeeding women used contraception than did breastfeeding women. About 20 percent of breastfeeding women used an effective method of birth control for 9 of the first 12 months postpartum as compared to 40 percent of bottlefeeding women.

Breastfeeding suppresses the return of menstruation and ovulation in postpartum women, but the duration of amenorrhea varies greatly from about 3 to 18 months. Menstruation is known not to be a reliable predictor of ovulation and thus studies measuring the duration of lactational amenorrhea provide only rough estimates of women's fecundability. Many women ovulate before their first menstruation postpartum, while many others have several anovulatory cycles prior to an ovulatory one (Gray et al. 1988).

Studies conducted by Laing (1976), WHO (1979) and Osteria (1978) provide an estimate of the duration of lactational amenorrhea in the Philippines. At three months, about one-quarter of Filipino breastfeeding women experience a return of menstruation as compared to nearly all of the bottlefeeding women. By 12 months, about two-thirds of breastfeeding women have had a return of menstruation. Full breastfeeding delays the return of menstruation longer than mixedfeeding. Osteria (1978) documented that, among 794 low-income urban women, at six months 34 percent of the fully breastfeeding women had resumed menstruation as compared to 79 percent of those mixed-feeding. Laing (1976), based on a 1970-1972 contraceptive acceptor national survey, reports that breastfeeding results in a mean period of amenorrhea of 7.4 months, as compared to a mean 2.8 months for women who do not breastfeed and assures about 4.6 months of protection against pregnancy.

One study compared breastfeeding practices of 41 women in Metro Manila and 60 women in Baltimore, Maryland, U.S.A. to determine what practices are the best predictors of ovulation and to seek guidelines on timing for initiation of contraception in breastfeeding women (Gray et al. 1988). Ovulation was determined by urinary hormonal assays, menstruation by interview, and breastfeeding practices by self-reporting and interview. The researchers found that whereas Manila women breastfed more frequently for shorter durations than the Baltimore women, the most important variable was overall nipple stimulation. "Breastfeeding frequency and the length of suckling episodes operate jointly to suppress ovulation..." (Gray et al. 1989). Long breastfeeds less frequently were just as effective to suppress ovulation as frequent breastfeeds of shorter duration each. Intensive breastfeeding was most effective in inhibiting conception during the first six months postpartum, but after supplementary foods were added to infants' diets, usually after six months, the risks of ovulation increased. This study is important for showing the complexity of factors involved in maintaining the contraceptive effect of breastfeeding and the difficulties in recommending a single formula to achieve the contraceptive effect, such as a certain number of feeds per day.

Using data from the same 40 women in Metro Manila, where resumption of ovarian activity was monitored by urinary hormone assays and menstrual status was determined by weekly interview, Eslami et al. (1989) were able to predict that, in

the first six months, menses is an inaccurate proxy measure for ovulation but a good indicator of ovulation after six months postpartum.

Savina and Kennedy (1989) investigated whether, through health education, women could intensify their nursing enough to increase the period of lactational amenorrhea. One group of 68 mothers were given breastfeeding education before and after delivery while a second group of 67 mothers from a different community served as a comparison. While bottle use began earlier and was more common in the comparison group and the education group did intensify their breastfeeding starting at six months, there was no difference in the duration of postpartum amenorrhea in the two groups.

Conclusions

The Philippine trends in breastfeeding incidence fit into the continuum found in Asia where the more economically developed countries have experienced the greatest declines and the least developed countries still maintain higher incidences of breastfeeding. The Philippines sits somewhere in the middle in this regard with about 85 percent of women initiating breastfeeding. In comparison, breastfeeding incidence is highest in Bangladesh and Nepal at 97.5 percent, and lowest in Malaysia at 74 percent (Zablan 1985b).

