

ECONOMIC AND SOCIOCULTURAL FACTORS INFLUENCING
WOMEN'S INFANT FEEDING DECISIONS
IN A RURAL MEXICAN COMMUNITY

By

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ABSTRACT

ECONOMIC AND SOCIOCULTURAL FACTORS INFLUENCING WOMEN'S INFANT FEEDING DECISIONS IN A RURAL MEXICAN COMMUNITY

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Mothers in Malinalco, Mexico with infants aged two years or younger were interviewed concerning socioeconomic and attitudinal factors influencing infant feeding decisions. Mothers were classified as exclusively breast feeding (EBF), mixed feeding (MF), exclusively formula feeding (EFF) or formula feeding after weaning (FFAW) based on current and former infant feeding methods. Exclusive or partial breast feeding was practiced by over half the research population. A majority of EBF mothers placed lowest on all income variables except socioeconomic status. More ($p \leq .05$) EFF and MF mothers had larger families than FFAW mothers. More ($p \leq .05$) EBF and FFAW mothers than either MF or EFF infants received advice to breast feed from a non-family individual. Recumbent length of mothers' infants was measured. In the age interval 0 to 24 months, EBF infants were longer than FFAW infants. Further investigation of mothers' time constraints and capacity for lactation is necessary.

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CHAPTER I

INTRODUCTION

Serious infant nutrition problems have been attributed to a rapid decline in breast feeding in developing countries (Behar, 1964; Berg, 1970). An increase in commercial formula and other breast milk substitutes use has accompanied declining breast feeding behavior. While breast milk has been infants' main liquid nourishment for most of human history, the practice of bottle feeding cow's milk has existed for approximately sixty years.

Change in infant feeding methods has taken place at a rapid pace in industrialized countries. During the latter part of the nineteenth century and the first quarter of the twentieth century, the majority of women in Western European countries and the United States breast fed their infants. During the nineteenth century infant mortality was approximately 25 to 30 percent in European countries. With the improvement of economic and sanitary conditions during the beginning of the twentieth century, infant mortality rates dropped to 5 to 8 percent in Northern and Western Europe. At this time a decline of breast feeding incidence also occurred.

Improved socioeconomic conditions notwithstanding, breast fed babies had milder illnesses and lower mortality rates than bottle fed

babies in industrialized countries (Harfouche, 1970). Grulee and Sanford (1936) studied the case histories of infants cared for at the Infant Welfare Society of Chicago between 1924 and 1929. The incidence of infection in breast fed babies was 37.4 percent as compared with 63.3 percent in artificially fed babies. The incidence of gastrointestinal disorders in breast fed infants was 5.2 percent in contrast to 16 percent for formula fed; the breast fed mortality rate was 1.54 per 1000 compared to 84.3 per 1000 in bottle fed infants.

In recent decades, the practice of breast feeding has undergone a further decline. Statistical evidence documenting a dramatic trend of decline in European countries since the 1930s has been reviewed by Vahlquist (1975). The number of infants being breast fed at three months fell from 77 to 33 percent in 20 years time in Bristol, England (Ross and Herdan, 1951). Mellander and Vahlquist (1958-59) in Sweden found that incidence for breast feeding varied between 45 and 55 percent at two months; between 28 and 40 percent at four months; and between 20 and 30 percent at six months. Berg (1970) reported that the U.S. national average of women breast feeding upon leaving the maternity ward dropped from 38 to 21 percent from 1946 to 1956 and decreased to 18 percent in the following decade. Hill (1967) estimated a similar U.S. national average of 25 percent in 1967.

Increased use of commercial infant formula has not been limited to the industrialized nations; in developing countries also women are using infant formulas to a greater degree than previously. As was the case in Western European nations, the wealthy urban classes were the first to abandon breast feeding in developing countries. Recently poor urban and periurban mothers have also shown a decline in breast

feeding behavior (Knodel, 1977). Unlike Western European countries, industrialization in developing countries has not always paralleled an improved socioeconomic condition of the underprivileged classes. Commercial infant formulas that are made available in developing areas are safe products. However, the use of such formulas by low socioeconomic groups may constitute a health hazard because environmental and educational conditions necessary for proper formula feeding implementation cannot be met.

The implications of abandonment of breast feeding with increased commercial formula use by Third World mothers has been the subject of much debate. The economic repercussions of increased use of commercial milks and formulas for the individual mother as well as the nation as a whole have been considered (Jelliffe, 1975; Reutlinger and Selowsky, 1976; Berg, 1970). The high costs to poor families resulting from the purchase of commercial milks as well as the loss of a potential natural resource, breast milk, to the country as a whole have been considered undesirable consequences of declining breast feeding. Deleterious health effects of bottle feeding for infants have been considered by Plank and Milanesi (1973) and Grantham-McGregor and Back (1970) as well as increased infant mortality due to diarrheal disease (Puffer and Serrano, 1973).

Reasons for the shift to bottle feeding have been the subject of much conjecture and disagreement. Urbanization has been suggested by some as a major contributing factor in the decline of breast feeding (Greiner, 1977b; Jelliffe, 1975), while others (Latham, 1977) pointed out that ideological and political factors may correlate better with the prevalence of breast feeding than the degree of urbanization.

Women's employment outside the home also has been cited but there is no general agreement as to the degree to which this is an influencing factor (Almroth, 1977; Popkin and Florentino, 1976; Greiner, 1977a). Commercial advertising by milk companies may contribute to the change (Jelliffe and Jelliffe, 1970) although claims of a direct relationship between commercial advertising, illiteracy and marasmic infants have been criticized as oversimplistic and unsupported by the data (Human Lactation Center, Ltd., 1978). A few studies have investigated factors influencing intention and success in breast feeding as measured by the attitudes of the mother (Liebrich and Morley, 1976), as well as methods of feeding and reasons and influences on this decision as reported by the mothers themselves and the relation of other factors directly influencing the women (Grantham-McGregor and Back, 1970).

The present research was an attempt to investigate feeding behavior at the level of the individual woman. It was endeavored to identify those economic, family and socioeconomic factors which significantly influenced the infant feeding behavior of mothers in a developing country. By identifying which factors were highly associated with the specific feeding methods elected by mothers, a more realistic understanding of the feeding decision could be attained. Moreover, knowledge of the factors that most influence infant feeding decisions could be useful in the promotion of effective intervention programs in the area.

The specific factors investigated were the infants' feeding history, attitudes and advice received by the mothers concerning breast milk and infant health, feeding methods used by family and peer females, family economic and living situation and the infants'

recumbent length. Five experimental hypotheses were proposed to be tested in the research project:

1. Economic factors related to the woman's family are associated with the woman's infant feeding decisions.
2. Factors of the woman's and her family's daily living situation are associated with the woman's infant feeding decisions.
3. A woman's perceptions of the role of breast milk and breast milk substitutes in infants' growth and health are associated with her infant feeding decisions.
4. The method by which a woman was fed as an infant is associated with her infant feeding decisions.
5. The feeding behavior of females within the woman's social environment is associated with her infant feeding decisions.

The specific factors were chosen for investigation because they define the scope of influences to which an individual mother may be subjected. Economic factors were selected in order to investigate the influence of the family's income and varying levels of impoverishment on the feeding decision.

Reasons and attitudes concerning breast feeding and infant health were investigated in order to document the actual reasons given by the mothers for their feeding decisions as well as the perceived appropriateness of different feeding methods. Advice received by the mothers and other social factors were investigated in order to measure the amount of influence exerted on the mothers by individuals of their family and community. Family factors (number of children in family, head of household) were investigated in order to assess how much different household situations affected the feeding decision.

Recumbent length was the anthropometric measure of choice due to age of infants in the study and time restrictions. Recumbent length was measured to determine if the infants studied were representative of the Mexican infant population and in order to compare infants' length according to feeding history.

It is possible that a combination of several influences is more fundamental to a mother's infant feeding decision than any one overriding factor. A complex mosaic of elements is involved in any decision-making process. Specific definition of interrelationships of factors involved in an infant feeding decision is beyond the scope of the present research. The relationship of factors influencing the feeding decision to each other would need to be analyzed. It was the focus of the present research to identify those factors which were highly associated with the specific feeding methods elected by the mothers. Such definition may lead to a more realistic understanding of infant feeding decisions at the level of the individual woman.

CHAPTER II

REVIEW OF LITERATURE

For centuries women in developing countries have breast fed their children. Breast feeding was unquestioned as the way to nourish an infant. Moreover, no other feeding alternative was available to mothers which would have kept their infants alive. Recently there has been a decline in the length of breast feeding in developing areas. In Chile, 95 percent of mothers breast fed their infants beyond the first year of life 20 years ago; in 1965, 80 percent of the infants were weaned at six months of age (Donoso and Monckeberg, 1965). In a study in 1969 including 1,094 Colombian children it was reported that 42 percent of infants were weaned by the age of nine months (Wray and Aguirre, 1969). Number of women breast feeding in Third World nations has declined also. In Singapore, the percentage of children from low income families breast fed at least three months dropped from 71 to 42 between 1951 and 1960 (Wong Hock Boon, 1971).

In a study of infant feeding practices in a rural Mexican town, Perez-Navarrete (1960) reported 91 percent of infants fully breast fed at six months of age. In a similar study carried out in the same village six years later, researchers reported only 61 percent of infants fully breast fed at three months of age (Sanjur, et al.,

1970). The authors also pointed out a trend towards early introduction of breast feeding supplements such as herb teas, cow's milk (fresh, powdered or evaporated) and goat's milk.

Infant Health

The average onset age of malnutrition has dropped from 18 to 8 months in several developing countries. This has happened concurrently with a decline in breast feeding (Berg, 1970). Relationships between bottle feeding and infant mortality have been shown. In a study of rural Chilean mothers and infants, Plank and Milanesi (1973) found that postneonatal deaths were significantly more frequent among infants who started bottle feeding in the first three months of life than among infants exclusively breast fed during that time. Investigators (Puffer and Serrano, 1973) in Recife, Brazil reported 78 percent of infants who died in the second through fifth month had been breast fed for one month or not at all. Similarly, 64 percent of those infants who died in the sixth to eleventh month period had never been breast fed or breast fed less than one month.

Although bottle feeding is often assumed to have negative effects on infants' nutritional status, researcher's findings regarding bottle feeding do not always agree. Recently, for example, researchers in the Philippines reported no evidence that bottle feeding or early cessation of breast feeding were causes of malnutrition in children aged 5 to 48 months from low income households studied (Zeitlin et al., 1978). In addition, a decline in breast feeding has occurred together with decreasing infant mortality rates in some countries.

Dilution of Milks

In order to make an expensive infant formula last longer, mothers often overdilute the formula, a practice which causes under-nourishment of the infant if it is the sole source of nutrients. This practice over prolonged periods of time leads to nutritional marasmus if other nutrient sources are not introduced. In a Barbados study mothers were asked to state how long a one pound tin of milk would last. Only 18 percent of mothers used the correct dilution; 82 percent of mothers overdiluted the product (Government of Barbados and Caribbean Food and Nutrition Institute, 1972).

Diarrheal Disease and Gastroenteritis

Diarrheal disease is important in the cycle of malnutrition, infection and disease. Researchers who have conducted extensive research projects in communities throughout the Americas concluded that, due to excessive mortality in the rural communities, diarrheal disease constituted a very serious health problem in children during the first two years of life (Puffer and Serrano, 1973).

In general child feeding with breast milk rather than other nutrient sources is accompanied by lower rates of attack by infectious diseases, especially those of the gastrointestinal tract. Such protection is believed to be due to the several anti-infective elements present in breast milk. An infant who has never been breast fed or breast fed to a limited degree can suffer from the lack of breast milk's safeguard mechanisms such as bacterial and viral antibodies, lysozymes, lactoferrin and secretory immunoglobulin A in colostrum. Grantham-McGregor and Back (1970) found an increased rate of

gastroenteritis in bottle fed infants in Kingston, Jamaica. In studying patterns of mortality from diarrheal disease in Latin America, Puffer and Serrano (1973) noted high death rates in areas where breast feeding was practiced only on a limited scale.

Gastroenteritis and diarrheal disease in infants often result from contamination of feeding bottles, the milk or both in poverty stricken areas. Monckeberg (1970) in an investigation in rural Chile, reported bacteriological contamination of 80 percent of the feeding bottles used. Formula is often prepared in unsanitary kitchens or on dirt floors. The water used to prepare powdered milk or formula may be unsafe. The water and bottles may not be boiled due to lack of knowledge or resources. Moreover, storage of prepared formula requires refrigeration which is frequently absent. All of these conditions can lead to a contaminated nutrient source and result in gastrointestinal infection in the infants. From data on working women and child nutriture in the Philippines, Popkin and Florentino (1976) reported that bottle fed infants in poor households showed a 50 percent greater incidence of hookworm, ascaris and trichuria infestation than did breast fed babies.

Diarrheal disease and growth

Diarrheal disease can contribute to growth problems for children. The relationship between diarrheal disease and growth increments in total body length and weight were investigated by Martorell et al. (1975) in rural Ladino Guatemalan children. Children studied ranged from 15 days to 7 years of age. The investigators concluded that diarrheal diseases were significantly associated with incremental

growth retardation in these children. They estimated that days ill with diarrheal disease alone accounted for approximately 10 percent of the total growth retardation in length and weight during the first years of life.

Bottle feeding as an alternative to breast feeding thus may lead to serious health problems if proper and sanitary procedures are not followed in preparing bottle feedings.

Breast Feeding and Economics

The trend away from breast feeding constitutes a problem of economics both for the mothers and the developing nation as a whole since a potential resource, breast milk, is not being used. In Kenya the estimated annual loss in breast milk is \$11.5 million which is equal to two-thirds of the national health budget (Berg, 1970). In Tanzania in 1964 the cost of adequately bottle feeding a six month old infant equaled half the minimum wage of the country (Latham, 1977). A laborer in Uganda may spend as much as 33 percent of his daily wage to feed cow's milk to his baby and in Chile 20 percent of his daily wage.

Reutlinger and Selowsky (1976) conducted a study of nutrition and poverty in India. From the data collected in Calcutta the authors suggested that an employed mother must spend 50 percent of her earnings to replace the breast milk her infant does not receive while she is at work. Moreover, it was shown that a low percentage (approximately 5%) of the money she actually earns is spent on infant foods. This would mean for example that if the additional income earned was 100 rupees, only 5 rupees would be spent on infant foods. It was concluded that

incomes obtained in this way may indeed increase infant malnutrition in the family.

Since the substitute for breast milk in the infants' diet is frequently contaminated and/or nutritionally inadequate, the costs to governments of treating malnutrition and infectious diseases must be considered. In the Philippines in 1958 the loss of revenue due to some mothers switch to bottle feeding (annual loss in breast milk) was estimated to be \$33 million (Jelliffe, 1975). Added to this type of expense to developing countries' budgets is the cost of treating pediatric illness. Marasmus is especially important in this respect since children cannot be quickly nutritionally rehabilitated. Cook (1971) estimated the cost of inpatient treatment of protein-calorie malnutrition in Jamaica to be \$1,292,184.

Causes of Declining Breast Feeding

Although a small percentage of women in developing countries do not breast feed due to physiological inability, the majority who use human milk substitutes are capable of breast feeding. Many reasons have been proposed and debated concerning the trend away from extended nursing. It has been suggested that when poor women shift from breast to bottle, they do so in imitation of their "economic superiors" (Jelliffe and Jelliffe, 1970). However, no hard data exists to confirm that this "trickle down" theory applies to infant feeding decisions (King, 1969).

Psychological causes that interfere with the important "let-down" reflex of the mother have been emphasized in relation to declining breast feeding. Mothers who move with their families from

rural to urban or periurban areas undergo great changes in lifestyle. A mother or a couple in an urban slum may find themselves alone and unaided economically by other family members. Furthermore, isolation of the mother means a lack of a supportive female that can be critical to successful lactation (Raphael, 1976).

