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FINAL REPORT TO THE POPULATION COUNCIL

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BREAST FEEDING PROMOTION PROGRAM

IN THE MEXICO CITY GENERAL HOSPITAL

(Summary of Research)

While maternal nursing continues to be the norm in infant feeding in Mexico, there has been a recent change in infant feeding customs which involves the curtailing of nursing duration. This is particularly true in urban populations where it is common for complete weaning from the breast to occur in the first weeks of life. Due to continuing problems with infant infection and malnutrition, Mexican health officials are concerned about the growing trend toward early weaning from the breast.

The lactation management program and evaluation study was carried out in 1988 and 1989 in the Mexico City General Hospital (MCGH), a large institution which primarily serves the urban poor. The MCGH is part of the Secretary of Health system and provides maternity care to around 6000 women each year. The program was a joint project of La Leche League of Mexico and a group of MCGH professionals; funding was obtained from The Population Council through their New York City Office. The objectives of the study were: 1) to facilitate the initiation of maternal nursing during the post-partum hospital stay and promote longer periods of breast feeding in the primiparas (the group with greater risk of short nursing duration), and 2) to evaluate the extent to which the program was successful in improving the lactation management situation in the post-partum hospital stay and in increasing the proportion of primiparas who breast feed during the first four months.

Three principal intervention components were included in the program: 1) changes in hospital perinatal care procedures; 2) lactation management training of hospital pediatric and obstetric staff; and 3) breast feeding classes for pregnant women and new mothers. Each of these components was evaluated according to the program objectives by means of indicators in the "before" and "after" periods. In the case of the primiparas, interviews were carried out in the post-partum hospital stay with follow-up in the homes at one month and at four months.

Study results showed that the MCGH program reinforced the concept of hospital responsibility in encouraging more adequate nursing of infants in the rooming-in area (nursing frequency "before program", 1.5 times in 3 hour observation periods; "after program", 1.9 times; comfortable mother-infant nursing interaction "before program", 30%; "after program", 45%). The program was also successful in orienting mothers about the advantages and techniques of breast feeding (mean nursing duration "before program", 12 weeks; "after program", 17 weeks; mean weight of babies at 19 weeks "before program", 6.4 kg.; "after program", 7.1 kg.).

The following discussion is a description of the benefits obtained in each of the main program intervention areas.

Changes in Perinatal Care Procedures

In order to judge the effects of the changes in hospital perinatal care procedures on the initiation of nursing, observations were made in the rooming-in area before and after the implementation of program activities (36 and 32 mothers, respectively). In both surveys, the great majority of mothers and infants were observed for periods of three hours in the daytime. In the two surveys, about three-quarters of the mothers were reported as having nursed their babies during the three hour period. In the initial survey, the mean time between infant arrival to the area and first breast feeding was 1.6 hours while in the later survey, the mean time to first nursing was 1.3 hours. Other types of infant feeding were rare occurrences in both periods with only one bottle seen in the area in each survey.

Some improvements in the mother-newborn interactions were noted in the later observation period. Whereas, in the first survey, the mean number of breast feedings per infant was 1.5; the same indicator was 1.9 in the second survey. The nursing interaction was also judged as comfortable for both mother and infant more times in the second survey, as was observed for 45% of the group in comparison to 30% in the first survey. In the first survey, the only class recorded was one prepared by a representative of the Gerber Food Company who promoted the use of supplemental foods for both breast and bottle fed babies from the first months. In the second survey, a lactation counselor led the class which concerned nursing advantages and techniques and emphasized that exclusive breast feeding should be continued during the first four months.

The daily breast feeding classes were among the most important activities which aided in establishing a better environment for nursing in the rooming-in area. A further program benefit came from the fact that trained personnel were in the area and willing to answer personal questions about nursing techniques. Given these positive factors, the situation in the rooming-in area changed from one of reluctance in offering the breast to pride in nursing that was demonstrated by greater nursing frequency.

Lactation Management Training for Hospital Personnel

As an initial program activity, five MCGH professionals: one obstetrician, two pediatricians, a nurse, and a social worker received a month-long training course at the "Wellstart Lactation Management Program" in San Diego, California. At the Wellstart organization, the team members reviewed the scientific fundamentals

of lactation performance, issues which impact on breast feeding success, as well as clinical management of post-partum mothers and other patients.

The MCGH breast feeding promotion program also included lactation management training for personnel in the pediatric and obstetric services. Specific course objectives and thematic guides were designed for each of the professional groups including physicians, residents, nurses, and social workers. The program team developed 12 summaries of lactation related themes which were used in these courses and later compiled and printed by La Leche League.

At the beginning of the training program, 167 hospital professionals took part in a survey of knowledge and attitudes regarding breast feeding and lactation management. It was found that the great majority were quite favorable toward breast feeding and had an interest in learning more about lactation management. Approximately 80% of the persons with children stated that their children were breast fed. Almost three-quarters mentioned that their professional studies on breast feeding topics had been insufficient, and two-thirds felt that they did not know enough about lactation management. Interest in further in-service training on lactation management was expressed by ninety percent.

Of the fifty lactation management questions covered in the first survey, the group answered 15 with a strong level of concordance with the opinion of lactation experts (mean greater than 3.5 points on a scale of 4.0 points). The overall mean score for this part of the survey was 3.0. The group showed deficiencies in knowledge for almost all topic areas except those that dealt with the benefits of breast feeding and certain aspects of the initiation of nursing in the post-partum. After receiving in-service training, 93 hospital workers took part in a second survey of the same type. The knowledge section in that survey included the 35 remaining items after having eliminated the 15 questions answer with strong concordance in the first occasion. Another 15 items were added to complete the total of fifty. On this occasion, eight items received scores greater than 3.5 or strong concordance with the experts. The overall mean item score in the second survey was 3.0 points. With regard to the particular topics covered in the second survey, health professionals still did not have adequate knowledge about the potential benefits of breast feeding in the second year, the correct timing for introducing other foods to the infant diet, nursing indications for mothers with special health problems, in addition to the physiological and psychological characteristics of breast fed infants.

A comparison of the 35 lactation management items included in both surveys showed that the second group had greater knowledge of these topics. In the first survey, the overall mean score for

these 35 questions was 2.6; in the later survey, the mean score statistically higher with 3.1 points.

Infant Feeding Methods Among Primiparas

The two groups of primiparas (175 and 176 mothers, respectively) surveyed during the post-partum hospital stay had the following characteristics: the same mean age of 20 years; C-section delivery, 29% and 35%; received prenatal care in the MCGH, 31% and 30%. Twenty-three percent of the first group had received prenatal information concerning breast feeding in the government health centers. In the second group, 17% stated that they had obtained prenatal nursing information in the MCGH or elsewhere.

In both surveys, very few mothers were planning to offer only bottle feedings from the first days. A little more than half of both groups of primiparas planned to offer only breast milk when leaving the hospital, and most of the others planned to offer mixed breast and bottle feedings. Moreover, the great majority of the mothers in both surveys (about 80%) felt that they would have no problems maintaining breast feeding throughout the first months. Roughly three-quarters of all groups planned to breast feed for at least four months, and a majority of the mothers felt that their infants would require supplementary foods before the third month.

Follow-up data was obtained for about half of both groups (85 and 75 mothers) at one month and at four months. Less than 40% of both groups were exclusively breast feeding at the end of the first month, and this infant feeding method was insignificant in the fourth month. On the positive side, "any breast feeding" was practiced by more than 75% of both groups at one month and by more than half of mothers at the end of four months. More mothers in the intervention group breast fed than did those of the control group, corresponding to an increase of about 10% and 15% in the two respective surveys. The proportion of the intervention group that was breast feeding at four months was statistically greater than that of the control group. The importance of the breast feeding promotion program is clearly seen by the difference in the median age at which complete weaning from the breast took place, this being a median of 12 weeks for the control group and 17 weeks for the program group. The great majority of both groups (about 80%) had included other milk and/or weaning foods in the infant diet by the second month.

More than half of the infants of both groups were reported to be healthy in the first month. A health problem was reported for almost half of the control group babies at four months, whereas less than a quarter of the intervention group were reported ill in that month. The intervention group infants weighed more at about 4.5 months of age (7.1 kg. vs. 6.4 kg.) and a smaller fraction of the intervention group infants were taken to doctor for illness

than that of the control group (about 40% and 20% during the first month and 31% and 17% in the fourth month). A little less than a quarter of the infants of both groups had a diarrhea episode in the first four months.

Family planning services were not being used by the great majority of the primiparas, and most of these mothers would be at risk of a new pregnancy before the infant reached the age of one year. Moreover, the supplementation of the breast milk from the first weeks in both groups was a determining factor in the early return of the menstrual cycle with 75% of the mothers reporting the resumption of the menstrual cycle before the end of the fourth month.

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I. INTRODUCTION

World wide abandonment of breast feeding is a feature of the twentieth century. Today there is marked variation in the incidence of nursing, as well as in the age of weaning from the breast. Differential breast feeding rates appear to result primarily from cultural factors rather than the biological capacities of groups of women. Conservative medical opinion estimates that eighty-five percent of mothers should have no physiological difficulty in nursing for at least six months, and moderate levels of malnourishment and morbidity have not been shown to substantially reduce the lactation performance of mothers. Moreover, human milk is considered to be fully adequate for the nutritional needs of babies for a minimum of four months and can serve as an important part of infant diet throughout the first two years. Nonetheless, many women never start nursing, and others wean their infants after a few weeks or months (1,2,5,6,12,19,25).

The decline in breast feeding practice started in the industrialized countries. In the more affluent nations, the economic and educational needs involved in the massive switch from the breast to the bottle more or less kept pace with the general developmental transition. In the past decades no differences in mortality rates between bottle fed and breast fed babies have been shown in these countries; nevertheless, several authors report greater morbidity rates in the bottle fed group and consequent increases in health care costs. Probably owing to the work of breast feeding promotional organizations and a favorable publicity in the women's and medical media, the decline in nursing in industrialized countries appears to have been checked. Recent reports of maternal nursing practice indicate a greater incidence and longer average duration than that observed during the 1950's and 1960's (1,6,11,20,44,49,52, 58,63).

In developing countries the use of the bottle has taken place recently among groups which do not have the education nor the economic resources necessary for correct management of artificial infant feeding. In areas of the world where infectious diarrhea remains one of the greatest causes of childhood mortality, the early protection afforded by breast milk is being lost. The recent switch from the breast to the bottle in developing countries is in striking contrast with the prolonged breast feeding practiced there only a generation ago. In these nations, the abandonment of nursing in favor of artificial infant feeding methods has been associated with other social changes including rapid urbanization, forced migration, and value changes resulting from the process of modernization (2,4,30,34,38,42, 55,47,54,58,62,65).

One characteristic of the modernization process which is implicated in declining breast feeding rates is the expansion of

medical services (14,17,18,21,24,49,58,62). A number of common obstetric and neonatal procedures have been reported to be detrimental to the establishment of the initial nursing relationship. As the proportion of physician attended and hospital births increases, breast feeding practice declines; these two occurrences appear to be related. Surgical procedures during delivery and use of anesthesia have been criticized as having important negative effects on the ability of mothers to interact with their newborns. Moreover, the fact that mothers and babies often stay in different areas of the hospital limits their contact and has led to rigid feeding schedules at intervals too lengthy for the nursing needs of the newborn.

One of the most harmful practices of which physicians are accused is the active promotion of formula or processed milk, together with early dietary supplements for all infants including those who are breast fed. A number of critics have stated that the majority of medical doctors do not know very much about the relative benefits or the techniques of breast feeding. They point out that medical school curriculum emphasizes infant diet based on artificial feeding methods and almost ignores lactation and nursing. Moreover, many medical texts underscore the complications of breast feeding with long lists of contraindications for mothers and infants. Instead of actively promoting more breast feeding, many doctors are cautious with their recommendations and appear to be apprehensive about possible maternal psychological problems and poor infant health should nursing not be successful (13,16,29,40,47).

Internationally known pediatric specialists, Jelliffe and Jelliffe (1976) call upon modern medicine to review many common delivery and post-partum care practices (24). The Jelliffes feel that Western maternal care is a cause of breast feeding difficulties, and that physicians should study how to foster the nursing process (13,18,19,24). Pediatric practice in developing countries is in many ways replicates that of industrialized nations. Unfortunately, when mistakes in perinatal care are made in industrializing nations, the consequences in infant morbidity and mortality are much more serious. Recent infant health programs have taken into consideration the need for lactation management training for physicians and other medical personnel. Once again, the innovation diffusion pattern has been primarily from the industrialized countries to the developing nations. Meanwhile, lactation management programs in the poorer countries are few in number, and the errors in perinatal services are costly in terms of infant health and nutrition.

In the past decade, a number of breast feeding promotion projects have been carried out in several developing countries. All the studies have shown that hospital-based interventions are helpful in increasing maternal nursing rates in the target population (22,35,59,64,68). These projects represent efforts to

correct certain hospital perinatal care practices and in training health professionals in ways to help mothers with post-partum nursing. Several successful multiple-center lactation promotion projects have been conducted in Honduras, Panama, Brazil, Indonesia, and Thailand (22). Most of the large programs include mass communication, as well as health center and hospital activities. All include specific educational programs for new mothers, and in a few projects breast feeding voluntary organizations, such as La Leche League, were important participants in planning educational campaigns and in forming support groups for nursing mothers (50).

No studies in connection with breast feeding promotion and lactation management have been reported in Mexico. While some local and institutional efforts at breast feeding promotion have been started in several cities in Mexico, these programs are not well known on a national level, and if they have an evaluation component, the corresponding information has not yet been published. The breast feeding promotion program carried out in the Mexico City General Hospital, subject of this research report, included evaluation procedures and specific mechanisms for diffusion of the results to other hospitals and health workers in Mexico and in other countries.

II. STUDY PROBLEM

Maternal nursing continues to be the norm in infant feeding in Mexico. Complete artificial feeding from birth is practiced only by a small minority of the population and, in general, the recent change in infant feeding customs involves the curtailing of nursing duration. In the rural areas, the modification in breast feeding practice has been somewhat slower, while in the cities early weaning from the breast is quite common (3,10,12,30, 51,53,66,67). Due to continuing problems with infant infections and malnutrition, Mexican health authorities are concerned about the growing trend toward early weaning from the breast. The Mexican Institute of Nutrition states that breast feeding is "indispensable" for a period of three months and "desirable" for at least nine months (66). Nevertheless, processed cows' milk and infant formula are used by a growing proportion of Mexican mothers.

The lactation management program and evaluation study was carried out in the Mexico City General Hospital (MCGH), a large institution situated near the downtown which primarily serves the poor. As temporary or self-employed workers, the patients do not pertain to the Mexican Social Security Institute and receive free or very low-cost services from the Secretary of Health institutions. The MCGH is part of the Secretary of Health system and has a total of 1340 beds in 18 different service areas.

As an important teaching hospital with a long tradition, the MCGH physicians are considered to be amply qualified, and many hold concurrent university appointments. On the other hand, given the patient load and the economic restrictions which affect all of the Secretary of Health institutions, most direct care is carried out by residents and medical students. While counting on essential support services, the General Hospital is not considered to be a tertiary level institution and lacks sophisticated diagnostic and treatment equipment. Notwithstanding these limitations, there exists a seriousness of purpose and a commitment to the offering of good basic services in a "no-frills" environment. This perhaps accounts for the fact that the majority of staff physicians are proponents of appropriate health care technology and preventive medicine. Several members of the MCGH pediatric staff had already attended courses sponsored by La Leche League of Mexico, a breast feeding promotion organization based in Mexico City. When the president of La Leche League communicated her interest in starting-up a joint breast feeding promotion project, the Pediatric Service readily accepted.

On the other hand, large urban hospitals, such as the MCGH, have several problems which make it difficult for their personnel to effectively conduct a lactation management program. First of all, the obstetric services provided by this type of hospital offer little continuity of care. In general, the prenatal visits are few and brief, and serve basically as a screening mechanism for high risk pregnancy. Frequently, the population has had no prenatal care in the hospital, and the first contact with the patient is her arrival already in labor. Before the initiation of the present program, delivery and post-partum care had been derived from diverse assumptions, but little or no attention had been given to the effects of these practices in relation to the initiation of maternal nursing.

In the recent past, the MCGH has provided maternity care for about 6000 women each year, and approximately 20% of the mothers are younger than 20 years old. At least 80% of the maternity patients can be considered among the urban poor, and 20% of the women are destitute. In this population common-law marriages are quite common, and only about half the mothers are legally married. Around 20% of the newborns are classified as "high risk" with a prematurity rate of 10% (less than 37 weeks) and 15% with low birth weight (less than 2500 grams).

Although the prenatal outpatient clinic is large with about 1400 visits each month, many of these women go elsewhere for the birth, and only about 25% of those who deliver in the MCGH have received a prenatal visit there. All the normal prenatal visits last ten or fifteen minutes, and no educational activities were regularly included before the present program. Routine post-partum gynecological appointments (after one week) are only made for those women who have had C-sections (about 28%). While well baby check-

ups are scheduled for all newborns after the first week, only 20% of the infants are brought back to the hospital for well baby care.

The post-partum care area has four rooms with eight beds each. Often there is a bed shortage, during which time, the recently delivered mothers must remain in the recuperation area. Rooming-in facilities are the norm for all normal delivery mothers and babies, but newborns first pass through the transitional nursery where they are weighed, measured, and bathed. Three to seven hours pass before normal delivery mothers receive their infants, and in the case of post C-section patients the separation time is for 24 or more hours. Normal delivery mothers most often leave the hospital after 12 to 18 hours and the post C-section group without complications leave after 28 hours.

Depending on the number of hours that the infant stays in the transitional nursery, he receives a bottle feeding once every three hours, the first generally being glucose water and thereafter formula. Normal delivery mothers are with their infants for six to ten hours, during which time about 90% initiate breast feeding. Sometimes first nursing is delayed because of the requirement that mothers must bathe before offering the breast. Another obstacle for first nursing was created by the norm that all mothers must sit up on the bed or a chair in order to breast feed. This rule was established because the pediatric staff wanted to protect the newborns from contact with the mother's bed sheets which often were not clean. Post-partum nursing is even more difficult for the C-section mother because she is more uncomfortable than the normal delivery mother, and often her baby is with her for a very short time before discharge from the hospital.

Before the commencement of the program, the hospital did not offer any formal breast feeding orientation during the post- partum stay. A three-page leaflet on infant care was given to the mother at the time of her discharge, but the information which it contained on nursing was very brief. Three times a week a representative of the Gerber Foods Company entered the rooming-in area and gave a short talk on infant feeding methods. She gave a congratulatory card to each mother and talked about breast feeding, bottle feeding, and weaning foods. When the mothers left the obstetric service, she offered them samples of Gerber products and a twenty-four page pamphlet on infant feeding which emphasized the benefits of offering weaning foods to both breast and bottle fed infants from the first months.

Data collected at the beginning of the program showed that a mean of 500 women gave birth in the hospital every month, and that about one-third were primiparas. This particular group of pregnant women was chosen as the program target population for two reasons. First, other studies have shown that these generally younger women are less likely to follow breast feeding recommendations and

second, they have had no previous experience with infant feeding, a factor which greatly influences feeding method decisions with subsequent children (33,51).

III. MCGH BREAST FEEDING PROMOTION STUDY

3.1 Program Organization and Objectives

The MCGH breast feeding promotion study was a joint project of La Leche League of Mexico and a group of MCGH professionals representing the pediatric and obstetric services. The objectives of the study were: 1) to facilitate the initiation of maternal nursing during the post-partum hospital stay and promote longer periods of breast feeding in the obstetric population, and 2) to evaluate the extent to which the program was successful in improving the lactation management situation in the post-partum hospital stay and in increasing the proportion of primiparas who breast feed during the first four months. Funding for the project was obtained from The Population Council (New York Office) through their Programatic Grant from the United States Agency for International Development.

Three principal intervention components were included in the program: 1) lactation management training of hospital pediatric and obstetric staff; 2) changes in hospital perinatal care procedures; and 3) breast feeding classes for pregnant women and new mothers. These intervention areas were chosen on the basis of the experience of several successful hospital-based breast feeding promotion programs in other countries (See Chapter I). The specific set of activities within these intervention areas was determined by the program team in response to the problems identified in the MCGH lactation management profile completed in October, 1988 (Appendix 1). Program interventions began in February and ended in July, 1989. Evaluation activities were carried out from October, 1988, to February, 1989 (comparison samples and observations), and from March to November, 1989 (intervention samples and observations).

The program team included two representatives of La Leche League of Mexico, seven MCGH staff members, and a social science researcher. The whole team met at least once a month to monitor program activities. Four coordination meetings were carried out with the heads of the pediatric and obstetric services to keep them up-dated on program activities and to exchange view points on related themes.

3.2 Training of Hospital Personnel

Experience in other countries has shown that health care personnel need to know more about the benefits and techniques of breast feeding and to see how other lactation management programs function (2,36,48,59). They then can form motivated groups which work to overcome institutional obstacles that are impeding a good start to breast feeding in the first hours after the birth and participate in support activities and education for lactating mothers.

As an initial program activity, five MCGH professionals: one obstetrician, two pediatricians, a nurse, and a social worker received a month-long training course in September, 1988, at the "Wellstart Lactation Management Program" in San Diego, California (59). At the Wellstart organization, the team members reviewed the scientific fundamentals of lactation performance, issues which impact on breast feeding success, clinical management of post-partum mothers, as well as problems of special patients.

The MCGH breast feeding promotion program also included in-service courses for hospital personnel (Table 1). The program team and La Leche League designed and conducted all the classes in this part of the program. During the months of January to July, 1989, a series of classes were held in the pediatric and obstetric services during the morning hospital shift. Specific course objectives and thematic guides were designed for each of the professional groups including physicians, residents, nurses, and social workers. The program team developed 12 summaries of lactation management related themes which were used in the in-service courses; these were later compiled and printed by La Leche League (Appendix 2).

3.3 Changes in Hospital Perinatal Care Procedures

There were a number of changes in hospital perinatal procedures which the program team considered necessary in order to effectively promote the nursing of infants during the post-partum hospital stay. The team discussed these recommendations with the heads of the pediatric and obstetric services and was successful in helping establish several of these changes. Implementation of the modifications in hospital practices were coordinated with other program activities so that the mothers who participated in the special educational program (described in Section 3.4 below) also had the benefit of the improvements in the new perinatal procedures. The following are the changes which were made by the hospital in order to assure that mothers would have a good start to breast feeding:

.) Bottle feeding in the rooming-in area only by pediatric order;

2) Reduction of the time that newborns stay in the transitional nursery and in the number of bottles to be given during that time;

3) Fewer hours of IV's for post C-section mothers so that these mothers and their newborns can be reunited sooner;

4) Mothers allowed to nurse standing up supported against the bed;[1]

5) More emphasis on attendence in the well neonate visits in the MCGH clinic with some lactation counseling incorporated in these services.

3.4 Breast Feeding Classes for Mothers

Three breast feeding orientation classes were offered to pregnant women who attended the MCGH prenatal clinic from February 27 to May 22, 1989. Of the group of primiparas that attended the sessions: 299 heard one talk, 42 heard two, and 6 heard all three. An approximately equal number of multiparas attended the classes.

The following themes were illustrated in these sessions: 1) "Benefits of maternal nursing and prenatal preparation for breast feeding"; 2) "The first days of breast feeding"; and 3) " Practical tips for nursing maintenance in the first months" (including some family planning information). All members of the MCGH program team participated in these classes which were based on slide presentations and question and answer sessions. La Leche League of Mexico prepared three short brochures on the same topics which were distributed to the primiparas at the end of the classes (Appendix 2).

The final breast feeding education session was offered to mothers during the post-partum hospital stay in the period from March 1 to June 15, 1989. This class was a thirty minute oral

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[1] [1] Before the program was begun, mothers were only allowed to nurse while seated in a chair. Breast feeding was not done while lying or sitting on the bed because the pediatric staff said that the babies could not have any contact with the bed sheets which were sometimes dirty. The program team mentioned to the staff physicians that the babies were wrapped in their own clean sheets, and that contact with the mothers' beds was minimal. Unfortunately they were unable to get this norm changed. After much discussion a compromise was made allowing mothers to nurse while standing up supported against the bed.

presentation of simple graphic material (posters) and group discussion led by a La Leche League lactation counselor. Mothers who attended the session were given a 12 page booklet prepared by La Leche League which covered material on breast feeding benefits, techniques, and problems which sometimes occur (Appendix 2). Four hundred and twenty-three primiparas attended the class as did a smaller number of multiparas.

IV. STUDY METHODOLOGY

4.1 Factors Associated with Infant Feeding Practices

In order to evaluate the impact of the MCGH breast feeding promotion program, it was necessary to make a selection among many factors which influence infant feeding practices. This section of the report describes a simplified conceptual model of the relations among these factors (Figure 1).

The variables described below which follow form part of the conceptual model for differential breast feeding practices. As commented on in the following discussion, most of these factors were considered to be operative in the infant feeding methods practices of the MCGH mothers.

1) Outcomes - the following kinds of factors are considered to be important dependent variables:

a) Initial infant feeding plan - the first observation was taken during the post-partum hospital interview when the mother was asked how she planned to feed her infant in the first few weeks. The possible responses were exclusive breast feeding, mixed breast and bottle feedings, and complete bottle feeding from birth.

b) Subsequent infant feeding methods - these observations were made after the first and fourth months at which time complete weaning from the breast in the interim or continued breast feeding was recorded. In both surveys, data was obtained concerning weaning foods and when these were first included in the infant diet.

c) Health related outcomes - the infant outcomes considered here include health status, weight, visits to the doctor for illness, as well as the report of any episode of infant diarrhea. Another outcome variable was the return of the mother's menstrual cycle, an event which is highly related to the frequency of nursing.

According to the same model, the following variables are considered to be antecedent factors which influence breast feeding incidence and duration.

2) Community influences - several kinds of ecological variables have been mentioned in the breast feeding literature (5,24,34,37,48,49,62,63,65). Among these influences are:

a) Availability of breast milk substitutes - in all zones of Mexico City there are supplies of infant formula and other types of processed milk available in large and small food stores. In this study, availability of processed milk is considered to be controlled.

b) Prevalence of female employment outside the home - in Mexico City, a large fraction of women with children are working, and there exist many opportunities for female employment in services and small-scale commerce. Therefore, this variable is also considered to be controlled in the evaluation study.

3) Personal characteristics - every woman has had a variety of individual experiences which affect her infant feeding decisions. Out of these experiences arise individual perceptions and priorities for infant care. The following maternal characteristics have been reported in connection with varying infant feeding practices (3,14,20,30,32,33,37,40,43,51,58,63):

a) Age and parity - previous studies have not shown these variables to have a simple relation to the duration of breast feeding. Some researchers report age with a positive relation with breast feeding rates. Other studies have indicated that older primiparas nurse with less frequency. With multiparas, on the other hand, with greater age and parity, there is more likelihood of longer periods of breast feeding.

b) Social class and education - previous studies in developing countries have shown that more education and higher social class are related to decreased incidence and duration of breast feeding. When reliable data can be obtained, the wage level is the most usual indicator of social class. Educational attainment is also often used as an indicator of the social class. Both of these indicators are used in the evaluation study.

c) Work status - mother's employment outside the home most often involves the necessity for mother-child separation in the first months of life, and when this occurs there is reduced frequency of nursing which, in turn, can lead to insufficient breast milk and subsequent early weaning. This study includes data about the mother's work outside the home before the birth of the baby and her return to work during the first four months.

d) Family structure - a supportive family environment is expected to be conducive to breast feeding, in as much as there are others to take care of the mother, while she responds favorably to the infant's demands for food and comfort. Among the variables considered in family structure is the presence of the spouse and/or the presence of another female adult in the same household.

e) Prior breast feeding experience - it is reasonable to assume that lactation performance is a partly conditioned response because of the neural-hormonal mechanisms involved; thus, an experienced breast feeder should have fewer nursing difficulties. The relationship between previous breast feeding and subsequent nursing has been substantiated in a number of reports. This variable is mentioned in as much as multiparas are a comparison group in the post-partum surveys.

f) Social support for breast feeding - evidence of social support for breast feeding is defined, here, as the mother's indication of personal contacts who recently recommended nursing as the best infant feeding method; these other persons include the spouse, other relatives, as well as friends and associates.

4) Health status of the mother and child - in the study the following variables were considered as important health related information (13,14,17,24,26,29,45,53,62):

a) Type of delivery aand complications - one of the most important obstacles to the initiation of post-partum nursing is the Cesarean birth because these mothers and their infants can't be reunited in the rooming-in area until many hours have passed, and even when they are finally together, many mothers are so uncomfortable that they have trouble beginning to nurse.

b) Illnesses - certain maternal diseases limit the capacity, or at least the advisability, of breast feeding. Among the contraindications for maternal nursing are severe anemia, epilepsy, active tuberculosis, and hepatitis B. Any physical problem which limits the sucking capacity of the neonate can also be a contraindication for breast feeding. While lesser morbidity is not known to substantially impair the lactation-suckling process, acute infections or a series of minor illnesses in either the mother or her infant can be an underlying problem for continued nursing.

5) Health service coverage - two sources of medical coverage were taken into consideration:

a) Program intervention status - it is supposed that the MCGH is the most important medical institution for the mothers because it is the institution where they received obstetric and post-partum care. In this case, the major difference should be the program intervention status, that is, whether the mother received obstetric care before or after the introduction of the hospital lactation management program.

b) Other medical contacts - other physicians also influence the mother's decisions with regard to infant feeding methods. These data include: place where the mothers received prenatal care were recorded in the post-partum interview and specific medical recommendations and/or classes concerning appropriate infant feeding methods were registered in all three interviews.

6) Intermediate level variables - the conceptual scheme for breast feeding practices posits that lactation performance results primarily from motivation to breast feed and frequent nursing. These two factors, in turn, may be operationally defined as:

a) Strength of mother's belief that continued nursing is the optimal infant feeding strategy; and

b) Demands on mother's time and energy.

These two intermediate level variables provide a conceptual bridge for the way that community, personal, and health-related variables influence the mother's decision to continue nursing. While the intermediate variables are not directly measured in the study, those mothers who never nurse or who discontinue breast feeding were asked why they did so. Responses of the mothers in this regard can reveal something about the strength of their infant feeding beliefs and the constraints on their time and energy.

4.2 Study Methods and Instruments

The MCGH breast feeding promotion study can be catalogued as operations research with emphasis on the development of appropriate health care technology in a complex organization (9,19,41,50). Accordingly, the study methods and instruments were designed to evaluate the extent to which the program could be considered successful with regard to its principal objectives, those being: 1) to facilitate the initiation of maternal nursing during the post-partum hospital stay and 2) promote breast feeding in the obstetric population as measured by an increase in the proportion of primiparas who breast feed during the first four months.

