The Incidence and Short-term Duration of Breastfeeding in a Hispanic Population in Oregon

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"The Lord has done great things for us
and we are filled with joy" (Psalm 126:3).

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CHAPTER I

INTRODUCTION

Hispanics presently make up the second largest minority group in the United States and their numbers are rapidly increasing. However, their exact numbers and rate of growth remain controversial (Exter, 1985). The term Hispanic refers to ethnicity rather than race and includes a heterogenous population of a variety of racial, cultural, and geographic backgrounds. Hispanics in the United States are most commonly of Mexican, Puerto Rican, or Cuban background. They may also be of Spanish or other geographic origin, including all Central and South American countries.

Although Hispanics are frequently involved with the health care system, insufficient research has been done into many aspects of their health (Markides & Coreil, 1986). Since the early 1970's, breastfeeding has increased in frequency among most groups of American women (Eckhardt & Hendershot, 1984; Hendershot, 1984; Hirschman & Hendershot, 1979; Martinez & Krieger, 1985), while varying incidences and duration have been reported among Hispanics (Rassin et al., 1984; Scrimshaw, Engle, Arnold & Haynes, 1987; Smith, Mhango, Warren, Rochat & Huffman, 1982).

Relatively few studies have been done examining the breastfeeding practices of Hispanic women. In addition, little is known about the incidence and short-term duration of breastfeeding among Hispanic women in Oregon. Research which examines the incidence and duration of breastfeeding

among Hispanics could assist health care providers in caring for these women and their infants. Nurses who work with Hispanic clients could better serve this population if more was known about their breastfeeding practices. Knowledge of the incidence and short-term duration of breastfeeding among Hispanics would provide information useful in planning education, intervention, and client support. In addition, health agencies would benefit from knowledge of the infant feeding practices of Hispanic women for the purposes of health care planning. This study will focus on the newborn breastfeeding practices of Hispanic women receiving care at a clinic in Oregon.

Review of Literature

The review of the literature will concentrate on the following areas relevant to this study. These include the benefits of breastfeeding, a discussion of the national trends in the incidence and duration of breastfeeding, as well as regional and state data. Some of the major factors which have been identified to have an effect upon breastfeeding will be briefly reviewed. Characteristics of the Hispanic population in the United States and factors specific to that population will also be presented.

Benefits of Breastfeeding to the Infant and Mother

The American Academy of Pediatrics (1978, 1981) has recommended breast milk as the primary source of nutrients for the first four to six months of life and encourages its continuation for the entire first year. Infant formulas are

considered the best alternative for meeting nutritional needs during the first year of life when mothers choose not to breastfeed, are "unsuccessful," or stop breastfeeding before one year of age (American Academy of Pediatrics, 1978). The composition of nutrients in breast milk is uniquely suited to the needs of human infants and also possesses a number of other advantages for both infant and mother (American Academy of Pediatrics, 1978; Anderson, 1985; Howie, 1984; Jelliffe & Jelliffe, 1977; Lawrence, 1985). Although infant formula manufacturers have attempted to imitate the essential nutrients in breast milk, it has been found that the components in breast milk, such as proteins, fats, carbohydrates, vitamins and minerals, are more readily digested and absorbed than those contained in formulas (American Academy of Pediatrics, 1978, 1981; Anderson, 1985; Jelliffe & Jelliffe, 1977; Lawrence, 1985).

Additional benefits of breastfeeding to the infant include decreased morbidity in the first year of life (American Academy of Pediatrics, 1978; Howie, 1984; Koopman, Turkish, & Monto, 1985). Studies in both the United States and in developing countries have found a lower incidence of respiratory and gastrointestinal infections among breastfed infants than among those who are bottle fed, although the difference is particularly pronounced in the developing world (Cunningham, 1977, 1979; Gulick, 1983; Howie, 1985; Jelliffe & Jelliffe, 1977; Koopman, Turkish, & Monto, 1985; Lawrence, 1985). Protective immunological properties of

breast milk include maternal antibodies, lysozyme, and colonization of the gut with lacto-bacilli (Howie, 1985; Jelliffe & Jelliffe, 1977; Lawrence, 1985).

The protein in human milk is species specific and no allergic or antibody response has been noted (American Academy of Pediatrics, 1979; Anderson, 1985; Howie, 1984; Jelliffe & Jelliffe, 1977). Allergies to cow's milk protein occur among at least 1% of bottle fed infants (Jelliffe & Jelliffe, 1977) and are said to be responsible for a minimum of 20% of all pediatric allergic conditions (Lawrence, 1985). Due to the infant's immature immune response, macromolecules of the foreign protein from cow's milk may be absorbed, stimulating the development of antibodies in infants who are bottle fed (Lawrence, 1985). "Breast-feeding (and the avoidance of the introduction of semisolids until four to six months of age) is the best prophylactic against food allergy in infancy" (Jelliffe & Jelliffe, 1977, p. 913). It has also been suggested that breastfed infants may be less likely to become obese in later years than bottle fed infants (American Academy of Pediatrics, 1978).

In addition, breastfeeding provides several benefits to the mother. Suckling stimulates endogenous oxytocin release which aids in uterine involution (Howie, 1984; Lawrence, 1985). Several studies also identify the contraceptive effect of breastfeeding, particularly when the breast is offered on demand and at least one nighttime feeding is offered (American Academy of Pediatrics, 1978; Howie, 1985;

Jelliffe & Jelliffe, 1977; Lawrence, 1985; Population Information Program, 1984, 1985). Although there is some controversy, breastfeeding may also enhance maternal-infant attachment, particularly in those mothers who desire close physical contact with their infants (American Academy of Pediatrics, 1978; Jelliffe & Jelliffe, 1977; Klaus & Kennell, 1976; Lawrence, 1985). Economically, breastfeeding is generally less costly than bottle feeding and in developing nations also conserves valuable resources (Jelliffe & Jelliffe, 1985).

Trends in Breastfeeding in the United States

In studying the breastfeeding practices of a Hispanic subpopulation living in Oregon, it is important to consider the larger context in which those practices occur. Breastfeeding trends in the United States throughout most of this century will be identified. Breastfeeding practices in the Western United States and Oregon will also be presented. This will add to the understanding of the regional context of this study. Later, the limited knowledge concerning infant feeding choices of Hispanics in the United States will be described.

Sources and Limitations of the Data

A variety of sources provide information regarding the incidence of breastfeeding in the United States. Major sources of national data include fertility, market research, and natality surveys. Hospital studies have also been conducted on a national level. Many subnational studies

have been done to assess infant feeding practices in more specific populations. The national studies are most useful for inferring breastfeeding trends in the United States due to their greater representation of the entire U.S. population. These major studies will be presented along with a discussion of their strengths and limitations, followed by a description of national breastfeeding trends.

Fertility surveys.

The fertility surveys which document breastfeeding incidence include the National Fertility Studies and the National Surveys of Family Growth. The National Fertility Studies were conducted through the Office of Population Research by Princeton University and were funded by the National Institute of Child Health and Human Development. The National Survey of Family Growth is a data collection system of the National Center for Health Statistics. Both studies provide information regarding marriage, contraception, fertility, pregnancy, reproductive health services, and demographic data. Because of the influence of lactation upon fertility, data regarding breastfeeding were also included. Both surveys studied scientifically selected samples of women of reproductive age, who were representative of the national population (Hendershot, 1984).

The National Fertility Study of 1965 included 5,600 women who were currently married and living with their husbands at the time of the survey, and were from 15 to 54

years of age. The 1970 National Fertility Study was conducted on 6,900 women, aged 15 to 44 years, who were either currently married or had been married in the past. This was an improvement in representation over the 1965 study because it included widowed, divorced, and separated women in the sample. Data for women who have never been married cannot be found in this database and thus, these women were not represented by the study. However, breastfeeding information was obtained for each infant of the women sampled regardless of marital status at the time of birth (Hendershot, 1984).

The National Survey of Family Growth--Cycle I, which was conducted in 1973, studied 9,800 women who were currently married, had been married in the past or were single and living with their children. Those women whose children did not live with them were not included in the survey. The National Survey of Family Growth--Cycle II, conducted in 1976, studied the same population and included 8,600 women. Both surveys had an age range of 15 to 44 years (Hendershot, 1984).

Both the National Fertility Study and the National Survey of Family Growth collected data by personal interview in the homes of the women included in the sample. Data regarding each live-born infant were collected retrospectively, based on the mother's recall. In many cases, the data were collected years after the last birth. Thus, the potential for recall error was significant. Since

the ages of the offspring varied greatly among survey participants, a broad range of years was covered and was considered to be useful in describing breastfeeding trends. One disadvantage of the surveys in this regard was a bias toward younger mothers during the earliest and latest time periods of the surveys, due to the age range limitations (Hendershot, 1984).

Market research.

Although other market research surveys have been done, those which are most useful and available to the public have been conducted by Ross Laboratories. Ross Laboratories surveys have been administered every three months since 1955. Questionnaires were mailed to large samples of mothers, ranging from 1,500 in 1955 to nearly 57,000 in 1984. A small monetary incentive was included with the questionnaire. A second questionnaire or a postcard was sent as a reminder to those mothers who did not respond. Probability samples were drawn from lists of infants born in hospitals during the study periods. The lists are said to include 70% of all U.S. births. The returned questionnaires were compared with U.S. Census data and the data weighted to correct for biases due to underrepresentation of certain women, such as those with a low level of education. The sample distributions were made to match the U.S. population data. Surveys were sent to mothers of infants up to six months of age (Hendershot, 1984; Martinez, Dodd, & Samartgedes, 1981; Martinez & Nalezienski, 1979). A

bimonthly telephone survey was begun in 1980, and mothers were contacted when their infants reached 8, 10, and 12 months of age (Martinez & Dodd, 1983). The Ross Laboratories surveys are useful in assessing national trends in infant feeding practices. Because they are administered at frequent intervals, changes in feeding practices can be detected over relatively short periods of time. Although retrospective in nature, the surveys only require mothers to recall information up to six months, unlike the fertility surveys, which ask for information that may extend over a period of years.

Disadvantages to the Ross Laboratories surveys include a possibly unrepresentative sample, as 30% of all U.S. births are not included on the list used for sampling. Infants of unmarried mothers are excluded from the list to protect privacy. All out-of-hospital births are missing as well as births of many disadvantaged and poorly educated women (Hendershot, 1984). In addition, the questionnaire response rate varied from 82% in 1955 to 54-70% in the 1970's and 1980's (Hendershot, 1984; Martinez & Dodd, 1983; Martinez & Krieger, 1985; Martinez & Nalezienski, 1979, 1981). Because it is known that non-responders tend to be less-educated than responders, an even greater underrepresentation of poorly educated and disadvantaged women is indicated in the later survey years (Hendershot, 1984).

In 1983, survey participants were asked for the first time about their racial and ethnic background. An underrepresentation of minorities was found. The data weighting procedure was then revised to include geographic birth distribution, race by age, and race by education, according to government statistics (Martinez & Krieger, 1985).

Natality surveys.

The National Natality Surveys were conducted in 1969 and 1980. A probability sample for both surveys was selected using birth certificate information from all 50 states. At three to six months postpartum, a questionnaire was mailed to mothers of live infants born in wedlock. The 1969 survey sampled mothers of 1 in every 1,000 white infants and 1 in every 500 non-white infants, with approximately an 85% response rate. The 1980 survey included mothers of 1 in 400 live-born infants weighing $\geq$ 2500 grams and 1 in 95 live-born infants weighing < 2500 grams. Approximately 80% of mothers responded. The responses for both surveys were weighted to reflect U.S. statistics for infants born in wedlock in the surveyed year (Forman, Fetterly, Graubard, & Wooton, 1985).

Although retrospective in design, the National Natality Surveys have the advantage of requiring only up to six months recall on the part of the mother, similar to the Ross Laboratories surveys. The Natality Surveys' samples are more representative than those of Ross Laboratories due to

having been drawn from birth certificates, which are a virtually complete data source. Good response rates also contribute to the Natality Surveys' representativeness. A major disadvantage of the surveys is the exclusion of out-of-wedlock births.

Hospital surveys.

Bain (1948) and Meyer (1958, 1968) conducted breastfeeding incidence studies based on hospital data. Both used a survey method, sending questionnaires to nursery supervisory personnel to record infant feeding methods for all of the infants discharged from the hospital during the time period of one week. Bain's breastfeeding data was collected as part of the American Academy of Pediatrics Study of Child Health Services. The questionnaire response rate was 72% for Bain's study (1948), and 63% for Meyer's 1956 study (1958). Both encompassed data from 48 states, with the exclusion of Alaska and Hawaii. Meyer's later study (1968), conducted in 1966, covered all 50 states and had a response rate of 64%.

The advantage of these studies is their accuracy regarding breastfeeding data, as there was no recall problem. Unfortunately, the duration of breastfeeding was not studied. Limitations include the exclusion of many hospitals from the sample, which was not strictly randomized, and the omission of out-of-hospital births. The response rate also decreases the representativeness of the sample. However, since the three studies used similar

methodology, breastfeeding trends for a twenty year period can be estimated (Hendershot, 1984).

A factor to be considered when comparing these studies is Bain's (1948) report of a higher incidence of breastfeeding for women who were discharged with infants under eight days old (41%) as compared to those discharged after eight days (35%). In Meyer's 1956 study (1958), 84% of infants left the hospital at five days of age or less, with the usual stay being four to five days. Meyer's 1966 study (1968) reported that 72% of the infants left the hospital within four days and 98% within five days. The difference in average length of hospital stay should be considered when comparing the results of the three surveys.

Summary.

All of these national breastfeeding incidence surveys provided valuable findings regarding trends in breastfeeding incidence in the United States. Each of the surveys has its own strengths and limitations, as do the analyses of the surveys that have been done by various researchers. The findings of one survey should be compared cautiously with those of another due to methodological differences. Survey findings regarding actual percentages of breastfeeding incidence are, of course, subject to the survey's flaws and may not reflect actual national breastfeeding practice.

Downward Trend

Breastfeeding was thought to be the almost universal infant feeding method in the United States prior to 1910.

In the 1930's, as understanding of more modern principles of infant nutrition increased, women began to bottle feed their infants (Meyer, 1968). Due to the limitations and methodological problems associated with national infant feeding data, which have been discussed previously, caution should be exercised in interpreting the various survey estimates of the incidence of breastfeeding. However, the surveys all report a definite downward trend in breastfeeding incidence from the 1940's or before, through the 1960's (Eckhardt & Hendershot, 1984; Hendershot, 1984; Hirschman & Butler, 1981; Hirschman & Hendershot, 1979; Hirschman & Sweet, 1974).

A secondary analysis of the 1965 National Fertility Survey (NFS) breastfeeding data was conducted by Hirschman and Sweet (1974). Although the NFS included breastfeeding data for each child born to the women interviewed, only the first child was considered in this analysis. Hirschman and Sweet (1974) also analyzed the incidence but not the duration data of the NFS. They identified downward trends in breastfeeding by both the year of birth of the infant as well as the birth cohort of the mother. Women were considered to be in the same birth cohort if they were born within a certain calendar period (five year span). This analysis found that about three-fourths of women breastfed their first baby before 1940, with a steady decline through the 1961-1965 period, when approximately one-third of infants were breastfed.

Hirschman and Hendershot (1979) combined information from the NFS and the 1973 National Survey of Family Growth--Cycle I (NSFG-1) to lengthen the trend analysis of breastfeeding prevalence begun by Hirschman and Sweet (1974). When data from the NFS and NSFG-1 were compared, only currently married women in the NSFG-1 were included due to the differing samples of the two surveys. Hirschman and Hendershot (1979) also extended the earlier study by analyzing the data regarding first-born and second-born infants for both surveys.

Downward trends from 1936 to 1970 were observed by infant birth year. Both surveys covered births occurring between 1946 and 1965. Similar downward trends were noted when the data was analyzed by birth cohorts of the mothers. It was found that over 70% of the first-born infants in the 1930's were breastfed, while less than 30% were breastfed in the late 1960's to early 1970's. The duration of breastfeeding also declined during this time. The NSFG-1 indicated that, of first children born from 1966 to 1973, less than 10% of mothers breastfed for three months or more. Therefore, of the women who did breastfeed during this downward trend, two-thirds stopped by the time their first child was three months old. In contrast, almost 60% of first children born in 1950 or before were breastfed and slightly over half of them were nursed for three months or more. Second-born infants were less likely to be breastfed,

but were more likely to be breastfed for longer durations than first-born infants (Hirschman & Hendershot, 1979).

The downward trend is also supported by Hirschman and Butler's (1981) analysis of the NFS and NSFG-1 data. Although incidence was assessed in terms of infant birth years and birth cohorts, the findings were reported only from the perspective of birth cohorts. It was found that two-thirds of women born from 1911 to 1915 breastfed their first child and over 40% were still doing so when their child was six months old. Only about 25% of women born from 1945 to 1950 breastfed their first-born and less than 5% were breastfeeding at six months.

Katherine Bain (1948) found that in the study years of 1946 and 1947, two-thirds of newborns were breastfed or both breast and bottle fed at the time of hospital discharge. One-third of infants received bottle feedings exclusively. A higher percentage of breastfeeding occurred in rural areas as compared to urban and suburban hospitals. The Northeastern states reported a 61% incidence of bottle feeding as compared to an 18% incidence in the Southwestern and Southeastern states. Ten years later, Meyer (1958) compared his results to Bain's (1948) and found a significant increase in bottle feeding at hospital discharge. Nationally, the percentage was found to increase from 35% to 63%. A corresponding reduction in breastfeeding was found, with Bain's survey recording a 38% incidence of exclusive breastfeeding, and Meyer's study reporting a 21%

incidence. Combined breast and bottle feeding was reduced from 27% in 1946 to 16% in 1956.

Meyer's second survey (1968), conducted in 1966, found exclusive breastfeeding in the United States to have further decreased to 18%, with combined breast and bottle feeding at 9%. The rate of exclusive bottle feeding had risen to 73%.

