

PERCEPTION OF INFANT COLIC BY CAUCASIAN AND HISPANIC
MOTHERS IN THE WIC PROGRAM

THESIS

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by

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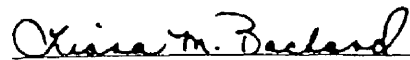
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TABLE OF CONTENTS

ACKNOWLEDGMENTS. i
TABLE OF CONTENTS. ii
LIST OF FIGURES. iii
LIST OF TABLES. . . . .	. . . . . iv
LIST OF APPENDICES. . . . .	. . . . . v
ABSTRACT. . . . .	. . . . . page 1
<u>CHAPTER</u>	
I. Introduction. . . . .	. . . . . page 2
II. Review of Literature. . . . .	. . . . . page 7
III. Methodology. . . . .	. . . . . page 13
IV. Results. . . . .	. . . . . page 18
V. Discussion. . . . .	. . . . . page 23
REFERENCES. . . . .	. . . . . page 31
APPENDICES	

LIST OF FIGURES

FIGURE 1	Infant Crying Patterns. . .	. . . page 21
FIGURE 2	Infant Feeding Patterns. . .	. . .page 22

LIST OF TABLES

TABLE 1 Interacting Systems Framework Concepts by System.	page 5
TABLE 2 Infant Behaviors Associated with Colic.	page 20
TABLE 1A Means and Standard Deviations of Questionnaire Item #15.	Appendix A
TABLE 2A Table of Data Summary.	Appendix A
TABLE 3A Means and Standard Deviation of Maternal Age.	Appendix A

LIST OF APPENDICES

APPENDIX A Tables

APPENDIX B IRB Approval

APPENDIX C Introductory letter, survey forms and consent in English

APPENDIX D Introductory letter, survey forms and consent in Spanish

Abstract

Colic is a phenomenon of early infancy that frustrates and puzzles parents and health providers. Colic accounts for a large number of provider visits as parents are concerned and seeking answers to this infant behavior. Feeding practices, allergy, gastrointestinal abnormalities, parental interaction and an extreme form of normal infant behavior have been projected as possible causes of colic. Research has also focused on coping mechanisms and support for parents experiencing colic with their infants. Furthermore, research on colic is somewhat limited in ethnically diverse infant populations.

A descriptive design was used to explore the differences in maternal perception of colic between Caucasian and Hispanic mothers. King's (1981) Interacting Systems Framework and the associated concept of perception provided the theoretical framework for the study. A convenience sample of mothers enrolled in the WIC program at a rural health department and a migrant health clinic were given the Maternal Perception of Infant Colic questionnaire to complete. Infant behaviors, crying and feeding patterns as well as maternal perceptions were explored.

Analysis revealed statistically significant results on only one item of the Maternal Perception of Infant Colic questionnaire. Caucasian and Hispanic mothers responses varied on whether infant colic was related to the way the infant was cared for.

An interesting finding of the study was that differences in infant care practices, such as feeding and pacifier use were present. This finding suggests further research in infant care practices is indicated.

Introduction

Infant colic puzzles and frustrates both parents and health care providers. Colic is responsible for generating high levels of parental concern and family tension, and accounts for a high number of provider visits. Synonyms for colic used in medical literature include infant irritability, irritable crying, excessive infant crying, idiopathic crying and persistent irritable crying, among others. An infant is thought to exhibit colic when periods of inconsolable crying occur daily over an extended period of time (Keefe, Froese-Fretz & Kotzer, 1998). Colic was first described in the medical literature in the 1900's (Dihigo, 1998), and has received attention from the fields of medicine, nursing, and mental health researchers.

Problem

The incidence of colic is reported as occurring in 10-30% of all infants (Fleisher, 1999) with one study reporting incidence as high as 40% (Treem, 1994). In real numbers, colic has been reported to affect as many as 700,000 infants per year (Medoff-Cooper, 1995). A study in Great Britain determined that "one in six families with infants of this age approach health visitors or general practitioners because of their baby's excessive crying" (St James-Roberts, Conroy, & Wisner, 1996, p 375). A pediatric gastroenterologist indicates that 4% of new patients admitted to his practice are referred for evaluation of colic (Fleisher, 1999). Colic has been reported to affect male infants as often as female infants (Keefe, Froese-Fretz, & Kotzer, 1998). Although several articles allude to an equal frequency in non-white infants, most of the studies done have included no reference to ethnicity or included only small numbers of non-white subjects.

The absence of research studies with other ethnic groups led to speculation that other cultures may perceive colic behaviors in a different way, manage colic differently or approach health care providers in a different way with concerns about colic. The purpose of this study was to observe, document and describe ways that Hispanic and Caucasian mothers may vary in the way they perceive infant colic.

The effects of colic on family relationships, self-esteem of parents, and parent-infant interaction are sometimes devastating. Periods of crying that occur daily, last several hours and extend for up to four months leave parents sleep deprived and exhausted physically and mentally. Parental frustration is increased by the fact that nothing seems to help and often they perceive their infant in pain during the colic episodes. Crying that cannot be comforted is believed to be a factor in child abuse when parents have limited resources and little or no support (Keefe, Froese-Fretz, & Kotzer, 1998).

Interventions to stop colic or manage the episodes have included feeding practice modifications, evaluation of GI structures and processes, pharmacological treatment, parental education and behavior change (Dihigo, 1998). There has been considerable debate over the origin and treatment of colic. Subsequently, literature can be found to support several points of view. The central themes are (1) colic is an organic, pathological gastrointestinal process; (2) colic is an extreme form of a normal behavioral process; and (3) colic is a combination of both (Fleisher, 1999).

Significance

Nurses are an important resource for parents of infants experiencing colic. Public health nurses may see infants in homes or clinic settings. Hospital and office nurses see

infants in acute care settings and nurse practitioners may be the providers for infants and families. Nurses and nurse practitioners often teach prenatal classes and work with parents in birthing centers and pediatric clinics. It is important for nurses to be knowledgeable about colic and to provide support and information for parents. Knowledge and awareness of the practices and beliefs of different ethnic groups with regard to colic and infant care is also important to providing culturally sensitive individualized care.

Theoretical Framework

Imogene King's (1981) Interacting Systems Framework for nursing is designed to provide a conceptual framework for nursing and an understanding of nursing practice. Her work is based on general systems theory, a concept originating in the biological sciences arena. In addition to general systems theory, King explored the work of other theorists in developing concepts for her systems framework.

One of the basic concepts of the Interacting Systems Framework is the definition of the individual as a personal system. Human behavior is based on "perceptions and judgments of individuals in every type of interaction" (King, 1981, p 59). Two additional systems are identified: interpersonal systems and social systems (King, 1981). These systems interact with each other to form larger systems.

King identified and defined concepts that make up each system. They are shown in Table 1 listed under the system they are most closely associated with (Frey, 1995). In her work, she emphasized that the concepts are not exclusive to each system, but may cross systems (King, 1981). The concepts listed first under each system are defined as

“comprehensive concepts” (King, 1981) or concepts that are key to understanding of the theory.

Table 1

Interacting Systems Framework Concepts by System—Imogene King (1981)

Personal	Interpersonal	Social
Perception	Interaction	Organization
Self	Communication	Authority
Growth/Development	Role	Power
Body Image	Stress/Stressors	Status
Learning	Transactions	Decision-making
Time		
Personal Space		
Coping		

The role of the early work by Imogene King was to promote nursing as a science and develop a framework for nursing theory and research (Frey, 1995) Additional work and refinement of her ideas over the years has added to an understanding of human behavior and relationships that is valuable to nursing practice.

King’s (1981) Interacting Systems Framework and Maternal Perception of Colic

This study of maternal perception of infant colic uses King’s (1981) Interacting Systems Framework and selected concepts discussed in it as the theoretical basis for research. The personal systems of the mother and infant, as well as the interpersonal system of the mother-infant dyad are central to the study. Other interpersonal systems such as the father, family members, extended family, friends, and health care providers are touched on in the study. The study specifically describes maternal attitudes, beliefs

and perceptions of infant behaviors. These are strongly related to the concept of perception within King's Interacting Systems Framework.

Perception, as discussed by King, is "a process of organizing, interpreting and transforming information from sense data and memory. It is a process of human transactions with the environment. It gives meaning to one's experience, represents one's image of reality and influences one's behavior" (1981, p. 24). Maternal perception of infant colic is being explored in this study in terms of perceived physical behaviors, such as crying and body movements, as well as maternal attitudes and beliefs about colic.

