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INFANT FEEDING IN THE PHILIPPINES 1955-1983 AND ITS EFFECTS ON INFANT HEALTH: A LITERATURE REVIEW

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1. Introduction

The Philippines is reported to be one of several countries where dramatic declines in breastfeeding are supposedly occurring. Alan Berg indicated in his widely-cited book, The Nutrition Factor (1973), that in 1958 about 64% of Filipino babies were still breastfed at 12 months, but by 1968, this figure had dropped to 44%. His source for these figures was an article by Ma. Linda Gabucan-Dulay (1970), where she compares her findings from a random sample of households in a number of provinces with those of a Manila hospital-based study done ten years earlier (Anonymous, 1959). (See footnote 1, p. 79). In a similar vein, Jelliffe and Jelliffe in their highly publicized book, Human Milk in the Modern World (1979), reprint Berg's Philippine data. Filipino health personnel, scholars, experts on infant feeding and concerned citizens also accept that a decline has occurred, so that actions to promote breastfeeding are receiving national attention.

Before major efforts are undertaken to increase the incidence of breastfeeding, it seems useful to review the available literature on infant feeding in the Philippines to determine:

a. whether a decline in breastfeeding has actually occurred;

b. if a decline has occurred, what is its nature: a decline in the percent initiating any breastfeeding, a decline in pure* breastfeeding, a decline in the total duration of breastfeeding, or all of these?

c. the normative practices in weaning infants: the foods they are weaned to and when weaning usually begins;

d. the range and prevalence of traditional beliefs associated with various types of milk-feeding;

e. the influences on mothers to choose a particular feeding method; and

f. whether mode of milk feeding in the Philippines is a determinant of infant nutritional status, morbidity and mortality.

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*"Pure breastfeeding" refers to mode of milk feeding only. Thus "mixed feeding" means a mixture of breast and bottle feeding, not a mixture of breastmilk with other foods.

This paper is based on data from the Philippines garnered from 42 published and unpublished papers and reports, and includes new findings from a current study being conducted at the Institute of Philippine Culture (IPC), Ateneo de Manila University. The studies span nearly 30 years, from about 1955 to 1983. Virtually every study that could be included is included, though some studies are of much better quality than others in research methods and in the reporting of data.

2. Trends in Initiating Breastfeeding at Delivery

In order to estimate trends in initiating breastfeeding to determine if any decline has occurred, it is necessary to group studies that sampled similar populations. Thus, the studies are grouped into four major types and are summarized in Tables 1 to 4.

First are studies that report findings from several provinces or regions, and thus are called Nation-Wide in their scope. These studies vary in the social classes represented and the ways in which samples were drawn. Only three used random sampling techniques which, as a result, surveyed all economic classes. In others, parents who attended a Malnutrition Prevention Program or a Mothercraft Center were interviewed, all presumably low-income and certainly biased samples. Although all of these studies are not strictly comparable, they fit well together because they tend to represent several provinces or regions and thus the national trend.

Second are small localized studies conducted in towns and rural areas outside major cities. Again, few of these used randomly-drawn samples, and they vary in the economic classes represented, but they fit well together because they are not urban and not hospital-based.

Third are the hospital-based studies conducted in Metro-Manila. These involve mostly low-income charity patients, and these studies are more comparable to each other than those within any of the other three groups.

Fourth are urban neighborhood studies conducted in Metro-Manila and Cebu City. They involve mostly small non-random samples. Most

studies interviewed low-income mothers, but two are low and middle income together and one is middle-income. These studies help emphasize the very strong relationship between the ability to buy canned milk (family income) and the prevalence of bottle feeding in urban areas.

In spite of the grouping of these studies, other problems of comparability remain. Some articles do not report the year the study was conducted, the sample size, the ages or years of birth of the infants concerned, or the research methods. The authors do not define what they mean by "low-income" or "middle-income." Another major problem is that most studies are based on recall and the recall ranges from 1 to 8 years, depending upon the study. The research details, as reported by authors of these articles, are summarized in the four tables (Tables 1-4), and a close reading of these details reveals that few are strictly comparable.

Nevertheless, this varied literature is at present our best picture of trends in infant feeding in the Philippines over the last 30 years. With all of these difficulties and reservations in mind, various graphs were plotted to try to produce estimates, however crude, of trends. All of the studies are numbered in the Tables, and their respective numbers appear in the graphs where they were used for plotting data. It should be noted that many of the studies based on recall pertained to the feeding of infants born some years previous. For example, Guthrie (1961) (study # 8) interviewed the parents of 275 first grade children. The year of the interviews is not stated, but, if the data were gathered in 1960 and if Filipino first graders are usually 7 years old, then the data pertain to infants born around 1953 and is so plotted.

There are at least two ways to estimate trends in the percent initiating breastfeeding at delivery: (1) to consider the percent who initiated <u>any</u> breastfeeding (pure and mixed), and (2) to consider the percent who initiated <u>pure</u> breastfeeding, without any supplementary milk.

TABLE 1

STUDIES OF INFANT FEEDING
NATION-WIDE, PHILIPPINES

	Reference	Year of Study	Group Studied	Research Method	Milk Feeding at Birth (%)				Average Duration Breastfeeding
					Any Breast	Purely Breast	Mixed	Bottle	
1	Buletao-Jayme 1965	1961-64	Several Provinces, rural and urban, 736 infants of 728 mothers, 0-36 months of age (data pertain to infants born 1958-64)	Random sampling of households	95.1	73.7	21.4	4.9	14 months
2	Gabucan-Dulay 1970	1968	Several Provinces, rural and urban 1000 infants over 1 year of age (data pertain to infants born prior to 1967)	Random sampling of households	67.9	43.8	24.1	32.1	about 1 year
3	Sumabat, L. 1974 (National Nutrition Service)	1969	696 mothers in 10 Health Regions.	Data collected on mothers participating in nutrition and health education classes in Mothercraft Centers.	92.0	79.0	12.0	7.0	17 months
4	WHO 1979	a.1975-77	Urban economically advantaged 495 mothers	Not entirely clear; report mentions quota sampling by infant age using birth records, area sampling and hospital records.	67			33.0	12-18 months
		b.1975-77	Urban poor, 793 mothers		84			16.0	
		c.1975-77	Rural, 808 mothers		94			6.0	

TABLE 1 (con't.)

	Reference	Year of Study	Group Studied	Research Method	Milk Feeding at Birth(%)				Average Duration Breastfeeding
					Any Breast	Purely Breast	Mixed	Bottle	
5	Ministry of Agriculture (1981)	a. 1976	24 Provinces, 4,707 infants 0-6 months old.	Data collected on mothers who enrolled in a malnutrition prevention project and were visited by Home Management Technicians.	93.0	79.4	13.6	7.0	
		b. 1980	24 Provinces, 17,514 infants 0-6 months old.		88.1	72.0	16.1	11.9	
6	Bulatao-Jayme 1982	1978	1200 children less than 3 years of age (data pertain to infants born 1975-78)	Not described	86.5	73.5	13.0	13.5	
7	Corpuz and Nunez 1982	1980-82	1,696 parents of 2,837 children aged 0-6 years in 3 Regions (III, VIII, and XII), rural and urban, all social classes. (data pertain to infants born approx 1974-82)	25% of total households in sampling areas selected through stratified random sampling, based on recall.		45.0			

TABLE 2

STUDIES OF INFANT FEEDING
TOWNS AND RURAL AREAS, PHILIPPINES
Localized Studies

	Reference	Year of Study	Group Studied	Research Method	Milk Feeding at Birth(%)				Average Duration Breastfeeding
					Any Breast	Purely Breast	Mixed	Bottle	
8	Guthrie, H. 1961	not stated	Small towns 100 km. radius of Manila, 275 first grade children (data probably pertain to infants born about 1953)	Interview based on recall, sampling not described.	89.7	69.1	20.6	10.3	
9	Guthrie et al. 1964	a.1962	Barrio 45km. North of Manila 50 mothers (data for a, b and c pertain to infants born 1959-61)	Structured interview on all children 18-36 months, based on recall.	88.0			12.0	
		b.1962	Barrio edge of a town 50 km. North of Manila, 46 mothers		89.2			10.8	13-18 months
		c.1962	Town 50 km. North of Manila 50 mothers		88.0			12.0	
10	Guthrie, H. 1967	not stated	33 infants 18-36 months of age in a small town 140 km. South of Cebu City (data probably pertain to infants born 1963-65)	Structured interview, how sample drawn not described, based on recall.	91.0	51.0	40.0	9.0	7-9 months
11	Baldezrama-Guzman, V. 1971	1969-70	Victoria, Laguna, 589 children 0-4 years of age, 327 mothers (data pertain to infants born 1965-70)	House-to-house interview based on sampling every 5th house, based on recall	95.0	75.0	20.0	5.0	

TABLE 2 (con't.)

	Reference	Year of Study	Group Studied	Research Method	Milk Feeding at Birth(%)				Average Duration Breastfeeding
					Any Breast	Purely Breast	Mixed	Bottle	
12	Guzman, V.B. 1977	1976	118 newborns in Victoria, Laguna	Mothers volunteered their infants for the study in return for free medical care. (clinic based)	97.1	70.6	26.5	2.9	14-18 months
13	Osteria, T. 1973	1968-72	Bay, Laguna, 183 mothers, IUD acceptors	Structured interview based on recall	90.2			9.8	12.3 months
14	Popkin, B. 1978	not stated (1975?)	Laguna Province, 314 infants 0-3 years of age from 34 barrios (data probably pertain to infants born 1972-75)	Random sample, structured interview, based on recall	93.0			7.0	11.4 months
15	Jimeno 1980	a. 1976	Last live births of 1157 women, children 0-8 years (data pertain to infants born 1968-76)	Random sample, recall information	93.0			7.0	15.6 months
		b. 1978	Last live births of 1248 women, children 0-8 years (data pertain to infants born 1970-78)	Random sample but about 1/2 were resurveyed from the 1976 study, recall information.	94.0			6.0	15.8 months

TABLE 3

STUDIES OF INFANT FEEDING
URBAN PHILIPPINES
Hospital-Based Studies

	Reference	Year of Study	Group Studied	Research Method	Milk Feeding at Birth(%)				Average Duration Breastfeeding
					Any Breast	Purely Breast	Mixed	Bottle	
			Hospital	Studies					
16	Anonymous 1959	not stated	Hospitals and Health Centers 1000 infants over 1 year of age - all social classes (data probably pertain to babies born prior to 1958)	Structured interview by doctors and interns, based on recall.	76.0	64.0	12.0	23.0	about 1 year
17	Osteria, T. 1978 and no date	1973	794 low-income mothers who delivered in the Jose Fabella Hospital	Followed from delivery for 2 years; monthly visits to homes	76.1	70.6	5.5	23.9	10.3 months
18	Rivera and Marao 1979	1978	250 women admitted for delivery at Manila Central University hospital, low and middle income groups.	Interviews conducted 48 hours after delivery.	76.4	49.2	27.2	23.6	
19	Valdecañas et al. 1981	1980	Hospital sample of 216 charity patients 91 returned a questionnaire by mail one month later.	Hospital interview and questionnaire by mail at 1 month postpartum.	76.0			24.0	
20	Simpson-Hebert et al. 1983	1983	78 Low-income women picked up in the prenatal clinic of the Jose Fabella Hospital.	Followed from 4th month of pregnancy through 12th month postpartum - data at 2 weeks postpartum (study still in progress)	82.0	51.4	30.5	18.1	

TABLE 4

STUDIES OF INFANT FEEDING
URBAN PHILIPPINES
Neighborhood Studies

	Reference	Year of Study	Group Studied	Research Method	Milk Feeding at Birth(%)				Average Duration Breastfeeding
					Any Breast	Purely Breas	Mixed	Bottle	
21	Franco and Mercado 1955	not stated	Low-income groups in Manila, 353 children of 95 mothers.	Survey-no details given	96	89.54	6.50	3.96	
22	Peralta et al. 1962	1959	Metro-Manila, all social classes 142 infants and children 0-42 months of age. (data pertain to infants born 1955-59)	116 Mothers filled up questionnaires on their children by recall	92.2 (86.6)*			7.8	9.5 months
23	Guthrie, H. 1964	a. 1963	Low-rent area in Manila, 50 mothers of infants 18-36 months of age.	Structured interview, based on recall.	81.6	73.5	8.1	18.4	
		b. 1963	Middle class housing area in Manila, 49 mothers of infants 18-36 months of age (data pertain to infants born 1960-62)	Structured interview, based on recall	87.7	40.8	46.9	12.2	
24	Guthrie, H. 1967	not stated	41 infants in Cebu City, 18-36 months of age, lower and middle class (data probably pertain to infants born 1963-65)	Structured interview, recall.	78.0	51.0	27.0	27.0	7-9 months

TABLE 4 (con't.)

#	Reference	Year of Study	Group Studied	Research Method	Milk Feeding at Birth(%)				Average Duration Breastfeeding
					Any Breast	Purely Breast	Mixed	Bottle	
25	Zeitlin el at. 1978	1974	Low-income Metro-Manila, 525 infants 5-48 months of age (data pertain to infants born 1970-74)	Mothers interviewed in Health Centers	84.0			16.0	
26	Paredes et al. 1977	1975	72 women in one barrio in Pasig, low-income, data on 77 children between 0-27 months of age (data pertain to infants born 1973-75)	Survey using structured questionnaire	73.0	69.0	4.0	27.0	
27	Guthrie et al. 1980	not stated	Low-income in Cebu City - squatter and center city	Mothers followed prospectively, sampling not described.	87.6			12.4	
28	Ignacio et al. 1980	not stated	319 Low-income mothers attending a nutrition class (data from this study not included in analysis - see problems with research method)	Mothers filled up a questionnaire. Ages of babies involved not stated, but mothers agen ranged from 13 to 69 years (80% below 39 years).	88.0			12.0	

National Samples

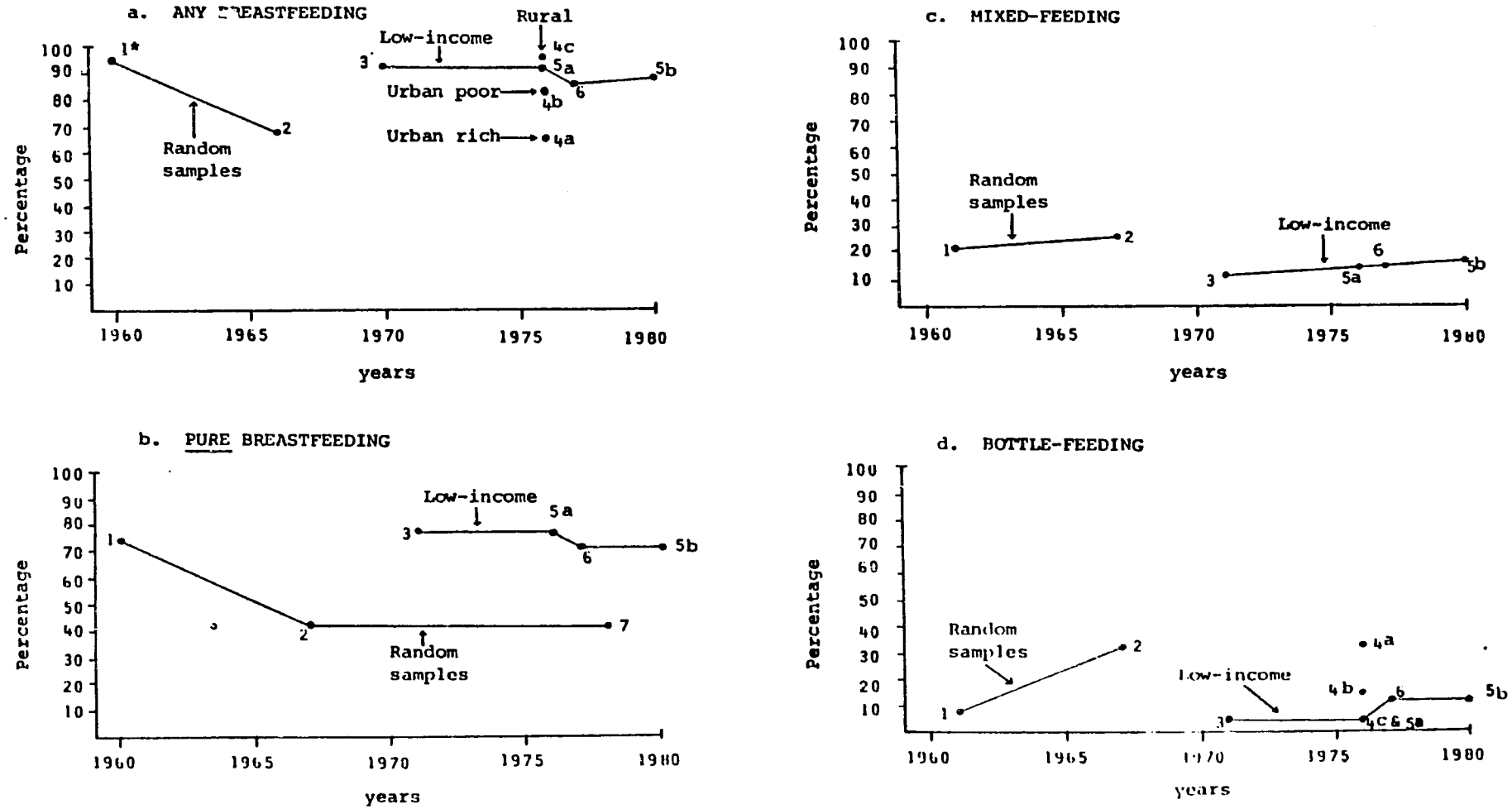
Table 1 and Figure 1a shows that, according to national samples in the early and mid-1960's, a 25% decline in initiating any breastfeeding may have occurred. This decline seems not to have occurred among the low-income, however, as shown from a plot of data from 1970 to 1980. Figure 1b indicates that a similar drop may have occurred in pure breastfeeding at birth in the early and mid-1960's but did not decline further from 1967 to 1978. Again, this decline in pure breastfeeding did not occur in the low-income group. Mixed-feeding (Figure 1c) increased only slightly, and pure bottle-feeding (Figure 1d) increased in the random sample studies, but only slightly among the low-income. On the whole, these studies provide a very unclear and unsatisfying answer to question of whether breastfeeding is declining on a national scale. Certainly no dramatic declines appear to be occurring in the low-income group.