The availability of other means of infant feeding (Chauduri, 1965) and locally inappropriate advertising by milk firms have been claimed to major factors in the abandonment of breast feeding (Jelliffe and Jelliffe, 1970). Advertising for commercial formulas can fill the knowledge gap of many mothers concerning infant feeding practices. Such commercial formulas can appear attractive to a mother searching for alternatives to breast feeding. Endorsement of formula from physicians and nurses as well as advertising diffused in hospitals could become powerful influences on illiterate women who may be questioning the merits of breast feeding. "Milk nurses," employees of commercial milk firms who visited newly delivered mothers may have had an influence. Ashworth and Waterlow (1970) reviewed the state of nutrition in Jamaica. In their survey taken in 1970, when mothers were asked why they had begun bottle feeding, 14 percent reported that a "milk nurse" had either given them a free milk sample or had told them to bottle feed. These mothers were successfully nursing at the time of the "milk nurse's" visit. Reportedly, commercial milk firms no longer employ "milk nurses" to promote their products in Third World countries.

The use of communication media such as radio, T.V., newspapers and women's magazines by milk firms to promote their products provide a constant message concerning alternatives to breast milk for poor

mothers. However, although the effects of infant food advertising are often debated, Greiner (1977b) pointed out that little "on location" study has been done.

There is much controversy over the influence of women's participation in the labor force on breast feeding practices. Employment of the mother is often cited as an important reason for weaning (Aykroyd, 1971). Yet other researchers question the importance of mothers' work outside the home. In Chile, Plank and Milanesi (1973) found mothers' employment to be an insignificant factor in breast feeding practices. In Antioquia Province, Colombia, Oberndorfer and Mejia (1968) analyzed the reasons which promoted the cessation of breast feeding among 1,412 mothers. The authors reported that only 3.3 percent of women ceased breast feeding because they worked outside their homes. Jellifee (1975) cited several studies in which low percentages of employed Third World mothers were reported. In a review of 11 different infant feeding studies, employment was given as the reason for weaning by an average of only 6 percent of mothers surveyed (Almroth, 1977).

The situation of rural women differs markedly from that of urban mothers. Remunerated jobs often are scarce in the countryside. A woman's occupation may not take her far enough away from home to interfere with the breast feeding process; yet great demands are made on her time, although she may not hold a paid position. She may be responsible not only for child care and household duties but for participation in family tasks and food processing and preparation. Little research has been done which investigates the effects of these time constraints on breast feeding behavior or other feeding practices.

The most common methodological tool used by researchers to study the status of breast feeding and other feeding practices in Third World countries is the survey. Questionnaires are administered to mothers discharged from maternity wards or to mothers selected by random sample in urban or rural communities. Such questionnaires attempt to elicit from the mothers information concerning reproductive histories, housing and other environmental and socioeconomic factors that could influence health and fertility, infant feeding practices, obstetrical care received by the mother and medical attention given to the child, duration of breast feeding and reasons for its discontinuance, infants' age at which other milks introduced, and most influential individual on the mothers' infant feeding method choice.

Other research consists of longitudinal studies in which infants are followed from birth to one year of age with attention given to anthropometric, medical and social data. Type of milk given, number of times per day the infant was fed and reasons why the infant was fed as he was are documented.

Summary

Researchers studying infant feeding practices in Third World countries have found a trend towards abandonment of breast feeding behavior. Important health and economic consequences have been reported due to this decline. Researchers do not reach general agreement concerning the reasons for the decline in breast feeding. The reasons cited include status, psychological interferences with the "let-down" reflex, advertising by commercial milk firms and women's participation in the labor force. Other factors such as the

relationship of women's time constraints and "on location" effects of commercial milk formula advertising have not been studied.

CHAPTER III

METHODS AND PROCEDURES

Three methods were selected to conduct the research. These techniques included administration of an interview schedule in Spanish to each mother, personal observation of the home environment and measurement of infants' recumbent length. Personal observation was used to document house construction materials, kitchen location, toilet facilities and water usage in the households. All techniques were used by the researcher to obtain information from the selected mothers.

The specific factors studied were the feeding method history of each infant living conditions and socioeconomic characteristics of the family, the mother's reasons for feeding method(s) used, the mother's attitudes concerning infant feeding and infant health and the social factors influencing the mother's decision of how best to feed her infant. The research was conducted by a graduate student in human nutrition from Michigan State University. The researcher was assisted by personnel from the Instituto Nacional de Nutrición both at the research site and in Mexico City, Mexico.

The following methodological procedures will be discussed: preliminary work, interview schedule development, recumbent length, pretesting, sample selection, research site selection, data

collection including administration of the interview schedule, informed consent and field notes, and data analysis.

Preliminary Work

An interview schedule was constructed in both English and Spanish and data sheets were developed in Spanish before the researcher entered the field. The interview was planned to be administered during two visits to the residence of each respondent and in an hour time period. The entire interview schedule except the measurement of recumbent length of the infant was planned to be administered during the initial visit. The recumbent length measurement was to be taken during the second home visit.

Interview Schedule Development

Few prototype questionnaires could be found in the literature on which to base the interview schedule. All questions used were original. Part of the desired information involved the mother's attitudes towards breast feeding and infant health. Since genuine attitudes are difficult to obtain in an interview situation, a technique was used by which mothers could give opinions regarding the actions of others as well as their own actions (Morley, 1978). The mothers were asked in a straightforward manner why they personally decided to breast feed or to use an alternative feeding method. They were also asked to give an opinion as to why they believed a close friend or neighbor did or did not breast feed her infant. It was hoped that by asking the mother to give an opinion about another person's behavior, the mother would report a more genuine attitude of her own towards the topic.

Another section of the interview schedule was concerned with the type of infant feeding method used by the mothers. One particularly common practice used by Third World mothers is that of mixed feeding (Human Lactation Center, Ltd., 1978). Mothers either supplemented the breast with cow's milk or commercial formula from birth or at some later date. In order to record such a behavior in the study, a "mixed feeding" response was allowed for in the construction of the interview schedule. An additional behavior pattern designated was one in which a mother originally breast fed but later introduced an alternative to breast milk as the child grew older.

Other sections of the interview schedule were designed to obtain demographic information, socioeconomic status of the household, feeding history of the mothers' infants and advice received by the respondents about infant feeding.

The interview schedule was approved by the Michigan State University Committee for Research Involving Human Subjects. All interview schedules and data sheets are included in Appendix A.

Recumbent Length

Recumbent length of mothers' infants was measured in order to determine if the infant population was typical in terms of length. Infants' recumbent length was compared with reference standards (Torregrosa et al., 1966) for the Mexican infant population under 72 months of age. Mean percent of standard length for age was calculated for each infant and averages within each feeding group were compared.

Since only one anthropometric measure was taken, length was the measure of choice. A single measure of weight is less meaningful in nutritional terms since it is subject to fluctation and is more affected by illness (Jelliffe, 1966). Recumbent length is used as the standard measure of length since standing heights are difficult to measure accurately with infants (Garn, 1973).

Pretesting

A short pretest, consisting of one interview, of the materials for item clarity and question sequencing was conducted in Lansing, Michigan. A pretest including four interviews was carried out in the town of Malinalco, Mexico. A female resident employed by the Instituto Nacional de Nutrición at their Malinalco field unit introduced the researcher to the mothers interviewed. She also clarified local colloquialisms for the researcher and assisted in taking the anthropometric measurement. Several questions on the original interview schedule were disregarded subsequent to the pretest due to the non-specific and unquantifiable nature of the responses given. The only other changes made in the interview schedule following the pretest were rewording of certain questions for increased clarity.

Sample Selection

A random sample of 100 mothers was drawn from the civil registry. Mothers with infants aged two years or younger were eligible for selection. Neither the mother's age nor the sex of the infant was a criterion for selection. One hundred mothers was considered the maximum number that could be interviewed adequately in the time frame allotted for the study.

Subjects' names were drawn randomly from the birth records in the Malinalco civil registry. Many of the original mothers selected were later excluded from the sample, since many families who registered their infants' in the Malinalco municipality had subsequently moved away. Many families that had moved to Mexico City made the two hour return trip to register their child's birth in Malinalco because the registering process there was less complicated than in Mexico City. The majority of families in Malinalco registered all their children's births at the civil registry. A second sample of 80 names was drawn to replace the number of selected mothers who had either moved away or who had refused to participate in the research project. Approximately 20 mothers were unwilling to participate in the interview when asked by the researcher. Some women refused to cooperate because they did not want to take time out of their day to answer questions or because their husbands had forbidden them to participate in interviews.

Research Site Selection

The criteria used in selecting the research site were geographic location of the community, community size, cultural group homogeneity within the community, site physical and social accessibility and breast milk substitutes availability in the area.

Malinalco is a small rural municipality. It is accessible from Mexico City by car. It is comprised of a mestizo population with few inhabitants of pure Indian heritage.

The location of the Instituto Nacional de Nutrición's field unit in Malinalco was an important factor in site selection. Physicians

from the Instituto traveled from Mexico City to Malinalco once a week. They gave free consultation to families who had participated in an earlier (1975) food consumption survey undertaken by the Instituto. The local personnel employed by the field unit provided important social and physical familiarity with the area. In addition, the researcher was able to obtain lodgings in the house utilized by the Instituto as the field unit clinic and organizational center.

For those mothers who chose not to breast feed, commercial formula and powdered milk were available in the local shops and pharmacy. Cow's milk was available from local vendors. Some families kept a cow and utilized its milk.

For these reasons the municipality of Malinalco was chosen as the research site.

Data Collection

All data were collected from March 22 to June 1, 1978. The researcher resided in the town of Malinalco during this period. Several trips were made to the outlying villages of Jalmolonga and Puente Caporal to interview mothers chosen in the random sample.

Administration of the Interview Schedule

The interview schedule was administered in Spanish during the initial visit to the home of each respondent. Since the sample was drawn at random, the mothers selected lived in various neighborhoods of Malinalco and in several outlying villages. Two women employed at the field unit of the Instituto Nacional de Nutrición in Malinalco initially assisted the researcher in locating the areas and subsequently

in seeking out the individual residences. The researcher was accompanied by her daughter of two years of age on many interview visits.

At the time of the initial contact with each mother, the researcher explained the research project and its purpose. It was explained that participation in the study was completely voluntary and that participation involved no further obligations. Before each interview the mother signed the consent form. It was explained that those mothers who participated in the study had the right to free consultation for themselves and their families with the doctors who staffed the field unit of the Instituto Nacional de Nutrición. Physicians from the Instituto offered free consultations once a week to participants in previous nutritional studies conducted by the Instituto in Malinalco. The possibility of free consultation appeared to have been a powerful motivating factor in the decision to participate for many of the women. The interviews were conducted in the homes and yards of the mothers.

Many respondents brought their infants into the clinic for consultation subsequent to the researcher's initial visit. It was decided to measure the recumbent length of several respondents' infants at the clinic instead of at a second home visit due to the considerable distance of their homes from the researcher's lodgings. For those mothers who did not appear at the clinic with their infants after the first interview, the researcher made a second visit to the respondents' residences in order to take the recumbent length measurement. The researcher was assisted on these second visits by the two local employees of the Instituto Nacional de Nutrición's field unit in Malinalco.

Recumbent length was measured in centimeters on an infant measuring board constructed in Mexico for the Instituto Nacional de Nutrición. If the mother was cooperative, she was asked to assist in taking the measurement of the child. In all other cases, the researcher was assisted by the local field unit assistants. The child's shoes and bulky clothing were removed before laying the child down. The mother or field unit assistant held the child's head against the fixed vertical slab at the end of the measuring board. The researcher held the child's knees straight, moved the sliding board against the heels and took the reading to the nearest millimeter (mm.). This was the standard method described by Jelliffe (1966).

Informed Consent

During the initial visit by the researcher, the research project was explained to the eligible mothers. If they consented to participate in the research, they signed an informed consent form (Appendix A), indicating that they comprehended the basic premises of the project, participated of their own free will, were free to withdraw from the study at any time and were assured that all information obtained would be treated confidentially.

Field Notes

The researcher kept daily notes for the duration of the research. Pertinent information informally obtained by the researcher concerning the community and its residents was noted. Specific problems in carrying out the study and personal observations of the

researcher were included. Observations were noted in order to describe the research site. Observations were made on geographic location, climate, major occupations in the community, system of subsistence agriculture, living conditions and physical appearance of the community.

Data Analysis

The data were analyzed on a CDC computer, utilizing Statistical Package for the Social Sciences (Nie et al., 1975) programs. Frequencies were calculated for all variables pertinent to the hypotheses formulated in the study.

All respondents were classified into one of four feeding categories on the basis of method by which the respondent fed her infant at the time of the study as well as the infants' feeding history. Respondents whose only feeding method had been breast feeding since the child's birth were classified as exclusively breast feeding (EBF). Respondents whose infants had been exclusively breast fed, weaned from the breast and subsequently fed milk or formula in a bottle were classified as formula feeding after weaning (FFAW). Respondents who partially breast fed, supplementing with milk or formula given in a bottle since the child's birth were classified as mixed feeding (MF). Respondents who elected to feed milk or formula exclusively given in a bottle since the child's birth were classified as exclusively formula feeding (EFF). Respondents who breast fed their infants less than three months and subsequently introduced formula were included in the EFF category. This last categorization was based on the Instituto's recommendation of a minimum of three months for duration of lactation (Figure 1).

Description	Symbol
Exclusively breast feeding	EBF
Formula feeding after weaning	FFAW
Mixed feeding	MF
Exclusively formula feeding	EFF

Figure 1. Classification of mothers by feeding method.

A socioeconomic index was computed for each household using the following variables: number of rooms in home; existence of toilet facilities and type of toilet; materials used in construction of the roof, walls and floor of home; location of water supply and distance of water supply from house; frequency of lack of water; conservation of water; use of boiled water; ownership of a refrigerator; occupation of household head; remunerated employment of the respondent outside the home, type of work and amount of remuneration; remunerated employment of the respondent inside the home and amount of remuneration; number of persons in household; number of persons in household who received salaries; households' monthly income; level of respondent's education and ability to read and write. All values for each variable were assigned a place on a rating scale. Higher values corresponded to a higher socioeconomic level. For example, the type of toilet variable had assigned rating values of: Flush (3), septic tank (2) and latrine (1). A theoretical optimum rating score was then calculated for each household. The degree to which each household achieved the optimum score was given as percent of maximum rating score. The households

were then divided into four categories, from lowest to highest, based on their percents of maximum rating score for the purposes of analysis. The Rating Scale is included in Appendix B.

For each variable analyzed, the percentages of respondents in each feeding category were compared. The statistical procedure of testing the difference between two proportions was used to compare the percentages (Hoel, 1971). Significance between percentages was at least at the $p \leq .05$ level.

A chi square test of significance was performed between feeding method categories and selected variables.

Anthropometric tables developed by Torregrosa et al. (1966) for Mexican infants aged three years or younger were used as the reference standards for recumbent length. These values were recommended to the researcher for use with Mexican infants by the Instituto Nacional de Nutrición. The length measurements were transformed into percentages of standard length for age to facilitate comparisons of infants in different feeding groups. T-tests were used to compare the difference between the infants' means of percent of standard length for age among the four feeding groups.

CHAPTER IV

THE RESEARCH SITE

The Community

The research site was Malinalco, Mexico. The municipality of Malinalco was located in the southwest area of the State of Mexico, approximately 118 kilometers from Mexico City. In 1975 the total population was 13,745 inhabitants (Government of Mexico, 1977). Malinalco was located ten kilometers southeast of Chalma. Chalma was a renowned pilgrimage center; many thousands of Mexicans make the religious journey to the large Catholic church located there. Due to the large influx of visitors, Chalma was an important commercial center for Malinalco.

The community of Malinalco derived its name from the Nahuatl language of the ancient Mexians. The name Malinalco came from "malinalli," a word applied to a weed twisted by coalmakers for the cordage of their sacks (Payón, 1958). An archeological site of Aztec ruins was situated near Malinalco and had drawn tourists to the town.