In addition, Frey (1995) has indicated that King's work features strong emphasis on the influence of culture, social, community and professional environment on human behavior. Ethnicity as culture is one of the factors that may influence perception and can be described as a part of the total life experiences of a person. The use of two low income cultural groups (Caucasian and Hispanic women participating in Women, Infants and Children (WIC) food supplement program) in the study of maternal perception of colic is consistent with this emphasis in King's work.

The definition of health proposed by Imogene King (1990) is important to an understanding of the role of perception in mothers caring for infants with colic. Health is the "dynamic life experiences of a human being, which implies continuous adjustment to stressors in the internal and external environment through optimum use of one's resources to achieve maximum potential for daily living" (King, 1990, p. 5). This definition encompasses the belief that all human experiences impact on each other and on how an individual responds to those experiences. A mother's perception of colic can

affect her own self-concept, her relationship with the infant, other family members, her ability to cope with the condition, and ultimately the health of her family and herself.

Review of Literature

Definition of Colic

One of the difficulties of studying colic has been the lack of a clear definition of the condition. This is due in part to the fact that crying is a normal part of infant behavior and crying is the one of the cardinal symptoms of colic. Crying is the normal means of infant communication (Keefe, 1988). The definition of colic hinges on identifying crying that goes beyond normal. The definition traditionally accepted by researchers was proposed by Wessel, Cobb & Jackson (1954) and is known as the “rule of 3’s.” According to Wessel et al.(1954), infant colic is characterized by “paroxysms of irritability, fussing, or crying lasting for a total of more than 3 hours a day and occurring on more than 3 consecutive days in any one week for a least 3 weeks. These periods of crying are more likely to occur in the afternoon or evening in an infant between 2 weeks and 4 months of age” (p 421). The infants are otherwise healthy and are normal in growth and development. Crying may be associated with symptoms such as turning red, flexing of legs repeatedly, abdominal distention and flatus (Dihigo, 1998). The infant is inconsolable or difficult to comfort and is perceived by observers to be experiencing pain or discomfort (Fleisher, 1999). Further complicating a standard definition is that colic is rarely observed or experienced by researchers. Rather, colic is most often described by parents.

Cause

If confusion surrounds definition, even more confusion is associated with the cause and treatment of colic. Forsyth (1989) has proposed two general theories regarding the etiology of infant colic. The first is that colic is simply an extension of normal infant behavior. It is viewed as an extreme form of normal crying and may be part of a normal developmental process by which infants learn self-regulation (Fleisher, 1999).

All infants cry and peak crying in infants not identified as having colic occurs between 2 weeks and 4 months of age, which is also the age range for colic to occur (Fleisher, 1999). The fact that colic disappears at about 4 months of age, with or without intervention, lends weight to the theory that it is related to learning, growth, and development. Proponents of this theory explain the physical symptoms, such as abdominal distention and flatus as “air swallowed during crying (Fleisher, 1999),” and have observed that “all infants flex their legs when crying” (Fleisher, 1999).

A second theory assumes that colic is a physiological entity or “something wrong” with the baby. (Forsyth, 1989) Suspicions of pathology usually involve feeding practices, digestive or elimination abnormalities (Forsyth, 1989), and are based on observation of abdominal distention, flatus, inability to be comforted, and the high pitched, intense crying that observers associated with pain.

Research by Keefe (1988) further defines this theoretical basis to include four major explanations of colic and offers an additional explanation. “The four predominant themes in the literature are (1) gastrointestinal etiology, (2) allergenic basis, (3) the parental anxiety/tension model, and (4) the immature CNS explanation” (p. 71). Keefe proposes an additional theory that colic reflects two levels of the mother infant system: a

biological component and an interactional component. (Keefe, 1988). The biological component refers to an infant's level of consciousness and arousal, which includes sleep patterns, and is referred to as "state behavior" (Keefe, 1988). An interactional component encompasses the mother's perception and response to her infant's behavioral cues.

Infants displaying colic behaviors have disorganized patterns of state behavior and send cues that are difficult for mothers to read, making her responses less effective (Keefe, 1988). When these two components of the mother baby dyad are present, colic may result.

Diagnosis, Management and Treatment

Before providing treatment, it is necessary to rule out any physical abnormality that could be the cause of infant crying. When all acute causes of crying have been ruled out and colic is suspected, a crying diary may provide valuable clues to making a diagnosis of colic (Dihigo, 1998). However, diagnosis is often made in retrospect when the symptoms finally abate (Fleisher, 1998).

Treatment of infant colic depends on which causal theory is ascribed to and a desire to provide parents with relief from the infant's symptoms. Extensive research has gone into identifying specific infant feeding practices as causative and curative for colic. One of the most frequently studied causes is the use of formula based on cow's milk. Popular theories have implicated a specific allergic reaction to the protein content of milk or intolerance to lactose (Forsyth, 1989). A common treatment approach is to change infant formula to one containing neither cow's milk nor lactose (Forsyth, 1989). Forsyth has indicated: "In a prospective study of healthy newborn infants, 26 % of formula fed infants followed by pediatricians in private practice had their formulas changed to non-

cow's milk formulas by the age of 4 months. The majority of these changes were in response to complaints of crying and feeding behavior" (1989, p. 522). The result of the study showed that although infants did seem to improve initially with a change in formula to eliminate cow's milk, the effect diminishes with time (Forsyth, 1989).

Occurrence

Studies have also compared colic occurrence in breast-fed and bottle fed infants. In a 1997 study of infant health outcomes (Bass & Groer, 1997), mothers of breast fed infants reported fewer colic symptoms than bottle fed babies at one and two months of age. Babies who were both breast and bottle fed also showed fewer colic symptoms at one and two months of age than infants who were only bottle fed (Bass & Groer, 1997). A longitudinal study comparing breast and bottle fed infants concluded that peak crying occurs at different ages for breast and bottle fed babies (Lucas & St James-Roberts, 1998). Breast fed infants experienced peak crying at 6 weeks of age while bottle fed babies peaked earlier at around 2 weeks of age (Lucas & St James-Roberts, 1997). The study included 97 infants and was based on validated maternal diaries (Lucas & St James-Roberts, 1997).

Attitude

Parental, particularly maternal, attitudes and behaviors have been implicated in colic. Maternal anxiety and tension have been suspected of contributing to infant distress. Infant behavior in relationship to parental behaviors was studied with the conclusion that colic was not caused by maternal factors, but the quantity and quality of mother infant interaction increased or decreased the infant's tension (Stewart, Weiland, Leider, Mangham, Holmes & Ripley, 1954). Parents of irritable infants tended to

respond inappropriately and inconsistently to the crying with over stimulation or relative neglect (Stewart & Weiland et al., 1954). Parent-infant interaction was studied more recently by Dihigo (1998) with the suggestion that attention should be given to improving the appropriateness of caregiver response to infant crying. This study is based on the premise that colicky crying is not a cry of pain, but a way for the infant to communicate needs to the parent (Dihigo, 1998). Parent infant interaction can be modified so that infant crying is interpreted more skillfully and thus, parent response may be more appropriate.

Infant Factors

Infant temperament differences have been categorized and studied in relationship to colic behaviors. One of these behaviors is crying. Differences in intensity, frequency and inconsolability reflect temperament and displays of temperament affect the relationship that develops between infant and caretakers (Jacobsen & Melvin, 1995). “Goodness of fit “ between the temperament of the infant and the parental expectations of infant behavior was examined as a source of tension in the relationship (Jacobsen & Melvin, 1995). Maternal response to the infant is believed to be related to the mother’s perception or how “bothered” the mother is by the infant’s behavior (Jacobsen & Melvin, 1995). Studies of infant temperament were also done by Carey & McDevitt (1970) using a tool they developed called the Infant Temperament Questionnaire. This tool has been used by researchers in colic studies as well as other studies of parent-infant interaction and involves parental assessment of infant temperament (Carey & McDevitt, 1978).

Coping

Current research is focused on helping parents cope with colic symptoms by providing concern, support, reassurance and validation that colic is a problem (Fleisher, 1998). Specific plans for respite from infant care, soothing techniques, and encouraging expression of feeling, both positive and negative, is also important (Fleisher, 1998). Less attention is given to the theory that colic involves a gastrointestinal disorder, but rather it is a self limited, harmless pattern of infant behavior (Fleisher, 1998) that can put families in crisis if they do not receive support and guidance

Summary

Extensive literature is available regarding infant colic. The literature covers the definition of colic, causation, treatment and intervention by health care providers. However, the majority of research, especially involving both mothers and infants, has been done on Caucasian, middle class subjects. This fact raises the question of cultural variations in the occurrence, experience and perception of colic, and the influence of culture and ethnicity on management. It is possible that culturally diverse populations may experience infant colic in a different way. Several studies allude to the fact that the incidence of colic is the same in white and non-white infants, but documentation of actual studies using ethnically diverse groups was limited. One researcher (Dihigo, 1998), recognized the absence of diverse research and suggested that further studies be done with subjects who “vary in cultural and socioeconomic status” before conclusive results could be reported.