Cross-cultural studies on factors influencing women's decisions to breastfeed (Raphael 1977, Hull and Simpson 1985) have emphasized the diversity of cultural and economic influences on women's decisions to breastfeed. Some of the socioeconomic findings reported to date in the Philippines are confounded by factors of self-selection, as rural women who would most likely breastfeed for one set of reasons (such as traditional values, convenience and economy) may also self-select home deliveries with traditional midwives for another set of reasons (such as lack of accessibility to a hospital and doctor or also lack of cash). Ideally, research should combine longitudinal studies of small samples with larger cross-sectional studies. They should be planned together so that indepth studies can inform survey design and interpretation of findings. Confounding variables in both kinds of studies need to be carefully controlled, as the types of homes where infants are breastfed and not breastfed, no doubt, differ greatly.

Too little is known about the extent to which women decide how to feed their infants prenatally, and at what point in time and under what influences that decision is made. If it is made in childhood, researchers could explore to what extent schools may play a role in influencing girls in the future.

Definitive studies on the effects of infant formula promotion, hospital practices, and the knowledge and attitudes of health personnel on women's infant feeding decisions and the total incidence and duration have yet to be done in the Philippines or elsewhere. Research to date suggests that these factors may not be as important as first thought. The Bicol study by Griffin et al. (1984) suggests that marketing results in earlier mixed feeding. Future studies need to be designed to measure the impact of hospital practices, infant formula marketing, and medical advice and attitudes on mother's infant feeding practices. While no clear relationships can be discerned at this time, the movement toward promotion of breastfeeding in health institutions may have an important impact on women over time.

Regarding infant formula companies creating a demand for a product in the Philippines, it may be that they market their products to a pre-existing demand because of changing socio-economic conditions among women and also within an indigenous belief system not wholly supportive of complete breastfeeding.

Research on infant health has been carried out in many cultural settings and among various socioeconomic groups. While using different research methods, most studies conclude that the main health benefit of breastfeeding is its protective effect against diarrhea (Feachem and Koblinsky 1984, Popkin et. al. 1989a). The Bicol study (Popkin et. al. 1989a); reported in such detail in this review, has greatly advanced our knowledge by carefully separating out nutritive and non-nutritive foods and measuring their individual effects. Zablan's (1986) analyses of the beneficial health effects of breastfeeding under various environmental conditions is somewhat unique and, once various confounding variables are controlled for such as socioeconomic factors, may provide a clearer understanding of the immunological pro-

tection of breastfeeding.

The birth spacing effect of breastfeeding has been shown in many countries to be an important determinant of fertility. Studies from the Philippines not only confirm this, but the joint Metro Manila-Baltimore study (Gray et. al. 1988, 1989) has advanced scientific knowledge on the relationship between suckling patterns, ovarian function postpartum, and postpartum menstruation as a predictor of fecundability. More refined studies on small samples followed carefully should be encouraged in other cultural settings where breastfeeding practices may differ more.

The wealth of knowledge accumulated from the research reviewed here can be attributed in part to the favorable climate in the Philippines to scientific research and the considerable care that health officials and professionals in the Philippines have for the public welfare. In the Philippines, the promotional activities of the infant formula companies is a highly charged politicized issue. While encouraging democracy, freedom of speech and free trade, the country is also grappling to control influences from multinational corporations that may not be in the best interest of the overall health and well-being of Filipino women and children. The openness of Filipino culture and government to research allows scientists to examine issues before making pronouncements about their influences. The breastfeeding researches discussed here are certainly a good example of the latter and the Philippines will no doubt continue to provide both the forum and the atmosphere for continued scientific inquiry on infant feeding in the future.

Notes

The author is grateful for comments by Marie Deiner-West, Beth Henning, Nancy Williamson, Lorna Makil and Virginia Miralao on earlier drafts of this paper. The author also thanks the many researchers who responded to requests to cite yet unpublished research papers and regrets inadvertently omitting other relevant research.