Towns and Rural Areas, Isolated Studies

Isolated studies from small towns and barrios all over the Philippines (Table 2) indicate that the initiation of any breastfeeding at birth made no declines from 1953 to 1975 (Figure 2). Since 1965, more than 90% of Filipino women in these isolated studies initiated breastfeeding. This corresponds closely with the findings on low-income women nationwide and represented in Figure 1a. Figure 3 summarizes trends in pure breastfeeding, mixed-feeding and bottlefeeding at birth. There may have been a decline in pure breastfeeding in the late 1950's and early 1960's (there are only three studies that report these figures), but pure bottlefeeding does not seem to have changed much from 1953 to 1975. The incidence of pure bottlefeeding has remained below 10% since 1965.

Figure 1 TRENDS IN INFANT FEEDING AT BIRTH

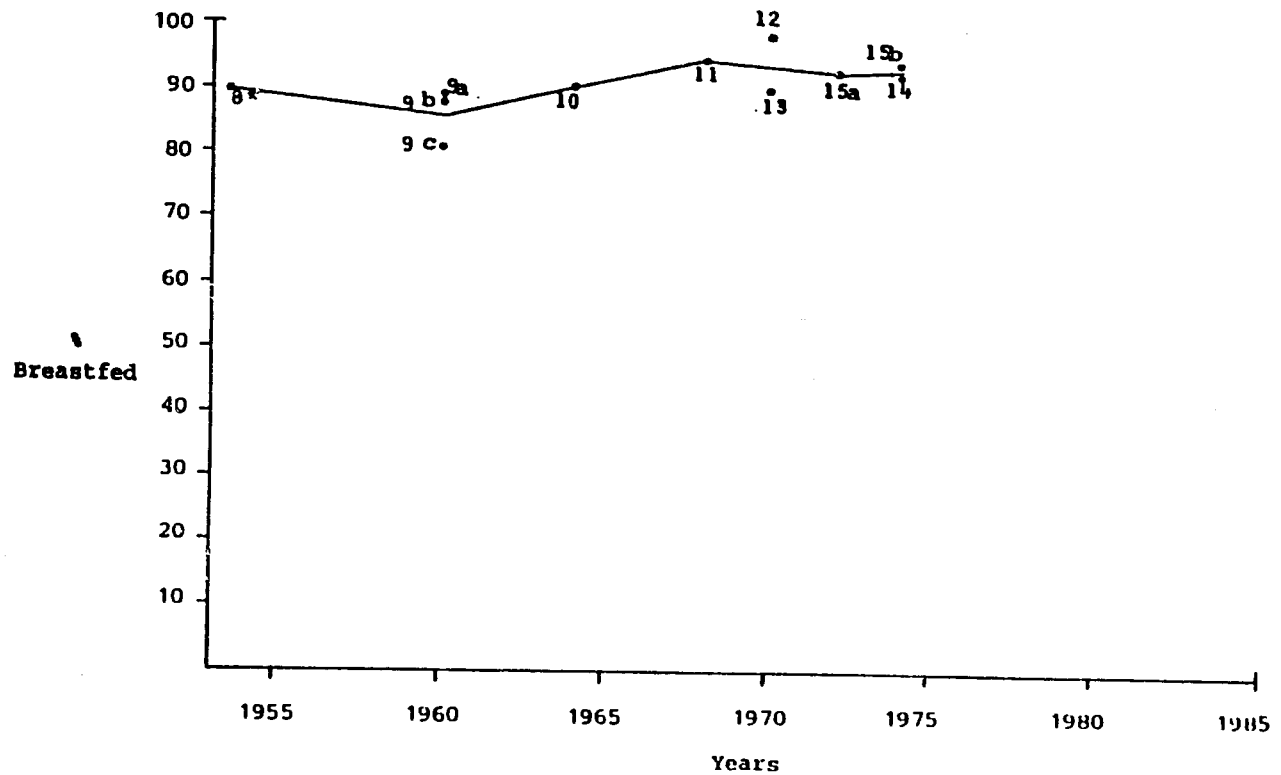
NATION-WIDE STUDIES



*Numbers in graphs refer to study numbers listed in Tables 1 - 4.

Figure 2. TRENDS IN INITIATION OF ANY BREASTFEEDING AT BIRTH

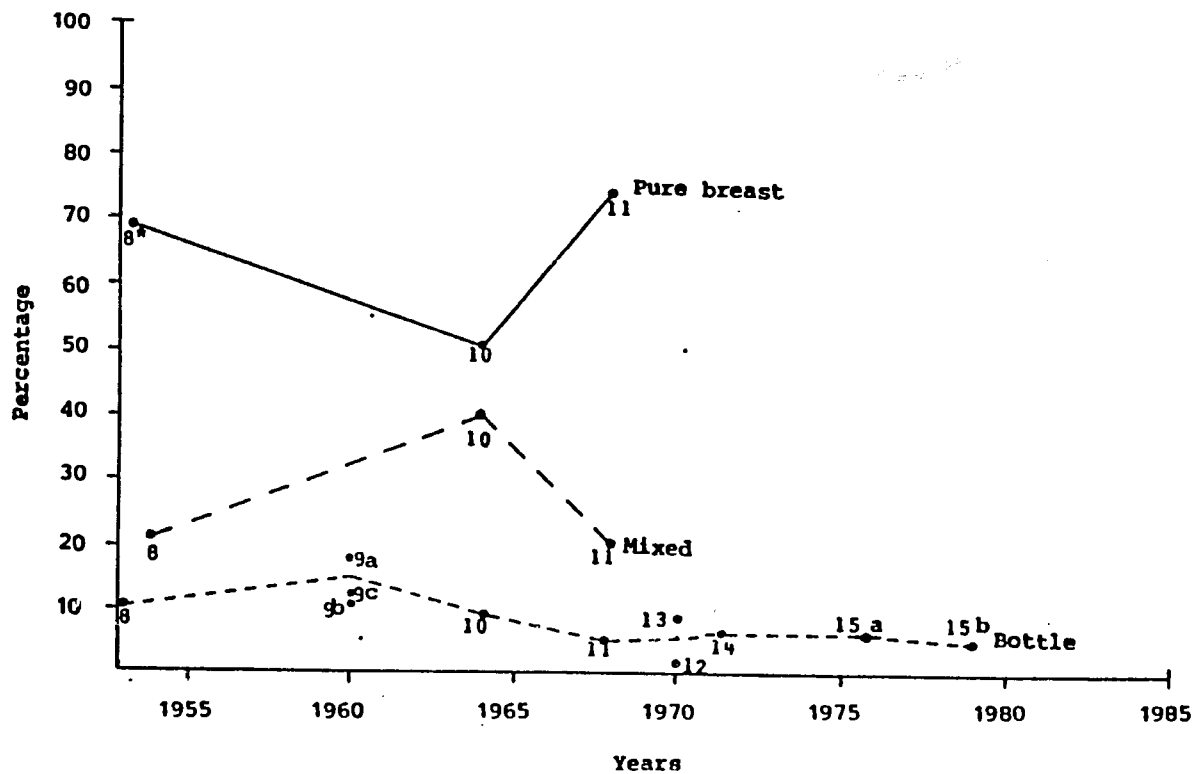
TOWNS & RURAL AREAS, ISOLATED STUDIES



* Numbers in graphs refer to study numbers listed in Tables 1-4.

Figure 3. TRENDS IN PURE VERSUS MIXED BREASTFEEDING AT BIRTH

TOWNS & RURAL AREAS



*Numbers in graphs refer to study numbers listed in Tables 1 - 4.

Metro-Manila Hospital-Based Studies

Metro-Manila hospital-based studies (Table 3), which interviewed mainly low and middle income women, show a remarkable picture of stability in the initiation of any breastfeeding at birth (Figure 4). Pure breastfeeding, however, seems to have declined in recent years (since 1973) in favor of mixed-feeding (Figure 5). Pure bottlefeeding has also been remarkably stable since 1959, never reaching above 24% of all babies born in hospitals (Figure 5).

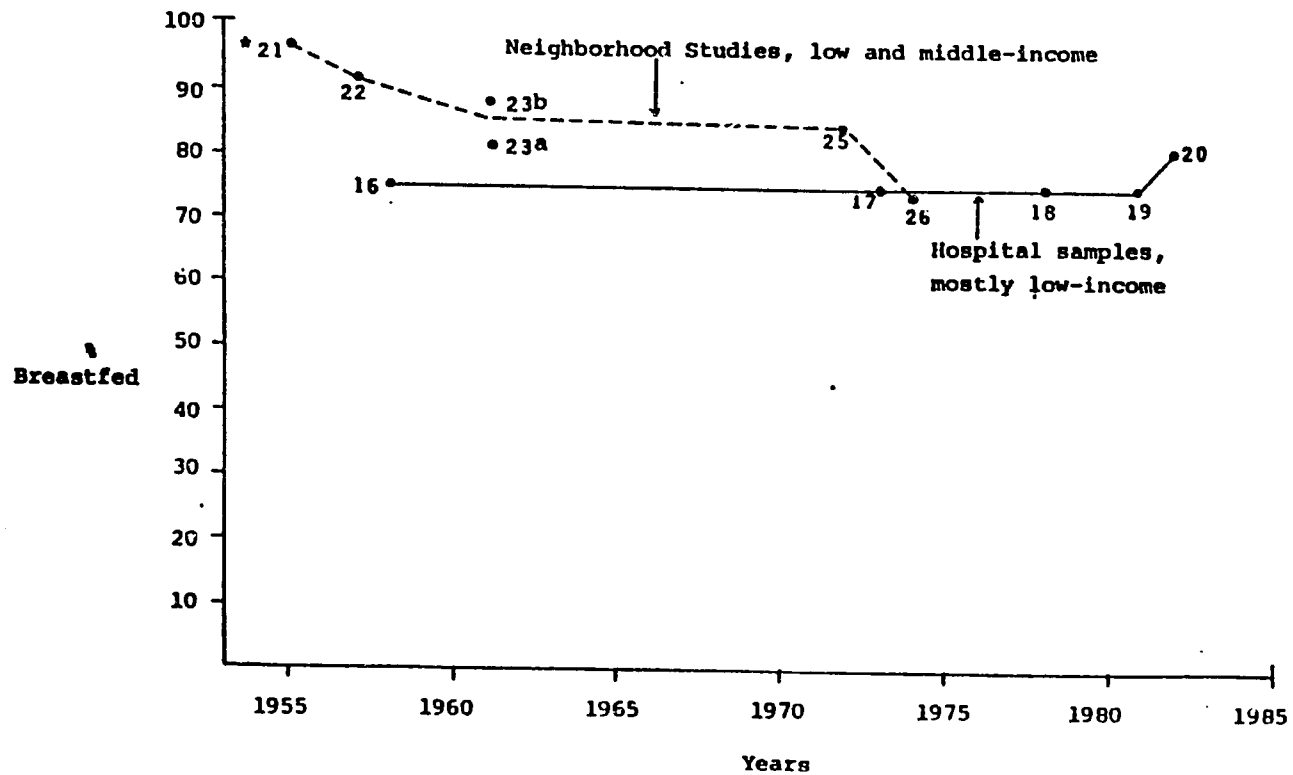
Urban Neighborhood Studies

In neighborhoods of Metro-Manila (Table 4), where some babies are born at home and in lying-in clinics, any breastfeeding at birth has been about 10% higher than in hospital deliveries (Figure 6). While 76% of babies born in hospitals were breastfed, around 85% of babies born city-wide were breastfed at birth. These studies do show that a moderate decline in breastfeeding may have occurred from 1955 (96%) to 1974 (73%). Reports of percent purely breastfeeding, mixed-feeding and bottlefeeding from these studies (Figures 6a,b,c) show trends similar to the national surveys and to the isolated studies of towns and rural areas, that is, a decline in pure breastfeeding in the late 1950's and early 1960's with a accompanying rise in mixed-feeding and a small increase in bottlefeeding, but this downward trend in pure breastfeeding stopped around 1965. It is interesting that these trends in the decline of pure breastfeeding did not show up in the hospital samples until the mid-1970's (Figure 5). This is probably because the hospital samples are largely composed of low-income charity patients, who could least afford bottlefeeding, while the neighborhood studies often included both low and middle income groups.

The overall impression provided by these four categories of studies is that the initiation of any breastfeeding at birth, especially among the low-income, has certainly not declined dramatically

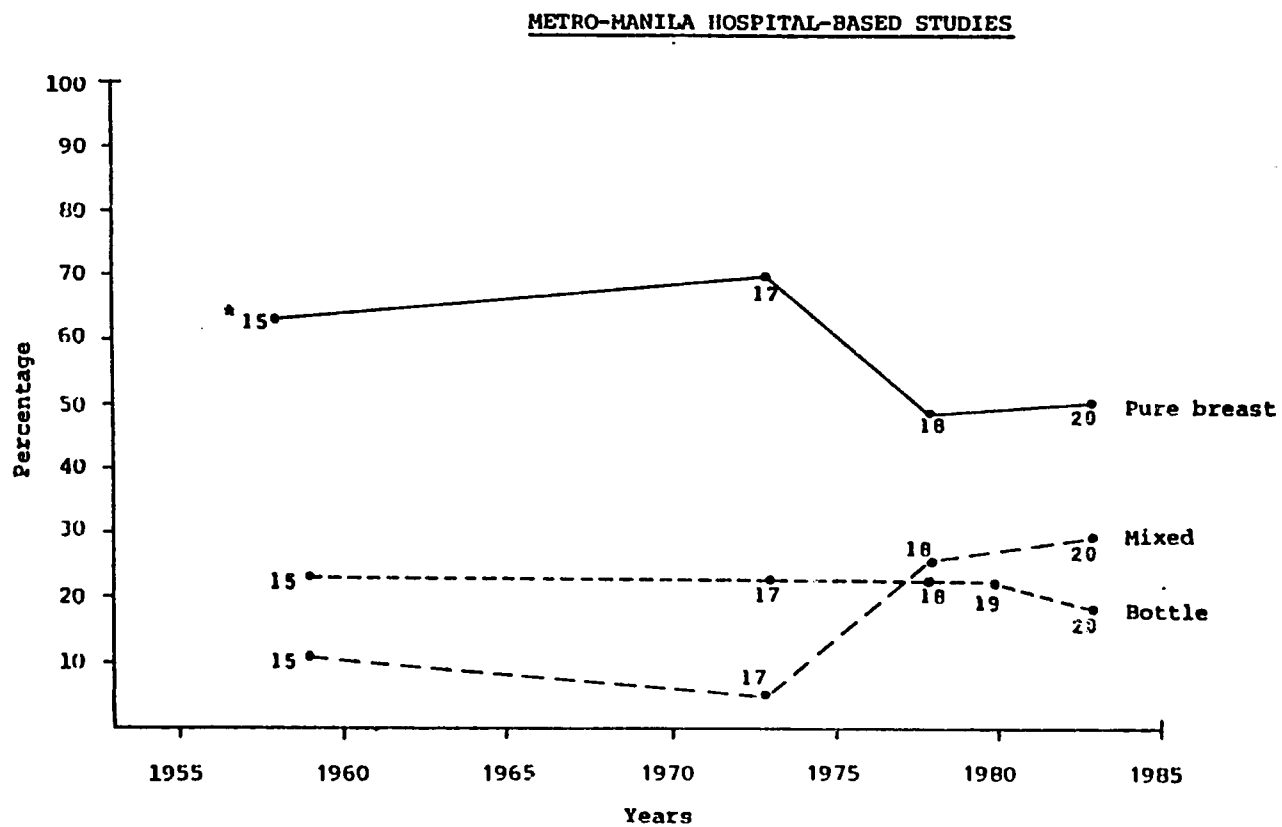
Figure 4. TRENDS IN INITIATION OF ANY BREASTFEEDING AT BIRTH

METRO-MANILA



*Numbers in graphs refer to study numbers listed in Tables 1 - 4.