In 1991, a study by Barr, Konner, Bakeman & Adamson was based on the theory that infant colic is culture specific. Forty six infants of the !Kung San, a society of hunter

gatherers in the Kalahari desert (Barr et al., 1991) were studied to determine crying patterns. The research compared crying patterns between Western society infants and the !Kung San with the result that crying patterns varied by time of day and intensity, but not by age (Barr, et al., 1991). There were differences in maternal response to infant crying and infant care practices (Barr, et al., 1991).

In an article encouraging researchers to take culture and ethnicity into consideration when conducting research, Porter and Villareual (1993) state “Although certain phenomena are universal, the meanings attributed to them and the consequent behaviors in response are group specific” (p.61). Research using subjects from diverse ethnic groups is especially pertinent in terms of studying perception of colic as perception can be influenced by ethnicity. Interest in cultural variations, personal observations of Caucasian and Hispanic mothers, and the absence of research about colic in other populations lead to the question proposed for this study: Are there variations in maternal perception of infant colic in Hispanic and Caucasian mothers enrolled in the WIC program?

Methodology

Research Design

The study of maternal perception of infant colic in Hispanic and Caucasian WIC mothers is a quantitative study. The research design is descriptive with elements of an exploratory study. Specific areas, such as pacifier use, are exploratory in nature. The primary research variables in the study are ethnicity of the mother and maternal perception of infant colic. Additional variables are demographic characteristics including age, education or income level, parity, and previous infant experience.

Sampling

The target population for the study was mothers of infants less than six months of age enrolled in the Women, Infants and Children (WIC) food supplement program. The accessible population was participants in the WIC program at two sites in Michigan. WIC provides food coupons for women who are pregnant or breastfeeding, infants, and children less than five years of age. The program is federally funded by the U.S. Department of Agriculture and the Department of Health and Human Services and is administered by each individual state.

To be eligible to take part in the study, a mother must also be the primary caregiver of the infant and be either Hispanic or Caucasian. An infant whose mother was eligible for the study must not have been diagnosed with any illness or condition that might cause crying or irritability.

Convenience sampling was used to obtain participants for the study. The desired sample size was a minimum of 30 in each ethnic group of mothers with no limit on the maximum number of participants.

WIC program standards for recertification and nutrition education require that clients enrolled in the program may only receive a maximum of three months of food coupons at a time for each recipient (WIC Policy and Procedure Manual, 1999). This standard made it possible to choose any three month period in a year and theoretically have every WIC recipient return to the clinic for service during that time period. Data collection began on November 15, 2000 and ended February 12, 2001. Table (no number yet) shows the three-month period of the study and the population seen during that time. Recipients who miss appointments are rescheduled or disenrolled in the program.

Instrumentation

The questionnaire used in the study was designed by Peggy Anne Field, RN, SCM, PhD (1990). The original study compared nurses' and mother's perceptions of colic and was conducted at a large urban public health center. Ms. Field indicated in the article that the items for the questionnaire were developed from her literature review and were categorized by crying patterns, symptoms of physical distress, feeding patterns and behaviors, and pacifier use (Field, 1990).

Demographic information, such as infant age at onset of symptoms, maternal age at childbirth, sex and age of infant, family income, educational level of mother, and birth order of infant were included in the Field study. The study included 111 infants and reported 79% showed colic symptoms by the fourth week of life (Field, 1990). The symptoms most often selected by the mothers in the Field study as associated with colic were passed gas frequently, clenched fists, drew up legs, cried most in afternoon/evening, stiff body posture and wanted to be held (Field, 1990).

The Field tool was pilot tested on a group of parents prior to use in the study and the questionnaires were also reviewed by a panel of public health nurses prior to use (Field, 1990). The nurses reviewed the questionnaire for content and clarity of the questions and the parents reviewed for clarity only. From these reviews, an initial estimate of content validity is assumed. A non-conforming data matrix made it impossible to assess reliability of the tool as a whole. However, a Cronbach's alpha of .85 was calculated for item 15 of the questionnaire indicating a high level of internal consistency and reliability.

In the Field study, some original questions about maternal responses to infant colic were omitted at the request of the agency where the data were collected. The questions were omitted because the Ethics committee of the public health clinic in Field's study felt questions might cause emotional distress to the mothers. These questions were included in the questionnaire used for the current study of WIC Hispanic and Caucasian mothers.

A questionnaire entitled Maternal Perception of Infant Colic with a four point Likert scale was developed by the author to assess a continuum of maternal responses to colic. There were 15 items on the Likert scale with scale responses ranging from strongly agree (1), agree (2), disagree (3), strongly disagree (4) and not applicable (0). This questionnaire was incorporated with the Field tool to comprise the study questionnaire.

Translation of the questionnaire and all other related materials into Spanish was done initially by the principal investigator, and then submitted for review and revision to two certified foreign (Spanish) language instructors. One of the instructors is Mexican and both have traveled in Spanish speaking countries and worked with Spanish speaking populations. Revisions were made and the tool was piloted in Spanish to three Spanish-speaking (Mexican or Mexican American) volunteers. There were several words and phrases that the reviewers felt could not translate well and a marked copy was kept by the researcher at the data collection site indicating alternative translations or words to facilitate understanding should questions arise.

Data Collection

Two WIC clinic sites in rural Michigan were selected as sites for data collection. Both of these organizations are local WIC agencies. One of the sites is a local health

department and one specifically targets WIC services to Spanish speaking migrant agricultural workers. Proposals for the study were submitted to the Internal Review Boards of both of these agencies as well as the Michigan Department of Community Health WIC division and The University of Michigan Flint. When approval was obtained for the study from all of the agencies, data collection was started.

Only two stipulations were placed on the research project by the agencies where data were collected. The administration of the local health department requested that the study involve only minimal time from WIC personnel. The Michigan Department of Community Health requested a disclaimer on the front of the questionnaire in large type that indicated that the study was not a part of the WIC program and that WIC eligibility and benefits would not be affected by participating or not participating in the study.

Procedure

Data collection was accomplished through the use of a questionnaire containing 20 items that were self administered by the study participant. To increase awareness and interest in the study, signs were posted in the WIC clinic area inviting WIC clients to participate. The signs also gave information about the study and how to obtain a questionnaire. (Appendix C and D).

The local health department staff was oriented and trained to ask clients who fit the study criteria if they would like to participate. Consent forms and an introductory letter were given to clients who expressed interest in participating. (Appendix C and D). The consent form was completed and returned to the WIC staff in order to obtain a questionnaire. A box decorated with bright pink paper and labeled "Colic Survey Forms" was placed in the waiting area for completed questionnaires. Client anonymity was

assured as the survey questionnaire did not have any identification on it and was not correlated with consent forms or clients, and was not returned to the WIC staff.

A slightly different procedure was necessary at the WIC clinic serving the Hispanic migrant population. The principal investigator approached clients in the waiting room and asked if they wished to participate. Because of language considerations, it was sometimes necessary to have an interpreter. A member of the WIC staff who spoke Spanish asked eligible clients if they would like to participate. Completed questionnaires were kept in separate envelopes from consent forms, again to protect anonymity of clients. Copies of the questionnaire, signs, consent forms and introductory letters were all available in Spanish and English at both clinics.

Data Analysis

Statistical analysis was completed using SPSS 7.5 at the student computer lab and through the office of Projects for Urban and Regional Affairs (PURA) at The University of Michigan Flint. A grant was obtained from PURA for funding of the statistical analysis and the assistance of a biostatistician.

Results

A total of 42 surveys were distributed for the study of maternal perception of infant colic. Of the questionnaires returned, 32 were usable in the study. Nineteen of these were Caucasian in ethnicity and 13 were Hispanic. Ten were unusable because one page or less was completed or the instructions were misunderstood and they were completed incorrectly.

The sex of the infants of the participants was almost evenly divided between male (15) and female (17) infants. The mean age of the infants at the time of the study

was 14 weeks and the modal age was 24 weeks. The mean age when colic symptoms were first noticed was 3.2 weeks of age. Thirty of the infants were reported by their mothers to have been well since birth with two infants reported to have had minor illnesses. Twenty-eight of the 32 mothers were able to give information about their infants' birth with relationship to the expected date of delivery (EDD). Of those whose EDD was known, 43.8% were born within a week of their due date, 43.8% were up to three weeks early or late, and none of the infants was considered premature. Prematurity was defined as birth prior to 37 weeks gestation (Youngkin & Davis, 1998) for the purpose of this study.