The Ross Laboratories surveys further substantiate the decline of breastfeeding, though not dramatically, specifically from 1955 through 1970. For one-week-old infants receiving any breast milk, the rate declined from almost 30% in 1955 to about 25% in 1970. In 1971, approximately 14% of two-month-old infants were breastfed (Martinez & Nalezienski, 1979). The percentages vary from the fertility survey findings, probably due to methodological differences.

Another data source, the Health Examination Survey of 1963 to 1965 (Roberts & Slaby, 1973), also reported findings consistent with a downward trend in breastfeeding. Data were obtained from the parents of children ages six to eleven. The rate of breastfeeding declined from 37% in the 1952 to 1954 period, to 32% in 1957 to 1959. This was approximately a 5% decrease over a six year time span (Hendershot, 1984).

Although the national incidence of breastfeeding varies according to survey, the trend appears to be that prior to the 1940's, the majority of infants were breastfed (probably about three-fourths). Through the 1950's and 1960's,

breastfeeding incidence declined significantly and steadily, as did the duration of breastfeeding (Hendershot, 1984).

Upward Trend

The decline in the incidence of breastfeeding nationally ended in the early 1970's, followed by a steady upward trend. This upward trend was documented by the Ross Laboratories surveys, the National Survey of Family Growth--Cycle II, and the National Natality Surveys. The pivotal time period when the trend reversed and breastfeeding increased seems to have been from about 1972 to 1973 (Eckhardt & Hendershot, 1984; Hendershot, 1984).

The National Survey of Family Growth--Cycle II (NSFG-2), conducted in 1976, found that about 25% of infants born in 1971 were breastfed as compared to a nadir of 22% in 1972. The breastfeeding rate rose to 25% in 1973, 30% in 1974, and to 34% in 1975 (Eckhardt & Hendershot, 1984; Hendershot, 1980). Increases in breastfeeding were noted for subgroups of the population in every category of birth order, sex, race, and education, although none was individually considered to be statistically significant. Mothers of infants born in this time period were asked if they breastfed their infant "at all" and if so, they were questioned regarding the duration of breastfeeding. There was no evidence to support any significant change in breastfeeding duration from 1971 to 1975 based on Cycle I and Cycle II data from the National Survey of Family Growth. During this time, breastfeeding ended before age three

months for the majority of infants, much younger than the recommended five to six months (Hendershot, 1980).

The Ross Laboratories survey data also documented an increase in breastfeeding, beginning during the years of the National Survey of Family Growth--Cycle II (1970-1975). However, the Ross Laboratories surveys also indicated that the upward trend continued during the late 1970's and into the 1980's. In 1971, 25% of newborn infants were at least partially breastfed in the hospital. The incidence increased to 28% in 1972, to 36% by 1975, 47% in 1978, and 55% in 1980 (Martinez, Dodd, & Samartgedes, 1981; Martinez & Nalezienski, 1979, 1981). These levels rose further to 56% in 1981 and almost 63% in 1984 (Martinez & Dodd, 1983; Martinez & Krieger, 1985). A leveling off or downward trend may be suggested by the 1986 survey which found a 57% incidence (Stahle, 1987), but that is yet to be seen.

The Ross Laboratories surveys also found an upward trend in the duration of breastfeeding. The percentage of infants who were still breastfeeding at five to six months of age was less than 6% in 1971 but increased to almost 15% (Martinez & Nalezienski, 1979). This finding is not in agreement with the findings for the National Survey of Family Growth--Cycle II for the same period, which indicated no increase or change in breastfeeding during the same period (Hendershot, 1980). The Ross Laboratories data indicated a continuing increase in breastfeeding for five to six-month-old infants. The incidence ranged from 25% to 29%

for the years 1980-1984 (Martinez, Dodd, & Samartgedes, 1981; Martinez & Krieger, 1985). A decrease in the incidence of breastfeeding at six months to 22% was reported in the 1986 survey (Stahle, 1987).

The National Natality Surveys of 1969 and 1980 (Fetterly & Graubard, 1984; Forman, Fetterly, Graubard, & Wooton, 1985) add to the documentation of an upward trend in breastfeeding during the 1970's. They reported that exclusive breastfeeding rose from 19% in 1969, to 51% in 1980 for white women, and from 9% in 1969, to 25% in 1980 for blacks.

The National Survey of Family Growth, the Ross Laboratories surveys, and the National Natality Surveys are not comparable due to methodologic differences. The Ross Laboratories surveys and the National Natality Surveys are not representative of the entire U.S. population, as they only included married women. The Ross Laboratories surveys are less representative of the disadvantaged due to sampling techniques as compared with the National Natality Surveys. However, the Ross Laboratories Surveys are the most recent and most helpful in establishing more current trends. The fertility, market research, and natality surveys agree that an upward trend in breastfeeding was occurring in the early 1970's. The market research surveys indicate its continuation into the early 1980's. The current trend is difficult to evaluate accurately, but there are some

indications that breastfeeding incidence may be leveling off and stabilizing somewhat. This has yet to be established.

Western Region

Regional differences in breastfeeding incidence in the United States have been analyzed by researchers using the early national fertility survey data. Hirschman & Sweet (1974) found that women who lived in the Western United States and did not live on a farm were more likely to breastfeed their first-born infants than other women in the nation. Those living on Western farms were slightly less likely to breastfeed than Southern farm residents, while fewer farm residents from other regions breastfed their first-born children.

Hirschman and Hendershot (1979) found that as the national decline in breastfeeding was occurring in the 1950's and 1960's, the West was relatively unaffected, although some decline was noted. In the West, an upward trend was reported in the late 1960's and early 1970's, prior to the remainder of the nation. Over half of the women living in the West breastfed their first-born infant in the early 1970's. This was at least twice the incidence of the other regions of the United States at that time.

Hirschman and Butler (1981) also found that women living in the West were most likely to breastfeed, as were women who grew up in the West. The duration of breastfeeding, however, did not seem to be associated with the West as a region of residence or of origin.

Regional data is also available for the Ross Laboratories surveys (Martinez & Krieger, 1985; Martinez & Nalezienski, 1981). Oregon, Washington, California, and Alaska compose the Pacific region. The in-hospital incidence of breastfeeding for residents of the Pacific region in 1979 was 66% and increased to 78% in 1984. This exceeded the national rates of 51% and 63% respectively for these years. Breastfeeding in the Pacific region was the second highest among the nine U.S. regions in 1979 and was the highest by a slight margin in 1984.

Oregon Statistics

The national hospital surveys analyzed and reported breastfeeding data specific to Oregon which were collected in their studies. Bain's (1948) survey reported a 42% incidence of exclusive breastfeeding in Oregon at discharge from the hospital. This was higher than both the Pacific region and the nation. The incidence of breastfeeding or combined breast and bottle feeding in Oregon (64%) was similar to Pacific and national rates.

Meyer's (1958) 1956 survey found a decrease in the percentage of infants who were breastfed in Oregon (49%). However this, as well as the rate of exclusive breastfeeding (34%), was higher than the incidence in the Pacific region and in the U.S. as a whole.

The 1966 survey by Meyer (1968) showed a further significant decrease in exclusive breastfeeding in Oregon to a level of 20%. Combined breast and bottle feeding did rise

however, for a total breastfeeding rate of 50%. These levels were much higher than those of the rest of the nation where the rates continued to decline. Duration of breastfeeding was not addressed by Meyer.

More recent studies of Oregon breastfeeding incidence and short-term duration utilized the 1979 and 1984 infant metabolic screening data to provide information regarding breastfeeding in Oregon (Becker, 1986; Hellings, Howe, Kodadek, & Snell, 1984). The 1979 findings revealed that 78% of Oregon infants were breastfed, either exclusively or by both breast and bottle combined, in the first few days of life (Becker, 1986). That incidence increased to 84% in 1984 (Hellings et al., 1984). In 1979, two-thirds of infants were still being breastfed at approximately one month of age (Becker, 1986).

The 1984 data showed that over three-fourths of infants were continuing to be breastfed at slightly less than one month, but this may be higher, due in part to the average time of the second screening being one week earlier than in 1979. Exclusive breastfeeding was recorded separately from partial breastfeeding in the 1984 data and it was found that 78% of Oregon infants were exclusively breastfed at the first metabolic screening and 69% at the second screening (Hellings et al., 1984).

Breastfeeding incidence data specific to Oregon was available from Ross Laboratories for 1986. This data indicated that 85% of infants living in Oregon in 1986 were

at least partially breastfed in the hospital. At two, four, and six months of age, the rates were 67%, 51%, and 40%, respectively. This was at least 18 percentage points higher than the national incidence reported at each of these time periods (Stahle, 1987). Although the Ross Laboratories survey may be less representative than studies by Becker (1986) and Hellings et al. (1984), it provides a comparison with the nation as a whole.

Two hospital studies (Cooksey, 1982; Steinmetz, 1985) conducted in Oregon provide some additional breastfeeding incidence data. Cooksey (1982) found a 70% rate of in-hospital breastfeeding among a sample of low-income, English speaking women at a university hospital in Oregon. Steinmetz (1985) reported that approximately 80% of mothers breastfed while in two community hospitals in Northwestern Oregon. These two facilities served primarily white, English speaking, middle-class clients.

The incidence of breastfeeding in Oregon has been consistently higher than most of the rest of the nation. A possible explanation for this may be found by comparing Oregon demographic data to that of the nation. Oregon's population is more homogeneous, is comprised of fewer minorities, is more rural, includes more unemployed women, and demonstrates a higher educational level among women than the national norm (Becker, 1986). All of these are factors which have been found to be associated with breastfeeding.

Factors Affecting the Incidence of Breastfeeding

A number of variables may influence a mother's decision to breastfeed. These factors often also influence whether the woman actually initiates breastfeeding, her satisfaction with this feeding method, and its duration. Simopoulos & Grave (1984) summarize: "it is apparent that a range of physical, psychological, and social factors play a part [in the choice and duration of infant feeding practice], and that the issue is complex, involving extensive social, economic, and motivational factors" (p. 603).

The national fertility surveys (Eckhardt & Hendershot, 1984; Hendershot, 1980; Hirschman & Butler, 1981; Hirschman & Hendershot, 1979; Hirschman & Sweet, 1974) and the Ross Laboratories' market research surveys (Martinez, Dodd, & Samartgedes, 1981; Martinez & Dodd, 1983; Martinez & Nalezienski, 1981) provide statistical information on a number of variables. In addition, numerous other authors have also conducted smaller studies which have examined some of the factors involved in a woman's decision to breastfeed, reasons for discontinuing breastfeeding, and extrinsic factors which influenced these decisions (Aberman & Kirchhoff, 1985; Bacon & Wylie, 1976; Cole, 1977; Eastham, Smith, Poole, & Neligan, 1976; Ekwo, Dusdieker, Booth, & Seals, 1984; Hall, 1978; Hally, Bond, Crawley, Gregson, Philips, & Russell, 1984; Hughes, 1984; Lawrence, 1982; Mackey & Fried, 1981; Procianoy, Fernandes-Filho, Lazaro, &

Sartori, 1984; Ray & Estok, 1984; Rousseau, Lescop, Fontaine, Lambert, & Roy, 1982; Wiles, 1984).

Throughout this discussion, a few points must be kept in mind. First, breastfeeding is comprised of a mother-infant dyad and therefore, factors which affect either participant or both may affect breastfeeding (Simopoulos & Grave, 1984). Second, in almost all cases there is a one-way flow of infants from breastfeeding to bottle feeding and that pattern is rarely reversed (Sauls, 1979). In addition, randomization of infant feeding methods is not possible, thereby introducing a possible inherent source of bias to research studies (Sauls, 1979; Simopoulos & Grave, 1984). Although demographic characteristics may appear comparable, one can not fully evaluate all the other possible factors which may have influenced both the infant feeding decision and practice.

Several research problems have been found in studies which attempt to identify factors associated with the choice and duration of infant-feeding method. Problems associated with research design are: (a) small sample size and lack of stratification; (b) self-selection and nonrandomization; (c) self-reporting, recall after delay, and clumping of data; (d) lack of clear operational definitions; (e) interview or questionnaire structure, interviewer bias, and timing of administration; (f) association does not imply causation; (g) language barriers and cultural variations; (h) attention to only selected variables; and (i) lack of report on the

influence of maternal or infant complications (Sauls, 1979; Simopoulos & Grave, 1984). Although some of these problems have been corrected in later studies, they do limit the generalizability and utility of the findings.

Some of the major factors identified in the literature will next be examined. These include race, education, maternal employment, income, culture, social support, health care provider, and hospital practices, among others. Although cultural influences will be discussed as a factor, specific aspects of Hispanic culture which influence breastfeeding among Hispanics will be presented in greater detail in a subsequent section.

Race

Prior to 1960, black women were more likely than white women to breastfeed their first child and to continue breastfeeding for at least three months. By 1961, however, white women were more likely to breastfeed than black women despite a downward trend overall in the United States. Breastfeeding continued to decline among black women to a nadir in 1971-1973 with only 11% initiating breastfeeding and 6% continuing for three months or more during those years (U.S. Bureau of the Census, 1987).

In contrast, in 1971-1973, 25% of white women initiated breastfeeding with 11% continuing for at least three months. This trend continued in 1973-1975, when infants of white mothers were found to be about twice as likely to breastfeed their infants as black mothers (Hendershot, 1980; U.S.

Bureau of the Census, 1987). According to 1983-1984 data, white women still breastfeed at two times the rate of black women although the rates have increased for both groups (Martinez & Krieger, 1985).

Some research has shown race to be the second most important factor influencing choice of infant feeding method and duration, following education (Eckhardt & Hendershot, 1984). The effect of Hispanic ethnicity upon breastfeeding, as a separate factor, will be discussed in a later section.

Education

In a 1984 study by Eckhardt and Hendershot, education was found to have the greatest single impact on the choice of infant feeding method. The initiation and continuation of breastfeeding has been found to be associated with an educational level beyond high school, i.e., at least some college education (Bacon & Wylie, 1976; Cole, 1977; Eckhardt & Hendershot, 1984; Hirschman & Hendershot, 1979; Martinez & Dodd, 1983; Martinez, Dodd, & Samartgedes, 1981).

It is of interest to note that better educated mothers were the first to begin bottle feeding, a trend which later spread to mothers of all educational backgrounds (Eckhardt & Hendershot, 1984; Martinez & Dodd, 1981). Women with more education were also the first to return to breastfeeding (Eckhardt & Hendershot, 1984; Martinez & Dodd, 1981). Eckhardt & Hendershot (1984) speculate that "education presumably makes people more receptive to new ideas and more willing to adopt them" (p. 411).

Since the early 1960's, mothers with education beyond high school have consistently had higher rates of breastfeeding than those with less education, although the percentage has varied along with the national trends (Hirschman & Hendershot, 1979). An exception was noted in the National Natality Survey of 1969, where, although the rate of breastfeeding increased with increasing education among whites, more highly educated blacks were less likely to breastfeed. However, the educational gap associated with breastfeeding has been decreasing. The greatest average annual rate of gain in breastfeeding occurred among women with less than a college education, in the decade from 1971 to 1981 (Martinez & Dodd, 1983).

In a more recent study, Martinez & Dodd (1983) found that among college educated women, 60% breastfed for two months, 36% continued for six months, and 5% were still breastfeeding at 12 months. In contrast, among women with a high school education or less, 35% breastfed for two months, 18% for six months, and 1.3% for 12 months. Later studies (Martinez & Krieger, 1985) have continued to indicate higher rates of breastfeeding among college educated women than among those with less education.

Maternal Employment

Research in the developing world has reported varying degrees of relationship between maternal employment and breastfeeding (Population Information Program, 1984). In many developed countries, excluding the United States,

breastfeeding does not appear to vary greatly with maternal employment (Lawrence, 1985), however the social support received by women in these countries such as extended paid maternal leave-of-absence may play a significant role.

In the United States, however, mothers who are employed full-time outside the home have a lower incidence of breastfeeding up to 12 months than women who do not work outside the home (Martinez & Dodd, 1983; Martinez, Dodd, & Samartgedes, 1981). Statistics for employed women in 1980 found 48% initiated breastfeeding in the hospital, 31% continued to breastfeed at two months, 8.8% at six months, and 4.3% at 12 months. In contrast, among women not employed outside the home, 56% initiated breastfeeding, 44.6% continued at two months, 26.9% at six months, and 9.2% at 12 months. The effect of part-time employment on breastfeeding was not addressed in this study.

Martinez & Krieger (1985) examined the effect of part-time employment on the incidence of breastfeeding in their 1983 and 1984 surveys. Breastfeeding rates in-hospital were highest among women who were employed part-time during both of the years studied and lower for unemployed mothers. Mothers who were employed full-time initiated breastfeeding at a rate similar to unemployed women, but had a shorter duration of breastfeeding.

Mackey & Fried (1981) found that 62% of breastfeeding mothers, who intended to return to work, planned to supplement their baby with formula. Women who intended to

stay at home planned to nurse their babies for an average of 10 months, whereas, women who intended to return to work planned to breastfeed for an average of 5.79 months. The intention to return to work was associated with a significantly shorter planned duration of breastfeeding (Mackey & Fried, 1981).

In a study of 567 women who were employed either full or part-time outside the home, returning to work at less than 16 weeks postpartum was associated with a shorter duration of breastfeeding than returning later (Auerbach & Guss, 1984). This study also found that mothers who used breast pumps or hand expressed milk during their hours at work were more likely to nurse longer than those who did not. Ekwo, Dusdieker, Booth, & Seals (1984) found maternal worries about the difficulty of breastfeeding, perception of difficulties in scheduling breastfeeding upon return to work, as well as a lower family income, tended to shorten the duration of breastfeeding among first-time mothers.

In contrast, of 200 mothers in England, only three indicated that they had chosen bottle-feeding because they intended to return to work or to interrupted studies (Bacon & Wylie, 1976). The intention to return to work has been given by women as a reason for initially choosing to bottle feed (Aberman & Kirchhoff, 1985), although it is reported less frequently as a reason for discontinuing breastfeeding. This may indicate some difference in perception of the difficulty of managing breastfeeding and working between

women who choose to bottle feed and those who choose to breastfeed.