The initial step in the project was then, the collection of the base-line information including: 1) perinatal procedures that could be hindering the initiation of breast feeding during the

hospital stay; 2) knowledge, attitudes, and practices (KAP) of hospital personnel toward breast feeding and lactation management; and 3) social and personal characteristics of the mothers and their infant feeding plans.

The first part of the base-line information was obtained from a report sheet concerning observations of the interactions of mothers, newborns, and hospital personnel in the rooming-in area (Appendix 3). This instrument had the purpose of evaluating the effectiveness of hospital lactation management efforts before program interventions began. The observations were divided in two parts: the first being general information about the observation area, the time of day, and the number of mothers and newborns in the room. The second section included maternal and obstetric data, along with information concerning her interaction with the newborn and the types of feeding which the infant received in the post-partum. In seven occasions during the months of February and March, 1989, the observers sat in the rooming-in area for a total of 21 hours observing 40 mothers, 35 of whom had already received their newborns.

The second part of the base-line information was provided by a survey questionnaire for obstetric and pediatric personnel which had the aim of quantifying their general level of knowledge, attitudes, and practices (KAP) with regard to breast feeding and lactation management. The selection of themes to be included was based on a similar instrument developed by the La Leche League of Mexico and already used in another large Mexico City hospital (7). A total of 164 MCGH health professionals filled out the questionnaire in October and November, 1988; they represented about 80% of all health care personnel in the two services areas (Appendix 4).

The third component of the base-line study was a post-partum survey administered in the rooming-in area; the corresponding questionnaire included background information with regard to social and personal characteristics of the maternity population, as well as their opinions and experiences concerning infant feeding with emphasis on their plans for the newborn. The questionnaire was administered to 175 primiparas who delivered in the MCGH during October and November, 1988. The same group of primiparas formed the control group for the program. A second comparison group was made up of 154 multiparas who were also interviewed before the beginning of program interventions.

The questionnaire for the survey of post-partum mothers included information concerning (Appendix 5): 1) maternal personal and social factors; 2) prenatal and obstetric history, including the present delivery; 3) infant feeding experience, opinions, and plans for the newborn with regard to breast, bottle, or mixed methods; 4) plans for the introduction of supplementary foods in the infant diet; 5) any foreseen problems for breast feeding

maintenance; 6) persons who might give infant feeding recommendations should problems or doubts arise; and 7) plans for use of a contraceptive method.

The control group of primiparas were surveyed in their homes to record information concerning infant feeding methods and health related data at one month and at four months.[2] The samples thus formed had the following composition: 1) 94 mothers surveyed in November and December, 1988, and 2) 85 mothers of the and at four months; the sample thus formed included: 92 mothers interviewed in June and July, 1989; and 74 mothers of the same group interviewed from September to November, 1989. The survey instrument for these interviews was the same one used for the follow-up of the control group (Appendix 6).

4.3 Analytic Methods

The instrument used for recording observations in the rooming-in area in the "before" period was repeated to detect program related changes in perinatal care practices. Comparisons were made regarding the number of times favorable actions were observed in the two samples. These results are reported in proportions, percentages, and measures of central tendency (15,27).

The first section (15 questions) of the two KAP surveys of hospital personnel included data concerning attitudes and personal experiences with breast feeding and lactation management. Simple proportions and percentages were obtained for all this information. "Before" and "after" comparisons in percentages were made for these data.

The second part of the analysis of the two KAP surveys of hospital personnel was based on how closely each professional group agreed with expert opinion with regard to fifty lactation management related statements. The scale of measurement for these survey instruments was from zero to four points, corresponding to the degree of concordance or distance thereof for each of the 50 statements. An overall score was calculated as the mean value obtained by pooling the mean scores on all 50 statements. The 15 survey items which were answered with a high level of concordance with expert opinion (greater than 3.5) were replaced by others in the second survey. The evaluation of knowledge acquired was the

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[2] The MCGH pediatric clinic suggests that no other types of milk or supplemental foods be added to the infant diet until the fifth month of life, and the program related classes and materials for mothers also stressed this recommendation. Moreover, at four months, the baby should have doubled his birth weight; thus, the weight gain at this age is a good indicator of general infant health.

comparison of the mean scores obtained for the 35 statements which were common to the two surveys. The analysis of variance procedure (ANOVA) was used to detect statistical differences in the two mean scores (27,57).

For the post-partum and follow-up surveys, the first part of the analysis included relative distributions for the most important variables. Measures of central tendency were computed for numerical and ordinal data.

The second part of the analysis for these surveys was the cross-tabulation of the antecedent factors with the intervention status to determine if differences could be detected between the groups. The following step was the cross-tabulation of the principal outcome variables with the intervention status; these being: 1) initial infant feeding plan and 2) continuation of breast feeding or complete weaning in the period of follow-up. The variable, duration of breast feeding, was defined on the basis of nursing or weaning at birth and for each month during the observation period (Figure 2). The timing of the introduction of weaning foods was divided in three periods (Figure 3).

Measures of association were made between the antecedent variables and the two outcome variables in accordance with the above categories. The chi-square test statistic was used. Three dimensional cross-tables, involving two strata of antecedent factors (one always being the intervention status) and each of the outcome variables were computed for more insight into the relationship among these variables. The chi-square test was used to determine the statistical significance of associations. The final step in the stratification analysis was the calculation of the relative risks of complete weaning from the breast at arrival to the home and for each of the four months of observation (27).

V. STUDY RESULTS

5.1 Observations in the rooming-in area

The personal characteristics of the two groups of mothers observed in the rooming-in areas were roughly comparable. The mean age of the first group of mothers was 23.2 years, and twenty-percent of the mothers were less than 20 years old. The second survey included older mothers with a mean age of 24.4 years, while more than a quarter of the group were younger than 20 years of age. With reference to the parity of the first group, 30.0% were primiparas and 70.0% were multiparas. The mean number of children was 2.5. The data regarding the parity of the second group was bi-modal representing as many primiparas as mothers with two children. The mean for the group was 2.5. In the earlier survey, 72.5% of the mothers had a vaginal delivery. In the later survey, a greater proportion (35%) of the group had a C-section.

Table 3 reports some observations related to the commencement of nursing and the lactation management situation in the rooming-in area. In both surveys, the great majority of mothers and infants were observed for periods of three hours in the daytime. While not all newborns wake up during such periods of observation, most do so at least once and cry out. The mother has then the option of rocking her infant and lulling it back to sleep or to offer the breast. In the two surveys, about three-quarters of the mothers were noted as having nursed their babies during the observations. All of them were asked when they first nursed their infants but some were unable to remember. In the initial survey, the mean time between infant arrival and first breast feeding was 1.6 hours while in the latter survey, the mean time to first nursing was 1.3 hours. Other types of infant feeding were rare occurrences with only one bottle seen in the area in each survey.

Some improvements in the mother-newborn interactions were noted in the later observation period. Whereas, in the first survey, the mean number of breast feedings during the observations was 1.5; the same indicator was 1.9 in the second survey. The nursing interaction was also judged as comfortable for both mother and infant more times in the later survey, observed for 45% of the group in comparison to 30% in the first survey. Moreover, the mothers picked up their newborns more times in the later observations, with a mean of 2.7 times in comparison with the 2.2 times recorded in the earlier period.

With regard to the help offered to nursing mothers by hospital personnel, about a tenth of both groups were shown something about correct breast feeding techniques during the hours of observation. On the other hand, the information concerning nursing benefits and techniques was much better in the later period. In the first survey, the only class recorded was one prepared by a representative of the Gerber Food Company which promoted the use

of supplemental foods for both breast and bottle fed babies from the first months. In the second period, the class concerned nursing advantages and techniques and was led by a member of the program team.

5.2 KAP Surveys among Hospital Personnel

At the beginning of the program, 167 persons from the obstetric and the pediatric services took part in the KAP survey. Eight months later, 93 persons of the same service areas took part in another survey of the same type. The majority of the health professionals who filled out the second questionnaire had participated in the in-service training courses. Women made up almost two-thirds of each group representing all the social workers and nurses, and about a third of the other professions. The different professions were not equally distributed in the two surveys, with a preponderance of nurses and residents in the earlier occasion and a more even division of the four professional groups in the later survey. The mean ages of the two groups was the same, 31 years, and about 55% of the two groups were currently married or had been at some time. The mean number of children for ever married persons was 1.0.

With regard to the attitudes and practices, the great majority of hospital personnel were quite favorable toward breast feeding and had an interest in learning more about lactation management (Table 4). Approximately 80% of the persons with children in both groups stated that their children were breast fed. Almost three-quarters of each group mentioned that their professional studies on breast feeding topics had been insufficient, and two-thirds felt that they currently did not know enough about lactation management.

By the time of the second survey, almost all personnel were aware of breast feeding promotion in the hospital, and three-quarters of the group wished to take part in activities related to the lactation management. Interest in further in-service training on lactation related themes was expressed by ninety percent of both groups. The one surprising observation in the later survey was the reduction in the proportion of persons who believed that the hospital population fully accepted breast feeding. This discrepancy probably was due to the fact that the group became more aware of the difficulties which the hospital population has in carrying out exclusive breast feeding in the first months.

Of the fifty lactation management questions covered in the first survey, the group answered 15 with a strong level of concordance with the opinion of lactation management experts (mean greater than 3.5 on a scale of 4.0). Twelve items were answered with a moderate level of concordance with expert opinion and low scores (3.0 or less) were obtained for 23 items (Table 4). The

group showed deficiencies in knowledge for almost all topic areas except those that dealt with the benefits of breast feeding and certain aspects of the initiation of nursing in the post-partum.

The knowledge section in the second KAP survey included the 35 remaining items after having eliminated the 15 items which had a high level of accordance in the first occasion. Another 15 questions were added to complete the fifty items for the second survey. The results of the later survey were: eight items showed strong concordance with expert opinion (Table 5). Twenty-six items had a moderate level of concordance. The group did not demonstrate adequate knowledge in about a third of the topics. While the mean scores obtained in both surveys were the same, 3.0 points, the results of the later survey can be considered to be better because the easier questions had already been eliminated. With regard to the particular topics covered in the second survey, health professionals still did not have adequate knowledge about the the benefits of breast feeding in the second year, the correct timing for introducing other foods to the infant diet, nursing indications for mothers with special health problems, in addition to the physiological and psychological characteristics of breast fed infants.

A comparison of the 35 lactation management topics included in both surveys showed that the second group had greater knowledge on these themes (Table 6). In the first survey, the mean item score for these 35 questions was 2.6, and no professional group attained a moderate level of agreement with expert opinion. In the later survey, the mean item score was increased to 3.1 with three of the four groups demonstrating a moderate level of concordance with expert opinion. The general mean item score in the second survey was statistically higher than that of the first survey.

5.3 Surveys of Post-partum Mothers

The mothers surveyed during the post-partum hospital stay had the following characteristics (See Table 2): 1) the two groups of primiparas had the same mean age of 20 years, and as is clearly expected, the multiparas were older with a mean of 26 years; 2) the mean height of the mothers in all groups was approximately 154 cm.; 3) the two groups of primiparas had about the same weight, 53 kg., while the multiparas were about 3 kg. heavier on the average; 4) the multiparas had a mean parity of 3.5 children with a mode of 3 children. The average age of the penultimate child was 2.5 years, and the statistical mode was one year. Almost three-quarters of the multiparas mentioned initial exclusive breast feeding with one or more children.

Table 7 refers to the outcome variables in the study of post-partum mothers. In all three groups very few mothers were planning to offer only the bottle from the first days. What varied was the

fraction of mothers who felt that they would be exclusively breast feeding during the first weeks. A little more than half of both groups of primiparas planned to offer only breast milk when leaving the hospital, and the corresponding proportion was even larger for multiparas (63.4%). The great majority of the mothers in all groups (about 80%) felt that they would have no problems maintaining breast feeding throughout the first months, and this indicator was significantly associated with the plan for exclusive breast feeding of the newborn in all three groups.

Roughly three-quarters of all groups planned to breast feed for at least four months, and this variable was statistically associated with a plan for initial exclusive breast feeding. A majority of primiparas and multiparas stated that their infants would be receiving supplementary foods in the first two months (small quantities of tea and water were not considered here as supplemental feedings), and more than 90% of the mothers felt that they would do so before the fifth month. It should be noted that many primiparas did not have a clear idea about appropriate infant diet and failed to answer the question concerning the timing of the introduction of other foods.

The variables reported in Table 8 concern personal data for mothers in the post-partum surveys. There were some differences in educational level among the three groups. A little more than half the primiparas had some secondary schooling or more years of education, while about a third of the multiparas reported secondary level or more schooling. Around 30% of both the primipara control group and the multiparas reported that the family income was less than minimum wage. Only 12% of the primiparas in the intervention group were reported in the same category; the information for the latter group held a positive statistical association with the plan for initial exclusive breast feeding.

With regard to the work status of the mothers, more primiparas in the control group (39%) were working prior to the birth of the infant, and this indicator was negatively related to the exclusive breast feeding of newborns. About a quarter of the multiparas and a fifth of the primiparas in the intervention group stated that they held wage work before the birth of the baby. Almost all women who were working before planned to return to work before the end of the first four months.

The variables referring to family structure and social support for breast feeding are also reported. There were some differences in the proportions of women whose husband was in the home. The great majority of multiparas were living with their spouses (82.5%), while the same variable was reported to be a little more than half of the first group of primiparas and about two-thirds of the primiparas in the later survey. All family types were represented in the post-partum surveys, but more primiparas were living without other family members or in extended families which

included another female adult. About two-thirds of the primiparas referred to exclusive breast feeding recommendations from their family and friends, and this indicator was significant for those who formed the intervention group. For reasons which are not clear, most of the multiparas did not report any such recommendation.

Table 9 is a summary of health related data for the three groups of mothers and their infants. The general health was reported as good for the large majority of mothers (more than 90% of all three groups). With regard to prenatal complications, about 18% of all the primiparas mentioned having had some problem, more than twice that of the multiparas. Complications during delivery were not equally distributed in the three groups; around 30% of primipara controls and the multiparas had C-sections. The corresponding fraction was 38% for the primiparas in the intervention group. Infant problems were mentioned for less than 10% of all three groups. Low birth weight was mentioned for less than 10% of the infants born to primipara controls and the multiparas, but a slightly greater proportion was noted in the intervention group.

While from 80% to 90% of the women had some prenatal care, only around 30% of each group had been seen one or more times in MCGH prenatal clinic. Intervention group mothers who had been seen in the MCGH more often mentioned a plan for initial exclusive breast feeding, and the corresponding difference in proportions was statistically significant. A varying percentage of the mothers had received a prenatal breast feeding class or counseling, and surprisingly, a slightly higher proportion of control group mothers mentioned this factor. (The post-partum breast feeding class was held after the interview to avoid a likely source of bias on the reporting of infant feeding plans). A small percentage of each group remembered a recent specific breast feeding recommendation by a physician. Those multiparas who reported a medical recommendation for breast feeding more often also mentioned the plan for initial exclusive breast feeding, and this relation was statistically significant.

Plans for the use of a specific family planning method in the post-partum were reported for a minority of the two groups of primiparas (43% and 35%, respectively). On the other hand, 80% of the multiparas were either surgically sterilized in the immediate post-partum or were planning to use a specific method to avoid a subsequent pregnancy. For the primiparas of the intervention group, plans for the use of a specific family planning method were negatively related to plans for the exclusive breast feeding of the newborn.

5.4 Follow-up Surveys of Primiparas

As was mentioned in the section on study samples, both control and intervention groups interviewed at one month represent a little more than half of the post-partum samples, and the four month samples account for less than half of the original groups. Nevertheless, the characteristics of the mothers and infants in the follow-up groups were quite similar to the corresponding post-partum groups.

There were several minor differences in the two follow-up groups having to do with their personal characteristics and contact with medical services. The second group included a slightly lower proportion of teen-age mothers, and more fathers were residing in the home. On the other hand, the first group had more vaginal births, and slightly more of the women had sought prenatal care in the MCGH. None of these variables were statistically related to feeding methods at one month or at four months.

Table 10 is a summary of the information concerning the infant feeding methods of the mothers in the follow-up surveys. One of the most important findings in this regard was the low rate of exclusive breast feeding at the end of the first month representing less than 40% of both the control and intervention groups, and this infant feeding method was insignificant in the fourth month.[3] On the positive side, "any breast feeding" was practiced by more than 75% of both groups at one month and by more than half of mothers at the end of four months. More mothers in the intervention group breast fed than did those of the control group, corresponding to an increase of about 10% and 15% in the two respective surveys. The proportion of the intervention group that was breast feeding at four months was statistically greater than that of the control group.

The importance of the breast feeding promotion program is clearly seen by the difference in the median age at which complete weaning from the breast took place. In the case of the control group, half of the women had changed to only bottle feedings at 12 weeks, whereas for the intervention group slightly less than half the mothers had ceased to breast feed at the end of the 17 week observation period.

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[3] As mentioned earlier, "only breast feeding" is defined here as including only breast milk along with small quantities of water and tea, a custom practiced by the great majority of Mexican women. Dr. Miriam Labbock of the Institute for Natural Family Planning calls this form of feeding "almost exclusive breast feeding" for the implications which it has on increased risk of diarrheal infections and earlier termination of lactation amenorrhea (personal communication).

As seen in the same table, the great majority of both groups (about 80%) included weaning foods in the infant diet by the second month, and almost all had substituted or supplemented the breast milk before the end of the fourth month. Here supplementation refers to other kinds of milk along with a variety of foods, which at times summed to as many as ten different items. The custom to give the infant "a little sample of everything" that the family eats was reported by a small minority of both groups.

The information in Table 11 concerns the personal and health related data of the mothers interviewed in the follow-up surveys. Three variables related to the mother's health were included. The first of these was her general health at the time of the interview. As seen in the same table, three-quarters of the mothers stated that they were healthy at one month after delivery, and this proportion was slightly higher at the end of the fourth month. No statistical relation was found between the mothers' health and infant feeding methods.

The rate of use of contraceptive methods in the fourth month was low for both control and intervention groups, 21% and 27%, respectively. Moreover, given the small percentage of mothers who practiced exclusive breast feeding in the first post-partum month, many were menstruating by the end of the second month. Eight-tenths of the control group reported a menstrual cycle by the fourth month, as did about three-quarters of the intervention group.[4] The similarity of the two groups with regard to this variable probably indicates that those infants of the intervention group who were still receiving breast milk in the fourth month were also receiving many additional foods. The return of the menstrual cycle was strongly associated with bottle feeding at four months for both groups.

Surprisingly, only a minority of both groups mentioned a breast feeding recommendation by a physician at one month, and this report accounted for less than 10% of the groups at four months. Clearly the great majority of physicians in the health centers and private clinics are not encouraging women to exclusively breast feed throughout the first four months.

With regard to social support for continued breast feeding, it is notable that almost half of the control group and more than a third of the intervention group reported a breast feeding recommendation in the first month. Unfortunately, by the fourth month, indications of social support for continued breast feeding were quite few (less than 10%); in the same month, almost all the recommendations were for the inclusion of supplementary foods in the infant diet.

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[4] Mothers who reported some bleeding only in the first month were considered in the group with continued amenorrhea.

Another factor reported in Table 11 is the return to wage work in the same month. A little less than a third of the primiparas had been working before the birth of the baby, and about the same proportion were going back to work or starting work in the first few months after the child's birth. The return to work is an important obstacle which often causes the physical separation of the mother and her child, as well as affects her willingness to continue with the additional task of continued breast feeding. For the mothers in the follow-up surveys, a tiny fraction were leaving the baby with other persons because of return to wage work in the first month, whereas this group was still small but somewhat more important in the fourth month. At one month, all the mothers who were separated from their babies for wage work had already weaned their infants. No statistical associations were found between return to wage work and bottle feeding at four months. In the same month, about half of the working mothers were able to take their infants with them to the work site, and for this reason, many were able to combine breast feeding and work.

Table 12 refers to health related data for the infants included in the follow-up surveys. More than half of the babies of both control and intervention groups were reported as healthy throughout the first month. For the control group the proportion with a health problem was almost the same at four months, whereas less than a quarter of the intervention group were reported ill in the fourth month. The difference in the health status of the two groups was statistically significant at four months.

The infants in both groups grew well, and at six weeks their average weight was about 1.5 times their average birth weight. Moreover, at about 4.5 months the mean weight of both groups was more than twice the birth weight. Nonetheless, the intervention group infants gained more weight in the same period, with a mean of more than 7 kg., and the corresponding difference was statistically significant.

A smaller fraction of the intervention group infants were taken to doctor for illness than that of the control group. About 40% of the control group infants had a physician visit for sickness at both one month and four months, whereas the corresponding proportions of the intervention group were less than 20% and about 31% at one and four months respectively. The differences in the corresponding proportions were statistically significant only at one month. On the other hand, this variable was defined very broadly to include any visit which the mother qualified as due to sickness, without taking into consideration the severity of the ailments.

A little less than a quarter of the infants of both groups had a diarrhea episode in the first four months. It is not surprising that intervention group infants were also susceptible to diarrheas given the quantity of other foods which they consumed

in addition to the breast milk. On the other hand, the fact that the intervention group had about the same experience with diarrheas as did the control group probably represents an improvement in their resistance to intestinal infections, given that the observations for the latter group were made during the summer and early fall, a period of the year when infant diarrhea is very frequent.

As seen in Table 13, the control group was at greater risk of bottle feeding during each of the observation periods. In the intervention group, a greater proportion of the mothers started breast feeding in the home than did the control group, and fewer weaned their infants during the first month. The weaning rates were about 30% at the end of the first month for the control group and roughly 20% for the intervention group. In each of the consecutive months, smaller proportions of mothers terminated breast feeding.

For the control group, the relative risks of complete weaning from the breast ranged from 1.3 to 3.0 times that of the intervention group, with an overall risk of 1.6 for the total period. The greatest risk occurred when the mother arrived to her home after the hospital stay. The mothers reported the following reasons for weaning from the breast during this period: 1) too little breast milk (28% of those who weaned); 2) baby refused to nurse (16%); 3) nipple problems (16%); 4) mother's illness (8%); and 5) return to work (5%).

I. CONCLUSIONS

6.1 Summary of Program Benefits and Limitations

The breast feeding promotion program which was carried out in the MCGH during 1988 and 1989 reinforced the concept of hospital responsibility in encouraging more post-partum nursing of infants and was successful in orienting mothers about breast feeding benefits and techniques. The following discussion is a summary of the program benefits in each of the major intervention areas. The purpose of this section is to highlight both the degree to which the project's objectives were successfully carried out and the limitations in the same areas which were not overcome during the program.

In the first intervention area regarding changes in perinatal care, the program had a clear impact in favoring the initiation of breast feeding in the rooming-in area. The daily breast feeding classes were among the most important activities which aided in establishing a better environment for nursing during the hospital stay. Every day some of the mothers who had heard the talk were in the area for a few more hours; these women showed a greater interest in nursing, and this difference in motivation was obvious

to other mothers who, in turn, felt better about offering the breast. Moreover, the fact that trained personnel were in the area and willing to answer personal questions about nursing techniques was a further program benefit. Given these positive factors, the situation in the rooming-in area changed from one of reluctance in offering the breast to pride in nursing that was demonstrated by greater nursing frequency.

On the other hand, several of the recommendations for changes in practices which the project team had made were not fully implemented during the intervention period. It was usual for the changes to be fully or nearly completely carried out in the morning shift, but personnel in the afternoon and night shifts modified pre-program procedures very little. This surely caused confusion in the messages which mothers received during their stay in the rooming-in area. Only with continuous supervision can procedural changes be maintained during program intervention, and later incorporated as permanent aspects of hospital care.

The second intervention area referred to the lactation management training of MCGH health personnel. The first activity in this area was the intensive training of five professionals in the month-long program in lactation management offered by The Wellstart Organization in San Diego, California. These five professionals formed the nucleus for program implementation in the hospital. Some months later, about half of the personnel of the pediatric and obstetric services, including physicians, residents, nurses, and social workers received short in-service courses on lactation management topics. Most of the persons who were thus trained showed a great deal of interest in lactation management themes and activities, and all five professional groups showed a statistically significant improvement in their knowledge of lactation related themes.

The limitations that were not overcome in this part of the program had to do with the numbers of professionals who were trained. Ideally, all the pediatric and obstetric personnel should have received in-service courses on lactation management. This was not possible. The personnel in the afternoon, night, and weekend shifts were not included in these sessions due to the lack of trained persons available for leading courses in other hours besides those of the weekday morning shift. Moreover, the especially programed courses for residents and social workers were more successful than those given to doctors and nurses at general meeting hours. For the latter personnel, the number of hours that could be fitted into their general program slot was not fully adequate for the course objectives.

The third program component involved the infant feeding plans of mothers during the hospital stay and the follow-up of their infant feeding methods and related health data at one month and at four months. From the post-partum surveys, it was clear that

breast feeding continues to be highly valued in the hospital population. Around 95% of all three groups planned to begin nursing, and more than half of each group stated that they would not be administering any other form of milk in the first few weeks. Moreover, about 75% stated that they would continue nursing for more than four months. The information related to breast feeding plans was generally credible because almost 70% of the multiparra group had already carried out exclusive breast feeding for some weeks with at least one child.

As to the introduction of other foods, the majority of mothers planned to substitute or supplement the breast milk from the first months. A minority of the primiparas felt that they would be offering the baby supplemental foods before the third month, while a majority of the multiparas planned to do so. Eighty to 90% of all groups planned to supplement the infant diet before the fifth month.

Intervention group primiparas in the post-partum did not show important differences in infant feeding plans when compared with the control group. This was not surprising given that the post-partum talk was scheduled after the interviewing in order to prevent a bias in the answers given to infant feeding questions. Moreover, only about 30% of the intervention group had had some prenatal care in the MCGH, and of these only 17% had received a talk on breast feeding advantages and techniques. The other mothers had gone to the clinic in the afternoon when no educational activities were carried on. Furthermore, some of the government health centers also had been offering breast feeding talks for pregnant women, and many of the control group had attended these sessions.

Several variables were found to be associated with the planned infant feeding method in the first few weeks. Among these variables were: 1) bottle feeding and wage work before the infant's birth in the case of the primipara control group;
2) breast feeding and exclusive breast feeding recommendations among family and friends for the primipara intervention group;
3) breast feeding and any prenatal care for the control group; 4) breast feeding and prenatal care in the MCGH for the primipara intervention group; 5) breast feeding and a recommendation for same by a physician for the multipara group; 6) bottle feeding and plans to use any family planning method in the post-partum for the intervention group. Of these associations, there was one which supported the hypothesis that the intervention group had in fact benefited from the MCGH program, that being, of course, the fact that prenatal care in the hospital made a significant difference as to plan for the exclusive breast feeding of the newborn.

The information obtained in the follow-up surveys showed that exclusive breast feeding was carried out by slightly more than a

third of the primiparas in the first month, and that by the second month the great majority of the infants had received other forms of milk, as well as other weaning foods. While the need for exclusive breast feeding had been commented on in the hospital talks, it is possible that this was not emphasized enough. It was also clear that many social pressures must lead to the early supplementation of the breast milk. Furthermore, most medical doctors were not attempting to encourage mothers to maintain exclusive breast feeding throughout the first months.

Infant health related data recorded in the follow-up suggest several propositions. First, that even with the addition of other foods, infants receiving some breast milk thrive more as seen by the differential weight gain at four months. Also more intervention group mothers reported their infants to be healthy, and fewer physician visits were recorded for intervention group infants. Statistical relations between feeding method and some of the infant health indicators were not obtained. This was probably due to small follow-up samples and/or by confusion caused by differences in the quantity of other foods consumed by infants described as receiving "any breast feeding".

The study data suggested that the first weeks of nursing are the most crucial, and that the mothers that continue exclusive nursing at the end of the first month form a relatively stable group, most of whom are able to maintain breast feeding for as long as four months. Early final weaning appears to be highly related to mixed breast and bottle feeding from birth, and this fact stresses the importance that breast feeding promotion programs be aimed at exclusive nursing with no complementary formula during the first few months.

It was also shown that family planning services were not being used by the great majority of the primiparas, and that most of the mothers would be at risk of a new pregnancy before the infant reached the age of one year. Moreover, the supplementation of the breast milk from the first weeks in both groups was a determining factor in the early return of the menstrual cycle and likely fertility with three-quarters of the mothers reporting the menstruation before the fifth month.

Apart from the intervention status, the antecedent variables generally were not shown to be statistically associated with the feeding method employed at one month and at four months. The exception was the variable regarding return to wage work at one month, which had a clear causal relation with complete weaning from the breast. The other two variables which had a statistical relation with the feeding method, the return of menstruation and the leaving of the infant with some other person, were probably subsequent events dependent on the introduction of other foods and/or on final weaning from the breast.

In conclusion, it is clear that important progress was made in each of the three program intervention areas. On the other hand, these activities were carried out in a period of six months, and not all of what the program team proposed to do was possible. There are clear reasons for the limitations in the obtention of the program goals. Large hospitals are complex organizations and perinatal care procedures are difficult to modify in a few months. Hospital personnel can be offered lactation management information and motivation through short in-service courses, but their incorporation of this knowledge into everyday practice takes longer, and continued reinforcement of institutional responsibility for lactation management is an essential part of the task. In this sense, one of the most important outcomes of the project was the formation of a lactation management committee in the MCGH Pediatric Service.

As to the primipara maternity population served by the hospital, breast feeding education was provided to the fraction of primiparas that attended prenatal care services in the morning and to all (or almost all) during the post-partum hospital stay. Nevertheless, the opportunities to motivate the patient population were few and brief. Given these limitations, it is not very surprising that the statistical association between program intervention and outcomes in infant feeding behaviors was not very strong and that while representing a statistically significant difference, only about two-thirds of the intervention group were still nursing at the end of the fourth month.

It should be noted that, according to the post-partum surveys, about 75% of both primipara groups planned to continue breast feeding beyond the fourth month; for both follow-up groups, a smaller proportion of the mothers were able to do so. The fact that no intervention group mothers were exclusively breast feeding at four months was the most disappointing aspect of the results. This situation points out that, while hospital-prenatal and post-partum based breast feeding programs can be successful in achieving longer nursing duration, it is necessary to have other means of getting information and social support to breast feeding mothers throughout the first months. Moreover, a small fraction of the mothers in both groups mentioned medical recommendations for breast feeding. As a result the mothers were influenced by social pressures to begin early supplementation to the breast milk and, therefore, many of the potential health benefits associated with exclusive breast feeding were lost to both mothers and babies.