The average age of the mothers participating in the study was 25.7 years (S.D.=5.15) with ages ranging from 17 to 37. When separated by ethnic group, average age for Caucasian mothers was 25.7 years (S.D.=4.88). Only five of the 13 Hispanic mothers reported their age at the time of the infant's birth resulting in a slightly higher average age of 25.8 years (S.D.= 5.56).

Only six respondents indicated their household income for an average of \$19,333.00 per year. Incomes ranged from a high of \$27,000.00 down to \$12,000.00 per year. It should be remembered that all participants in the study qualified for WIC by having household incomes of less than 185% of the poverty level based on the number of people in their household (WIC Policy and Procedure Manual, 2000).

Forty four percent (44%) of mothers surveyed had completed high school with five mothers having some college education. Thirty seven percent (37%) did not complete high school. The percentage not completing high school was highest in the Hispanic population. Sixty one (61%) percent of the women who were multiparous had

experienced colic with a previous infant. In 68% of the cases, the mother or her spouse was identified as the person who first suspected the infant had colic symptoms. Doctors were ranked second as identifying colic with other family members and friends third. Nurses were not selected as identifying colic by any of the 32 participants.

Questions 11 and 12 on the survey tool assess crying patterns and infant behaviors that may be associated with colic. The frequency of selection of infant behaviors associated with colic is summarized in Table 1. Top selections for Caucasian mothers included passing gas, and wanting to be held. Hispanic mothers selected wanting to be held and stomach rumbling as most frequent characteristics of colic. Posturing and body movements were selected more often by the Caucasian mothers.

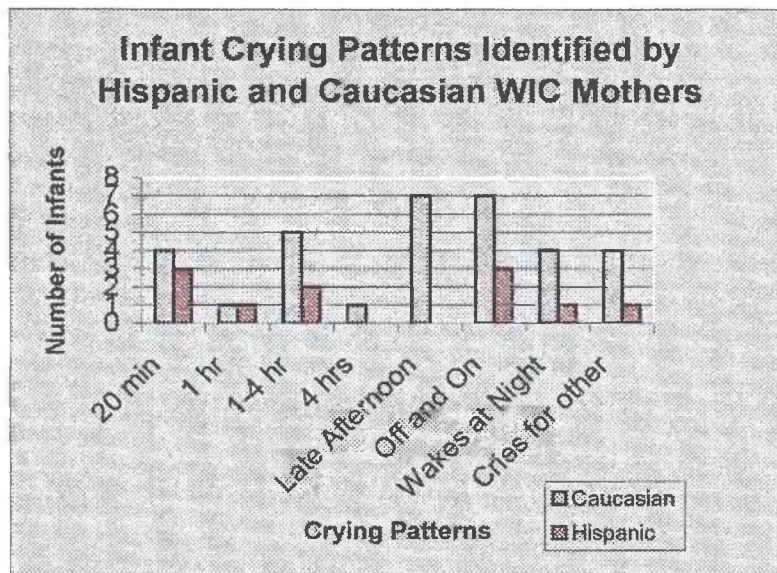
Table 1

Infant Behaviors Associated With Colic by Caucasian and Hispanic Mothers on WIC

Infant Behavior	Total # of mothers	Caucasian	Hispanic
Passes gas	15	13	2
Draws up legs	12	7	1
Wants to be held	12	9	3
Holds body straight	8	7	1
Kicks legs	8	7	1
Stomach rumbles	8	5	3
Difficult burping	8	7	1
Refuses to feed	6	5	1
Feeds hungrily	6	4	2
Hungry/won't eat	5	3	2
Burps	4	4	0
Waves arms	4	3	1
Clenches fists	4	2	2
Curves body	3	1	2
Difficult to cuddle	1	0	1
Avoids eye contact	1	1	0
Bowel movement	1	1	0

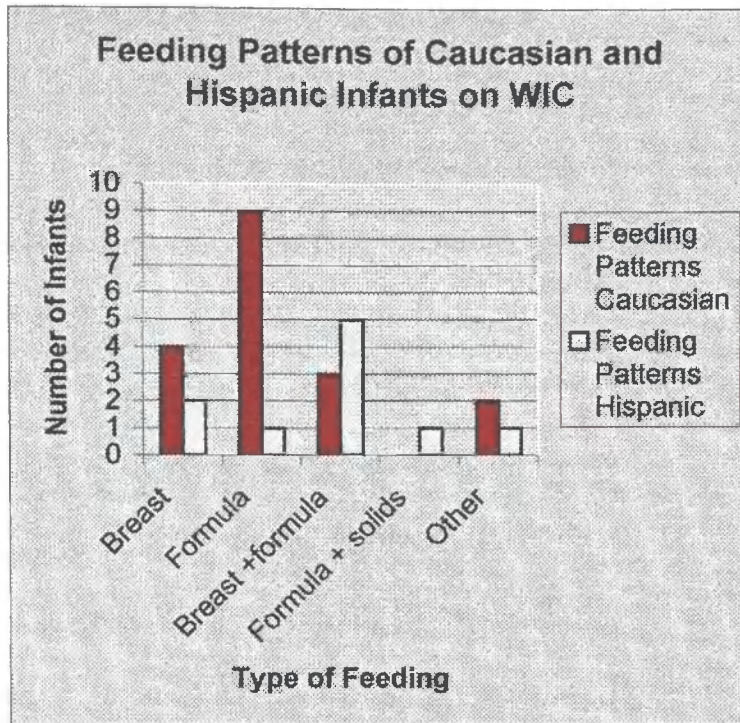
The results of the frequency distribution of crying patterns is shown in Figure 2. The crying patterns identified most often by mothers were crying off and on throughout the day, crying for 20 minutes after feeding, crying 1-4 hours per day, and crying in the late afternoon or evening. The results are displayed by ethnic group.

Figure 2



Additional data were collected on feeding patterns and pacifier use. The type of feeding used in infancy has been of interest to researchers in relationship to development of colic symptoms. The data collected about feeding patterns are displayed in Figure 3. Breastfeeding, or a combination of breast and bottle, was more common in the Hispanic group with seven out of 10 mothers breastfeeding as compared to seven out of 19 Caucasian mothers. Infants who were fed only formula were more likely to be Caucasian (nine infants), as opposed to Hispanic (one infant).

Figure 3



Pacifier use was reported in 19 cases comprising sixteen Caucasian infants and only three Hispanic infants. The pattern of pacifier use most frequently reported by the mothers was that infants readily took the pacifier when colicky, but only used it briefly before spitting it out.

Statistical tests were done to answer the question, “Were there differences between Caucasian and Hispanic mothers in perception of infant colic?” These included t tests, Chi square, and a linear probability model. Analysis of responses to the questionnaire items found only one item with statistically significant differences between the groups. Item 15c which asks if mothers believe colic is related to the way they care for their infant showed a finding of .032 on a t test for equality of means. The level of significance was set at $\alpha .05$ so the score is significant. Seventeen of 19 Caucasian

mothers disagreed or strongly disagreed with the statement while only six of 10 Hispanic mothers disagreed or strongly disagreed.

Discussion

There were some interesting findings in the study and some limitations. In terms of demographic results, the study confirmed findings of other researchers, including the study by Field (1990).

Colic was equally distributed between male and female infants. The mean age of onset of colic symptoms was 3.2 weeks of age. The Field study (1990) reported a mean age of 4 weeks. Many studies do not report an age of onset, but indicate in their definition of colic that it begins from 2 weeks to four months of age (Fleisher, 1999).

In this study as well as others (Keefe, Friese-Fretz, & Kotzer, 1998), the infants were considered well with no failure in growth or development. No major illnesses or conditions, including prematurity, were associated with the symptoms. Two mothers reported minor illnesses such as upper respiratory illness, and a “stomach virus.”

Birth order of the infants in this study could not be compared with other studies as many studies selected only first- born infants as subjects. Studies using only first- born infants are based on the premise that maternal nervousness, anxiety and lack of experience contribute to symptoms. Birth order in this study and the Field study (1990) show a slightly higher number of infants with older siblings who had colic. Mothers with previous experience with colic may be more astute at symptom recognition, less tolerant of normal infant behavior, or the conditions that contributed to colic in a sibling may still be present with succeeding infants.

Data analysis suggests that a set of symptoms or infant characteristics is associated with colic. These characteristics include persistent crying, body postures of stiffness, drawing up legs and making fists, passing gas and stomach rumbling, and wanting to be held and comforted. These findings are congruent with studies by Keefe, Froese-Fretz, & Kotzer (1998), and Treem (1994). Field (1990) developed her tool using behaviors and crying patterns identified by other researchers as related to colic. Mothers reported few additional symptoms when given the opportunity to comment. Additional symptoms and the frequency of their occurrence are sleeping only a short time then crying (1); repeating cycles of the baby appearing hungry but refusing to eat or sucking only a few times and crying resumes (2); and crying during feeding (1).