Returning to work or to school was the primary reason reported by health care providers for early discontinuation of breastfeeding among their patients. This explanation was given by up to 77.5% of nurses and 85.7% of obstetricians (Lawrence, 1982). Discontinuing breastfeeding for the purpose of returning to employment or school, may be perceived as a socially acceptable rationale by both health care providers and clients.

Income

Prior to the 1960's, low income women were more likely than other women to breastfeed (Hirschman & Hendershot, 1979). However, after this time, the downward trend appeared to occur more rapidly in poor women than in those with higher incomes (Hirschman & Hendershot, 1979). The best available data in the early 1970's is taken from the National Survey of Family Growth--Cycle II. This data indicates that low income women did not participate in the upward trend in breastfeeding that occurred in the early 1970's (Hendershot, 1984).

Martinez, Dodd, & Samartgedes (1981) and Martinez & Dodd (1983) utilized grouped income data. In their national surveys, they found a higher incidence and duration of breastfeeding among those with higher incomes but they also reported an increase in breastfeeding among women of all income levels between 1971 and 1980. This finding disagrees

with the findings of the National Survey of Family Growth--Cycle II, as discussed previously. However, the Ross Laboratories data (Martinez, et al., 1981 & 1983) is considered a less reliable source as no attempt was made to correlate income to family size. Lower income groups may have been underestimated in their data. In addition, single mothers were excluded from the Ross Laboratories surveys, which also may have skewed the data.

The data regarding income for the national surveys appear to be incomplete and to have questionable reliability. Therefore, statements pertaining to income and breastfeeding taken from these studies should be interpreted cautiously. The best conclusion appears to be that low income women evidenced a slower upward trend in breastfeeding than those at other income levels (Hendershot, 1984).

Family income has also often been related to level of maternal education (Simopoulos & Grave, 1984). In a British study of 200 mothers, breastfeeding was found to be significantly associated with social class (Bacon & Wylie, 1976), which may be seen to be a reflection of income.

Culture

In general, less developed and more rural cultures have a larger proportion of mothers who prolong lactation up to 24 months or until a subsequent pregnancy occurs (Ebrahim, 1976; Morse, 1982). This prolonged breastfeeding also has an added contraceptive benefit which aids in the natural

spacing of children, a significant factor in their survival (Houston, 1986). Breastfeeding appears to decline with increasing urbanization and development (Morse, 1982).

Morse (1982) points out that in developing countries, feeding choices are made based on the needs of the family or social unit rather than on the needs of the infant or mother. Infant feeding behaviors are themselves, therefore, imbedded in the context of cultural values and behaviors (Morse, 1982).

In many cultures the use of a "doula", a woman assigned to care for and support the new mother, facilitates the transition to motherhood. The "doula" is available to assist with breastfeeding problems. In Western cultures, groups such as the La Leche League have arisen in part to provide this type of support for breastfeeding mothers (Morse, 1982).

The availability of support to the breastfeeding mother can increase the duration of successful breastfeeding (Rousseau et al, 1982). This was frequently noted in the literature on Hispanic choice of infant feeding method (Baranowski, Bee, Rassin, Richardson, Brown, Guenther, & Nader, 1983; Bryant, 1982; Skeel, McCarty, & Pierce, 1986; Shapiro & Saltzer, 1985).

The United States is composed of a variety of racial and ethnic groups each of which possess a distinct culture. Cultural variations also occur within different geographical areas in the United States. It is therefore difficult to

make generalizations about the influence of culture upon breastfeeding. Some of the past studies also only addressed black and white women in America and failed to address other minority groups (Eckhardt & Hendershot, 1984). Specific aspects of Hispanic culture and its influence upon breastfeeding will be discussed later.

Social Support

Support from members of a social network and to a lesser degree support from professionals, has been associated with the initial decision to breastfeed and the duration of breastfeeding (Cronenwett & Reinhardt, 1987). Persons who are considered to be significant sources of support vary, depending on the mother's ethnic and socioeconomic status. For Anglo-Americans, the male partner was found to be the person who most influenced the decision to breastfeed, whereas for Hispanic women, their mothers were most influential. Breastfeeding decisions for black women were most affected by their close friends (Cronenwett & Reinhardt, 1987). In each of these groups, the person providing social support, as well as the woman, were effected by past experience with feeding methods and sociocultural norms.

Support for breastfeeding by male partners may be influenced by a number of conflicting emotions. Jordan (1984) discussed the potential paternal risk factor breastfeeding may pose. "Although intellectually a father may know breast is best, he may experience many conflictual

feelings, such as pride, envy, inadequacy, superfluousness, jealousy, and exclusion." Since breasts are frequently viewed as sexual objects in the United States, males may have difficulty sharing what they perceive belongs to them with a newborn who also is displacing the male's position of dependency with his female partner (Jordan, 1984). In addition, exposure of the female breast to feed an infant may be viewed negatively within certain social groups.

In other studies, past experience with feeding methods by either the mother or her family and friends exerted a significant influence (Eastham, Smith, Poole, & Neligan, 1976; Mackey & Fried, 1981). One factor noted by several authors was the early point at which the decision to breast or bottle feed was made. Most women had decided which feeding method to use very early in pregnancy or even prior to the pregnancy (Aberman & Kirchhoff, 1985; Eastham, et al, 1976; Mackey & Fried, 1981; Sarett, Bain, & O'Leary, 1983). Very few women remained undecided and most did not identify the health care provider as a source of information or support (Aberman & Kirchhoff, 1985).

Among adolescents, it was found that those who had personally been breastfed or had observed infants being breastfed had more positive attitudes and increased knowledge about breastfeeding than those with less exposure to breastfeeding (Cusson, 1985; Ellis, 1983; Joffe & Radius, 1987; Ray & Estok, 1984). Older adolescents also had more positive attitudes and increased knowledge compared to

younger adolescents and were more likely to say they intended to breastfeed (Cusson, 1985; Ellis, 1983; Joffe & Radius, 1987). Joffe and Radius (1987) found that among inner-city adolescents, only 17% said they "probably" or "definitely" intended to breastfeed their babies. However, in a Canadian study by Ellis (1983), the majority of adolescents (72%) said they planned to combine breast and bottle feeding, perhaps reflective of current societal attitudes.

Morse, Harrison, & Prowse (1986) and Morse & Harrison (1987) found that families, friends, and health care providers often placed social pressure on women to discontinue breastfeeding when their infants were nine to ten months of age, if they were still breastfeeding. These authors found that women who continued to nurse beyond the social norm generally did so in secret. Morse & Harrison (1987) stated "it is apparent that the duration of breastfeeding is influenced by social and cultural norms and not solely determined by the mother" (p. 208).

Psychosocial influences on the choice to breast or bottle feed are complex and are generally difficult to measure or for women and significant others to verbalize. They nevertheless appear to exert a profound influence on infant feeding practices. Rousseau et al. (1982) examined factors which influence a parent's choice of infant feeding methods and reported that "psychosocial factors were perceived as the main deterrents to breastfeeding."

Most authors who examined psychosocial factors which influence infant feeding decisions believe that changes in attitude and knowledge need to be initiated early in life and on a broad societal scale. Only a few undecided women may be susceptible to education by health care providers during pregnancy (Bacon & Wylie, 1976; Cronenwett & Reinhardt, 1987; Eastham, et al, 1976; Hall, 1978; Humenick & Van Steenkiste, 1983; Simopoulos & Grave, 1984; Wiles, 1984).

Health Care Provider

As mentioned in the previous section, most women have decided on a feeding method prior to or early in pregnancy and very few were influenced in their decision by a health care provider (Aberman & Kirchhoff, 1985; Cronenwett & Reinhardt, 1987; Eastham, et al., 1976; Mackey & Fried, 1981). This contrasts sharply with the perception by health care providers that their influence was as important or more important than family and friends in a woman's decision to breastfeed (Lawrence, 1982).

In Lawrence's (1982) study, one third of health care practitioners reported that they do not even raise the topic of breastfeeding at any time during the pregnancy or postpartum. Studies revealed wide variations in the number of women who discussed infant feeding with their health care providers (Eastham, et al., 1976; Hally, Bond, Crawley, Gregson, Philips, & Russell, 1984; Mackey & Fried, 1981).

Various types of health care providers care for women and their offspring prenatally and postpartum. The type of practitioner does appear to affect the incidence and duration of breastfeeding. Women seen by private physicians during their pregnancy had a higher incidence of initiating breastfeeding than clinic patients (Eckhardt & Hendershot, 1984). After birth, newborns who received care from pediatricians had a higher incidence and duration of breastfeeding than those followed by general practitioners.

Nurse-midwives were not identified as health care providers in most studies although nurses were. However, Winikoff, Laukaran, Myers, & Stone (1986) found that nurse-midwives had greater and more accurate knowledge of breastfeeding than pediatricians, obstetricians, and pediatric and obstetric nurses. Also Hally, et al. (1984) in a British study noted "a majority [of women] showed a preference for discussing infant feeding with midwives during pregnancy and with midwives and health visitors [community health nurses] after going home with the baby" (p. 66).

A study of infant feeding methods by women enrolled in the Women, Infants, and Children's Supplemental Food Program (WIC) reported that the statewide incidence of breastfeeding in Illinois among WIC participants was less than 10% (Matheny, Picciano, & Birch, 1982). In 1980, the incidence and duration of breastfeeding among WIC participants, nationally, was 40% in-hospital and 20% at three months.

This is contrasted with overall national breastfeeding incidence and duration rates of 55% and 33% respectively (Martinez & Stahle (1982). In California, the percentage of Hispanic WIC clients who breastfed was closer to the national average initially, but increased following an intensive support and education program (Skeel, McCarty, & Pierce, 1986).

A significant number of women stop breastfeeding in the first two months postpartum and this rate continues to rapidly decline from that point (Eckhardt & Hendershot, 1984; Martinez, et al, 1981, 1983). Most women who discontinue breastfeeding in the first two months do so because of problems which could be addressed through prenatal breastfeeding education and through adequate postpartum support by a knowledgeable health care professional (Bacon & Wylie, 1976; Cronenwett & Reinhardt, 1987; Eastham, et al, 1976; Hall, 1978; Humenick & Van Steenkiste, 1983; Simopoulos & Grave, 1984; Wiles, 1984). The most frequent reasons given for early discontinuation of breastfeeding include the following: inadequate milk supply, baby unsettled after breastfeeding, very frequent feedings required, breastfeeding was too tiring, painful nipples, baby refused the breast, unable to go out, and too time consuming (West, 1980). Other reasons were offered less frequently.

Cole (1977) also found that a number of women reported weaning because "the baby's doctor told me to stop" (p.

354). Cole suggests this may be due to health care providers recommending the use of supplementary feedings or the early introduction of solids when mothers report problems with breastfeeding, rather than assisting mothers with problem solving.

Jelliffe and Jelliffe (1977) describe lactation as an interactive process between the mother and baby. Anxiety about the adequacy of milk supply can inhibit the let-down reflex and set in motion a syndrome leading to failure with breastfeeding. In a study by Humenick & Van Steenkiste (1983), women cited low satisfaction with breastfeeding, perceived number of problems, and/or excessive fussiness of the baby, as reasons they discontinued breastfeeding. Other reasons given for early termination of breastfeeding included "insufficient milk," unsettled baby, fatigue of the mother, neonatal illness, breast engorgement, personal choice, "baby's refusal of the breast," and cracked nipples (Houston, 1984). These are similar to the reasons offered by the women in West's study (1980).

In a randomized prospective experimental study of a breastfeeding teaching intervention with postpartum mothers, Johnson, Garza, & Nichols (1984) found that the group that received bedside, individualized teaching, as well as a manual and information on the availability of a lactation consultant had a significantly greater duration of breastfeeding. This was compared to the group who only received information on the lactation consultant or the

group who received the manual alone. Similarly, Jones & West (1986) found that contact with a lactation nurse in the hospital and at home increased the duration of breastfeeding among women from lower socioeconomic groups.

Follow-up care and support after mothers are discharged from the hospital have been identified as significant in increasing the duration of breastfeeding (Macey, 1986). Houston (1984) conducted an experimental study where mothers received home visits every two weeks for the duration of breastfeeding by a midwifery sister. During this visit, feeding patterns and problems were discussed. The experimental group was found to breastfeed longer and delay the introduction of formula supplements or solids longer, in comparison to a control group who did not receive such visits. Similar results were obtained by Skeel, McCarty, & Pierce (1986) among Hispanic women in California. It appears from these studies that prenatal education coupled with individualized support postpartum can significantly increase the duration of breastfeeding.

Hospital Practices

Hospital practices often affect not only the incidence of breastfeeding but also its duration. Hospital policies and practices which encourage breastfeeding include offering 24 hour rooming-in, early initiation of breastfeeding, and not offering supplemental formula. In addition, positive nursing attitudes and support of breastfeeding mothers appear to facilitate the breastfeeding relationship. Cole

(1977) found that rooming-in was associated with a longer duration of breastfeeding after discharge from the hospital.

Two recent studies found many hospital factors which effected breastfeeding, although other variables may have also influenced the results. These studies were conducted in hospitals serving a predominantly low-income population (Reiff & Essock-Vitale, 1985; Winikoff, Laukaran, Meyers, & Stone, 1986) and the findings cannot, therefore, be generalized to other populations.

Winikoff et al. (1986) found that no patients were exclusively breastfeeding at discharge in the hospital studied. Breastfeeding was not initiated within the first 24 hours in 37% of the women who indicated they desired to breastfeed. Only 16% of infants had been breastfed at all by discharge and all had been formula fed. Numerous hospital problems were identified which exerted a strong influence on the incidence of breastfeeding in this situation.

The following problems were noted in this hospital by Winikoff et al. (1986): lack of availability of rooming-in, routine separation of mothers and babies, and most babies brought to mothers only for scheduled feedings. Lack of staff support and assistance with breastfeeding, routine distribution of formula at every feeding to all mothers, and routine bottle feeding orders were also observed. Furthermore, mothers were expected to restate their feeding preferences at each feeding time as there was no method of

identifying breast versus bottle feeding infants. Breast pumps were routinely distributed to breastfeeding mothers, usually without instruction, and often before they had an opportunity to nurse. All mothers were routinely offered medication for lactation suppression at each dosage interval regardless of feeding preference. There was little opportunity for mothers to attend postpartum classes and the staff perceived that mothers had little interest in breastfeeding. As a result, mothers identified a lack of knowledge about lactation and proper breastfeeding and believed that breastfeeding alone was insufficient to nourish their baby. They also perceived and predicted an insufficient milk supply.

In another hospital study among predominantly Hispanic women, Reiff & Essock-Vitale (1985) found that, despite staff nursing attitudes favoring breastfeeding, the hospital modeling of formula supplementation exerted a stronger influence on mother's infant feeding practices two weeks after discharge. During hospitalization, 51% of mothers were exclusively breastfeeding, 18% supplementing breast with bottle, and 31% exclusively bottle feeding. By two weeks postpartum, only 23% were exclusively breastfeeding, 32% were supplementing, and 45% were exclusively bottle feeding. Mothers who were exclusively breastfeeding at two weeks postpartum had more children and had lived in the United States for a shorter time period. Of the mothers who were bottle feeding or supplementing at two weeks

postpartum, 93% knew the brand of formula used in the hospital and 88% were using it, with the majority offering ready-to-feed preparations. Two-thirds of the mothers who were supplementing at two weeks postpartum had received hospital gift packs of formula at discharge in contrast to only one-third of the exclusively breastfeeding mothers.

An area of controversy is what effect discharge gift packs of formula have when given to all women, breast or bottle feeding (Bergevin, Dougherty, & Kramer, 1983; Evans, Lyons, & Killien, 1986; Gray-Donald, Kramer, Munday, & Leduc, 1985). Several methodological problems were noted in the studies examined, especially concerning the effect of formula or glucose supplementation in the hospital prior to discharge. Bergevin, Dougherty, & Kramer conducted a randomized study of 448 women, and reported that women who received formula samples at discharge were less likely to be breastfeeding at one month postpartum than those who did not. In addition, more gift pack recipients had introduced solids by two months.

Gray-Donald, Kramer, Munday, & Leduc (1985) did not find in-hospital formula supplementation to significantly effect the duration of breastfeeding. They did find that mothers who were still breastfeeding at four and nine weeks were more likely not to have received supplementation than those who had stopped breastfeeding. However, several confounding factors in this study may have influenced these results. Evans, Lyons, & Killien (1986) did not find a

significant difference in the incidence of breastfeeding at six to seven weeks postpartum between mothers who had received formula gift packs and those who had not.

Additional Factors

In the literature, numerous additional variables have been reported to influence the incidence of breastfeeding but few of these have been studied to any extent. Those which have been more widely reported include parity, religion, geographic variations, and sex of the infant.

Numerous authors reported that a woman's previous experience with either breast or bottle feeding contributed to her choice of a feeding method for subsequent children (Hendershot, 1980; Hirschman & Butler, 1981; Hirschman & Hendershot, 1979; Martinez, Dodd, & Samartgedes, 1981; Martinez & Dodd, 1983; Martinez & Nalezienski, 1981). In general, primiparous women have been found to initiate breastfeeding more often than multiparous women. For multiparous women, success with breastfeeding a first child is positively correlated with the incidence and duration of breastfeeding the second child. Duration also appears to increase with higher order births.

The incidence of breastfeeding has been found to be greater among Protestant women than among Catholic or Jewish women (Hirschman & Butler, 1981; Hirschman & Hendershot, 1979; Hirschman & Sweet, 1974). Geographic variations which have been noted include the finding that women from the western portion of the United States are most likely to

breastfeed while women from New England are least likely to breastfeed. This trend did not disappear even when socioeconomic and sociocultural variations were controlled (Hirschman & Butler, 1981; Hirschman & Hendershot, 1979; Hirschman & Sweet, 1974). The sex of the infant does not appear to be related to the choice of infant feeding method (Hendershot, 1980).

Other factors effecting the incidence of breastfeeding could be grouped into the four categories identified by Bentovim (1976) including: individual variables, family variables, sociocultural variables, and precipitating factors relating to the pregnancy and birth, although some overlap may be noted between categories. Some individual variables include maternal age, length of residence in the United States, employment during pregnancy or anticipated employment postpartum, sexual values, body image, and personal modesty.