6.2 Recommendations for Future Programs

As a result of the experience accumulated during the breast feeding promotion program in the MCGH and in consideration of the particular problems documented in the study, members of the project team offer the following recommendations for future lactation

management activities in the hospital. Many of these recommendations should also be useful for other health professionals who are considering the start-up of similar programs in their institutions.

- Incorporate breast feeding education as a permanent part of prenatal clinic activities, and these should be available in both morning and afternoon shifts. Also include other themes such as preparation for childbirth and appropriate family planning methods for new mothers.

- Expand the existing program of educational activities during the post-partum hospital stay for multiparas as well as primiparas, with special efforts, including individual counseling, directed on adolescent, single, and other high risk mothers (about 30% of the total obstetric population).

- Operate a lactation counseling service to be incorporated as a permanent part of the pediatric ambulatory clinic, and which can also offer orientation to hospitalized patients.

- Continue with the preparation and distribution of appropriate breast feeding and reproductive health materials for pregnant women and new mothers. Include the government health centers as a further distribution point for educational materials.

- Organize a special mothers' club which offers breast feeding education sessions for all those obstetric patients who wish to continue in communication with the hospital during the first six months. Family planning information should also be stressed in club activities.

- Reinforce the current family planning services in the hospital and help initiate a special program for new mothers which is responsive to their infant feeding plans and personal values. Among the tasks of the new program would be counseling for those mothers who wish to use lactation infertility as a method of family planning; IUDs and local methods should be recommended for others who are breast feeding.

- Organize regular meetings of the hospital lactation management committee with the purpose of reinforcing the program related changes in hospital practices and for assuring access to information and response to quality service questions.

- Continue with in-service training in lactation management for professionals who offer maternity, postnatal, and pediatric services.

- Provide technical assistance and training to other government health system institutions in areas related to lactation management and reproductive health.

Propose subsequent hospital-based lactation management projects based on operations research and aimed at extending the incidence and duration of exclusive breast feeding in the first four to six months.

BIBLIOGRAPHY

1. American Academy of Pediatrics. Policy statement based on Task Force Report: The promotion of breast feeding. Pediatrics 69(5):654-661, 1982.

2. Arango, J.O. Promotion of breast feeding: a national perspective. Public Health Reports 99(6):559-565, 1984.

3. Arroyo, P. et al. Los factores sociales determinan la duración de la lactancia materna. Gaceta de la Facultad de Medicina (U.N.A.M.) 34 (72):5, 1977.

4. Baumgartner, C. Psychomotor and social development of breast-fed and bottle-fed babies during their first year of life. Acta Paediatrica Hungarica 25(4):409-417, 1984.

5. Berg, A. The nutrition factor. Washington, D.C.: the Brookings Institute, 1973, pp.98-100.

6. Buchanon, R. Breast feeding: aid to infant health and fertility control. Population Reports Series J (4);54, 1975.

7. Carrillo, A.M. Conocimientos y actitudes de personal de una institución de la Secretaría de Salud ante la lactancia materna. Memorias del IV Seminario Interinstitucional de Investigación en México (November, 1987). Mexico City, National Autonomous University of Mexico, 1988.

8. Cassel, J. Social and cultural considerations in health innovations. Annals of the New York Academy of Science 107:739-747,1965.

9. Chávez, A. Early life, nutrition, and child mortality. IN Child Health, vol. 4, p.11 (F. Falkner, ed.) Basle, Switzerland: Karger, 1985.

10. Chávez, A. et al. Child nutrition problems during lactation in rural poor areas. IN Nutrition (A. Chavez et al., eds.) Basle, Switzerland, 1985.

11. de Castro, F.J. Decline in breast feeding. Clinical Pediatrics 7:703,1968.

12. Dimond, H.J. and Ashworth, A. Infant feeding practices in Kenya, Mexico and Malaysia: the rarity of the exclusively breast fed infant. Human Nutrition - Applied Nutrition 41A:51-64, 1987.

13. de Chateau, P. and Wiberg, B. Long term effect on mother-infant behavior of extra skin contact during the first hour post partum. Acta Paediatrica Scandinavica 66 (2):137-151, 1979.

14. El-Mougli, M. et al. Social and medical factors affecting the duration of breast feeding in Egypt. Journal of Tropical Pediatrics 27:5-11, 1981.

15. Fleiss, J.L. Statistical methods for rates and proportions. New York: John Wiley and Sons, 1973, pp. 157-172.

16. Fromm, E. and Maccoby, M. Social Character in a Mexican village. Newark, New Jersey: Prentice Hall, 1970,p.16.

17. Haire, D. The cultural warping of childbirth. Environmental Child Health 19(2A): 171-191, 1973.

18. Hales, D.J. Promoting breast feeding: strategies for changing hospital policy. Studies in Family Planning 12(4): 167-172, 1981.

19. Hanafy, M.M. et al. Maternal nutrition and lactation performance. Journal of Tropical Pediatrics 18(3):187-191, 1972.

20. Hirschman, L. Social background and breast feeding among American mothers. Social Biology 21:39-57, 1974.

21. Hollen, B.K. Attitudes and practices of physicians concerning breast feeding and it management. Environmental Child Health 22(6);288-293, 1976.

22. Hoffman, S.L. and Combest, C. Promotion of breast feeding: yes, it works! (manuscript). Center to Prevent Childhood Malnutrition, 1987.

23. Janowitz, B. et al. Breast-feeding and child survival in Egypt. Journal of Biosocial Sciences 13:287-297,1981.

24. Jelliffe, D.B. and Jelliffe, E.F.P. Obstetric delivery tomorrow: towards a curvilinear compromise. Environmental Child Health 22(5):203-234, 1976.

25. Jelliffe, D.B. and Jelliffe, E.F.P. The uniqueness of human milk. American Journal of Clinical Nutrition 24:968- 1013, 1971.

26. Klaus, M. et al. Maternal attachment: importance of the first few days. New England Journal of Medicine 286:260, 1972.

27. Kleinbaum, D., Kupper, L. and Morgenstern, H. Epidemiologic research. Belmont, California: Lifetime Publications, 1982, pp. 234-263 and 320-374.

28. Lewis, O. Tepoztlan, village in Mexico. New York: Holt, Rinehart and Winston, 1960, pp. 72-75.

29. Lozoff, B. et al. The mother-newborn relationship: limits to adaptability. Pediatrics 9(1):1-12, 1977.

30. Mariscal Abascal, C. et al. Estudio de la alimentación al seno materno en un area suburbana. Boletín Médico del Hospital Infantil (Mexico) 34(4):777-786, 1977.

31. Martinez, C.M. et al. La lactancia en el medio rural. Monograph Series of the Mexican National Institute of Nutrition (INNSZ). Mexico City, 1975, pp.14-17.

32. Mead, M. and Newton, R. Cultural patterning of perinatal behavior. IN Childbearing:its social and psychological aspects (S.A. Richardson and A.F. Gutmacher, eds.). New York: Williams and Williams, 1967, pp.143-179.

33. Mendoza V., D. et al. Patterns and determinants of breast-feeding and contraceptive use in Mexico. Unpublished document of the Mexican Social Security Institute, 1985.

34. Morse, J.M. Infant feeding in the third world: a critique of the literature. Advances in Nursing Science: October, 77-82, 1982.

35. Myers, D. and Winikoff, B. The role of hospital practices in the promotion of breast feeding. Population Council and the World Health Organization, manuscript, 1987.

36. Naylor, A. and Westen, P. Training Health Professionals about breastfeeding. Mothers and Children 5(2):1-3,1986.

37. Nerlove, S. Women's workload and infant feeding practices. Ethnology 13:207-214, 1974.

38. Notzon, F. Trends in infant feeding in developing countries. Pediatrics (Supplement part 2) 74(4):648-666, 1984.

39. Organization for Economic Co-operation and Development (OECD). New directions in education for changing health care systems. Paris: OECD, 1975, pp.64-71.

40. Popkin, B. and Solon, F.S. Income, time, the working mother and child nutriture. Environmental Child Health 22(4):156-166, 1976.

41. Potter, J.E. et al. The influence of maternal health care on the prevalence and duration of breast feeding in rural areas in Mexico. Studies in Family Planning 18(6):309-319, 1987.

42. Puffer, R.R. and Serrano. C.V. Características de la mortalidad en la niñez. Washington, D.C. Pan American Health Organization Scientific Publication no. 262, 1975, pp. 271-274.

43. Ramos Galván, R. Aspectos sociales de la desnutrición. Gaceta Médica de México 107(4):265-267, 1974.

44. Raphael, D.L The tender gift: breast feeding. New York: Schocken books, 1976.

45. Roberts, R.E. Modernization and infant mortality in Mexico. Economic Development and Social Change 21(4);655-669, 1973.

46. Rodríguez, J. and Vandale, S. Bases conceptuales para la selección e implementación de tecnologías apropiadas en salud desde la perspectiva de los países en desarrollo. Border Health/ Salud Fronteriza 21(1):39-47, 1986.

47. Skolnik, A. The intimate environment. Boston: Little, Brown and Co., 1973, p. 287.

48. Steady, F.C. Infant feeding in developing countries: combating multinationals imperative. Journal of Tropical Pediatrics 27:215-219, 1981.

49. Tan, K.L. Breast feeding: social, economic and medical considerations. Annals of the Academy of Medicine 12(4):609-613, 1983.

50. Thompson, M. Role of voluntary agencies in promoting breast feeding. Environmental Child Health 21(5):264-266, 1975.

51. Vandale, S. Factores sociales y culturales que influyen en la alimentación del lactante menor en el medio urbano. Salud Pública de México 20(2):215-230, 1978.

52. Vahlquist, B. Evolution of breast feeding in Europe. Environmental Child Health 21(1):11-18, 1975.

53. Vega Franco, L. et al. Alimentación al seno materno en las clases populares de la Ciudad de México. Salud Pública de México 19:227-234, 1977.

54. Villanueva, G. Nutrición del lactante. Subtema de alimentación al seno. Symposium of the Mexican Institute of Social Security. III National Dietology Meeting, manuscript, 1975.

55. Victoria, C. et al. Evidence for protection by breast feeding against infant deaths from infectious diseases in Brazil. Lancet 1:319-321, 1987.

56. Wade, N. Adverse effects of Western technology. Science 184:45-48, 1974.

57. Weiss, C. H. Investigación evaluativa. Mexico: Trillas, 1983, pp. 87-93.

58. West, C. P. Factors influencing the duration of breast feeding. Journal of Biosocial Sciences 12:325-331, 1980.

59. Wellstart. Breast feeding and child survival. Wellstart's International Lactation Management Education Program. Undated pamphlet, San Diego, California.

60. Winikoff, B. Issues in the design of breastfeeding research. Studies in Family Planning 12(4) 177-183, 1981.

61. Winikoff, B. Nutrition, population and health. Science 200:895-902, 1978.

62. Winikoff, B. and Laukaran, V.H. Breastfeeding and bottlefeeding controversies in the developing world: evidence from a study in four countries. Social Science and Medicine 29(7): 859-868, 1989.

63. Winikoff, B. et al. Dynamics of infant feeding: mothers, professionals, and the institutional context in large urban hospital. Pediatrics 77(3):357-365, 1986.

64. Winikoff, B. et al. Overcoming obstacles to breast-feeding in a large municipal hospital: applications of lessons learned. Pediatrics 80(3):423-433, 1987.

65. World Health Organization. Infant and young children feeding. Report by the General Director. Sixty-seventh Session of the WHO, provisional agenda, item 20.2. Geneva, WHO, 1981.

66. Ysunza, O. Consideraciones biosociales de la lactancia. Mexican National Institute of Nutrition (INNSZ), Publication no. L-55, 1987.

67. Ysunza, O. and Perez Gil, S.E. Conducta de la lactancia en el medio urbano de México. Cuadernos de Nutrición (CONASUPO- Mexico) 4:32-51, 1979.

68. Zeldin, L. Evaluation report of the breast feeding support project PROALMA. INCS Report Series, manuscript, Educational Development Center, 1985.

TABLE 1

IN-SERVICE TRAINING COURSES OFFERED IN THE PROGRAM

PROFESSIONAL GROUP	NO. (% OF TOTAL GROUP)	NO. HOURS (MONTHS)	TOPICS COVERED
OB physicians Pediatric physicians	20 (60%) 15 (40%)	4 (Jan-March)	. MCGH lactation management program . Breast feeding advantages . Lactation physiology . Practical management . Breast milk composition
OB residents	12 (60%)	4 (Apr-May)	. Same as above
Ped. residents	18 (100%)	10 (June)	. Same as above + . Immunological components . Drugs & lactation . Problems of special groups . Contraindications . Maternal complications . Induced lactation & relactation
OB nurses (1)	12 (20%)	4 (Apr-May)	. Same as above + . Problems of post-partum nursing
Pediatric nurses (2)	10 (15%)	-	. Only informal talks with Wellstart trained personnel
Social workers (3)	20 (50%)	12 July	. Same as above + . Infant feeding in historical perspective . Social impact of breast feeding decline . Psychological benefits . Problems of special groups . Family relations & neonate adaptation

(1) Only those in the rooming-in area; (2) Only those in neonate wards; (3) Rotating in different service areas

TABLE 2

MOTHERS IN THE STUDY

Sample 1: "Control group" - primiparas who delivered live born infants in the MCGH from October 2 to November 17, 1988

Program interventions: none

Surveys: 1) post-partum in hospital (175 mothers)
2) follow-up in the home at one month (94 mothers)
3) follow-up in the home at four months (85 mothers)

.....

Sample 2: "Multipara comparison group" - multiparas who delivered live born infants in the MCGH from October 21, 1988 to March 3, 1989

Program intervention: none

Survey: 1) post partum in the hospital (154 mothers)

.....

Sample 3: "Intervention group" - primiparas who delivered live born infants in the MCGH from April 23 to June 14, 1989

Project interventions:
1) prenatal breast feeding classes *
2) post-partum breast feeding class
3) trained hospital perinatal personnel
4) new hospital post natal care procedures

Surveys: 1) post partum in the hospital (176 mothers)
2) follow-up in the home at one month (92 mothers)
3) follow-up in the home at four months (74 mothers)

.....

* Only a fraction of the intervention group mothers received one or more of these classes.

TABLE 3

LACTATION MANAGEMENT OBSERVATIONS

IN THE ROOMING-IN AREA

INDICATOR	BEFORE PROGRAM	AFTER PROGRAM
Mean time between infant arrival and first nursing	1.6 hours	1.3 hours
No. of times infant was picked up	2.2 times	2.7 times
Proportion of infants nursed during observation	77.1%	78.1%
Mean no. of times infant was nursed during observations	1.5	1.9
Mother-infant nursing interaction judged as good	30.0%	45.0%
Other types of infant feeding observed	1 bottle of formula (at mother's request)	1 bottle of glucose water (by physician order)
Mother received breast feeding help	11.4%	9.4%
Infant feeding class during observations	infant feeding by Gerber Food Co. representative	techniques & advantages of breast feeding by team member

TABLE 4

ATTITUDES AND PRACTICES OF MCGH PERSONNEL CONCERNING

BREAST FEEDING AND LACTATION MANAGEMENT (LM)

	BEFORE PROGRAM	AFTER PROGRAM
Children were breast fed	37.3% (total group) 80.0% (of those with children)	42.2% (total group) 79.1% (of those with children)
Professional studies on LM were sufficient	28.8%	28.6%
State that they currently know enough about LM	35.8%	37.8%
State that the MCGH actively promotes breast feeding	62.6%	94.4%
MCGH maternity population accepts breast feeding	91.3%	74.4%
Want more classes on LM	89.6%	93.3%
Want to take part in the MCGH LM Committee	69.9%	77.3%

TABLE 5

ITEM SCORES IN THE TWO KAP SURVEYS
(See Appendix 3)

ITEM	ITEM SCORE KAP1	ITEM SCORE KAP2	DIFFERENCE
ITEM1	3.1	3.6	+0.5
ITEM2	3.1	3.3	+0.2
ITEM3	2.9	3.6	+0.7
ITEM4	3.3	3.5	+0.2
ITEM5	3.4	3.6	+0.2
ITEM6	3.8	3.1	n.c.*
ITEM7	2.1	3.1	+1.0
ITEM8	3.0	3.3	+0.3
ITEM9	2.0	2.6	+0.6
ITEM10	1.9	2.4	+0.5
ITEM11	1.6	2.5	+0.9
ITEM12	3.0	3.4	+0.4
ITEM13	2.7	3.4	+0.7
ITEM14	3.8	3.1	n.c.*
ITEM15	2.3	2.7	+0.4
ITEM16	2.8	3.3	+0.5
ITEM17	3.5	3.5	n.c.*
ITEM18	2.4	3.0	+0.6
ITEM19	3.0	3.3	+0.3
ITEM20	2.8	3.1	+0.3
ITEM21	3.5	3.4	n.c.*
ITEM22	3.0	3.4	+0.4
ITEM23	3.7	3.0	n.c.*
ITEM24	2.8	2.9	+0.1
ITEM25	3.8	3.0	n.c.*
ITEM26	3.6	3.0	n.c.*
ITEM27	1.9	2.8	+0.9
ITEM28	1.8	2.2	+0.4
ITEM29	3.7	2.6	n.c.*
ITEM30	2.6	3.2	+0.6
ITEM31	2.7	3.0	+0.3
ITEM32	2.4	2.5	+0.1
ITEM33	3.8	2.5	n.c.*
ITEM34	2.1	3.7	+1.6

(continued)

TABLE 5 (CONTINUED)

ITEM SCORES IN THE TWO KAP SURVEYS

(See Appendix 3)

ITEM	ITEM SCORE KAP1	ITEM SCORE KAP2	DIFFERENCE
ITEM35	3.0	3.3	+0.3
ITEM36	2.7	2.9	+0.2
ITEM37	2.4	3.0	+0.6
ITEM38	3.5	2.6	n.c.*
ITEM39	3.7	3.4	n.c.*
ITEM40	3.5	2.9	n.c.*
ITEM41	3.8	3.3	n.c.*
ITEM42	3.9	2.2	n.c.*
ITEM43	3.1	3.0	-0.1
ITEM44	2.1	2.8	+0.7
ITEM45	2.1	2.4	+0.3
ITEM46	2.8	3.5	+0.7
ITEM47	2.4	3.1	+0.7
ITEM48	2.4	3.0	+0.6
ITEM49	3.0	3.5	+0.5
ITEM50	3.6	2.1	n.c.*

* These items were not the same in the two KAP surveys and therefore do not have comparable scores.

TABLE 6

GLOBAL LACTATION MANAGEMENT ITEM SCORES

IN THE TWO KAP SURVEYS

ITEM SCORE	DESCRIPTION	NO. OF ITEMS (%) KAP1	KAP2
≥ 3.5	strong accordance	15 (30.0%)	8 (16.0%)
≥ 3.0 & < 3.5	moderate accordance	12 (24.0%)	26 (52.0%)
< 3.0	poor accordance	23 (46.0%)	16 (32.0%)
	TOTAL ITEMS	50 (100.%)	55 (100%)
	MEAN SCORE	3.0	3.0

TABLE 7

MEAN ITEM SCORE OBTAINED BY PROFESSIONAL

GROUPS IN THE TWO KAP SURVEYS (1)

	BEFORE PROGRAM	AFTER PROGRAM
Physicians	2.9	3.2
Nurses	2.3	2.9
Residents	2.8	3.1
Social workers	2.3	3.1
TOTAL	2.6	3.1*

(1) This table considers only the 35 lactation management items included in both KAP surveys

(2) Score with asterisk represents a statistically significant difference; F= 20.9267; p <.001 (ANOVA).

TABLE 8

INFANT FEEDING PLANS IN THE POST-PARTUM SURVEYS

	PRIMIPARA CONTROL GROUP	MULTIPARA COMPARISON GROUP	PRIMIPARA INTER-VENTION GROUP
Exclusive breast feeding	52.4%	63.4%	54.9%
Bottle feedings	4.2%	2.0%	3.4%
Mixed feedings	43.5%	34.6%	41.7%
No problem fore-seen for breast feeding maintenance in first few months	80.3% *	84.0% *	77.0% *
Plan to continue breast feeding for 4 or more months	72.5% *	73.0% *	75.8% *
Plan to offer first supple-mental foods before 3rd month	60.6%	54.8%	70.8%
Plan to offer first supple-mental foods before 5th month	91.7%	95.2%	95.0%

* Significant association with plan for initial exclusive breast feeding; $p < .05$; chi-square test).

TABLE 9

PERSONAL AND SOCIAL DATA FOR MOTHERS IN THE POST-PARTUM SURVEYS

	PRIMIPARA CONTROL GROUP	MULTIPARA COMPARISON GROUP	PRIMIPARA INTER-VENTION GROUP
Only primary schooling or less	49.7%	69.9%	47.1%
Family income of less than minimum wage	31.7%	30.2%	12.3%
Wage work before infant's birth	32.6% *	24.0%	20.0%
Plans to work in the first four months	39.2%	22.1%	21.8%
Husband in home	58.0%	82.5%	68.4%
Another female adult in home	58.3%	35.7%	63.2%
Living without any adult family members	12.0%	4.6%	8.4%
Exclusive breast feeding recommen-dations among family and friends	61.7%	39.6%	68.6% *

* Significant association with plan for initial exclusive breast feeding ($p < .05$; chi-square test).

TABLE 10

HEALTH RELATED DATA FOR MOTHERS AND INFANTS IN THE POST-PARTUM SURVEYS

	PRIMIPARA CONTROL GROUP	MULTIPARA COMPARISON GROUP	PRIMIPARA INTER-VENTION GROUP
Mother reports chronic illness	9.8%	4.6%	6.4%
Some complication during pregnancy	21.6%	8.4%	15.5%
C-section birth	29.7%	31.2%	38.1%
Infant with some health problem	8.1%	9.3%	8.8%
Infant with low birth weight (<2500 g.)	6.4%	8.5%	12.2%
Some prenatal care	88.5% *	82.2%	83.0%
Prenatal care in the MCGH	31.2%	28.0%	30.1% *
Prenatal breast feeding class or counseling	22.8%	13.7%	16.6%
Medical exclusive breast feeding recommendation	15.6%	14.3% *	16.5%
Plan for use of family planning in the post-partum	43.0%	79.9%	34.6% *

* Significant association with plan for initial exclusive breast feeding ($p < .05$; chi-square test).

TABLE 11

INFANT FEEDING METHODS IN THE FOLLOW-UP SURVEYS

	PRIMIPARA CONTROL GROUP		PRIMIPARA INTERVENTION GROUP	
	(1 month)	(4 months)	(1 month)	(4 months)
Only breast feeding	34.4%	2.4%	38.0%	0.0%
Only bottle feeding	28.7%	52.4%	17.4% (1)	36.5% (1)
Any breast feeding	71.0%	47.6%	82.6%	63.5% (1)
Introduction of supplementary foods before third month	-	81.9%	-	78.0%
Introduction of supplementary foods before fifth month	-	97.6%	-	100.%
Median age of complete weaning from the breast	-	12 wks	-	>17wks(2)

(1) Significant difference with regard to primipara control group in the corresponding month ($p < .05$; chi-square test).
(2) Exact median time not known because of the 17 week observation period.

TABLE 12

PERSONAL AND HEALTH RELATED DATA FOR MOTHERS

IN THE FOLLOW-UP SURVEYS (1)

	PRIMIPARA CONTROL GROUP		PRIMIPARA INTERVENTION GROUP	
	(1 month)	(4 months)	(1 month)	(4 months)
Healthy mother in the same month	74.5%	79.8%	75.0%	82.2%
Return of menstruation in first 4 months	-	75.9% (2)	-	73.5% (2)
Use of a specific family planning method	-	20.2%	-	26.8%
Medical recommendation for breast feeding in same month	21.5%	2.5%	13.3%	8.1%
Breast feeding recommendation among family & friends in same month	46.7%	2.5%	36.3%	9.5%
Separated from baby during the day because of wage work in or before the same month	3.2% (2)	7.1%	2.4% (2)	13.5%
Leaves infant with other person during the day in same month	24.7% (2)	39.0% (2)	22.2%	49.3% (2)

(1) For all the variables included in this table, no statistically significant differences were detected between control and intervention groups in the corresponding months.
(2) Significant association with regard to bottle feeding in the corresponding month ($p < .05$; chi-square test).

TABLE 13

HEALTH RELATED DATA FOR INFANTS

IN THE FOLLOW-UP SURVEYS

	PRIMIPARA CONTROL GROUP		PRIMIPARA INTERVENTION GROUP	
	(1 month)	(4 months)	(1 month)	(4 months)
Healthy infant in the same month	57.2%	53.1%	62.0%	78.4% (1)
Infant weight at 1.5 & 4.5 months (respective averages - see note 3)	4.5 kg	6.4 kg	4.7 kg	7.1 kg (2)
Sick baby medical visit in same month	38.3%	40.5%	17.4% (1)	31.1%
Any infant diarrhea reported in months 1 to 4	-	22.6%	-	23.0%

(1) Significant difference with regard to primipara control group in the corresponding month ($p < .05$; chi-square test).

(2) Significant difference in mean weight with regard to primipara control group in the corresponding month ($f = 19.603$; $p < .001$; ANOVA).

(3) When interviews occurred after the second month or fifth month, respectively, the information regarding infant weight was not included in the group average.

TABLE 14

MONTHS OF BREAST FEEDING AND RELATIVE RISKS OF COMPLETE WEANING IN THE FOLLOW-UP SURVEYS

BREAST FED AT THE BEGINNING OF THE PERIOD	PRIMIPARA CONT. GROUP	PRIMIPARA INTERV. GROUP	RR OF WEANING FOR CONTROL GROUP DURING PERIOD
(Not breast fed at home)	8.2%	2.7%	3.0
First month	91.8%	97.3%	1.3
Second month	69.4%	79.7%	1.6
Third month	54.1%	70.2%	2.3
Fourth month	44.7%	66.1%	(*)
TOTAL PERIOD (Fifth month)	44.7%	64.9%	1.6

* Risk not calculated due to zero cell in the corresponding cross-table.

FIGURE 1

CONCEPTUAL MODEL FOR THE STUDY OF FACTORS

WHICH INFLUENCE BREAST FEEDING PRACTICES

ANTECEDENT VARIABLES

- Community influences
- Personal factors
- Mother & infant health status
- Health service coverage (including breast feeding promotion programs)

INTERMEDIATE VARIABLES

- Maternal belief about optimal infant feeding strategy
- Demands on maternal time and energy

OUTCOME VARIABLES

- Infant feeding methods
- Health related outcomes

FIGURE 2

MEASURE OF BREAST FEEDING DURATION

IN WEEKS OF LIFE

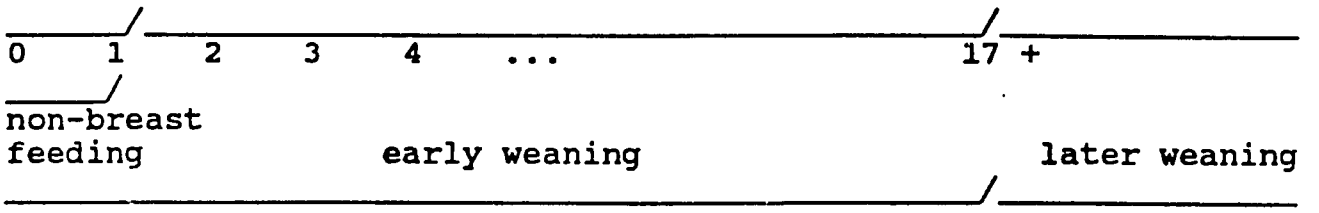
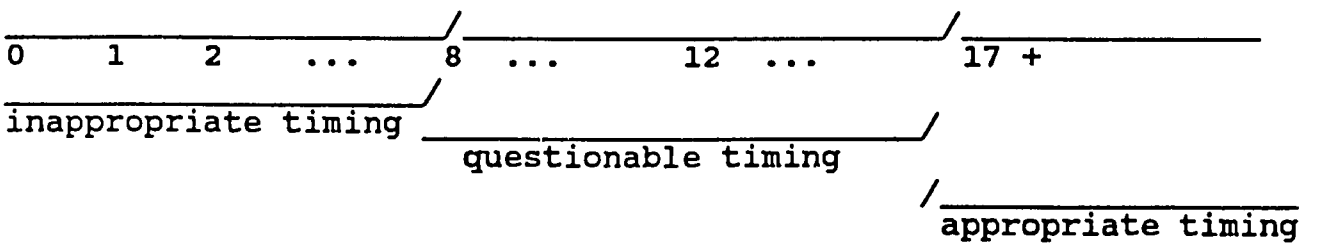


FIGURE 3

MEASURE OF THE INTRODUCTION OF WEANING FOODS

IN WEEKS OF LIFE



APPENDICES

FINAL REPORT: BREAST FEEDING PROMOTION
PROGRAM IN THE MEXICO CITY GENERAL HOSPITAL

APPENDIX 1

HOSPITAL LACTATION MANAGEMENT PROFILE[1]

Name of Hospital .....

Address .....

Date .....

Name of person completing this form .....

Professional position in the hospital of the person who certifies this form .....

1.0 Total patient capacity of the hospital.....

2.0 Annual number of deliveries (19__).....

2.1 Annual number of deliveries for primiparas (19__).....

3.0 Total number of maternity beds .....

4.0 How many maternity beds per room? .....
How many rooms? .....

5.0 Neonatal care nuersery capacity:

Rooming-in (normal new borns).....
Level I (new borns under observation) .....
Level II (intermediate) .....
Level III (intensive care nursing) .....

6.0 Is this hospital a Level III nursery referral center?
Yes..... No.....

7.0 Average number of deliveries per month for the past _____ months (from _____ to _____, 19__) = ...

[1] Adapted from a Questionnaire by Wellstart/San Diego Lactation Program.

54

8.0 Estimate of distribution of socio-economic status of maternity patients:

upper income .....%
middle income .....%
lower income (not welfare) .....%
welfare .....%

9.0 Percent of mothers less than 18 years old .....%

10.0 Percent of single mothers .....%

11.0 Deliveries attended by:

Private OB .....%
Residents .....%
Medical students .....%

12.1 Does hospital have a prenatal clinic? If yes:

How many visits 1st trimester .....
How many visits 2nd trimester .....
How many visits 3rd trimester .....

12.2 What percent of patients have prenatal care in this clinic?
.....%

12.3 How many prenatal visits should be recommended?

1st trimester .....
2nd trimester .....
3rd trimester .....