Figure 5. TRENDS IN PURE VERSUS MIXED BREASTFEEDING AT BIRTH

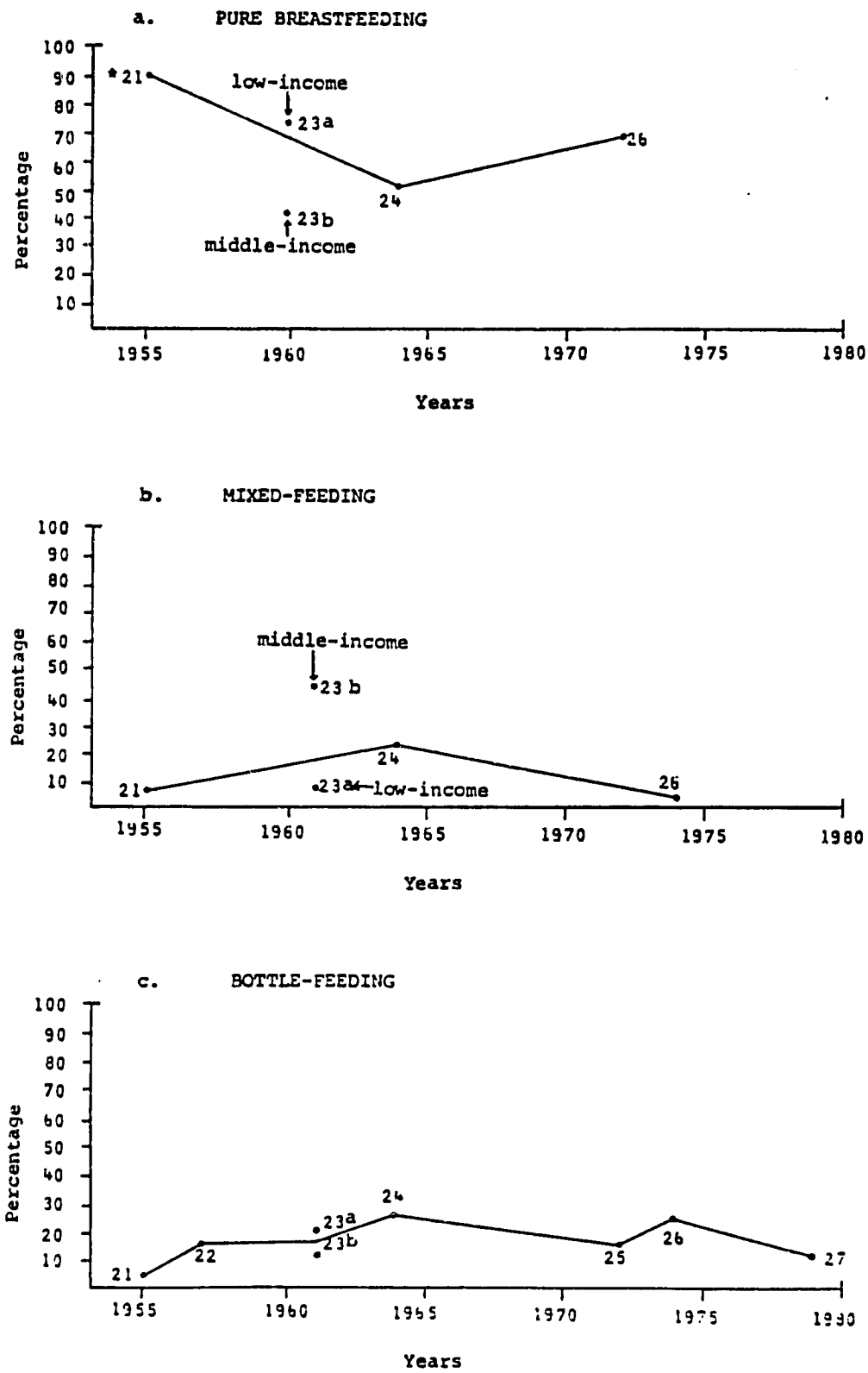


*Numbers in graphs refer to study numbers listed in Tables 1 - 4.

Figure 6. TRENDS IN MILK-FEEDING AT BIRTH

METRO-MANILA & CEBU CITY

NEIGHBORHOOD STUDIES



*Numbers in graphs refer to study numbers listed in Tables 1 - 4.

in the Philippines and perhaps not declined at all. There may have been a very slight decline among the urban poor and a stronger decline among the upper income groups. While pure bottlefeeding has not made significant gains in the Philippines, mixed-feeding has increased in popularity among women having hospital deliveries (only recently), but trends in mixed-feeding for the population as a whole remain unclear due to a lack of studies.

While there are no strong downward trends in breastfeeding at birth, certainly not since about 1965, these studies do indicate that:

a) Mothers living in rural areas and small towns continue to have the highest rates of breastfeeding initiation at around 90 to 94%;

b) Urban low-income women have a lower rate of initiation, at around 75% to 85%, but there are no data since 1975;

c) Urban low-income women giving birth in hospitals have a similar but lower rate of breastfeeding initiation, at about 76%;

d) As income increases, so does bottlefeeding, whether mixed or pure.

3. Trends in the Duration of Breastfeeding

A second major way to measure possible declines in breastfeeding is to determine if the overall duration of breastfeeding has shortened. There are two measures of this: (1) the total average duration of breastfeeding and (2) the percent still breastfeeding at certain time-periods postpartum.

Total Average Duration of Breastfeeding

In the national samples, the total average duration of breastfeeding has not declined from about 1960 to 1977 - it remains at about one year or longer (see Table 1). In towns and

rural areas it has remained at about 1 year or more from about 1960 to about 1978 (see Table 2). The urban studies (hospital and neighborhood) do not give enough data to observe trends but do indicate that babies from 1959 to 1973 have been breastfed about 9 months to 1 year on average.

Percent Continuing Breastfeeding

A more refined measure of breastfeeding duration is the percent of infants still being breastfed at certain time-points postpartum. Seven studies report this sort of data (see Table 5).

Table 5. Duration of Breastfeeding, 1955-1975 (see Footnote 2).

Study No.	Year	% who continued breastfeeding at least 3 months	6 months	9 months	12 months	18 months	Location
21	1955				96		Metro Manila neighborhood study
16	1959	83	67	49	40	8	Metro Manila hospital sample
2*	1968	84	73	63	51		National random sample
11*	1969-70	92	88	78	55	9	Victoria, Laguna random sample
12	1970	100	100	100	90	81	Purely breastfeeding non-working mothers, Victoria, Laguna
17	1973	75	62	56	48	27	Metro Manila hospital sample
14*	1975?		88		77		Laguna province, random sample
20	1983	74	63	63			Metro Manila hospital sample

*These studies probably are more reliable since they involve random samples.

Based on these eight studies, it appears that among women who ever initiated breastfeeding between 1959 and 1983, they continued to breastfeed their babies at about the same rate. It seems that about half or more breastfed their babies one year, and about three-quarters breastfed 6 months.

As breastfeeding drops off, it usually is replaced by bottlefeeding for a period of time reaching one year or more. In one study of 74 initially breastfeeding urban women, the shift to mixed feeding and complete bottlefeeding is demonstrated in Table 6 and Figure 7 (Simpson-Hebert et al. 1983).

4. Types of Milks Used in Artificial Feeding

Nine studies report the types of milks used in the artificial feeding of infants from 1958 to 1982, whether it was mixed-feeding or pure bottlefeeding. The comparative data are contained in Table 7. Some studies reported the use of "powdered milk" without stating whether or not it was infant formula. Since there are many kinds of powdered milk on the market, this was not assumed to be infant formula, though in some cases it may have been.

The data indicate that both sweetened condensed milk and evaporated milk are popularly used for feeding infants. Comparing the Metro-Manila studies, it seems that evaporated milk has decreased in popularity, while sweetened condensed milk and infant formula have increased in popularity. These statistics cannot be taken too seriously, however, because of the small samples-sizes and the non-random sampling methods used. Pictures of human babies (in the case of Bear Brand, a mother bear with her baby) adorn the cans containing evaporated and sweetened condensed milk. Even though it is widely known that these milks are not suitable for infant feeding, the message of the manufacturers is clear - "this milk is for babies."

Table 6. The course of milk feeding among 74 initially breastfeeding mothers in urban Philippines. (IPC Study on Infant Feeding.)*

Month	At Birth	1	2	3	4	5	6	7	9
N =	74	74	71	69	66	61	60	59	56

% of Babies Receiving

	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Breast only	72	(97)	41	(55)	31	(44)	28	(41)	27	(41)	27	(41)	30	(50)	26	(44)	25	(45)
Mixed	2	(3)	27	(36)	30	(42)	28	(40)	20	(30)	14	(23)	10	(17)	11	(19)	10	(17)
Bottle only	0		6	(8)	10	(14)	13	(19)	19	(29)	20	(33)	20	(33)	22	(37)	21	(38)

*Simpson-Hebert, Mayling et al. 1983.

Figure 7. The Course of Milk Feeding Among 74 Initially Breastfeeding Mothers in Urban Philippines

(IPC Study on Infant Feeding)

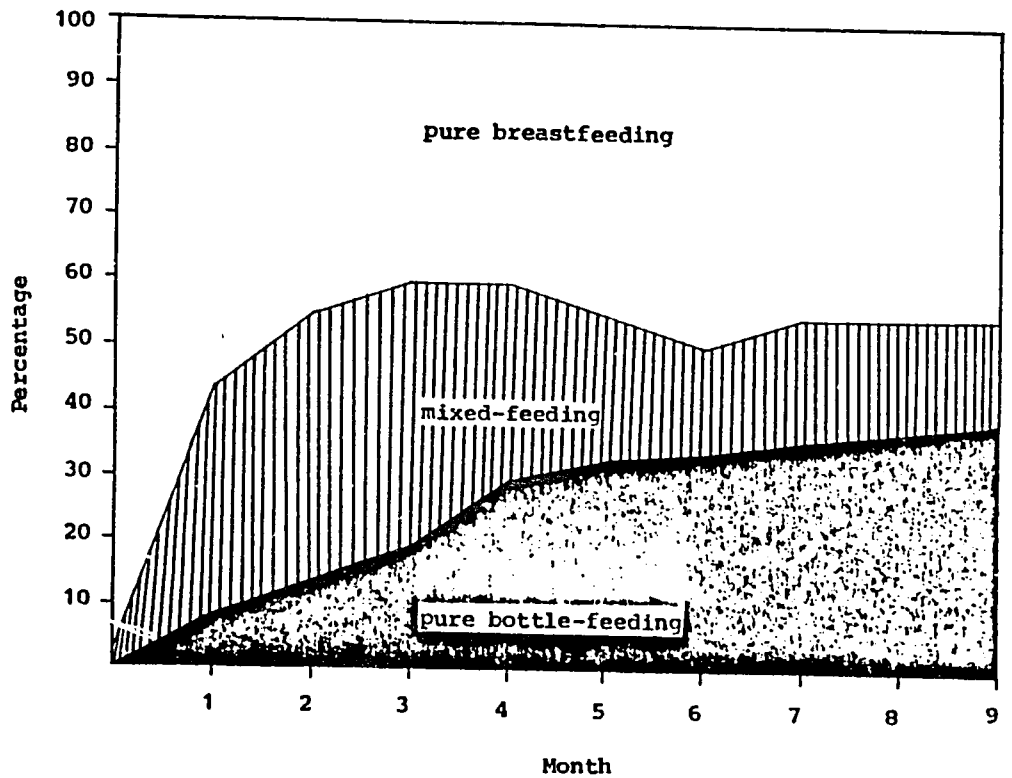


Table 7. Types of milks used for artificial feeding of infants in the early months.

Reference	Year Infants Born	Subjects Pure and Mixed Bottle-feeding	Income Classes Surveyed	% who used: Sweetened Condensed	Evapor-ated	Fresh Carabao	Powdered (not specified)	Infant Formula	Hypo-aller-genic	Location
Anonymous 1959	1958?	350	All	6	69			29	2	Manila
Peralta et al. 1962	1955-59	11	All	14	73		13			Manila
Guthrie 1964	1960-62	42	Low and middle		87	13				Manila
Bulatao-Jayme 1965	1958-64	194	All - rural - urban	25 57	48 25		9.1 13.0			Nationwide
Guthrie 1967	1963-65	16	All		100					Town Cebu Is.
Gabucan-Dulay 1970	1967	562	All	12	32		53		3	Nationwide
Guzman 1971	1970	24	All	54	32			14		Victoria, Laguna
Paredes et al. 1977	1973-75	24	Low	40	20			40		Pasig, Metro Mla.
Simpson-Hebert et al. 1983	1982	53	Low	12	3		5	77	2	Metro Mla.

5. Reasons Given for Choosing an Infant Feeding Method

Seven studies report the reasons Filipino women give for choosing their infant feeding methods. (Cabucan-Dulay 1970; Guthrie 1962; Guthrie 1964; Guthrie 1967; Paredes 1977; Rivera 1981; NMPC 1983). The predominant reasons for choosing breastfeeding are:

a) The best or most nutritious food for baby;
b) Convenient
c) Economical
d) Emotional reasons, like it makes the baby closer to the mother; its the true maternal role.

The child-spacing effect of breastfeeding was mentioned by 6% of the women in Rivera's 1981 study, but not elsewhere.

The primary reasons mothers give for complete bottlefeeding are:

a) The mother is working
b) Insufficient breastmilk
c) The mother is weak or sick

The primary reasons for mixed-feeding are:

a) It provides freedom for the mother
b) Insufficient breastmilk

Only a very small percentage of women ever reported that they bottlefed upon the advice of medical personnel, due to small nipples or small breasts, or to preserve the figure of the mother. No study reports women claiming that bottlefeeding is superior to breastfeeding, as might be expected if women were being influenced by milk company advertising. A few (6%) mixed-feeding mothers reported mixed-feeding to be more nutritious (Rivera 1981). An examination of this literature leads one to believe that neither to advice of medical personnel nor the advertising by milk companies

are influencing women to bottlefeed, at least not on a conscious level that women can express to interviewers. This, together with the statistics that Filipino women continue to initiate breast-feeding at a very high rate, leads to the conclusion that breast-feeding is still the preferred infant feeding method in the Philippines.

6. Factors Influencing Infant Feeding Decisions

The available literature suggests that there are at least six socio-economic variables affecting infant feeding choice in the Philippines:

a) educational attainment of the mother
b) household income level/social class
c) mother's employment outside the home
d) mother's place of delivery
e) influence of other people, including physicians
f) mother's knowledge about breastfeeding
g) maternal nutritional status

Educational Attainment

A study of 319 mothers in depressed areas of Quezon City showed that as educational attainment increased, so did the incidence of bottlefeeding. Bottlefeeding was the choice of 41% of those who had attended college as opposed to 11% who had never attended college. (Ignacio et al. 1980). Rivera and Marso (1979) and Csteria (1978) had similar findings in the urban setting, but Popkin's rural Laguna study shows the opposite trend (see Table 8).

TABLE 8 Educational Attainment and Infant Feeding Method

Reference	% Bottlefeeding Who Had Attended:		
	College	High School	Elementary
Ignacio (1980) (urban)	41	11	11
Rivera & Marso (1979) (urban)	26	29	16
Osteria (1978) (urban)	33	23	21
Popkin (1978) (rural)	8	4	18

Popkin does note, however, that those women who had attended high school and college had a shorter duration of breastfeeding (9.5 months) than others (11.4 months). Likewise, Osteria (1978) reports that breastfeeding lasted about 12 months among women with an elementary education as compared to 4 months among college educated women. In line with this, Guthrie (1967) reports from Cebu that four times as many mothers in the upper educational group (the fathers had completed college) reported insufficient breastmilk as women in the lower educational group (fathers had completed high school or less).

Income/Social Class

Household income also appears to influence infant feeding choice. The better able the family to afford artificial feeding, the more likely they will bottlefeed. Among the urban poor, Ignacio et al. (1980) found that the mean income of households where mothers bottlefed was ₱409 per month as opposed to ₱379 per month among those who breastfed. In rural Laguna the mean annual income of bottlefeeding families was ₱9387 and of breastfeeding families was ₱4351 (Popkin 1978). Other studies claim to have found that middle-income tend to prefer bottlefeeding and low-income and lower middle-income prefer breastfeeding, but no statistics are provided (Rivera and Marso 1979; Guthrie 1967).

Mother's Employment

The mother's employment outside the home, not employment itself, affects women's infant feeding choice. Among 319 low-income mothers in Quezon City, breastfeeding was practiced by 11% of those employed outside the home, 90% of those gainfully employed at home, and 89% of those staying at home with no gainful employment (Ignacio et al. 1980).

In another Metro-Manila study among 794 low-income women, 68% of those employed breastfed their infants initially, as compared to 78% of those unemployed. However, the employed women terminated breastfeeding prior to two months while the unemployed women continued for an average of 12 months (Osteria 1978).

In our current study of infant feeding practices in Metro-Manila, we are following a group of 74 women who chose breastfeeding at delivery. How their employment statuses affected duration of breastfeeding is shown in Table 9 (Simpson-Hebert et al. 1983).