Family variables which may effect the decision to breastfeed include marital status, family structure, number of children, family experience with infant feeding methods, spousal or family support, family values, and socioeconomic status. Social variables may be more difficult to identify but may exert a strong influence on choice of infant feeding method. These variables include cultural values, beliefs, and practices; religious influences; community structure; social network; and social taboos regarding breast exposure or view of the breast as primarily a sexual object. In

addition, the health care provider's attitude and support or lack thereof may influence a woman's choice to breastfeed and the duration of nursing.

Factors surrounding the pregnancy and birth itself may influence the choice of feeding method. These variables may include the woman's response to discovering the pregnancy, i.e., wanted or unwanted and subsequent attachment during the pregnancy; perception of social support; complications during the pregnancy; experience with the health care provider; and other education during pregnancy. In addition, the factors which occur at the time of birth can all affect the decision to breast or bottle feed. These factors include: length of labor, type of medication or anesthesia, type of delivery (vaginal or cesarean), separation after birth, availability of rooming in, pediatrician support or lack thereof, prematurity, congenital anomalies, multiple gestation, infant and maternal response to early feeding attempts, and any maternal or infant complications.

Procianoy et al. (1984), in a Brazilian study of 95 women, found a shorter duration of breastfeeding among the 22 women who had cesarean deliveries. In a more recent study, Janke (1988) found no significant difference in duration of breastfeeding at six weeks postpartum between women who had vaginal or cesarean deliveries. In both groups, commitment to breastfeeding was associated with the duration of breastfeeding. Other factors were significantly

associated with breastfeeding only among women with vaginal births. Janke speculated that the longer duration of hospitalization and support in establishing breastfeeding in the hospital may have mediated the effect of other factors in the cesarean birth group.

Summary of Factors

Simopoulus and Grave (1984) addressed some of the research problems accompanying identification of factors associated with a mother's choice of infant feeding methods.

> In general, demographic variables are easier to incorporate into questionnaires and easier to administer, explain, test and score than psychosocial, and especially, attitudinal variables. Yet the latter are probably closer to true causal determinants of choice in infant feeding practices than demographic (p. 606).

Breastfeeding is clearly a complex process, involving the interaction of psychological, emotional, and physiological processes operating in the maternal-infant dyad, and in their interaction with their social network and the larger sociocultural environment.

Methodological problems in a number of the studies of factors have limited their usefulness. One must also keep in mind that the flow is almost always unidirectional from breast to bottle feeding and rarely the reverse. In addition, the impossibility of random assignment of infants to breast or bottle feeding makes it difficult to assess if

the feeding choice actually represents inherent differences among the two groups of women (Sauls, 1979). Research findings must be interpreted with caution as the incidence and duration of feeding methods may be effected by a complex array of factors. In addition, association does not equal cause or effect.

The Hispanic Population

Demographic Data

The Hispanic population of the United States is reported to be the sixth largest in the world (Trevino, 1982). The term Hispanic does not refer to race but rather to identified ethnicity. Hispanics represent a heterogeneous population of many racial, cultural, and geographic backgrounds. Hispanic ethnic origin is considered by many to constitute a separate demographic category which should be identified in the same way as racial categories of Black and White are identified for the purposes of data collection and analysis.

Hispanics in the United States may be of Mexican, Puerto Rican, Cuban, Spanish, or other geographic origin but choose to identify themselves ethnically as Hispanic while racially they may be classified as White; Black; American Indian, Eskimo, and Aleut; or Asian and Pacific Islander (Trevino, 1982). Although other terms such as Chicano, Latino, and Mexican American have been used to identify Hispanics, the latter term appears to be most widely accepted and used. However, it is important when examining

or conducting research with Hispanics in the United States to be aware of the predominant subgroup being studied (Trevino, 1982).

In the United States, most Hispanics are of Mexican origin and reside in the Southwest. The second largest group of Hispanics in the United States is called "other". This group includes persons from the Dominican Republic, Colombia, El Salvador, Ecuador, Spain, Argentina, Guatemala, Peru, and all other Central and South American countries except Mexico, Puerto Rico, and Cuba. Additional major groups of Hispanics in the United States are Puerto Ricans who primarily live in the Northeast, and Cubans who are concentrated in Florida and the New York metropolitan area (Exter, 1985; Markides & Coreil, 1986; Trevino, 1982).

Hispanics are the second largest minority group in the United States and it is projected they may outnumber blacks by as early as 1990 (Markides & Coreil, 1986) although Exter (1985) disputes the method of population projections utilized. In 1980, the U.S. Census reported the Hispanic population to be 14,608,673 (6.4% of the total U.S. population) (U.S. Bureau of the Census, 1983). The 1988 U.S. Census Bureau report identified an increase of this population to 19,400,000 civilian Hispanics (8.8% of the total U.S. population) (Mollison, 1988). These reports most likely underrepresented the actual United States Hispanic population due to the number of illegal immigrants who were not counted (Exter, 1985). Estimates of annual rates of

increase in the Hispanic population in the United States range from 3.3% to 4.9% per year (Exter, 1985).

Exter (1985) reports that at least one half of the U.S. Hispanic population is bilingual in English and Spanish, and 80% of Hispanics are either fluent or able "to get by" in English. Those who are totally dependent on Spanish represent 20% of the Hispanic population while 12% are fluent only in English.

The birth rate for Hispanics in the United States is higher than for any other group. Hispanic women aged 18-44 years in 1986 had 105.6 births per 1,000 women compared with 68.2 births for whites and 78.4 births for blacks (U.S. Bureau of the Census, 1987). However, a Census Bureau report states, "about two-thirds of the difference between Hispanic and non-Hispanic fertility is due to lower educational attainment, not ethnic origin" (Exter, 1985, p. 30). The mean family size of Hispanics is 3.88 persons compared to 3.23 persons for non-Hispanic families (U.S. Bureau of the Census, 1987). Among Hispanics in the United States, the median age in 1985 was reported to be 25.0 years compared to 31.9 years among non-Hispanics (U.S. Bureau of the Census, 1987).

The median household income for Hispanics in 1985 was reported by the Census Bureau to be $19,027. This was above the figure of $16,786 for blacks and far below the $29,152 figure reported for white households. Fewer Hispanic than black households were reported to earn less than $5,000.

However, the median household income and other income figures for Hispanics may have been distorted by the underreporting of undocumented and migrant workers (U.S. Bureau of the Census, 1987).

Over half (55%) of the Hispanic population in the United States lives in Texas and California (Mollison, 1988). Approximately 75% of Hispanics of Mexican descent in the U.S. live in these two states (Exter, 1985). However, communities with significant concentrations of Hispanic persons can also be found throughout the United States. The 1980 U.S. Census figures for Hispanics in Oregon was 66,164 persons, 2.5% of the total Oregon population. In Oregon, the majority (69%) of Hispanics are of Mexican descent, with the second largest group being "other." In 1980, 25% of Oregon's Hispanic population in 1980 resided in Clackamas, Marion, Polk, and Yamhill counties, the counties surrounding the site of data collection for the present study. In this four county area, 76% of the Hispanic population is of Mexican descent (U.S. Bureau of the Census, 1982).

The majority of research on breastfeeding among Hispanic women has been done in California, Texas, Florida, and New York. No research which examined infant feeding methods of Hispanic women in Oregon was found. The younger age, larger family size, and higher fertility of Hispanics, however, point to the importance of examining such issues among the Hispanic population in Oregon.

Breastfeeding Among Hispanics in the United States

Assessing breastfeeding trends nationally among Hispanics is difficult due to the lack of available information. The fertility surveys do shed some light on breastfeeding incidence and trends but need to be interpreted cautiously. These data have been collected through survey methods which require an adequate knowledge of the English language as well as reading and writing ability to complete. An underrepresentation of non-English speaking Hispanics can be assumed.

It is also known that nonrespondents to mail surveys tend to be less educated than those who respond (Hendershot, 1984), so it is likely that more educated Hispanics are better represented by the surveys than those who have less education. Migrant Hispanics can also be assumed to be poorly represented due to the difficulty of contacting them by mail. The national fertility surveys make no differentiation between the major Hispanic groups in the United States: Mexican, Puerto Rican, Cuban, and other (Exter, 1985; Smith et al., 1982). In addition, the degree of acculturation among Hispanics who were surveyed was not assessed. Nevertheless, the fertility surveys are useful in providing some estimation of the incidence of breastfeeding among Hispanics nationally.

Hirschman and Sweet (1974) used the 1965 National Fertility Study data and evaluated the effect of ethnic origin upon the incidence of breastfeeding. Ethnic origin

was determined by the nationality of the woman's mother. Their findings revealed that black and Latin American mothers were more likely (7% above the overall average) to breastfeed their first baby than mothers of other ethnic backgrounds included in the survey. All of the ethnic origin data, which covered the birth years of 1926 to 1965 were analyzed collectively. Therefore, breastfeeding trends among Latin American mothers during this time period were not identified.

An analysis of data from two fertility surveys (NFS & NSFG-1), found that prior to 1950 (approximately 1936 to 1950), Hispanics had a high rate of breastfeeding their first-born (73%). This was similar to the incidence among blacks. During the same time period, 56% of white women breastfed their first child (Hirschman & Hendershot, 1979).

A significant downward trend occurred from that time until the early 1970's in all three racial or ethnic groups studied (white, black, and Hispanic origin). Hispanic was defined as ethnic origin, independent of racial classification, so a Hispanic woman may have been included in either black or white racial groupings. If a woman responded that she was either Mexicano, Chicano, Mexican American, Puerto Rican, Cuban, Hispano, or of any other Spanish origin or descent, she was still considered to be Hispanic. The incidence of breastfeeding for first-born Hispanic infants in 1951 to 1955 dropped to 58% and continued to decline to a level of 19% in 1971 to 1973. The

duration of breastfeeding also decreased among Hispanics. The rate of first-born children who were breastfed for three months or more, declined from 38% prior to 1950, to 16% in 1961-1965, and to 4% in 1971-1973 (Hirschman & Hendershot, 1979).

The breastfeeding decline among Hispanics was more precipitous than that of white women, but less precipitous than among blacks. Breastfeeding incidence among Hispanics, like blacks, was continuing to decline in the early 1970's. At the same time, a reversal in the downward trend was occurring among white mothers who breastfed for less than three months (Hirschman & Hendershot, 1979). During this later period, Hispanics were less likely than average to breastfeed (Hirschman & Butler, 1981).

No analysis of the effect of Hispanic origin on breastfeeding incidence could be found for the National Survey of Family Growth--Cycle II or for the Ross Laboratories surveys. However, some subnational studies have been conducted which specifically investigated the infant feeding practices of Hispanic women.

Data collected as part of a 1979 survey by the Centers for Disease Control, to obtain information regarding family planning and maternal and child health, were analyzed by Smith and associates (1982). Women who lived in 51 counties which border Mexico, in the states of Texas, New Mexico, Arizona, and California, were surveyed. Included were women ranging in age from 15 to 44, who had ever had a live birth

during the period of 1971 to 1979, and were either Hispanic of Mexican origin or Anglo. Over 1,000 women were surveyed by means of personal interviews with trained, bilingual, female interviewers. The women surveyed were asked if they had breastfed their most recent live-born child and if so, for what duration. The response rate to the survey was 89%.

This study (Smith et al., 1982) found that the incidence of breastfeeding among Anglos during the two periods analyzed (31% from 1971 to 1975, and 47% from 1976 to 1979) followed the national trend for white women. An abrupt rise in breastfeeding, that was statistically significant, was also noted. The Hispanic incidence of breastfeeding was somewhat less than that of Anglos during the first period (26% from 1971 to 1975) but was less than half the rate for Anglo women during the second period (21% from 1976 to 1979). While an increase in breastfeeding occurred among Anglo women, there was a decrease among Hispanic women of Mexican origin, in the same geographic area.

Smith et al. (1982) found that the downward trend in breastfeeding among Hispanics occurred for all four parity groups (first, second, third, or fourth and higher parity births). A downward trend in the breastfeeding rate was also reported among Hispanic mothers of all educational levels except those with exactly 12 years of education, who showed a 3% increase. In contrast, an increase in breastfeeding from the first period (1971-1975) to the

second period (1976-1979) was noted for all parity and educational levels among Anglo women.

A decrease in the duration of breastfeeding was seen for both Hispanic and Anglo women during the second time period. The mean number of months duration of breastfeeding for Hispanics during the 1971 to 1975 period was 5.17 months and this dropped to 3.37 months during the 1976 to 1979 interval. The mean number of months duration for Anglos was 5.91 and 5.22, respectively. A possible problem with this study may be maternal recall, as was true of the national fertility studies. Answers may also be erroneous due to perceived social desirability when interviewers are used for data collection.

Magnus and Galindo (1980) surveyed county district health centers in Los Angeles, California during 1978. The researchers found that 86% of the infants in the sample were Hispanic. Only 13% of the infants were exclusively breastfed and only 21% of infants received any breast milk during their first three months of life.

In another study, Rassin et al. (1984) reported that ethnic background was found to have the strongest influence upon the incidence of breastfeeding among mothers of low socioeconomic status. The study was conducted in 1981 at a university hospital in South Texas. A questionnaire was administered to mothers within 48 hours postpartum to identify the mother's intended infant feeding method along

with other information. Translators verbally interviewed non-English speaking mothers.

The researchers (Rassin et al., 1984) found that only 27% of the women intended to breastfeed. Anglo mothers had the highest intended incidence (44%) while breastfeeding among blacks was lowest (9%). The percentage of Mexican American women who intended to breastfeed was 23%. Breastfeeding incidence was analyzed by both maternal and paternal ethnicity, with both factors producing similar rates.

All ethnic groups in this study had a lower incidence of breastfeeding than the national rate of 58% for 1981, as determined by a Ross Laboratories survey (Martinez & Dodd, 1983). However, this result is not surprising as the study was conducted among a population of women that the Ross Laboratories surveys have been found to underrepresent or not include in their sample, ie. those with low levels of education, low socioeconomic status, and single mothers (39%). Teenagers, 17 years of age and younger, made up 26% of the sample. Many of these mothers were likely to be single and would not have been represented in a Ross Laboratories survey. Breastfeeding incidence among Hispanics in this study should be viewed with some caution, due to the small subsample of Hispanic breastfeeding mothers (14 out of 62 Hispanics).

Ysunga-Ogazon (1984) expressed concern over what he called a downward trend in breastfeeding which seems to have

occurred in Mexico in the 1960's and 1970's. This may or may not have contributed to the decreased incidence of breastfeeding among Mexican Americans living in the United States. Ysunga-Ogazon reported that the incidence of breastfeeding in Mexico was 78% in 1979, a slight decrease from 80% in 1976. The author described a study conducted among a low-income urban Mexican population, in which 78% of the mothers breastfed initially, 60% breastfed for one to three months, and only 38% breastfed for more than four months. Another study in one Mexican state found a decrease in breastfeeding, from 95% in 1960 to 73% in 1966 (Ysunga-Ogazon, 1984). More recent information on the incidence of breastfeeding in Mexico was not found.

A high incidence of breastfeeding was noted in a study done in 1981 and 1982 by Scrimshaw, Engle, Arnold, and Haynes (1987). The sample consisted of over 500 low-income, low-risk, primiparous women, of Mexican origin or descent, who delivered their infant in one of two Los Angeles hospitals. Most of the women were born in Mexico and had arrived in the United States fairly recently. Some of the women were interviewed prenatally and all were interviewed postpartum.

Prenatally, 82% of the women intended to breastfeed. Of those, 26% planned to breastfeed for one to three months, 44% for four to six months, and 30% for a longer duration. Postpartally, the percentage of women who planned to breastfeed dropped to 70% in one hospital, but remained

unchanged in the other facility. The difference in breastfeeding rates between the two hospitals was believed to be due to differing hospital practices, including variations in the incidence of cesarean births, staff availability to support breastfeeding, privacy, rooming-in, and other factors. Shapiro & Saltzer (1985) conducted a study in Southern California among 31 primarily Spanish-speaking, Mexican American women, receiving prenatal care and it was identified that 68% planned to breastfeed. Two-thirds of the women interviewed communicated that they thought that, if they were in Mexico, there would be more support for breastfeeding their baby.

A wide variation of breastfeeding incidence among Hispanics is noted among the later studies which were examined. Differences in research methodology, the specific Hispanic population studied, levels of acculturation, and a multitude of factors which may affect infant feeding choices are likely to be found. Many factors which influence a woman's infant feeding decision have already been discussed, including some pertaining to culture. Specific Hispanic cultural factors which affect the perception and choice about infant feeding methods will be addressed.

Hispanic Cultural Factors Which Affect the Choice of Infant Feeding Method

Two studies of social support and choice of infant feeding methods of Hispanic women among different populations were conducted with similar results. One study

in Miami, Florida involved Puerto Rican, Cuban, and Anglo women (Bryant, 1982). The other study occurred in Galveston, Texas among Mexican-American and Anglo women (Baranowski, et al., 1983).

Studies by Baranowski et al. (1983) and Bryant (1982), found that among Hispanic women, the client's mother was the most important source of infant feeding information and support and exerted a strong influence on the choice of feeding method. In contrast, Anglo women identified their husbands as the most important source of support in their feeding decision but also identified friends as important sources of information. For Hispanics the advice given by friends, relatives, and neighbors was found to be more significant and more likely to be followed than that given by health care professionals. This was particularly true when the support network of the woman was nearby rather than in a distant city or country.

The incidence and duration of breastfeeding was found to be greater among Anglo women and less among Hispanic women. Women who successfully breastfed identified a supportive network as being essential while those lacking this support most often switched to bottle feeding (Baranowski et al., 1983; Bryant, 1982).

Another study was conducted among women of Mexican origin or descent in the Los Angeles area to identify factors effecting breastfeeding or the choice and duration of infant feeding method (Scrimshaw, et al., 1987). In this

study at two hospitals, it was found that women who had rooming-in and initiated breastfeeding earlier were more likely to carry out their prenatal intention to breastfeed. Breastfeeding was also more likely among women who were married or planning to be married. Women who planned to return to work were less likely to breastfeed and breastfed for a shorter duration. Of the women who did not breastfeed, 44% identified work plans as the reason.