The municipality was composed of the town of Malinalco proper as well as several outlying villages. The total land area included in the municipality was approximately 100 square miles. The lands ranged in elevation from 2,600 meters to 1,200 meters above sea level.

The town of Malinalco was located in a subtropical valley of fertile farmlands. It was nestled against mountainous bluffs at one end of the flat valley. Seventy-five percent of the lands surrounding Malinalco were planted with crops; small areas of land unsuitable for crops were used as pasture land. Many of the mountain slopes were planted with corn despite the sharp inclines and high elevations. Timber was cut and hauled away for sale from several heavily wooded mountain areas near Malinalco.

Malinalco had a warm subtropical climate. The months of April and May were the warmest and driest of the year. In the summer, heavy rains fell almost daily and the vegetation was most luxuriant at this time.

Agriculture

Subsistence agriculture was the main economic activity of the community. The principal crops included rice, corn, sugar cane and black beans; fruits such as lime, orange, banana, guayaba and plum; and vegetables such as tomato, pumpkin, radishes and peas. Tree crops included avocados and coffee.

The majority of the land was planted once a year in the spring and harvested at the end of the rainy season during September and October. A small proportion of the land was planted two or three times a year through means of irrigation.

The system of land ownership was one of small private land holding and "ejidal" lands (communal ownership lands). The researcher was unable to determine the system of harvested crop distribution among the communal land owners and workers. Approximately 30 percent

of the population owned no property. Corn and beans were the main dietary staples grown by most land holding households.

The months in which beans, corn and rice may be cultivated depended on the type of land planted, either irrigated or temporal. Irrigated lands depended on the availability of water and therefore were planted irregularly; temporal lands were planted only during the rainy season which included the months of June, July and August. Planting months, as well as those that preceded them represented a large investment of money and work hours for the family. Consequently, there was less money available in their budgets for food buying during this time. Conversely, harvest months (September and October) were viewed by many poor peasants as a time of "food affluence" due to both crops harvested for household consumption as well as any surplus crops that might be sold for cash. Cash obtained through the sale of crops was used for the purchase of other foodstuffs or household necessities.

Other occupations in the community included merchants, salaried employees (e.g., highway construction workers) and tradesman/artisans (carpenters, house repairment).

Diet

The diet of Malinalco families was more varied in comparison with the diets generally encountered in rural Mexican towns (Instituto Nacional de Nutrición, 1976). The Division of Nutrition of the Instituto Nacional de Nutrición (1975) reported the following dietary composition for Malinalco families: 29 percent from the cereal and legume group; 19 percent from the vegetable group; 11 percent from

animal products; 8 percent from each of the fruit group and the fats group; and 10 percent from a group designated sugars (soda pop, white sugar, chocolate, jams).

In a longitudinal food consumption study undertaken in 1975 by the Division of Nutrition of the Instituto Nacional de Nutrición the following information concerning the various food groups of Malinalco families' diets was reported.

The consumption of animal products depended chiefly on the family income and availability in the community. Cattle and pigs were slaughtered twice a week and meats, intestines, sausages and fried pork skin were available in the marketplace each Wednesday. Many households raised chickens for egg production or pigs whose meat could be sold for cash. However, 45 percent of the consumption of animal products in the diet was the result of milk ingestion. Milk was not drunk in large quantities from a glass but normally was taken in small amounts mixed in coffee. Milk was bought from mobile peddlers or at the homes of cow owners. A small number of families who kept cows used the milk exclusively for household consumption. Animal products were consumed on an average of two to three times a week.

The group of foodstuffs most commonly consumed in the diet were cereals and legumes. Of this group the foodstuffs most frequently eaten were tortillas (corn products), bread, black beans and pastas. These foodstuffs were eaten three times daily.

Although fruit was plentiful in the area, its consumption in the diet was low; fruit was not consumed on a daily basis. Moreover, the consumption of fruit was highly dependent on the seasons. More fruit

was eaten during the month of September when many fruits were ripe. Limes and bananas constituted a regular part of the diet.

Red tomato, green tomato and peppers comprised 69 percent of vegetable consumption. These vegetables constituted part of the basic diet (eaten twice daily) due to year round availability.

Living Conditions

The physical appearance of Malinalco was typical of many small rural Mexican villages. The Catholic church, a pavilion in the town square and the municipal building were clustered in the center of town. Several general stores and a small restaurant also were located in the center of the town. Two cement-paved roads entered the town and reached the town square. Three leveled stone streets stretched out from the center of the village. After approximately one-eighth mile, the paving ceased and the roads consisted of dirt and stone.

The town was subdivided into "barrios" (neighborhoods). Some of the neighborhoods, encroaching on the mountainside, had higher elevations than others. In the barrios near the center of town the houses were continuous and were butted against the street. Little of the actual construction of the houses could be seen from the outside since a flat facade was the only feature visible from the street. Generally, the houses were one story dwellings of adobe brick constructed around an open air patio. Homes near the town's center tended to be of better construction and exhibited a greater degree of family wealth than houses farther away.

In the outlying neighborhoods the houses usually were situated on a small plot of land surrounded by a fence. The majority of these

houses were constructed of adobe bricks. The adobe brick walls of the houses were often plastered. The most common construction material for roofs was "teja" (shingles). Floors were typically dry, hardened earth or rough stone tiles. Most houses were one or two room dwellings. Often a separate kitchen or "cookhouse" was constructed several meters from the principal dwelling. Cookhouses were constructed of adobe bricks or bamboo. It was here that the daily preparation of tortillas was carried out over a wood fire. Many families kept chickens and/or pigs. These animals were allowed to roam freely in the dirt yard and enter the porchlike area in front of the house. Adobe brick fences surrounding most homes kept the animals from entering the streets.

Several of the more affluent members of the community had flush toilets inside the house. However, the majority of households had no toilet facilities. Human wastes were not disposed of in any systematic manner save that of allocating a certain area of the terrain for defecation.

The water supplied to the community of Malinalco proper was formerly taken from large springs located in the various neighborhoods. Within the last five years the village government had undertaken a project to provide piped potable water to the majority of households. The water supply, however, was often erratic in some neighborhoods due to the varying land elevations in the town. As a rule, the smaller outlying villages did not have piped potable water; rather, they obtained water which may or may not have been potable from nearby streams. Most families stored water for drinking and washing in earthen jars in their homes.

The town of Malinalco had both federal and state primary schools (grades one through six). Each outlying village had at least one primary school, either federally or state supported. Only the town of Malinalco had a secondary school (grades seven through ten). Fewer children attended secondary school than primary school because they were needed at home to work the family land. Secondary school also required payment of tuition. Approximately 39 percent of the population over ten years of age was illiterate (Government of Mexico, 1977).

The Residents

The 1975 population of Malinalco was 13,745 residents (Government of Mexico, 1977). Of this population 16 percent were under the age of four years. The Malinalco birth rate agreed with the high national birth rate of Mexico; 47/1000 live births. However, the infant mortality rate in Malinalco exceeded the national average. From 1966 to 1970 the national infant mortality rate was 65.2 per 1000 while in 1973 the infant mortality rate in Malinalco was 82 per 1000 live births (Government of Mexico, 1977).

A small health clinic was located in the town of Malinalco which was attended by an intern paid by the federal government. This intern spent one year in the community and was replaced by a new intern annually. Another physician had a private practice in the town. These two medical doctors serviced both the town of Malinalco and all the other outlying villages that made up the municipality. Both physicians charged a fee for their services. Only the most affluent members of the community frequented the doctors with any regularity.

The majority of the population consulted physicians infrequently. Most families relied on home remedies and the advice of the town's only pharmacist. Most births took place at home and were attended by a midwife.

Infant deaths (under one year of age) comprised 15 percent of registered deaths in 1970; 26 percent were children aged 1 to 4 years of age (Government of Mexico, 1977). When these two figures are added, it can be seen that deaths of children from birth to four years of age constituted almost half of the total number of deaths for the total population.

The only religion practiced by the residents was Roman Catholicism. The church structure was located in the center of town. Many religious holidays were celebrated throughout the year and the Mass service was attended weekly by many residents.

The Women

A woman in Malinalco typically rose early. She went to the "mill" where corn, used in the preparation of tortillas, was ground. Afterwards, she prepared breakfast for her children and her husband if he had not yet left for work in the fields. Morning activities included buying the needed foodstuffs for each day's meals, house-cleaning and washing clothes in a nearby stream or in a washing facility in the home. Younger children and infants were cared for continually throughout the day.

Many women took the midday meal to their husbands working in the fields. This trip on foot signified a three to four hour or longer absence of the mother from her household. Young children and infants

were often left in the care of another female family member or a sibling from three to twelve years older than the infant.

Most women interviewed reported that they socialized very little with neighbors because they were too busy at their respective chores. Somewhat more contact was reported with female relatives, such as sisters or cousins. The amount of contact between the women was highly dependent upon the physical proximity of the individuals involved. By far the female that a woman had most contact with was either her own mother or her mother-in-law. Frequently, the mother or mother-in-law lived in the same household with the daughter or daughter-in-law. It was common for an infant to be cared for by his grandmother. The amount of care infants received from the grandmother varied from household to household.

Many women in Malinalco also played a role in areas other than the family. They helped in the planting and harvesting of crops on tilled land. Most women raised either pigs or chickens at the home-site. Only one woman was interviewed who tended a vegetable garden at her home. The most frequent reason given for lack of gardens was that a family could not raise chickens and plants on the same land because the animals destroyed the garden. Gardens also required water. Although water was plentiful in many households, most families found it more beneficial to raise pigs or chickens rather than vegetables. Presumably animals were more valuable possessions because they could be sold for more money than vegetables.

The women sold "refrescos" (soda pop), tortillas, candy or other small food items in front of their homes. Some dedicated themselves

to the home production of tortillas which were sold by themselves or someone else in the Malinalco marketplace or in the larger town of Chalma (ten miles away). Market days were Wednesday and Sunday in Malinalco and most women were found in the plaza on these days, participating as buyers or sellers or both.

The Research Population

One hundred mothers, selected by a random sampling technique, with children aged two years or younger participated in the research project. All one hundred mothers were interviewed by the researcher. The infants of participating mothers were measured for recumbent length. A total of one hundred infants was measured.

The Mothers

Selected characteristics of the mothers and their households are presented in Table 1. The mothers interviewed in the study ranged in age from 15 to 45 years. Most (50%) of the mothers ranged in age from 21 to 30 years. Of the mothers interviewed, 33 percent had had two or fewer pregnancies; 24 percent had had three to four pregnancies; 23 percent had had five to seven pregnancies; and 19 percent had had more than eight pregnancies. A large percentage of mothers (44%) had two or fewer children; 19 percent had from three to four children; 30 percent had from five to seven children; and 7 percent had from eight to ten children.

The number of persons living in the households ranged from 3 to 14 individuals. There was a generally equal distribution of small and large households in the sample. Extended families were

Table 1.--Selected characteristics of mothers and mothers' households in Malinalco research population.

Characteristics	Mothers (n=100) %
Mother's age (years)	
20 or less	24
21 - 30	50
31 - 40	21
>40	5
Number of pregnancies	
1 - 2	33
3 - 4	24
5 - 7	23
8 - 10	16
11 - 15	3
Number of children	
2 or less	44
3 - 4	19
5 - 7	30
8 - 10	7
Number of persons living in household	
3 - 5	32
6 - 8	45
9 - 11	19
12 - 14	4
Number of years attended school	
0	17
1 - 3	43
4 - 6	37
>6	3
Ability to read	
YES	72
NO	28
Ability to write	
YES	67
NO	32
Unknown	1

Table 1.--Continued.

Characteristics	Mothers (n=100) %
Head of household	
Respondent's husband	90
Respondent's mother or father	5
Respondent	3
Other	2
Feeding method	
Exclusively breast feeding	41
Mixed feeding	17
Exclusively formula feeding	21
Formula feeding after weaning	21

common. The individual most likely to be living with the couple and their children was the grandmother, either paternal or maternal. Often the grandfather also resided with the family. Although there existed many kinship ties within the population, aunts, cousins, or sisters of the responding mothers seldom lived in her household. Often, the mother's siblings or cousins lived nearby.

Mothers varied as to the number of years of schooling they had received. Only three of the mothers interviewed had received more than a primary school education (grades one through six). Seventeen percent of the sample had never attended school. The majority of the mothers reported the ability to read (72%) as well as to write (67%).

The head of the household most commonly reported was the respondent's husband. Mothers who reported themselves or their parents as household head usually lived in households in which their husband was absent. In these cases, the absent husband had either abandoned or separated from the mother or worked in another town, returning to the household infrequently.

Mothers were categorized according to infant feeding method practiced. Forty-one percent of the respondents breast fed exclusively since the child's birth; 17 percent practiced mixed feeding since the child's birth; 21 percent practiced exclusive formula feeding since the child's birth; and 21 percent practiced formula feeding after the child had been weaned.

The Infants

Fifty-two percent of the mothers' infants had two or fewer brothers or sisters living. The large percentage of infants with few

siblings was more indicative of the young age or the mothers sampled than small family size in the community. The majority of mothers were under thirty years of age and were still in the prime of their child-bearing years. Birth control was almost nonexistent in the community. Only four mothers reported the use of some method of contraception.

The recumbent length of the infants under two years of age of all respondents was measured. Recumbent length was measured also to improve the researcher's skill in taking anthropometric measurements and in order to inform the infant's mother of his present height. The mean percent of standard length for age was calculated for infants in each of the four feeding categories. Infants were also categorized by age into four groups: 0 to 24 months, 0 to 6 months, 7 to 12 months and 13 to 24 months (Table 2).

When infants categorized into the four feeding groups were compared within the 0 to 24 month age range, exclusively breast fed (EBF) infants were significantly ($p \leq .05$) longer than infants fed formula after weaning (FFAW). In the 0 to 6 month age range, both EBF infants and mixed (MF) infants were significantly ($p \leq .01$) longer than exclusively formula fed (EFF) infants. No significant differences existed between infants' mean percent of standard length for age and feeding categories in the 7 to 12 month age range. In the 13 to 24 month range, FFAW infants were significantly ($p \leq .05$) longer than EBF infants.

Table 2.--Mean percent of standard length for age of respondents' children categorized by feeding method and age.

Age range	Mean percent of standard length for age according to feeding method			
	EBF	MF	EFF	FFAW
	$\frac{\%}{(n=41)}$	$\frac{\%}{(n=17)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=21)}$
0 - 24 months	96 ^a	95	93	93 ^a
	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=6)}$	$\frac{\%}{(n=5)}$	$\frac{\%}{(n=0)}$
0 - 6 months	98 ^a	99 ^b	94 ^{a,b}	0
	$\frac{\%}{(n=12)}$	$\frac{\%}{(n=3)}$	$\frac{\%}{(n=1)}$	$\frac{\%}{(n=1)}$
7 - 12 months	95	93	94	92
	$\frac{\%}{(n=7)}$	$\frac{\%}{(n=8)}$	$\frac{\%}{(n=15)}$	$\frac{\%}{(n=19)}$
13 - 24 months	90 ^a	93	91	94 ^a

*EBF = exclusively breast feeding, MF = mixed feeding,
EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

^{a,b}like superscripts in same row different at $p \leq .05$.

CHAPTER V

RESULTS AND DISCUSSION

Income and Economics

The economic variables investigated were household monthly income, occupation of household head, weekly milk or formula expenditure, type of and remuneration for work done by respondent outside the home, distance of work from the home, type of and remuneration for work done by respondent inside the home, number of persons in household receiving a salary and receipt of an exchange commodity other than cash by households. The per capita monthly income was calculated for households. These variables were compared with the four feeding groups.