TABLE 9 Percent Breastfeeding (Pure & Mixed) by Employment Status (IPC Project on Infant Feeding)

	At birth	At 3 months	At 6 months
Not employed	100	79	68
Employed, near baby	100	60	67
Employed, not near baby	100	38	29

At three and six months, a large proportion of unemployed women were still breastfeeding (79% and 68%). Also, among those women who were gainfully employed at home or who worked in the market and could take their babies with them, a large proportion continued to breastfeed their babies (60% at 3 months and 67% at 6 months). However, a smaller proportion of those employed outside the home and who were unable to be near their babies during working hours were able to continue breastfeeding (38% at 3 months and 29% at 6 months).

It is not unusual for mothers to choose bottlefeeding or mixed feeding from birth in anticipation of returning to work. Many of these women believe that if they start the baby on breastfeeding, it will be difficult after 6 or 8 weeks when they return to work to train the baby to take the bottle. They also fear dripping, engorged breasts when they return to work. Others, who plan to breastfeed in the morning and evening on work days, find that it does not work so well in practice. Initially they experience engorgement and let-downs in the office or on a jeepney or bus that cause embarrassement. Second, the work day is very long. Sometimes mothers must be away from their babies 10 to 12 hours per day, so that most of the feeding becomes bottlefeeding. Their babies, like all babies, catch colds, get diarrhea and have other illnesses which relatives blame on the breastfeeding. The relatives say that the mother breastfeeds when she is tired. The breastmilk is then "weak", "watery" and "lacks vitamins", thus the baby becomes sickly. They discourage her from continuing (Simpson-Hebert et al. 1983).

Place of Delivery

Due to the fact that many hospitals and lying-in centers have the practice of separating mothers and babies at birth and bottlefeeding the infants, institutional deliveries tend to discourage the initiation of breastfeeding. In the study of 319 low-income women in Quezon City (Ignacio et al. 1980), breastfeeding was practiced by 94.6% of those who delivered at home and 61.1% of those who delivered in a hospital or center.

Ward assignment within hospitals also seems to have an effect on breastfeeding. In our study of 74 charity patients who delivered at the Jose Fabella Hospital, 30 were assigned to the rooming-in ward, 33 to the regular ward (baby in the nursery) and 11 to the surgical ward (cesarian and hypertensive patients).

All these women were included in the study because of their stated intention to breastfeed their babies and all tried to initiate breastfeeding after hospital release. Yet those assigned to the rooming-in ward had a slightly better rate of breastfeeding continuation than those assigned to the regular ward. Both of these continued at higher rates than those assigned to the surgical ward, whose hospital stay was usually seven days as opposed to two days for the others (see Table 10).

TABLE 10 Breastfeeding Continuation by Ward Assignment (IPC Project on Infant Feeding)

	Percent Breastfeeding				
	At Birth	At 1 month	At 3 months	At 6 months	At 8 months
Rooming-in Ward	100	97	83	71	72
Regular Ward	100	88	72	60	60
Surgical Ward	100	73	45	43	43

Influence of Other People

When women are asked if anyone influenced them to breast or bottlefeed their infants, the majority claim that no one influenced them, that their choice was based on their own decision. The rest mention relatives, husbands and medical personnel as people who influenced them (Table 11).

TABLE 11 Persons Influencing Infant Feeding Choice

	Advised or Influenced By:			
Reference	No One (Own Decision)	Relatives*	Husbands	Med. Persons**
Rivera & Marso (1979)	60	20	10	10
Ignacio et al. (1980)	71	13	5	14

* Usually mothers and mothers-in-law

** Doctors, midwives, nurses, nutritionists

Husbands' feelings toward breastfeeding may be more important than indicated in Table 11. A 1983 survey conducted by the National Media Production Center in Metro Manila found that only 6% of husbands held negative attitudes towards breastfeeding and 64% were both supportive and encouraging to their wives (NMPC 1983). In another recent urban study 80% of husbands were supportive and encouraging their wives to breastfeed, 9% held negative attitudes and 11% claimed to hold no opinion (Simpson-Hebert et al. 1983).

Women have other sources of information about infant feeding that may or may not influence them. Relatives (see Table 12) are heavily relied upon for information, but in another urban study, mass media was mentioned by 65% women, with television being the largest single source. Eighty-eight percent said that these mass media messages did influence them (Simpson-Hebert et al. 1983).

Table 12. Sources of information on infant feeding.

	% Receiving Information From:				
Reference	Husband	Relatives	Neighbors/ Friends	Medical Personnel	Mass Media
Guthrie (1964) rural				12	
urban middle class				77	
Rivera & Marso (1979)					
urban low-income		59	24	29	18
Simpson-Hebert et al. (1983)					
urban low-income	6	44	16	12	65

The influence of the medical profession in promoting breastfeeding or bottlefeeding is unclear, but three studies imply that women's knowledge about bottlefeeding comes mostly from physicians, and that if physicians were to withhold that information, a far smaller proportion of women might bottlefeed. For example, Peralta (1962) reports that among the bottlefeeding women in her study, almost all of their knowledge of bottlefeeding and formula-making came from

physicians. Similarly, Bulntao-Jayme (1965) reports that among the bottlefeeding women in her survey, 56% of those living in the province and 74% of those in urban areas were bottlefeeding under the advice and guidance of a physician or paramedical person. Likewise, Guthrie (1964) reports that only 12% of barrio women report receiving infant feeding advice from physicians and 86% purely breastfed, while 77% of her urban middle class sample reported receiving infant feeding advice from physicians and 41% purely breastfed. Although the relationship between bottlefeeding incidence and contact with physicians may be a spurious one (because if one can afford to go to the doctor, one can afford to bottlefeed), it certainly leaves room for further studies.

Knowledge About Breastfeeding

A recent study of urban hospital-delivered women (Rivera and Marso 1979) found that, among those who chose to breastfeed their infants, more had:

a) high knowledge scores about breastfeeding
b) received general nutrition information
c) breastfed before
d) the intention to breastfeed right after delivery
e) encouragement from their husbands and friends to breastfeed

than those who chose to bottlefeed. They also found that a mother's feeding choice with her first-born strongly determines how she will feed subsequent children.

Although lactation behavior is largely guided by instinct in other mammals, it is certainly not among humans. Breastfeeding is a learned behavior that is usually guided by the cultural tradition of the group to which the mother belongs. The capacity to produce milk and the willingness of infants to suckle are present is nearly mother-infant pair, but the infant's access to the nipple is controlled by knowledge and cultural values. It is not suprising,

therefore, that mothers who chose breastfeeding had higher knowledge scores than those who did not.

Nutritional Status of Mother

Very little is known about the effect of poor nutritional status on Filipino women's willingness and abilities to lactate. Only one study was located. Osteria (1977) compared 410 well-nourished with 194 malnourished low-income women in Metro-Manila. In that sample, more of the well-nourished women breastfed (78.5%) than the malnourished ones (71.3%), and the nourished women breastfed a month longer (11.78 months) than the malnourished ones (10.83 months).

7. Infant Feeding in the First Three Days of Life

Evidence from the literature seems to indicate that a fairly large proportion of Filipino mothers believe that their colostrum, or the "first milk" that comes out of the breast, should not be given to their babies. Table 13 indicates the proportion of mothers in five different studies who gave colostrum to their babies; the remainder expressed it and threw it away.

TABLE 13 Colostrum Feeding By Filipino Mothers

Reference	Group	No. of Mothers Interviewed	% Who Gave Colostrum	Location
Peralta 1962	Urban	116	59	Manila
*Bulatao-Jayme 1965	Urban Rural	728	62 39	National Survey
Guzman 1977	Rural	118	91	Victoria, Laguna
Guthrie 1981	Rural	not stated	"about all"	Cebu
*Corpuz & Nunez 1982	Rural & Urban	1,696	33	National Survey

In our current study of feeding practices in Metro-Manila (Simpson-Hebert et al. 1983), women report the belief that the first milk that comes from the breast is "spoiled" because it has stayed in the breast a long time. Women believe the colostrum is "spoiled"

because of its yellow color and watery consistency. They believe they should express as much of this milk as possible before putting their infants to their breasts for the first time. Some squeeze out only an ounce or so and then breastfeed on the first day. Others wait two to three days and remove about one cup of milk. A few know that colostrum is good for babies; they have heard it on television or from medical personnel. This belief that colostrum is spoiled does not seem to be deeply ingrained or associated with disgusting feelings of "dirtiness" and thus could probably be easily changed.

In another recent study, Valdecañas et al. (1981) report that of their 216 hospital respondents in Manila,

> "a significant proportion of the respondents (85.7%) did not know what the first milk (colostrum) is called nor its importance. On the contrary, it was believed to be "stocked-up milk", "should be discarded", "dirty milk that will cause diarrhea", "bad for the baby", "not the real mother's milk", "watery", and "yellowish", "will not make the baby healthy." (p.32)

Similarly in a study conducted among low-income women in Quezon City (Ignacio et al. 1980),

> "Almost half of the mothers (46.6%) believed that the first secretion which is the colostrum should be discarded although they had different reasons for this belief. About a third (29.1%) realized the importance of colostrum although they were unaware that the most important characteristic of colostrum is that it gives immunity to the infant."

A second very common practice in the Philippines is feeding babies non-milk substances in the first three days of life, with or without colostrum. Some substances, such as ampalaya juice, castor oil and Tiki-Tiki are given to purge the intestinal tract of meconium. Other non-milk materials such as water and am (rice water) are given instead of, or as a supplement to, the "first milk." For example, Peralta (1962) reports that 59% of the infants in her study were put to the breast in the first three days, with or without non-milk materials. The remainder were given only non-milk materials

such as castor oil (11.7%), plain water (17%) or milk formula (7.3%). Bulatao-Jayme (1965) reports that 38.8% of rural mothers and 62.1% of urban mothers breastfed their babies in the first three days, usually combined with non-milk materials. The remainder (51.9% of rural and 27.7 of urban) gave their babies non-milk substances only. The non-milk substances commonly given were a boiled extract of ampalaya leaves, castor oil or Tiki-Tiki, to help bring out the meconium, sugar water, honey water, rice-water (am)or combinations of these. Interestingly, only 22% of rural mothers and 16% of urban mothers purely breastfed the first three days. Balderrama-Guzman (1971) reports that 70% of Victoria, Laguna mothers give Tiki-Tiki the first three days, with or without other foods. In a later report about the same town (Guzman 1977), she states that 91% of the mothers put their babies to the breast within 24 hours, 66% within the first 12 hours, but they also usually give ampalaya juice or Tiki-Tiki to help expel the meconium.

8. Reasons Given for Weaning

Nine studies discuss the reasons women give for weaning. (Anonymous 1959; Balderrama-Guzman 1971; Bulatao-Jayme 1965; Gatucan-Dulay 1970; Guthrie et al. 1981; Guthrie 1962; Guthrie 1967; Guzman 1977; Peralta 1962). There are rural/urban and social class differences in weaning practices. Also, as some authors point out, reasons for early (0-6 months) termination of breastfeeding are different from the reasons for later (7-18 months) termination. Although these time differences could not be distinguished in every article, it appears that the predominant reasons for early termination are:

a) insufficient breastmilk

b) mother returns to work

c) poor health of the mother

d) nipple problems - sore, cracked or inverted

Reasons for <u>later</u> termination are:

a) another pregnancy

b) the child is "old enough" to be weaned

c) the child bites the nipples

d) insufficient milk

A recent study in Cebu (Guthrie et al. 1980; 1983) where respondents were followed prospectively, revealed deep-rooted cultural beliefs that influence breastfeeding success. That these beliefs are widespread is being confirmed by the current study conducted by Simpson-Hebert et al. (1983) in Metro-Manila. Some of these are also mentioned by Valdecañas et al. (1981). The following discussion is based on findings from all three studies.

<u>Common Beliefs that Lead to Non-Milk Feeding, Mixed-Feeding and Early Termination of Breastfeeding</u>

1) <u>Maternal Illnesses</u>

When a mother is sick, she cannot breastfeed because the illness (whatever it may be - upper respiratory infection, diarrhea, etc.) will pass through her milk to her baby.

2) <u>Unsuitable Milk</u>

When a mother is tired or angry, when she is hungry, when her milk is "cold" because she has done laundry, or "hot" because she has been in the sun, she cannot breastfeed until she rests, calms down, eats, or reaches the correct body temperature. In other words, the adverse condition must be "fixed" before she can breastfeed. If not, the baby will suffer from gas pains and diarrhea. The "fix" may take anywhere from a few minutes to two hours. So that the baby will not have to wait, he or she is given a substitute bottle of <u>am</u> or milk. In the Metro-Manila study, it was this group of reasons that was often initially reported as "insufficient milk", but further probing revealed

that what mothers often meant is that there were times of the day (before breakfast, while doing laundry, after returning from the market, etc.) that their milk was "unsuitable" for the baby.

3) Spoiled Milk

When mothers have been away from their babies for several hours, they believe their milk gets "spoiled". It must be expressed and discarded or else it will make the baby sick. A bottle of am or milk is given instead.

4) Milk is what you eat.

Mothers believe that the milk contains what they eat, thus some mothers will blame a baby's illness on having eaten spicy foods, cold foods or beverages, foods cooked in oil, etc. Some mothers, therefore, restrict their own diets of certain fruits and vegetables which are believed to be harmful, or if they eat these foods, they will restrict their breastfeeding.

5) Salty or thin milk

Some mothers believe that their milk tastes salty or is thin like "rice-washing water". They taste their milk for saltiness or put drops into a glass of water and watch the dispersion to determine thinness. If they deem it unsuitable, they terminate breastfeeding.

6) Baby develops diarrhea

Mothers and some medical personnel believe that mother's milk can cause diarrhea, but the specific way it causes it is not explained. This leads many mothers to wean early.

7) Right breast "rice", left breast "water"

The current Metro-Manila study (Simpson-Hebert et al. 1983) has found that many women believe that the right breast contains

the "rice" and the left breast the "water". This belief is also reported by 62% of respondents in the study by Ignacio et al. (1980). The terms "kanin" and "tubig" are used by them to describe the two milks. Thus, they believe that the child must suck from both breasts at each feeding. Some babies develop a preference for one breast only. If it is the right breast, the breastfeeding should be followed by a water-feeding from a bottle. If it is the left breast, the mother feels she needs to supplement her breastfeeding with canned milk.

In our current study of infant feeding practices in Metro-Manila we have gathered the Tagalog terms used to express many of the concepts described above. Those terms are listed in Table 14.

9. Methods of Terminating Breastfeeding

Nine articles report the methods used in the Philippines to terminate breastfeeding (Bulatao-Jayme 1965; Balderrama-Guzman 1971; Gabucan-Dulay 1970; Guthrie 1962, 1964, 1967; Guzman 1977; Ignacio et al. 1980; Peralta 1962). No regional, urban/rural or economic class differences in these methods could be ascertained from the literature, although some authors allude to such differences. Table 15 lists the various methods and the number of studies reporting them, but this does not truely represent method prevalences. Also, it is likely that many mothers used more than one method.

TABLE 14 Tagalog Terms Associated with Breastfeeding*

1. Not Enough Milk or No Milk

kulang sa gatas	-	insufficient milk
walang gatas	-	no milk
tuyong gatas/tuyong suso	-	dried up milk/dried up breasts
malambot ang suso	-	soft breasts due to absence of milk or little milk

2. Too Much Milk

mapa ang suso	-	engorged or full breasts
sobra ang gatas	-	too much milk
gumigibik	-	dripping (breasts)
tumitigas ang suso	-	hard breasts
masakit at makirot	-	painful and throbbing
mabigat ang suso	-	heavy breasts

3. Unsuitable Milk

maalat na gatas	-	salty milk
malamig na gatas	-	cold milk
panis/sirang gatas	-	spoiled milk (due to tiredness, having been in the sun, or the breasts not having been emptied regularly)
malabnaw na gatas	-	watery/diluted milk
huras tiras na gatas	-	watery/diluted milk
dilaw na gatas	-	yellow milk, (thought to be caused by mother's condition, such as beri-beri).
walang sustansiya	-	no nutritious value
mabigat na gatas	-	heavy milk

4. Breast Qualities or Characteristics

tubig ang kabilang suso; pagkain o kanin sa kabilo	-	one breast contains water; the other contains food or rice
ang malaking suso, gatas ang-laman; ang maliit, tubig		the bigger breast contains milk; the smaller contains water

5. Nipple Qualities or Characteristics

maga ang utong	-	sore nipple
sugat sa suso	-	cracked nipple
may biyak ang utong	-	cracked nipple
sugat sa suso at may langib	-	cracked nipple with scab or dried skin
baligtad ang utong	-	inverted nipple
maliit na utong	-	small nipple

6. Feeding Difficulties

ang bata ay maselan	-	baby is choosy

* IPC Project 174 "Infant Feeding Decisions and Contraceptive Choices in the Philippines" - collected from field data

TABLE 15 Methods of Weaning in the Philippines

Method	Number of Studies Reporting
Application to the mother's nipples of bitter or hot substances like ginger, "Vicks, etc."	9
Mother hides from the baby	4
The child is sent away to stay with relatives	1
The milk-feeding is stopped abruptly and the child is forced to eat table foods	4
Weaning is gradual, with a gradual increase in artificial feeding and solids	3
Pacifier	2
Child sleeps with someone else	2
Punishing the child	2
Breast is painted with a dark substance, like dark red lipstick, and the baby is told the breast is dirty or bloody	2
Placing a band-aid over the nipple	1

10. Weaning Foods

Ten articles discuss the introduction of weaning foods, solids and liquids, into Filipino babies' diets. Table 16 provides information from four studies where the timing of these weaning foods were reported. Although the time period represented in the table is short (1958-68), it appears that during the 1960 decade there was a trend toward earlier introduction of weaning foods. No recent studies of weaning practices were located. The table indicates that more than half of Filipino babies receive some kind of weaning food by the age of 6 months and nearly all are being given other foods in addition to milk by the age of one year.