Scrimshaw, et al. (1987) also found that the more acculturated a woman was the less likely she was to initiate breastfeeding. Acculturation was measured by questions which indicated a woman's preference for speaking English or Spanish, number of years lived in the United States, self-identification, urban or rural birthplace, and preference for American or Hispanic cultural events and materials. Although acculturation is multifaceted, language alone has been used as a rough indicator of acculturation (Becerra & Anda, 1984).

Sweeney and Gulino (1987) found that among Hispanic women in border areas in Texas and California, the subject's mother had the most influence on the feeding decision and the male partner ranked second. In terms of duration of breastfeeding at six weeks postpartum, however, the husband or partner exerted the strongest influence.

Another study (Shapiro & Saltzer, 1985) of attitudes toward breastfeeding among primarily Spanish speaking, Mexican American women found that most women planned to

breastfeed. Conducted in Southern California, this study found that one-third of the women had previously breastfed infants. Most of these had successfully breastfed for more than seven months although they had also used supplementary feedings. The majority of women had been breastfed themselves and perceived positive attitudes toward breastfeeding by their mothers. Spousal opinion toward breastfeeding, of either a positive or negative nature, was important to the women. Nearly two-thirds of the women believed that more support for breastfeeding would be available to them in Mexico than in the United States.

Many of the same reasons for discontinuing breastfeeding were given by Hispanic women as had been previously reported by other studies. The most frequent reasons given in a California study (Skeel, McCarty, & Pierce, 1986) were insufficient breast milk supply, sore nipples, and return to work. In this study, an educational approach combined with close, individual, postpartum follow-up by trained Hispanic lactation counselors resulted in an increase in the incidence and duration of breastfeeding.

In summary, it appears that a Hispanic woman's mother and husband or partner and their attitudes toward breastfeeding, as well as the woman's previous breast or bottle feeding experience are influential in the infant feeding decision. In the hospital, frequent and extended contact with the newborn, early initiation of breastfeeding,

and staff and hospital attitudes and policies which promote breastfeeding, significantly influence whether a woman initiates her plan to breastfeed. On-going support from the male partner and others, including health care providers, as well as work plans, appear to influence the duration of breastfeeding.

Summary of Review of Literature

Breastfeeding is the best source of nutrition for the first six months of life. Prior to 1910, almost all American infants were breastfed. In the 1940's, a decline in breastfeeding occurred continuing to its nadir in the late 1960's and early 1970's. A rise in breastfeeding incidence in the United States began at that time. This increase has continued through to the present, with a possible leveling off now taking place. Over 50% of American infants are currently being initially breastfed. Mothers in the Western United States have been found to be more likely to breastfeed their newborn infants than those in other parts of the country. In Oregon, an estimated 85% of newborn infants were breastfed in 1984.

Many factors are assocaited with breastfeeding. These include, but are not limited to: Caucasian race, educational level above high school, maternal unemployment or partial employment, middle to high income level, social support, supportive health care providers, and various cultural factors, some of which are specific to Hispanics.

Hispanics compose the second largest minority group in the United States, and their numbers are rapidly increasing. The birthrate among Hispanics in the United States is significantly higher than that of Whites or Blacks. Prominent factors positively related to Hispanic breastfeeding are: support from the woman's mother; ongoing support from her partner, social network, and health care providers; unemployment; and a lack of acculturation to American society.

The incidence of breastfeeding among Hispanics in the United States is uncertain. Reports range from a breastfeeding incidence of approximately one-fourth to three-fourths of study participants. A lack of data is even more apparent among Hispanics in Oregon. Research is needed to identify the incidence and short-term duration of breastfeeding among Hispanics living in Oregon.

Conceptual Framework

As mentioned previously, the decision to breastfeed an infant is a complex choice influenced by many factors in both the woman, her infant, her family, her social network and the larger community, as well as factors surrounding her pregnancy and delivery. Although associated factors may be partially identified through research, the impact each factor has upon the ultimate decision and subsequent implementation is more difficult to assess.

Bentovim (1976) examined the decision to breastfeed from a systems theory perspective. He described both

precipitating factors or positive feedback and negative feedback or that which tends away from a decision to breastfeed. Four classes or groups of variables were identified which influence the woman's decision to breastfeed or not including (1) personal or individual variables, (2) family characteristics, (3) sociocultural or societal variables, and (4) precipitating variables related to the pregnancy, birth, and postpartum. Some of the factors identified in each of these categories have been presented earlier giving a picture of the complexity of this decision.

Bentovim's categories thus provide a useful structure for examining factors which may influence the decision and duration of breast or bottle feeding in a Hispanic population. Some of these factors can be examined in their association with the breastfeeding decision reported in the hospital after delivery and breastfeeding incidence at six weeks postpartum in a group of Hispanic women in Oregon. However, no cause and effect relationship can be determined.

Statement of the Problem

Currently no information is known to exist which identifies the incidence and duration of breastfeeding among Hispanics in Oregon. Nationally, the population of Hispanics is increasing rapidly due to high birth rates and migration. Identification of the incidence and short-term duration of breastfeeding, bottle feeding, and combined breast and bottle feeding among Hispanic women could assist

health care providers in their care of Hispanic women and their infants. Knowledge of the breastfeeding practices among Hispanics could assist nurses in planning education, intervention, and client support to promote breastfeeding in this population. Furthermore, this information could be useful in health care planning by WIC, the Migrant Health Service, the Public Health Service, and other federal, state, and local agencies. Results from this study may also add to the limited knowledge base concerning the health care practices of Hispanic migrant and seasonal workers and their families. Although this study will not evaluate factors which are associated with infant feeding decisions, patterns may emerge from the demographic data regarding the sample population.

Research Questions

The research questions posed for this study were:

1. What is the incidence and short-term duration of breastfeeding in a Hispanic population in Oregon?

2. What factors are associated with the incidence and short-term duration of breastfeeding in a Hispanic population in Oregon?

CHAPTER II

METHODS

The purpose of this study was to identify the incidence and short-term duration of breastfeeding among Hispanic women served by a rural nurse-midwifery clinic in Oregon. The data base used for this study was collected by nurse-midwives and provides demographic information as well as a report of infant feeding choice or practice prenatally, in the hospital, and at six weeks postpartum. This research study was designed as a descriptive analysis of a secondary data source.

Setting

The setting for this study was a rural health clinic which is located in Western Oregon. The clinic provides primary health care services for a clientele which is composed predominantly of seasonal, migrant, and low-income families. During the study period, prenatal, intrapartum, postpartum, and newborn care was provided to women and their offspring by Certified Nurse-Midwives. At the time of data collection, the clinic was funded by grants from the Migrant Health Service and the Public Health Service. Federally funded WIC services were provided at the clinic site. Physicians and other health care providers were available for consultation and referral as needed. Although the clinic continues to provide prenatal and postpartum care, intrapartum care is not being provided by the clinic nurse-midwives at this time.

Most of the infants were delivered by the clinic nurse-midwives at a university hospital in a metropolitan area located approximately 30 miles from the clinic. A few infants were born at other area hospitals. A small number of mothers had an unplanned out-of-hospital birth due to precipitous labor. The university hospital does not have a normal newborn nursery, so all essentially healthy infants received 24-hour rooming-in with their mothers, unless otherwise arranged.

Women with uncomplicated pregnancies were encouraged to participate in the hospital's short-stay program. This program was available to women who met low risk criteria antepartum, intrapartum, and postpartum. If infants also met low risk criteria they were eligible also to have a short hospital stay. On the short-stay program, women and infants remained in the hospital for six hours after delivery, except when the delivery occurred between 10:00 p.m. and 6:00 a.m. Women who selected the short-stay option were visited at home by a clinic nurse within 24 hours of hospital discharge (or within 48 hours of discharge on a weekend). Women or infants not on the short-stay program had an extended stay of approximately 24-48 hours following a vaginal delivery.

Sample

The clinic provides health care to women of several different racial and ethnic backgrounds; however, the majority of its clients are of Hispanic origin or descent.

This study included those pregnant women who were seen by the nurse-midwifery service for prenatal and intrapartum care who identified themselves as Hispanic. Partners' ethnic background could not be ascertained using this data set. Data from 1985 through 1986, approximately a two-year period, were examined.

Women with infants meeting the following additional criteria were included in the sample: live, singleton birth at term; birth weight > 2500 grams; no major anomaly present; and Apgar $\geq$ 7 at five minutes. These criteria were selected based on the review of the literature. They were used to minimize the effects of confounding factors, such as prematurity, low birth weight, multiple gestation, congenital anomalies, and perinatal asphyxia upon the choice of infant feeding method. Prenatal and intrapartum feeding intention data must have been recorded on all study participants. A sample size of 229 Hispanic women who met the study criteria was obtained.

Incomplete data were available on some women in the sample, primarily due to the high percentage of migrant and seasonal workers whose families received care at the clinic. Migration and deportation present a historical threat to internal validity in this sample. Migration to obtain continued agricultural work frequently interrupted the continuity of care. In addition, undocumented workers may have been subject to deportation by the United States Immigration and Naturalization Service, resulting in

incomplete data on them as well. Also, some families may have voluntarily returned to their country of origin.

It is not known if the women who migrated differ from those who continued to be followed by the clinic. This may present a threat of selection. Inclusion of the partial data available for women who delivered with the service, but migrated or were lost to follow-up, provided insight into the incidence of breastfeeding among this group. Threats to external validity in this study are minimal due to the use of a secondary data source and the descriptive design.

Instrument

Data were collected by the nurse-midwives on all clients seen by the clinic for prenatal care in order to obtain statistical information regarding their clinical practice. The original data collection forms were designed by the nurse-midwives for information gathering at the initial prenatal visit, intrapartally following delivery, and at six weeks postpartum (see Appendix A). This tool included demographic data and health care information regarding both mother and infant. Of special interest to this study were the data collected at each sampling period regarding infant feeding choices.

A major problem in the study was that data was collected in a handwritten draft format of the tool (see Appendix A). Problems which resulted included: use of categorical data, inconsistencies in recording information, and write-in information. In order for the reader to

examine the individual items, sections of this tool have been retyped (see Appendix B). The tool has subsequently been revised after the data collection period used for the present study.

Information from the chart was used to complete the data form. Attempts were made to complete the data collection forms at the appropriate time periods throughout the client's involvement with the clinic. When data were promptly recorded, this minimized the opportunity for inaccuracies caused by delayed recall. Because several nurse-midwives participated in data collection, however, the potential for differing interpretations of the possible responses listed on the tool was ever-present. Additionally, problems were encountered due to the limited number of responses on the data form which resulted in write-in information that may have been inconsistently recorded. This later caused some difficulty in categorization when the data was transferred to the computer files.

Procedure

The forms were saved and the data subsequently entered into a computer database by several individuals, including two of the nurse-midwives, an earlier researcher and research assistant, and the current investigators. The data entry process occurred during a period of approximately one year. Much of the information was initially entered using the Personal Filing System (PFS). It was later transferred

to the CRUNCH file system. CRUNCH is a quantitative statistical package designed by CRUNCH Software Corporation. The remainder of the information was entered directly onto the CRUNCH files. Some differences in interpretation of data categorization may have been encountered during this process, possibly resulting in some distortions of the original data. However, efforts at data verification were made in order to assure accuracy.

A computer-generated subsample of every tenth entry in the data file was compared with the actual data collection forms, in order to verify the accuracy of the transcription. A 95% accuracy rate was obtained on this subsample and the data were accepted. Data in the computer sample were identified by code number and thus anonymity was preserved. The researchers had access to the patient-identification information only during the data entry period and verification process. Permission to use this data set has been obtained from the clinic medical director (see Appendix B). This study was designated as exempt from review by the Committee on Human Subjects at the Oregon Health Sciences University.

Analysis

A statistical analysis of the data was conducted using descriptive statistics. The mean, mode, range, and relative frequency of feeding choices, selected demographic characteristics, and medical information related to the

pregnancy and birth were examined, as appropriate (see Appendix B).

Specific items which may be related to infant feeding choices were noted: age, marital status, parity, migrant or seasonal worker status, payment status, WIC referral, maternal education, and preferred language. Also evaluated were type of delivery, short and routine hospital stay, type of care provider, the sex of the infant, and the incidence of neonatal jaundice. Chi square analyses were conducted to identify associations between these factors and the incidence and short-term duration of breastfeeding. A significance level of $p < 0.05$ was used.

Infant feeding choices in this data set consisted of breastfeeding, bottle feeding or both (combined breast and bottle feeding). At the postpartum visit, the addition of solids was also assessed. Researchers have used a variety of definitions for what feeding behaviors would be included in each of the categories. More precise definitions of the types of feeding were not available for the data collection tool used in this study. The women responded according to their own definitions of the feeding methods, or possibly with some guidance from the interviewer. This may have resulted in some inaccuracies. In addition, a response bias potentially could be present if certain feeding methods were perceived as socially desirable by these clients.

For the purposes of this study, breastfeeding incidence was defined as an answer of "Breast" to the "Type Feed"

question on the intrapartum statistics portion of the data collection tool. This means the mother reported that she had decided to breastfeed, or actually did breastfeed her infant during the intrapartum period. A response of "Both" was interpreted as combined breast and bottle feeding. Overall breastfeeding incidence refers to the combination of "Breast" and "Both" responses.

Short-term duration of breastfeeding was defined as breastfeeding throughout the first six weeks of life. This was indicated by a response of "Breast" to the "Type Feeding" question on the postpartum and newborn statistics portion of the data form, for those clients who returned for a newborn visit at six or more weeks postpartum. Infants who returned later than six weeks postpartum for a follow-up visit, in which the feeding method of "Breast" was recorded, were considered to have been breastfeeding at six weeks of age.

For those infants older than six weeks whose mothers indicated a "Both" response, it cannot be determined if the infants were both breast and bottle feeding, or only breastfeeding at six weeks. A change from exclusive breastfeeding to combined feeding ("Both") could have occurred for some infants between six weeks and the time of their follow-up visit. Thus, the overall short-term duration of breastfeeding indicated incidence based on the combination of "Breast" and "Both" responses, at six weeks postpartum.

CHAPTER III

Results

The results of this study are presented in three sections. First, demographic and other selected characteristics of the sample are described. Second, the incidence and short-term duration of breastfeeding in this sample will be reported. Third, the relationship between selected characteristics and the incidence and short-term duration of breastfeeding will be explored.

Description of the Sample

Demographic Characteristics

The clinic data set included 523 women. Non-Hispanics accounted for 171 of these women and were recorded as being of Anglo, Russian, Indian, or other ethnicity. The majority of women identified themselves as Hispanic (352). Many of these women migrated or for other reasons did not deliver with the clinic. Other missing data also contributed to attrition. There were 229 Hispanic women who met the criteria for inclusion in the study.

The ages of subjects were recorded in the data set by range categories of unequal intervals, rather than by actual age (see Table 1). The age 20-34 category spanned the largest number of years and included the majority of women (64%). The second largest group was composed of women aged 15-19 years (29%). This was only a five-year age span, in contrast to the 15 year age span in the first group. The other two groups were relatively small. Women aged 35-44

made up 6% of the sample, while those aged 10-14 accounted for slightly over 1%. It was impossible to accurately determine the ages of the majority of women in the study. Comparison between groups was also complicated by the unequal intervals.

Categories of marital status included married (78%), single (13%), living with (7%), separated (1%), divorced (0%), and widowed (0.4%). No differentiation was made on the data form to distinguish common-law marriage from civil marriage. Common-law marriage was noted to be prevalent among this population (Horwitz, 1987). Therefore, data pertaining to marital status were collapsed into the categories of partnered and unpartnered. Most women in the sample were identified as partnered (85%) (see Table 1).

Socioeconomic Characteristics

Three categories of patient status were noted (see Table 2). The majority of women (56%) were considered to be of migrant status. The term migrant was used to refer to those workers who had the sole occupation of farming, and who traveled or migrated from job to job, temporarily residing at a variety of locations while employed. Seasonal farm workers were similar to migrant workers, except that they generally did not migrate but resided in one location. Those with seasonal status made up one-third (32%) of the clinic sample. The remainder (12%) were classified as "other".

Table 1

Demographic Characteristics

Characteristic	Frequency	Percent
Maternal Age		
10-14	3	1.3
15-19	66	28.8
20-34	147	64.2
35-44	13	5.7
Marital Status		
Partnered	194	85.5
Unpartnered	33	14.5

Most of the women (82%) in the sample indicated that their preferred language was Spanish. English was the preferred language of 18% of the women (see Table 2). Country of origin was not assessed among the women in the data set. Therefore, it is unknown if the language preference of the women reflected their country of origin. It is also possible that some women may have been bilingual in Spanish and English, but this was not assessed in the data set. It was the impression of the health care providers that the majority of women who indicated Spanish as their preferred language, spoke little or no English (L. Goldfarb, C.N.M., personal communication, August 19, 1988).

Education was recorded as grouped data (see Table 2). Those women with eight years of education or less composed over two-thirds (70%) of the sample. Women who reported 9-12 years of education accounted for an additional 28%. Only 2% of the sample had 13-16 years of education. None of the women indicated an educational level beyond 16 years.

The clinic utilized a sliding fee scale based on household income and family size to determine payment for services (see Table 3). The majority of women (59%) fell into the 25% payment category, which meant they were responsible for paying 25% of their clinic fee. The second largest group (31%) were those in the 0% payment category. These women were expected to pay a flat fee of $10.00 per clinic visit. Only 5% of the sample were responsible for paying the full fee, while the remaining 5% were included in the 50% and 75% payment classifications.

WIC services were available at the clinic site and almost all of the subjects (93%) were referred to this program (see Table 2). It is uncertain, based on the data set, how many of these women actually utilized WIC services.

Selected Characteristics

Additional factors related to the pregnancy and birth were assessed. These factors included parity, type of delivery, type of care provider, type of hospital stay, newborn information, and prenatal feeding intention.