[1]For example, one can see an infant feeding bottle dated 1880's in the Villa Escudero Family Museum south of Manila. Other evidence for early contact with bottlefeeding comes from the fact that founders of La Gota de Leche traveled to Europe prior to 1907 to learn about sanitary bottlefeeding methods.

[2]The usual immunizations for infants are BCG at birth, diptheria, pertussis, tetanus and polio at 3, 4 and 5 months and measles at 9 months. Zablan does not state which immunizations have been received by the immunized groups and offers no explanations as to how breastfeeding might afford some protection against these diseases.

References

Aguillon, D. B., Caedo, M. M., Arnold, J. C. and Engel, R. W.
1982 The relationship of family characteristics to the nutritional status of pre-school children. Food and Nutrition Bulletin, 4(4):5-12.

Anonymous
1959 Present trends in the feeding of Filipino infants. Philippine Journal of Pediatrics, 8(4):229-237.

Balderrama-Guzman, V. and Tantengco, V. O.
1971 Effect of nutrition and illness on the growth and development of Filipino children (0-4 years) in a rural setting. Journal of the Philippine Medical Association, 47(7):323-336.

Barranda-Bautista, A. and Cruz, C.
1979 Infant feeding trends in Philippine urban and rural communities (1978). The Philippine Journal of Pediatrics, 28(5):234-240.

Bongaarts, J.
1978 A framework for analyzing the proximate determinants of fertility. Population and Development Review, 4:105.

Bulatao-Jayme, J. and Maglangsacay, R.
1965 Infant feeding and weaning practices in the Philippines; 2. Northern Luzon, Southern

Tagalog and Western-Visayas. The Philippine Journal of Pediatrics, 14(6):336-339.

Burgess, A.P.
1980 Breastfeeding: The knowledge and attitudes of some health personnel in Metropolitan Manila. Social Science and Medicine, 26(5):168-171.

Corpuz, A.G. and Nunez, D.
1982 Child-rearing beliefs and practices, developmental characteristics of children from birth to 6 years of age and their nutritional status. Home Economics Journal, 10(2):7-22.

Dalisay, S., Valdecanas, O., and Lipton, R.
1986 Breastfeeding and weaning beliefs and practices among selected mothers in San Pablo City. Philippine Journal of Nutrition, 39(1&2):48-54.

Del Mundo, F. and Adiao, A.C.
1970 Lactation and child spacing as observed among 2,102 rural Filipino mothers. Philippine Journal of Pediatrics, 19(3):128-132.

Deniega, L.A.
1980 An appraisal of the rooming-in technique at the clinical division of the Santo Tomas University Hospital. The Philippine Journal of Pediatrics 29(3):255-262.

Eslami, S., Gray, R., Apelo, R., Ramos, R.
1989 The reliability of menses as an indicator of the resumption of ovulation in breastfeeding women. Unpublished paper. Baltimore: The Johns Hopkins School of Hygiene and Public Health.

Feachem, R. G. and Koblinsky, M.A.
1984 Interventions for the control of diarrheal diseases among young children: Promotion of breastfeeding. Bulletin of the World Health Organization, 62(2):271-291.

Fernandez, E. and G. M. Guthrie
1984 Belief systems and breastfeeding among Filipino urban poor. Social Science and Medicine, 19(9):91-95.

Fernandez, Ma. E. L., Popkin, B.
1988 Prelacteal feeding patterns in the Philippines. Ecology of Food and Nutrition, 21:303-314.

Gabucan-Dulay, M.L.
1970 Current feeding patterns as observed among 1,000 Filipino infants. Philippine Journal of Pediatrics, 19:95-103.

Government of the Philippines
1989 Senate Bill 1044.

Gray, R., Campbell, O., Eslami, S., Zacur, H., Labbok, M. and Apelo, R.
1988 The return of ovarian function during lactation: results of studies from the United States and the Philippines. Unpublished, Johns Hopkins School of Hygiene and Public Health.