Monthly income and the feeding categories were compared. There was a significant difference between monthly income and feeding categories ($p \leq .05$). Ninety-three percent of exclusively breast feeding (EBF) households had monthly incomes of \$133 or less as compared to 57 percent of formula fed after weaning (FFAW) households, 54 percent of mixed feeding (MF) households and 77 percent of exclusively formula feeding (EFF) households (Table 3). Seventy-five percent of the total population reported monthly incomes of \$113 or less. The MF group had the most consistent representation in each income group above \$45. Both MF mothers and FFAW mothers lived in households in which at least

Table 3.--Monthly income of Malinalco households in which children aged two years or younger were present.

Income range	Feeding Group*			
	EBF	MF	EFF	FFAW
(U.S.\$0	$\frac{\%}{(n=41)}$	$\frac{\%}{(n=17)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=21)}$
1-45	15	6	10	5
46-68	54	23	38	38
69-113	24	24	29	14
114-159	5	23	14	38
160-205	3	24	10	5

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

43 percent were in the two highest income ranges compared to EFF mothers who lived in households which had the lowest percentages in the two highest income ranges.

Eighty-eight percent of the sample had monthly per capita incomes between \$4.50 and \$22.70 (Table 4). Fifty-six percent of this group had monthly per capita incomes of \$4.50 to \$13.60. Sixty-eight percent of EBF mothers and 62 percent of EFF mothers belonged to households in which monthly per capita income was \$4.50 to \$13.60. Forty-one percent of MF mothers and 52 percent of FFAW mothers belonged to households in which per capita income was \$13.60 to \$22.70. More ($p \leq .05$) EBF mothers (68%) lived in households with a monthly per capita income of between \$4.50 to \$13.60 than FFAW mothers (33%).

Table 4.--Monthly income per capita of Malinalco households in which children aged two years or younger were present.

Per capita income	Feeding group*			
	EBF	MF	EFF	FFAW
(U.S.\$)	$\frac{\%}{(n=41)}$	$\frac{\%}{(n=17)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=21)}$
0 - \$2.30	2	0	0	0
\$2.31 - \$4.50	5	0	0	0
\$4.51 - \$13.60	68 ^a	47	62	33 ^a
\$13.61 - \$22.70	24	41	19	52
\$22.71 - \$31.80	0	12	0	14
\$31.81 - \$41.00	0	0	10	0
over \$41.	0	0	10	0

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning

^alike superscripts in same row different at $p \leq .05$.

Per capita monthly incomes for feeding groups did not vary over as wide a range as did monthly incomes. A majority of the sample (88%) fell within two of the seven per capita monthly income ranges. These two income ranges fell in the middle of the per capita income scale. Thus when the number of persons in households was considered, income variations across the households were less evident.

A socioeconomic index of 24 variables was computed for each household. Feeding method groups were not categorizeable on the basis of the socioeconomic index (Table 5).

Table 5.--Socioeconomic status of Malinalco households in which children aged two years or younger were present.

Socioeconomic status range	Feeding Group*			
	EBF	MF	EFF	FFAW
(maximum possible score = 1.00)	% (n=41)	% (n=17)	% (n=21)	% (n=21)
0.43 - 0.50	34	18	24	14
0.51 - 0.56	42	29	33	24
0.57 - 0.62	17	29	14	33
0.63 - 0.77	7	24	29	29

*EBF = exclusively breast feeding, MF = mixed feeding,
EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

Data obtained from the monthly income variable and the socioeconomic status index were not consistent. Percentages of mothers in each feeding group found in each socioeconomic status index level were not statistically significant; however, a significant difference existed between monthly income and feeding categories. The discrepancy in the data obtained from the monthly income variable and the socioeconomic status index pointed to the possibility that monthly income considered alone may not be a reliable indicator of the economic condition of the household as it translated into actual living conditions. Also, the socioeconomic index variables may not have been weighted correctly thus requiring more refinement in this comparison research tool.

Occupations of the household heads were investigated. Peasant/day laborer was the lowest paid occupation. Persons employed in the

other three occupations received higher incomes but comparable among the three groups. The exact incomes for all occupations were impossible to determine. Mothers were often reticent about offering this information to the researcher or simply did not know. Merchants who owned their own stores probably received the greatest income of all the occupations.

Occupation of household heads was compared to feeding groups (Table 6). Ninety percent of the EBF households had peasant/day laborers as household heads. More ($p \leq .05$) EBF (90%) household heads were peasant/day laborers than FFAW (68%), MF (63%), and EFF (62%) households. Approximately one third of all household heads were merchants, salaried employees or trade/artisans in the FFAW, MF and EFF groups.

Table 6.--Occupation of heads of Malinalco households in which children aged two years or younger were present.

Occupations	Feeding group*			
	EBF	MF	EFF	FFAW
	$\frac{\%}{(n=41)}$	$\frac{\%}{(n=17)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=21)}$
Peasant/day laborer	90 ^{a,b,b}	63 ^a	62 ^b	67 ^c
Merchant	2	6	14	10
Salaried Employee	2	13	5	14
Trade Artisan	5	13	19	10
Other	0	6	0	0

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

^{a,b,c}like superscripts in same row different at $p \leq .05$.

Exclusively breast feeding mothers more than any other group belonged to households whose head was employed in the lowest paid occupation in the community, peasant/day laborer. These peasants either practiced sharecropping, farmed communal lands or farmed on their own small landholdings. They received no fixed income. Their only cash income came from the sale of seasonally planted crops (normally one crop per year) and an irregular income from day laborer employment on the lands of others. After enough of their own crops (usually corn and beans) was stored for the family's use, peasants who worked small plots of land often had few surplus crops to sell for cash. Thus the cash flow into these households was erratic and low.

Remunerated work of the respondents was compared to feeding method groups (Table 7). A significant difference existed between the amount of remuneration for work outside the home performed by the respondent and feeding categories ($p \leq .05$). Only ten percent of the entire sample worked for remuneration outside the home. Of these ten women, two (20%) were EBF mothers who received less than \$1.10 per week. Twenty percent of these women were MF mothers who received from \$3.40 to \$9.00 per week; 30 percent were EFF mothers who received from \$3.40 to \$9.00 per week; and 30 percent were FFAW mothers who received from \$3.40 to \$9.00 per week. Remunerated work outside the home by mothers thus would not appear to be a strong factor in choice of infant feeding method.

Data on monthly expenditure for milk or formula was collected and calculated as percentage of monthly income. The average monthly

Table 7.--Amount of remuneration for work outside home performed by Malinalco mothers with children aged two years or younger.

Amount of pay/wk. (U.S.\$)	Feeding Method*			
	EBF	MF	EFF	FFAW
	$\frac{\%}{(n=2)}$	$\frac{\%}{(n=2)}$	$\frac{\%}{(n=3)}$	$\frac{\%}{(n=3)}$
0 - \$2.30	100	0	0	0
\$2.31 - \$3.40	0	0	0	33
\$3.41 - \$9.00	0	100	100	66

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

expenditure on milk or formula for all the households in the sample was \$7.20 (Table 8). This figure represented 10 percent of the monthly income of all households. Households reporting the lowest average monthly income (\$23) spent \$8.00 or 35 percent of their monthly income on milk or formula. Households reporting the second lowest average income (\$57) spent \$6.50 or 11 percent of their monthly income on milk or formula.

The range of monthly expenditure on milk or formula by the households was from \$4.90 to \$9.50. This range did not represent a wide variation across households from all income groups.

While the actual amount of monthly income spent on milk by the households did not vary widely across the income groups, the percentage of monthly income which the expenditure represented varied from 35 percent to 2 percent. As the average monthly income for households rose, the percentage of monthly income spent on milk decreased with only one

Table 8.--Monthly expenditure on formula or milk in Malinalco households in which children aged two years or younger were present.

Estimated average monthly income	Households	Average monthly ex- penditure for milk	Milk expendi- ture as % total monthly income
(U.S.\$0	(n=50)	(U.S.\$)	%
23	4	8.00	35
57	18	6.50	11
80	5	5.00	6
102	5	9.50	9
125	9	5.50	4
159	6	5.60	3
204	3	5.00	2

exception. For very poor mothers who had to spend an inordinate amount of monthly income on the feeding of only one of their children, the decision to bottle feed was a costly alternative to breast feeding. As monthly income rose, the strain on the family income represented by the cost of milk or formula feeding the youngest child was lessened.

Summary

From the data obtained on the economic variables, the population as a whole can be classified as a poor, peasant community. Seventy-five percent of households fell within the median or lower income ranges, receiving \$113 or less per month. The majority of household heads were peasant/day laborers. The peasant occupation was the lowest paid of all the occupations reported in the community. The cash flow into peasant households was low because the peasant farmer could only sell

in the marketplace that part of his single crop which was not used for family consumption for the entire year. Such surpluses were generally small. In addition the peasant farmer had to hire out as a day laborer during the nine months of the year that he was not working his own or shared land. Day laborer jobs were unstable and thus case income for each month was erratic and variable.

Information about households' monthly income was difficult to obtain. Mothers were reticent about giving this type of information or simply did not know. Moreover, actual salaries received by workers in each occupation reported had to be approximated by the researcher since most mothers did not know the actual amount and because no economic data of this nature was available for the community. Little was known about how the cash income was allocated by the households. Both from the researcher's personal observation and information related to the researcher by personnel from the Instituto Nacional de Nutrición, it was apparent that use of alcohol was widespread among the adult male members of the community. Although the amount of income spent on alcohol purchase was not determined, the effects of possible large alcohol expenditures on the availability of money in the households to meet dietary needs should be considered.

Because of the unstable economic situation of the community, jobs for the male household heads were not plentiful. The small number of females who were employed outside the home is accounted for by that fact.

It appears that the decision to breast feed taken by EBF mothers was influenced by the conditions of poverty in their households.

The majority of EBF households fell within the median and lower ranges of monthly income (92), reported having peasant/day laborers as household heads more than any other feeding group and received the lowest remuneration for the respondents' work outside the home. It is possible that women who elected to exclusively breast feed did so because they had no other economic alternative. They may have considered breasts full of milk as a food resource for their infant which they could not afford to waste. Breast milk was for them a free source of nutrients for their infants. Due to the generally low incomes of their households, EBF mothers may have decided that using a feeding method for which purchase of a commercial milk or formula was necessary was economically impossible for them.

When the poorest women in the sample chose not to breast feed, they had to spend a considerable amount of their monthly income for the breast milk substitute. Yet 64 percent of the women who were buying milk or formula were in median or lower income range households. Thus in the case of mothers who used formula, the feeding decision was not entirely dictated by economics because they had decided and continued to feed formula although such feeding meant a considerable expense for the household. Such a seemingly illogical decision for a poor mother would be necessary if she simply had little or no breast milk to feed her infant. As discussed under Perceptions and Attitudes, this lack of breast milk was the most common reason given for formula feeding.

While a relationship exists between monthly income and feeding method, the feeding groups could not be characterized on a consistent basis using all the socioeconomic variables studied.

Family Living

The types of information investigated by the family living variables were the following: number and age of the respondents' children; caretaker of the infant if other than the mother; preparation and use of milk, formula and feeding bottles; physical characteristics and construction of house; and water use and sanitation facilities. The individual variables were compared with the four feeding groups.

Number of respondent's children and feeding group were compared. A significant difference existed between number of children and feeding method ($p \leq .05$). Of the total sample, 44 percent of the respondents had two children or less; 19 percent had from three to five children; and 37 percent had from five to ten children (Table 9). A greater percentage ($p \leq .05$) of formula feeding after weaning (FFAW) mothers (68%) and exclusively breast feeding (EBF) mothers (44%) had two children or less than did mixed feeding (MF) mothers (18%). A greater percentage ($p \leq .05$) of MF mothers (65%) had from five to ten children than did EBF mothers (34%) and FFAW mothers (10%). A greater percentage ($p \leq .05$) of exclusively formula feeding (EFF) mothers (48%) and EBF mothers (34%) had from five to ten children than did FFAW mothers (10%).

Mothers who formula fed after weaning had small families (67% less than two children) while MF mothers tended to have larger families (65% from five to ten children). Exclusively breast feeding mothers and EFF mothers had families that varied in their number of children.

Table 9.--Number of children in Malinalco households in which children aged two years or younger were present.

Number of children	Feeding Group*			
	EBF	MF	EFF	FFAW
	$\frac{\%}{(n=41)}$	$\frac{\%}{(n=17)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=21)}$
1 - 2	44 ^a	18 ^{a,b}	43	67 ^b
3 - 4	22	18	10	24
5 - 10	34 ^{a,b}	64 ^a	48 ^c	10 ^{b,c}

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

a,b,c like superscripts in same row different at $p \leq .05$.

The number of older and younger siblings of each infant in the study were investigated (Table 10). A significant difference existed between number of older siblings and feeding method ($p \leq .05$). Slightly more than half (52%) of all infants had two or fewer siblings; 19 percent had from three to four siblings; and 23 percent had more than five siblings. More ($p \leq .05$) infants of EFF mothers (43%) had from five to seven older siblings than did infants of either EBF mothers (17%) or FFAW mothers (0%). Likewise, more ($p \leq .05$) infants of MF mothers (41%) had from five to seven older siblings than did infants of EBF mothers (17%) or FFAW mothers (1%). More ($p \leq .05$) infants of FFAW mothers (76%) had from one to two older sibling than did infants of EBF mothers (56%), MF mothers (24%) or EFF mothers (43%).

Table 10.--Number of older siblings of infant under two years of age in Malinalco households studied.

Number of older siblings	Feeding group*			
	EBF	MF	EFF	FFAW
	$\frac{\%}{(n=41)}$	$\frac{\%}{(n=17)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=21)}$
1 - 2	56 ^a	24 ^b	43 ^c	76 ^{a,b,c}
3 - 4	20	24	14	19
5 - 7	17 ^{a,b}	41 ^a	43 ^b	0 ^{a,b}
over 7	7	12	0	5

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

^{a,b,c}like superscripts in same row different at $p \leq .05$.

The majority of infants in the study (52%) had one to two older siblings. Of those infants who had from three to ten older siblings, the infants of MF mothers and EFF mothers had more siblings than did infants of EBF mothers and FFAW mothers.

When which member of the household acted as head was investigated, 90 percent of the mothers reported their husbands as head. Of the remaining 10 percent, two MF mothers and one FFAW mother reported themselves as head. Three EBF mothers, one EFF mother and three FFAW mothers reported either their own mother or father or another person as head.

The usual caretaker of the respondents' children under two years of age was investigated. Fifty-three percent of the infants were cared for exclusively by the respondent. One infant in the study was cared

for exclusively by an individual other than the respondent. Forty-six percent of the infants were cared for jointly by the respondent and another individual.

Relationship to the infant of the caretaker and feeding group were compared (Table 11). When the infants were cared for by both the mother and another individual, the extra caretaker for the majority of EBF (64%), MF (50%) and FFAW (66%) infants was the grandmother. The extra caretaker besides the mother for the majority of EFF infants (60%) was an older sibling. More ($p \leq .05$) EFF infants (60%) were cared for by the respondent and an older sibling than were infants of either EBF (21%) or FFAW (11%) mothers.

Table 11.--Relationship of caretaker (other than mother) to infants aged two years or younger in Malinalco households studied.

Relationship of caretaker (other than mother) to infant	Feeding Group*			
	EBF	MF	EFF	FFAW
	$\frac{\%}{(n=22)}$	$\frac{\%}{(n=6)}$	$\frac{\%}{(n=10)}$	$\frac{\%}{(n=9)}$
Grandmother	64	50	40	66
Sibling	18 ^a	50	60 ^{a,b}	11 ^b
Greatgrandmother	9	0	0	22
Other	9	0	0	0

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

^{a,b}like superscripts in same row different at $p \leq .05$.

Age of infants' caretaker (other than the mother) was investigated and compared with feeding groups (Table 12). More ($p \leq .05$) infants of EFF mothers (60%) were cared for by persons aged 5 through twenty years than infants of either EBF mothers (18%) or FFAW mothers (11%).