Table 2

Socioeconomic Characteristics

Characteristic	Frequency	Percent
Patient Status		
Migrant	126	56.0
Seasonal	72	32.0
Other	27	12.0
Preferred Language		
English	40	18.1
Spanish	181	81.9
Education (years)		
≤ 8	137	69.5
9-12	56	28.4
13-16	4	2.0
≥ 17	0	0.0
Payment Status		
0%	69	31.5
25%	129	58.9
50%	9	4.1
75%	2	0.9
100%	10	4.6
WIC Status		
WIC	187	92.6
Non-WIC	15	7.4

Table 3

Scale for Calculation of Sliding Fee (1985)

FAMILY SIZE	INCOME RANGE IN DOLLARS				
	0%	25%	50%	75%	100%
1	<5,251	5,251-7,035	7,036-8,715	8,716-10,499	>10,500
2	<7,051	7,051-9,447	9,448-11,703	11,704-14,099	>14,100
3	<8,851	8,851-11,859	11,860-14,691	14,692-17,699	>17,700
4	<10,651	10,651-14,271	14,272-17,679	17,680-21,299	>21,300
5	<12,451	12,451-16,683	16,684-20,667	20,668-24,899	>24,900
6	<14,251	14,251-19,095	19,096-23,655	23,656-28,499	>28,500
7	<16,051	16,051-21,507	21,508-26,643	26,644-32,099	>32,100
8	<17,851	17,851-23,919	23,920-29,631	29,632-35,699	>35,700
9	<19,651	19,651-26,331	26,332-32,619	32,620-39,299	>39,300
10	<21,451	21,451-28,743	28,744-35,607	35,608-42,899	>42,900
11	<23,251	23,251-31,155	31,156-38,595	38,596-46,499	>46,500

The majority (65%) of the mothers were multiparous while one-third were primiparous (35%)(see Table 4). Parity ranged from 0 to 10, with 94% of women in the sample having given birth to four children or less. Women with a parity of one made up 21% of the sample, while those with parity of two, three, or four comprised 18%, 12%, and 7% of the group, respectively.

Almost all of the women (94%) delivered vaginally. Of these, 5% had a vaginal birth after a previous cesarean delivery (VBAC). Remarkably, only 5.7% of the women gave birth by cesarean section (see Table 4), while nationally 22.7% of women delivered by cesarean section in 1985 (U.S. Bureau of the Census, 1987). The primary (first-time) cesarean birth rate was 4.8%.

Hospital births accounted for most of the deliveries (96%). Out-of-hospital births, which appeared to be due primarily to precipitous labors, occurred among 4% of the sample. Most deliveries (86%) were performed by Certified Nurse-Midwives (CNMs). Labor was managed exclusively by CNMs for 82% of clients. An additional 12% of labors were managed collaboratively with physicians. Only 6% of labors were managed exclusively by physicians.

Almost half of the women (47%) were included in the short-stay program, meaning they were discharged from the hospital approximately six hours post-delivery, or slightly later if they delivered at night. The other half of the mothers (53%) had what was considered to be an extended

stay. An extended stay was generally 24-48 hours for vaginal deliveries and occurred most often due to maternal or neonatal complications, when women desired surgical sterilization, or when women gave birth by cesarean section (see Table 4). Most of the women (209 out of 229) received at least one postpartum follow-up visit, either at home or in the clinic. At six weeks after delivery, 146 women returned for a postpartum visit.

Table 4

Selected Characteristics

Characteristic	Frequency	Percent
Parity		
Primipara	81	35.4
Multipara	148	64.6
Type of Delivery		
Vaginal	215	94.3
Cesarean	13	5.7
Postdelivery Status		
Short-Stay	105	46.5
Extended Stay	121	53.5

Male infants accounted for 47% of the newborns, while 53% were female. Postpartally, 209 infants (91%) returned to the clinic for at least one newborn visit. The newborn visits occurred from 0.5 to 16 weeks after birth. Of those

who returned, the majority (78%) received follow-up care, with data recorded at six weeks or later. However, 22% of the infants were only seen at a home visit or in the clinic, prior to six weeks. Many of these infants subsequently migrated, were lost to follow-up, or received care elsewhere.

One of the complications recorded at the infant visit was the occurrence of neonatal jaundice. According to maternal report, 9% of infants had had some incidence of neonatal jaundice. An incidence of less than 1% of neonatal jaundice was noted to have occurred in the hospital.

Most women in this study (92%) indicated a specific decision regarding infant feeding at the initial prenatal visit. Breastfeeding was chosen by 78%, while bottle feeding was selected by 12%. An additional 1.5% indicated they intended to both breast and bottle feed their infants. Eight percent of women were undecided on an infant feeding method at the inital prenatal visit (see Table 5). Upon admission to the labor and delivery unit, the choice of infant feeding was reassessed.

The Incidence and Short-Term Duration of Breastfeeding

The incidence of breastfeeding, for the purposes of this study, was surmised from data collected and recorded on admission or shortly after delivery in the hospital. Infant feeding choice was indicated by the women at this time, although actual feeding may or may not have yet occurred.

The overall incidence of breastfeeding in the hospital was found to be 78%. This included women who indicated breastfeeding (75%) or both breast and bottle feeding (4%) as their choice of feeding method. Bottle feeding alone was the initial feeding method chosen by 22% of the women (see Table 5).

The short-term duration of breastfeeding was measured by maternal report among infants who returned for a newborn visit at six weeks of age or later. In this study, short-term duration of breastfeeding was defined as breastfeeding throughout the first six weeks of life. Most of the infants (149) had feeding data recorded at a six week visit. Those infants, who returned at precisely six weeks accounted for 73% of the total number of infants who returned for follow-up. An additional 14 infants (7%) had data which were collected on a follow-up visit occurring after six weeks, the latest presenting at 16 weeks of age. Infants who returned at less than six weeks made up 20% of the sample. Data recorded on infants who returned only at 0.5 to 5.9 weeks were excluded from the examination of short-term duration.

Among those infants who returned for follow-up at precisely six weeks, the short-term duration of breastfeeding was 50%. Breastfeeding alone was reported by 39% of the mothers. Combined breast and bottle feeding was indicated by 11% of these women. The actual incidence of bottle feeding can be determined, utilizing the six-week

postpartum data. Half of the infants (50%) were found to be exclusively bottle feeding at six weeks of age (see Table 5).

Table 5

Intention, Incidence and Short-Term Duration of Breastfeeding

	Feeding Method (%)		
Interval	Breast	Both	Bottle
Prenatal Intention	78.3	1.5	12.3
In-Hospital Incidence	74.9	3.5	21.6
Short-Term Duration	38.9	11.4	49.7

Note. Both refers to combined breast and bottle feeding. Short-term Duration includes only data at precisely six weeks.

Using data collected at six weeks and later, the short-term duration of breastfeeding was found to be 52% (84 infants). This included infants who were either breastfed (38%) or both breast and bottle fed (14%). It was assumed that infants returning later than six weeks, who were being breastfed, were also breastfed at six weeks. Type of feeding method could not be identified for infants older than six weeks who returned to the clinic and were exclusively bottle fed, as they may or may not have been

breastfed at six weeks of age. This may have resulted in an underestimation of the actual incidence of breastfeeding at six weeks (short-term duration). It is also unknown if those infants who both breast and bottle fed after six weeks received combined feedings or were only breastfed at six weeks.

Almost half (48%) of the infants included in the under-six-week group were seen at two weeks. The overall incidence of breastfeeding among infants who received follow-up only at less than six weeks was 59%. Those infants who were reported to be exclusively breastfed accounted for 39%. An additional 20% of infants received both breast and bottle feedings. The remaining 41% of these infants were bottle fed. Two infants had been introduced to solid foods by six weeks of age; one by three weeks and one by six weeks.

The infant feeding choices indicated by women were quite consistent between the initial prenatal visit and the incidence reported in the hospital. Prenatal intention to breastfeed, or to combine breast and bottle feeding, was reported by 79% of the mothers. This compared closely with the in-hospital incidence of 78%. The short-term duration of breastfeeding, however, declined to 52% by six weeks postpartum.

Little change was noted in exclusive breastfeeding, except for a slight decline from 78% prenatally, to 75% in the hospital. A large decrease was noted postpartum, when

the rate dropped to 38%. Combined breast and bottle feeding was low prenatally (1%) and rose to 4% in the hospital. By six weeks postpartum, the rate of combined feeding had increased to 14%.

A comparison was made between the overall in-hospital breastfeeding incidence of those who migrated or were lost to follow-up and those who returned for follow-up care. The number of infants who received no follow-up care from the clinic was small (17 infants). The overall incidence of breastfeeding in the hospital for infants who did not return for follow-up was less (65%) than for those who did return (80%), but this finding was not significant.

Selected Factors and Their Relationship to the Incidence and Short-Term Duration of Breastfeeding

Chi square analyses were performed on various factors to examine their relationship with breastfeeding incidence and short-term duration. Data obtained at six weeks and later were included in short-term duration. None of the factors analyzed were found to be statistically significant in relationship to breastfeeding. These factors included age, marital status, migrant or seasonal worker status, preferred language, education, payment status, WIC referral, parity, type of delivery, short or routine hospital stay, type of care provider, sex of the infant, and neonatal jaundice.

Education and preferred language have been used as rough indicators of acculturation (Becerra & de Anda, 1984).

Maternal education and preferred language were therefore combined to form a new variable which could serve as an indicator of acculturation. Education and preferred language were themselves found to be significantly associated ($p < 0.0001$). The majority of women (65%) had eight years or less education and preferred Spanish as their language. The second largest group (17%) was made up of women with 9-12 years of education who preferred Spanish (see Table 6).

The new variable indicating acculturation was then compared to the type of infant feeding method. The results were non-significant, but were of interest to note. Among women with eight years of education or less and who preferred Spanish, 82% initiated breastfeeding (breast, or breast and bottle) in the hospital. Of these, 56% continued to breastfeed, or both breast and bottle feed at six weeks. Women with 9-12 years of education, who preferred Spanish or English, initiated exclusive breastfeeding in the hospital at rates similar to one another (66% and 65% respectively). In this group, an additional 6% of Spanish speaking women combined breast and bottle feeding, while none of the English speaking mothers in this group used combined feeding. At six weeks postpartum, among those with 9-12 years of education, the overall short-term duration of breastfeeding was similar for English speaking (36%) and Spanish speaking women (32%). There were four women who had educational levels above 12 years, who preferred English (1)

or Spanish (3). Three women initiated breastfeeding and continued to exclusively breastfeed at six weeks postpartum. The other woman (Spanish speaking) initiated bottle feeding and did not return for follow-up.

Table 6

Crosstabulation of Education and Preferred Language

	Preferred Language		
	English	Spanish	
Education	n	n	
≤ 8 yrs.	11	125	136
			70.83
9-12 yrs.	20	32	52
			27.08
13-16 yrs.	1	3	4
			2.08
	32	160	
	16.67	83.33	

chi square = 25.1905

df = 2 $p < 0.0001$

Note. P-value may not be accurate. Two cells have expected frequencies less than five.

Women who may be less acculturated, appeared to initiate and continue breastfeeding at higher rates than those who were more acculturated. Exceptions to this were women with greater than 12 years of education.

Additional Findings

None of the selected factors were identified to be significantly associated with breastfeeding. When breastfeeding incidence was presented in relationship to these factors, however, interesting results surfaced.

Some differences were noted in the incidence and short-term duration of breastfeeding among women by age, although these findings were not significant. The highest incidence and short-term duration of breastfeeding was noted among women ages 35-44, although there were only thirteen women in this group. In the hospital, 85% of women ages 35-44 initiated breastfeeding, with an additional 8% indicating they were both breast and bottle feeding. At six weeks postpartum, 40% of these women continued to exclusively breastfeed. Another 50% reported that they were combining breast and bottle feeding. Thus, for women ages 35-44, an overall breastfeeding incidence of 93% was noted in the hospital, and 90% at six weeks.

The overall incidence of breastfeeding among 15 to 19-year-olds was 77%. At six weeks, 37% were breastfeeding. Among women ages 20-34, 79% initiated breastfeeding and 55% were either partially or exclusively breastfeeding at six

weeks postpartum. Women ages 10-14 formed too small of a subsample (3) to be included in a chi square analysis. It appeared that younger women had a lower incidence and short-term duration of breastfeeding than older women, but the unequal intervals of age categories made this comparison difficult.

There was little difference in the incidence of breastfeeding among women who were classified as migrant or seasonal workers. At six weeks, however, the short-term duration of breastfeeding was 58% among migrant workers and 42% among seasonal workers. This difference was not significant when chi square analysis was performed. Payment status showed no remarkable difference in relationship to infant feeding method.

Education was not significantly associated with the incidence and short-term duration of breastfeeding. It was noted that women with 8 or less years of education had an overall breastfeeding incidence of 80% in the hospital. At six weeks postpartum, 56% continued to breastfeed. Among women with 9-12 years of education, 68% initiated breastfeeding in the hospital (breast and both) and 35% continued at six weeks. An analysis of preferred language and infant feeding method produced similar results. These rates were also similar to those found when acculturation (education and preferred language combined) and infant feeding method were analyzed.

Interestingly, although non-significant, a slightly higher incidence and short-term duration of breastfeeding was noted among women who had cesarean births than among women who delivered vaginally. In the hospital, those who delivered by cesarean section had a 93% overall incidence of breastfeeding. Among those who delivered vaginally, the overall incidence of breastfeeding was 78%. At six weeks postpartum, the short-term duration of breastfeeding was 70% for women who had had cesarean deliveries and 51% among those who delivered vaginally.

CHAPTER IV

Discussion

The purpose of this study was to identify the incidence and short-term duration of breastfeeding in a Hispanic population living in Oregon. This study utilized an existing data set compiled by nurse-midwives to describe their clinical practice. Selected factors identified in the literature to have an association with breastfeeding, and for which data were available, were evaluated. In this chapter, findings related to the incidence and short-term duration of breastfeeding will be discussed. Then, selected factors and their relationship to breastfeeding practice will be examined.

Incidence and Short-Term Duration of Breastfeeding

The overall incidence of in-hospital breastfeeding (breast, and combined breast and bottle feeding) for this sample was 78%. This exceeds the national incidence of 57% reported by Ross Laboratories for 1986 (Stahle, 1987). This is slightly lower, however, than the Oregon statistics for this general time period. Using 1984 Oregon metabolic screening data, Hellings et al. (1984) found an 84% breastfeeding incidence in the first few days of life. Steinmetz (1985) reported an 80% incidence of breastfeeding in two Oregon hospitals in 1985. The 1986 incidence of in-hospital breastfeeding in Oregon was identified by Ross Laboratories as 85% (Stahle, 1987).

This Ross Laboratories survey (Stahle, 1987) also found a 67% incidence of breastfeeding among two-month-old infants in Oregon. The current study reported a 52% breastfeeding incidence at six weeks of age. However, it is difficult to compare these duration figures due to the two-week time difference in data collection. Also difficult to compare is the 79% breastfeeding incidence, at less than one month of age (mean of 27.3 days), found by Hellings et al. (1984).

Caution must be used in comparing breastfeeding incidence among studies which differ methodologically, as these do. Breastfeeding incidence may be affected by many factors, including those of a methodological nature, which are not inherent in a given population. However, it is notable that the incidence of breastfeeding obtained in this study is only moderately less than the breastfeeding incidence found in other Oregon studies. Oregon's breastfeeding incidence has consistently been found to be higher than the national incidence. It is more difficult to gauge the significance of the breastfeeding duration results, due to a lack of comparable studies.

The breastfeeding incidence found in this study can also be compared with that of studies conducted among Hispanic populations, although considerable caution is indicated. As noted previously, a wide variation in breastfeeding incidence exists in the Hispanic breastfeeding literature. In addition, the studies were carried out

during earlier time periods than the current study and in differing geographic locations.

A low breastfeeding incidence (21%) was reported by Smith et al. (1982) among Hispanics of Mexican origin, living on the U.S. - Mexico border, during 1976 through 1979. The same low incidence (21%) was found in another study of urban Hispanics, living in the Los Angeles area in 1978 (Magnus & Galindo, 1980). Most of these women were probably of Mexican origin, although this was not specified. A study among urban Mexican American women in Texas, conducted in 1981, also described a low breastfeeding incidence of 23% (Rassin et al., 1984). These women were generally of low socioeconomic status, as were the women in the current study.

In contrast, like the results of the current study, Ysunga-Ogazon (1984) reported a 78% incidence of breastfeeding among women living in Mexico in 1979. A high incidence of breastfeeding was also found among women of Mexican origin or descent, who delivered in two Los Angeles hospitals during 1981 and 1982 (Scrimshaw et al., 1987). One hospital had a 70% incidence, and the other, 82%.

The breastfeeding incidence found in this study among Hispanics living in Oregon (78%) is somewhat comparable to the incidences of the Los Angeles study of 70% and 82% (Scrimshaw et al., 1987). However, the populations may have been dissimilar in many ways including geography. The Los Angeles study was conducted among an urban population, while

this study addressed a rural population. Employment presumably also varied. Hispanics in the study population were primarily employed as migrant or seasonal workers while those in Los Angeles most likely worked in urban settings.

A multiplicity of factors likely influenced the breastfeeding incidence of both studies. It is difficult to make comparisons among studies which differ so greatly methodologically. Additionally, Hispanics represent a variety of subpopulations which may not be comparable.

In 1984, C. Everett Koop, Surgeon General of the United States, set a goal for breastfeeding in the nation, to be achieved by 1990. Attainment of the goal requires an increase in national breastfeeding incidence to 75% at hospital discharge, and 35% at six months of age (Koop, 1985). The incidence found in this study meets the national goal, although it was measured intrapartally rather than at hospital discharge. It is unknown if the study sample met the duration goal due to the unavailability of six-month data.

The influence of various factors upon the incidence of breastfeeding in this study is not well known. However, a discussion of some of the selected characteristics of the population studied may shed light on this matter.

Selected Factors

As Bentovim (1976) suggested, a complex range of factors interact to affect a woman's decision to breastfeed her infant. Bentovim identified four categories of factors

including individual variables, family variables, societal and cultural variables, and variables related to pregnancy and delivery.

In this study, information on variables related to the pregnancy and delivery, and demographics was available. It is unfortunate that little information on family composition and size, and Hispanic social and cultural variables was available. The literature identified a Hispanic woman's social network and social support as significant in her choice of infant feeding method. Exploration of the relationship between family, societal and cultural variables, and breastfeeding practice among Hispanics may have yielded more significant associations.