Gray, R. H., Campbell, O., Apelo, R., et. al.
1989 The risk of ovulation during lactation and use of breastfeeding for fertility regulation. Unpublished, Johns Hopkins School of Hygiene and Public Health.

Griffin, C.C., Popkin, B. M., and Spicer, D. S.
1984 Infant formula promotion and infant-feeding practices, Bicol Region, Philippines. American Journal of Public Health, 74(9):992-997.

Guthrie, H. A.
1964 Infant feeding practices in five community groups in the Philippines. The Journal of Tropical Pediatrics, (December):65-73.

1967 Infant feeding practices in a corn-eating area of the Philippines. Tropical and Geographic Medicine 19:48-55.

Guthrie, G. M., Guthrie, H. A., Fernandez, T. L.; and Estrera, N.
1980 Maintenance and termination of breastfeeding in rural and urban Philippine communities. Ecology of Food and Nutrition, 10:35-43.

1982 Cultural influences and reinforcement strategies. Behavior Therapy, 13:624-637.

1983 Early termination of breastfeeding among Philippine urban poor. Ecology of Food and Nutrition, 12:195-202.

1985 Infant formula samples and breastfeeding among Philippine urban poor. Social Science and Medicine, 20(7):713-717.

Guzman, V. B., Bibera, S., Lopez, H., Somera, L., Librea, A.
1977 Patterns of care, illness, nutrition, growth and development during the first three years of life in a rural setting. Nutrisyon, 2(3&4):19-48.

Heiser, V.
1936 An American doctor's odyssey. New York: Grosset and Dunlap.

Honculada, J. S.
1988a The bottlefeeding scandal. Health Alert, Issue 83, pp. 239-251

1988b The bottlefeeding scandal part II. Health Alert, Issue 84, pp. 239-251.

Huffman, S. and Lamphere, B.
1984 Breastfeeding performance and child survival. Population and Development Review, A Supplement to Vol. 10, p. 93-111.

Hull, V. and Simpson, M.
1985 Breastfeeding, child health and child spacing: cross-cultural perspectives. London: Croom-Helm.

Ignacio, M. S., Ona, L. N. and Azares, F.A.
1980 Factors related to mothers's choice of infant feeding method. Philippine Journal of Nutrition, 33(4):209-213.

Jelliffe, D. and Jelliffe, E.
1979 Human Milk in the Modern World. Oxford: Oxford University Press.

Jocano, F. L.
1980 Social work in the Philippines - an historical overview. Quezon City: New Day Publishers.

Laing, J. F.
1976 Revised lactation and amenorrhea data from the 1974 National Acceptor Survey. UPPI Research Note No. 96 (Mimeographed).

McLaughlin, A. and Andrews, V.
1910 Studies on infant mortality. Philippine Journal of Science, 5:149.

Ministry of Agriculture
1981 Malnutrition prevention project, 5-year accomplishment report. Bureau of Agricultural Extension, Home Economics Projects Division, Project of the Philippines.

Nutrition Foundation of the Philippines (NFP)
1987 Annotated Bibliography: Breastfeeding in the Philippines.

NMPC (National Media Production Center)
1983 Metro Manila quick survey response on breastfeeding. Mimeographed.

Osteria, T. S.
1977 The physical development of breastfed young children as related to birth intervals, parity and maternal nutrition. Nutrisyon, 2 (3&4):49-54.

1978 Variations in fertility of breastfeeding practice and contraception in urban Filipino women: Implications for a nutrition program. Nutrition and Human Reproduction (H. Mosley, ed.). New YOrk: Plenum Press, pp. 411-432.

Pangilinan, T. M.
1980 A comparison of newborn care by rooming-in and by regular hospital nursery care. Mimeographed.

Paredes, W.C., Rabuco, L. B. and Burgess, A. P.
1977 The prevalence of breast and bottlefeeding in Pasig. Philippine Journal of Nutrition, (January-March):9-11, 28.

