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## Maternal-Infant Nurses' Knowledge of Breast Feeding

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MATERNAL-INFANT NURSES' KNOWLEDGE OF BREASTFEEDING

By

Wendy S. Kershner

A THESIS

Submitted to  
Grand Valley State University  
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## ABSTRACT

### MATERNAL-INFANT NURSES' KNOWLEDGE OF BREASTFEEDING

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This study explored the level of knowledge related to breastfeeding among maternal-infant nurses. It also explored whether there was a relationship between nurses' breastfeeding knowledge and level of education, type of clinical experience, years of experience and personal experience with breastfeeding.

A convenience sample of 67 maternal-infant nurses completed a modified version of Leadley's (1994) Breastfeeding Knowledge and Attitudes Survey.

Descriptive and correlational statistics were used to analyze the relationship between the variables and the nurse's breastfeeding knowledge. Data analysis revealed a mean score of 13.2 out of 20 questions on nurses' breastfeeding knowledge. There was no significant difference in nurses' breastfeeding knowledge based on their level of education, clinical experience, years of experience or personal experience with breastfeeding.

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## Chapter 1

### Introduction

The advantages of breastfeeding are well known. Research shows that breastmilk is the best known source of infant nutrition while it simultaneously promotes maternal health (Biancuzzo, 1999; Spisak & Gross, 1991). Breastfeeding provides biochemical, immunologic, enzymatic, endocrinologic, psychosocial, developmental, hygienic and economic advantages. Breast-milk contains the ideal balance of nutrients, enzymes, immunoglobulin, anti-infective and anti-inflammatory substances, growth factors and hormones. This ideal nutrition contributes to the healthy growth and development of the infant while reducing the incidence and severity of infectious diseases and development of allergies. The composition of breast milk changes to match the changing needs of the infant. Breastfeeding promotes maternal health by reducing the risk of breast and ovarian cancer, facilitating the return to pre-pregnant state, and increasing the spacing between pregnancies by suppressing ovulation (Spisak & Gross, 1991). The breastfeeding process promotes maternal-infant bonding and provides the woman with a sense of

satisfaction. In addition, breastfeeding provides economic benefits to the family and the nation. Artificial milk is costly, however the biggest expense lies in increased health care costs due to infant illness (Biancuzzo, 1999).

Although the benefits of breastfeeding are well researched and documented, the number of mothers who do breastfeed has shown cyclic variations for many years. Ryan (1997) cites the data from the 1988 Ross Laboratory survey that found that the initiation of breastfeeding increased steadily from 1971 to its highest level in 1982 (61.9%). The incidence of breastfeeding declined from 1984 to 1989. The proportion of women breastfeeding at hospital discharge was 59.7% in 1984 and 52.2% in 1989. From 1989 to 1995 the prevalence of the initiation of breastfeeding increased. The proportion of women breastfeeding at hospital discharge was 59.7% in 1995 (Ryan, 1997).

The 1984 Surgeon General's Workshop on breastfeeding and human lactation resulted in a number of initiatives to promote breastfeeding. The following recommendations were made: a) to improve professional education in human lactation and breastfeeding; b) to develop public education and promotional efforts; c) to strengthen support for breastfeeding in the healthcare system; d) to develop a broad range of support services; e) to initiate a national breastfeeding promotion effort; and f) to expand research on human lactation and breastfeeding (Spisak & Gross,

1991). In 1988, health goals for the nation were developed for the year 2000 (Biancuzzo, 1999). These national health objectives were updated and revised for the 1990's and are published in the Healthy People 2000 (1991) document. Included in the objectives was a goal for breastfeeding. Based on the data from the Ross Laboratory survey, the goal was to increase the number of mothers who breastfeed their babies to at least 75% with 50% of those infants still breastfeeding at age six months (Spisak & Gross, 1991). In 1989, the World Health Organization (WHO) in conjunction with United National Children's Fund (UNICEF) described ten steps to successful breastfeeding (see Appendix A). This document was used to assist in developing protocols and hospital standards of care to promote breastfeeding efforts throughout the world. In 1990, at a policy makers' meeting WHO/UNICEF jointly developed the Innocenti Declaration. This statement outlined goals on the protection, promotion and support of breastfeeding, which were to be reached by 1995. The goals included: a) appointing a national breastfeeding coordinator, b) establishing a national breastfeeding committee composed of government representatives, c) taking action to the effect of International Code of Marketing of breast milk substitutes, d) protecting the rights of breastfeeding women and e) ensuring that every facility providing maternity services fully practices all of the Ten Steps to Successful

Breastfeeding set out in the joint WHO/UNICEF statement. The Baby-Friendly Hospital Initiative (BFHI) was implemented in 1991. The purpose of this was to assist hospitals in overcoming some of the breastfeeding barriers. The BFHI was based on the ten steps listed in the WHO/UNICEF statement. Hospitals that participated received the Baby-Friendly award. Baby-Friendly U.S.A is the official organization for granting the BFHI award. Wright and Rice (1996) reported that currently only 14 hospitals in the United States have achieved the Baby-Friendly award.