TABLE 1 Introduction of Weaning Foods

	% of Infants Fed Weaning Foods by				
	2 mos.	4 mos.	6 mos.	9 mos.	1 year
Anon. 1959	2.4	26.0	31.0	50.0	97.2
*Bulatao-Jayme 1965	21.6	46.2	73.4	88.5	90.9
Guthrie 1967			50	90	
*Cabucan-Dulay 1970	32	53	75	93	99

* National Surveys

Before the age of six months, some babies are given other liquids, like coffee with milk, calamansi juice, "am" (rice water) and carbonated soft drinks. By the age of six months, most have been started on lugao (rice-porridge). Between 6 and 12 months, fruits (principally bananas), sweet potato, crackers and egg yolk are also added to the diet. At around one year fish, meat, seafoods, and chicken are added.

Filipino mothers believe that rice is the single most important food item onto which babies are weaned. In spite of mothers reporting all of these other foods, Balderram-Guzman (1971; 1977) emphasizes that 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 bottlefed or breastfed) is usually completely dropped from the infant's diet and replaced largely with rice in various forms. It is commonly believed in the provinces that giving fish to babies can cause worms and so it too is often withheld even beyond one year of age (Guzman 1977).

Actually, the weaning to rice begins almost from birth. In our current Metro-Manila study, we note that a small proportion mothers regularly bottlefeed their babies with am from birth. Am is prepared by boiling rice and pouring off some of the water which is fed to the baby. Bottlefeeding with am is replaced with lugao -

a soft rice gruel sometimes mixed with broth, sugar or salt. Lugao is gradually replaced by ordinary cooked rice (see Table 17 and Figures 8 and 9). Figure 10 provides a composit picture of how the diet of most babies changes in the first two years of life.

Thus infants are gradually weaned from a fairly nutritious breastmilk diet with am and other inferior liquids, to a largely unnutritious diet of rice with very few additions. It appears that rather than supplementing with lugao and other foods, they use these foods to substitute for milk feedings, so that by one year infants no longer consume milk and they subsist on a diet largely composed of rice and corn. It is little wonder, then, that malnutrition and repeated infections are prevalent in preschool children (Balderrama-Guzman 1971; Corpuz and Nunez 1982). In a 3 year longitudinal study conducted by Guzman et al. (1977) in Victoria, Laguna among a predominantly breastfed group of infants, she found

> "that weight and height curves of the infants were good up to 4 to 6 months of age because of breastfeeding. As the child grew older, the nutritional status deteriorated, the prevalence of infections increased, the I.Q. scores decreased and many of the children had delayed bone age." (p.47).

11. Nutritional Status, Morbidity and Mortality

Although it often asserted that breastfeeding as opposed to bottlefeeding leads to better nutritional status and lower rates of morbidity and mortality among infants, studies on Filipino infants do not strongly support these views.

What is found is that, in general, Filipino infants of low-income families are sick much of the time and begin to exhibit signs of malnutrition as early as four months of age, whether breastfed or bottlefed. Also, evidence indicates that the breastfed babies have little or no advantage over the bottlefed ones. Although there is no one study that provides

Table 17. Rice Feeding to Infants, 0-9 months, Urban Philippines.
(IPC Project on Infant Feeding)

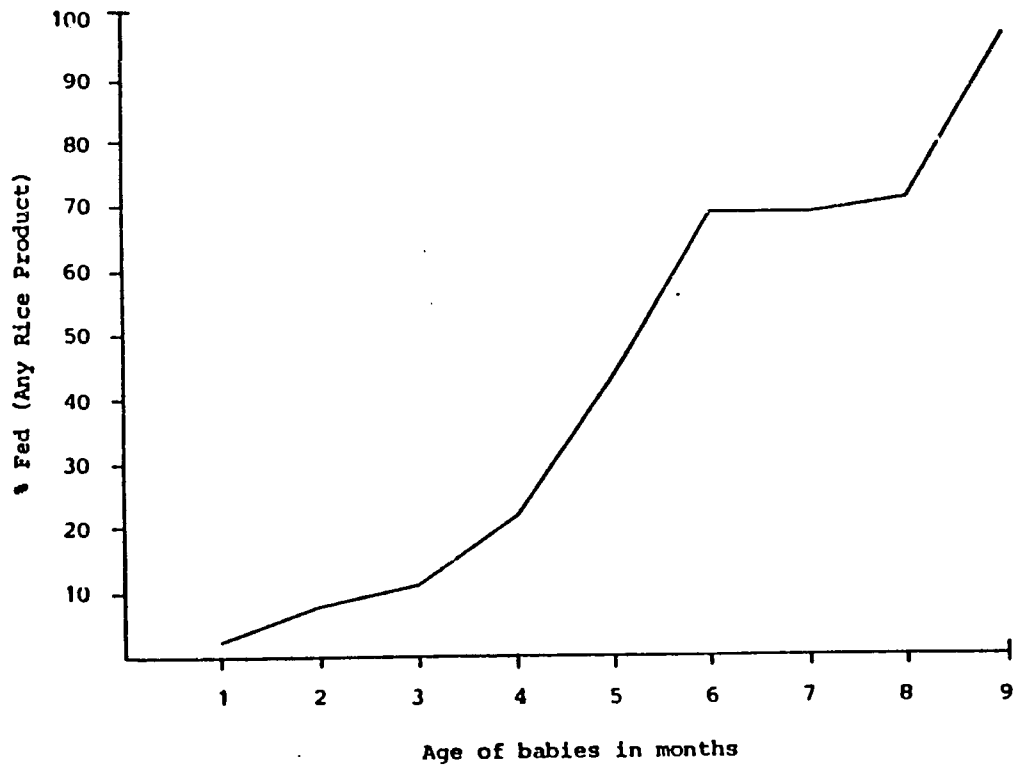
Month	1	2	3	4	5	6	7	8	9
N =	75	72	70	66	62	60	60	58	57

% of Babies Being Fed

Am	2.66	6.94	11.43	18.18	9.68	10.00	3.33	8.62	5.26
Lugao			1.42	6.06	30.65	50.00	50.00	55.17	61.40
Rice					4.83	21.67	61.67	63.79	82.46
One or more rice products	2.66	6.94	11.42	22.73	43.55	68.33	68.33	70.69	96.49

Figure 8. Rice Feeding To Infants, 0-9 months, Urban Philippines

(am, lugao and table rice)



(IPC Project on Infant Feeding)

Figure 9 . Rice Feeding To Infants, 0-9 months, Urban Philippines

(IPC Project on Infant Feeding)

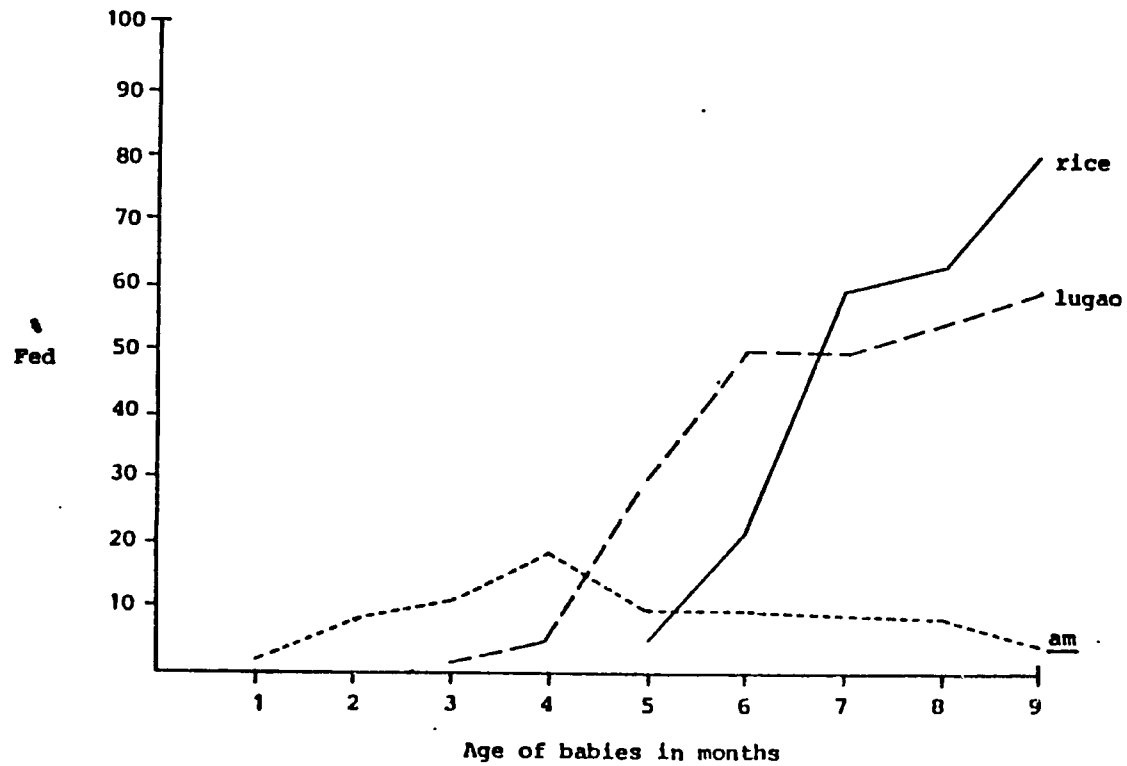
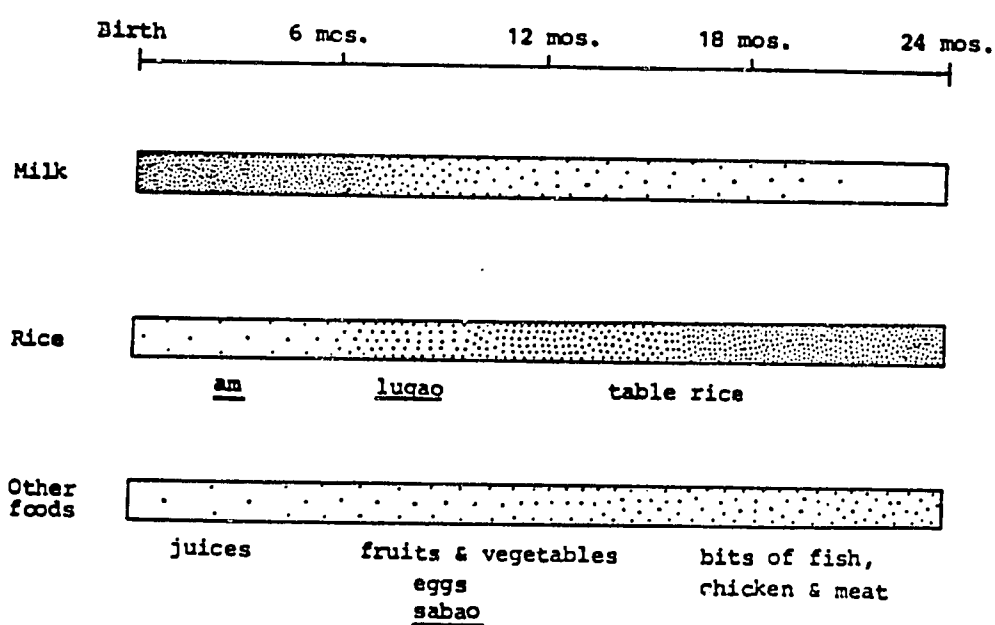


Figure 10. Filipino Infant Feeding, Birth To Two Years
A Composite Picture



definitive answers as to why this should be so, bits of evidence from various studies indicate that poor milk feeding and weaning practices, which are based on indigenous beliefs, as well as a host of social, economic and demographic factors lead to high rates of malnutrition, whether breast or bottle fed. Infant morbidity and mortality are more closely related to infant nutritional status, poverty, crowding and sanitation than to mode of early milk feeding. Thus, whatever protective or superior advantage breastmilk may confer appears to be largely wiped out by cultural and environmental factors in the Philippine situation. Since this finding is contrary to what is commonly believed among health professionals, it is necessary to take a detailed look at the evidence.

Nutritional Status

Beginning with the issue of nutritional status, a recent national survey of 2,837 Filipino pre-schoolers discovered that 74 percent are malnourished at the first, second or third degree (Corpuz & Nunez 1982). Not only is pre-schooler malnutrition a massive problem in the Philippines, it is a massive problem even among infants. A large nationwide nutrition education program of the Home Economics Programs Division of the Philippine Ministry of Agriculture (Ministry of Agriculture 1981) revealed that by 18 months only 15% of low-income babies are normal weight for age, 75% are first degree and 10% are second degree malnourished, even in spite of an intensive program by that group to raise nutritional status among the babies surveyed.

This high level of malnutrition among the rural and urban poor is the cause of 40% of the deaths of Filipino children under 5, either directly or indirectly. At birth Filipino infants are of satisfactory weight by international criteria and they grow well the first 4 to 5 months. In the remaining months of the first year

they slip to 80% of expected weight on average (Guthrie 1982; Corpuz & 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).

Zeitlin et al. (1978) conducted a study of infants 0-3 years of age in ten severely depressed areas of Metro-Manila in Quezon City, Pasay, Manila and Pasig. They found that the significant determinants of infant nutritional status are:

a) mother's education
b) birth order
c) morbidity
d) relative degree of socio-economic deprivation
e) neighborhood location

Whether a baby had been breastfed or bottlefed made no difference in the nutritional status. "In locations with relatively high status more infants (21%) were bottle fed than in locations with the lowest nutritional status (12%)." "Even in locations in which nutritional status is lowest, there is no difference between the status of the bottlefed and breastfed infants" (Zeitlin et al. 1978). The mean weight for age (Philippine standard) of the bottlefed infants was 76.8% and of the breastfed was 7[illegible].

The researchers also inquired as to whether infants who were breastfed longer had a higher nutritional status than those breastfed a short time. No significant difference between weaning age and nutritional status was found.

> "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." (Zeitlin et al. 1978).

The quality of maternal care is suggested by the authors as a major factor in infant nutritional status. They found that mothers were quite ignorant of proper nutrition for their infants. Most mothers had not more than a sixth grade education. They found that due to their very low incomes, they tended to cut costs on everything rather than giving priority to the feeding of their infants.

A second study of the causes of malnutrition among 729 Filipino pre-school children found a slight relationship between type of infant feeding and nutritional status (Aguillon et al. 1982). Families were first classified according to whether their most malnourished child was normal, or first, second or third degree malnourished. After classification they found that:

a) fewer of the normal children were completely bottlefed (11.5%) than those with first (21.8%) second (30.7%) or third (54%) degree malnutrition. Mixed feeding, was equally prevalent, however, among all the groups.
b) fewer of the normal children (16.7%) had been weaned from milk at 1 to 6 months than the third degree malnourished children (53.9%). However, equally few of the first (12.3%) and second (13.5%) degree malnourished children had been weaned that early.
c) Later weaning (more than 12 months) was positively associated with higher nutritional status. More normal infants (35.7%) were weaned after one year than third degree malnourished infants (16.%).

d) More normal children (81.4%) had been supplemented by the age of 6 months than had third degree malnourished infants (70.3%). But there was not much difference in the timing of supplements to the first degree (73.1%) the second degree (65.9%) malnourished infants.

Taking into account all of the socio-economic variables the study measured, the authors' overall conclusion is that, "the results suggest 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." (p.9).

Studies by Balderrama-Guzman (1977) and Osteria (1977) lend support to these findings, that method of feeding is not so important to infant nutritional status as other variables that can affect the quality of feeding. One study involved following up from birth to age three 68 rural children (Balderrama-Guzman 1977). Ninety-seven percent were breastfed (71% purely breastfed) and of these 10% had been weaned by one year, 81% by 18 months. The researchers did not compare the nutritional status of the breastfed vs. the bottlefed infants (because only 2 were bottlefed) but they did find that in this predominantly breastfed group that:

a) in the first 6 months, 57.4% of the babies had a normal nutritional status, 38.2% had first degree malnutrition, 4.4% had second degree.
b) by 12 months, only 17.6% were normal
c) by 18 months, 10.3% were normal
d) by 24 months, only 4.4% were normal

That breastfed Filipino children experience high rates of malnutrition that equal the national average is supported by another study of 591 breastfed infants of urban low-income mothers who were followed from delivery to age two (Osteria 1977). In that sample,

by age two 61.3% were malnourished. This lower rate of malnutrition than that reported by Balderrama-Guzman's (1971) 68 breastfed children may be related to the fact that Osteria's sample was urban, while Balderrama-Guzman's was rural.

While Balderrama-Guzman suggests that a cause of malnutrition in breastfed infants is that they are weaned largely to rice (1971; 1977), Osteria shows the importance of household dynamics on feeding. The most important effect was the birth interval. Of babies born less than twelve months after a previous child, 85% to 87% of them were malnourished. Of babies born more than twelve months after a previous child, 40% to 60% were malnourished.