Table 12.--Age of caretaker (other than mother) of infants aged two years or younger in Malinalco households studied.

Age of infants' caretaker (other than mother)	Feeding Group*			
	EBF	MF	EFF	FFAW
(yrs.)	$\frac{\%}{(n=22)}$	$\frac{\%}{(n=6)}$	$\frac{\%}{(n=10)}$	$\frac{\%}{(n=9)}$
5 - 20	18 ^a	50	60 ^{a,b}	11 ^b
31 - 40	14	0	0	0
41 - 60	50	50	30	66
61 or over	18	0	10	22

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

^{a,b}like superscripts in same row different at $p \leq .05$.

In slightly less than half the households in the sample (46%) the infant under two was being cared for by both the mother and another individual. In many families then the care of the infants was a shared responsibility. The most likely person to help with the infants' care was the grandmother in most households. This was probably because she was usually the only other adult female living in the household. Many couples lived with the parents of either the husband or wife.

In the case of EFF households, infants were more likely to be cared for by an older sibling than in the other households as classified by feeding method. Since 48 percent of EFF households had from five to ten children, an older brother or sister was readily available for such care. Half of the individual (other than mother) giving the bottle to EFF infants were aged 11 to 15 years. Use of the bottle for feeding allowed EFF mothers to tend to the other chores involved in attending to a large family while an older child fed the infant. Since 50 percent of infants of MF mothers were also fed by an older sibling and had a large number of older brothers and sisters, use of the bottle also freed the MF mothers. That infants of EFF mothers were cared for by an older sibling more often than infants of EBF mothers may have been because that EBF mothers were more physically tied to their infants. Since FFAW mothers tended to have small families (68% had less than two children) it is logical that a smaller percentage of these infants were left in the care of older siblings.

Use of boiled feeding bottles and feeding groups were compared (Table 13). The majority of mothers in all three feeding groups that use bottles boiled the feeding bottles before using them. However, more ($p \leq .05$) EFF mothers (95%) boiled the feeding bottles than either MF (72%) or FFAW mothers (71%).

Exclusively formula feeding mothers appeared to have been more conscientious about the cleanliness of the feeding bottles than other mothers in the study who used a bottle. Mothers who reported sterilizing the bottles also reported washing them beforehand. Such an emphasis on cleanliness of the bottles may have been because the bottles were used very often. If the EFF mothers had few bottles to begin with they

Table 13.--Use of boiled feeding bottles by mothers in Malinalco households in which children aged two years or younger were present.

Use of boiled feeding bottled	Feeding Group*		
	MF	EFF	FFAW
	$\frac{\%}{(n=11)}$	$\frac{\%}{(n=20)}$	$\frac{\%}{(n=14)}$
NO	27	5	29
YES	73 ^a	95 ^{a,b}	71 ^b

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

^{a,b}like superscripts in same row different at $p \leq .05$.

would have required more cleaning due to use than in the other groups. The tendency to boil the bottles may have been related to the infant receiving formula in bottles since birth. EFF mothers could have had more experience and problems with contaminated bottles and subsequent gastrointestinal upsets of the infant. Boiling the bottles may have been an attempt to avoid problems of contamination.

Housing construction

Number of rooms in the house was compared with feeding method (Table 14). A significant difference existed between number of rooms and feeding method ($p \leq .05$). Of the total sample 93 percent of the households lived in homes of two rooms or less (excluding kitchen). The majority of households in all feeding groups except the FFAW group had homes comprised of a single room. More ($p \leq .05$) EBF households (76%) had single room dwellings than FFAW households (38%).

The majority of households in the sample used either shingle tiles (53%) or corrugated metal (35%) in the roof construction of their home, More ($p \leq .01$) EBF households (54%) had roofs constructed of corrugated metal than FFAW households (10%). More ($p \leq .01$) FFAW households (70%) had roofs of shingle tile than EBF households (44%). In a tropical climate shingle tile may be considered the better construction material since corrugated metal tends to radiate heat of the home back into it and ventilation is usually poor.

Table 14.--Number of rooms in houses of Malinalco households in which children aged two years or younger were present.

Number of rooms	Feeding Group*			
	EBF	MF	EFF	FFAW
	$\frac{\%}{(n=41)}$	$\frac{\%}{(n=17)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=21)}$
1	76 ^a	59	76	38 ^a
2	24	30	19	43
2	0	11	5	19

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

^alike superscripts in same row significant at $p \leq .05$.

The most common material used in wall construction of the homes was adobe bricks (80%). Twenty percent of the households had floors constructed of cement; 47 percent had hardened earth floors; and 30 percent had cement tile floors.

Eighty-five percent of the households in the sample had a one room construction separated from the main house that was used as a

kitchen. Fifteen percent of the households had a kitchen that was either on the porch or a separate room continuous with the house.

Most households (83%) in the study had no toilet facilities. Households with toilet facilities had either a flush toilet or a septic tank. The majority of households (79%) obtained their water from a tap inside or near their homes; 13 percent had to bring water from nearby streams. Although most households had constant water supply, the majority (81%) also conserved water in the home in a large clay jar. The most common length of time the water was stored was one day. Eighty-seven percent of the households reported that water was not boiled before use for either washing or drinking, since the water piped to their homes was potable.

Seventy-two percent of the households obtained their foodstuffs from both shops and the market. Twenty-seven percent also used foodstuffs such as tomatoes, onions and other vegetables in addition to corn and beans that were grown on family land.

Feeding method groups were not categorizeable on the basis of wall or floor construction, kitchen facilities, toilet facilities, water source or food sources. Feeding method groups also were not statistically categorizeable on the basis of all other family and daily living variables not previously discussed.

Summary

Family size appeared to have influenced the feeding method decision of respondents. A significantly greater percentage of MF mothers had families with five to ten children than either EBF mothers or FFAW mothers. More EFF mothers also had families of five

to ten children than FFAW mothers. Likewise, significantly more infants fed with a bottle since birth (MF and EFF) had from five to seven older siblings than infants who were being breast fed (EBF) or who had been breast fed (FFAW). Infants of EFF mothers were cared for by an older brother or sister to a greater degree than infants in the other three feeding groups.

It is possible that mothers who elected to formula feed either partially or totally since the child's birth did so due to the demands of a large family. First, use of the bottle allowed for the possibility of an older brother or sister to feed the infant in mother's absence; such was the case with EFF mothers more than any other group. This practice freed the otherwise breast-bound mother to attend to other members of the family or household chores involved in attending that family.

Secondly, the greater number of pregnancies and childbirths a woman undergoes, the greater is the physiological and nutritional drain on her body. Such a nutritional burden is aggravated when the mother herself is poorly nourished. Use of milk or formula may have been not only a practical but a necessary alternative for mothers with many children who lacked sufficient breast milk to feed their newborn infants. While lactation failure was not documented in this study, it exists as a possible explanation for not exclusively breast feeding.

Perceptions and Attitudes of Mothers

Respondents were interviewed to elicit responses concerning their attitudes about feeding methods and infant health. Respondents were asked to give their opinions concerning the feeding methods used

by other women. Respondents' knowledge of birth control methods and actual use of these methods were investigated. The variables concerning these types of information were compared with the four feeding groups.

Mothers were asked to give their opinion about the ideal weaning age for an infant. A majority of mothers in all feeding groups except the MF group believed that a child should be weaned at twelve months of age or younger: EBF, 56 percent; EFF, 75 percent; and FFAW, 67 percent. More ($p \leq .05$) FFAW mothers (38%) believed the ideal weaning age to be between five and eleven months than did EBF mothers (12%). More ($p \leq .05$) MF mothers (35%) believed an infant should be weaned at 24 months or later than did either EFF mothers (5%) or FFAW mothers (9%). If the infant was no longer nursing at the breast, the mother was asked his weaning age. The mean weaning age for all weaned infants in the sample was 11.6 months.

Table 15.--Ideal weaning age reported by respondents with children aged two years or younger in Malinalco.

Age (months)	Feeding Group*			
	EBF	MF	EFF	FFAW
	% (n=41)	% (n=17)	% (n=20)	% (n=21)
5 - 11	12 ^a	18	25	38 ^a
12	44	29	50	29
14 - 15		6	5	5
18	29	12	15	19
24 or more	15	35 ^{a,b}	5 ^a	9 ^b

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

^{a,b}like superscripts in same row different at $p \leq .05$.

Reasons for deciding to breast feed were investigated. Forty-five percent of all respondents replied that it was more economical to breast feed; that is, the respondents did not have money to purchase breast milk substitutes or did not consider using small family incomes for this purpose. Twenty-two percent responded that they gave breast milk because they believed it to be better for the infants' health. Percentages of respondents in each feeding group that gave these reasons were similar (Table 16). Exclusively formula feeding (EFF) mothers did not breast feed per se; however, some of these mothers gave reasons for attempting to breast feed although their attempts had resulted in failure. The EFF group had the lowest percentage of women responding that breast feeding was economical.

Table 16.--Reasons for breast feeding given by mothers of children aged two years or younger in Malinalco.

Reasons given for breast feeding	Feeding Group*				Total
	EBF	MF	EFF	FFAW	
	$\frac{\%}{(n=41)}$	$\frac{\%}{(n=17)}$	$\frac{\%}{(n=11)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=89)}$
More economical	46	41	36	35	42
Breast milk better for child's health	29	18	18	20	24
Other	25	41	46	45	34

*EBF = exclusively breast feeding, MF = mixed feeding,
EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

Respondents who regularly fed milk or formula in a bottle were asked the reason for not breast feeding or for introducing the bottle. A significant difference existed between the reason for not breast feeding and feeding method ($p \leq .01$). In both the mixed feeding (MF) and formula feeding after weaning (FFAW) groups the reason which received the highest percentage compared to all reasons given was insufficient breast milk (Table 17). The reason most commonly reported by EFF mothers for not breast feeding was total lack of breast milk. Other reasons reported by mothers for not breast feeding included breast problems, inconvenience and refusal of the infant to suckle the breast. Thus for all feeding groups that were bottle feeding at the time of the study, partial or total inability to produce breast milk was an important factor in the decision not to breast feed.

Table 17.--Reasons for not breast feeding given by mothers of children aged two years or younger.

Reasons for not breast feeding	Feeding Group*			Total
	MF	EFF	FFAW	
	$\frac{\%}{(n=17)}$	$\frac{\%}{(n=20)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=58)}$
Insufficient breast milk	65	15	38	38
No breast milk	0	35	10	16
Other	35	50	52	46

*EBF = exclusively breast feeding, MF = mixed feeding,
EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

Respondents were asked if they felt that breast feeding restricted other daily activities. Sixty-four percent of the total sample felt that breast feeding did not restrict activities while 36 percent felt that it did. More ($p \leq .05$) EBF mothers (73%) felt that breast feeding restricted their activities than did FFAW mothers (45%) when they were breast feeding.

Respondents were asked whether they believed that giving the breast or the bottle involved more work. A significant difference existed between which feeding method was more work in respondents' opinions ($p \leq .05$). Seventy-two percent of those responding believed that the bottle involved more work than the breast (Table 18). More ($p \leq .05$) MF mothers (91%) believed that the bottle was more work than FFAW mothers (25%).

Table 18.--Opinions as to amount of work involved in breast/bottle feeding given by mothers of children aged two years or younger in Malinalco.

Opinion as to amount of work involved	Feeding Group*			Total
	MF	EFF	FFAW	
	$\frac{\%}{(n=11)}$	$\frac{\%}{(n=5)}$	$\frac{\%}{(n=4)}$	$\frac{\%}{(n=20)}$
Breast feeding more work	9	40	75	30
Bottle feeding more work	91 ^a	60	25 ^a	70

*MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

^alike superscripts in same row different at $p \leq .05$.

The respondents were asked to give the reason why they believed a good friend or neighbor practiced the feeding method that she did (Table 19). When asked why other women breast feed, half or more of the respondents in all feeding groups except MF mothers responded that other women breast feed because it is more economical. This perception on the part of the mothers was in agreement with the most common reason actually given for breast feeding. Mothers also believed that other women breast fed because it was more convenient, better for the child's health and because the woman had sufficient milk. When asked why other women practice mixed feeding, 62 percent of EBF mothers, 60 percent of MF mothers and 66 percent of FFAW mothers responded that other women supplemented their breast milk with another milk because their milk was insufficient to feed the infant properly. This perception on the part of the mothers was also in agreement with the most commonly reported reason for mixed feeding. Mothers also believed that women mixed fed because it was more convenient or because they worked outside the home.

When asked why other women formula fed, the greatest response was that the formula feeding mother had no breast milk or that her milk dried up: EBF, 44 percent; MF, 59 percent; EFF, 52 percent; and FFAW, 38 percent. In reality, total lack of breast milk was the most common response given for not breast feeding by formula feeding mothers. Other women reportedly believed formula was introduced due to mother's work outside the home, a new pregnancy or refusal of the child to suckle the breast. Similarly, when asked why other women quit breast feeding and began feeding formula, the response most often given by mothers in all feeding groups was that her milk had probably dried up. Mothers also

Table 19.--Reasons for which other women practice infant feeding methods as reported by mothers of children aged two years or younger in Malinalco.

Reasons	Feeding Group*			
	EBF	MF	EFF	FFAW
Reasons for breast feeding	$\frac{\%}{(n=36)}$	$\frac{\%}{(n=14)}$	$\frac{\%}{(n=18)}$	$\frac{\%}{(n=20)}$
More economical	55	43	50	60
Better for child's health	8	14	11	5
More convenient	3	14	6	
Other	33	28	33	35
Reasons for mixed feeding	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=10)}$	$\frac{\%}{(n=15)}$	$\frac{\%}{(n=9)}$
Insufficient milk	62	60	47	66
More convenient	19 ^a	20	7 ^a	33
Work outside home	5 ^a	10	27 ^a	
Reasons for formula feeding	$\frac{\%}{(n=41)}$	$\frac{\%}{(n=17)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=21)}$
No milk	44	59	52	38
Other	56	41	48	62
Reasons for suspension of breast feeding	$\frac{\%}{(n=41)}$	$\frac{\%}{(n=17)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=21)}$
Milk dried up	32	47	38	38
Other	68	53	62	62

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

^alike superscripts in same row different at $p \leq .05$.

believed that a new pregnancy had caused suspension of breast feeding.

From the above data there was a high degree of agreement in the perceptions of all respondents as to why other women did not breast feed. The reasons given for partial or exclusive formula feeding by all respondents was most often inability of other women to produce breast milk.

When the respondents were asked who they believed to be the most knowledgeable about infant feeding, the most common response given by mothers in all feeding groups was the physician. More EBF mothers (66%) believed that the physician was the best authority on infant feeding than MF mothers (53%), EFF mothers (48%), or FFAW mothers (29%). This finding is interesting since many EBF mothers lived in some of the poorest households in the sample and would presumably have less money to pay for a doctor's visit.

When the respondents were asked if milk or formula given in a bottle could make an infant ill, 73 percent of the total sample responded that they believed that milk given in this manner could cause illness of the infant compared to EFF mothers (10%) or FFAW mothers (10%) (Table 20). This perception on the part of EBF mothers may have been because they had had less experience with bottle feeding and the health problems that could result from it.

When asked under what circumstances milk given in a bottle could make an infant ill, 40 percent of all mothers responded that if the bottles were not washed and boiled, illness was probable. Twenty-nine percent of the mothers believed that if milk was left too

Table 20.--Beliefs concerning bottle contamination as reported by mothers of children aged two years or younger in Malinalco.

Milk in a bottle can make an infant ill	Feeding Group*				Total -
	EBF	MF	EFF	FFAW	
	$\frac{\%}{(n=41)}$	$\frac{\%}{(n=17)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=100)}$
NO	34	29	10	10	23
YES	61 ^{a,b}	71	86 ^a	86 ^b	73
Don't know	5	0	4	4	4

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

^{a,b}like superscripts in same row different at $p \leq .05$.

long in the bottle and had soured, the infant would become ill. More ($p \leq .05$) EFF mothers (56%) believed that soured milk was the cause of the problem than did EBF mothers (13%) or FFAW mothers (19%) (Table 21). The greater experience of EFF mothers with bottles than the other mothers probably accounted for this difference of opinion. Whereas EFF mothers believed soured milk more of a problem, more ($p \leq .05$) FFAW mothers (63%) believed that unwashed and unboiled bottles caused illness in the infant than did either MF mothers (27%) or EFF mothers (28%).