12.4 What percent of patients follow these recommendations?

1st trimester .....%
2nd trimester .....%
3rd trimester .....%

12.5 Is brestfeeding discussed with patients during their prenatal visits? Yes ..... No .....

12.6 What is the average time spent in a normal prenatal visit?

1st trimester .....
2nd trimester .....
3rd trimester .....

13.1 Does hospital provide postpartum outpatient clinic care? If yes. What percent of patients return to this clinic for postpartum care? .....

13.2 How long after discharge is a visit to this clinic scheduled?

Vaginal delivery .....
C-section .....

14.1 What percent of patients return to hospital for well baby care? .....

14.2 How long after discharge is the first well baby visit arranged? .....

14.3 ¿If there is a first well baby visit, to whom is it recommended? .....

14.4 How long after discharge is the postpartum care visit arranged? .....

15.0 What percent of maternity patients delivering in your hospital are classified as risk groups?

high risk .....%
medium risk .....%

16.0 What percent of deliveries are cesarean sections? .....%

17.0 What percent of infants born in your hospital weigh less than 2500 grams? .....%

18.0 ¿What percent of infants born in your hospital are considered to be less than 38 weeks gestation? .....%

19.0 Infant feeding and other information (in percent) during postpartum for vaginal or C-section deliveres:

	Vaginal	C-Section
- initiating breast feeding	.....	.....
- breastfeeding <u>exclusively</u> at discharge	.....	.....
- "mixed feeding" at discharge	.....	.....
- only bottlefeeding at discharge	.....	.....
- length of time between delivery and first breast feeding	.....	.....
- time of rooming-in	.....	.....
- average length of hospital stay		

20.0 What is the usual interval between breast feedings after they are initiated? .....

56

21.0 Are mothers instructed to limit the time of nursing at each feeding? Yes ..... No .....

22.0 If rooming-in is available, are there times when babies are not with mothers? Yes ..... No .....

22.1 If yes in 22.1, what times (both day or night)? .....
.....

23.0 What do new borns receive before the first breastfeeding?

- nothing .....%
- sterile water .....%
- D/W .....%
- formula .....%

24.1 Do breast fed infants receive additional supplements routinely?

- no supplements .....%
- sterile water .....%
- D/W .....%
- formula .....%

24.2 If supplemented feedings are given but not routinely, what criteria is used to select infants who will be supplemented?

- pre/post feeding weights .....
- fussy baby .....
- low wet diaper count .....
- mother judgement .....
- nurse judgement .....
- physician judgement .....

25.0 Do breastfed infants receive formula or water feedings in place of breast feeding to allow mothers to nap or sleep through a night feeding? Yes ..... No .....

26.0 If infants are offered something in addition to or other than breast feeding, how is it given?

- bottle .....
- syringe .....
- dropper .....
- cup .....
- other .....

27.0 Are infants given pacifiers or "dummies"?
Yes ..... No .....

28.0 Are mothers instructed to cleanse their nipples before each

nursing?
Yes ..... No .....

29.0 Please list three (3) most frequent situations for both mother and infant which are considered contraindications to breastfeeding in your hospital.

mother:
1) .....
2) .....
3) .....

newborns:
1) .....
2) .....
3) .....

30.0 What are the two most frequent breast feeding problems which mothers and/or infants in your hospital seem to have?

.....
.....
.....
.....

31.0 Please note two things which are usually done in your hospitals for breastfeeding mothers with:

- inverted or flat nipples .....
  .....
- sore nipples .....
  .....
- engorgement .....
  .....
- a baby who refuses to nurse .....
  .....

32.0 Does your hospital have an electric breast pump?
Yes ..... No .....

33.1 Does your hospital have a special breast feeding counselor/ consultant/advisor? Yes ..... No .....

33.2 If yes to 33.1, what are the qualifications for selecting a breast feeding counselor? .....
.....
.....

-48

34.0 What assistance is given to a mother who would like to nurse but cannot for a period of time, when infant is too ill or a temporary contraindication is present?

.....
.....
.....

35.1 Do nursing mothers receive any written educational materials about breast feeding? Yes ..... No .....

35.2 If yes to 35.1, what is provided?

.....
.....
.....

36.1 Is a class on breast feeding provided for breast feeding mothers before they are discharged? Yes ..... No .....

36.2 If yes to 36.1, how is this class conducted?

.....
.....
.....

37.0 When a breastfeeding mother is discharged, does she take home:

	Yes	No
- breast pump	.....	.....
- nipple shields	.....	.....
- Water (sterile or D/W)	.....	.....
- bottles	.....	.....
- breast pads	.....	.....
- breast cream	.....	.....
- emergency formula	.....	.....

38.1 When a breastfeeding infant is admitted to your hospital, can the mother remain? Yes ..... No .....

38.2 If yes to 38.1, what arrangements are available to her for sleeping?

- a bed in the room with her infant .....
- a bed in another room .....
- a chair in the infant's room .....
- she is allowed to sleep in a parent's waiting area .....
- no arrangements are available .....

39.0 When a breast feeding mother is hospitalized, can her infant be admitted with her? Yes ..... No .....

40.0 Please check any of the listed personnel assigned to the postpartum and/or nursery units in your hospital.

	postpartum	nursery
- medical doctors	.....	.....
- nurses	.....	.....
- nursing students	.....	.....
- nurse practitioner students		
- nurse midwifery students	.....	.....
- medical students	.....	.....
- interns/residents in obstetrics	.....	.....
- interns/residents in pediatrics	.....	.....
- interns/residents in general family practice	.....	.....
- others (identify please)	.....	.....

41.1 Does your hospital have a breast feeding committee (sometimes calles advisory group, task force, interest group, etc.)? Yes ..... No .....

41.2 If yes to 41.1, please note which professions are included in the committee:

- pediatrician .....
- neonatologist .....
- obstetrician .....
- family physician .....
- nurse .....
- pediatric nurse practitioner .....
- midwife .....
- nutritionist .....
- hospital or clinic administrator .....
- health educator .....
- social worker .....
- other (describe) .....

42.1 Have members of the perinatal nursery staff of your hospital had formal training about lactation and breastfeeding management? Yes ..... No .....

42.2 If yes to 42.1, what percentage of the personnel have been trained?

- pediatrician .....%
- nurses .....%
- residents .....%
- other (idenfity) .....%

42.3 Describe the type of breast feeding training in each case:

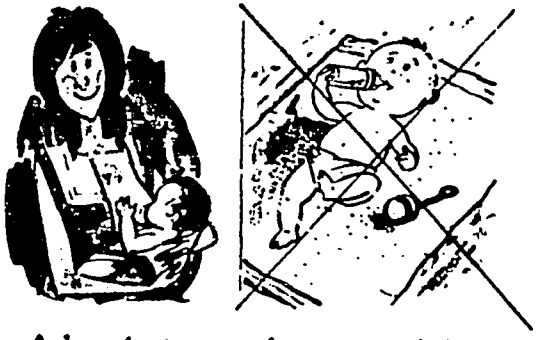
.....
.....
.....
.....
.....

APPENDIX 2: EDUCATIONAL MATERIALS

PRENATAL PAMPHLETS

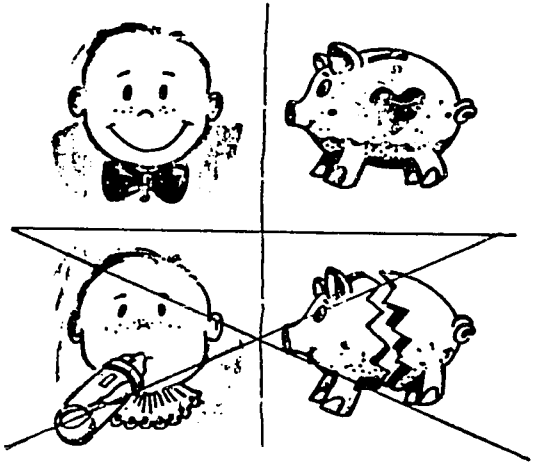
LECHE DE MAMA

Le regalas tu calor y tu cariño.



Además te regalas comodidad.

Y te permite ahorrar

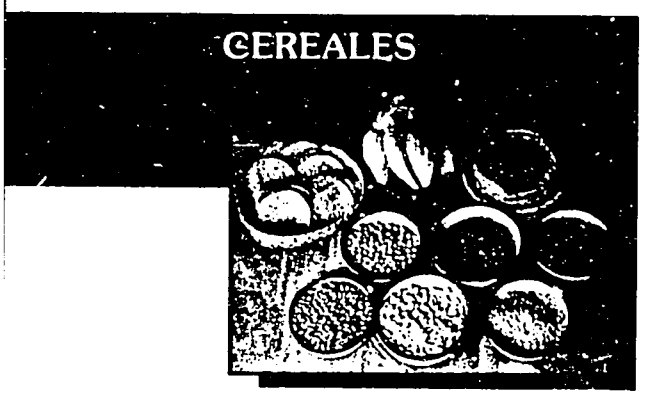


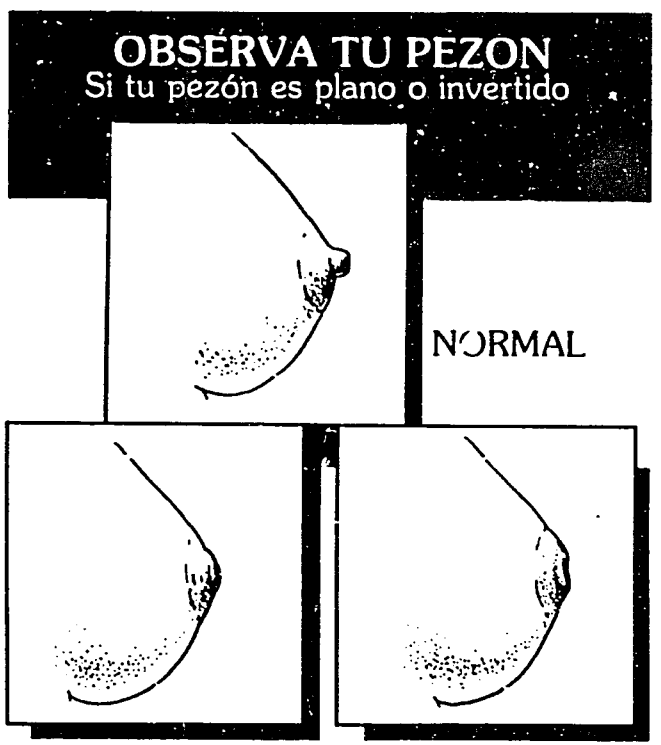
La Liga de la Leche de México, A.C.
Francisco Petrarca 223-402
Col. Polanco C.P. 11560 Tel. 531-28-03

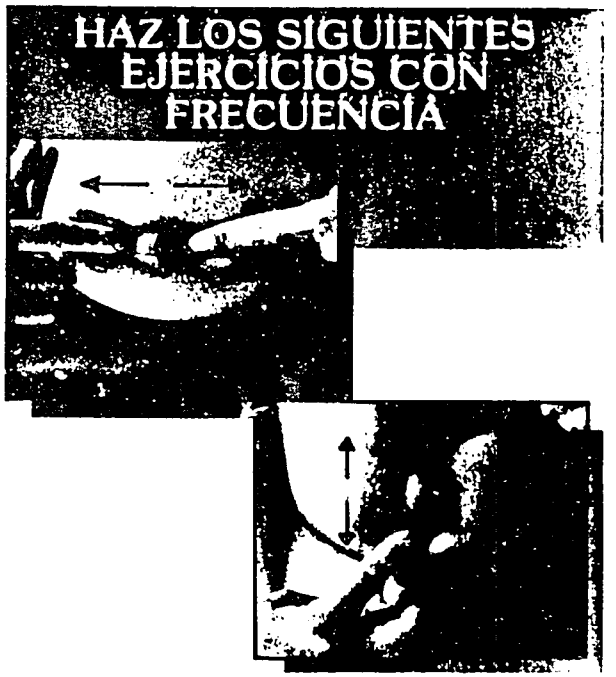
EL MEJOR COMIENZO

¿ESPERAS UN BEBE?

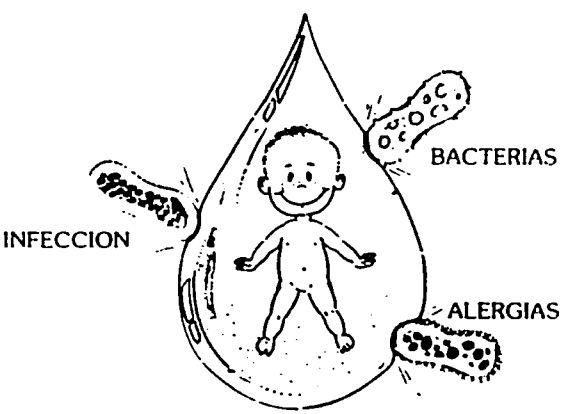
Consume alimentos frescos y variados







DALE UN REGALO A TU BEBI-
AMAMANTALO



Le regalas salud

TU NECESITAS!

Tomar mucho líquido.

Consumir nentos sanos y variados.

Descansar.

TU BEBE NECESITA TU CARIÑO, TU CALOR Y TU LECHE.

La Liga de la Leche de México, A.C.

Francisco Petrarca 223-102
Col. Polanco C.P. 11560 Tel. 531-2801

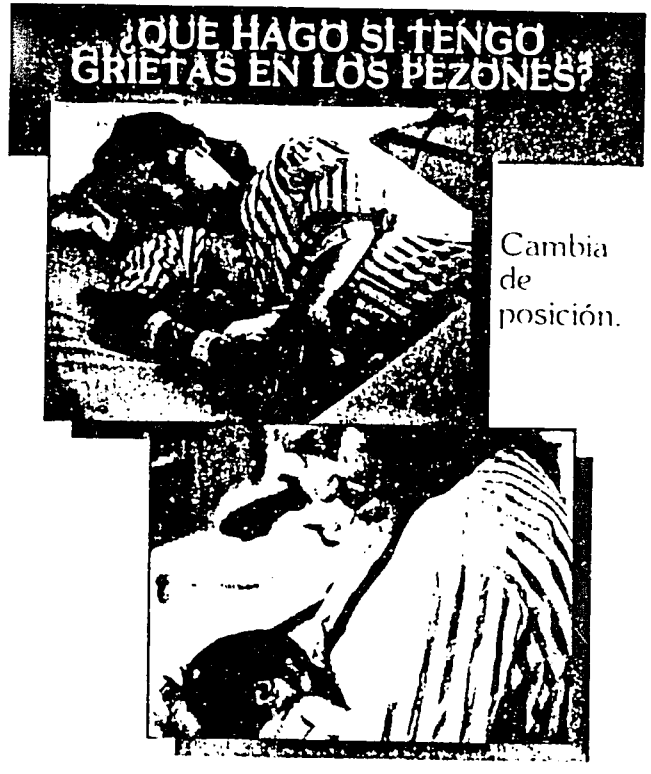
Aprobado con el permiso de
The Population Council

LECHE DE MAMA

¿CÓMO LE OFREZCO EL PECHO A MI BEBE?

¿CÓMO DESPRENDO AL BEBE SIN LASTIMAR MI PEZÓN?

¿QUE HAGO SI SIENTO MIS PECHOS MUY LLENOS?


¿QUE HAGO SI TENGO GRIETAS EN LOS PEZONES?
Cambia de posición.

DURANTE EL EMBARAZO Y LACTANCIA
Lava tu pecho sólo con agua.

ANTES DE AMAMANTAR BEBE APLICA HIELO PARA DISMINUIR LA MOLESTIA

LECHE DE MAMÁ

¿QUE HAGO SI ME ASUSTO O HAGO UN CORAJE?

Tu leche es buena y no se te va. Sigue amamantando.

¿QUE HAGO PARA NO TENER PRONTO OTRO BEBE?

USA:
Anticonceptivos locales: espumas, óvulos, preservativos.

NO USES:
Pastillas ni inyecciones.

La Liga de la Leche de México, A.C.
Francisco Petrarca 223-402
Col. Polanco C.P. 11560 Tel. 531-28-03
Aprobado con el permiso de:
The Population Council

AL NACER EL BEBE
AMAMANTALO LO ANTES
POSIBLE.

AMAMANTA A TU BEBE
CADA VEZ QUE LO PIDA.

AUNQUE TUS PECHOS SEAN
CHICOS PRODUCEN TODA LA
LECHE QUE TU BEBE
NECESITA.

LO PRIMERO QUE
PRODUCE TU PECHO ES:
CALOSTRO.
BACTERIAS
INFECCION
ALERGIAS
CALOSTRO
ES PROTECCION

MIENTRAS MAS AMAMANTES
MAS LECHE
TENDRAS.
No le des otra
leche.
Tampoco agua,
té o chupón.
Sólo:

SI TE ENFERMAS DE GRIPA,
SIGUE AMAMANTANDO.
TU LECHE ES BUENA Y
PROTEGE A TU BEBE.

POST-PARTUM PAMPHLET

LECHE DE MAMA

La Liga de la Leche de México, A.C.

Francisco Petrarca 223 402
Col. Polanco C.P. 11560 Tel. 531 28 03

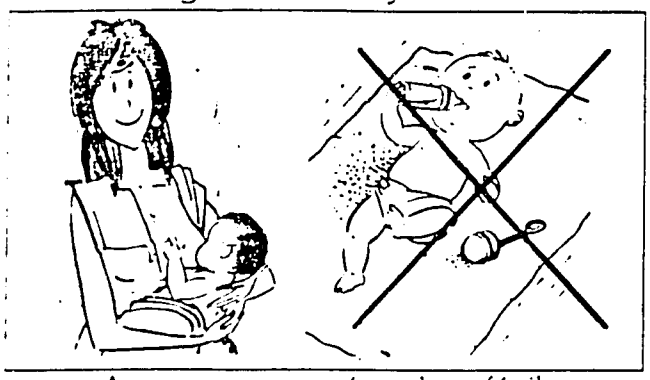
Autorizado con el permiso de:
The Population Council.

Hospital General de México
Secretaría de Salud.

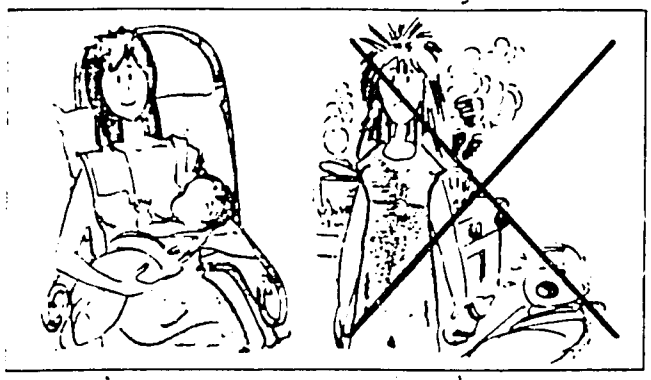
EL MEJOR COMIENZO

AMAMANTANDO A TU BEBE LE REGALAS SALUD.

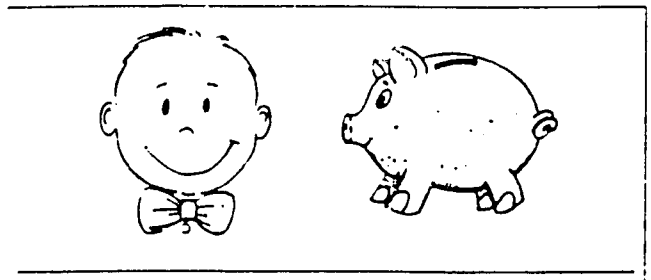
Le regalas tu calor y tu cariño

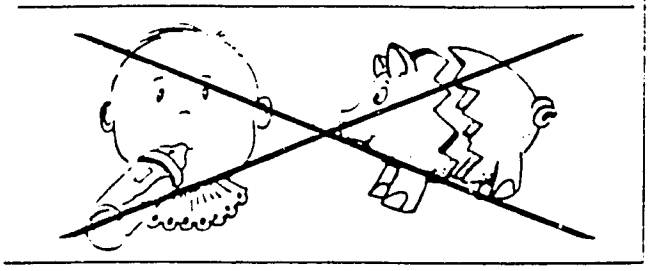


Amamantar es cómodo y fácil



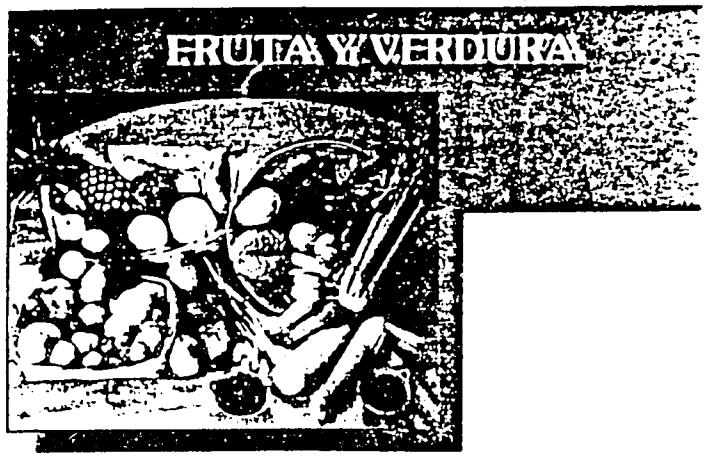
Amamantar te permite ahorrar

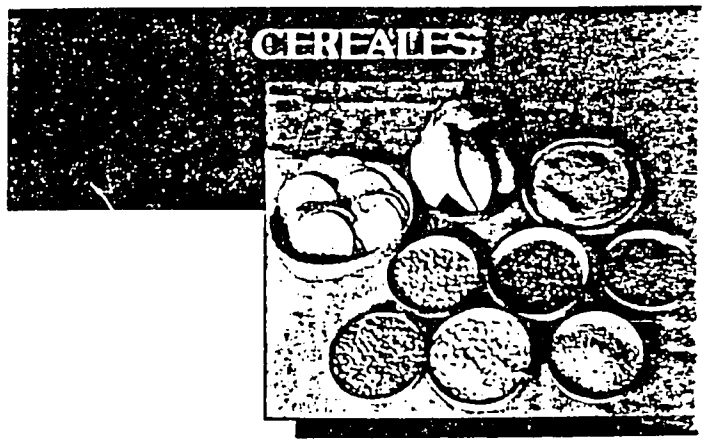




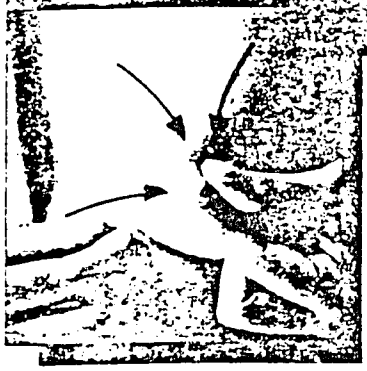
¿ESTAS EMBARAZADA?

Consume alimentos frescos y variados





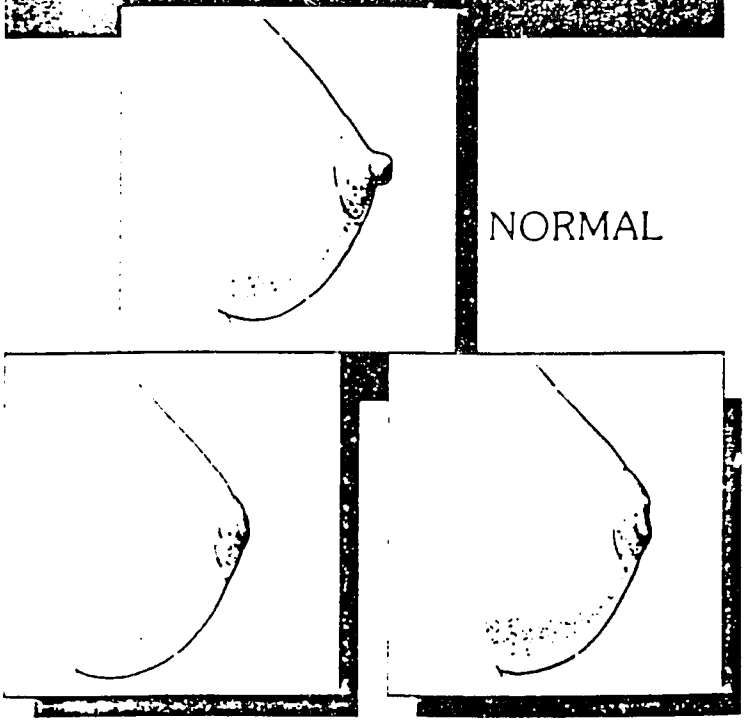
PREPARA TUS PEZONES PARA AMAMANTAR



Jala con suavidad tu pezón hacia adelante

Gira el pezón con tus dedos hacia la derecha y la izquierda.

OBSERVA TU PEZÓN



SI TU PEZÓN ES PLANO O INVERTIDO

Haz los siguientes ejercicios varias veces al día.

Coloca tus dedos a los lados del pezón y estira hacia afuera la piel de la areola. Luego estira hacia arriba y abajo. Repite estos ejercicios varias veces durante el día.

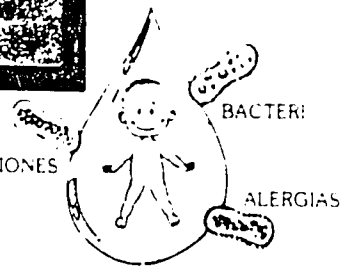
DURANTE EL EMBARAZO Y LA LACTANCIA

Lava tu pecho SOLO CON AGUA. No uses jabón, ni alcohol.

LO PRIMERO QUE PRODUCE TU PECHO ES CALOSTRO.

CALOSTRO
es el primer
alimento
que tu bebé
necesita.

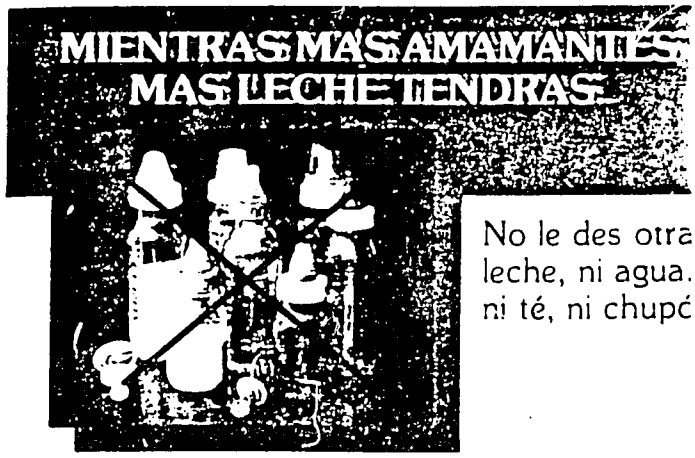
CALOSTRO
es de color amarillo
y protege a tu bebé
de muchas enfermedades.



AL NACER TU BEBE, AMAMANTALO LO MAS PRONTO POSIBLE Y CADA VEZ QUE TE LO PIDA.

Mientras más amamantes, más leche tendrás.

MIENTRAS MAS AMAMANTES MAS LECHE TENDRAS.



No le des otra
leche, ni agua,
ni té, ni chupó

SOLO PECHO

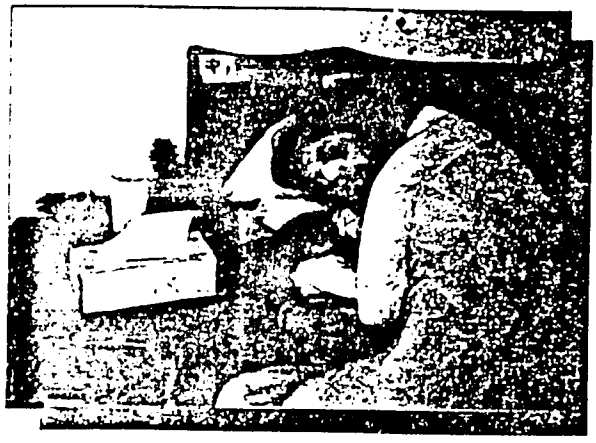
Tu bebé te necesita sólo a tí.
Tu leche contiene todo el alimento que él necesita.
Tu leche contiene toda el agua que él necesita.

NO IMPORTA EL TAMAÑO DE TUS PECHOS

Aunque tus pechos sean chicos producen toda la leche que tu bebé necesita.
MIENTRAS MAS AMAMANTES, MAS LECHE TENDRAS.

AUNQUE TE ENFERMES DE GRIPE

Tu leche sigue protegiendo a tu bebé. Continúa amamantando.



LA MAMA QUE AMAMANTA NECESITA

Tomar mucho líquido.

Consumir alimentos sanos y variados.

Descansar.

TU BEBE NECESITA TU CARIÑO, TU CALOR Y TU LECHE

¿CÓMO LE OFREZCO EL PECHO A MI BEBÉ?

Sostén tu pecho con la mano abierta formando una C.

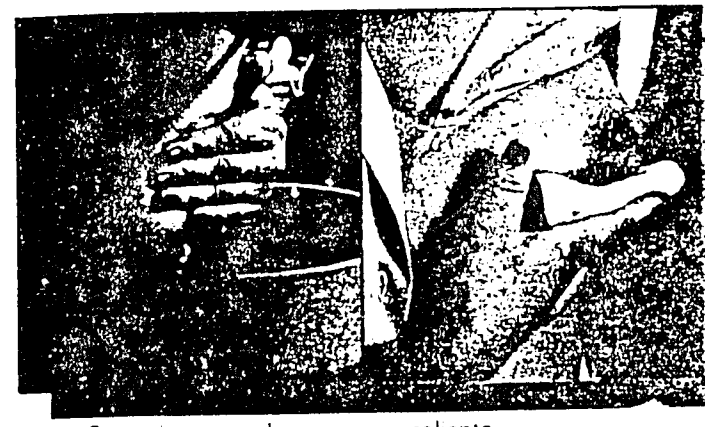
Con tu pezón toca los labios del bebé, cuando abra su boca, introduce la mayor parte de tu areola en su boca.

¿CÓMO DESPRENDER AL BEBÉ?

Introduce tu dedo en la boca del bebé

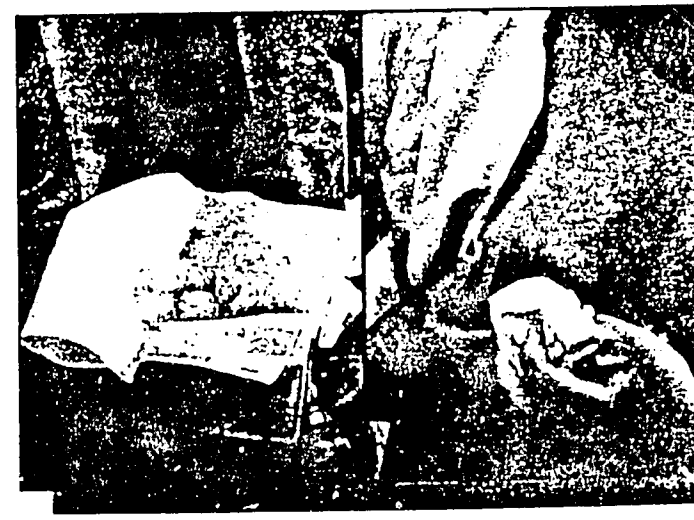
¿QUÉ HAGO SI SE ME LLENAN MUCHO LOS PECHOS?