Peralta, F. L., Bulatao-Jayme, J. and Madlangsacay, R. M.
1962 Infant feeding and weaning practices in the Philippines. I. Metropolitan Manila. Jounral of Philippine Medical Association, 38:675-684.

Popkin, B. M.
1978 Economic determinants of breastfeeding behavior: The case of rural households in Laguna Philippines. Nutrition and Human Reproduction (H. Mosley, ed.), New York: Plenum Press.

Popkin, B. M., Adair, L., Akin, J.S., Black, R., Briscoe, J., and Flieger, W.
1989a Breast-feeding and diarrhea morbidity. Unpublished manuscript prepared for Office of Evaluation, UNICEF.

Popkin, B. M., Akin, J. S., Flieger, W. and Wong, E. L.
1989b Breastfeeding trends in the Philippines, 1973 and 1983. American Journal of Public Health, 79(1):32-35.

Popkin, B. M., Yamamoto, M. E., and Griffin, C.

1984 Traditional and modern health professionals and breast-feeding in the Philippines. Journal of Pediatric Gastroenterology and Nutrition, 3:765-776.

1985 Breast-feeding in the Philippines: The role of the health sector. Journal of Biosocial Science Supplement 9:99-125.

Raphael, D. (ed.)
1977 Mothers in poverty: Breastfeeding and the maternal struggle for infant survival. Lactation Review 2(3). Westport, Conn: The Human Lactation Center.

Relucio-Clavano, N.
1981 The results of a change in hospital practices - a pediatrician's campaign for breastfeeding in the Philippines. Assignment Children - Breastfeeding and Health (UNICEF), Vol. 55/56:139-165.

Rivera, E. F. and Marso, J. J.
1979 Variables in current infant feeding practices. Proceedings of the Philippine Pediatric Society, 16th Annual Convention.

Savina, G. and Kennedy, K.
1989 The effect of a breastfeeding education program on lactational amenorrhea. Studies in Family Planning, 20(4).

Simpson-Hebert, M.
1983 Infant feeding in the Philippines 1955-1983 and its effects on infant health: A literature review. Prepared for the National Conference on the National Campaign for the Promotion of Breastfeeding, May 1983, commissioned by UNICEF, mimeographed.

1986 Infant feeding in Metro Manila, Vol. 2: Infant Formula marketing and health institution policies. Ramon Magsaysay Award Foundation, Manila.

Simpson-Herbert, M. and Makil, L. P.
1985 Breast-feeding in Manila, Philippines: Preliminary results from a longitudinal study. Journal of Biosocial Science Supplement, 9:137-146.

Simpson-Hebert, M., Cresencio, E. and Makil, L. P.
1986 Infant feeding in Metro Manila, Vol. 1: Infant feeding decisions, infant health and family planning among low income families. Ramon Magsaysay Award Foundation, Manila.

Valdecanas, O. C., Vicente, L. M., Valera, J.
1981 Beliefs, attitudes and the practice of

breastfeeding among some urban parturient mothers. Philippine Journal of Nutrition, (January-March):28-36.

Verzosa, E. L.
1984 Infant feeding knowledge and attitudes of Metro Manila health professionals. UP College of Home Economics, Master's Thesis.

WHO (World Health Organization)
1979 WHO collaborative study on breastfeeding. Methods and main results of the first phase of the study. Preliminary report. 66 pages. Mimeographed.

Zablan, Z. C.
1985a Breast-feeding and fertility among Philippine women: trends, mechanisms and impact. Journal of Biosocial Science Supplement, 9:147-158.

1985b Philippine trends in breastfeeding practice. Work agreement Paper No. 4. Population Institute, University of the Philippines.

1986 1983 Levels and patterns of Breastfeeding. Manila: UPPI Working Paper.

Zeitlin, M., Masangkay, Z., Consolacion, M., and Nass, M.
1978 Breastfeeding and nutritional status in depressed urban areas of greater Manila, Philippines. Ecology of Food and Nutrition, 7(2:103-113).