Respondents were questioned as to whether they believed infants were healthier if they were breast fed or fed a substitute for breast milk. Fifty-two percent of the sample responded that breast milk was better for the child's health (Table 22). Twenty-four percent believed milk or formula made infants healthier while 23 percent felt that what

Table 21.--Beliefs concerning conditions under which bottles contaminated as reported by mothers of children aged two years or younger in Malinalco.

When can milk in a bottle make an infant ill	Feeding Group*				Total
	EBF	MF	EFF	FFAW	
	$\frac{\%}{(n=23)}$	$\frac{\%}{(n=11)}$	$\frac{\%}{(n=18)}$	$\frac{\%}{(n=16)}$	$\frac{\%}{(n=68)}$
If bottles not washed/ boiled	39	27 ^a	28 ^b	63 ^{a,b}	40
If milk soured	13 ^a	36	56 ^{a,b}	19 ^b	29
If unboiled water/milk used	0	9	6	0	3
Don't know/other	48	28	10	18	28

*EBF = exclusively breast feeding, MF = mixed feeding,
EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

^{a,b}like superscripts in same row different at $p \leq .05$.

Table 22.--Beliefs concerning effect of milk fed on infants' health as reported by mothers of children aged two years or younger in Malinalco.

Infants healthier if fed:	Feeding group*				Total
	EBF	MF	EFF	FFAW	
	$\frac{\%}{(n=41)}$	$\frac{\%}{(n=16)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=99)}$
Formula/milk	15 ^a	31	43 ^a	19	24
Breast milk	63 ^a	44	38 ^a	52	52
Don't know	22	25	19	29	23

*EBF = exclusively breast feeding, MF = mixed feeding,
EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

^alike superscripts in same row different at $p \leq .05$.

the child was fed made no difference. More ($p \leq .05$) EBF mothers (63%) believed that infants were healthier if breast fed than did EFF mothers (38%). On the other hand, more ($p \leq .05$) EFF mothers (42%) felt that formula was the healthier alternative than did EBF mothers (15%). These last results implied that EBF mothers and EFF mothers believed that the infant feeding method that each had chosen was the healthiest alternative for their infants.

Respondents were asked if diet should be changed when the infant was ill. Sixty-one percent of the respondents believed that it was better to change the diet while 36 percent believed that the diet should remain the same during the infant's illness. The mothers reported a variety of ways in which the diet could be changed when the infant was ill. The most common response given in all feeding groups however was that milk should be suspended. When asked if diet affected infants' health, 73 percent of mothers responded positively while 20 percent believed that diet did not affect infants' health to a significant degree.

When asked if breast feeding was an effective birth control method, 53 percent of the mothers responded that breast feeding did not help to avoid pregnancy while 41 percent responded that breast feeding helped to delay the conception of another child.

Summary

It is of special interest that the most common reason for breast feeding given by mothers who had breast fed or were breast feeding at the time of the study was economic in nature: breast feeding was the most inexpensive infant feeding method available.

In answering this question many women commented that money was scarce and that they had no money in their budget for "extra" food for the infant since the mother's breasts were full of milk. It will be remembered that from the economic data obtained in the study, breast feeding mothers placed in general in the lower economic categories. Thus, the reason given for breast feeding by EBF mothers and FFAW mothers was consistent with their economic situation. At least in the case of breast feeding mothers, lack of money and a situation of poverty in general were influencing factors in the decision to breast feed.

According to the respondents the major reason for which women introduced a breast milk substitute at the time of birth was a partial or total lack of breast milk. When such a situation occurred, the women usually did little to attempt to bring the milk back. Most considered it futile because they were convinced for whatever reason that they had no milk.

The situations of individual respondents varied greatly. One young, affluent EFF mother responded that she had simply decided that she did not like breast feeding and was not going to give the breast. Other exclusively formula feeding mothers were older women with large families who lamented the fact that they were forced to formula feed their infants due to lack of milk because they believed breast milk to be better for the child's health.

Thus, reported lactation failure was an important factor in the infant feeding decisions of formula feeding mothers. Whether this inability to produce breast milk was physiological or psychological

in nature was impossible to determine from the results of this study.

Attitudes of EFF mothers and EBF mothers concerning the healthiness of breast milk and breast milk substitutes for their infants were consistent with their feeding methods. Each group of mothers believed that the milk they were giving their infants was the best for their health. Exclusively breast feeding mothers believed breast milk was the best alternative for their infants. However when asked the reason for breast feeding, EBF mothers reported concern for the child's health only half as many times as the economic advantages of breast feeding.

Beliefs of the mothers concerning contamination problems associated with bottle feeding may have been the result of their individual experiences. For example exclusively formula feeding mothers tended to believe that soured milk was the greatest problem associated with bottle feeding. All but one of the mothers who had been feeding a breast milk substitute exclusively since the infant's birth reported that they did not own refrigerators. It is probable that they had encountered problems with storing the formula once prepared as well as the gastrointestinal upsets infants would show after ingesting soured milk.

The most common beliefs of the mothers concerning reasons for which other mothers fed their infants as they did were in agreement with the actual reasons given. Many respondents believed that mothers breast fed for the same reason EBF and FFAW mothers reported: breast feeding was an inexpensive source of food for the infants. Many

respondents believed that mothers formula fed for the same reason that MF and EFF mothers reported, partial or total lack of breast milk. Such consistent agreement among the mothers concerning reasons for breast feeding or not breast feeding confirms the validity of these reasons as influencing factors in the infant feeding decision process.

Feeding History of Respondent

The feeding methods by which respondents were fed as infants as well as the method used to feed their siblings were investigated. Of the total sample, 93 percent of the respondents were breast fed as infants. Only 3 percent of respondents had been fed a breast milk substitute.

Ninety-three percent of all respondents reported that the majority of their siblings had been breast fed as infants. Similarly, when the respondents were categorized by feeding method, 93 percent of EBF mothers, 100 percent of MF mothers, 86 percent of EFF mothers and 95 percent of FFAW mothers reported that their siblings had been breast fed.

The manner in which the respondents or their siblings had been fed as infants did not emerge as a factor which was in direct relationship with the respondents' current infant feeding method decisions.

Social Influences

Respondents were interviewed to elicit information concerning advice received regarding infant feeding, conformance with advice received and exposure to commercial advertising for milk formulas and milk products.

Advice of the respondents' mother regarding infant feeding was investigated. In all feeding groups except exclusively formula feeding mothers, over half the respondents had received advice from their mothers concerning infant feeding: exclusively breast feeding (EBF) mothers, 56 percent; mixed feeding (MF) mothers, 59 percent; and formula feeding after weaning (FFAW) mothers, 62 percent. Exclusively formula feeding mothers reported 48 percent receiving advice from their mothers. In all feeding groups the most common advice received was to breast feed. The majority of respondents in all feeding groups reported that they had followed their mother's advice (Table 23). The fact that a majority of EFF mothers reported that they followed their mother's advice to breast feed but in reality formula fed their infants cannot be totally explained. Some mothers who had attempted to breast feed and had failed may have felt that they had followed their mother's advice though unsuccessfully. More ($p \leq .05$) EFF mothers (36%) did not follow their mothers' advice than did EBF mothers (6%). An inability to produce breast milk on the part of EFF mothers as discussed previously may have explained some EFF mothers refusal to follow the advice to breast feed.

Advice of the respondents' mother-in-law was investigated (Table 24). In all feeding groups except MF, over half of the respondents did not receive advice from their mother-in-law: EBF, 71 percent; EFF, 57 percent; and FFAW, 52 percent. Sixty-five percent of MF mothers did receive advice from their mother-in-law. More ($p \leq .05$) MF mothers (64%) received advice from their mother-in-law than did EBF mothers (29%).

Table 23.--Conformance with mother's advice by mothers with children aged two years or younger in Malinalco.

Conformed with mother's advice	Feeding Group*			
	EBF	MF	EFF	FFAW
	$\frac{\%}{(n=18)}$	$\frac{\%}{(n=7)}$	$\frac{\%}{(n=11)}$	$\frac{\%}{(n=7)}$
NO	6 ^a	0	36 ^a	14
YES	94	100	67	86

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

^alike superscripts in same row different at $p \leq .05$.

Table 24.--Advice from mother-in-law given to respondents with children aged two years or younger in Malinalco.

Received advice from mother-in-law	Feeding Group*			
	EBF	MF	EFF	FFAW
	$\frac{\%}{(n=41)}$	$\frac{\%}{(n=17)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=21)}$
NO	71	35	57	52
YES	29 ^a	65 ^a	43	48

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

^alike superscripts in same row different at $p \leq .05$.

The majority of respondents in all feeding groups reported that the most common advice given by the mother-in-law was to breast feed. A significant difference existed between respondent's conformance with advice from mother-in-law and feeding categories ($p \leq .05$). The majority of respondents in the EBF, MF, and FFAW feeding groups reported that they had followed her advice. A majority of EFF mothers also reported following their mother-in-law's advice to breast feed although in reality they did not. Again, if their attempts at lactation had been unsuccessful, these mothers may have felt that they had to some degree conformed with the mother-in-law's advice to breast feed.

When advice to the respondents from sisters and friends was investigated, a very high percentage of mothers in all feeding groups reported receiving no advice from either of these two categories of individuals. More than 85 percent of mothers in all feeding groups reported receiving no advice from their sisters. More than 80 percent of mothers in all feeding groups reported receiving no advice from friends.

Advice given to respondents concerning infant feeding from a significant other individual was investigated. The two individuals from whom the majority of respondents received advice were the midwife and the physician. Forty-five percent of the total sample received advice from the midwife; 31 percent of the total sample received advice from a physician.

Advice given to the respondents concerning infant feeding from a significant other individual and feeding categories were compared (Table 25). The individual from whom the majority of respondents received advice in the EBF and MF groups was the midwife: EBF,

Table 25.--Significant individuals advising respondents with children aged two years or younger in Malinalco.

Individual advising	Feeding Group*			
	EBF	MF	EFF	FFAW
	$\frac{\%}{(n=41)}$	$\frac{\%}{(n=17)}$	$\frac{\%}{(n=21)}$	$\frac{\%}{(n=21)}$
Midwife	56 ^a	53	19 ^{a,b}	43
Physician	22	29	38	43
Physician/midwife/ husband (any two)	12 ^a	6 ^b	33 ^{a,b}	
Other	10	12	10	14

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

^{a,b}like superscripts in same row different at $p \leq .05$.

56 percent; MF, 53 percent. An equal percentage (43%) of FFAW mothers received advice from the midwife as from the physician. The individual from whom the majority of EFF mothers received advice was the physician. More ($p \leq .05$) EBF mothers (56%) and more ($p \leq .05$) MF mothers (53%) received advice from the midwife than EFF mothers (19%).

Respondents usually received advice from the midwife at the time of their infants' birth. Most births took place at the mothers' homes. The midwife was called at some time during the mother's labor period. After the birth of the child the midwife helped wash the infant and care for the mother. She would usually make a visit to the mother's home each day for the next three days until the mother's breast milk came in and she was assured that mother and child were doing

well. Almost universally mothers reported that the midwife encouraged them to breast feed.

Respondents received advice from a physician either at their own homes or at the health clinic. At times the physician was called by a family to attend the childbirth at the mother's home. Only a few mothers in the study were attended in a hospital or clinic at the time of their infant's birth. At other times, infants were brought to the health center due to illness and it was at that time that the mother received advice concerning infant feeding from the physician. As reported by the mothers, the advice of the physician varied according to the individual situation of the infants.

FFAW mothers in the study tended to have older infants than other mothers. That more FFAW mothers received advice from a physician than mothers in the other feeding groups may have resulted when breast milk no longer met the dietary needs of the infant and mothers sought the advice of a physician concerning a breast milk replacement.

More EBF mothers and MF mothers received advice from the midwife than did EFF mothers. Since the midwife's advice was to breast feed, these mothers were receiving more encouragement to breast feed than were EFF mothers. The results concerning EFF mothers and the advice of the midwife imply that either one of two situations may have been occurring: either the midwife advised EBF and MF mothers to breast feed more often when she visited them than when she visited EFF mothers or EFF mothers were not visited as often by midwives and therefore received less advice from them.

In some cases, mothers received advice from more than one other significant individual (Table 24). More ($p \leq .05$) EFF mothers (33%)

received advice from two individuals (husband, midwife, and/or physician) than did EBF mothers (12%) or MF mothers (6%).

The types of advice received by the respondents from a significant other person were investigated. The two most common types of advice were to breast feed or to formula feed. Sixty-nine percent of those mothers receiving advice from a significant other individual were advised to breast feed whereas 24 percent were advised to formula feed.

Types of advice received by the respondents from a significant other person and feeding categories were compared (Table 25). Eighty-four percent of EBF mothers and 83 percent of FFAW mothers receiving advice from a significant other individual were advised to breast feed. More ($p \leq .05$) EBF mothers (84%) and more ($p \leq .05$) FFAW mothers (83%) reported receiving advice to breast feed than did MF mothers (40%) or EFF mothers (44%). Fifty percent of EFF mothers and 40 percent of MF mothers receiving advice from a significant other individual were advised to formula feed.

These results show that mothers who elected to formula feed reported receiving less advice to breast feed from a significant other than did mothers who elected to breast feed their infants.

Exposure of the respondents to advertisements for breast feeding and commercial formulas and milks was investigated. Of the total sample, 87 percent reported never having seen an advertisement concerning breast feeding. Sixty-seven percent of the total sample reported having been exposed to advertisements for commercial formulas or powdered milks. A majority of respondents in the entire

Table 26.--Type of advice given by significant individuals to respondents with children aged two years or younger in Malinalco.

Type of advice	Feeding Group*			
	EBF	MF	EFF	FFAW
	$\frac{\%}{(n=32)}$	$\frac{\%}{(n=10)}$	$\frac{\%}{(n=18)}$	$\frac{\%}{(n=18)}$
Breast feed	84 ^{a,b}	40 ^{b,d}	44 ^{a,c}	83 ^{c,d}
Formula feed	9	40	50	17
Other	7	20	6	

*EBF = exclusively breast feeding, MF = mixed feeding, EFF = exclusively formula feeding, FFAW = formula feeding after weaning.

a,b,c,d like superscripts in same row different at $p \leq .05$.

sample and a majority of respondents in each feeding group reported having been exposed to such advertisements through the radio.

Summary

The individuals who gave advice to the respondents concerning infant feeding and possibly influenced their feeding decisions were the mother, the mother-in-law, the midwife and the physician.

Since most of the respondents lived with either their own mothers or their mother-in-law, they had a high degree of contact with these individuals. Thus many women received advice about infant feeding from these older women. Younger women with one or two children often reported advice from their mother or mothers-in-law about the infant's diet and health. The infants' grandmother frequently expressed to the researcher her feeling that she needed to give her

daughter advice if she was young because the daughter was inexperienced.

Many older mothers who had many children reported receiving no advice from their mother or mother-in-law. After having fed five or six previous infants, the respondent felt confident enough in her own feeding knowledge that she asked no advice from her mother and her mother offered none. In other cases, the respondents' mother had given no explicit advice to breast feed because the decision to nurse was so fully assumed by both parties that advice was considered unnecessary.

Interestingly, the majority of respondents reported receiving no advice from sisters or friends. Many mothers related to the researcher that their household duties and care of the children allowed them little time to socialize with friends. Sisters often lived in another neighborhood or town, having married and moved away. Younger mothers frequently reported a very low degree of socialization; in fact, for many young mothers, the only other female with whom they had daily contact was their mother or mother-in-law.