Si sientes tus pechos duros, congestionados, probablemente has dejado pasar mucho tiempo entre cada tetada.



1. Sumerje tus pechos en agua caliente.
2. Aplica fomentos de agua caliente a tus pechos.
3. Amamanta más seguido.

¿QUÉ HAGO SI TENGO GRIETAS EN LOS PEZONES?



Antes de amamantar al bebé, envuelve hielo en un pañuelo y aplícalo en el pezón. Así disminuirá la molestia al amamantarlo

PARA ALIVIAR EL DOLOR QUE PRODUCEN LAS GRIETAS:

— Amamanta primero del pecho que duele menos.
— Cambia de posición a tu bebé para que al chupar te cause menos molestia.

¿QUÉ TAN SEGUIDO AMAMANTO A MI BEBÉ?

Amamanta a tu bebé cada vez que te lo pida. A principio va a querer mamar muy seguido. Poco a poquito,él mismo va a hacer su horario

¿QUE HAGO SI ME ASUSTO O HAGO UN CORAJE?

Sigue amamantando. Tu leche es BUENA y NO SE TE VA.

Tu bebé no necesita otros alimentos antes de los 4 meses.

¿ENTONCES CUÁNDO EMPIEZO A DAR OTROS ALIMENTOS A MI BEBÉ?

Entre los 4 y los 6 meses de edad, tu bebé puede empezar a probar otros alimentos.

PRIMERO AMAMÁNTALO. DESPUÉS OFRÉCELE

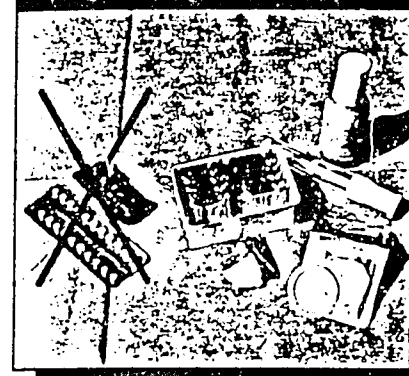
Probaditas de otros alimentos y, poco a poco, aumenta la cantidad de su comida.

Agrégale a su dieta un alimento nuevo cada semana.

Cuando tu niño cumpla UN AÑO, comerá DE TODO.

¿QUÉ PUEDO HACER PARA NO QUEDAR EMBARAZADA?

Continúa amamantando frecuentemente. Puedes usar anticonceptivos locales: espumas, óvulos, dispositivo intrauterino DIU. Pero NO USES pastillas ni inyecciones.



RECUERDA:

Mientras más amamantes, más leche tendrás.

Amamanta cada vez que tu bebé te lo pida.

No necesita ni agua, ni té, sólo necesita tu leche.

MANUAL FOR HEALTH CARE PERSONNEL

LACTANCIA MATERNA: CONCEPTOS PRÁCTICOS PARA MÉDICOS

19

Lactancia Materna:
Conceptos Prácticos para Médicos

The Population Council

Hospital General de México

La Liga de la Leche de México, A.C.

Octubre 1989

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Introducción

Este manual ha sido desarrollado especialmente para profesionistas de la salud que trabajan con mujeres embarazadas y mujeres que amamantan a su bebé. A pesar de que existen muchos profesionistas de la salud perfectamente informados sobre el tema de amamantar, hay mucha contradicción respecto a temas como:

- frecuencia
- posición correcta de infante
- alimentos complementarios

Los profesionistas de la salud siempre son vistos por la comunidad como autoridades y por ello es necesario que proporcionen información veraz y oportuna. Los profesionistas que mantienen una actitud positiva sobre el amamantamiento pueden hacer mucho al transmitir estos sentimientos a las nuevas madres y a las que están embarazadas. Mucha de la información en este manual tal vez parezca sentido común para usted; sin embargo, muchas madres desconocen el tema y no empiezan a dar pecho o lo descontinúan ante cualquier problema por pequeño que sea. Su consejo y apoyo pueden convertir a una madre neófita en dar pecho, en una madre que amamanta con éxito.

Ventajas del Amamantamiento

por Jane Bravo

Uno de los grandes avances médicos de la década pasada ha sido la validación científica de la importancia de la leche característica de los humanos. Este "descubrimiento" ha creado una creciente conciencia general del valor, durante el primer año de vida, de la leche de la propia madre del bebé, para su óptimo desarrollo físico y emocional.

Es imperativa la participación y contribución de la comunidad médica, en la tarea de ayudar a la madre a comprender que los beneficios que la lactancia reporta a su bebé, son invaluables y pueden durar toda la vida. Sencillamente, no hay mejor leche para alimentar a un ser humano, que la propia leche producida por el cuerpo humano.

La leche materna es pura, fresca y perfectamente adecuada al bebé. Las fórmulas se preparan a base de leche de vaca procesada y contienen ingredientes artificiales. No hay fórmula que iguale el equilibrio exacto de los nutrientes que existen en la leche materna. Conforme va creciendo el bebé, la leche materna va cambiando para continuar satisfaciendo sus necesidades, algo que la fórmulas no pueden lograr.

La leche materna le proporciona al bebé importantes elementos inmunológicos. La madre que amamanta produce anticuerpos contra las infecciones que amenzan al bebe y se los transmite a través de su leche. La leche materna contiene, ademas, celulas que actúan en contra de bacterias en el tubo digestivo del niño.

Hay estudios que han demostrado que los bebés que son únicamente amamantados durante varios meses, tienen menos infecciones, que aquellos que son amamantados por tiempos mas cortos.

Los bebés amamantados padecen de menos alergias. Al comparárseles con bebés alimentados con fórmula, los bebés que reciben exclusivamente leche materna durante los primeros seis meses de vida padecen de menos alergias. La leche materna protege contra la sensibilización de alergenos comunes.

Esta protección contra alergias se deriva de la presencia de la IgA, la cual bloquea el paso de proteínas extrañas y otras sustancias desencadenadoras de alergias.

Los bebés amamantados presentan mayor resistencia a las enfermedades respiratorias. Incluso, tienen menos cuadros gripales. Los bebés alimentados artificialmente tienen mas probabilidades de contraer enfermedades graves como bronconeumonias, otitis, etc.

La leche materna contribuye al crecimiento óptimo del cerebro. Taurina, un aminoácido presente en la leche materna en grandes cantidades, es importante para el desarrollo del sistema nervioso central. Las fórmulas hechas a base de leche de vaca contienen sólo cantidades mínimas de esta sustancia.

La leche materna protege contra enfermedades. Los bebés amamantados padecen menos diarreas, vómitos e infecciones del oído y son hospitalizados con menor frecuencia que aquellos alimentados artificialmente.

Los bebés amamantados padecen menos enfermedades de la piel. Estos bebés presentan menos eczema y eritema de la zona del pañal.

La leche materna estimula el desarrollo de una flora bacteriana adecuada en el intestino, la cual causa una evacuación ligeramente ácida en el bebé. Esta ligera acidez junto con otros factores, inhibe el crecimiento de bacterias, hongos, protozooarios.

La lactancia materna fomenta el lazo materno-infantil. El amamantamiento refuerza la necesidad del bebé y de la madre de estar juntos. Amamantar con frecuencia implica mucho contacto de piel a piel y mucho tiempo dedicado a conocerse el uno al otro.

Las madres que amamantan hablan y tocan más a sus bebés y también se relacionan más con ellos. Hay estudios que han demostrado que estas madres responden con mayor rapidez al llamado de sus bebes y son mas cariñosas con ellos.

Los bebés amamantados por lo general lloran menos. El contacto frecuente con sus madres les mantiene felices y satisfechos. Como la leche materna es de fácil digestión, es menos probable que tengan dispepsia.

La leche materna ayuda a prevenir la caries. Se ha demostrado que los niños amamantados son menos susceptibles a las canes dentales que aquellos alimentados con biberón, y son menos las probabilidades de que necesiten correcciones ortodóncicas.

Los bebés amamantados no padecen de estreñimiento. Aunque pueden pasar varios días sin que evacúe, el bebé alimentado exclusivamente con leche materna tiene evacuaciones blandas. Los bebés alimentados con fórmula, en cambió, algunas veces sufren de evacuaciones duras y dolorosas.

La leche materna no necesita preparación. Está siempre a la temperatura exacta y no requiere refrigeración o esterilización.

Es limpia por naturaleza. Pasa directamente del pecho a la boca del bebé, previniendo la contaminación que pudiera suceder al preparar descuidadamente un biberón. Está lista a cualquier hora de la noche o del día y en cualquier lugar. No se necesita preparar.

La leche materna no es cara. En cambio, cualquier tipo de alimento artificial puede absorber una gran parte del ingreso familiar.

La lactancia a libre demanda del bebé ayuda a prevenir contra otro embarazo.

A pesar del esfuerzo de cientos de científicos altamente calificados y de millones de dólares en investigaciones, la tecnología moderna aún no produce un sustituto de la leche materna que proporcione las propiedades inmunológicas y nutrientes presentes en la leche humana. De hecho, los científicos siguen encontrando e identificando nuevos componentes de la leche materna y cada descubrimiento trae consigo un renovado asombro ante la complejidad y precisión con la cual la naturaleza la ha diseñado para satisfacer todas las necesidades del recién nacido.

Anatomía y Fisiología de la Glándula Mamaria

por Dr. Armando Montaño Uzcanga

Las mamas son glándulas de secreción externa de tipo alveolo-tubular cubiertas por una envoltura celuloadiposa, situadas en la cara anterior del torax. Su forma, limites y dimensiones sufren variaciones individuales que dependen de diferentes factores como son el estado hormonal, la edad y la raza.

Forma. La mama humana tiene una forma cónica, protuberante, distintiva y singular. En otros primates, las mamas son comparativamente planas, incluso en la preñez y la lactación. Esta forma cónica es más pronunciada en las mujeres nulíparas más jóvenes. A medida que avanza la edad, las mamas suelen aplanarse un poco y tornarse péndulas, semiesféricas y menos firmes.

Extensión. El borde superior suele estar a nivel de la segunda o tercera costilla y su borde inferior está mas o menos a nivel del sexto o septimo cartilago costal. Su borde medial coincide con el borde del esternón y su borde lateral, con la linea axilar anterior, pero la extension real del tejido mamario es mucho mayor porque se extiende hacia afuera como una fina capa que a menudo llega al borde inferior de la clavicula, a la linea media del esternón y por fuera al borde anterior del dorsal ancho.

La mitad superior de la mama y, en particular, el sector superoexterno, contiene más tejido mamario que el resto de la glándula, y en consecuencia, es más grueso. En ocasiones, el tejido mamario se puede extender hasta la axila, pudiendo formar un abultamiento axilar que va desde el sector superoexterno de la mama hasta la axila inferior.

Tamaño. Es frecuente que haya alguna diferencia en el tamaño de las dos mamas, pasando inadvertida para la mayoría de las pacientes y estas diferencias de tamaño o la prolongación del tejido a la axila son tan frecuentes que no se deben considerar como anormalidades.

La cantidad de grasa es el factor más importante que interviene en las variaciones de tamaño, forma y densidad de las mamas. A medida que las mujeres engordan, sus mamas se tornan más grandes y péndulas. Por lo tanto, el tamaño de la mama no está en relación con la cantidad de tejido grandular y con la capacidad funcional para producir secreción láctea.

Estructura Superficial de la Mama. La cara anterior es convexa en toda su extensión y presenta en el vértice o parte media la areola y el pezón.

La areola o aureola, es una superficie circular situada en la parte mas saliente de la mama, de una extensión de dos o tres cms. de diámetro y de una coloración mas obscura que el resto de la mama. En la areola se observan salientes que son los tubérculos de Morgagni, que no son otra cosa que glándulas sebáceas que levantan el tegumento y que durante el embarazo aumentan de tamaño y se denominan glándulas de Montgomery.

El pezón es una papila situada en el centro de la areola, de forma cilíndrica o cónica; en su vertice se observan de 15 a 25 orificios, por donde desembocan los conductos galactoforos.

El área subareolar contiene fibras musculares lisas dispuestas en forma circular y radial formando círculos concéntricos. Se insertan en la base de la dermis para contraer la areola y comprimir el pezón. La mayor parte del pezón consiste en fibras musculares lisas, dispuestas en forma circular y longitudinal. Cuando se contraen, hacen que el pezón entre en erección y se ponga mas firme.

Constitución Anatómica. Se distinguen en la mama, la glándula mamaria propiamente dicha, su envoltura celuloadiposa y su envoltura cutánea.

La **glándula** está formada por ácinos secretores, conductores excretores y tejido conjuntivo intersticial, siendo en conjunto una glándula tuboacinosa.

A) Los ácinos secretores se agrupan en numero de 10 a 100 o más, en torno de un conducto colector, dando origen al **lobulillo**, que es una unidad estructural básica de la glándula mamaria. Los ácinos se encuentran revestidos por una capa de células mioepiteliales que proveen un mecanismo muscular para expulsar la leche desde los ácinos y conductillos.

La agrupación de ácinos va a dar origen a los **lóbulos**, que en número de 20 a 25 desembocan cada uno en un conducto excretor propio, que termina en el pezón.

B) Los conductos colectores se inician en los conductores intralobulares que van a desembocar a conductos interlobulares, los cuales desembocan en los conductos galactóforos que al llegar a la base del pezón, se agrandan para formar los senos lactíferos, los cuales se dilatan y sirven de depósitos para la leche en el amamantamiento.

C) El tejido conectivo forma parte de la envoltura celuloadiposa que le da sostén a la glándula.

La envoltura celuloadiposa es dependencia de la capa subcutánea que al llegar a la glándula se divide en una hoja anterior, que cubre a la glándula en su convexidad, y una hoja posterior, que se extiende entre la glándula y la fascia superficial. Esta capa forma tabiques interlobulares que la fijan al pectoral mayor y a la piel, constituyendo el aparato suspensor de la mama (Ligamento de Cooper).

La envoltura cutánea. Está formada por la piel que cubre totalmente la cara anterior de la glándula y posee tres zonas. Una cubre el pezón, otras a la areola y el resto constituye la zona periférica.

Irrigación e Inervación. La glándula se halla irrigada por arterias procedentes de la mamaria interna, de las torácicas y de las intercostales.

Las venas que nacen de las redes capilares forman una red subcutánea que al nivel de la areola origina el círculo venoso de Haller; estas redes superficiales se unen con la red abdominal superficial para desembocar a las venas satélites de las arterias de origen.

Los nervios de la glándula proceden de los cinco intercostales correspondientes, del supraclavicular y del plexo cervical superficial. Se distribuyen por la piel y los músculos aerolares, vasos sanguíneos y la misma glándula.

Fisiología de la Glándula Mamaria

Las mamas son parte integral del sistema reproductor y se hallan bajo el control del mismo sistema neuroendocrino.

Durante la vida de cada mujer, ocurren cambios profundos en las mamas. Estos cambios comprenden los de la adolescencia, las modificaciones vinculadas con la pubertad, el ciclo menstrual y la menopausia y los cambios que tienen lugar durante el embarazo y la lactancia.

Origen y Adolescencia. El desarrollo mamario se inicia a la sexta semana de vida embrionaria, a partir del mismo epitelio apocrino que eventualmente da lugar a la formación de las glándulas sudoríparas axilares. Este desarrollo mamario fetal ha sido estimulado por la prolactina, estrógenos y progesterona de origen placentario.

Poco después de nacer hay evidencias temporarias, cierta función secretoria de las mamas en la mayoría de los neonatos. Luego las mamas vuelven a entrar en una fase inactiva que las caracteriza durante toda la niñez.

Los elementos epiteliales constituyen pequeños conductos diseminados en un estroma fibroso y no hay lobulillos.

Pubertad. Se inicia con un alargamiento y ramificación de los conductos, a partir de los cuales brotan los lobulillos que habrán de formar la estructura mamaria normal. Estos cambios ocasionan un aumento rápido del tamaño y densidad de las mamas como consecuencia de la acción coordinada de varias hormonas, como prolactina, estrógenos, progesterona, esteroides suprarrenales, insulina, hormona del crecimiento y hormona tiroidea. La mayoría de los autores dicen que los estrógenos promueven en particular el crecimiento de los conductos, en tanto que la prolactina y la progesterona son responsables del desarrollo de los lobulillos.

Ciclo Menstrual. Normalmente en las mamas el fenómeno de la ingurgitación se halla íntimamente vinculado con el ciclo menstrual. La ingurgitación tiene varios componentes: aumento de tamaño, densidad y nodularidad de las mamas, así como un aumento en la sensibilidad. La ingurgitación disminuye hacia el final de la menstruación y desaparece al completar esta.

La ingurgitación mamaria se relaciona con los antecedentes reproductivos de la paciente como con su edad. Es más pronunciada en mujeres nulíparas y en las que no han amamantado, es decir, en las mamas que no han funcionado normalmente.

Estos cambios están relacionados a cambios proliferativos y regresivos del epitelio lobular, canalicular y del tejido fibroso, con edema e infiltración linfocitaria, antes de la menstruación.

Menopausia. Al completarse la menopausia, las mamas disminuyen su volumen y densidad. Si habían sido anormalmente nodulares, la nodularidad suele disminuir. También hay una disminución de la cantidad y tamaño de los campos glandulares. Estos cambios regresivos en la mama son secundarios a la producción decreciente de estrógenos.

Embarazo y Lactancia. Los efectos del embarazo se ponen de manifiesto en las mamas a las pocas semanas de la concepción. Las mamas empiezan a agrandarse rapidamente y se tornan mas firmes. Las glándulas de la areola se destacan más y la piel se obscurece. Los pezones se agrandan y se tornan mas erectos. Estos cambios obedecen a los altos niveles sanguineos de estrogenos y progesterona y también a una concentración de prolactina de origen hipofisiario que aumenta en forma incesante durante la gestación. Los elementos canaliculares y lobulillares de las mamas proliferan y durante los últimos meses del embarazo las celulas del epitelio lobulillar contienen una secreción que es la precursora de la leche que van a producir.

Fisiología de la Lactancia

por Dr. Armando Montaño Uzcanga

La principal función de las mamas es proporcionar alimento y protección contra cierto tipo de enfermedades a la descendencia, mediante la producción de leche. La leche materna es la principal fuente de nutrición para casi todos los recién nacidos.

Para comprender mejor los eventos asociados para el establecimiento y mantenimiento de la lactancia, la dividiremos en mamogenesis o desarrollo mamario, lactogenesis o iniciación de la secreción láctea, y la galactopoiesis, o mantenimiento de la producción láctea.

Mamogenesis: El tejido mamario presenta una serie de cambios estructurales desde el nacimiento hasta la senectud. Como mencionamos previamente, es posible observar cierta actividad secretoria de la glándula al nacimiento, condicionada por el estímulo hormonal del embarazo, seguida poco tiempo después de involución e inactividad hasta la pubertad, donde se desarrolla demanera acentuada.

La glándula mamaria inicia su crecimiento y desarrollo definitivo durante la pubertad. El tejido adiposo y fibroso aumentan, así como la extensión del árbol canalicular.

El sistema lobular se desarrolla hasta adquirir la diferenciación de las estructuras de tipo acinoso, las cuales alcanzaran su máxima expresión durante el embarazo y la lactancia.

En el embarazo hay una marcada hipertrofia e hiperplasia de los lobulillos y el parénquima adquiere aspecto tubologlandular y el tejido conjuntivo que separa los lóbulos disminuye; los acinos se tapizan de células secretorias; hay un aumento de la vascularidad y de la velocidad de la corriente linfática. Durante la lactancia, los acinos tienen funciones de secreción y almacenamiento de la leche y al finalizar este periodo, hay un proceso de involución mediante un colapso de los lóbulos.

Lactogenesis. Durante el embarazo se reúnen las condiciones hormonales que son necesarias como un paso previo a la lactancia: aumento en los niveles cirulantes de estrógenos, progesterona, prolactina y lactógeno placentario, los cuales alcanzan su nivel máximo al término de la gestación. Con la expulsión de la placenta, se produce una caída brusca en la concentración sanguinea de estas hormonas, lo que aunado al estímulo del pezón producido por el recién nacido al iniciarse el amamantamiento, conducirá finalmente a la síntesis y secreción de la leche.

El mantenimiento de la secreción láctea se va a ver favorecido por la succión del pezón durante el amamantamiento, mediante el cual no solo genera la secreción de oxitocina que ocasiona la expulsión de la leche ya formada y almacenada.

Podriamos resumir la participación de las hormonas de la siguiente manera:

Prolactina: Su concentración aumenta progresivamente durante la gestación y alcanza su nivel maximo en el momento del parto. Este aumento es 20 a 25 veces mayor que su concentracion fuera del embarazo.

Durante la gestación no existe secreción láctea a pesar de la gran cantidad de prolactina circulante por el efecto inhibitorio periférico de los estrogenos y de la progesterona: los primeros por su acción directa sobre la glándula mamaria y la segunda impidiendo la sintesis de lactoproteinas.

Para que se inicie la lactancia es necesaria una concentración sanguínea elevada de prolactina, pero después esta se mantiene aún con niveles bajos de esta hormona.

Oxotocina: Después del parto, causa contracción de las celulas mioepiteliales, forzando la salida de leche a los ductos, haciéndola fluir. Su liberacion puede ser inhibida por stress, fatiga y ansiedad.

Progesterona: Estimula la proliferación lóbulo-alveolar en la mama. Durante la gestación inhibe la secreción de la leche despues del parto; al disminuir sus concentraciones séricas, pierde su efecto inhibitorio, iniciándose la lactancia.

Estrógenos: Estimula básicamente al sistema ductal de la mama, así como al tejido glandular. Puede estimular la secreción de prolactina, pero inhibe sus efectos a nivel celular en la mama. La concentración serica disminuye después del parto, iniciando la lactancia.

Lactógeno Placentario: Producido por la placenta estimula el crecimiento de las mamas durante la gestacion, con niveles progresivamente elevados. Se desconocen otros efectos sobre la mama.

Tiroxina: Estimula la actividad metabólica del tejido glandular. Es importante en el mantenimiento de la lactancia por su efecto directo sobre la glándula mamaria.

Otras: Son también muy importantes para el mantenimiento de la lactancia una vez establecida la hormona del crecimiento (HGH), ACTH, INSULINA Y CORTISOL, participando como cofactores necesarios en la producción de leche.

GALACTOPOIESIS. El mantenimiento de la producción de leche después del parto depende de la acción conjunta de factores de la hipófisis anterior (prolactina) y posterior (oxitocina).

La prolactina favorece el aporte de caseina, ácidos grasos y lactosa y mantiene el volumen de secreción, mientras que la oxitocina hace contraer las células mioepiteliales y vacia la luz alveolar, lo que estimula la ulterior secreción de leche y un nuevo llenado alveolar de leche.

El vaciamiento frecuente de la luz ductal es un factor importante en el inicio y mantenimiento de un nivel adecuado de secreción. De hecho, hacia el 4o. mes después del parto, la succión parece ser el único estimulo requerido, pero los factores ambientales y emocionales son también importantes para que continúe la producción de leche.

La excreción de leche de la mama no ocurre como resultado de la presión negativa producida mecánicamente por la succión, sino que la succión del pezón desencadena un reflejo neuroendócrino que provoca la liberación de prolactina y oxitocina.

También la cantidad y calidad óptimas de leche dependen de la disponibilidad de hormona tiroidea, insulina y cortisol, junto con un aporte alimentario suficiente de principios nutritivos y de líquidos.

Por todo lo anterior, podríamos decir que el mejor estimulo para la producción correcta y suficiente de leche es la frecuencia de tetadas, ya que al aumentar el número de las mismas, hay disminución en el dolor del pezón y de la hipersensibilidad mamaria, y aumenta notablemente la secreción de leche y peso del niño.

Composición de la Leche Humana

por Dr. Horacio Reves Vazquez

La leche materna presenta características muy peculiares que es importante conocer para comprender por que este tipo de alimentacion exhibe ventajas fundamentales en la nutrición infantil

a) Variaciones Normales

Estas dependen de diversos factores, como son: etapa de lactancia, momento del dia, momento de la tetada, nutrición materna y variaciones individuales; todas estas seran analizadas en los siguientes párrafos.

Existen variaciones significativas en la leche humana, dependiendo del lado de que se esté alimentando al bebé, tanto en volumen como en lactosa y ácidos grasos, siendo de ellos el más importante el volumen con cambios hasta en un 65%.

En relación a los acidos grasos, estos incrementan hacia el final de la tetada, siendo tambien mayor su producción al mediodia, en que llega a incrementarse hasta en dos o en cinco veces mas que en el resto del día.

Una variación importante en lo que toca a los recien nacidos prematuros, es que la leche de sus madres presenta un mayor contenido de nitrogeno en aproximadamente el 20%.

Hacia la madrugada, los cambios estadisticamente significativos ocurren en lactosa y volumen que alcanzan sus niveles mas bajos en todo el dia.

Las madres desnutridas producen una leche menor en volumen, pero que contiene practicamente todos los nutrientes en las mismas proporciones que las madres bien nutridas. Estas madres desnutridas, si tienen deficiencias de vitaminas hidrosolubles, vitamina C, tiamina y vitaminas B12, también lo manifestaran en su leche.

b) Calostro

Es un líquido amarillento (por la presencia de B caroteros) y espeso. Tiene una gravedad especifica de 1.040-1.060, con volumen que va en aumento en forma progresiva (2 20 ml. por toma, los primeros tres días).

Las mujeres que han tenido embarazos previos, incrementan su producción mas rápidamente. El calostro tiene un mayor contenido de proteinas, vitaminas liposolubles y minerales, siendo rico en anticuerpos y facilitando dos procesos fisiológicos, que son la proliferación de lactobacillus bifidus y facilitando la progresión del meconio.

La producción de calostro es similar tanto en mujeres que están recibiendo el estimulo de la succión que en la que no lo tiene en los primeros tres días, pero es fundamental el estimulo de la succión desde el tercero hasta el quinto día, para la instalación de una produccion adecuada.

c) Leche Transicional

Es la que está presente del séptimo al décimo cuarto día. En relación al calostro, esta leche presenta un aumento del contenido de lactosa, grasas, calorías y vitaminas hidrosolubles, con una disminución en las proteínas, inmunoglobulinas y vitaminas liposolubles. Estos cambios ocurren bruscamente, para que despues los cambios que continuan realizándose se hagan de manera lenta, hasta el trigésimo sexto día, en que se estabilizan.

d) Leche Madura

1.-Agua. Es el mayor componente de la leche humana. Si la mujer que lacta disminuye sus ingestas, el organismo conserva líquidos a través de la disminución de pérdidas insensibles y orina, pero mantiene la producción de leche. La lactosa es un agente muy importante en la regulación de la producción de leche y por lo tanto, en la producción de agua.

2.-Carbohidratos. La lactosa es el principal carbohidrato; sólo está presente en la leche y su concentracion es la mas alta de todas las otras especies de mamíferos, estando esto relacionado con:

— El cerebro del humano es el más grande y por lo tanto, requiere de un mayor aporte de glucosa.

— La lactosa tiene un valor osmótico fundamental en la secreción de agua y por lo tanto, del volumen lácteo.

Además de la lactosa, existen más de 50 oligosacáridos que constituyen el 1.2% de la leche humana, entre los que se encuentran: glucosa, galactosa, fucosa, N acetil glucosamina (carbohidrato unido a proteinas), ácido siálico, etc. Todos estos carbohidratos y glucoproteínas poseen un efecto benéfico para el desarrollo de lactobacilus bifidus (principalmente la fucosa).

La lactosa, cuyo contenido en la leche aumenta rápidamente en el calostro, tiene un aumento mínimo en la leche de transición y en la leche madura. Las variaciones en su concentración son más significativas en la leche de transición. Su contenido no sufre variaciones en caso de recién nacidos prematuros ni en el tipo de leche que producen las madres desnutridas. La lactosa se desdobla en glucosa y galactosa, siendo esta última fundamental en la producción de galactopépticos, esenciales en el desarrollo del SNC.

3.-Lipidos. Es el segundo mayor componente de la leche humana, pero es también el que mayores variaciones en su concentración presenta durante toda la lactancia (28%). No existen diferencias en sus características en la leche de prematuros que en la de recién nacidos de término. Presenta altas cantidades entre los días 11 y 30. El contenido de ácidos grasos disminuye al inicio de la tetada y aumenta al final. No sufre variaciones con el tiempo que se administre el seno materno. El mayor componente son los triglicéridos, el 20% son sintetizados de ácidos grasos de cadena media provenientes de la misma glándula. También contienen fosfolípidos y colesterol, pero en cantidades pequeñas. La relación entre ácidos grasos poliinsaturados y saturados (1.3) facilita la absorción de calcio.

Cabe recalcar que la dieta de la madre puede modificar el patrón de ácidos grasos más no la cantidad total.

Las lipasas favorecen la emulsión de ácidos grasos para una absorción facilitada de estos elementos.

La carnitina juega un papel importante en la oxidación mitocondrial de los ácidos grasos, incrementando también la cetogenesis y la lipolisis.

4. Proteinas. La leche de prematuros y de término contiene un 20 a 25% de nitrógeno no proteico. En la leche de prematuros existe un aumento del 11 al 20% en el contenido total de nitrogeno. La caseina es un término que incluye a un grupo de proteinas especificas de la leche, que tienen una baja solubilidad en pH ácidos y que forma complejos de caseinato de calcio o fosfato de calcio, que finalmente son transformados en complejos insolubles. La taurina se encuentra en altas concentraciones en la leche humana y está prácticamente ausente en la leche de vaca; participa en los recién nacidos conjugando, prácticamente sola, los ácidos biliares y funciona también como un neurotransmisor en el cerebro y la retina. La composicion está dada también por lactoferrina, que es una proteina que se une al hierro, inhibiendo el crecimiento de ciertas bacterias hierro-dependientes en el tubo digestivo. El uso de hierro oral inhibe a la lactoferrina por ocasionar saturación de ella con hierro. Dentro de las inmunoglobulinas presenta una minima cantidad de IgG. La Ig A secretora es la principal inmunoglobulina, la cual es sintetizada por la glándula y es un mecanismo de defensa contra infecciones al impedir que virus y bacterias invadan la mucosa intestinal. Las lisozimas son factores antimicrobianos no específicos, con acción bactericida para enterobacterias y bacterias gram positivas. Cabe aclarar que es importante no confundir la alfa lactoalbúmina que tiene la leche materna con la lactoalbúmina que en la leche de vaca está constituida por diversas proteinas. La alfa lactoalbúmina es un cofactor de sintesis de lactasa. Los aminoacidos se encuentran en la leche como proteinas y pépticos, principalmente, y en menor cantidad como aminoácidos libres y glucosaminas. Todos los aminoácidos, al igual que las proteinas, disminuyen rápidamente hacia el tercer día, excepción hecha por la taurina que mantiene niveles altos hasta el décimo día.