A second important factor was parity, especially among malnourished mothers. Those with more than four children had the highest percentage of malnourished babies (86.8%).

The mother's own nutritional status also had an effect on the infant's status, with 68.5% of babies of malnourished mothers and 55.6% of babies of nourished mothers being malnourished, but it is also noteworthy that more than half of the babies in both groups were malnourished. The overall conclusion is that birth interval and birth order have large effects on infant nutritional status, but what percent of the variance it explains was not determined.

Of course, birth interval and birth order are not in themselves causes of infant malnutrition. They are variables in household dynamics that lead to infant malnutrition, namely, they affect the quality of infant feeding. Since other studies indicated that most infant malnutrition usually begins after 5 months of age, it is possible to speculate that short birth intervals and high birth order result in a degree of child neglect that starts at the beginning of weaning to table foods. Perhaps due to an over-

demand on maternal time and energy, and because the preparation of nutritious infant foods takes time (more time than breastfeeding), mothers feed their infants whatever is handy (rice) or perhaps less often than infants require. This does not explain all, however, since even a high proportion of babies of well-nourished mothers of low parity (48.8%) and longer birth intervals (42.0%) were malnourished. The poor weaning diet of all low-income Filipino infants combined with high rates of morbidity due to poverty (crowding and poor sanitation) still seem to be the most logical direct variables.

Another possible reason why breastfed babies grow so poorly is that the breastmilk itself is insufficient, but this possibility has been inadequately investigated. One small study of the volume, protein and calcium content of the breastmilk of 26 Filipino mothers living near the campus of the University of the Philippines was conducted by Bongga et al. (1975). The babies ranged from 1 month to 10 months old. Bongga reports that milk volume at 1 to 4 months was 584-600 ml. per day instead of the FAO/WHO recommended amount of 850 ml. per day.

> "Breastmilk contributed only 70 percent of protein, 54 percent of calcium and 70 percent of calorie requirements"

At 7 to 10 months, their breastmilk provided only 25% of protein, 29% of calcium and 27% of calorie requirements.

Given that these infants would require proper supplementation in order to sustain growth, Bongga investigated the other foods these mothers fed their babies by the 7th to 8th month. In general they gave sweetened condensed milk diluted 1 oz. milk to 7 oz. water, rice gruel (lugao), crackers and cookies, and the overall amounts of these were too small. By months 9 to 10, they added boiled potatoes, bread and egg yolk. Fruits and vegetables were never given except in the case of one mother who gave banana to her infant. Still these amounts were insufficient in calories, protein and calcium to make up for the

limited milk intake. The authors conclude that the low volume of breastmilk and the poor supplementary diet at all stages lead to the poor nutritional status of breastfed Filipino infants.

> "Results of the present study show the gross inadequacy of dietary intake of infants at different stages of lactation. Contrary to the finding of Jelliffe that breastmilk secretion provides sufficient protein to infant during the first 4 months of life, results of this study showed that at least for the infants investigated, the amount of milk obtained from the mother was insufficient to meet the protein, calcium and calorie needs even as early as three to four months of age. By the second half of the year, further decrease in milk secretion and insufficient supplements made up for the poor nutritional status of infants."

The mothers in this study had no apparent signs of nutritional deficiency and all but three were at a desirable weight for height or over. Their dietary intake, however, was insufficient for lactation. Their mean calorie intake was 2,175 calories per day which is only 77% of the recommended allowance for lactation. Dietary calcium was 43% of the suggested allowance and protein consumption was 88% of recommended.

Although the author reports that the feeding of these infants was inadequate, their nutritional status did not suffer greatly. Out of the 26, only 3 were less than 80% of desirable weights, or first degree malnourished, but about half were 80% to 90% of standard weights, inching their ways toward malnutrition. The author feels that the nutritional status of Filipino infants could be improved through better maternal diets prior to and during lactation and higher quality infant food supplements started at an earlier age, perhaps at 4 to 6 months. The absence of any milk supplements in these babies' diets was a main reason for their poor dietary intakes.

Thus, no matter what variables are investigated, most studies come to the same conclusion that milk feeding is insufficient, weaning from milk is often early and the milk is replaced with rice. Guzman (1971) found that in her study of 585 rural children, at 12 months of

age 33% of the babies were completely off of milk. By 18 months 79% were receiving no milk. Because the weaning diet was largely carbohydrates, the protein content of these babies' diets was only 20% of the recommended amount, and the calorie content was 60-70% of the recommended amount. 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.

In the study by Zeitlin et al., 64% were off of milk by 12 months and 83% by 18 months. In this urban group of under 3 year olds, only 7% were considered to be normal. First degree malnutrition was identified in 41%, second degree in 45% and third degree in 7%.

Table 18. Cumulative percent weaned from Milk (breast and bottle).

Reference	3 months	6 months	9 months	12 months	18 months	24 months
Zeitlin et al. 1978 (urban)	27	29	39	64	83	92
Balderrama-Guman 1971 (rural)	0	0	9	33	79	94

Second, inferior foods and liquids replace milk feedings from an early age. Some mothers feed their babies am when they go out, when they do laundry (because their milk is "cold"), when they are tired or busy and don't want to be bothered or when they run out of milk formula. They also give them coffee, soft drinks and calamansi juice instead of milk feedings. These practices deteriorate the nutritional status of breastfed and bottlefed children. Next, when lugao is added to the diet, it fills the child with a food of low nutritional value that, due to less suckling, decreases the mother's milk supply. Between 6 and 18 months, the baby is then weaned to a largely rice diet, too low in calories or protein to sustain growth.

Food beliefs appear to restrict weanlings' diets mainly to rice. In the IPC study, mothers' beliefs about what should not be fed to babies less than one year old were collected. Table 16 lists the foods that were usually mentioned as restricted.

TABLE 19 Foods Restricted in Diets of Babies Less Than One Year Old

(IPC Research Project on Infant Feeding)

Restricted Foods	Reasons
"Oily" foods	
"Salty" foods	
"Sour" foods	Cause loose bowel movement
Coconut milk	
"Cold" fruits:	
papaya	
mango	
some types of bananas	Cause indigestion and gas pains
water melon	
"Hard" foods:	
Meats	
Candies	Baby cannot chew
Fish	Causes worms
Certain Vegetables:	
Sweet potato	
Corn	Cause indigestion and gas pains
String beans	
Turnips	
"Cold" foods	Cause colds and tonsilitis

Thus, it may be equally poor breastfeeding and bottlefeeding practices and weaning to rice that lead to poor nutritional status in infants, not breastfeeding or bottlefeeding per se. This explains why the incidence and duration of breastfeeding seems to have little or no effect on nutritional status, and why earlier supplementation does not lead to improved nutritional status. The rice is not a supplement but a substitute, and a poor one at that.

Third, Guzman (1971) found that in her 0-4 year age group 78.3% had parasite infections, with those infections starting at around six months of age. (No equivalent data on urban infants was located.) Obviously parasites take their nutritional toll on babies.

Morbidity and Mortality

Turning to the effects of breastfeeding versus bottlefeeding in infant morbidity and mortality, of studies done to date in the Philippines, three show that breastfed babies experience fewer episodes of diarrhea than bottlefed babies and one shows no difference. Breastfeeding appears to offer no immunological protection against respiratory ailments and fevers but bottlefed babies seem more likely to proceed to life threatening stages of these illnesses. In the hospital setting, rooming-in of newborns has been shown to lower the incidence of newborn morbidity and mortality. A small amount of evidence indicates that the increase in breastfeeding, that often accompanies shifts to rooming-in, is the responsible factor in lowering the incidence of neonatal diarrhea but does not account for lower rates of clinical sepsis.

A study of 525 urban infants by Zeitlin et al. (1978) found no difference in the morbidity of bottlefed, already weaned, and still breastfed infants for respiratory ailments, fevers and diarrhea based on a recall of illnesses for the previous month. They suggest that no difference in diarrheal diseases may be due to the relatively safe water supply found in Metro Manila. A drawback of this study is that the 0-4 month age group was not included and other studies show a slight difference in diarrheal rates in that time period.

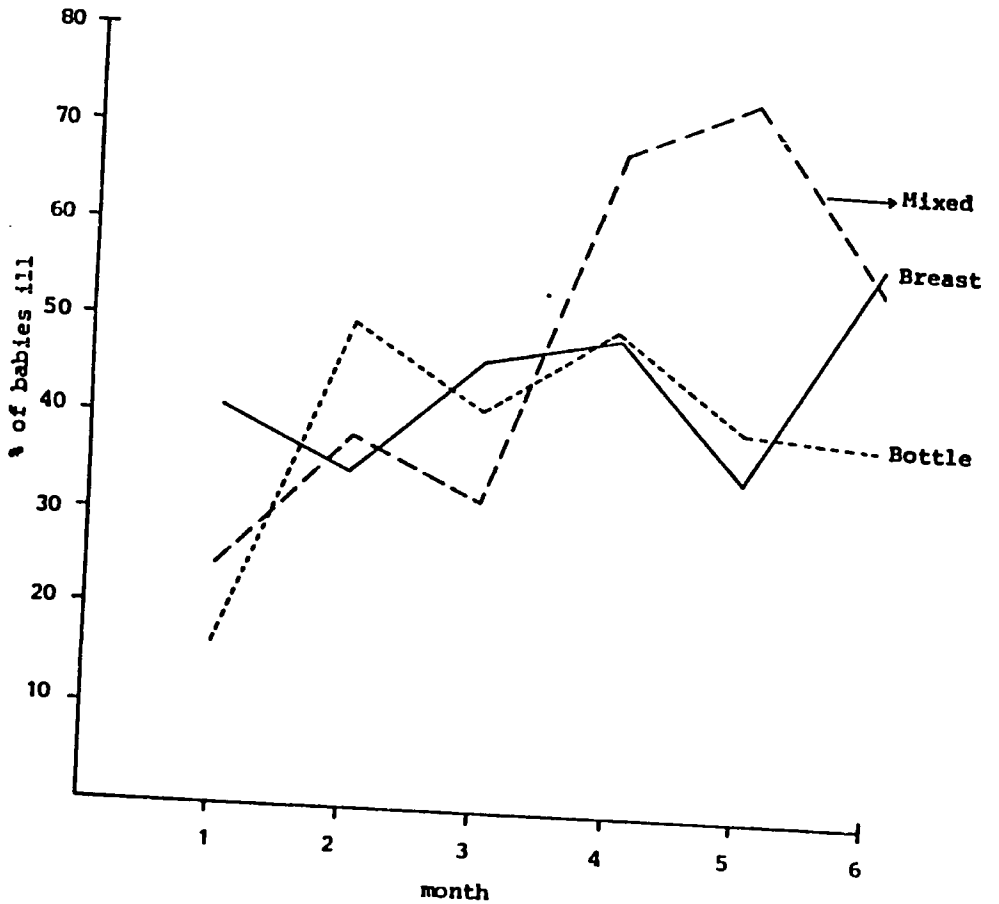
Likewise, Guzman (1977) found no difference in the incidence of illnesses between wholly breastfed and bottlefed infants in her sample of 68 babies. For diarrhea, she found that breastfed infants did have an edge over the bottlefed ones, but the protective effects of breast-

feeding seemed to last for only the first six months. The wholly breastfed infants had the fewest incidents of diarrhea, followed by mixed but predominantly breastfed, followed by mixed by predominantly bottlefed infants. For lower respiratory ailments, there was no difference among the different feeding groups. Overall, Guzman concludes that breastfeeding provides no significant protection from illnesses (p. 32).

In the current IPC study of infant feeding practices (Simpson-Hebert et al. 1983), we followed the incidences of upper respiratory illnesses, fevers and diarrhea in purely breastfed, mixed-fed and bottlefed infants for the first 6 months. All three groups of babies experienced high monthly occurrences of respiratory illnesses for the first 6 months (see Figure 11). As for illnesses accompanied by fevers, all three groups experienced fevers, but the bottlefed tended to experience them at a high rate (40% of all babies) earlier than the mixed-fed, and the mixed-fed earlier than the bottlefed. In the bottlefed group, 40% were ill with fevers in the third month. This hit the mixed-fed babies in the fourth month and the breastfed babies in the fifth month (see Figure 12). In the occurrence of diarrhea, the breastfed babies suffered least and the bottlefed the most (see Figure 13). However, by the sixth month, babies in all three feeding groups were experiencing diarrheas at fairly moderate rates. These data needed to be interpreted with reserve and caution because the numbers of babies in each feeding group is small. (Breastfed = 32; mixed-fed = 18; bottlefed = 15).

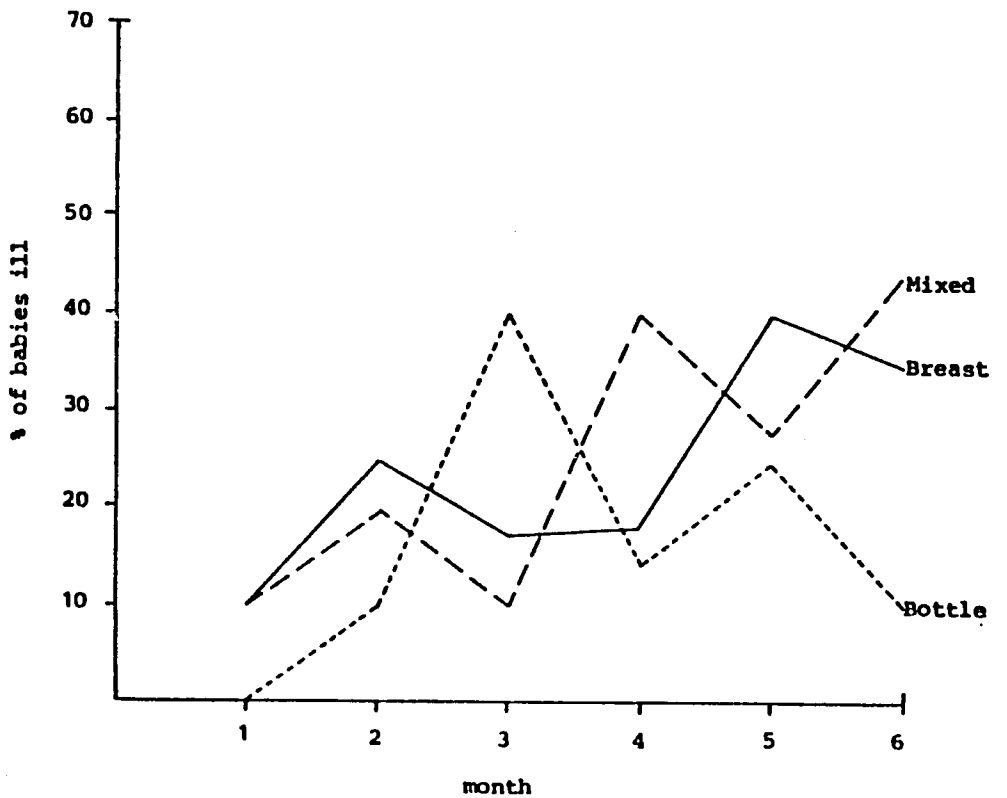
In the same study we analyzed whether the incidence of serious life-threatening illnesses occurred differently in the three feeding groups. For the first six months, out of our 32 purely breastfed babies, 2 experienced measles or 6% of the total. Of the mixed-fed babies, 4 out of the 18 were seriously ill, three with brocho-pneumonia and one with meningitis, or 22% of the total. The one with meningitis died from the

Figure 11. Incidence of Upper Respiratory Ailments By Mode of Infant Feeding



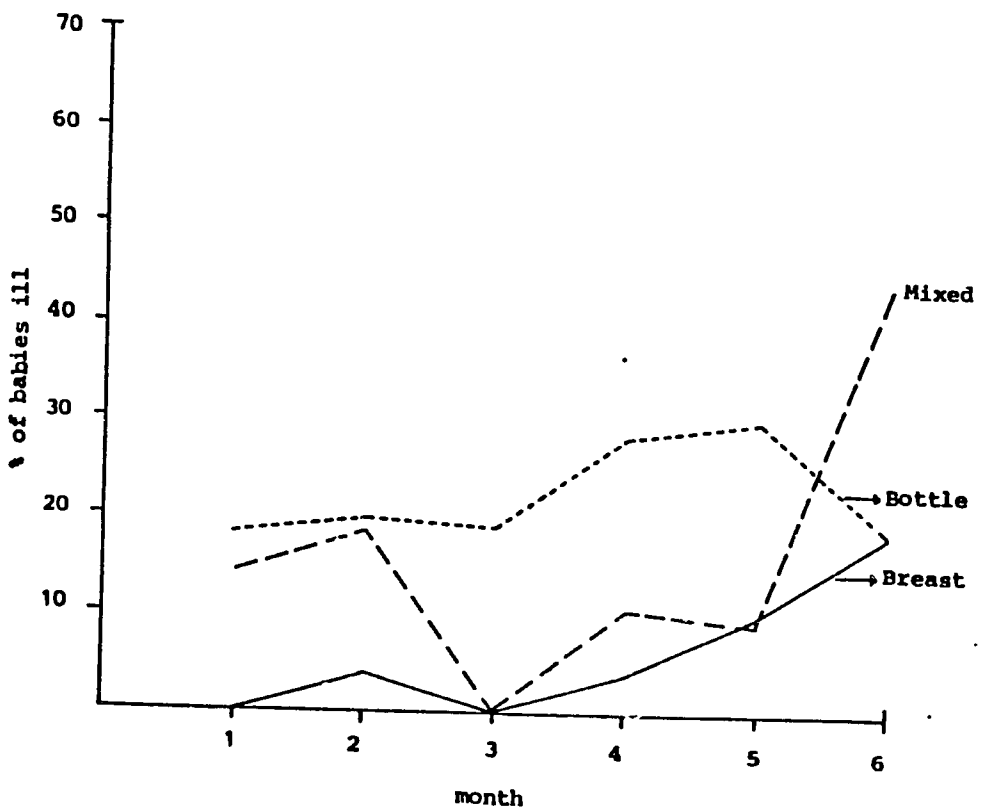
(IPC Study on Infant Feeding)

Figure 12. Incidence of Fevers By Mode of Infant Feeding



(IPC Study on Infant Feeding)

Figure 13. Incidence of Diarrhea by Mode of Infant Feeding



(IPC Study on Infant Feeding)

illness. Of the 15 bottlefed babies, 5, or 33% of the total, experienced serious illnesses, 3 bronchopneumonia, one serious bronchitis and one serious diarrhea with meningitis. One baby with bronchopneumonia died of the illness. All of the babies with these life-threatening diseases were brought to the doctor and the parents of all but the measles cases were advised to confine their babies in the hospital, but two could not afford the stated price of the treatment and returned home with their babies. One of these babies died.