The two persons other than family from whom the respondents received advice were the midwife and the physician. The midwife was present at most births which took place in the home and advised the mother to breast feed; fewer respondents had contact with the physician. As reported by the mothers, the physician's advice was appropriate for the particular health status of the infant.

Exclusively formula feeding mothers appeared to have been atypical in terms of advice received concerning infant feeding. More EFF mothers did not follow their mothers' advice (normally to

breast feed) than did EBF mothers. More EBF and MF mothers were advised by the midwife than EFF mothers; fewer EFF mothers received encouragement to breast feed than FFAW or EBF mothers. More EFF mothers received advice from two individuals than either EBF or MF mothers. Whether or not the advice received by EFF mothers from the two individuals was conflicting was impossible to determine from the data analysis performed for the purposes of this research.

However, from the data analyzed, it was evident that EFF mothers received less reinforcement to breast feed than either FFAW or EBF mothers. It is difficult to determine if this lack of advice to EFF mothers to breast feed was an important factor in their decision to formula feed. If their reported inability to produce breast milk discussed earlier was psychological in nature then lack of encouragement and feedback from other women in the community could have made a difference. If however, the lactation failure was due to a physiological incapacity for nursing, these mothers could not have breast fed regardless of how much advice or encouragement to breast feed they had received.

Since respondents in all feeding groups were equally exposed to commercial advertising for milk formulas, advertising per se did not appear to be influential in the feeding decision. Advice received by the respondents concerning infant feeding or the lack of it may have been influencing factors in their decisions, especially in the case of exclusively formula feeding mothers.

CHAPTER VI

SUMMARY AND IMPLICATIONS

A decline in breast feeding behavior with serious health and economic consequences has been noted in developing countries. The objective of this study was to identify factors influencing the infant feeding decisions of rural Mexican women in order to obtain a better understanding of the feeding decision at the level of the individual woman. The two methodological tools used were an interview schedule and measurement of recumbent length. Factors examined included infant feeding methods practiced by the respondents, reasons for infant feeding methods used, attitudes concerning infant feeding and infant health, elements of the respondent's daily living situation and household, social influences, socioeconomic information and infants' recumbent length. All variables were compared with infant feeding method used by the respondent. Infants' mean percents of standard length for age were compared on the basis of feeding method and age.

Mothers in the sample were classified into one of four feeding groups: exclusively breast feeding, mixed feeding, exclusively formula feeding and formula feeding after weaning. The majority of mothers were breast feeding exclusively or partially at the time of the study. Thus breast feeding as an infant feeding method was widespread in the

research population. At the same time many mothers practiced formula feeding although they varied in their degree of formula use and infants' age at which formula was introduced.

Several factors appeared to have influenced to a significant degree the individual mother's decision about infant feeding: economic situation, family size, reported ability to produce breast milk and advice received concerning breast milk. Exposure to commercial advertising and women's participation in the labor force, often cited in the literature as determining factors in infant feeding decisions, did not emerge as significant influences on the mothers interviewed. Rather, factors associated with the actual life situations of the mothers appeared to have been determinants in the decision.

The decision to breast feed taken by exclusively breast feeding (EBF) mothers appeared to have been influenced by the conditions of poverty in the households. Although many EBF mothers reported believing that breast milk was best for their infants, the most common reason given for breast feeding was a lack of money with which to purchase a breast milk substitute. Thus these mothers may have made the decision to breast feed due to a lack of economic alternatives. Researchers at the Human Lactation Center (1978) pointed out that "Third World women with the least amount of resources, time or access to health care and weaning foods, have no choice but to breast feed. More than half the infants they bear do not survive due to a lack of food for themselves and their children." Concurrently, EBF mothers and mothers who practiced breast feeding exclusively and introduced formula after weaning (FFAW) received considerable advice and encouragement to breast feed.

Some of the poorest women in the sample decided to feed with a breast milk substitute. The majority of exclusively formula feeding (EFF) mothers and mixed feeding (MF) mothers reported that they formula fed due to an inability to produce breast milk. Thus for poor women unable to nurse, the decision to feed with cow's milk, powdered milk or a commercial formula may have been due to a lack of food source alternatives for the infant. It has been asserted that if commercial milk formulas were not widely available to Third World women, breast feeding would flourish. This assumption was refuted by the data obtained in the present research project. Indeed, if breast milk alternatives had not been available to these mothers unable to nurse, their struggle to keep the infant alive would have been aggravated. At the same time, it can be seen from the data concerning monthly cash expenditure for milk that poor women who purchased formula needed to spend an inordinate amount of the household income for that item. Therefore, the decisions to formula feed in these households put a great strain on the entire family's income.

In the case of women who used formula feeding (EFF and MF), family size may have been a determinant in the feeding decision. More EFF and MF mothers had from five to ten children than breast feeding mothers. The demands on the mother's time due to large family size and the convenience of allowing an older child to bottle feed the infant may have made bottle feeding a more attractive alternative to these mothers. Perhaps more importantly, the effect of a greater number of pregnancies and childbirths on these women's health may have contributed to their reported inability to nurse the most recently born child.

From the factors which were found to be significantly associated with the infant feeding decisions in the present research project, several areas are indicated as avenues of further research. Since family size appeared to be an important factor in the decisions of formula feeding mothers, more information is needed concerning the ways in which mothers spend their time and their daily activity pattern. It is necessary to know if breast feeding is a "time-saver" for Third World women. Conversely, little is known about the extent to which bottle feeding frees women, especially those with large families, to attend to other necessary tasks. Moreover, the perceptions of Third World women concerning feeding practices and time constraints need to be documented.

The majority of women who formula fed reported having done so due to an inability to produce breast milk. More research on the oft-quoted "lactation failure" syndrome is needed. Many formula feeding women also reported having large numbers of children. It is generally agreed that the childbearing process is a burden of the mother's health. Studies investigating the nutritional effects of repeated cycles of pregnancy, childbirth and lactation on malnourished women's capacity for nursing could help to clarify the physiological and nutritional causes of lactation failure. Many women in the sample voiced the concern that if they breast fed their children, they would become "skinny" (emaciated) like their own mothers who had exclusively breast fed all their children. Thus while these women lacked detailed knowledge of the physiological process, they legitimately feared the negative nutritional effects of repeated lactation cycles.

Influential factors in the mothers' infant feeding decisions could be used by nutritionists promoting education programs in rural areas such as Malinalco. Before breast feeding is generally recommended, mothers' actual capacity for lactation should be investigated. Although breast feeding may be the best nutritional alternative for very young infants, it is meaningless to advise this practice if the mother cannot physiologically produce enough breast milk to feed the child. Indeed, formula feeding mothers already reported receiving some advice to breast feed from their families. If mothers are found who cannot breast feed, enough information regarding the use of other milks and their appropriateness according to the child's age should be made available to these women. In the community studied, formula feeding women often depended on the experience of others in choosing a type of milk for their infants. In many cases it was only after an inappropriately chosen milk had caused diarrheal disease in the infant that the mother visited the physician and received his advice. A more accessible health care system, of which nutritional counseling could be a part, needs to be made available to women in these situations. Optimally, an inexpensive milk formula could be distributed to these women through government-subsidized health clinics.

While intervention programs may be needed in poor rural communities such as the one studied, they cannot deal with the overall situation of poverty which contributes heavily to disease and death of infants in rural communities in the developing world. Presently nutritionists may not be working closely with economic planners in Third World countries to correct situations which are damaging to

to infants' nutritional status. However, the effects of poverty and the specific ways in which they condition mothers' feeding decisions will have to be taken into account if infants in developing are to be better nourished.

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APPENDICES

APPENDIX A

INTERVIEW SCHEDULES AND DATA SHEETS

APPENDIX A

EXPLANATION OF INFANT FEEDING INTERVIEW SCHEDULE

1. The interview schedule is written in the male gender for simplicity. When using the schedule the appropriate gender will be used.
2. Not every question on the interview schedule will be asked of each mother. Sections marked A, B, C, or D will be administered according to the mother's past and present infant feeding behavior.
3. The technique of probing will be used in all cases to obtain the desired information as specified in the interview schedule. Probing questions are not included in the schedule to allow for flexibility in the field situation.
4. The responses obtained from the subject mothers will be recorded on a data sheet. The printed responses which follow some of the questions will be checked if they represent the substance of the participant's response. If the nature of the response is such that extra space is needed or if further clarification is appropriate, a field notebook will be used to record the responses.
5. The recumbent length of all children under 2 years of age of each subject mother will be recorded on the second contact with the mother. A supplementary data chart which will record the mother's identification, the child's name and the child's recumbent length will be used to record that measure on the second visit. This data will subsequently be transferred to the individual data sheet for each subject mother.
6. Bracketed information on the interview schedule will be collected and calculated by the researcher subsequent to the interview.
7. Weaning, as used on these forms, is taken to mean the time at which the mother discontinues all breast feeding of the child.
8. The following abbreviations will be used:
 - DK - doesn't know
 - NA - not applicable
 - NR - no response

9. According to the pretest results, the questions on the master questionnaire as well as the data sheet will be changed or adjusted in wording in the interest of clarification. Likewise, further questions may be added if they are needed to obtain the desired information.
10. If a subject mother is unable for any reason to complete the interview during the initial session, the interview will be completed at the second visit or another time agreed upon by the researcher and the mother.
11. The name of the child under two years of age of each mother will be used in those questions which refer to the child.
12. One printed interview schedule covered with plastic will be used for all interviewing. The answers to the questions will be recorded on the data sheets.

CONSENT FORM

The nature of the interview in which I am to be the respondent has been explained to me. I understand the nature of the interviews as well as the purpose for which it is being used. I freely consent to participate in this interview and I understand that I am free to quit at any time. I am assured that the results of these interviews will be considered confidential and that I will remain anonymous. I am assured that I will be informed of the recumbent length measurement of my child at the end of the interview.

(signature)

(date)

INFANT FEEDING INTERVIEW SCHEDULE

General

1. What is your name?
How old are you?
What is your birth date?
2. How many children do you have?
3. How many children do you have two years old or younger?
What are their names?
4. How many times have you been pregnant?
How many miscarriages have you had?
5. Have any of your children been stillborn?
How many?
For each stillborn child, would you tell me the conditions of his birth?
6. Have any of your children died in the first year of life?
How many?
For each child that died, would you tell me the causes of death?
7. Who cares for your infant normally?
If different from the mother:
How is this person related to the mother?
How old is this person?

Feeding History of Each Child Under Two Years of Age

8. [Recumbent oength _____ cm. Recorded after first visit.]
9. What is the child's name?
What is his sex?
How old is he?
What is his birth date?
How many older brothers/sisters does he have?
How many younger brothers/sisters does he have?
Where was he born?
10. Does (name) get sick often?
What makes him ill?
How often?
11. Has he been sick last month?
What made him ill?
How many times?
12. Has he had diarrhea in the past month?
How many times?
When was the last time he had diarrhea?
For how long did the diarrhea last?

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12. How do you feed (name)?
 IF EXCLUSIVELY BREAST FEEDING, CONTINUE WITH SECTION A
 IF MIXED FEEDING, CONTINUE WITH SECTION B
 IF EXCLUSIVELY FORMULA FEEDING, CONTINUE WITH SECTION C
- A. MOTHERS WHO BREAST FEED EXCLUSIVELY
14. When did you begin to breast feed (name)?
 (no. days after birth)
 Why did you wait until that time to begin breast feeding?
15. Why did you decide to breast feed (name)?
16. Has the child been weaned?
 IF WEANED:
 When was the child weaned?
 Why was the child weaned? or Why was the child given the bottle?
 IF NOT WEANED:
 At what age do you plan to wean the child?
 Why would you wean him at that time?
17. Have you ever given another milk or drink other than breast milk to your infant?
 What type of milk/drink?
 Why did you give him this?
 For how long did you give him this?
18. How many times a day do you breast feed (name)?
 For how many minutes do you breast feed each time?
 Do you do any activity while breast feeding your child?
 Please describe you activity.
19. Have you ever had problems with your breasts?
 Please describe.
20. Do you feel that breast feeding keeps you from doing other things you would like to do?
 IF YES:
 Why do you continue to breast feed?
- B. MOTHERS WHO PRACTICE MIXED FEEDING
21. When did you begin to breast feed (name)?
 (no. days after birth)
 Why did you wait until that time to begin breast feeding?
22. Why did you decide to breast feed?
23. Why did you decide to introduce the bottle?
24. How many times a day do you breast feed?
 How many times a day do you give the bottle?

25. Do you feel that breast feeding keeps you from doing other things that you would like to do?
 IF YES:
 Why do you continue breast feeding?
 Do you feel breast feeding or bottle feeding is more work?
26. Have you had problems with your breasts?
 Please describe.

C. MOTHERS WHO FORMULA FEED EXCLUSIVELY

27. Has (name) ever been breast feed?
 IF NO:
 CONTINUE WITH QUESTION 29
 IF YES:
 IF EXCLUSIVELY BREAST FED UNTIL WEANING, MOTHER IS TYPE A - CONTINUE WITH QUESTIONS IN SECTION A
 IF MIXED FED UNTIL WEANED, MOTHER IS TYPE B - CONTINUE WITH QUESTIONS IN SECTION B
28. Why didn't you breast feed (name)? or Why did you give him a bottle?

D. MOTHERS WHO PRACTICE MIXED FEEDING OR FORMULA FEEDING EXCLUSIVELY

29. What do you feed your infant instead of or in addition to breast milk?
 How do you prepare it?
 Why do you give this instead of something else?
 Do you still feed him this?
 IF NO:
 Why did you stop feeding him this?
 How many different liquid food has the child been fed since birth?
30. Do you buy milk for your child?
 Where do you buy it?
31. What type of milk do you buy or receive as gifts or benefits?
32. How much money do you spend per week on milk for your child?
33. [Cost of milk at location specified: _____/liter]
 [Documented after first visit.]
34. How many bottles of milk do you give (name)? each day?
 (can give times of day instead of no. of bottles)
 Approximately how much liquid does each bottle contain?

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35. Are you the only person who gives the bottle to (name)?
 IF NO:
 Who else gives him the bottle?
 What relation does this person have to him?

Influences

36. How were you fed as an infant?
37. How were your brothers/sisters fed?
38. If you have sisters with children, how many of them breast feed or have breast fed their children?
39. If you have older daughters with children, how many of them breast feed or have breast fed their children?
40. How many of your friends/neighbors are breast feeding or have breast fed their children?
41. Do you have a friend that breast feeds her infant?
 Do you have a friend that exclusively formula feeds?
 Do you have a friend that supplements her breast milk?
 FOR EACH OF THE ABOVE QUESTIONS, ASK THE FOLLOWING QUESTION:
 Why do think she feeds in that way?
42. Has your mother given you advice about (name) feeding?
 IF YES:
 What did she advise?
 Did you follow her advice?
43. Has your mother-in-law given you advice about (name's) feeding?
 IF YES:
 What has she advised?
 Did you follow her advice?
44. Have your friends advised you about how to feed (name)?
 IF YES:
 What have they advised?
 Did you follow that advice?
45. Have your sisters advised you about how to feed (name)?
 IF YES:
 What have they advised?
 Did you follow that advice?
46. Has some other person that we haven't mentioned given you advice about how to feed (name)?
 IF YES:
 Who?
 Where?
 What was the advice?
 Did you follow this advice?
 PROBE: DOCTOR OR OTHER MEDICAL PERSONNEL, MIDWIFE, HUSBAND

47. Who do you think knows most about infant feeding?
48. Have you seen advertisements for breast feeding?
IF YES:
Where have you seen them?
49. Have you seen advertisements for commercial milk formulas or any other milk other than breast milk?
IF YES:
Where have you seen them?
50. Do you own or have access to:
a. T.V. c. magazines
b. radio d. newspapers

Attitudes and Beliefs

51. How do you know when your child is not healthy?
52. When should one avoid giving breast milk to an infant?
PROBE: DIET, ILLNESS OF MOTHER OR CHILD
Why?
53. When should one not give milk or formula in a bottle?
PROBE: DIET, ILLNESS OF CHILD
Why?
54. Can milk or formula given in a bottle make a child ill?
How does it affect the child?
Why do you believe this happens?
55. Should you change the child's diet if he is ill?
How should the diet be changed?
Why?
56. When you think of infants you know, do you think that they are healthier if fed breast milk or some milk other than breast milk?
IF OTHER MILK:
What type of milk?
Do you believe the diet of a child influences his health?
57. Do you know of any way to avoid pregnancy?
Which methods are you familiar with?
Which is most effective?
Do you use any method of avoiding pregnancy?
58. Do you believe that breast feeding helps to avoid a new pregnancy?
Have you noticed this in the experience of your sisters and or friends?
Have you noticed this in your own experience?