Item #9 on the Infant Colic Survey asked mothers if they had any idea about the cause of colic in their infant. Comments from both Caucasian and Hispanic mothers centered around feeding practices and formula (6) and one mother suggested that infant fatigue might be the cause. These comments suggest that mothers associate colic symptoms with feeding practices.

While the convenience sampling cannot be said to produce a sample representative of the population, the WIC structure makes representativeness more likely. The fact that the entire enrolled population of mothers with infants less than six months of age was scheduled to return during the three months of the study indicates that the potential for a representative sample was inherent in the sampling plan. It is also important to note that statistics show nearly 50% of all infants born in Michigan are enrolled in WIC (Michigan Department of Community Health, 2000).

Although the sample was small, it was evident that colic symptoms and behaviors do occur in Hispanic infants and that mothers do recognize the symptom complex and call it “colic”. Hispanic mothers may perceive a strong parental role in colic as suggested by the .032 finding on the t test of item 15c on the Likert scale. There are some possible explanations to explain why Hispanic mothers were significantly different than Caucasian mothers on this item.

Hispanic mothers may believe certain infant care practices and interactions prevent or relieve colic, or they may believe the way they care for or interact with their infant causes colic. A third possibility is that this result may be related to translation of the item into Spanish and nuances of meaning that affected the response.

The study results for this item indicate that Caucasian mothers believe that infant care practices and interactions are not related to colic. This is an interesting finding in that when asked for their ideas about the cause of colic, a small number of both Hispanic and Caucasian mothers indicated that feeding was related to colic. These mothers may separate feeding from other kinds of infant care.

While not statistically significant, there were differences in aspects of infant care between Caucasian and Hispanic mothers that may have clinical significance. Pacifier use was almost exclusively a Caucasian practice while breastfeeding was more common among Hispanic mothers. It is possible that higher numbers of breastfed infants in the Hispanic population reflects cultural beliefs and values, lifestyle differences, or the influence of family and friends. Pacifier use may be lower in the Hispanic group because the breast may be used as a comfort technique for a crying infant.

It should be considered that breastfeeding and formula feeding may or may not make a difference in the incidence of colic because of the composition of the milk itself. That relationship was not explored in this study. Other aspects of feeding, such as holding, eye to eye contact, and skin to skin contact may also be important. There may be an unknown difference in a breastfeeding mother's response to a crying infant that has not been studied.

One of the Hispanic mothers mentioned a home remedy, manzanilla tea, which was used to soothe her colicky baby. The use of over-the-counter or non-provider prescribed medications, maternal treatments, and home remedies was not explored in this study. In future studies with ethnic groups, these interventions should be explored.

Limitations

The limitations of this study were (1) working with two ethnic groups, translation and cultural differences; (2) the problems of access to the population i.e., delays in IRB approval;(3) use of a convenience sample and; (4) small sample size.

Translation of the introductory letter, consent form and survey into Spanish was challenging. It is difficult to assess the effect of discrepancies in translation. The Hispanic surveys had increased missing data that could be attributed to misunderstanding of the translation. Most of the Hispanic WIC mothers in the study population are from Mexico, but there may be participants from Cuba, South or Central America or Puerto Rico. Different dialects are used as well as slang terms, which made translation difficult. Ideally a questionnaire designed for the ethnic group being studied should be used in research studies (Porter & Villareul, 1993). The use of a bilingual survey also increased the cost and manpower of the study.

Although the two populations are equal in economic status as assured by WIC participation, the educational level was lower in the Hispanic population. Out of eight Hispanic participants completing the information about education, five had not finished high school, two had completed high school and one was in college. In the Caucasian population, 19 participants responded to the question with the following results: five did not complete high school, nine completed high school and five had finished college or were in college at the time of the survey.

Lower reading comprehension may have made completion of the survey more difficult for the Hispanic mothers and may have affected the accuracy of response. The Hispanic participants were observed to require more help from the clinic staff to complete the survey, but it was impossible to determine if this was due to translation, literacy or cultural differences.

There was some hesitation to complete the survey on the part of the Hispanic participants in the study. Many of the Hispanic participants are only temporary residents in the U.S. consequently their reluctance to complete surveys and other paperwork may reflect concern for their immigrant status. At the migrant clinic site, it was observed that the women were more willing to participate when approached by a regular clinic staff person than by the researcher.

One of the most formidable limitations to the study was that access to the WIC population required submission of three IRB proposals. One of the agencies delayed approval until the harvest season was past. Approval wasn't granted until November 1, 2000 and the delay may have impacted the number of Hispanic participants available to the researcher.

Sample size was a definite limitation. The use of two groups, Hispanic and Caucasian mothers, made a sample size of at least 30 in each group desirable (Polit & Hungler, 1999). A small sample size decreases the probability that the results are representative of the population and also increases the possibility that differences may exist between the two ethnic groups, but are not recognizable in such a small sample (Polit & Hungler, 1999).

The small sample size was due partly to difficulty in accessing the population. The Hispanic population was migrant agricultural workers who are in the area in large numbers only during the harvest season (August-October). After that time, the population becomes much smaller. Data collection took place from November 1, 2000 to January 31, 2001.

Implications for Nursing Research

There was only one area of the study that suggested Caucasian and Hispanic mothers differed in their perception of colic and that was related to infant care. King (1981) emphasized the role of interpersonal and social relationships interacting with personal systems. Many child care practices and maternal responses are formed through interaction with groups and society as a whole. Studies of parenting practices such as holding and carrying patterns, comforting behaviors, and feeding patterns should be considered. Cultural differences in the role and support of extended family and partner, family life and working status of the primary caregiver are all factors that might be studied. Fleisher (1999) has suggested that colic is not perceived as a problem in societies where an infant's cries are responded to in an emergent manner. This suggestion lends weight to the need for additional research into perception as it relates to infant care

practices and maternal response to infant behavior. Additional study should also include other economic and social groups as well as other ethnic groups.

Implications for Nursing Practice

Nurses were not reported in this study as having an important role in the identification of colic. The results indicated that parents were key to identification of colic symptoms in their infant. This result also occurred in the Field (1990) study. The implication of this finding is that nurses should listen more diligently to parents for cues and concerns about infant behavior. Crying patterns and other behaviors associated with colic should be included in the nurse's assessment of infants from birth to six months of age, keeping in mind that colic usually appears at two weeks of age and resolves by 4 months. The strength of the nurse's role may be in infant assessment and in providing health guidance and support for families experiencing colic. A nursing diagnosis for colic would be helpful in addressing parental concerns about colic and in assuring that assessment is documented.

King's (1981) Interacting Systems Framework is useful when working with mothers, infants and families. The nurse-patient relationship is an example of an interpersonal system that is formed to promote health. Assuring that pregnancy, labor and birth proceed in an optimum state of health for both mother and baby, connecting parents with community resources and support, well child care, and education about normal growth and development are nurse practitioner roles.

Nurses in many roles can assist parents in learning to care for their infant and offering emotional support and reassurance. The inclusion of colic and other patterns of infant behavior in basic nursing education and in parental preparation for infant care are

important considerations. Anticipatory guidance for parents should be explored as an intervention technique for managing colic.

Conclusion

Colic appears to be a complex set of symptoms that occur in early infancy and has the potential to cause considerable parental distress. Many health care resources are directed toward the problem of infant colic. At this point in time, the primary cause or multiple causes of colic remain unknown.

The results of this study suggest that maternal perceptions of infant care and actual infant care practices may be important in colic. Research involving the phenomenon of colic, parenting practices and styles, and parental attitudes in a variety of ethnic groups contributes to the body of knowledge about colic. Eventually nursing research may provide the key to a cause and increase the success of interventions.