Thus we may conclude that the immunological protection offered by pure breastfeeding is more important for serious life-threatening illnesses than for more minor illnesses. In the bottlefed and mixedfed babies, the minor illnesses tend to develop into more serious conditions requiring hospitalization, whereas the breastfed babies tend to overcome their minor illnesses more readily.

Two studies indicate that the rooming-in of newborns results in lower morbidity and mortality during hospital confinement, but it is not certain that the higher incidence of breastfeeding is the responsible factor.

A study conducted by Dr. Relucio-Guzman (1981) in the Baguio General Hospital clearly emphasizes the advantages of rooming-in for newborns in the hospital setting. Dr. Clavano brought about two major changes in the care and feeding of newborns between 1975 and 1978.

a. babies were no longer kept in the nursery but instead were brought to their mothers within eight hours after birth (this was gradually reduced to 6 hours, then to four, then two, and finally 30 minutes);

b. bottlefeeding of babies was discouraged.

This resulted in at least two environmental changes for newborns:

a. early mother-infant contact, constant bodily warmth (babies were placed in beds with mothers), and early stimulation;

b. early and continuous feeding of colostrum of most babies.

Dra. Clavano compared the morbidity and mortality experiences of infants born before these changes (N=4720) with those born after the changes (N=5166), based on their hospital records. She found that:

a. the incidence of breastfeeding increased from 40% to 87% of all newborns;

b. the incidence of clinical infection of newborns dropped 87%, and mortality due to clinical infections dropped 95%;

c. the incidence of diarrhea was reduced 47%, and newborn mortality due to diarrhea dropped from 8 per 1000 before the changes to 0 per 1000 after.

A similar study was conducted at the Manila Central University Hospital (Pangilinan n.d.). The hospital records of 2842 infants that were placed in the rooming-in ward with their mothers (and visited by their fathers) and 2390 infants placed in the ordinary nursery between 1977 and 1979 revealed that those roomed-in had a much lower incidence of infection. Babies with birth weights below 2180 grams were excluded. Four percent of the roomed-in babies developed infections as compared to 12.24% of the nursery group. At the same time the type of feeding for both groups was primarily artificial, but the roomed-in babies were purely breastfed at a higher rate (40%) than those in the nursery (16.6%). The effect of type of feeding on incidence of infection was not reported, so that it remains unclear whether feeding or environment resulted in these different infection rates.

Dra. Clavano did analyze the incidence of clinical sepsis, oral thrush and neonatal diarrhea by mode of infant feeding. The study covered the same 9,622 babies delivered from January 1973 to April 1977. Out of this group of babies, there were 98 cases of clinically septic infants. Sixty-six of these 98 were low birth weight babies and 32 were normal weight at birth. It was customary in the early part of that period to assign low birth weight babies to bottlefeeding (Dra. Clavano, personal communication). Only 3 of the clinically septic

infants were breastfed, 7 were mixed-fed and the remainder (88) were bottlefed. It is not clear from the report whether clinical sepsis is more strongly related to mode of feeding or low birth weight, but more of the clinically septic were on bottlefeeding. In order to resolve that matter, the low birth weight babies would have to be removed from the analysis, leaving the 32 normal weight babies with clinical sepsis for the analysis. Of the 98 clinically septic babies, 67 died. Of those 67, 64 were bottlefed and 53 were low birth weight babies. The usual mortality rate among low birth weight babies and the mortality rates of low birth weights by mode of feeding would have been very useful data not reported here. Thus, the presence of these low birth weight babies making up two-thirds of the septic babies and three quarters of those who died remains a confounding variable in this study.

It appears from these data that the incidence of neonatal clinical sepsis in general is low in this hospital and is concentrated in low birth weight babies who happened to be assigned to bottlefeeding. An analysis of clinical sepsis by mode of feeding that analyzed normal weight and low weight babies separately would have provided a clearer picture, but the number of babies in each group would have been too small to make the analysis meaningful. Thus the issue regarding clinical sepsis remains unresolved.

The advantage of breastfeeding is more convincing for oral thrush and diarrhea. The incidence of oral thrush was 67 out of 9,622 babies. Of these, 63 were bottlefed, 2 mixed-fed and 2 breastfed. The incidence of diarrhea was 138 out of the entire sample. Of these, 124 were formula fed, 8 were mixed-fed and 6 were breastfed. Thirty-eight of these babies died and all were formula-fed. This could have happened by chance alone since 90% of the entire sample was formula-fed. Almost all (130) of the diarrhea episodes occurred during the period prior to rooming-in. These findings on diarrhea are consistent with those of

other studies reported here, that breastfeeding babies exhibit fewer episodes of diarrhea than bottlefed babies, but also confirms that morbidity differences between feeding groups are never very large ones.

The issue of nutritional status and morbidity must really be taken together because they are synergistic. One reason Filipino infants have such poor nutritional status, besides the poor feeding practices discussed earlier, is because they are often sick. Respiratory illness and gastro-intestinal infections are frequent, whether breastfed or bottlefed, and they lead to poor appetite. In Guzman's sample of 68 mostly breastfed infants, 26 of them had primary complex. In Zeitlin's (1978) one month recall, 50% of all infants in the previous month, whether bottlefed or already weaned, had been sick with either diarrhea (59%), fever (75%) or respiratory (82%) illnesses. None of these could be related to bottlefeeding or age at weaning, but were related to the relative degree of poverty, crowding and poor sanitation of the different depressed neighborhoods in the study. In the IPC study, more than 50% of all 74 babies were sick in any one month for the first six months, again a factor that suppresses the infant's appetite.

More extensive studies of infant mortality by mode of milk feeding are sorely lacking. Osteria (no date) reports that out of a sample of 794 hospital-delivered infants followed two years, 98 died. When the 41 who died in the first month of life are excluded from the analysis (27 died the first week), a total of 56 babies died over the subsequent two years. Of those, 14 were bottlefed from birth and 42 were breastfed. Thus, the distribution of deaths by mode of feeding is 25% in the bottlefed category and 75% in the breastfed category. This is nearly identical to the distribution of breastfed and bottlefed babies, as 76% were breastfed at birth. From these data, no relationship between mode of feeding and mortality can be ascertained.

11. The Contraceptive Effect of Breastfeeding

Breastfeeding has a very considerable impact on birth spacing in the Philippines, an effect ultimately advantageous to infant health and nutritional status. A study of 2,102 rural Filipino mothers (Del Mundo 1970) discovered that 51.2% of mothers who breastfed 7 to 12 months had their next babies after 24 to 35 months. This same natural child spacing (24 to 35 months) was achieved by only 30% of those mothers who bottlefed their infants.

Breastfeeding suppresses the return of the ovulatory cycle for a few months postpartum, reducing the chance of conception. The return of menstruation is the easiest, though not perfect, indicator of the return of ovulation, so that the absence of menstruation postpartum, called amenorrhea, is often used to demonstrate the effect of breastfeeding on ovulation.

In Bay, Laguna, Osteria (1973) compared the duration of postpartum amenorrhea in 165 subjects who breastfed with 18 subjects who did not breastfed. The breastfeeding mothers had an average duration of amenorrhea of 9.8 months. Those who did not breastfed had a duration of 1.9 months.

In the Philippines, breastfeeding provides greatest protection in the early months postpartum but largely loses its effect by one year. This is mainly due to the fact that Filipino infants are generally receiving supplements by 6 months, and this results in reduced suckling and thus reduced suppression of the menstrual cycle. Table 16 compares the timing of the return of menstruation in breastfeeding and non-breastfeeding women in the Philippines. At three months, about one-quarter of Filipino breastfeeding women experience a return of menstruation, but nearly all of those not breastfeeding are menstruating. By 12 months, one-third of those breastfeeding are still amenorrheic.

TABLE 20. Return of Menstruation Postpartum

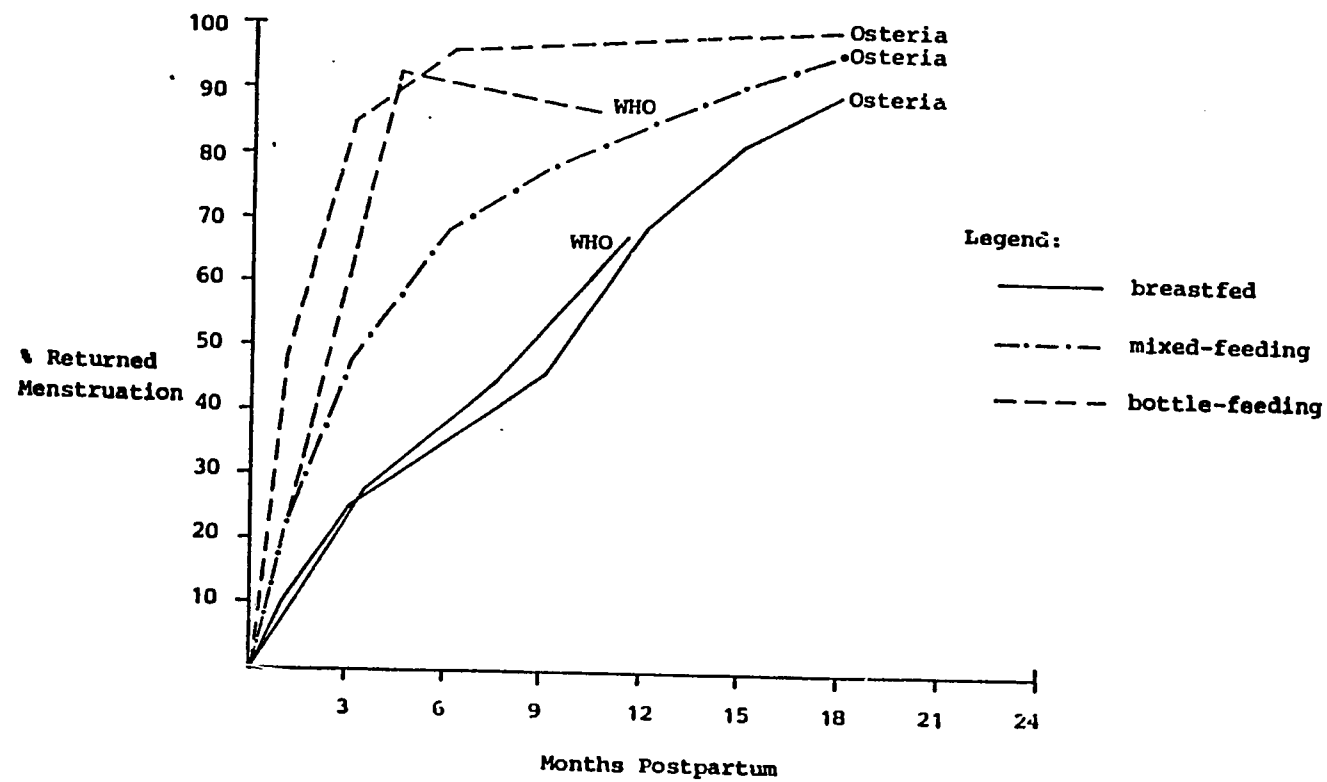
By Infant Feeding Status

Reference	Group	% Menstruating 3-4 months BF	3-4 months not	7-8 months BF	7-8 months not	11-12 months BF	11-12 months not
WHO 1979	- Urban Advant.	21.4	97.8	-	100.0	-	100.0
	- Urban poor	27.8	93.5	42.4	90.9	68.6	88.2
	- Rural	23.2	86.7	40.6	94.1	68.6	96.0
Csteria 1978	Urban poor	25.1	85.9			68.2	99.5

The absence of menstruation is a fairly accurate but not perfect indicator of fecundability. The WHO study found that 8.2% of Filipino women became pregnant while breastfeeding before menstruation returned. Thus the reliability of breastfeeding as a contraceptive method is slightly less than that of the IUD or contraceptive pill. When menstruation resumes, women can no longer rely on breastfeeding as a contraceptive method.

Pure breastfeeding delays the return of menstruation longer than mixed feeding. Csteria (1978) found among 794 low income urban women that at 6 months only 34% of purely breastfeeding women had resumed menstruation as compared to 79% of those mixed feeding (see Figure 8).

Figure 14. Return of Menses among Low-income Urban Women by Mode of Infant Feeding



Osteria (1978)

WHO (1979)

13. Summary and Conclusions

A review of the Philippine literature on infant feeding was undertaken to determine breastfeeding, bottlefeeding and weaning practices in the Philippines and the effects on infant health. The ultimate purpose of the review was to determine what educational messages to mothers should form the foundation of a proposed campaign to encourage breastfeeding. The main findings of the review are:

1. Filipino mothers initiate breastfeeding at a very high rate. About 90 to 94% of rural low income and 75% to 85% of urban low income women initiate breastfeeding. A smaller proportion of urban economically advantaged, 67%, initiate breastfeeding.
2. Pure breastfeeding at delivery, as opposed to mixed feeding, has remained very high among the low income groups. It is chosen by 50% to 70% of urban and rural low income women. Mixed feeding appears to have gained in popularity among the middle and upper income groups and among those receiving hospital deliveries.
3. Pure bottle feeding remains low at delivery, rarely exceeding 25% for urban babies or 15% for rural and provincial babies.
4. The incidence of breastfeeding and bottlefeeding have changed very little between 1955 and 1983, so that neither downward nor upward trends can be found in either feeding method.
5. About half of all breastfed babies are still breastfed at one year. About three-quarters are breastfed to six months. How much of this breastfeeding is mixed along the way with bottlefeeding could not be ascertained from the literature.
6. The average duration of breastfeeding has neither increased nor declined from 1959 to 1983 and remains at about one year.

7. The most popular milks for artificial feeding today in the urban areas are infant formula and sweetened condensed milk. No equivalent data are available for the rural areas since 1970. Prior to 1970, the most popular milks for bottlefeeding everywhere were evaporated and sweetened condensed. The same may be true today for the rural areas.
8. The reasons for choosing an infant feeding method appear to be primarily economically motivated. Among those choosing breastfeeding, they say it is cheaper. Among those choosing bottlefeeding, they say it is because the mother is working. The primary reason for mixed feeding is that it provides freedom for the mother. Insufficient breastmilk is also frequently reported as a reason for mixed feeding and pure bottlefeeding. Breastfeeding mothers also usually say that breastfeeding is the most nutritious way to feed their babies.
9. Socio-economic variables influence infant feeding decisions. Better educated women, women working outside the home, women with higher incomes, women who have had hospital deliveries, women who have more contact with physicians, and women who know less about breastfeeding are more likely to bottlefeed.
10. Rooming-in of babies in hospital deliveries has a positive effect on breastfeeding initiation and continuation.
11. Other people, mainly relatives, influence women to breastfeed or bottlefeed. However, mass media, primarily television, is increasing as an important influence on women.
12. Maternal nutritional status has only a slight effect on breastfeeding initiation and continuation.
13. A large proportion of Filipino women, perhaps one-half, do not give their babies their colostrum. They express it and throw it away. Non-milk feedings, including Tiki-Tiki, ampalaya juice and castor oil, are commonly given to babies in the first few days of life in the belief that it helps to expel the meconium.

14. Filipino infants are often weaned from the breast too early. A number of traditional beliefs undermine breastfeeding in the early months. These lead to a decrease in the sucking stimulus, which results in insufficient breastmilk and another pregnancy, the most common reasons for weaning.

15. The most common method of terminating breastfeeding is the application of bitter or hot substances to the mother's nipples.

16. Supplementation of babies' diets begins as early as 2 months and about three-quarters are being supplemented by the age of six months. The main supplements are lugao and table rice.

17. Age at milk weaning, whether breast or bottle, begins as early as three months. By 18 months most babies are completely off of milk.

18. Malnutrition among infants and pre-schoolers is a problem of massive proportions in the Philippines. By 18 months, only 15% are normal weight for age. Malnutrition usually appears after 6 months of age.