Some studies have found that older women are more likely to breastfeed than their younger counterparts. This study found a relatively high incidence of breastfeeding among women over age 15, although the highest incidence was noted among women aged 35-44. Actual age data rather than categorical data would have been more useful in analyzing trends and differences. The unequal intervals of the age categories made comparison difficult.

In American studies, unmarried women have generally been found to be less likely to breastfeed than married women. No difference was found among this study population. It was thought that partnered women might have had social support for breastfeeding from their partner, but other sources of support may have been available for unpartnered

women. It is also possible that there may not be a difference in societal and family support available to partnered and unpartnered women in the Hispanic culture. Cultural factors may also have contributed to the nonsignificant difference in breastfeeding between primiparous and multiparous women.

Migrant and seasonal workers, who made up most of the sample, did not show a significant difference between their incidence and short-term duration of breastfeeding. Social support networks of these two groups could not be identifed from the data. Although seasonal workers may have had more stable social networks, migrants may also have had social networks or other factors which supported breastfeeding.

The number of newborns who did not return for any follow-up care and who thus had no postpartum feeding data available was small (17 infants). Those who did return for newborn follow-up care had a slightly higher, though non-significant in-hospital incidence of breastfeeding (80%) than those infants who did not return (65%). It may be that many of those who did not return may not have initiated breastfeeding, knowing they might be migrating or returning to work soon after delivery. In Mexico, which was believed to be the country of origin of many of the women, education is mandatory for only five years. In rural areas of Mexico, many women receive less than five years of education as they must begin to work (L. Goldfarb, C.N.M., personal communication, September 20, 1988). In the

literature, women with higher educational levels have been noted to have a higher incidence and short-term duration of breastfeeding, than those with less education. In this study, women with eight or less years of education were noted to have a higher incidence and short-term duration of breastfeeding than women with 9-12 years of education, although this association was not significant. These rates were comparable to those noted when education and preferred language were combined as a rough indicator of acculturation. It may be that women who have more education are generally more acculturated and perceive bottle feeding as more socially desirable than breastfeeding. Women with 13-16 years were found to primarily breastfeed their infants. This was similar to the more highly educated women in the general population.

A lower socioeconomic status has been shown in the literature to be associated with a lower incidence of breastfeeding than reported by women with higher income levels. In this sample, actual income could not be determined, as payment status was dependent upon both household income and family size. These variables were not available in the data set. However, the majority of women were in the 0% or 25% pay categories, indicating a relatively low household income. No significant association was noted between payment status and breastfeeding incidence or short-term duration. The homogeneity of the sample in

regard to payment status may have obscured the significance of this factor.

Other studies have noted a lower incidence of breastfeeding among women and infants receiving WIC services. However, the population targeted by WIC is already a group with a low incidence and short-term duration of breastfeeding due to multiple factors, including socioeconomic status. Data were not available on how many women were actually enrolled in the WIC program, only that they were referred. WIC strongly encourages breastfeeding among its recipients. Those who breastfeed receive food for themselves, as do those who exclusively bottle feed. Bottle feeding mothers are given less food but are also provided with infant formula. Mothers who breastfeed and supplement with formula receive food, as well as formula for up to 50% of infant feedings (A. Carlson, R.D., personal communication, September 27, 1988). Interestingly, WIC referral seemed to make no difference in breastfeeding incidence or short-term duration. However, most of the women in the study were referred to WIC and the effect may have been obscured. WIC may have exerted a minimal effect upon those families who migrate. Utilization of actual WIC clinic data would have been more helpful in the identification of any significant relationship between WIC status and the incidence and short-term duration of breastfeeding in this population.

It was of interest to note that the incidence and short-term duration of breastfeeding was greater among women who delivered by cesarean section than among those who gave birth vaginally. It is possible that, among the women who had cesarean births, the added support in establishing lactation in the hospital and the closer postpartum follow-up may have contributed to the higher rates of breastfeeding in this group. It is also possible that social support may have been greater for these women when they returned home. Their return to work may also have been delayed, also encouraging the continuation of breastfeeding.

No significant difference was noted between women who had a short-stay and those who had a routine hospital stay after delivery. Women and infants who had a short-stay may have experienced less effect from hospital practices. In the hospital where most women delivered, breastfed babies were not routinely supplemented with either glucose water or formula. However, no breastfeeding protocol for nursing staff was in use and thus some variation may have occurred between various nurses in their practice, teaching, and support of breastfeeding. At the time of data collection, no newborn nursery was available for healthy babies, so all infants "roomed-in" unless other specific arrangements were made. The effect of this and other variables such as a roommate, a language barrier, the variety of health care providers, and other hospital practices, upon breastfeeding, is unknown. Most breastfeeding mothers did receive gift

packs of formula when they were discharged from the hospital. Women on the short-stay program received a home visit from a clinic nurse, within the first 24-48 hours after discharge. Possibly, this home visit may have provided support and assistance to breastfeeding mothers which compensated for or neutralized any effect hospital care may also have exerted on those having routine stays.

Care was primarily managed by nurse-midwives. The type of care provider was not significantly associated with breastfeeding practice. Nurse-midwives have been identified in the literature to be well-informed regarding breastfeeding and generally are prepared to offer expert assistance and support to breastfeeding mothers. They also have tended to be strong advocates of breastfeeding. Assessment of breastfeeding success is part of the in-hospital client assessment, as well as an important part of postpartum follow-up for nursing mothers. Nurse-midwives, hospital nurses, and community health nurses may have assisted in the promotion of breastfeeding through education and early intervention, when indicated.

It was not surprising that the sex of the infant was not significantly associated with breastfeeding practice as this had been previously noted in the literature. A low incidence of neonatal jaundice was reported. Neonatal jaundice may have effected breastfeeding if the infant required hospitalization, however this could not be clearly identified.

CHAPTER V

Summary, Conclusions, Limitations, and Recommendations for Further Research

Summary

The purpose of this study was to identify the incidence and short-term duration of breastfeeding in a Hispanic population in Oregon. Further, demographic and other selected characteristics relating to the pregnancy and birth were examined for possible relationships to breastfeeding incidence and duration.

This study utilized a secondary data source collected by nurse-midwives at a rural health clinic, from 1985 through 1986. Nurse-midwives provided prenatal, intrapartum, postpartum, and newborn care to the clinic population which was primarily Hispanic. A sample of 229 Hispanic women who delivered a baby with the nurse-midwifery service and met the study criteria, were drawn from the data source.

The overall incidence of breastfeeding (breast, and breast and bottle feeding) was found to be 78% in the hospital. The incidence of breastfeeding was ascertained from data collected intrapartally. Infant feeding choice was indicated by the mothers at this time, although actual feeding may or may not have yet occurred. Mothers also reported the infant feeding method used, at a postpartum follow-up visit. Data from 6 to 16 weeks postpartum

revealed a short-term duration of breastfeeding of 52% at six weeks postpartum.

No significant relationships were found between the incidence and short-term duration of breastfeeding and any selected characteristics. Chi square analysis did reveal a significant association between maternal education and preferred language among the sample. The majority of women had less than or equal to eight years of education and indicated Spanish as their preferred language. Maternal education and preferred language were used as a rough indicator of acculturation. Although non-significant, it was noted that women with less than eight years of education who spoke primarily Spanish had an overall breastfeeding incidence (breast, and combined breast and bottle feeding) which was higher than those who had more education or who were more acculturated. An exception was noted among those women with 13-16 years of education, who primarily breastfed their infants. Women who were less acculturated also had higher rates of short-term duration of breastfeeding than women who were more acculturated, although this too was not significant. Again an exception was seen among those with 13-16 years of education who continued at high rates of breastfeeding.

Conclusions

The incidence and short-term duration of breastfeeding were identified in a Hispanic population in Oregon. These statistics are subject to the limitations of the study and

therefore, caution must be exercised in the utilization of these findings. However, these findings can be used by nurses and other health care providers working with Hispanic families to support and promote breastfeeding among this population. Additionally, agencies may find this information helpful in health care planning and resource management.

The growing number of Hispanics in the United States and their high fertility rate point out the need for the promotion of breastfeeding in this population. This study found an in-hospital breastfeeding incidence which attained the U.S. Surgeon General's goal for initial breastfeeding in this country. However, the data from this study were collected intrapartally rather than at hospital discharge. More research needs to be conducted to evaluate the incidence of breastfeeding among other Hispanics living in the U.S. The breastfeeding incidence at six months could not be identified in this sample, so it is uncertain if the Surgeon General's duration goal was met. Study of breastfeeding duration over six months or more would provide additional important information regarding Hispanic breastfeeding practice. Attention may need to be directed to the promotion and support of breastfeeding among selected subgroups of Hispanics, such as those with 9-12 years of education, and those who have adopted bottle feeding.

Nurses need to become more aware of the complex factors associated with a woman's decision to breastfeed. The role

of a Hispanic woman's social network in breastfeeding practice as well as Hispanic cultural influences must be considered. It is important that nurses and other health care providers identify culturally relevant ways to support the establishment and maintenance of lactation. In addition, since the majority of women in this study had made an infant feeding decision prior to the initial prenatal visit, educational programs to promote breastfeeding may need to be targeted at the entire community. A tendency was also noted for more acculurated women to have a lower incidence of breastfeeding in comparison to less acculturated women. Health care providers, therefore, may need to examine ways to promote a positive perception of breastfeeding among the Hispanic population as they become more acculturated to American society.

Limitations

There were several limitations to this study. These included flaws inherent in the data collection tool and the process of data gathering. A major limitation was the disparity between the purpose of the data collection tool and the objectives of this study. However, this may also have been somewhat beneficial, possibly minimizing bias in the data collection. In addition, some factors thought to be associated with breastfeeding among Hispanics could not be clearly identified using this data set, such as advice from the woman's mother or support for breastfeeding from her social network. The use of data which were categorical

and of unequal intervals, such as age, limits the interpretation of the findings in this study. Differences in breastfeeding incidence and duration may have been obscured by this type of data categorization.

The data collection tool lacked operational definitions of what constituted exclusive versus partial breastfeeding. A major criticism of many breastfeeding studies has been the omission of operational definitions (Harrison, 1985; Simopoulos & Grave, 1984). Because a secondary data source was used, operational definitions could only be applied for the purposes of analysis. If clear operational definitions had been used for data collection, this could have enhanced the reliability of the study results.

The incidence of breastfeeding data should be interpreted with caution. The infant feeding choice in the hospital was recorded by a nurse on admission to the labor and delivery unit. Actual breastfeeding practice after delivery was not recorded in the hospital. Some mothers may have changed their choice of feeding methods during their hospital stay and although some may have indicated an intention to breastfeed they may not have ever actually breastfed. Mothers who had not previously indicated that they planned to utilize a combined feeding method may also have offered one or more bottles of formula to their infant in the hospital.

Data regarding the short-term duration of breastfeeding were obtained not only from infants who returned for follow-

up at six weeks of age, but also from those who returned later, up to 16 weeks of age. It was inferred that those who were being exclusively breastfed at later than six weeks, were being breastfed at six weeks. Although this is a reasonable assumption, it is unfortunate that actual six-week data were not available for all infants.

Lack of information on maternal employment limited the evaluation of the effect of this possibly significant factor on the incidence and short-term duration of breastfeeding. Women may have made infant feeding choices partially based on work plans, but this could not be investigated.

The attrition of study subjects with missing data due to migration, loss to follow-up, or other reasons, may limit the generalizability of the findings. It is not known if these women and their infants may have different characteristics from those who were included in the study. Data on country of origin were not available so the particular characteristics and culture of this Hispanic population cannot be determined. Inherent differences between a rural migrant population and an urban Hispanic barrio limit the generalizability of these findings to a similar population.

No data were available on the effect hospitalization may have had on breastfeeding practice. Although a few Spanish speaking nurses were available, as were literature and videos, it is not known if Hispanic women actually received the same information as non-Hispanics, or if the

information was understood. In addition, no data were available on whether some breastfed infants were supplemented with formula in the hospital or how mothers interpreted the discharge gift packs of formula. These factors may or may not have influenced the incidence and short-term duration of breastfeeding. Also, only referral and not actual participation in the WIC program was identified, so the influence of this program on breastfeeding practice cannot be evaluated accurately for this population.

Recommendations for Further Research

The following suggestions are offered for further research:

1. Further study utilizing this data set to compare the Hispanic versus non-Hispanic incidence and short-term duration of breastfeeding might offer insight into differences among groups being served by the same rural clinic.

2. Follow-up studies of breastfeeding duration among Hispanics at three, six, and twelve months after birth could provide useful information to health care providers and agencies on whether the Surgeon General's goals for breastfeeding are being met, and where promotional and supportive efforts may need to be directed.

3. Analysis of WIC infant feeding data at the same clinic might provide insight into the effect of this program on the incidence and short-term duration of breastfeeding,

particularly if operational definitions of each type of feeding method could be established prior to data collection.

4. An analysis of the impact of formula gift packs on breastfeeding duration among Hispanics could assist health care providers and agencies in deciding whether or not to provide such gift packs.

5. Identification of maternal reasons for early cessation of breastfeeding could provide insight into what types of support and interventions are needed to maintain breastfeeding.

6. An exploration of the effect of maternal employment in farmwork on breastfeeding incidence and short-term duration could assist health care providers in planning and providing care to this population.

7. Further research on the effect of Hispanic social networks and social support on infant feeding decisions and practice would increase understanding of how to design intervention programs to promote and support breastfeeding in specific Hispanic populations.

8. An exploration of maternal acculturation and type of infant feeding method could identify Hispanic cultural factors associated with breastfeeding and assist in the promotion of breastfeeding among Hispanics in a culturally relevant manner.

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APPENDIX A

Original Clinic Data Form

ANTEPARTUM STATISTICS

Patient's Name: _____ Address _____ Phone # _____

SDLF Chart #: _____ DOB: _____

INITIAL VISIT:

1. COUNTY ☐
2. AGE ☐
3. WEEKS 1st Visit ☐
4. Pt. STATUS ☐
5. PAYMT. STATUS. ☐
6. EDUCATION ☐
7. GRAVIDA ☐☐
8. TERM ☐☐
9. PRETERM ☐☐
10. ABORTIDUS ☐☐
11. NOW LIVING ☐☐
12. INITIAL HGB ☐
13. INITIAL HCT ☐
14. RH TYPE ☐
15. MARITAL STATUS ☐
16. PREFERRED LANGUAGE ☐
17. STATED FEEDING PREF. ☐
18. HEIGHT ☐
19. REGISTRATION STATUS ☐
20. TEACHING ☐☐
21. INITIAL AP RISK SCORE ☐☐
22. REFERRAL ☐☐☐
23. ETHNIC CATEGORY ☐

Key:

(1) 1. Marion 2. Polk 3. Yamhill 4. Clackamas 5. Other

(2) 1. 10-14 2. 15-19 3. 20-34 4. 35-44

(3) 1. ≤ 12 2. 13-20 3. 21-28 4. 29-34 5. ≥ 35

(4) 1. Migrant 2. Seasonal 3. Other

(5) 1. 0% 2. 25% 3. 50% 4. 75% 5. 100%

(6) 1. ≤ 8 yrs. 2. 9-12 yrs. 3. 13-16 yrs. 4. ≥ 17 yrs.

Key cont'd

(7) thru (11) White in # at time of registration.

(12) 1. ≤ 10 2. 10.1 - 10.9 3. 11.1 - 11.9 4. 12.0 - 12.9 5. ≥ 13.0

(13) 1. ≤ 30% 2. 30.1% - 33% 3. 33.1% - 34% 4. 34.1% - 36% 5. ≥ 36.1%

(14) 1. RH Positive 2. RH Negative

(15) 1. Married 2. Single 3. Living With 4. Separated 5. Divorced

(16) 1. English 2. Spanish 3. Russian 4. Other

(17) 1. Breast 2. Bottle 3. Undecided

(18) 1. ≤ 59 in. 2. 60-64 in. 3. 65-68 in. 4. ≥ 69 in.

(19) 1. Initial Visit With Us 2. Transfer from another clinic 3. Transfer from private M.D. 4. Transfer from out of state 5. Other

(20) 1. Teaching Sheet 2. InAmed/Consent 3. Other

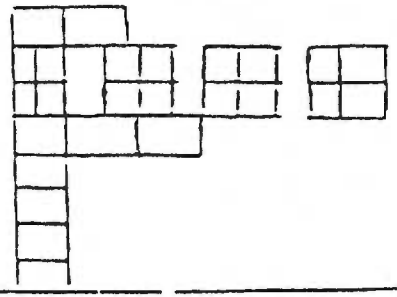
(21) 1. 1, 2 2. 3, 4 3. 5 6. ≥ 6

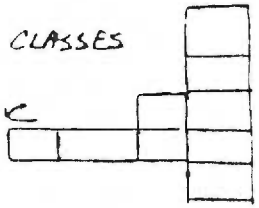
(22) 1. WIC 2. SDLF Comp. Clinic 3. Special Studies 4. Soc. Worker 5. OB-ONSU 6. M.D. 7. Other

(23) 1. Anglo 2. Hispanic 3. Russian 4. Indian 5 Other

ANTEPARTUM SUMMARY:

1. # of PRENATAL VISITS
2. PROBLEMS IN PRENATAL PERIOD
3. MEDICATIONS RECEIVED
4. SPECIAL STUDIES
5. DOCUMENTED WT. GAIN
6. HCT AT 36 WEEKS
7. AP 36WK ZISH SCORE
8. TYPE FEEDING
9. ATTENDED CHILDBIRTH CLASSES
10. ATTENDED C/S CLASS
11. TEACHING IN CLINIC
12. REFERRALS
13. FINAL STATUS





Key:

① Fill in #

② 1. Abnormal Pap
2. Abnormal presentation/lie
3. Active Herpes
4. Anemia
5. Antibody titer
6. Diabetic-insulin
7. Drug Abuse
8. Eclampsia
9. Gestational Diabetic-diet controlled
10. Gonorrhea
11. Late pre-natal care (> 28 wks)
12. Multiple Gestation
13. PIH
14. Poor Compliance ± care
15. Pyelo
16. Smoker > ½ ppd
17. Suspected IUGR
18. Suspected LGA
19. Syph. / Hs
20. URI
21. UTI (Asymp.)
22. UTI (symp.)
23. Vaginitis
24. Other
25. NONE

③ 1. Iron 2. Vitamins 3. Antibiotics 4. Vaginal Cream
5. Rho-GAM at 28 wks 6. URI meds 7. Other

④ 1. Ultrasound 2. BPP 3. NST 4. OCT
5. Fm Charts 6. 1° GTT 7. 3° GTT 8. Amnio
9. Genetic Screen 10. Genetic Counsel 11. Ab screens

⑤ 1. ≤ 5 lbs 2. 6-10 lbs 3. 11-15 lbs. 4. 16-20 lbs
5. 21-25 lbs 6. 25-30 lbs 7. 31-35 lbs. 8. 36-40 lbs
9. ≥ 41 lbs.