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Appendix A

Table of Means and Standard Deviations of Maternal Perception of
Infant Colic Questionnaire Item 15

Table of Summary of Data

Table of Means and Standard Deviation of Maternal Age

Table 1A

Means and Standard Deviations of Items on Maternal Perception of Infant Colic Questionnaire

Questionnaire Item#	N	Mean	Standard Deviation
15a. Colic is physical illness			
Caucasian	19	2.05	1.22
Hispanic	07	2.57	1.13
15b. Colic is normal behavior			
Caucasian	19	2.68	.75
Hispanic	09	2.11	.78
15c. Colic is related to infant care			
Caucasian	19	3.16	.60
Hispanic	10	2.50	.97
15d. Amount of crying worries			
Caucasian	19	2.05	.97
Hispanic	10	1.90	1.45
15e. Intensity of crying worries			
Caucasian	19	1.89	.88
Hispanic	11	1.27	.90
15f. Baby cannot be comforted			
Caucasian	19	2.16	1.17
Hispanic	10	2.20	1.14
15g. Don't know what to do about crying			
Caucasian	19	2.16	1.21
Hispanic	10	2.50	.71
15h. Cannot cope with colic			
Caucasian	19	2.79	1.32
Hispanic	09	2.44	1.01
15i. Colic affecting relationship/baby			
Caucasian	19	2.89	1.37
Hispanic	10	2.30	1.49

Means and Standard Deviations of Items on Maternal Perception of Infant Colic
Questionnaire Continued

Questionnaire Item#	N	Mean	Standard Deviation
15j. Spend less time with baby due to colic			
Caucasian	19	3.00	1.41
Hispanic	10	2.30	1.42
15k. Colic upsetting to family			
Caucasian	19	2.79	1.40
Hispanic	09	2.22	1.56
15l. Colic makes caring for baby difficult			
Caucasian	19	2.26	1.37
Hispanic	10	2.00	1.63
15m. Consulted doctor about colic			
Caucasian	19	1.47	1.17
Hispanic	10	1.80	1.32
15n. Plan to consult doctor about colic			
Caucasian	19	1.47	1.26
Hispanic	09	2.22	1.48
15o. Can handle colic without doctor			
Caucasian	19	2.05	1.31
Hispanic	10	1.90	1.37

Table 2A

Summary of Data

Questionnaire Item	Total N	Hispanic N	%	Caucasian N	%
1. Baby's sex					
Male	15	04	31.00	11	58.00
Female	17	09	69.00	08	42.00
2. Baby's age/visit (wks)	29	11	37.93	18	62.06
2 wks		00	00.00	04	22.22
3 wks		00	00.00	01	05.55
4 wks		00	00.00	02	11.11
6 wks		00	00.00	01	11.11
7 wks		00	00.00	01	05.55
8 wks		04	36.36	01	05.55
16 wks		00	00.00	02	11.11
18 wks		00	00.00	01	05.55
20 wks		00	00.00	01	05.55
24 wks		07	63.63	03	16.66
3. Baby's age/colic began	24	06	25.00	18	75.00
1 wk		02	33.33	05	27.77
2 wks		02	33.33	03	16.66
3 wks		00	00.00	01	05.55
4 wks		01	16.66	07	38.89
8 wks		01	16.66	00	00.00
10 wks		00	00.00	01	05.55
12 wks		00	00.00	01	05.55
4. Birth order/baby	31	12	38.70	19	61.29
1 st	09	02	16.66	07	36.84
2 nd	13	06	50.00	07	36.84
3 rd	06	03	25.00	03	15.78
4 th	03	01	08.33	02	10.52
5. Other child/colic	18	04	22.22	14	77.77
Yes		02	50.00	09	64.28
No		02	50.00	05	35.71

Summary of Data Continued

Questionnaire Item	Total N	Hispanic N	%	Caucasian N	%
6. Feeding type	25	09	36.00	16	64.00
Breast		02	22.22	04	25.00
Formula		01	11.11	09	56.25
Breast/Formula		05	55.55	03	18.75
Breast/Solids		00	00.00	00	00.00
Formula/Solids		01	11.11	00	00.00
Breast/Form/Solids		00	00.00	00	00.00
7. Birth/EDD	28	09	32.14	19	67.85
Yes		07	77.77	07	36.84
No		02	22.22	12	63.16
8. Well since birth	30	12	40.00	18	60.00
Yes		12	100.00	16	88.89
No		00	00.00	02	11.11
9. Reasons for colic	07	02	28.57	05	71.42
Feeding related	06	02	33.33	04	66.66
Infant fatigue	01	00	00.00	01	14.28
10. Person identifying colic	22	07	31.81	15	68.18
Self/Spouse		04	57.14	11	73.33
Family/Friend		01	14.28	01	06.66
Doctor		02	28.57	02	13.33
Other(Day care provider)		00	00.00	01	06.66
11. Crying Pattern					
20" after feeding		03		04	
1 hour in 24		01		01	
1-4 hrs in 24		02		05	
More than 4 hrs in 24		00		01	
Late afternoon/evening		00		07	
Wakes at night crying		00		04	
No pattern		00		01	
Cries only 2-3"		00		01	
Persistent crying		00		01	
Cries at night/hungry		00		01	
Cries during feeding		00		01	

Summary of Data Continued

Questionnaire Item	Total N	Hispanic N	%	Caucasian N	%
12. Colic symptoms					
Holds body straight		01		07	
Curves body		02		01	
Draws up legs		01		11	
Kicks legs		01		07	
Clenches fists		02		02	
Waves arms		01		03	
Passes gas		02		13	
Stomach rumbles		03		05	
Bowel movement		00		01	
Burps		00		04	
Difficult burping		01		07	
Refuses		01		05	
Feeds hungrily		02		04	
Wants to feed		02		05	
Avoids eye contact		00		01	
Wants to be held		03		09	
Difficult to cuddle		01		06	
13. Pacifier use	30	11	36.66	19	63.33
Yes		02	18.18	17	89.47
No		09	81.81	02	10.53
13a. Type of pacifier use					
Refuses when colicky		00		01	
Accepts/keeps when colicky		00		03	
Accept/spits out		00		11	
14. Other colic symptoms					
Crying related		02		00	
Stiffens body		00		01	
Sleep disturbances		00		02	
17. Ethnic group					
Hispanic		13	40.60		
Caucasian				19	59.40

Summary of Data Continued

Questionnaire Item	Total N	Hispanic N	%	Caucasian N	%
18. Income level (annual)	06				
\$12,000.00				01	
\$13,000.00		01			
\$14,000.00				01	
\$25,000.00				02	
\$27,000.00				01	
19. Educational Level	27	08	29.62	19	70.37
Less than high school		05	62.50	05	26.31
High school		02	25.00	10	52.63
Less than 2 yrs college		01	12.50	01	05.26
More than 2 yrs college		00	00.00	01	05.26
Undergraduate degree		00	00.00	01	05.26
20. Comments					
Formula change helped symptoms				01	
Babies outgrow colic				01	
Colic occurs in cycles				01	
Cries in car/can't see mom				01	
Colic related to feeding				01	
Manzanilla tea is effective		01			

Table 3A

Maternal Age At Birth of Infant

Questionnaire Item	N	Mean	Standard Deviation
16. Maternal age at infant's birth	24	25.7	5.15
Caucasian	19	25.7	4.88
Hispanic	05	25.8	5.56


Appendix B
IRB Approval Forms

THE UNIVERSITY OF MICHIGAN - FLINT

August 10, 2000

To: Mary Killeen

From: Suzanne Selig, Chair, Human Subjects Committee



Re: Maternal Perception of Infant Colic in Caucasian and Hispanic Mothers enrolled
in WIC program.
(Approval #75/99)

This is to inform you that your proposal "Maternal Perception of Infant Colic in Caucasian and Hispanic Mothers enrolled in WIC program" has been approved by the Human Subjects Committee. Should you decide to make any changes in the use of human subjects which differ from the approved proposal, please advise this committee prior to making these changes.

Should you observe any negative change in the health or behavior of a human subject attributable to this research, you are required to suspend your project. If this happens, please inform the committee as soon as possible for our further review and decision as to the continuation/termination of your project.

This approval for your project is valid for a period of twelve months. If your project extends beyond this period (twelve months), please re-submit your proposal for reconsideration.

THE UNIVERSITY OF MICHIGAN - FLINT

January 3, 2001

To: Patricia Fitch

From: Suzanne Selig, Chair, Human Subjects Committee



Re: Maternal Perception of Infant Colic in Caucasian and Hispanic Mothers
Enrolled in WIC Program (Approval #75/99)
(Revision Approval #37/00)

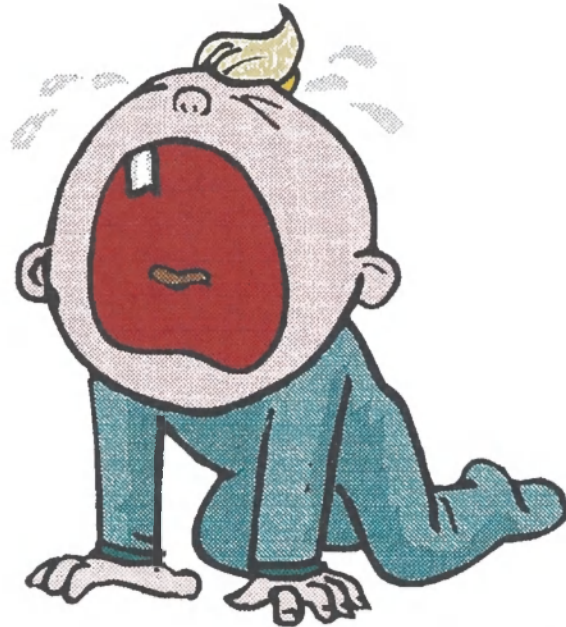
Thank you for your memo indicating the change in your project, "Maternal Perception of Infant Colic in Caucasian and Hispanic Mothers Enrolled in WIC Program" in which the revision to add the Health Delivery Incorporated Clinic in Imlay City as a site to collect data has been made. Your project was originally approved by the Human Subjects Review Committee on August 10, 2000; and is valid through August 10, 2001.