5. Electrolitos y Minerales. El contenido de cloro y sodio es alto en el calostro, disminuyendo en la leche madura hasta el día 30, en que ya sus niveles se mantienen estables. Los niveles de potasio también disminuyen en el calostro, se incrementa en la leche madura temprana y vuelven a disminuir en la leche madura tardía, inclusive más allá de los treinta días. El calcio y el fósforo son inicialmente bajos, incrementando en la leche madura temprana (12 a 21 días) y disminuyen en la leche madura tardía (120 a 180 días), pero no a niveles tan bajos como en el calostro. El magnesio no tiene variaciones ni en la etapa de calostro ni en la de leche madura. En términos generales la concentración de minerales y electrolitos no tienen variaciones en la leche de prematuros o de término.

6. Elementos Traza. Hierro. La leche humana contiene niveles mayores que la leche de vaca, pero concentraciones menores que las leches maternizadas; sin embargo, los niños no desarrollan anemia, debiendo entenderse que el grado de absorción de la leche humana (hierro) es del 49%, a comparación del 10% para el hierro de la leche de vaca y de sólo el 4% para el hierro de las fórmulas maternizadas. Ésto se explica por una mayor facilidad para la absorción del hierro humano y niveles más altos de vitamina C y lactosa que favorecen su absorción.

Zinc. El zinc presente en la leche materna tiene un índice de absorción mayor (42%), que el que presentan las fórmulas maternizadas (31%) y la leche de vaca (28%) siendo esto un factor importante, pues es conocido que los lactantes pueden desarrollar manifestaciones de deficiencias de zinc.

La relación zinc-cobre ha sido relacionada con enfermedad coronaria; en la leche humana, esta relación es de 14.9 y en la leche de vaca es de 30.1. El selenio es un elemento que se encuentra en fase de estudio para reconocer que manifestaciones daría su deficiencia. Hasta el momento solo existe un reporte confiable, en que se encuentra que su deficiencia llevó a una cardiomiopatía fatal. Las concentraciones presentes en la leche materna (16 ng) es mayor que en la leche de vaca (8.6 ng).

7. Flúor. El flúor se asocia con una disminución de los procesos de caries dental. Su papel es transformar la hidroxiapatita en flúor apatita, reduciendo su solubilidad ácida. Los niveles de flúor en la leche humana son menores (0.025 mg/l) que en la leche de vaca (0.3 a 0.1 mg/l), sin que la administración de flúor oral a la madre logre incrementar estos niveles. El desarrollo dental definitivo es después del nacimiento y depende de los depósitos de flúor y de su biodisponibilidad en la dieta, aunque también influyen los niveles de selenio. En estudios comparativos, el niño alimentado al seno tienen menos caries y una mayor salud dental.

8. Osmolaridad. No cambia a través de la lactancia a pesar de que sí existen cambios en la concentración de diversos constituyentes de la leche, siendo entre 287 y 293 mOsm, lo cual aumenta el riesgo de enterocolitis necrosante, sobre todo en el recién nacido prematuro. Las fórmulas hiper o hiposmolares disminuyen o retardan el vaciamiento gástrico.

9. pH. El calostro tiene 7.45, a los 14 días es de 7.04 y a partir del tercer mes inicia una elevación para llegar a los seis meses a 7.25 y a los doce meses a 7.40. Además, el pH de la leche inicial de la tetada es más bajo del pH del final de la tetada (7.06/7.11). La leche con pH ácido retarda el vaciamiento gástrico. Las drogas con pH alcalino se eliminan en mayor cantidad en el calostro y la leche madura, y disminuyen sus concentraciones en la leche de transición. El pH del calostro mejora la función celular y humoral. El pH ácido aumenta la secreción de gastrina.

10. Hormonas. Se encuentran presentes en la leche: hormona liberadora de gonadotrofinas, TRH, TSH, prolactina, gonadotrofinas, hormonas ováricas, corticoesteroides, eritropoyetina, GMPc, AMPc. La concentración de hormonas varían durante la lactancia, teniendo por ejemplo que mientras los niveles de prolactina disminuyen progresivamente, los niveles de T3 y T4 aumentan. En relación a las hormonas tiroideas se piensa que éstas actúen como un efecto profiláctico en los niños hipotiroideos. Las prostaglandinas PGE y PGF se encuentran en la leche en niveles 100 veces por arriba de los plasmáticos y su papel consiste en aumentar la motilidad gastrointestinal, ocasionando el típico tipo de evacuaciones en el niño alimentado al seno materno. Las sales biliares que se encuentran disminuidas en el recién nacido, son un factor limitante en la digestión, así que su presencia favorece esta función tan importante en el recién nacido. El factor de crecimiento epidérmico es un péptico que estimula la proliferación de tejido epitelial y epidérmico, principalmente a nivel pulmonar y en el tubo digestivo.

Lazos Psicológicos

por Jane Bravo

El amamantamiento es perfectamente adecuado para llenar tanto las necesidades físicas como emocionales de un bebé. Con el pecho, el bebé encontrará la nutrición perfecta para su cuerpo en crecimiento, así como cariño y seguridad que necesita para desarrollarse como una persona.

El contacto visual entre la madre y su infante durante el amamantamiento promueve el "bonding" (unión). Se ha postulado que este contacto es muy importante para su desarrollo posterior, ya que fomenta un sentimiento de seguridad que a menudo llega a crearle una autoimagen positiva.

El amamantamiento evita que la madre lactante tenga cambios emocionales bruscos. La prolongación del periodo de amenorrea es en parte la responsable de esta protección contra grandes variaciones en la sensibilidad.

También la circulación de prolactina altera en forma positiva el comportamiento materno, a través de su acción sobre los ovarios y quizá, sobre el cerebro.

Cierre del Ciclo Sexual. Con la lactancia natural la mujer completa un ciclo sexual biológico: menstruación-relaciones sexuales-embarazo-parto-lactancia, y esta última, como cualquier otro aspecto de su sexualidad puede proporcionarle placer físico, si bien la naturaleza sensual del amamantamiento no se reconoce en la sociedad occidental. Hay quienes aseguran que la supervivencia del ser humano ha dependido de la satisfacción obtenida por los actos voluntarios del ciclo reproductivo: el coito y la alimentación al pecho.

Binomio Madre-Hijo. Además, la madre siente satisfacción por la respuesta de su hijo, al que ella también necesita. Sus pechos llenos, por ejemplo, experimentan un gran alivio cuando el pequeño, al mamar, los vacía.

Para el Niño. Seguridad e Independencia. Para autores como Ashley Montagu, John Bowlby o M. Beran-Brown, entre otros, una buena lactancia natural es sumamente valiosa para el crecimiento emocional del infante.

Bostok en 1962, planteó que debido a la relativa estrechez del canal del parto y al grosor de la cabeza del feto humano, este nace prematuramente; es decir, que a pesar del largo periodo de gestación, los humanos recién nacidos son inmaduros en varios aspectos (por ejemplo, son incapaces de buscar alimento por sí mismos, y necesitan calor, contacto y protección materna constante). Decía él: "como si siguieran siendo fetos extrauterinos durante alrededor de otros nueve meses". Montagu y D. Jelliffe aceptan esta consideración.

Piensan también que para el niño, el amamantamiento (leche tibia ofrecida con afecto) es lo más parecido a la situación intrauterina y, por tanto, la transición menos traumática de feto intrauterino a feto extrauterino.

Al ser amamantado, el niño escucha los latidos del corazón de su madre y pone en juego sus cinco sentidos, pues la ve y la escucha, huele y saborea su leche y puede tocarla y ser tocado por ella. Por ello, si una madre lo hace con gusto, alimentar a su pequeño al pecho significa garantizarle su amor a la vida.

El contacto de piel a piel (que según Montagu) es el órgano sensorial más grande con que contamos, juega un papel importante en el futuro desarrollo físico y emocional del infante, aunque esto suele olvidarse en nuestras sociedades tecnológicas y orientadas hacia la máquina, a las que se podría calificar como culturas de "no contacto"

Satisfacción Oral y Anal. Entre los niños alimentados natural y artificialmente hay variaciones en la satisfacción de diversas necesidades. En los primeros, la mitigación del hambre se da de manera casi inmediata; hay más gratificación oral, pues el niño satisface plenamente su necesidad de succión, sin necesidad de chupones que presionan el arco dental superior, dejando así poco espacio para los dientes; hay, asimismo, sensaciones anales más gratas, pues las deposiciones son más suaves.

Algunos investigadores sostienen que con la lactancia natural la experiencia inicial con la madre es también más satisfactoria y eso tiene relación con la actividad y el aprendizaje, la personalidad y la adaptación.

Algunas personas temen que el amamantamiento, especialmente si éste es prolongado, obstaculice la independencia del niño.

Sin embargo, como dice Herbert Ratner, la mejor manera de hacer independiente a un niño, es dando respuesta a sus necesidades cuando es dependiente.

Por más simbiótica que sea la relación de madre e hijo, llegará un momento en que el mundo del niño expandirá y la madre se convertirá en una parte de éste, ya no en su centro. Habiendo ella también satisfecho su necesidad de afecto, podrá aceptar y alentar la paulatina separación de su hijo.

Claro que el amamantamiento por sí mismo no garantiza una buena relación madre/hijo(a), como la alimentación artificial no la impide. Hay lactancias "artificiales" y lactancias "naturales" de diferente calidad. Sin embargo, la lactancia natural, sí es un auxiliar importante en esta relación.

A Manera de Conclusión. Todas las ventajas que se han descrito explican por qué, a pesar del apoyo de la ciencia y de la técnica, 100 años de lactancia artificial no han podido igualar (mucho menos superar) al uno o quizá dos millones de años de lactancia natural que las mujeres han brindado a sus hijos a lo largo de la evolución humana.

Después de 3 ó 4 décadas de abandono del amamantamiento, las mujeres están volviendo a esa forma natural de criar a sus hijos y, versadas desde siempre en el arte de enseñarse las unas a las otras, informan a más y más madres sobre las ventajas de la lactancia natural.

Este hecho debería llamar la atención de nuestra sociedad, altamente tecnificada, obligándola a percibir que la leche materna cumple otras funciones además de la alimenticia; es decir, satisface ella una gran cantidad de necesidades sociopsicobiológicas de la familia, la madre y, por supuesto, del niño.

Importancia Inmunológica de la Leche Humana

por Dra. Isabel Zurbia Flores Soltero

El recién nacido no tiene defensas suficientes para protegerse a sí mismo contra el medio altamente contaminado al que llega, en comparación al ambiente estéril intrauterino; esto debido a la inmadurez inmunológica. Esto se demuestra por la incidencia de infecciones neonatales, la cual es significativa. Se ha observado que los recién nacidos se infectan durante el parto o durante los primeros meses de la vida, por arriba del 10%. Un ejemplo es la disminución en la fagocitosis, deficiencia de algunas inmunoglobulinas, etc. La protección de recién nacido, desde el punto de vista inmunológico, está dada por los anticuerpos adquiridos de la madre por vía trasplacentaria y por el calostro y la presencia de IgA en la leche humana que produce protección local en la mucosa del tracto gastrointestinal. Está demostrada la baja incidencia de infecciones respiratorias y enterales en los niños alimentados con leche humana, no sólo a través del calostro, sino de la leche madura de los primeros meses de vida. Las propiedades protectoras de la leche humana han sido divididas en factores celulares y humorales, y una variedad de componentes celulares solubles y agentes microbianos que se han identificado tanto en el calostro como en la leche madura.

1. Componentes Celulares:

Las células que se encuentran en la leche humana son: macrófagos, linfocitos, neutrófilos y células epiteliales, en un total de 4000mm3.

La célula predominante son los macrófagos, ocupando un 90% del total de los leucocitos, lo cual significa 2000 a 3000mm3. Los linfocitos ocupan un 10% del total de las células (200 a 300 mm 3). Se ha demostrado que un 50% son linfocitos T y un 34% linfocitos B.

1. **Macrofagos:** Estos tienen las mismas funciones que en cualquier tejido humano. Esto incluye movimientos ameboideos, producción de los componentes del complemento C3 y C4, lisosimas y lactoferrina. Otras funciones que tienen algunos macrófagos de la leche humana son: fagocitosis de latex, adherencia al vidrio, facilita la adherencia eritrocítica de C3b e IgG para la fagocitosis. Los bacteciridas son responsables de la inhibición de la mitosis linfocítica, facilita la entrada de IgA a la célula, forma células gigantes e interactúa con los linfocitos. Los macrófagos del calostro son un vehículo potente para el transporte de inmunoglobulinas. Los macrófagos incluso participan en la biosíntesis y excreción de lactoperoxidasa y factores de crecimiento celular, favoreciendo el crecimiento del epitelio intestinal y la maduración de las enzimas intestinales producidas en el borde de cepillo. La movilidad de los macrófagos está inhibida por el factor inhibidor de migración de linfokina (MIF). La actividad de los macrofagos ha sido demostrada tanto en calostro fresco como en cultivos celulares de calostro.

2. **Linfocitos:** En la leche humana y el calostro existen tanto linfocitos B, como linfocitos T; estos sintetizan IgA.

La acción de los linfocitos T en la leche humana aún se encuentra en estudio, se ha sugendo que pueden sensibilizar e inducir tolerancia inmunológica, o iniciar las reacciones contra huésped. Los linfocitos pueden ser incorporados en los tejidos de succión, proporcionando inmunización adquirida de corto tiempo al recién nacido. Se ha examinado la actividad bactericida de los leucoci-

tos en la leche y es comparable con la respuesta leucocitaria en sangre periférica. Se ha estudiado también la respuesta de proliferación ante una antígeno en calostro y leche humana, y se demuestra que existe respuesta incluso a agentes virales como rubeola, citomegalovirus y parotiditis. Se ha observado que la inmunidad celular para reconocer antígenos bacterianos se encuentra limitada, comparada con la que existe en sangre periférica. Esto se cree que es debido a una acción intercelular y no a la ausencia de factores externos. Por otra parte, se ha observado una reactividad en linfocitos T y B única en la leche, que no se observa en sangre periférica. Los linfocitos son capaces de responder a la presencia de Escherichia coli administrada oralmente, lo cual no sucede en forma sistemática en la madre.

En resumen, los linfocitos de calostro y la leche humana proveen al recién nacido de beneficios inmunológicos. Existe una respuesta tanto de linfocitos B como de linfocitos T, en el tracto intestinal, en contra de organismos invasores. Investigaciones sobre alergias, enterocolitis necrosante, tuberculosis y meningitis neonatal, demuestran que existe una función protectora de la leche humana.

Duración de la Actividad Celular en la Leche Materna: La efectividad del funcionamiento celular en la leche humana, depende de la supervivencia de estas celulas en el tracto gastrointestinal. Está demostrado que el pH del estómago puede ser hasta de 0.5 pero la producción de HCL es mínima en los primeros meses de la vida, así como la actividad péptica. Inmediatamente después del inicio de la alimentación, el pH es de 6.0, regresando a niveles normales en 3 hrs. Las células de la leche toleran esto. Existen estudios en los cuales se han encontrado células linfoideas intactas, tanto en estómago como en intestino, que son capaces de presentar fagocitosis y atravesar la mucosa. Cuando la leche humana ha sido almacenada, se ha observado que las células no toleran temperaturas por arriba de los 63 grados C, y por abajo de los −23 grados C, y la liofilización.

II. Factores Humorales:

Se han encontrado toda clase de inmunoglobulinas en la leche humana. Existen más de 30 componentes que han sido identificados. De éstos, 18 han sido asociadas con proteínas existentes en el suero materno; el resto se ha encontrado exclusivamente en la leche.

La concentración de inmunoglobulinas se encuentra mucho más alta en el calostro de todas las especies, lo cual se demuestra en la siguiente tabla, expresada en mg por 100 ml.

1er. día	600 IgA, 80 IgG, y 125 IgM
2o. día	260 IgA, 45 IgG, y 65 IgM
3er. día	200 IgA, 30 IgG, y 58 IgM
4o. día	80 IgA, 16 IgG, y 30 IgM

La inmunoglobulina más importante que se encuentra en suero humano es IgG, la IgA sólo constituye una quinta parte, sin embargo, en la leche humana existe lo contrario; la IgA es la más importante, no sólo en concentración, sino también en actividad biológica. De las inmunoglobulinas IgA, la más significativa y que es sintetizada en las células alveolares de la glándula mamaria es la IgA secretoria. La IgA constituye el 90% de todas las inmunoglobulinas en el calostro y la leche.

Estabilidad de las Inmunoglobulinas: Se ha demostrado que a temperaturas de 62.5 grados C por 30 minutos, IgM se destruye totalmente. El congelamiento a −23 grados C por 4 semanas no altera la IgA. La IgA secretoria difiere de la IgA serica. La IgA secretoria puede ser sintetizada en la mama no lactante, como en la lactante. Es una molécula compacta, resistente a las enzimas proteolíticas del tracto intestinal, como al bajo pH del estómago. Está formada tanto en las glándulas mamarias como los linfocitos de la leche. Los niveles en la leche son de 10 a 100 veces más altos que en el suero. Las inmunoglobulinas dan una protección local en el intestino en contra de virus, como poliovirus y bacterias como E. Coli, las cuales infectan a la mucosa y entran al cuerpo humano por este medio.

III. Diferentes Factores de Protección:

Factor Bifidus. Se ha demostrado que la flora intestinal en el recién nacido alimentado al seno materno, está constituida principalmente por la bacteria bífida. Esta impide colonización de intestino por otras bacterias; además, tiene una alta resistencia a los cambios físicos, resiste aun cuando la leche humana es congelada, hervida y almacenada por tres meses.

Factor de resistencia. La leche humana protege al recién nacido en contra de infecciones estafilocócicas, esto se debe a la presencia en la leche humana de un factor de resistencia, descrito como no dializable, termoestable y parte de los ácidos grasos libres.

Lisozima. La leche humana contiene un factor antimicrobiano, inespecífico, llamado lisozima, la cual es termoestable y acidoestable. Esta ha sido encontrada en grandes concentraciones en las heces de niños alimentados al seno materno y tiene una influencia importante sobre la flora del tracto intestinal. La lisozima es bacteriostática en contra de las enterobacterias y bacterias gram positivas.

Lactoferrina. Esta es una proteína ligada al hierro, que tiene un fuerte efecto bacteriostático sobre estafilococo y E. Coli, aparentemente privando a éstos de hierro. La concentración de lactoferrina es alta en el calostro y luego progresivamente disminuye hasta los 5 meses de la lactancia. Se ha demostrado con lactoferrina insaturada, la inhibición del crecimiento, incluso de C. albicans. La lactoferrina, tanto como la lizosima, son estables y resisten adecuadamente el pH del estomago.

Interferon. En cultivos de células de calostro se ha demostrado que éstas, al ser estimuladas, secretan una substancia parecida al interferon, con una actividad antiviral por arriba de 150 NIH unidades por ml.

Complemento C3 y C4, componentes del complemento que facilitan la fusión de anticuerpos a la bacteria, se encuentran en bajas concentraciones en el calostro. Cuando se activa C3 tiene propiedades opsonicas, anafilácticas y quimiotácticas y es importante para la lisis de la bacteria fusionada por anticuerpos especificos.

Proteína ligadora de B12. Esta fue encontrada en grandes concentraciones en meconio y heces de niños alimentados al seno materno, e impide el crecimiento de E. Coli y bacteroides.

IV. Evidencia de la Efectividad de la Leche Humana para Controlar las Infecciones:

Infecciones bacterianas: La IgA de la leche humana tiene una actividad antitoxina en contra de E. Coli y Vibrio cholerace, previniendo así la diarrea. También ha sido demostrada la protección para la infección por salmonella. La E. Coli aislada en cultivos de heces en niños alimentados al seno materno es diferente a los niños alimentados con fórmula, ya que ésta tiene mayor sensibilidad a los efectos bactericidas del suero humano; esto apoya la teoría de que la leche humana favorece la proliferación de mutantes con virulencia disminuida.

Infección viral: La leche humana contiene anticuerpos en contra de poliovirus, coxachisvirus, echovirus, influenza, reovirus y rhinovirus. A algunos especímenes de calostro humano se les ha demostrado actividad en contra del virus respiratorio sincicial.

V. Propiedades Protectoras Alérgicas:

Esto se encuentra aún en discusión, ya que es muy difícil de identificar la especificidad de protección en contra de las alergias; sin embargo, existen medios indirectos para demostrar esto. Se sabe que para la inmadurez del tracto gastrointestinal del recién nacido, éste tiene una alta permeabilidad que a las macromoléculas y que los anticuerpos secretorios producidos en el intestino se retrasan de tres semanas hasta tres meses de edad; entonces, en estos casos los niños alimentados al seno materno adquieren proteínas de leche humana que son específicas para el niño humano. En esta forma indirecta también se observa que los niños alimentados con leche de vaca inician la producción de anticuerpos a los 18 días, aumentando así la incidencia de la alergia a la proteína de la leche de vaca al 1%. La alimentación con leche de vaca se ha asociado a gastroenteropatías, dermatitis atópicas, rinitis, enfermedad pulmonar crónica, esosinofilia, falla para aumentar de peso y muerte súbita, incluso.

Contraindicaciones

por Dr. Horacio Reyes Vázquez

Las contraindicaciones son muy escasas; más bien por falta de un conocimiento adecuado se llega a la toma de decisión de suspender la alimentación que se constituye como la óptima, el seno materno. A continuación se hablará de los padecimientos que si constituyen una contraindicación formal para su uso.

A. Cancer de Mama.

La madre en quien se ha establecido el diagnóstico de cáncer de mama no debe alimentar a su bebé, pues requiere el inicio inmediato de tratamiento, por lo que la alimentación debe suspenderse, pues además, aún existe un punto que se encuentra en controversia y que es la participación de la prolactina en el desarrollo del tumor. Caso diferente lo constituye la madre en quien se ha detectado una tumoración en mama, a quien se le puede practicar una biopsia de la lesión con anestesia local, sin que esto amerite el suspender la alimentación al bebé. Una vez que se tenga el resultado deberá tomarse la decisión más adecuada. Otro punto que genera discusión es el hecho de que la alimentación al seno materno favorece la aparición del cáncer de mama, siendo esto un argumento infundado. Esto básicamente ha sido pronunciado en madres primerizas, en edades entre los 30 y 35 años; sin embargo, se conoce ahora que el cáncer de mama no tiene ninguna relación con la alimentación al seno materno, por lo que no se justifica que la madre en este rango de edad, evite dar este tipo de alimentación. Al contrario, hay estudios que demuestran que el amamantamiento por más de seis meses protege a las madres contra el cáncer de mama.

B. Infección por Citomegalovirus.

El citomegalovirus ha sido identificado en la leche humana de madres que son portadoras de anticuerpos contra este virus. La incidencia varía según el tiempo de administración, pues la presencia del virus es más común en muestras obtenidas una semana después del nacimiento (50%), que en muestras obtenidas dentro de la primera semana (11%). Además, en citomegalovirus, como sucede con otros miembros de la familia de los herpes virus persiste en el organismo por tiempos indefinidos y que su presencia puede ser exacerbada por diversos factores, tales como los cambios hormonales que se dan en el posparto.

C. Infección por Rubeola.

Resulta claro que las madres que desarrollan rubeola al momento de estar lactando, o bien las madres que son inmunizadas, eliminan el virus por la leche. Sin embargo, no se han encontrado manifestaciones clínicas de rubeola en el niño, por lo que investigaciones futuras deberán de poner en claro si existe alguna contraindicación de alimentar al seno cuando exista rubeola, pues con los datos actuales esto no sucede.

D. Herpes Simple.

El herpes virus tipo I es muy raro que se encuentre en la leche humana sin dar más manifestaciones, por lo que en casu de que el herpes se encuentre a nivel de areola o pezon, sería la unica contraindicación de alimentar al seno. Si la madre no presenta lesiones a este nivel, puede alimentar a su bebé.

E. Virus de la Inmunodeficiencia Humana.

El SIDA neonatal tiene como una de sus probables fuentes de ingreso al seno materno, sin que esta ruta sea la más común. Sin embargo, cuando una madre considerada como infectada por el VIH y el uso efectivo de otros medios de aporte de leche no estén disponibles, la madre deberá continuar alimentando al seno, existiendo como opción la pasteurización de la leche humana por 30 minutos a 56 GC para eliminar el virus de la leche.

Control Prenatal

por Dra. Emma López Marroquín

Nutrición:

Durante el embarazo los cambios hormonales y el continuo crecimiento del ser en gestación, condicionan el incremento en los requerimientos nutricionales, debido al mayor gasto energetico con respecto a condiciones normales. No es necesario que una mujer embarazada se someta a un regimen dietético especial, sino que ingiera un poco más de alimento que el acostumbrado y sobre todo que sea de calidad, para lo cual es indispensable que haga tres comidas al día de alimentos nutritivos y variados, incluyendo en cada uno de ellos frutas, verduras, cereales, proteinas animales y lácteos; ésto permite que todos los nutrientes se encuentren disponibles en el organismo en el momento necesario. Es conveniente que la mujer embarazada tome una suficiente cantidad de liquidos nutritivos (lácteos o jugos de frutas), que tome una o dos raciones a lo largo del día de alimentos que además de que proporcionen energia, sean nutritivos como: verduras crudas o cocidas al vapor, lácteos (leche, queso, yogurt) frutas naturales o secas o cereales integrales.

Debe evitarse la ingestión exagerada de café, té o alcohol, así como alimentos enlatados, congelados o bebidas embotelladas.

Examen de los Senos:

Las mamas sufren una serie de cambios durante el emoarazo, en preparación para la lactancia, como son: aumento de tamaño, aumento de consistencia, aumento de la vascularidad superficial, hiperpigmentación de la areola. Un cuidadoso exámen de las mamas, debe ser realizado en toda mujer embarazada durante su control prenatal. Inicialmente se explora la textura y elasticidad de la piel, que tiene por objeto predecir y prevenir problemas de congestión mamaria antes del parto, que se asocian con frecuencia a una piel sin elasticidad.

El exámen de la areola y del pezón y no dejar pasar pequeños defectos que puedan condicionar problemas para iniciar y/o continuar la lactancia, son igualmente importantes. Para realizar el reconocimiento, se hace presión sobre la areola intentando hacer protruir la misma colocando el pezón entre el dedo indice y el pulgar; el pezón normal sobresale de su base, el plano no sobresale de los bordes de la areola y el invertido se interna completamente en la areola. Estos dos ultimos son anormales.

Preparación de los Senos y Pezones:

La etapa prenatal es la ideal para detectar problemas y solucionarlos; además debe instruirse a la futura madre acerca de la manera correcta de realizar una serie de ejercicios preparatorios, cuyo objetivo primordial es el de que se acostumbre y familiarice con el manejo de sus pechos antes del inicio de la lactancia.

El baño debe ser como de costumbre, utilizando una cantidad mínima o no utilizar jabones directamente sobre los pezones. Algunos autores recomiendan una fricción suave sobre la areola, pero no con mucha frecuencia ya que ésta podría ocasionar que se quitaran los lubricantes naturales tópicos producidos por las glándulas de Montgomery; por lo tanto están contraindicados los jabones y sustancias químicas tópicas. La exposición de los pezones, al aire y a la luz solar también favorece la preparación de ellos.

Los casos de pezón plano o invertido, pueden corregirse con una serie de ejercicios que reciben el nombre de Técnica de Hoffman, que consisten en colocar los dedos índices de ambas manos a cada lado del pezón y estirar suavemente los dedos alejándolos de éste. Puede repetirse el movimiento cambiando de posición los dedos por encima y por debajo del pezón, estirando con suavidad nuevamente. La intención de estos ejercicios es mejorar la respuesta de protrusión del pezón al estímulo. Otra forma para mejorar las condiciones del pezón, es por medio de la utilización de los formadores de pezón. Están hechos de un material plástico y constan de dos elementos: el primero es un disco cónico con una abertura al centro,por la cual se introduce el pezón. El segundo tiene forma de media esfera y se coloca sobre el mismo,entre el brassiere y el pecho.

La función de los formadores de pezón, consiste en ejercer una presión suave pero firme en la areola para lograr que el pezón sobresalga. Pueden usarse al principio durante periodos cortos de tiempo, pudiendo llegar a usarse de 8 a 10 horas diarias. El resultado de su uso constante es muy satisfactorio.

Estancia en el Hospital

por Dra. Emma Lopez Marroquin

Amamantando en la Sala de Partos: Una de las primeras acciones que llevan a cabo los mamíferos,después del nacimiento de sus crías, es el amamantamiento. Este estímulo desencadena la liberación de hormonas que favorecen procesos fisiológicos y,en los humanos, la presentación de eventos de índole psicológica; por lo tanto, es conveniente iniciar esta relación inmediatamente después del parto, lo que traerá consigo una serie de ventajas, como son:

1) Facilitar el alumbramiento.

2) Facilitar la involución uterina y evitar así las hemorragias.

3) Si por parte del bebé existiera broncoaspiración, el calostro no causa irritación de las vías respiratorias.

4) La depresión posparto se hace menos evidente.

5) Favorece el acercamiento madre-hijo.

6) Reduce el período de hospitalización y los gastos intra o extra hospitalarios en fórmulas y biberones.

Desde las primeras horas que la madre pasa en el hospital, necesita recibir el apoyo por parte del personal de salud, para solucionar cualquier problema que se presente, por lo que deben llevarse a cabo acciones encaminadas a:

- Facilitar a la madre amamantar en una posición cómoda, sin impedimentos o reglas.
- Enseñar la forma correcta de ofrecer el pecho, que es tomándolo con toda la mano, formando con los dedos una "C".
- Mostrar que la forma correcta de amamantar es posicionando al bebé frente a frente con su madre.
- Enseñar las diferentes posiciones para amamantar.
- Alentarla a alimentar al bebé cada vez que él lo solicite.
- Informar que no deben usarse irritantes o jabones al asear los pezones.
- Prohibir que le sea administrado al bebé en forma complementaria agua, fórmula, te.