19. There is no scientific evidence to support the view that breast-fed babies are better nourished than bottlefed babies. The variables most affecting infant nutritional status are degree of poverty, birth order, and birth spacing, and mother's educational attainment. Malnutrition appears to be caused by an inability to buy high quality foods including milk (poverty), ignorance of proper infant feeding (low maternal education), child neglect (due to high parities and a close spacing between births), and high levels of illness among infants. Insufficient breastmilk due to poor maternal diets is also suggested as a problem.

20. Breastfed and bottlefed babies experience illnesses at about the same rates. Bottlefed babies have a little more diarrhea in the first six months. Serious illnesses may occur more often in mixed-fed and bottle-fed babies in the first six months, but evidence is scanty.

21. Filipino infants suffer from upper respiratory infections, diarrhea and fevers at a high rate. These high rates are more closely related to degree of poverty, crowding and poor sanitation than to mode of feeding.

22. Rooming-in of babies after hospital deliveries has a positive effect on infant health, but it has not been conclusively demonstrated that the increased incidence of breastfeeding that accompanies rooming-in is the responsible factor.

23. Breastfeeding has a positive effect on birth spacing in the Philippines. Complete breastfeeding has a more positive effect than mixed feeding. Yet birth spacing tends to be short even among breastfeeding mothers because of poor breastfeeding practices and early termination. This close-spacing is a leading cause of infant malnutrition.

14. Recommendations

The stated goal of the proposed breastfeeding campaign in the Philippines is to improve infant health. The literature shows that the main causes of young child malnutrition in the Philippines are (1) high birth order, (2) close birth spacing, (3) poverty, (4) low maternal education. All of these lead to a poor weaning diet for babies. The literature shows that the main causes of infant morbidity are poverty, crowding and poor sanitation.

Mode of infant feeding has not been shown to be a major determinant of infant health in the Philippines.

Filipino women do not need to be convinced to breastfeed, because they already breastfeed at very high rates. Their husbands are also largely pro-breastfeeding. The duration of breastfeeding is 9-12 months on average. Infant malnutrition arises at weaning. Milk feeding is decreased and then terminated too early and replaced by low-quality foods, mainly rice.

Filipino mothers are, on average, feeding their babies as they have been told to do by nutritionists and health personnel, that is, breastfeed fully for 4 to 6 months and then add table foods to the infant's diet. They do this within the limits of their budgets and in accordance with indigenous breastfeeding and weaning beliefs. For Filipino infants, this results in massive malnutrition.

A campaign to increase the incidence and duration of breastfeeding could have beneficial effects on infant health, but as long as such a high proportion of the population remains impoverished, the campaign can only be expected to make marginal improvements in infant health.

If campaign leaders were to shift their focus to encompass the major determinants of poor health and nutrition, the campaign could have greater impacts. Thus the campaign needs to find ways of overcoming the limiting effects of poverty and low education on infant nutrition and health and needs to tackle the other serious problems, close spacing of children and large numbers of children. Breastfeeding messages can be used as an entree to weaning food and family planning messages.

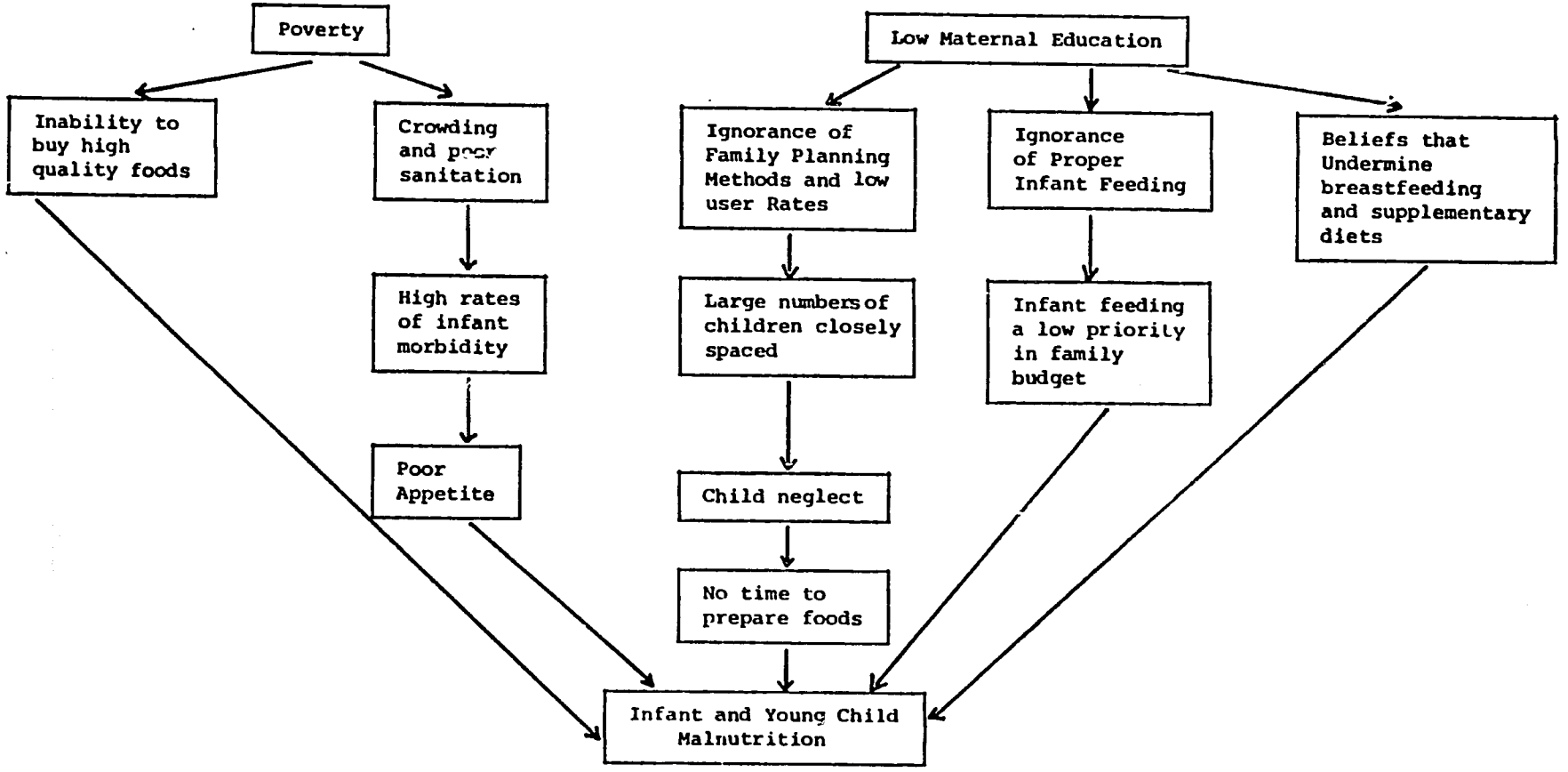
Figure 15 proposes a model of infant and young child malnutrition in the Philippines based on this author's assessment of the literature. Using this model as a guide, a breastfeeding campaign could help to attack the problems of:

a. poverty, because breastfeeding is more economical than bottle-feeding for non-working mothers;

b. large numbers of children closely spaced, because complete and prolonged breastfeeding has a contraceptive effect in that it suppresses the ovulatory cycle for a time (3 to 12 months) and family planning messages can be incorporated into the campaign;

c. ignorance of proper infant feeding, by telling parents that their babies need to be fed milk for a longer period of time and in large quantities;

FIGURE 15: A MODEL OF INFANT AND YOUNG CHILD MALNUTRITION IN THE PHILIPPINES



d. beliefs that undermine breastfeeding and supplementary diets, by providing information that will lead to better breastfeeding practices and better supplementary diets.

In order to achieve improvements in birth spacing and nutrition, the breastfeeding campaign would need to:

a. Encourage mothers to feed their babies their colostrum. They need to be told that colostrum is not "stocked-up" or "spoiled," that it is nutritious and needs to be fed to babies. Many women believe that their milk does not come in until the third or fourth day after delivery. This belief needs to be dispelled.

b. Discourage the feeding of purgatives such as Tiki-Tiki, ampalaya juice and castor oil.

c. Discourage the feeding of non-milk materials in the early months because these can introduce harmful pathogens into babies. Their own breastmilk is enough liquid for the baby, and frequent suckling stimulates milk production.

d. Encourage breastfeeding mothers to eat more food than normal and encourage pregnant mothers to gain more weight, so that breast-milk production will be increased.

e. Encourage complete breastfeeding for five to six months, as long as the baby is healthy and gaining weight.

f. Tell mothers that babies need milk for 2 to 3 years. Breast-feeding can be continued that long. If her milk becomes scanty, then milk should be purchased for the baby.

g. Discourage the use of sweetened condensed milk for infant feeding. Ask manufacturers to place on their labels in bold print "DO NOT FEED TO BABIES" in English and Pilipino.

h. Provide mothers with milk feeding guidelines. For breastfeeding, tell them babies need <u>at least</u> 6 feedings per day, but they can feed more often. For bottlefed babies they need X number of ounces per day according to their ages. Provide charts for birth to age three.

i. Attack indigenous beliefs that undermine breastfeeding.

j. Attack indigenous beliefs that undermine weaning diets. Tell mothers what to feed and that these foods supplement the milk diet but do not substitute for it. Provide supplementary food charts for birth to age three. Discourage a diet based largely on rice. However, a scoop of powdered milk can be added to lugao to make a nutritious weaning food.

k. Tell mothers how to space babies farther apart and how to terminate child-bearing. Discourage reliance on breastfeeding as a contraceptive but tell them it serves as extra protection beyond their contraceptive method. Breastfeeding women can safely consume low-dose contraceptive pills and use IUDs. They cannot practice the rhythm method.

l. Encourage "rooming-in" in hospitals because it has a positive effect on breastfeeding.

m. Guard against stating advantages of breastfeeding that are not true or proved. For example, it is untrue that breastfed babies are less sickly and have a higher nutritional status. It is also untrue that breastfeeding is a reliable contraceptive method or that it protects women from breast cancer. Breastfeeding should be encouraged because it is a high quality, clean, nutritious milk that is not costly. If breastfeeding is done correctly, the child is less likely to acquire diarrhea and perhaps more likely to survive a serious illness.

At least one research group has attempted an experiment to encourage prolonged breastfeeding and better supplementary diets for babies (Fernandez et al. 1983; Guthrie et al. 1982). In Cebu, 154 mothers who followed advice and whose babies gained weight were positively reinforced with praise and small tangible rewards. At the beginning of the study the babies were 0-24 months old and the reinforcement program lasted one year. For the babies who were less than one year old at the beginning

of the program, no improvement was made in their nutritional statuses; in fact, at the beginning of the program 85-92% of the 0-5 month olds were normal but a year later only 25 to 38% were still normal weight for age. In the 12 to 24 month age groups they had better results. These children made significantly better weight gains than the children in the control group, yet only about 40% were normal weight for age a year later in spite of these intensive efforts. This was better than the control group that averaged only about 14% normal.

The authors state that the 6 to 18 month interval is particularly difficult for Filipino infants. The breastmilk no longer meets the nutritional requirements of the children and the usual supplement, a corn gruel (lugao), is too low in caloric density. Babies cannot eat enough to meet their calorie needs. Also the babies had poor appetites, perhaps due to teething or infections.

Cultural factors also played a role in the results of this study.

a. They say that the mothers showed many signs of "learned helplessness" because they see no relationship between better diet and better health. Babies seem to get sick or die at random, not according to nutritional status.

b. Mothers were reluctant to compare the growth of babies because it is considered bad luck to admire healthy babies.

c. The mothers had alternative explanations for poor growth such as heredity or illnesses that can be treated only by indigenous healers.

c. They also had alternative explanation for getting well. They often gave credit to these healers or to the powers of vitamins rather than to good diet or good medical treatment as the reason their babies got well from illnesses.

Such studies point to the variety of cultural and psychological factors that a breastfeeding campaign must overcome, factors that are often the by-product of poverty (indigenous healers are cheaper) and low education.

Above all it needs to be recognized that the basis of high rates of infant malnutrition, morbidity and mortality in the Philippines is mainly due to poverty and a lack of knowledge or incentive to properly feed babies over 6 months of age (due to low maternal education), and until these basic problems are solved we should expect little improvement in infant health, no matter how long or how completely Filipino mothers breastfeed.

Footnotes

1. A careful reading of the Gabucan-Dulay (1970) article shows Berg's figures to be erroneous. Actually, she reports that 43.8% of babies were purely breastfed at birth, and 67.9% either purely breastfed or mixed-fed at birth. At 12 months, 51% of the 67.9% were still breastfeeding, or 35% of the total sample of 1000 infants. In the Manila hospital-based study (Anonymous 1959), 64% were purely breastfed at birth and 76% were either purely breastfed or mixed-fed at birth. At 12 months, 40% of the 76% were still breastfed, or 30% of the total sample of 1000 infants.

	% Breastfed At Birth	% Purely Breastfed At Birth	% of Breastfed Group Breast-fed 1 year or more	% of Total Sample Breastfed at 12 months
Anonymous (1959)	76	64	40	30.4
Gabucan-Dulay (1970)	67.9	43.8	51	34.6

Not only is this data reported wrongly in Berg, but the data are not even comparable since one is a hospital study and the other is a national survey.

2. A few other studies (##s 4, 6 & 26) report the percent of the total sample, breastfed and bottlefed, who were being breastfed at certain time-points. Those studies cannot be compared with the ones presented here because the latter are measures of duration among breastfeeding women only. Another study (##25) provides figures on cumulative percent weaned, which could not be easily converted to the percent of babies still being breastfed at the monthly time-periods.

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Addendum

Research Needs

This paper, prepared for the IEC Group of the National Breastfeeding Campaign, covers all of the scientific literature on infant feeding that I was able to locate. Clearly there are areas where our knowledge is still deficient and it is these areas that question the very foundation premises of the campaign. We assume that Filipino mothers can produce enough milk to feed their babies, and that nutritional status and infant health are related to mode of milk feeding. Yet the findings of the literature review do not support these views. Thus, because our knowledge in these areas is still very limited, I propose the following areas be given priority for future research:

1. Breastmilk volume among Filipino mothers may be inadequate to sustain good growth in infants for the first 6 months, but only one small study of 26 women exists (Bongga et al. 1975). This is insufficient evidence on which to build policy. What is needed is a larger study based on the study design used by Bongga et al. which also measured total maternal and infant nutritional intakes and nutritional status.
2. More studies are needed comparing the nutritional outcomes of breastfed and bottlefed babies. As many extraneous variables as possible need to be controlled in such a study, such as birth order of the child, birth spacing, family income, neighborhood crowding and sanitation, nutritional status of the mother and parents' educational attainment.
3. More studies are needed on the morbidity and mortality patterns of breastfed and bottlefed babies controlling again for all the same variables as listed in # 2. Different aged babies need to be investigated separately, like the 0-6 month age group, the 6-12 month, 12-18 month and 18-24 month groups.

4. There is an underlying hypothesis in this paper that the general poverty of the Filipino population is responsible for infant malnutrition, morbidity and mortality, not mode of milk feeding. Poverty lowers the ability of parents to eat properly themselves. They can only feed their children what is available to the family as a whole. If the lactating mother is deficient in calories, she cannot breastfeed adequately. If she is not lactating, she cannot afford to buy enough milk formula for her baby. When the baby is weaned to semi-solid and solid foods, high quality foods are not available. This undercurrent of malnutrition, while usually not severe, is carried through childhood and into maturity. When young women marry and bear children, they start out at a nutritional disadvantage which jeopardizes their own lactation, and so the cycle is repeated. Likewise, poverty leads to a less than optimal environment to sustain good health. Crowding, poor sanitation and inability to afford medical care all affect health status. Poverty also affects the educational level of the parents in that children quit school at an earlier age to save money on clothes and materials and to begin earning for the family. This exacerbates ignorance of proper nutrition for all family members.

Any research that could address the effects of poverty on infant nutritional status in a scientific manner, beyond what has already been documented, would be a useful addition.

There are three infant feeding research projects currently underway in the Philippines: one in Metro Manila and two in Cebu.

a. A research project at the Institute of Philippine Culture, Ateneo de Manila University: "Infant Feeding Decisions and Contraceptive Choices in the Philippines" - 1982-1985 - Low Income of Metro Manila - 175 families with newborns followed

18 months. Project Director is Mayling Simpson-Hebert. Research needs 2, 3 and 4 above as covered by this project.

b. An infant feeding research project at the Cebu Institute of Medicine, Cebu City. Project Directors are Tomas L. Fernandez, Nenita Estrera and George Guthrie. Research needs 2 and 4 are covered by this project.

c. An infant feeding research project at San Carlos University, Cebu City. About 2,000 mother-infant pairs. Project Directors are Father Wilhelm Fleiger and Florentino Solon. Research needs 2, 3 and 4 are covered by this project.

My personal knowledge of the two Cebu projects is very limited so that those project directors should be contacted for complete information. All three of these projects are intended to produce information that could be useful to a breastfeeding campaign. Some of the results, such as those from the Metro Manila study, will be ready in 1984, but project directors could be asked for early unpublished results.

Mayling Simpson-Hebert
May 16, 1983