The change has been noted, and is consistent with the Human Subject Committee guidelines. Thank you for informing the committee of this change.

Appendix C

Promotional Signs--English
Introductory Letter--English
Informed Consent--English
Infant Colic Questionnaire--English

Colic Study for WIC Recipients



Participation is voluntary and does not affect
your WIC benefits or eligibility

ASK THE WIC RECEPTIONIST ABOUT THE STUDY IF YOU WOULD
LIKE TO PARTICIPATE

All information is confidential.

This study is being conducted by a UM Flint graduate student.

INTRODUCTORY LETTER

Date:

Dear Participant:

This letter is to invite you to take part in a study of mother's views of infant colic. The purpose of the study is to learn what mothers believe about colic in their infants. Colic symptoms can be a concern for parents and account for a large number of visits to health care providers. Caucasian and Hispanic mothers of infants 2 weeks to 6 months of age are being invited to participate in the study. Although you may not benefit by taking part in the study, it is possible that the results may help other mothers and their infants in the future.

The colic research project is being conducted by Pat Fitch, RN, BSN, a graduate student at University of Michigan Flint in the Family Nurse Practitioner program. Although Pat is also a Lapeer County Health Department employee, the research study is NOT a Health Department project and no Health Department materials or funds are being used for the project.

Although the research project is being conducted at WIC and forms are being distributed in the WIC area, the study is NOT part of the WIC program. Your decision to participate or not participate does NOT affect your WIC eligibility or WIC benefits. None of the information you shared on the questionnaire will be given to WIC personnel and no information from your WIC records will be used for the study. The results of the study in aggregate form will be shared with WIC, but it will be impossible to identify individual participants.

Participation in the study involves completion of a questionnaire which will take about 20 minutes of your time. Your participation is completely voluntary and you may withdraw at any time by not completing one after you requested one, or not turning it in after you completed it.

The information you provide on the questionnaire will be confidential and there is no way that your name or identity can be determined from the questionnaire.

If you want to obtain a questionnaire, complete the informed consent statement. Take the completed statement to the WIC receptionist and she will give you the questionnaire.

If at any time you have questions about the research project, please feel free to call me at 810-667-0391, or Mary Killeen at 810-766-6866.

Thank for you interest in this research project.

PAT FITCH

INFORMED CONSENT

1. I agree to participate in the research project Maternal Perception of Infant Colic in Caucasian and Hispanic Mothers in the WIC program which is being conducted by Pat Fitch RN, BSN. for her research project at UM-Flint.
2. I have been informed and understand that my participation is voluntary and that I may withdraw from the study at any time without penalty.
3. I understand that the research study is NOT part of the WIC program and that my decision to participate or not participate will NOT affect my WIC eligibility or benefits.
4. I understand that the research study is NOT a Lapeer County Health Department project and no public materials or funds are being used.
5. I understand that my part of the research project will be to complete a questionnaire that will take about 20 minutes of my time, and that there will be no way for the information I give on the questionnaire to be identified with me or my infant.
6. I understand that all information I give on the questionnaire will be confidential and will not be shared with WIC personnel and that none of my WIC records will be used in the study. Results will be reported in group form only.
7. I understand that if I want to receive a report of the colic study I must provide my address or phone number below. I understand I will receive a report after the study is complete in April 2001.

Signature of Participant

Date

COMPLETE THIS PORTION OF THE FORM ONLY IF YOU WANT TO RECEIVE A REPORT OF THE COLIC STUDY AFTER APRIL, 2001.

Street Address _____
P.O. Box _____
City _____ State _____ Zip _____
Phone _____

**This research study is NOT a part of the WIC program and
does NOT affect your WIC benefits or eligibility.
Your participation in the study is voluntary.**

**SURVEY OF COLIC IN INFANTS IN WIC
PARENT QUESTIONNAIRE**

Are you the primary caregiver of
the baby?

Yes

No

If you answered "No" to this question, please turn in your questionnaire to the receptionist. Thank you for your willingness to take part in the study.

Completion and submission of this survey form is voluntary and you may withdraw from the study project any time prior to turning in the survey form.

Please fill in the blank or place a mark beside your choice.

1. Baby's sex:

male

female

2. Age of baby at time of this visit to clinic:

3. How old was your baby when colicky symptoms first began?

months

weeks

days

4. Birth order of baby in family:

1st

2nd

3rd

4th

greater than 4th

5. ANSWER ONLY IF THIS CHILD IS NOT THE FIRST:

Did any other child in your family have colic?

Yes

No

6. How was the baby being fed when the colic began?

Breast

Formula

Breast and formula

Breast and solids

Formula and solids

Breast, formula and solids

Other (please state) _____

7. Was the baby born within a week of the due date?

Yes _____

No _____

Don't know _____

If "no", weeks premature(early) _____
or overdue(late) _____

8. Has the baby been well since birth?

Yes _____

No _____

If "no", explain illness _____

9. Can you, as the baby's caregiver, think of any single reason or combination of reasons which may have caused your baby's colic? _____

10. Who first thought that your baby was colicky?

Self or spouse _____

Family member or friend _____

Public health nurse _____

Doctor _____

Other (please state) _____

11. Please indicate the typical pattern of your baby's crying (check more than one if applicable):

Baby cries for about 20 min. after feeding _____

Baby cries for a total of about 1 hr in each 24 hr period _____

Baby cries for a total of about 1-4 hrs in each 24 hr period _____

Baby cries for a total of more than 4 hrs in each 24 hr period _____

Baby usually cries most in late afternoon or evening _____

Baby's crying is off and on throughout the day _____

Baby wakes at night crying _____

Other (please state) _____

12. Please indicate any of the symptoms from this list which you usually see in your baby when he/she is colicky (check as many as apply):

- Baby holds body straight (will not bend at waist) _____
- Baby curves body backward with head thrown back _____
- Baby draws up legs _____
- Baby kicks legs stiffly _____
- Baby tightly clenches fists. _____
- Baby waves arms stiffly in a purposeless (useless) manner _____
- Baby passes gas rectally _____
- Baby's stomach or abdomen rumbles _____
- Baby has a bowel movement _____
- Baby burps often _____
- Baby has difficult burping _____
- Baby refuses breast or bottle _____
- Baby feeds hungrily _____
- Baby seems to want to feed, but will not feed for any length of time _____
- Baby avoids eye contact _____
- Baby wants to be held _____
- Baby is difficult to cuddle _____

13. Does your baby use a pacifier?

- Yes _____
- No _____

If "yes", choose one of the following that fits best:

- Baby refuses pacifier when colicky _____
- Baby accepts and keeps pacifier when colicky _____
- Baby only briefly accepts pacifier when colicky, tending to spit it out often _____

14. Please list any other behaviors/symptoms/signs that your baby shows when colicky, if they have not been listed here: _____

15. The following are a series of statements about infant colic. The answers range from strongly agree to strongly disagree. Please choose the answer that best fits your belief about colic and your experience with your infant.