Diagnóstico de Problemas: Todas estas acciones van encaminadas a la prevención de una serie de problemas que ocurren con frecuencia durante la lactancia y que,por falta de conocimientos,no reciben el tratamiento adecuado.

Congestión: lo mejor para evitar la congestión mamaria es la prevención, lo cual se logra con el amamantamiento temprano. Debido a que ocasiona obliteración del pezón, hay imposibilidad por parte del bebé para obtener leche al succionar condicionando frustración y llanto continuo. El tratamiento consiste en:

1) Someter a un masaje a toda la mama, de preferencia por cuadrantes, en forma centrípeta.

2) Calor local con compresas y posteriormente sumergir las mamas en un recipiente con agua caliente, con el cuerpo inclinado al frente.

3) Extraer en forma manual la leche.

4) Amamantar con más frecuencia.

Pezones Dolorosos: La delicada piel de los pezones se ve súbitamente sometida a la presión que ejerce el bebé al succionar, lo que al principio sólo ocasiona dolor y evolucion hasta fisuras de diferentes tamaños, conocidas con el nombre de "grietas". La prevención debe hacerse con la preparación desde el embarazo. El tratamiento consiste en:

1) Amamantar con frecuencia.

2) Iniciar con el pezon menos adolorido para que el más afectado sea sometido a una menor fuerza de succión.

3) Desensibilizar el pezón previo a ofrecerlo al niño, con la aplicación local de hielo.

4) Asolear los pezones y/o aplicar aire caliente con una secadora de pelo (cuidando no quemar los pezones).

5) Se puede usar lanolina pura sobre el pezón o extraer un poco de leche y aplicarla sobre las lesiones.

6) Exponer los pezones al aire.

Pezones Planos o invertidos: en el capítulo anterior se describió la forma de reconocer los pezones planos e invertidos de los normales y la manera de corregirlos antes del parto. Si después de éste persisten estos problemas, debe ser aplicado un programa de ejercicios e indicar el uso de los formadores de pezón (bubus) que por la presión negativa que ejercen, hacen protruir el pezón.

Reflejo de "Bajada": cuando el pezón es estimulado, los receptores localizados en él y la areola transmiten estímulos nerviosos a la hipófisis para producir prolactina, que induce la secreción de leche en la mama y oxitocina, la cual estimula las células mioepiteliales para que se lleve a cabo la expulsión de la leche.

El reflejo de bajada, es decir, la expulsión de la leche, puede ser inhibido por diferentes situaciones como en mujeres inseguras que no han recibido preparación durante el embarazo o en quienes experiencias desagradables relacionadas con el amamantamiento de hijos previos influyen en inhibir el reflejo de expulsión, o mujeres demasiado aprehensivas.

Amamantamiento en Casa

por Dra. Isabel Zurbia Flores Soltero

Frecuencia de Amamantamiento: estando la madre con el recién nacido en casa, la frecuencia de amamantamiento debe ser a libre demanda, es decir, sin horarios y cuando el niño lo pida. En realidad los primeros días las tetadas serán muy frecuentes, más o menos cada hora u hora y media, mientras se establece una producción adecuada de leche, sin olvidar que en cuanto a mayor succión-mayor producción. Los niños que se alimentan al pecho siguen un lapso de dos a tres horas más o menos, desde el comienzo de una alimentación a la otra, ya que la leche materna se digiere mucho más rápido y fácilmente que las leches artificiales. Cada niño presenta un patrón distinto de alimentación, algunos prefieren comer poco y seguido, y otros prefieren tomas más largas y espaciadas. La lactancia nocturna ayuda a mantener el suministro de leche materna. Muchos niños necesitarán por lo menos una tetada nocturna por 5 o 6 meses o más.

Descanso Adecuado: el establecimiento de la lactancia toma algún tiempo, al principio el niño requerirá de muchas atenciones y cuidados, aún por la noche. Si el niño amamanta por las noches, ella puede recostarse en el día con su hijo y dormir un rato, o bien, buscar un momento del día para recobrar el sueño perdido durante la noche.

Senos Adoloridos: esto existe cuando hay plétora o llenura de los pechos; esto sucede con mayor frecuencia durante la estancia hospitalaria en el período inmediato al parto. La explicación de esto es que existe un aumento del torrente sanguíneo y la cantidad de hormonas, aumentando así la producción de la leche. La madre siente sus pechos duros, congestinados y esto le provoca dolor. El pezón, al aparecer la plétora, tiende a desaparecer en la areola. En consecuencia, el niño tendrá dificultades para prenderse al pecho y mamar. El tratamiento consiste en sumergir los senos en agua caliente, haciendo masajes colocando la mano abierta en la parte superior del seno, deslizando con suavidad hasta la areola, repitiendo el ejercicio masajeando toda el área del pecho. Otra medida es extraer un poco de leche por medio de la técnica de Marmet, que consiste en poner la mano en forma de C con el pulgar hacia arriba, rodeando toda la areola, presionando hacia atrás e impulsando hacia el frente posteriormente para obtener una buena expulsión de la leche. Aplicar paños calientes en el pecho y amamantar al niño con frecuencia son otras soluciones.

Mastitis: esta se refiere a la presencia de infección en el pecho; puede estar dado por un conducto tapado que no fue tratado adecuadamente; una grieta como puerta de entrada a estafilococos y otros organismos patógenos. Los síntomas son parecidos a un resfriado común con fiebre y ataque al estado general. El área infectada presenta calor, rubor, tumefacción y dolor al tacto. Los periodos en los cuales hay una mayor ocurrencia de infecciones de pecho son:

- Posparto mediato. La mujer puede estar muy cansada y sus pechos pueden no estar vaciándose en forma adecuada.

- Cuando existe un destete rápido.

- Cuando la madre se encuentra agotada por exceso de trabajo.

Cuando la madre está muy tensa o nerviosa.

- Cuando amamanta al bebe con horario rígido.
- Cuando usa brassiere demasiado apretado.
- Cuando amamanta con irregularidad.

Tratamiento: de ninguna manera la presencia de mastitis contraindica seguir amamantando. Se deberá usar antibiótico, oxacilinas en este caso, ya que el germen más frecuente son estafilocos. a dosis adecuada, con previa toma de cultivo de la leche, pezon del lado afectado, así como de la boca del niño. Uso de paños humedecidos en agua caliente antes y durante las tetadas y guardar reposo.

Una infección como la mastitis, no tratada a tiempo, puede pregresar a una complicación más seria, como es el absceso. Este generalmente requiere de una intervención quirurgica para su drenaje y antibioticos. Cuando existe absceso se recomienda no amamantar de ese lado al niño, pero continuar extravendose la leche, mientras se resuelve el proceso agudo.

Se puede amamantar a las 24 hrs. despues de la cirugía.

Cólicos: se presentan con mucho menos frecuencia en el niño amamantado, ya que la coordinacion tan rápida que existe entre respiración y deglución, en ocasiones hacen tragar al niño aire; estas burbujas de aire ocasionan dolor cuando pasan al intestino, de ahi la insistencia de hacer eructar al niño después de cada tetada. Cuando existe cólico, la solución es poner al niño boca abajo sobre el brazo de la madre y hacerle masajes en el vientre con la mano. Otra solucion es acostar boca abajo sobre una franela caliente recién planchada. En ocasiones el cólico es ocasionado por algo que la madre come, siendo el primer alimento causante de cólico en el bebé, la leche de vaca que la madre ingiere. El huevo, chocolate, frijol, citricos, son también posibles causantes de cólico en el bebe. La solución es que la madre retire de su dieta el alimento causante de cólico y vuelva a comerlo después de un mes, teniendo en observación a su bebe.

Introducción de Sólidos: la leche materna es suficiente por sí sola para la mayoría de los infantes hasta la mitad del primer año. En algunos casos podría un niño necesitar alimentos sólidos alrededor del 4o. ó 5o. mes. El propósito de los alimentos sólidos es el de complementar la leche materna y de asegurarse que el niño siga obteniendo energía, proteína y otros nutrimentos suficientes para crecer normalmente. Es importante que además se continúe la alimentación al pecho, entre otras razones, porque sigue proveyendo cantidades útiles de energía y de proteína de alta calidad. La introducción de solidos también va de acuerdo al momento de madurez intestinal, con adecuada secreción de enzimas pancreaticas y selección adecuada de la absorción de diferentes proteinas, previniendo así las alergias por sensibilización producida por proteinas de alto peso molecular; esta madurez se va iniciando a partir del 4o. mes de vida. Otra forma indirecta de saber el momento de dar solidos en cada caso, es cuando el niño repentinamente pide mamar con mucho más frecuencia que antes y que coincide con el momento en que ya puede morder o que empieza a querer tomar con la mano los objetos y llevárselos a la boca.

Medicamentos en la Leche Humana

por Dr. Horacio Reyes Vázquez

Una causa común de consulta en madres que lactan es la ingesta de medicamentos y su posible repercusión en el niño, esto sumado a que durante el embarazo y la lactancia las madres consumen habitualmente entre 5 y 8 medicamentos, establece la necesidad de tener puntos de referencia para establecer un criterio en su administración.

Existen diversos factores que permiten que un medicamento aparezca en la leche materna:

1. – Difusión pasiva. – Factor más importante.
2. – Falta de unión a proteinas.
3. – Medicamentos no ionizados.
4. – Bajo peso molecular (menos de 200 mol.).
5. – Calostro.

Los medicamentos aparecen en la leche materna en cifras menores al 1% de lo que la madre ingiere, independientemente del volumen consumido por el bebé.

Otro punto que es importante para los medicamentos en la leche humana, es la capacidad del lactante para destoxificar y excretar el fármaco:

A). – Existen medicamentos que pasan en cantidades minimas pero el niño no tiene la capacidad de eliminar, por lo que este se acumula.

B) – Existen medicamentos que son hepatotoxicos (acetoaminofen) por lo que podrían contraindicar su administración en el recién nacido, sin embargo, por tener caminos alternos de metabolismo se pueden administrar.

C). – Otros medicamentos compiten, por su unión con proteinas, (sulfas, ácido salicilico) con la bilirrubina, por lo que pueden ocasionar en pacientes de alto riesgo Kernicterus. Su uso en este grupo de pacientes se contraindica.

D). – La prematurez ocasiona inmadurez de sistemas enzimaticos y disminucion en los niveles de proteinas.

E). – La liposolubilidad de un medicamento no ionizado favorece su entrada a traves de membranas celulares y en consecuencia a la leche así como su concentración en el componente graso en la leche.

F). – Ciertos medicamentos aparecen en la leche materna en minimas cantidades, pero no hay que olvidar que la madre produce 60 ml. de leche por hora y por lo tanto el bebe puede consumir altas concentraciones del fármaco.

Existen algunas preguntas que debemos plantearnos para la selección de los medicamentos que permiten establecer cuáles son los riesgos y cuáles son los beneficios en la toma de decisión:

1). — ¿El medicamento que se va a administrar puede ser dado al niño en caso de que este lo necesitara?

2). — ¿Existe algún riesgo con el medicamento si se administra al bebé?

3). — ¿El beneficio por los medicamentos es mayor al riesgo?

4). — ¿Cuál es el tiempo que se va administrar el medicamento?

5). — ¿Cuál es el riesgo de sensibilización que puede presentar el niño a la droga?

Una vez que hemos tomado la decisión de administrar un medicamento a la madre que está lactando, existen algunos puntos que debemos de recordar para tratar de minimizar los posibles efectos secundarios:

+ No utilizar medicamentos de larga acción, pues al bebe le dificulta en mayor escala el eliminarlo.

+ Pedir a la madre que tome el medicamento inmediatamente después de alimentar a su niño, para tratar de lograr que comience la eliminación del fármaco antes de la siguiente toma de leche.

+ Vigilancia estricta en el niño para detectar cualquier signo o síntoma anormal.

+ Elegir el medicamento que alcance los niveles más bajos en la leche materna.

A continuación se hace mención de medicamentos comunes en los que se encuentra contraindicación para su uso en la lactancia o bien aquellos medicamentos en los que debemos tener vigilancia especial.

Medicamento:	**Sugerencia:**
Aspirina	La madre debe incrementar la ingesta de Vitamina C.
Indometacina	Puede ocasionar crisis convulsivas y es nefrotóxica.
Pentazocina	Contraindicada en el período neonatal.
Primidona	Contraindicada.
Antihistamínicos	Evitar las presentaciones de larga acción, cuando están combinados a descongestivos, disminuyen la producción de leche.

Medicamento:	**Sugerencia:**
Clorafenicol	Contraindicado.
Clindamicina	Precaución extrema.
Eritromicina	Evitarse en el primer mes de vida por el riesgo de ictericia.
Metronidazol	Contraindicada cuando el niño es menor de 6 meses.
Pirimetamina	Contraindicada en niños menores de 6 meses.
Estreptomicina	No debe ser dada por más de 2 semanas.
Sulfonamidas	Evitarse en el primer mes de vida.
Tetraciclinas	No debe administrarse por más de 10 días.
Trimetropin Sulfametoxosol	Niños con riesgo potencial de Kernicterus debe de evitarse.
Atropina	Inhibe la lactancia.
Ergotamina	El tratamiento no debe exceder los 6 mg.
Plomo	Contraindicado, si la madre tiene niveles séricos de 40 microgr.
Prednisona	Utilizar por tiempo corto.
Tolbutamina	Contraindicada en la lactancia.
Diazepam	Dosis mayores de 10 mg. al día contraindican la lactancia.
Inhibidores de monoaminoxidasa	Inhibe la lactancia.
Nicotina	Inhibe el reflejo de bajada.
Vacuna de varicela	Contraindicada si el niño es menor de un año.

Lactancia Inducida y Reiniciación de la Lactancia

por Dra. Emma Lopez Marroquin

Estos no son conceptos nuevos, sino que son bien conocidos en la historia de diferentes culturas. La motivación inicial fue la de tratar de alimentar a algun niño cuya madre fallecia, obligacion que era tomada por alguna amiga o familiar de ella, pues no se contaba con otra alternativa; o bien, en casos de guerra o desastre, con el objeto de proporcionar alimento a los niños desprotegidos.

El término **Lactancia Inducida** se refiere al proceso por medio del cual una mujer que nunca ha amamantado o incluso que nunca ha estado embarazada, sea estimulada y produzca secreción láctea y la **Relactación** implica procedimientos por medio de los cuales una mujer que tuvo hijos y que por alguna razón no amamanto o lo hizo pero lo suspendió, sea estimulada para que vuelva a producir leche, porque desea volver a amamantar.

En los paises industrializados, el principal interes de madres que desean una lactancia inducida, es por amamantar a un hijo adoptivo, ya que si no pudieron concebirlo, por lo menos tienen la satisfacción de brindarle las ventajas de su leche y alimentarlos extrauterinamente con su cuerpo.

El tratamiento que debe brindarse a una madre que acude con un médico manifestando su deseo por ser sometida a un régimen de lactancia inducida, debe incluir no sólo el aspecto fisiológico que debera ser llevado a cabo con mucha disciplina, sino el apoyo psicológico por medio de material de lectura apropiado y terapia estimuladora en la cual se hable con la madre y el padre y se les explique que la relactación sí es posible, pero que se necesita de mucha paciencia y dedicación, y que siguiendo las instrucciones con disciplina, si se establece la lactancia con una producción de leche que satisfaga completamente al bebé.

Desde el punto de vista fisiológico, se sugiere que la mujer deberá iniciar en forma sistemática, con expresión manual de ambas mamas, así como la estimulación de los pezones durante por lo menos dos meses antes de la llegada del bebé, si es que el tiempo lo permite. Pueden ser utilizadas bombas de extracción, ya sea manuales o eléctricas, pero se sugiere que sea llevada a cabo la expresión manual de preferencia. El horario para llevar a cabo esta actividad debe ser escogido por la madre, pero ser llevado en forma disciplinada para obtener mejores resultados. De esta manera, se espera que la secreción láctea se inicie entre una a seis semanas despues; cuando no ha habido tiempo suficiente para la preparación y se inicia con la succión del bebe, la secreción láctea aparece una o dos semanas después.

Debido a que la cantidad de secreción no será suficiente para nutrir a un bebé en los primeros meses de la vida, será necesario complementar la alimentación; se recomienda evitar el uso de biberones que podrian confundir al bebé con el pezón y dejar de succionar de éste, por lo que se ha optado por utilizar taza entrenadora o gotero, aunque lo más práctico que al mismo tiempo ayuda a la estimulación del pezón es la utilización de un reservorio de fórmula que tiene un tubo de drenaje; este reservorio se cuelga invertido al cuello de la madre y el tubo de drenaje llega hasta el pezón, proporcionando alimento cuando el bebé succiona, al mismo tiempo que estimula el pezón de su madre adoptiva.

Se ha descrito en estos casos el uso complementario de medicamentos que en forma colateral elevan la producción de prolactina, inhibiendo los factores inhibidores de prolactina como, lo es la Clorpromazina a razón de 25 a 100 mg. tres veces al día, durante 10 días, con lo que se refuerza el tratamiento de la estimulación local.

En los casos de Relactación, es mucho más fácil el establecimiento de una lactancia exitosa, ya que se cuenta no sólo con la "disposición física" por llamarlo así, al referirnos al hecho de que esas mamas ya han producido leche con anterioridad, sino también a la predisposición psicológica, pues si esa mujer logró con éxito amamantar a uno o más hijos, en esta ocasión estará dispuesta a someterse al tratamiento.

Lo más importante es la estimulación, que puede iniciarse con anticipación o establecerse con la succión del bebé, conjuntamente con el complemento con un reservorio (Lact-Aid); la producción se inicia en aproximadamente tres días y alcanza volúmenes satisfactorios al cabo de una semana.

En estos casos se puede reforzar con la utilización de drogas, como la Metoclopramida, a razón de 10 mg. tres veces al día, por 10 días.

Función Reproductora Durante la Lactancia

por Dr. Armando Montaño Uzcanga

Se conoce, desde hace mucho tiempo, que la lactancia por sí sola es un importante factor que limita la fertilidad en aquellas mujeres que amamantan a sus hijos por tiempo prolongado.

En los meses que siguen al parto, la secreción de gonadotropinas es acíclica,con una inversión en la proporción de la hormona estimulante del folículo (FSH) en relación con la hormona luteinizante (LH); por otra parte, el ovario, por mecanismos no totalmente dilucidados, es menos sensible al estímulo gonadotrópico y una respuesta inadecuada del ovario hace que se produzca anovulación y amenorrea durante la lactancia.

Aunque existen diferencias individuales, así como entre los diversos núcleos de población y entre las zonas rurales o urbanas, en las mujeres que lactan plenamente la amenorrea postparto se prolonga por espacio de ocho a doce meses; por el contrario, las que no lactan o lo hacen por un corto tiempo, la función menstrual y la ovulación se reanuda dentro de los dos a cuatro meses que siguen al término de la gestación.

En esta forma, los espacios intergenésicos o intergestacionales son cinco a diez meses más prolongados en las mujeres que amamantan a sus recién nacidos.

Métodos Anticonceptivos y Lactancia. La eficacia anticonceptiva de la lactancia es controvertida y depende básicamente de que ésta sea total, con tetadas frecuentes (10 a 12 en 24 horas), que persistan las tetadas nocturnas, que la ablactación sea tardía y que el bebé no succione en chupón.

Se puede explicar el efecto anticonceptivo de la lactancia por el estímulo nervioso del pezón que al llegar al SNC, activan la secreción de beta-endorfinas y suprimen la de gonadotropina hipotalámica, por lo que la secreción de hormona luteinizante es menor y no se produce la ovulación.

Sin embargo, su eficacia como anticonceptivo es significativamente menor que los métodos actuales que se utilizan con este propósito. Una de las razones por las cuales una mujer que está amamantando deja de lactar es un nuevo embarazo; de ahí que en la mayoría de los casos resulte necesario proporcionarle una protección anticonceptiva adicional, la que deberá iniciarse de tres a seis meses después del parto, si la mujer aún se encuentra en amenorrea, o bien, inmediatamente después de que se reanude la función menstrual.

En estas condiciones, la anticoncepción puede desempeñar un papel importante en la prolongación de la lactancia, con la consecuente protección al recién nacido. Debe tenerse presente, sin embargo, que los métodos anticonceptivos que se utilicen con este objeto, deben seleccionarse adecuadamente, tanto por su eficacia en la prevención del embarazo, como por su efecto sobre la lactancia.

Anticonceptivos Hormonales. Los anticonceptivos que contienen en su fórmula una combinación estrógeno-progestacional pueden afectar adversamente la lactancia. Este efecto se atribuye al componente estrogénico y está en relación directa con la dosis del compuesto. Estos fármacos producen una disminución en la cantidad y calidad de la leche, así como un acortamiento del periodo de lactancia.

Los anticonceptivos a base de progestágenos, ya sea para uso oral intramuscular o subcutáneo, no parecen afectar la lactancia: sin embargo, debe tenerse presente que los compuestos de la serie 19-Nor, al metabolizarse a estrógenos en el organismo, pueden también disminuir la cantidad de leche y acortar el periodo de lactancia.

Anticonceptivos no Hormonales. El dispositivo intrauterino (DIU) es el método no esteroide más eficaz para efectuar la anticoncepción reversible durante la lactancia, ya que carece de efectos sobre la misma. Puede colocarse, si no existen contraindicaciones para ello, poco tiempo después del parto.

Los preservativos no afectan la lactancia, pero son menos eficaces que los dispositivos intrauterinos o los compuestos hormonales en la prevención del embarazo. Pueden ser particularmente ventajosos durante la amenorrea de la lactancia cuando no hay necesidad de una protección absoluta.

Las jaleas, los óvulos o las espumas espermaticidas tampoco alteran la lactancia. Poseen una eficacia similar a los preservativos, por lo que su empleo resulta de utilidad, ya sea en forma independiente, o bien, combinados con los preservativos en el periodo de amenorrea postparto.

El ritmo o abstinencia periódica no es recomendable para las mujeres que están amamantando. La ausencia o irregularidad de los periodos menstruales limitan considerablemente su eficacia.

Por lo anterior, se puede concluir que la anticoncepción y la lactancia no son solamente compatibles, sino que en cierta forma se completan entre sí. El amamantamiento no es un motivo por el cual se debe evitar la anticoncepción, al contrario, es una razón para utilizarla, a fin de que la madre recupere sus reservas nutritivas, prolongue el tiempo de lactancia y aumente su intervalo intergestacional.

Controversias Actuales sobre Alimentación al Seno Materno

por Dr. Alfredo Morán Martínez

— **Amamantamiento y Trabajo.** Una de las causas más frecuentes de destete temprano es el trabajo de la madre. Sin embargo, muchas de ellas no quieren privar a sus hijos de los beneficios de la lactancia natural, y buscan la manera de amamantar y trabajar. Por lo que es de suma importancia que el médico pueda proporcionar la instrucción necesaria a la madre y que en todos los lugares de trabajo se den las mayores facilidades posibles.

Las recomendaciones dependen de la edad del niño y de sus patrones de amamantamiento, pero en términos generales es recomendable iniciar el entrenamiento 1 mes antes de que la madre vuelva al trabajo. Uno de los aspectos básicos es la extracción de la leche, que puede ser manual o mecánica, siendo preferible la primera.

Masajes Previos para Estimular el Flujo de Leche:

1.- Colocar todos los dedos de la mano juntos en la parte superior del pecho presionando hacia la pared torácica en movimientos circulares. Repetir el movimiento alrededor de todo el pecho.

2.- Masajear el pecho colocando la mano en la parte superior de éste, llevándola hacia el pezón. Repetir la acción alrededor de todo el pecho.

3.- Inclinarse hacia el frente y sacudir los pechos con ambas manos, a fin de que la fuerza de gravedad facilite el reflejo de expulsión de la leche.

Extracción Manual de Leche:

1.- Colocar el dedo pulgar por encima de la areola y los dedos índice y medio por debajo de la misma.

2.- Presionar hacia las costillas sin separar los dedos.

3.- Impulsar los dedos hacia el frente presionando ligeramente el pecho a modo de vaciar los depósitos de leche situados por detrás del pezón. El movimiento se repite variando la posición de la mano, a fin de vaciar todos los depósitos de leche.

En relación al bebé, desde un mes antes de que la madre vaya al trabajo se debe empezar a ofrecer su propia leche previamente extraída en un biberón, para ir acostumbrando al niño. De preferencia que no lo ofrezca la madre, sino el papá o persona que va a cuidar al bebé.

Conservación de la Leche Extraída:

— La leche obtenida se puede conservar 48 hrs. en refrigeración y de 1 a 3 meses en el congelador, dependiendo del congelador.

— No se debe calentar al fuego directo, debe entibiarse en agua corriente.

— Si está congelada, ponerla directamente del congelador al chorro de agua fría, cuidando que no entre agua al biberón. Entibiar en agua caliente después de semi-descongelada.

Además de los beneficios ya conocidos de la lactancia natural, el favorecer su realización aunque la madre trabaje, evitará sentimientos de culpa, compensa para madre e hijo la separación, proporciona momentos más relajantes para la madre que trabaja y permite al niño identificar a su madre sobre cualquier otra persona encargada de su cuidado.

— **Operación Cesárea.** La cesárea no afecta ni el reflejo de bajada de la leche, ni el suministro de la misma.

Es recomendable que no se administren anestésicos generales y que se utilice el bloqueo epidural que permite a la madre estar consciente en el nacimiento de su hijo e iniciar la lactancia lo antes posible. De los medicamentos recomendados es la bupivacaína ya que no disminuye el tono ni la fuerza muscular del recién nacido, como se ha reportado con lidocaína y mepivacaína.

La madre necesita ayuda para proteger su incisión y amamantar. Algunas mujeres amamantan sentadas, con un cojín protegiendo la incisión del peso del niño, y otras prefieren hacerlo recostadas de uno y otro lado, también apoyadas por cojines. En relación a los medicamentos que frecuentemente se utilizan después de una operación cesárea como analgésicos y antibióticos, se deben elegir los que proporcionan seguridad al recién nacido.

— **Hepatitis.** La mayor controversia entre lactancia materna y hepatitis ha surgido en relación a la causa por el virus de la hepatitis B, que comúnmente produce una afección más severa y mayor número de complicaciones. Desde 1975 en que Beasley y Col. realizaron sus primeras observaciones en Taiwan, se demostró que la alimentación al seno no aumenta la incidencia de infección en niños nacidos de madres con el virus. Ya que de 92 niños que recibieron seno se infectaron el 53%, y de 55 que no lo recibían el 60%. En estudios más recientes (1985) como el realizado por De Martino en Florencia, también se demostró claramente que la lactancia natural no incrementa el riesgo de desarrollar hepatitis B en niños nacidos de madres infectadas, si se aplica en forma inmediata la vacuna contra la hepatitis B y gammaglobulina hiperinmune o standar. En base a su estudio de 85 niños (22 alimentados al seno materno) y que en ninguno se detectó algún dato de infección.

En el caso de la hepatitis D se recomiendan las mismas medidas preventivas que para la hepatitis B, ya que no se transmite en ausencia del virus de la hepatitis B.
Para la hepatitis A el reporte emitido en 1986 por el comité sobre enfermedades infecciosas de la Academia Americana de Pediatría nos indica no suspender la lactancia materna y únicamente valorar la aplicación de gammaglobulina en el bebé.
En conclusión, los beneficios potenciales de la lactancia materna, especialmente en los países en desarrollo, superan por mucho el riesgo de transmisión de la hepatitis, siguiendo las medidas preventivas mencionadas.

— **Fibrosis Quistica.** En la actualidad los pacientes con fibrosis quistica tienen mayor sobrevivencia y varias mujeres se han embarazado y han tenido hijos normales. La leche secretada se ha encontrado con niveles de sodio y cloro dentro de lo normal por lo que se considera que las madres con fibrosis quistica pueden lactar a sus hijos.

— **Repercusiones Psicológicas.** En ocasiones existe la creencia popular que el niño amamantado por un periodo largo, presenta problemas emocionales y de desarrollo, como producto de la "sobreprotección y dependencia" que se genera. Sin embargo, en base a los estudios realizados se concluye que los niños alimentados al seno materno que se destetan por si mismos, tienen un desarrollo psicomotor más rápido, son menos tensos y ansiosos y tienen una adecuada confianza básica.

— **Nivel Peligroso de Aluminio en las Fórmulas Infantiles.** A consecuencia de la muerte de 2 niños en los E.U.A. que recibian fórmulas artificiales y que presentaron con centraciones elevadas de aluminio en el cerebro, se procedió a calcular la ingestión de aluminio por los lactantes encontrando que los alimentados al seno materno reciben 2-3 mcg/día, los de fórmulas a base de soya 1260 mcg/día, a base de leche de vaca 82 mcg/día. El aluminio tiene unefecto dramático, deteriorando el IQ de los niños e incluso se ha asociado con demencia de diálisis, osteodistrofia y la Enfermedad de Alzheimer, otros efectos indeseables se han identificado sobre los eritrocitos, glándulas paratiroides y cromosomas.