⑥ 1. ≤ 30% 2. 30.1% - 32% 3. 32.1% - 34%
4. 34.1% - 36% 5. ≥ 36.1%

⑦ 1. 0 2. 1-2 3. 3, 4 4. 5-6 5. ≥ 7

⑧ 1. Breast 2. Bottle 3. Both

⑨ 1. Yes, 2 ± SDLF 2. Yes, 1 ± SDLF 3. Yes, ± other 4. No

⑩ 1. Yes, ± SDLF 2. Yes, ± other
3. No.

⑪ 1. Teaching Sheet V'ed
2. InP/Consent

⑫ 1. WIC 2. Spec Studies
3. SDLF-Comp Cl. 4. Soc. Worker
5. OB-GYN U 6. M.D. 7. OTHER

⑬ 1. Delivered with us/SDLF
2. Migrated
3 Transferred 2° High Risk
4. Transferred to private M.D.
5. Lost to Follow-up
6. Other 7. Trans/Distance

name

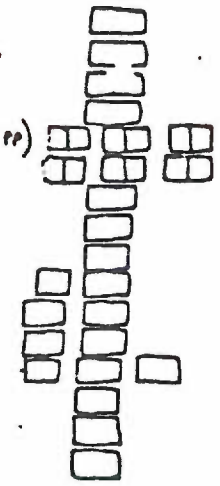
EDC

INTRAPARTUM STATISTICS

Pt's NAME: _____ HOSP#_____ SOLF#_____

DELIVERY DATE: _____ BABY'S HOSP#_____

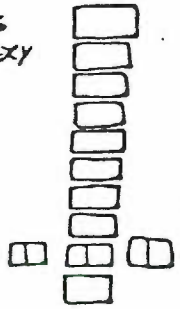
LABOR + DELIVERY:
1. PRE DELIVERY STATUS
2. POST DELIVERY STATUS
3. SITE OF DELIVERY
4. INTRAPARTUM RISK SCALE
5. COMPLICATIONS (ANTE, INTRA, IMMEDIATE PP)
6. FIRST STAGE MEDS
7. LENGTH OF 1ST STAGE
8. LENGTH OF 2nd STAGE
9. EBL
10. PERINEUM
11. 2nd STAGE MEDS
12. MISNITER
13. SPECIAL STUDIES
14. TYPE OF DELIVERY
15. DELIVERED BY:
16. MANAGEMENT



KEY:

1. 1. Short Stay - SDP 2. Extended Stay 3. Routine Stay - MD 4. Other
2. 1. Short Stay - SDP 2. Extended Stay 3. Routine Stay - MD 4. Mom - SDP Baby - ESP 5. Other
3. 1. Hospital 2. Clinic 3. CNM 4. Other
4. 1. 1,2 2. 3,4 3. 5-6 4. ≥ 7
5. 1. Desires BTL 2. Eclampsia 3. Epidural 4. Fetal Distress 5. Fear Unknown Origin 6. Forceps Del. 7. Excessive Blood Loss 8. Gestational Diabetes 9. Infection 10. Laceration - 4° 11. Malpresentation 12. None 13. Pre-eclampsia 14. Post-Dates 15. Prolonged Labor 16. Psych/Social 17. Repeat C/S 18. Spinal Anesthesia 19. VBAC 20. Other_____
6. 1. None 2. General 3. Epidural 4. Hydroxy 5. Morphine 6. Nisentil 2cmg 7. Nisentil >2cmg 8. Pitocin for Aug. 9. Pitocin for Ind. 10. Sedation 11. Spinal 12. Vistaril 13. Other
7. 1. 0-4 hrs 2. >4-8 hrs. 3. >8-12 hrs. 4. >12-16 hrs 5. >16 hrs.
8. 1. 01-20 min 2. 21-40 min 3. 41-60 min. 4. 61-90 min 5. 91-120 min 6. ≥ 121 min.
9. 1. 1-250cc 2. 251-499cc 3. 500-800cc 4. 801-1000cc 5. > 1000cc
10. 1. Intact 2. Minor lac - no repair 3. 1° 4. 2° 5. 3° 6. 4° 7. Midline Epis. 8. Mediolateral Epis.
11. 1. None 2. Local ā del. 3. Local β del. 4. Pudental ā del. 5. Pudental β del. 6. Spinal 7. Epidural 8. Nisentil 9. Other
12. 1. None 2. EFM 3. Internal FM
13. 1. U/S 2. Fetal Scalp Sample 5. None 3. Pre-eclam. labs 4. Other_____
14. 1. NSVD 2. Forceps 3. C/S 4. VBAC 5. Breech 6. Other_____
15. 1. CNM 2. CNM/Student 3. M.D. 4. Other_____
16. 1. CNM 2. Collaborative 3. M.D.

NEWBORN
1. EGA by DATING PARAMETERS
2. WEEKS GESTATION AT DELIVERY
3. BIRTH WEIGHT
4. SIZE/AGE STATUS
5. APGAR 1°
6. APGAR 5°
7. SEX
8. ADMISSION STATUS
9. PROBLEMS
10. TYPE FEED



KEY:

1. 1. ≤ 36 2. 37 3. 38 4. 39 5. 40 6. 41 7. 42 8. ≥ 43
2. 1. ≤ 36 2. 37 3. 38 4. 39 5. 40 6. 41 7. 42 8. ≥ 43
3. 1. ≤ 2000gr. 2. 2001-2500gr. 3. 2501-3000gr. 4. 3001-3500gr. 5. 3501-4000gr. 6. >4000gr.
4. 1. AGA 2. SGA 3. LGA
5. FILL IN
6. FILL IN
7. 1. FEMALE 2. MALE
8. 1. Short Stay - SDP 2. Extended Stay 3. Other _____
9. 1. Anemia 2. Hypoglycemia 3. + Direct Coombs 4. Infection - needed antibiotics 5. Jaundice 6. Major Anomaly 7. Meconium Stained 8. Minor Anomaly 9. Multiple Gestation 10. Polycythemia 11. Stillbirth 12. Other_____
10. 1. Breast 2. Bottle 3. Both 13. None

POST-PARTUM AND NEWBORN STATISTICS
SIX WEEKS

Pt's. NAME: _____ SDUF # _____

NEWBORN'S SDUF # _____

POST-PARTUM PERIOD:

1. SEXUALLY ACTIVE POST DELIVERY
2. USED CONTRACEPTION POST DELIVERY
3. TYPE OF CONTRACEPTION USED
4. BIRTH CONTROL METHOD DESIRED
5. BIRTH CONTROL METHOD RECEIVED
6. HCT (Fill in or ✓ below)
7. PAP
8. # OF VISITS IN SIX WEEKS
9. PROBLEMS
10. DID NOT RETURN FOR SIX WEEKS F/U

(5) 1. None
2. Birth Control Pills
3. Diaphragm
4. Condoms
5. Foam
6. I.U.D.
7. Tubal
8. Vaginal Sponge
9. Vaginal Suppository
10. Vasectomy
11. Withdrawal
12. Natural Family Planning
13. Other _____

(6) Fill in

(7) 1. C.I 2. CL I 3. CL II
4. CL III 5. Follow-up done

(8) 1. 1 2. 2 3. 3,4 4. 5,6 5. >6

KEY:

(1) 1. Yes 2. No

(2) 1. Yes 2. No

(3) 1. None 2. Foam 3. Condom
4. Sponge 5. Withdrawal
6. Vaginal Suppository 7. Other

(4) 1. None
2. Birth Control Pills
3. Diaphragm
4. Condoms
5. Foam
6. I.U.D.
7. Tubal
8. Vaginal Sponge
9. Vaginal Suppository
10. Vasectomy
11. Withdrawal
12. Meth' From. Plug.
13. Other

(9) 1. None
2. Breast Engorgement
3. Endometritis
4. Mastitis
5. Perineal Dehiscence
6. URI
7. UTI
8. Other

(10) 1. Not Applicable 2. Arranged for care elsewhere
3. Migrated 4. Lost to Follow-up

NEWBORN: 6 WEEKS

1. WEIGHT
2. WEIGHT GAIN
3. CIRCUMSIZED
4. PROBLEMS
5. TYPE FEEDING
6. INITIAL IMMUNIZATIONS
7. DID NOT RETURN FOR F/U

(5) 1. Breast 2. Bottle 3. Both
4. Solids

(6) 1. Received 2. Delayed 3. Declined by parents 4. Not done
5. Did not keep appoint.

(7) 1. Not applicable 2. Arranged for care elsewhere 10 HOME
3. Migrated 4. Lost to Follow-up

KEY:

(1) Fill in (in grms)

(2) YES NO

(3) 1. Not applicable (female)
2. YES 3. No.

(4) 1. Conjunctivitis
2. Neonatal Death
3. Failure to thrive
4. Jaundice
5. Infection
6. Rehospitalized
7. Skin problems
8. URI
9. Other

APPENDIX B

Data Utilized in this Study

Antepartum Statistics

Age _____

1. 10-14 2. 15-19 3. 20-34 4. 35-44

Patient Status _____

1. Migrant 2. Seasonal 3. Other

Payment Status _____

1. 0% 2. 25% 3. 50% 4. 75% 5. 100%

Education _____

1. ≤ 8 years 2. 9-12 years 3. 13-16 years

4. ≥ 17 years

Gravida _____

Term _____

Preterm _____

Abortions _____

Marital Status _____

1. Married 2. Single 3. Living With 4. Separated

5. Divorced

Preferred Language _____

1. English 2. Spanish 3. Russian 4. Other

Stated Feeding Preference _____

1. Breast 2. Bottle 3. Undecided

Referral _____

1. WIC 2. Comprehensive Clinic 3. Special Studies

4. Social Worker 5. University Hospital 6. M.D.

7. Other

Ethnic Category _____

1. Anglo 2. Hispanic 3. Russian 4. Indian

5. Other

Antepartum Summary

Number of Prenatal Visits _____

Problem in Prenatal Period

1. Abnormal Pap 2. Abnormal Presentation/Lie

3. Active Herpes 4. Anemia 5. Antibody Titer

6. Diabetic - Insulin 7. Drug Abuse 8. Eclampsia

9. Gestational Diabetic - Diet-controlled

10. Gonorrhea 11. Late Prenatal Care (after 28 weeks)

12. Multiple Gestation 13. Pregnancy-Induced

Hypertension 14. Poor Compliance with Care

15. Pyelonephritis 16. Smoked > 1/2 pack per day

17. Suspected Intrauterine Growth Retardation

18. Suspected Large for Gestational Age

19. Syphilis 20. Upper Respiratory Infection

21. Asymptomatic Urinary Tract Infection

22. Symptomatic Urinary Tract Infection

23. Vaginitis 24. Other 25. None

Type Feeding _____

1. Breast 2. Bottle 3. Both

Attended Childbirth Classes _____

1. Yes, One with Clinic 2. Yes, Two with Clinic

3. Yes, Other 4. No

Attended Cesarean Section Class _____

1. Yes, with Clinic 2. Yes, Other 3. No

Referrals _____

1. WIC 2. Special Studies 3. Comprehensive Clinic

4. Social Worker 5. University Hospital 6. M.D.

7. Other

Final Status _____

1. Delivered with Clinic 2. Migrated 3. Transferred Secondary to High Risk 4. Transferred to Private M.D.

5. Lost to Follow-up 6. Other

7. Transferred Secondary to Distance

Intrapartum Statistics

Pre-delivery Status _____

1. Short Stay 2. Extended Stay 3. Routine Stay - M.D.

4. Other

Post-delivery Status _____

1. Short Stay 2. Extended Stay 3. Routine Stay - M.D.

4. Maternal Short Stay - Infant Extended Stay

5. Other

Site of Delivery _____

1. Hospital 2. Clinic 3. Car 4. Other

Complications _____

1. Desires BTL 2. Eclampsia 3. Epidural

4. Fetal Distress 5. Fever Unknown Origin

6. Forceps Delivery 7. Excessive Blood Loss

8. Gestational Diabetes 9. Infection

10. Laceration--4th Degree 11. Malpresentation

12. None 13. Pre-eclampsia 14. Post-Dates

15. Prolonged Labor 16. Psych/Social 17. Repeat C/S

18. Spinal Anesthesia 19. VBAC 20. Other _____

Type of Delivery _____

1. NSVD 2. Forcep 3. C/S 4. VBAC 5. Breech

6. Other _____

Delivered By _____

1. CNM 2. CNM/Student 3. M.D. 4. Other _____

Management _____

1. CNM 2. Collaborative 3. M.D.

<u>Newborn</u>

Weeks Gestation At Delivery _____

1. $\leq$ 36 2. 37 3. 38 4. 39 5. 40 6. 41 7.42

8. $\geq$ 43

Birth Weight _____

1. $\leq$ 2000 gr. 2. 2001-2500 gr. 3. 2501-3000 gr.

4. 3001-3500 gr. 5. 3501-4000 gr. 6. $\geq$ 4000 gr.

Apgar 1" _____

Apgar 5" _____

Sex _____

1. Female 2. Male

Admission Status _____

1. Short Stay - SDP 2. Extended Stay 3. Other _____

Problems _____ _____ _____

1. Anemia 2. Hypoglycemia 3. Positive Direct Coombs

4. Infection - Needed Antibiotics 5. Jaundice

6. Major Anomaly 7. Meconium Stained 8. Minor Anomaly

9. Multiple Gestation 10. Polycythemia 11. Stillbirth

12. Other _____ 13. None

Type Feed _____

1. Breast 2. Bottle 3. Both

Postpartum Period

Of Visits In Six Weeks _____

1. 1 2. 2 3. 3, 4 4. 5, 6 5. > 6

Problems _____

1. None 2. Breast Engorgement 3. Endometritis

4. Mastitis 5. Perineal Dehisence 6. URI 7. UTI

8. Other _____

Did Not Return For Six Weeks F/U

1. Not Applicable 2. Arranged For Care Elsewhere

3. Migrated 4. Lost to Follow-up

Newborn Follow-up

Weeks _____

Problems _____ _____ _____

1. Conjunctivitis 2. Neonatal Death 3. Failure To Thrive 4. Jaundice 5. Infection 6. Rehospitalized

7. Skin Problems 8. URI 9. Other 10. None

Did Not Return For F/U _____

1. Not Applicable 2. Arranged For Care Elsewhere

3. Migrated 4. Lost to Follow-up

APPENDIX C

Letter of Agreement

Salud de la Familia Clinic
347 N. Front
Woodburn, OR 97071
August 15, 1988

Teri D. Curry, R.N.
Paula J. Hammond, R.N.
3140 N.E. Fremont Dr.
Portland, OR 97220

Dear Ms. Curry & Ms. Hammond:

This letter authorizes you to use data collected from Salud de la Familia Clinic for your Master's Research Project at Oregon Health Sciences University. I understand that you will be researching the incidence and short-term duration of breastfeeding among our Hispanic clients. Data will be collected from charts and clinic statistics, and no direct patient contact will be involved.

I will look forward to learning of the results of your study. I anticipate that it will provide information that can assist the clinic in providing health care to Hispanic women and their newborn infants.

Sincerely,

Robert Keller, M.D.
Medical Director

AN ABSTRACT OF THE THESIS OF

Teri D. Curry and Paula J. Hammond

For the MASTER OF SCIENCE IN NURSING

Title: THE INCIDENCE AND SHORT-TERM DURATION OF BREASTFEEDING IN A HISPANIC POPULATION IN OREGON

Approved:

[redacted]

Pam Hellings, P.N.P., Ph.D., Thesis Advisor

The incidence of breastfeeding among Hispanics in the United States is uncertain, and in Oregon, has been essentially unknown. This study identified the incidence and short-term duration of breastfeeding in a Hispanic population living in Oregon. Selected demographic characteristics, and factors related to pregnancy, birth, and the newborn period were evaluated to assess their possible association with the incidence and short-term duration of breastfeeding.

A descriptive study was conducted, utilizing a secondary data source. Data was collected from 1985 through 1986, by nurse-midwives as a part of their clinical practice at a rural Oregon clinic. The clinic serves primarily seasonal, migrant, and low-income families. Two hundred and twenty-nine Hispanic women who had delivered a live, term infant with a weight of > 2500 grams, no major anomalies,

and a five minute Apgar score of 7 or greater, were included in the study.

In general, the study subjects were married or partnered, preferred Spanish as their primary language, had an educational level of eight years or less, and were of low socioeconomic status. Almost two-thirds of the sample were multiparous. Most women (94%) had a vaginal delivery. A primary cesarean birth rate of 4.8% was identified.

The incidence of breastfeeding (breast alone, or breast and bottle) was 78% in the hospital, and 52% at six weeks postpartum (short-term duration). Chi square analysis was performed on selected factors, using a $p < 0.05$ level of significance. None of the factors evaluated (age, marital status, migrant or seasonal worker status, preferred language, education, payment status, WIC referral, parity, type of delivery, short or routine hospital stay, type of care provider, sex of infant, and neonatal jaundice) were found to be significantly associated with breastfeeding.

These results, especially concerning the association of factors, should be considered with caution, due to the descriptive study design. The study findings may be helpful to nurses, other health care providers, and agencies serving childbearing Hispanic women, in the promotion and support of breastfeeding.