	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
Colic is a physical condition or illness.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Colic is a normal part of infant behavior.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Colic is related to how I care for my baby.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The amount of crying worries me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The intensity of crying worries me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby cannot be comforted when crying.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel I don't know what to do when my baby cries.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I cannot cope with my baby's colic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am concerned that my baby's colic has or will have a negative effect on my feelings for him/her.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby's colic makes me want to spend less time with him/her.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My baby's colic is upsetting to my family.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Colic makes caring for my baby difficult.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have seen a doctor about colic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I plan to see a doctor about colic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can handle colic without seeing a doctor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. Your age when this baby was born: _____

17. Your ethnic group:

African American _____

Caucasian _____

Hispanic _____

Other _____

18. Family income level:

19. Your educational level:

Did not complete high school _____

Complete high school _____

Less than 2 yrs college _____

More than 2 yrs college _____

Undergraduate degree _____

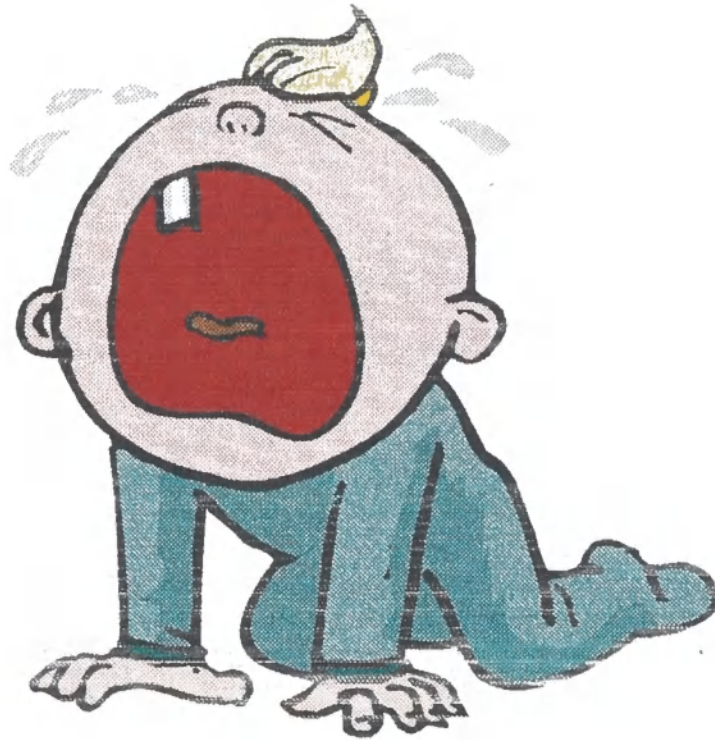
Advanced degree _____

20. Any comments you would like to add?

Appendix D

Promotional Sign—Spanish
Introductory Letter—Spanish
Informed Consent—Spanish
Infant Colic Questionnaire--Spanish

Estudio de Colico por Participantes de WIC



Participacion es voluntario y no
affecta su beneficios.

El estudio es una lista de preguntas
para los madres de bebes con colico.

Informacion es secreta.

La estudia es un proyecto de la
Universidad de Michigan Flint.

Querida Participante,

Esta carta es para invitarle a completar una lista de preguntas para las madres de bebés en la programa de WIC. Es un estudio sobre las opiniones de los padres de bebés con cólico. Las síntomas de cólico son muy importantes a los padres porque algunas veces es necesario obtener las sevicios del doctor. Es possible que este informe no le sirva pero será un beneficio a los otros.

Esta estudio es un proyecto de estudiante graduada de la Universidad de Michigan Flint. La estudiante es una enfermera en la Lapeer County Departamento de Salud Público también. Se llama Pat Fitch, RN. La profesora de la clase se llama Mary Killeen, RN MSN.

Este estudio no es un parte de la programa de WIC y no cambiara a sus beneficios o participación a la programa de WIC.

La lista de preguntas es breve y se requiere poco tiempo.

Si tiene preguntas, llama por teléfono a 810-667-0391 o la profesora Mary Killeen a 810-766-6866.

Gracias.

Señora Fitch

PERMISO

1. Doy mi permiso para participar en el estudio "Opiniones de las Madres de los Niños con Cólico en la Programa de WIC" por un estudiante graduada (Pat Fitch) de la Universidad de Michigan Flint.
2. Entiendo que mi participación es voluntario y no es necesario participar.
2. Entiendo que el estudio no es un parte de la programa de WIC y no afecta mis beneficios o participación en la programa de WIC.
4. Entiendo que el estudio no es parte de Lapeer County Departamento de Salud Público.
5. Entiendo que mi participacion es responder una lista de preguntas y la información es secreta.
6. Entiendo si deseo una noticia de resultado de estudio, es necesario para dar mi domicilio.

Firma:

Fecha:

Completa si desea noticia.

Nombre:

Domicilio:

ESTUDIO DE CÓLICO DE LOS BEBÉS DE WIC
PREGUNTAS PARA LOS PADRES

Es necesario a responder a todas las preguntas o hace una marca al lado de su opinion.

1. Su bebé es:
muchacho _____
muchacha _____
2. Cuántos años tiene su bebé hoy? _____
3. Cuántos años tiene su bebé cuando el cólico comenzó?
Meses _____
Semanas _____
Dias _____
4. Este bebé es
Primero _____
Segundo _____
Tercero _____
Cuarto _____
Mas de cuarto _____
5. RESPONDE SOLO SI ESTE BEBÉ NO ES EL PRIMERO EN LA FAMILIA
TENER CÓLICO.
Otros bebés en la familia tienen cólico?
Si _____
No _____
6. Tipo de comer cuando el cólico comenzó.
Lactancia materna _____
Formula _____
Lactancia materna y fórmula _____
Lactancia materna y la comida _____
Formula y la comida _____
Lactancia materna, formula y la comida _____
Otros, por favor _____

7. Nació en punto con respecto a la bebé?

Si _____

No _____

No se _____

Si "no," cuantas semanas antes o detras del tiempo? _____

8. Se siente bien despues de nacimiento?

Si _____

No _____

Si responde "No", explica la enfermedad.

9. Puede pensar en algunas razones por el colico

10. Quien era la primera persona que pensó en cólico y su bebé?

Ud o su esposo _____

Familia o amigo _____

La enfermera de salud publico _____

El doctor _____

Otro, por favor _____

11. Cual es el modelo la llorera de bebé?

Bebé llora por viente minutos despues de comer _____

Bebé llora por un hora de 24 _____

Bebé llora por 1-4 horas de 24 _____

Bebé llora por más de 4 horas de 24 _____

Bebé llora mas por la tarde _____

Bebé llora y no llora todo al dia _____

Bebé llora por la noche _____

Otros, por favor _____

12. Hace una marka al lado de las s^íntomas de su beb^é
ES POSIBLE PARA MARKA MAS QUE UNO.

- Beb^é no se dobla a la cintura _____
- Beb^é se dobla a la cintura en sentido contrario _____
con las cabeza (tirado en sentido contrario)
- Beb^é acercarse las piernas _____
- Beb^é da puntapies con tieso _____
- Beb^é forma un puno fuiste _____
- Beb^é hace senales con los brazos en un modo _____
de no proposito
- Beb^é tiene gaseoso intestino _____
- El estomago hace ruido sordo _____
- Beb^é tiene evacuacion _____
- Eruccion muchas veces _____
- Beb^é tiene dificultad con eruccacion _____
- Beb^é no quiere el pecho or la botella _____
- Beb^é tiene hambre _____
- Beb^é tiene hambre pero decea comer poco tiempo _____
- No hace contacto visual _____
- Beb^é quiere estar abrazado _____
- Beb^é es dificil para confortar _____

13. Usa un chupete con su beb^é?

- Si' _____
- No _____

Si la respuesta es "Si", es necesario tiene seleccion el major.

- Bebe no usa la chupete cuando tiene cólico _____
- Bebe usa la chupete cuando tiene cólico _____
- Bebe usa la chupete poco tiempo y entonces _____
escupirte muchas veces

14. Escriba una lista de las otras s^íntomas o comportamientos
de su beb^é, por favor _____

15. Estos son frases acerca de colico. Marka cualquier es su opinion.

	Acordo Mucho	Acordo	No Acordo	No Acordo Mucho	No Aplicable
Colico es una enfermedad.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Colico es un parte normal de comportamiento de bebes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
La causa de colico es el cuidado que doy a mi bebe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tengo preocupacion cuando mi bebe llora mucho.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tengo preocupacion cuando mi bebe llora fuente.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No es possible confortar mi bebe cuando esta llorando.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No se como ayudarle a mi bebe cuando esta llorando.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No aso el colico de mi bebe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tengo preocupacion que el colico ya cambro o cambiara mi sentamentos a mi bebe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No quiero pasar al tiempo con mi bebe a causa de colico.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Le molenta el colico a mi familia.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Es dificil para cuidar a bebe a causa del colico.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ya he consultado un doctor sobre colico.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Voy a consultar un doctor sobre colico.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No es necesario consultar un doctor sobre colico.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. Cuantos años tiene al nacimiento este bebé?

17. Que raza Ud?

Negro _____

Blanca _____

Hispanic _____

Otro _____

18. La entrada de su familia _____

19. Cuantos años tiene en la escuela?

Poco de doce años _____

Completar high school _____

Poco de dos años de colegio _____

Mas de dos años de colegio _____

Graduarse de colegio _____

Mas clases despues de graduado _____

20. Otros informacion que es importante _____