Otras Lecturas Recomendables:

A Practical Guide to Breastfeeding
Riordan, Jan

Alimentación al Pecho
UNICEF

Basics of Breastfeeding: A Guide for Nurses
Riordan, Jan; Countryman, Betty Ann

Boletines y Publicaciones Sobre el Tema
La-leche League International

Breastfeeding and Drugs in Human Milk
White, Gregory J. & Mary

Breastfeeding Matters
Michin, Maureen

Breastfeeding: A Guide for Nurturing Your Baby
UNICEF

Breastfeeding: A Guide for the Medical Profession
Lawrence, Ruth

Como Ayudarles a las Mamás a Amamantar
King, F. Savage

Counseling the Nursing Mother
Lauwers, Judith; Woessner, Candace

El Arte Femenino de Amamantar
Liga Internacional de la Leche

Food for Thought
Michin, Maureen

Guía Práctica para una Buena Lactancia
Helsing, Elisabet; King, Felicity Savage

Guía para Promover La Lactancia Materna en Centroamérica
OMS

Human Milk in the Modern World
Jelliffe, Derrick B. & E.F. Patrice

APPENDIX 3

ROOMING-IN OBSERVATION INSTRUMENT

1.1 Date ..... 11. __ __
1.2 Shift..... 12. __
1.3 Room ..... 13. __
1.4 Hours: from.....to ..... 14. __
1.5 Observer's name..... 15. __

2.1 How many mothers are in the room at the beginning?..... 21. __
2.2 How many mothers at the end?..... 22. __

3.1 How many mothers are with their newborns at the beginning? ..... 31. __
3.2 How many at the end?..... 32. __

4.0 Report the following information (from the charts or by asking nurses and/or mothers):
4.1 Age
4.2 Parity
4.3 Delivery hour
4.4 Delivery type
4.5 Hour of arrival to rooming-in
4.6 Hour that the newborn was brought in
4.7 Liquids given to the newborn in the nursery
4.8 Hour of the first breast feeding

MOTHER 1 -

410. __ __
411. __ __
412. __
413. __
414. __
415. __
416. __ __
417. __
418. __ __

MOTHER 2 -

420. __ __
421. __ __
422. __
423. __
424. __
425. __
426. __ __
427. __
428. __ __

MOTHER 3 -

430. __ __
431. __ __
432. __
433. __
434. __
435. __
436. __ __
437. __
438. __ __

MOTHER 4 -

440. __ __
441. __ __
442. __
443. __
444. __
445. __
446. __ __
447. __
448. __ __

MOTHER 5 -

450. __ __
451. __ __
452. __
453. __
454. __
455. __
456. __ __
457. __
458. __ __

MOTHER 6 -

460. __ __
461. __ __
462. __
463. __
464. __
465. __
466. __ __
467. __
468. __ __

MOTHER 7 -

470. __ __
471. __ __
472. __
473. __
474. __
475. __
476. __ __
477. __ __
478. __ __

MOTHER 8 -

480. __ __
481. __ __
482. __
483. __
484. __
485. __
486. __ __
487. __
488. __ __

5. Describe the following interactions:
5.1 No. of times that the baby was picked up
5.2 What seemed to be the reason(s)?
5.3 How many times was the newborn nursed?
5.4 What was the nursing posture?
5.5 Did mother and infant seem to be comfortable with the nursing?
5.6 What persons offered information or helped the mother to breast feed?
5.7 What did they do?
5.8 Did the newborn receive a bottle of formula?
5.9 Who asked for or made the decision to bottle feed?

MOTHER 1 -

511. __
512A. __
512B. __
512C. __
512D. __
513. __
514A. __
514B. __
514C. __
515. __
516A. __
516B. __
517A. __
517B. __
518. __
519. __

MOTHER 2 -

521. ___
522A. ___
522B. ___
522C. ___
522D. ___
523. ___
524A. ___
524B. ___
524C. ___
525. ___
526A. ___
526B. ___
527A. ___
527B. ___
528. ___
529. ___

MOTHER 3 -

531. ___
532A. ___
532B. ___
532C. ___
532D. ___
533. ___
534A. ___
534B. ___
535. ___
536A. ___
536B. ___
537A. ___
537B. ___
538. ___
539. ___

MOTHER 4 -

541. ___
542A. ___
542B. ___
542C. ___
542D. ___
543. ___
544A. ___
544B. ___
545. ___
546A. ___
546B. ___
547A. ___
547B. ___
548. ___
549. ___

MOTHER 5 -

551. ___
552A. ___
552B. ___
552C. ___
552D. ___
553. ___
554A. ___
554B. ___
555. ___
556A. ___
556B. ___
557A. ___
557B. ___
558. ___
559. ___

MOTHER 6 -

561. ___
562A. ___
562B. ___
562C. ___
562D. ___
563. ___
564A. ___
564B. ___
565. ___
566A. ___
566B. ___
567A. ___
567B. ___
568. ___
569. ___

MOTHER 7 -

571. ___
572A. ___
572B. ___
572C. ___
572D. ___
573. ___
574A. ___
574B. ___
575. ___
576A. ___
576B. ___
577A. ___
577B. ___
578. ___
579. ___

104

MOTHER 8 -

581. ___
582A. ___
582B. ___
582C. ___
582D. ___
583. ___
584A. ___
584B. ___
584C. ___
584D. ___
585. ___
586A. ___
586B. ___
587A. ___
587B. ___
588. ___
589. ___

6. Did anyone address the total group concerning infant feeding? Yes.... No.....
If yes, add the following information:

6.1 Who was it?.....

6.2 What was the gist of the message?.....

6.3 Was the information about breast feeding correct? Yes.....No .....

6.4 How long was the talk in minutes?.....

6.5 What educational media were used?.....
.....

6.6 What written materials and/or products were distributed? .....
.....

6.7 What was the mothers's reaction to the talk?.....
.....

7. Use the rest of this page to describe any other happenings that seemed to facilitate or obstaculize brest feeding and/or mother-infant relations.

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APPENDIX 4.1

PERSONNEL SURVEY INSTRUMENT ON KNOWLEDGE, ATTITUDES & PRACTICES IN REGARD TO BREAST FEEDING & LACTATION MANAGEMENT (KAP 1)*

The first part of the following questionnaire is made up of fifty statements concerning breast feeding and lactation management. You will find that you are in agreement with only a part of the statements and in disagreement with the rest. After each statement, mark the option that is closest to your personal opinion. Respond to the statements just as quickly as you can. Thank you for your cooperation.

THIS QUESTIONNAIRE SHOULD REMAIN ANONYMOUS.

.....

The options for each statement are the following:

(TA) Total agreement
(SA) Some agreement
(SD) Some disagreement
(TD) Total disagreement

.....

1. Breast feeding suspension is indicated for an infant of five months with diarrhea: (TA) (SA) (SD) (TD)

2. Maternal nursing is the easiest way to feed twins: (TA (SA) (SD) (TD)

3. Breast fed newborns need extra water or tea: (TA) (SA) (SD) (TD)

4. Newborns with cleft palate can be breast fed, if their mothers receive special instruction: (TA) (SA) (SD) (TD)

5. Newborns should be nursed on demand (without regard to any set schedule): (TA) (SA) (SD) (TD)

.....

* This questionnaire was adapted from an instrument developed by "La Leche League of Mexico".

6. Breast milk is especially important for premature infants:
(TA) (SA) (SD) (TD)

7. Breast feeding suspension is indicated for mothers with mastitis (breast abscess): (TA) (SA) (SD) (TD)

8. If an infant is fussy shortly after having been nursed, it is likely that the breast milk wasn't sufficient:
(TA) (SA) (SD) (TD)

9. It is beneficial for the infant to be breast fed for one year or more: (TA) (SA) (SD) (TD)

10. It is beneficial for the mother that she continue to breast feed her infant for one year or more:
(TA) (SA) (SD) (TD)

11. C-section delivery poses a special problem for the breast feeding mother: (TA) (SA) (SD) (TD)

12. It is possible to combine work outside the home and breast feeding: (TA) (SA) (SD) (TD)

13. A woman with inverted nipples can breast feed:
(TA) (SA) (SD) (TD)

14. Health professionals play an important role in the breast feeding success of their patients:
(TA) (SA) (SD) (TA)

15. When a breast fed infant does not gain weight according to statistical grouth charts, it is necessary to supplement the breast milk with formula: (TA) (SA) (SD) (TD)

16. In economically disavantaged populations, infant mortality is positively correlated with bottle feeding:
(TA) (SA) (SD) (TD)

17. The volume of milk which a mother can produce depends on the size of her breasts: (TA) (SA) (SD) (TD)

18. Mothers with second degree malnutrition produce adequate breast milk during the first months: (TA) (SA) (SD) (TD)

19. Very nervous mothers should not breast feed their infants:
(TA) (SA) (SD) (TD)

20. Breast feeding suspension is indicated when the mother has some contageous disease such as bronchitis:
(TA) (SA) (SD) (TD)

21. Even with sore nipples, it is possible to continue breast feeding, if certain precautions are taken:
(TA) (SA) (SD) (TD)

22. Newborns should be nursed at their mother's breast within minutes after being delivered: (TA) (SA) (SD) (TD)

23. More lactation management topics should be included in the curricula of all training programs for health professionals:
(TA) (SA) (SD) (TD)

24. Breast feeding suspension is indicated when the newborn presents ichtericia: (TA) (SA) (SD) (TD)

25. Breast milk is superior to any other kind of food during the first montns of life: (TA) (SA) (SD) (TD)

26. In all socio-economic groups, breast feeding is positively associated with infant health: (TA) (SA) (SD) (TD)

27. The fact that a newborn stays in the nursery during the first day represents an obstacle to breast feeding:
(TA) (SA) (SD) (TD)

28. Breast feeding suspension is indicated for mothers with hepatitis: (TA) (SA) (SD) (TD)

29. The majority of mothers who wish to breast feed can do so successfully: (TA) (SA) (SD) (TD)

30. Breast feeding mothers can take oral contraceptives without affecting their milk production: (TA) (SA) (SD) (TD)

31. If formula feeding is managed correctly, the nutritional result can be just as good as with breast feeding:
(TA) (SA) (SD) (TD)

32. The child who is breast fed for two or more years is likely to have psychological problems: (TA) (SA) (SD) (TD)

33. Mothers who breast feed are more affectionate and relaxed with their infants: (TA) (SA) (SD) (TD)

34. Once a mother stops lactating, her breast become pendulous and flabby: (TA) (SA) (SD) (TD)

35. Breast feeding on demand represents a sort of slavery for the mother: (TA) (SA) (SD) (TD)

36. If a mother hasn't planned to breast feed, it is difficult to persuade her to do so: (TA) (SA) (SD) (TD)

37. If a young infant cries before an hour and a half have passed since last being nursed, he should be put to the breast again: (TA) (SA) (SD) (TD)

38. If a mother has information and help, she will be able to breast feed an infant with special problems, such as the hospitalized baby or with cerebral palsey:
(TA) (SA) (SD) (TD)

39. Breast feeding should be recommended even if the mother plans to return to work in six weeks: (TA) (SA) (SD) (TD)

40. It is necessary to change certain hospital procedures in order to help mothers get a good start in beast feeding:
(TA) (SA) (SD) (TD)

41. Breast milk production is increased by more frequent nursing: (TA) (SA) (SD) (TD)

42. Breast feeding helps a mother and her newborn to rapidly establish a positive interaction: (TA) (SA) (SD) (TD)

43. Great fright or suffering can cause the breast milk to suddenly dry up: (TA) (SA) (SD) (TD)

44. After the eighth month, breast milk loses it nutritional and immunological value: (TA) (SA) (SD) (TD)

45. Health professionals are adequately prepared to solve the lactation management problems of their patients:
(TA) (SA) (SD) (TD)

46. New mothers should be given free formula when they leave the hospital so that they will know what to do if they fail at breast feeding: (TA) (SA) (SD) (TD)

47. It is possible to reinitiate breast feeding, even if a mother has stopped lactating for some time:
(TA) (SA) (SD) (TD)

48. At six weeks, other foods should be added to the diet of the breast fed infant: (TA) (SA) (SD) (TD)

49. Breast milk alone is sufficient food for four or five months for term delivered infants with healthy mothers:
(TA) (SA) (SD) (TD)

50. Breast feeding creates greater infant security, and therefore is a psotive factor for infant independence:
(TA) (SA) (SD) (TD)

The second part of this questionnaire records some of your personal experiences and opinions with regard to breast feeding and lactation management.
THIS QUESTIONNAIRE SHOULD REMAIN ANONYMOUS.

.....

Hospital .....

Date.....

1. Sex: male..... female.....

2. Age (in years):.....

3. Marital situation: single..... married.....
   common law..... separated, divorced or widowed.....

4. Number of children:.....

5. If you have children, were they breast fed? yes.....no.....

6. Your profession: physician..... nurse.....
   social worker..... resident..... other.....

7. Was lactation management a topic which was covered in your professional training program? yes.....no.....

8. If you answered "yes" to question 57, do you believe that lactation management was given enough emphasis in your training program? yes..... no.....

9. Do you feel that you now know enough about breast feeding and lactation management? yes..... no.....

10. Do you believe that this hospital is actively promoting breast feeding in the patient population? yes.... no.....

11. Specify the proportion of your workday which is dedicated to direct patient care:..... %

12. Do you personally counsel mothers about breast feeding advantages and management? yes..... no .....
    sometimes.....(in what cases?.....)

13. Do you think that the patient population of this hospital fully accepts breast feeding? yes..... no.....

14. Would you like to take part in a committee dedicated to promoting breast feeding in the patient population of this hospital? yes..... no.....why?.....

15. Would you like to attend an intensive in-service course on breast feeding and lactation mangement?
    yes..... no..... why?.....

APPENDIX 4.2

PERSONNEL SURVEY INSTRUMENT ON KNOWLEDGE, ATTITUDES & PRACTICES IN REGARD TO BREAST FEEDING & LACTATION MANAGEMENT (KAP 2)*

The first part of the following questionnaire is made up of fifty statements concerning breast feeding and lactation management. You will find that you are in agreement with only a part of the statements and in disagreement with the rest. After each statement, mark the option that is closest to your personal opinion. Respond to the statements just as quickly as you can. Thank you for your cooperation.

THIS QUESTIONNAIRE SHOULD REMAIN ANONYMOUS.

.....

The options for each statement are the following:

(TA) Total agreement
(SA) Some agreement
(SD) Some disagreement
(TD) Total disagreement

.....

1. Breast feeding suspension is indicated for an infant of five months with diarrhea: (TA) (SA) (SD) (TD)

2. Maternal nursing is the easiest way to feed twins: (TA (SA) (SD) (TD)

3. Breast fed newborns need extra water or tea: (TA) (SA) (SD) (TD)

4. Newborns with cleft palate can be breast fed, if their mothers receive special instruction: (TA) (SA) (SD) (TD)

5. If the breast milk hasn't come in by the fifth day, the mother probably will have problems with breast feeding.

.....

* This questionnaire was adapted from an instrument developed by "La Leche League of Mexico".

6. Breast milk is especially important for premature infants:
(TA) (SA) (SD) (TD)

7. Breast feeding suspension is indicated for mothers with mastitis (breast abscess): (TA) (SA) (SD) (TD)

8. If an infant is fussy shortly after having been nursed, it is likely that the breast milk wasn't sufficient:
(TA) (SA) (SD) (TD)

9. It is beneficial for the infant to be breast fed for one year or more: (TA) (SA) (SD) (TD)

10. It is beneficial for the mother that she continue to breast feed her infant for one year or more:
(TA) (SA) (SD) (TD)

11. C-section delivery poses a special problem for the breast feeding mother: (TA) (SA) (SD) (TD)

12. It is possible to combine work outside the home and breast feeding: (TA) (SA) (SD) (TD)

13. A woman with inverted nipples can breast feed:
(TA) (SA) (SD) (TD)

14. The fact that calostro doesn't flow from the breasts during the last three months of pregnancy is not considered as a problem for milk production once nursing begins.

15. When a breast fed infant does not gain weight according to statistical growth charts, it is necessary to supplement the breast milk with formula: (TA) (SA) (SD) (TD)

16. In economically disavantaged populations, infant mortality is positively correlated with bottle feeding:
(TA) (SA) (SD) (TD)

17. The fact that the baby demands more nursing after the second month is not considered to be a lactation problem.

18. Mothers with second degree malnutrition produce adequate breast milk during the first months: (TA) (SA) (SD) (TD)

19. Very nervous mothers should not breast feed their infants:
(TA) (SA) (SD) (TD)

20. Breast feeding suspension is indicated when the mother has some contageous disease such as bronchitis:
(TA) (SA) (SD) (TD)

11. Even with sore nipples, it is possible to continue breast feeding, if certain precautions are taken:
(TA) (SA) (SD) (TD)

12. Newborns should be nursed at their mother's breast within minutes after being delivered: (TA) (SA) (SD) (TD)

13. If the breast milk appears to be somewhat bluish and watery seven days after the birth, it is likely that the infant will require formula supplements.

14. Breast feeding suspension is indicated when the newborn presents ichtericia: (TA) (SA) (SD) (TD)

15. Breast milk decomposes very rapidly and can't be used after 24 hours of refrigeration.

16. If the breast feeding mother notices that her breast return to their normal size, it is an indication that her milk is drying up.

17. The fact that a newborn stays in the nursery during the first day represents an obstacle to breast feeding:
(TA) (SA) (SD) (TD)

18. Breast feeding suspension is indicated for mothers with hepatitis: (TA) (SA) (SD) (TD)

19. If the breast milk hasn't come in by the fourth day, the baby will need a formula supplement.

20. Breast feeding mothers can take oral contraceptives without affecting their milk production: (TA) (SA) (SD) (TD)

21. If formula feeding is managed correctly, the nutritional result can be just as good as with breast feeding:
(TA) (SA) (SD) (TD)

22. The child who is breast fed for two or more years is likely to have psychological problems: (TA) (SA) (SD) (TD)

23. If a lactating mother has a breast abcess, antibiotics should be administered and nursing suspended only the side that is affected.

24. A breast fed baby is sick when he has as many as six bowel movements in one day.

25. Breast feeding on demand represents a sort of slavery for the mother: (TA) (SA) (SD) (TD)

26. If mother hasn't planned to breast feed, it is difficult to persuade her to do so: (TA) (SA) (SD) (TD)

37. If a young infant cries before an hour and a half have passed since last being nursed, he should be put to the breast again: (TA) (SA) (SD) (TD)

38. A breast fed baby tends to cry more than a formula fed baby.

39. The infant who receives both breast milk and formula supplements grows faster than the infant who recieves only his mother's milk.

40. The best way to increase the production of breast milk is to get the mother to drink more milk and atoles.

41. Cracked nipples heal faster with the use of ice, lanolin, and sun baths.

42. The breast fed baby tends to sleep more than a formula fed baby.

43. Great fright or suffering can cause the breast milk to suddenly dry up: (TA) (SA) (SD) (TD)

44. After the eighth month, breast milk loses it nutritional and immunological value: (TA) (SA) (SD) (TD)

45. Health professionals are adequately prepared to solve the lactation management problems of their patients: (TA) (SA) (SD) (TD)

46. New mothers should be given free formula when they leave the hospital so that they will know what to do if they fail at breast feeding: (TA) (SA) (SD) (TD)

47. It is possible to reinitiate breast feeding, even if a mother has stopped lactating for some time: (TA) (SA) (SD) (TD)

48. At six weeks, other foods should be added to the diet of the breast fed infant: (TA) (SA) (SD) (TD)

49. Breast milk alone is sufficient food for four or five months for term delivered infants with healthy mothers: (TA) (SA) (SD) (TD)

50. The color and consistency of the excrement should never vary in the exclusively breast fed baby.

The second part of this questionnaire records some of your personal experiences and opinions with regard to breast feeding and lactation management.
THIS QUESTIONNAIRE SHOULD REMAIN ANONYMOUS.

.....
Hospital .....
Date.....

1. Sex: male..... female.....

2. Age (in years):.....

3. Marital situation: single..... married.....
common law..... separated, divorced or widowed.....

4. Number of children:.....

5. If you have children, were they breast fed? yes.....no.....

6. Your profession: physician..... nurse.....
social worker..... resident..... other.....

7. Was lactation management a topic which was covered in your professional training program? yes.....no.....

8. If you answered "yes" to question 57, do you believe that lactation management was given enough emphasis in your training program? yes..... no.....

9. Do you feel that you now know enough about breast feeding and lactation management? yes..... no.....

10. Do you believe that this hospital is actively promoting breast feeding in the patient population? yes.... no.....

11. Specify the proportion of your workday which is dedicated to direct patient care:..... %

12. Do you personally counsel mothers about breast feeding advantages and management? yes..... no .....
sometimes.....(in what cases?.....)

13. Do you think that the patient population of this hospital fully accepts breast feeding? yes..... no.....

14. Would you like to take part in a committee dedicated to promoting breast feeding in the patient population of this hospital? yes..... no.....why?.....

15. Would you like to attend an intensive in-service course on breast feeding and lactation mangement?
yes..... no..... why?.....

APPENDIX 5
QUESTIONNAIRE FOR SURVEY OF MOTHERS IN
THE POST-PARTUM HOSPITAL STAY

PART I - MATERNAL PERSONAL & SOCIOECONOMIC DATA

Name of the person who fills out the form:

.....

Interview # 1. Date:.....

1) I.D. #..... 1. __ __ __

Name:.....(2) Age:..... 2. __ __ __

Address:.....

Neighborhood:.....(3) ZIP..... 3. __ __ __

4) Pregnancies (no.):..... 4. __

5) Term deliveries (no.):..... 5. __

6) Live born children (no.):..... 6. __

7) C-sections (no.):..... 7. __

10) Persons who attended the births:..... 10. __
1. All physician attended
2. One or more births with midwife
3. One or more births with some other person

11) Ages of oldest child..... & youngest child..... 11. __ __

12) No. of living children. (If one, or more
have died, state age at death & cause..... 12. __ __
..... MEMO

13) Initial feeding methods with first..... 13. __ __
& with last.....
1. breast
2. bottle
3. mixed

14) Husband in the home..... 14. __
1. yes
2. no
If not, why not?.....

15) Mother's occupation..... 15. __
1. housewife
2. domestic worker
3. vendor
4. office worker/ employee
5. laborer
6. technical or professional
7. student
9. other

16) Plans to return to work:..... 16. __
1. 1st month
2. 2nd month
3. 3rd month
4. 4th month
7. not sure when
8. later in the first year
9. no plan to work

17) Mother's birthplace:..... 17. __
1. Mexico City
2. other city
3. rural area
4. other country

18) Educational level:..... 18. __
1. does not read or write
2. reads and writes
3. primary school
4. secondary school
5. high school
6. technical/vocational school
7. university

19) Family composition:..... 19. __
1. nuclear, husband present
2. extended, other female adult present
3. extended, no other female adult present
4. fragmented, husband absent

20) No. of family members in the home:..... 20. __

21) No. of rooms in the home:..... 21. __

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22) Family income:..... 22. __
1. minimum wage
2. less than minimum wage
3. more than minimum wage
4. did not answer

23) Husband's employment:..... 23. __
1. permanent
2. temporary or seasonal
3. unemployed
9. not living with husband

24) Husband's occupation:..... 24. __
1. laborer
2. vendor
3. office worker/employee
4. factory or blue collar worker
5. farm worker
6. chauffeur
7. unemployed
8. other
9. not living with wife

25) Cooking means:..... 25. __
1. gas stove
2. oil stove
3. brasier
4. other
5. no cooking means

26) Water source:..... 26. __
1. public tap
2. domestic tap
3. water truck
4. well
5. other

27) Means of food conservation:..... 27. __
1. refridgeration
2. ice
3. open air

28) Disposal of human waste:..... 28. __
1. indoor toilet
2. latrine
3. open air

POST PARTUM QUESTIONNAIRE

PART II - MOTHER/INFANT MEDICAL DATA

29) Mother's height (cm):.....
& usual weight (kg):..... ..... 29. __ __ __

30) Dx of any illness before pregnancy:..... 30. __
..... MEMO

1. might impede breast feeding
2. would not impede breast feeding
9. no reported illness

31) Dx of any complication in pregnancy..... 31. __
(as in 30)..... MEMO

32) Infant's birth date:..... 32. __ __ __

33) Delivery complication:..... 33. __
1. C-section
2. forceps used
3. other problem
9. no reported problem

34) Dx of infant's problem at birth..... 34. __
(as in 30):..... MEMO

35) Infant's sex:..... 35. __ __
1. male
2. female

36) Infant's height (cm):..... 36. __ __
& weight (to nearest tenth of kg)..... __ __

37) Prenatal care:..... 37. __
1. Mexico City General Hospital
2. Social Security Institute
3. Government Health Center
4. other public service
5. private care
6. other
9. no prenatal care

38) Infant breast fed:..... 38. __
1. yes
2. no, mother's problem
3. no, infant's problem
4. no, still in nursery
5. other reason

39) First breast feeding_
(no. of hrs. after birth):..... 39. __ __

40) Mother received breast feeding
orientation during prenatal care:..... 40. __
1. yes
2. no

41) Mother received breast feeding
orientation during post partum care..... 41. __
(same as above):.....

42) If yes in (40) or (41), indicate types of
orientation received:..... 42. __ __ __
1. group talk or class
2. personal counseling
3. printed material
4. more than one group talk or class
9. no orientation received

43) Mother's opinion about any problem for 43. __
beginning or maintaining breast feeding:..... MEMO
1. mother's problem
2. infant's problem
3. work commitment
4. other problem .....
8. doesn't want to breast feed
9. no problem foreseen

44) Persons to be consulted should infant
feeding problems or doubts arise:..... 44. __ __
1. relative
2. friend
3. coworker
4. neughbor
5. employer
6. physician
6. other person
9. no person mentioned

45) Plans for contraceptive use:..... 45. __
1. hormonal pills
2. IUD
3. local methods
4. surgical method
5. doesn't know which
6. lactation amenorrhea
7. hormonal injections
9. doesn't plan to use contraception

POSTPARTUM QUESTIONNAIRE

PART III - INFANT FEEDING PLANS

---

1) Interview date (month & day):..... 1. _ _ _ _

2) Infant feeding plan..... 2. __
   1. breast feeding
   2. bottle feeding
   3. mixed feeding
   4. doesn't know

3) Feeding schedule:..... 3. __
   1. every two hours
   2. every three hours
   3. every four hours
   4. demand feeding
   5. doesn't know

4) Type of milk being (to be) given:..... 4. __
   1. fresh whole milk
   2. commercial infant formula
   3. powdered milk
   4. evaporated milk
   5. atoles
   6. other
   7. does not know
   9. only breast milk

5) No. of weeks of breast feeding
   (planned or actually carried out):..... 5. __ __
   98. doesn't know how long
   99. doesn't plan to breatfeed

(6) Reason for weaning from the breast:..... 6. __ __

1. work commitment
2. too many responsibilities
3. separation from child
4. weight loss or other change
5. better for baby
6. physician recommendation
7. father's suggestion
8. other person's suggestion
9. insufficient breast milk
10. right time for weaning
11. mother's illness
12. infant's illness
13. baby refused the breast
14. new pregnancy
15. taking birth control pills
16. method with other children
17. other reason.....
98. never began breast feeding
99. continues to breast feed

7) Plan for supplemental foods..... 7. __ __ __ (1st month)

__ __ __ (2nd month)

__ __ __ (3rd month)

__ __ __ (4th month)

1. tea
2. fruit juice
3. cereal
4. atoles
5. pureed fruits
6. pureed vegetables
7. other milk
8. pasta & broth
9. bread & crackers
10. tortillas
11. egg yolk
12. bean soup
13. pureed meat & chicken
14. unspecified Gerber products
15. other
99. none

8) Person who cares for the child (when the mother can't):..... 8. __

1. mother alone
2. infant's aunt
3. infant's grandmother
4. other relative
5. neighbor/friend
6. creche
7. other

9) Recent physician recommendation
about feeding method:..... 9. __
1. breast feeding
2. bottle feeding
3. mixed feeding
4. begin supplemental foods
9. no recommendation mentioned

10) Father's suggestion
(same as in 9):..... 10. __

11) Other person who has given infant
feeding advice:..... 11. __
1. mother
2. mother-in-law
3. sister
4. sister-in-law
5. other relative
6. neighbor/friend
7. nurse or health worker
8. other person
9. no one

12) Other person's infant feeding
advice (same as in 10):..... 12. __

APPENDIX 6

QUESTIONNAIRE FOR FOLLOW-UP SURVEYS
OF MOTHERS AND INFANTS

1) Date ..... 1. __ __ __

Name of person who fills out the questionnaire

.....

2) Health of the mother (her report)..... 2. __
healthy..... ill .....
Dx of mother's illness ..... MEMO

3) Mother's weight .....kgs ..... 3. __

4) Infant's date of birth .....month .....day 4. __ __

5) Infant's weight .....kgs ..... 5. __ __ __

6) Infant's height .....cms ..... 6. __ __

7) Dx of infant's illness ..... 7. __ __
(mother's report) ..... MEMO

8) Diarrhea episodes ..... 8. _ _ _ _
no ..... yes ..... During what months?
1st month .....
2nd month .....
3rd month .....
4th month .....

9) Was the milk suspended during the diarrhea? ..... 9. _ _ _ _
breast milk ..... other milk .....
In which months?
1st month .....
2nd month .....
3rd month .....
4th month .....
For how many days?

10) Has the mother or infant made a visit to the doctor? 10. __ __
mother ..... infant ..... both .....
Motive for the visit .....
Where was the visit made? .....

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11) What contraceptive method is the mother using? .... 11. __

1. pills
2. IUD
3. local methods
4. sterilization
5. injections
6. lactation amenorrhea
9. none

12) Month that menstruation resumed ..... 12. __

1. fst .....
2. 2nd .....
3. 3rd .....
4. 4th .....
5. not resumed .....

PART II - INFANT FEEDING METHODS

---

1) Interview date (month & day):..... 1. _ _ _ _

2) Infant feeding plan..... 2. __

1. breast feeding
2. bottle feeding
3. mixed feeding
4. doesn't know

3) Feeding schedule:..... 3. __

1. every two hours
2. every three hours
3. every four hours
4. demand feeding
5. doesn't know

4) Type of milk being (to be) given:..... 4. __

1. fresh whole milk
2. commercial infant formula
3. powdered milk
4. evaporated milk
5. atoles
6. other
7. does not know
9. only breast milk

5) No. of weeks of breast feeding (age at total weaning) 5. __ __
99. still breast feeding

(6) Reason for weaning from the breast:..... 6. __ __
1. work commitment
2. too many responsibilities
3. separation from child
4. weight loss or other change
5. better for baby
6. physician recommendation
7. father's suggestion
8. other person's suggestion
9. insufficient breast milk
10. right time for weaning
11. mother's illness
12. infant's illness
13. baby refused the breast
14. new pregnancy
15. taking birth control pills
16. method with other children
17. other reason.....
98. never began breast feeding
99. continues to breast feed

7) Supplemental foods introduced ..... 7. __ __
(1st month)
1. tea
2. fruit juice
3. cereal
4. atoles
5. pureed fruits
6. pureed vegetables
7. other milk
8. pasta & broth
9. bread & crackers
10. tortillas
11. egg yolk
12. bean soup
13. pureed meat & chicken
14. unspecified Gerber products
15. other
99. none

__ __ __
(2nd month)

__ __ __
(3rd month)

__ __ __
(4th month)

8) Person who cares for the child
(when the mother can't):..... 8. __
MEMO
1. mother alone
2. infant's aunt
3. infant's grandmother
4. other relative
5. neighbor/friend
6. creche
7. other

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9) Recent physician recommendation
about feeding method:..... 9. __
1. breast feeding
2. bottle feeding
3. mixed feeding
4. begin supplemental foods
9. no recommendation mentioned

10) Father's suggestion
(same as in 9):..... 10. __

11) Other person who has given infant
feeding advice:..... 11. __
1. mother
2. mother-in-law
3. sister
4. sister-in-law
5. other relative
6. neighbor/friend
7. nurse or health worker
8. other person
9. no one

12) Other person's infant feeding
advice (same as in 10):..... 12. __