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59. Have you ever become pregnant while breast feeding?
 IF YES:
 How long after the birth of the child you were breast feeding?

Socioeconomic Information

- 60.-65. Observe on visit to home.
66. Where do you obtain water?
 How many times a day do you or someone else go for water?
 Do you always get water from the same place?
67. Do you conserve water in or near your home?
 How do you conserve the water?
 Do you boil the water before using it?
 For how long do you normally store water?
 Do you have a refrigerator?
68. Where do you obtain your foodstuffs?
69. Do certain seasons exist when there is less food available?
 Do you always spend the same amount of money on food throughout the entire year?
 When do you spend less?
70. Are you the head of the household?
 IF NO:
 Who is head of the household?
 What is his occupation?
71. Do you work outside the home?
 Please describe this work.
 Do you receive a salary for this work?
 How much money or other type of payment do you receive?
 How far from your home do you work?
72. Do you work form someone else inside your home.
 Please describe.
 Do you receive a salary for this work?
 How much do you receive?
73. How many people in your household receive salaries?
 How much do they receive?
 Do you receive or give food to others? Do you do work for other people in exchange for services or other commodities?
 Who?
 What commodities?
 How often?
74. How many people live in your household?

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- 75. What is the total monthly income on which your household depends?
- 76. How many years of schooling have you had?
- 77. Do you know how to read?
- 78. Do you know how to write?

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INFANT FEEDING INTERVIEW DATA SHEET

General

1. Nombre de la madre _____ I.D.# _____
Edad _____ Fecha de Nacimiento ____ / ____ / ____
2. # niños _____
3. # niños menos de 2 años _____ Nombre _____
4. # embarazos _____ # abortos _____
5. # murieron al nacer _____
Causas:
6. # muerto dentro 1er. año _____
Causas:
7. Cuidado de los niños
_____ respondiente
_____ otra nombre _____
relación _____
edad _____

Hisotria de la Alimentación

8. [largo recumbente _____ cm.]
9. Nombre del niño _____ I.D. # Madre _____
Sexo _____
Edad _____
Fecha de nacimiento _____ / _____ / _____
Hermanos mayores _____
Hermanos menores _____
Lugar de nacimiento _____
10. Enferma frecuentemente _____ NO _____ SI
Enfermedad _____

Frecuencia: _____

11. Enfermo mes pasado _____ NO _____ SI
Enfermedad

veces _____

12. Diarrhea mes pasado _____ NO _____ SI
veces _____

Ultima vez con diarrea _____ duración _____

INTERVIEW DATA SHEET

I.D.# _____

Alimentación:

_____ solo pecho _____ mixta _____ solo biberón

MADRES: PECHO EXCLUSIVAMENTE

7. Empezó dar pecho _____ (# días postnacimiento)
 Porque:

Porque no:

8. Destetado

_____ SI Edad _____
 Porque:

_____ NO Edad proyectado _____
 Porque:

9. Razon por dar pecho:

Razon por continuar:

- a. porque tengo miedo por su salud si dejo de darle pecho
- b. porque no tengo el dinero de comprar otras leches
- c. porque las leches que no sean la materna no son buenas para el niño
- d. otra:

10. Otra leche/bebida

_____ NO

PORQUE

CUANTO TIEMPO

_____ SI Tipo _____

11. # veces/día da pecho _____
 tiempo cada vez (min) _____
 actividad mientras _____ NO

_____ SI Descripción:

12. Problema c/ pecho _____ NO _____ SI
 Descripción:

INTERVIEW DATA SHEET

I.D.# _____

13. Sienta restringida _____ NO _____ SI
 Porque continua:

MADRES: LACTANCIA MIXTA

14. Empezó dar pecho _____ (#dias postnacimiento)
 Porque:

Porque no:

15. Razon dar pecho:

16. Razon por dar biberón
 a. creí que mi leche era insuficiente porque el niño lloró mucho
 b. creí que mi leche era insuficiente porque el niño no ganó peso
 c. porque no tuvo leche
 d. demasiado inconveniente
 e. me enfermó y no pudo dar pecho
 f. el niño no pudo o no quiso amamantar
 g. otra:

17. # veces/dia pecho _____
 # veces/dia biberón _____

18. Sienta restringida _____ NO _____ SI
 Porque continua:

Mismo trabajo _____ NO _____ SI

19. Problemas c/ pechos _____ NO _____ SI
 Descripción:

MADRES: BIBERON EXCLUSIVAMENTE

20. Amamantado: _____ NO (sigue c/ #21)
 _____ SI (sigue c/ Sección A si pecho solo)
 (sigue c/ Sección B si mixta)

INTERVIEW DATA SHEET

I.D.# _____

21. Razon no dar pecho

- ☐ porque trabaja y no podía estar con el niño
☐ porque recibe leche del seguro
☐ porque recibe leche de otros lados
☐ porque pensaba que se le caerían los senos
☐ porque pensaba que engordaría
☐ porque pensaba que podría afectar mi salud (grietas, abcesos)
☐ porque mi esposo se opuso
☐ porque es mejor la leche artificial y/o de vaca que la materna
☐ porque me enfermo y no tuvo leche
☐ porque el niño no pudo o no quiso amamantar
☐ demasiado inconveniente
☐ creí que mi leche era insuficiente porque el niño lloró mucho
☐ creí que mi leche era insuficiente porque el niño no gana peso
☐ mi doctor me avisó de dar biberón
☐ otro:

MADRES: LACTANCIA MIXTA O BIBERÓN EXCLUSIVAMENTE

22. Liquidos usados:

<u>TIPO</u>	<u>PREPARACION</u>	<u>PORQUE ESTO</u>	<u>TODAVIA NO SI</u>	<u>RAZON CAMBIAR</u>
-------------	--------------------	------------------------	--------------------------	--------------------------

Liquidos en total: _____

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INTERVIEW DATA SHEET

I.D.# _____

23. Compra leche

☐ NO☐ SI

donde:

☐ almacenes comerciales☐ de vecinos/familia☐ almacenes del gobierno☐ centro de salud☐ otro:

24. Tipo leche

☐ leche fresca de vaca☐ leche en polvo☐ leche pasteurizada☐ leche evaporada☐ leche condensada☐ CONASUPO☐ leche industrializada☐ otra:

25. Gasto/semana \$ _____

☐ no podría estimar

Cantidad comprada/semana _____ litros

☐ no podría estimar

26. [Costo de leche especificada:

_____ lugar

_____/litro]

27. #biberones/día _____

Cantidad/botella _____

28. Da biberon:

☐ respondenterelaciónedad☐ otra personaInfluencias

1. Como Ud. alimentado

☐ lactdo al pecho☐ lactancia con biberon☐ lactancia mixta☐ NS☐ otro:

2. Hermanos alimentado

☐ mayoría lactado al pecho☐ mayoría lactancia con biberon☐ mayoría mixta☐ NS☐ otro:

INTERVIEW DATA SHEET

I.D.# _____

3. Hermanas c/ hijos, cuantas amamantan
del # total

☐ NS☐ NA

4. Hijas mayores, cuantas amamantan
del # total

☐ NS☐ NA

5. Amigas/vecinas, cuantas amamantan
mayoría pecho exclusivamente
mayoría pecho suplementado
mayoría biberón

☐ NS

6. Amiga q' amamanta:

☐ NO☐ SI

Porque cree:

Amiga q' da biberón:

☐ NO☐ SI

Porque cree:

Amiga lactancia mixta:

☐ NO☐ SI

Porque cree:

Alguien dejo amamantar:

☐ NO☐ SI

Porque cree:

7. Consejos de madre

☐ NO☐ SI

Cuáles son:

Ud. conforma: ☐ NO ☐ SI

Porque:

INTERVIEW DATA SHEET

I.D.# _____

8. Consejos de suegra

☐ NO☐ SI

Cuales son:

Ud. conforma: ☐ NO ☐ SI

Porque:

9. Consejos de amigas:

☐ NO☐ SI

Cuales son:

Ud. conforma: ☐ NO ☐ SI

Porque:

10. Consejos de hermanas

☐ NO☐ SI

Cuales son:

Ud conforma:

Porque:

11. Consejos de otra persona

☐ NO☐ SI

Nombre _____

Nombre _____

CONSEJOS:

DONDE:

UD. CONFORMA ☐ SI ☐ NO☐ SI ☐ NO

PORQUE:

12. Quien sabe mas:

13. Anuncios: leche materna

☐ NO☐ SI☐ NSdonde ☐ T.V.☐ radio☐ anuncios en calle☐ periodicos☐ revistas☐ cine☐ otro:

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INTERVIEW DATA SHEET

I.D.# _____

14. Anuncios: otras leches

☐ NO☐ SI☐ NS

donde

☐ T.V.☐ radio☐ anuncios en calle☐ periódicos☐ revistas☐ cine☐ otro:

15. Posee/acceso a

☐ T.V.☐ radio☐ revistas☐ periódicos☐ ninguno16. Atendido en centro de salud ☐ NO ☐ SIVisitas desde parto ☐ NO ☐ SIRecibio consejos ☐ NO ☐ SI

Quien:

Cuales:

Conformo: ☐ NO ☐ SI

Porque:

17. Tiempo ideal dar pecho _____

Lactancia: Creyencias/Actitudes

1. Niño saludable porque:

2. Cosas hace saludable:

Leches:

INTERVIEW DATA SHEET

I.D.# _____

3.-6.

LECHE MATERNAOTRAS LECHES

DAR

TEMPORADAS

EVITAR

DAR

ENFERMEDADES

EVITAR

7. Leche materna hacer enfermo:

☐ NO☐ SI☐ NS

Cuando:

Enfermedad:

Porque:

8. Leche en biberón hacer enfermo:

☐ NO☐ SI☐ NS

Cuando:

Enfermedad:

Porque:

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INTERVIEW DATA SHEET

I.D.# _____

9. Alimentación cuando enfermo:

☐ NO☐ SI

Como:

☐ NS

Porque:

10. Niños de amigas:mas saludables

☐ leche materna☐ otra leche Cual:

Manera de alimentar:salud

☐ NO☐ SI

Porque:

☐ NS

11. Metodo evitar embarazo:

☐ NO☐ SI

Cuales son:

☐ NS

Cual mas efectivo:

Ud. usa metodo: ☐ NO ☐ SI

Cual:

12. Dar pecho: diferencia en embarazo

☐ NO☐ SI☐ NS

Noto c/ hermanas, amigas

☐ NO☐ SI☐ NS

En propia experiencia

☐ NO☐ SI☐ NS

13. Embarazo dando pecho

☐ NO☐ SI

Tiempo postnacimiento: _____

Situación Familiar

14. # cuartos _____

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INTERVIEW DATA SHEET

I.D.# _____

15. Cocina aparte

☐ SI
☐ NO donde cocina:

16. Excusado

☐ NO
☐ SI ☐ Inglés
 ☐ fosa septica
 ☐ letrina

17. -19.

Construcción de casa:

17. Techo	<input type="checkbox"/> concreto	18. Paredes	<input type="checkbox"/> tabique
	<input type="checkbox"/> asbesto		<input type="checkbox"/> madera
	<input type="checkbox"/> lamina		<input type="checkbox"/> lamina
	<input type="checkbox"/> otro		<input type="checkbox"/> otro

19. Piso ☐ mosaico
 ☐ cemento
 ☐ tierra
 ☐ otro

20. Obtención de agua:

Donde:

#veces/día _____
 Mismo sitio ☐ NO ☐ SI

21. Conservación de agua:

☐ NO
☐ SI Como:

Donde:

Cuanto tiempo:

Refrigerador ☐ NO ☐ SI

INTERVIEW DATA SHEET

I.D.# _____

22. Alimentos
- | | |
|-----------------------|----------------------|
| <u> </u> mercado | <u> </u> tienda |
| <u> </u> jardín | <u> </u> otro: |
| <u> </u> regalos | |

Alimentos por temporada
Cambios:

Cuando mas:

Cuando gasta mas:

23. Jefe de familia
 ____respondente
 ____otro Quien:
 Ocupación:

24. Ocupación de respondente:

25. Trabajo fuera _____ NO _____ SI
Descripción:
- Renumeración _____ NO _____ SI \$ _____
otro:

Distancia de casa:

26. Trabajo dentro _____NO _____SI
Descripción:
- Renumeración _____NO _____SI \$ _____
otro:

27. #personas en casa _____

28. #personas con salario _____
 Cuanto reciben \$ _____
 Recibe pago aparte de \$ _____ NO
 _____ SI
 Descripción:

29. Ingreso mensual para household:

30. Estudios _____ no atendió

_____ 1-3

_____ 4-6

_____ secundaria

_____ preparatoria

_____ profesional

_____ otro:

32 Escribir
 NO
 SI

APPENDIX B

RATING SCALE FOR CALCULATION OF SOCIOECONOMIC STATUS INDEX

APPENDIX B

RATING SCALE FOR CALCULATION OF
SOCIOECONOMIC STATUS INDEX

Variable name	Value	Value Rating
Number of rooms	3	3
	2	2
	1	1
Existence of toilet	Yes	2
	No	1
Type of toilet	Flush	3
	Septic tank	2
	Latrine	1
House Construction: Roof	Concrete	4
	Shingle	3
	Corrugated steel	2
	Other	1
Walls	Cement block	4
	Adobe brick	3
	Wood	2
	Other	1
Floor	Tile	4
	Cement	3
	Rough stones	2
	Earth	1
Water Source	House tap	3
	Public tap	2
	Stream	1
Distance of water source from house	In or side of house	6
	1 - 10 meters	5
	100 meters	4
	200 meters	3
	300 meters	2
	>300 meters	1

Variable name	Value	Value Rating
Frequency of water lack	Never	5
	Infrequently	4
	1x/wk.	3
	3 - 4x/wk.	2
	Daily	1
Water storage	Yes	2
	No	1
Water boiled	Yes	2
	No	1
Ownership of refrigerator	Yes	2
	No	1
Household head's occupation	Merchant	4
	Salaried employee	3
	Trade/artisan	2
	Peasant/Day laborer	1
Remunerated employment outside home	Yes	2
	No	1
Type of work outside home	Food vendor	3
	Domestic	2
	Other	1
Amount of remuneration	0 - \$2.30	1
	\$2.30 - \$3.40	2
	\$3.40 - \$9.00	3
Remunerated employment inside house	Yes	2
	No	1
Amount of remuneration	0 - \$2.30	1
	\$2.30 - \$3.40	2
	\$6.80 - \$11.36	3
Number of persons in household	3 - 5	5
	6 - 8	4
	9 - 11	3
	12 - 14	2
	15 - 17	1
Number of persons receiving salary	3	3
	2	2
	1	1

Variable	Value	Value Rating
Monthly income	0 - \$45	1
	\$45 - \$68	2
	\$68 - \$113	3
	\$113 - \$159	4
	\$159 - \$205	5
Years of schooling	0	1
	1 - 3	2
	4 - 6	3
	6	4
Ability to read	Yes	2
	No	1
Ability to write	Yes	2
	No	1

Maximum possible rating score: 78