Despite these promotional efforts, breastfeeding rates as of 1995 were 59.7% at hospital discharge and only 21.6% at six months (Ryan, 1997). Although breastfeeding rates have shown improvement over the last two decades, (from 52.2% in 1989 to 59.7% in 1995) these statistics continue to fall short of the national health objective for breastfeeding for the year 2000.

A study done in 1990 by the National Center for Education in Maternal and Child Health identified barriers to breastfeeding promotion in the following categories: a) professional education; b) public education; c) support in the health care system; d) support services in the community; e) support in the workplace; and f) research. Specific barriers attributed to education of health professionals, included; lack of support or encouragement,

poor advice, inadequate education and limited access to professional support (Biancuzzo, 1999).

One important way to promote, protect and support breastfeeding is to remove barriers that interfere with the process of breastfeeding. Consistent and accurate breastfeeding information is essential to a new mother who is breastfeeding especially during the taking in phase. In this phase the mother is a receiver. She accepts what she is given, tries to do what she is told, awaits the actions of others, and initiates very little herself (Rubin, 1961). During this time, nurses are the primary providers of information on breastfeeding. Nurses play a major role in promoting or discouraging breastfeeding. An understanding of milk production, milk transfer, and breastfeeding techniques is imperative to attain effective breastfeeding. It is important that nurses possess the knowledge to enable the mother to become confident and independent in breastfeeding her infant.

The purpose of this study was to assess the level of knowledge related to breastfeeding among maternal-infant nurses and to identify what factors contribute to their level of knowledge.

## Chapter 2

### Review of the Literature

The subject of breastfeeding has been addressed extensively. The literature includes various aspects of breastfeeding, including: a) psychological factors, b) social and cultural factors, c) the physiology of breastfeeding, d) maternal knowledge and attitude on success of breastfeeding, e) social support and social influence, f) maternal health problems, g) drug therapy during breastfeeding, h) breastfeeding compromised infants, i) breastfeeding techniques, j) the effects of infant formula; distribution and advertisement, k) the effects of early hospital discharge, l) the working breastfeeding mother, and m) the promotion of breastfeeding (Biancuzzo, 1999). The focus of the literature review for this paper is on nurses' knowledge of breastfeeding. However, the following topics will also be addressed: physiology of breastfeeding, promotion of breastfeeding and problems associated with breastfeeding. These topics will be considered in order to demonstrate the importance of breastfeeding and the impact nurses have on the promotion of breastfeeding.

## Physiology of breastfeeding

Although infant formulas provide adequate nutrition for most normal, term infants, human milk is the "gold standard" for infant feeding. Breastfeeding is the natural way to provide optimal nutritional, immunologic, and emotional nurturing for the growth and development of infants. Formula is not the same as breast milk in terms of nutrients, enzymes, growth factors, hormones, or immunologic and anti-inflammatory properties (Biancuzzo, 1999). There are three categories of infant formulas. These include cow's milk based formulas (Similac, Enfamil, Gerber), soy protein based formulas (Isomil, Prosobee, Gerber Soy) and specialized formulas (Nutramigen, Pregestimil and Alimentum).

It is important to understand the differences between human milk and cow's milk in order to understand how human milk differs from cow's milk based formulas (Tigges, 1997). Biancuzzo (1999) describes the basic differences in composition of human milk from cow's milk. In comparison with human milk, cow's milk differs in its protein, carbohydrate and fat components. Cow's milk's high renal solute load, high protein and casien content, high proportion of saturated fats, low amount of linoleic acid and poor mineral bioavailability make a less than perfect nutritional source for infants. There are components of human milk which formula does not contain, many of which

are living cells. These include Secretory IgA, lysozymes, macrophages, hormones, enzymes, growth factors and long-chain polyunsaturated fatty acids. The amino acid component is different in cow's milk than it is in human milk. Human milk is richer in cystine and taurine, which is responsible for central nervous system development. Cow's milk contains higher amounts of phenylalanine and tyrosine, which may lead to central nervous system damage. Human milk contains the perfect amounts of phenylalanine and tyrosine needed for central nervous system development (Biancuzzo, 1999).

The composition of human milk constantly changes as the infant grows so that it more perfectly meets nutritional needs. The initial milk "colostrum" is especially important for the newborn. Colostrum is rich in immunoglobulins and has a laxative effect on the gut, aiding with the passage of meconium. Compared with mature milk, colostrum is higher in protein, lower in fat and lower in carbohydrate. Colostrum is replaced by transitional milk around day 3 to 10 days postpartum (Lawrence, 1999).

The protein components of human milk are far different than cow's milk. Protein provides 7% of the calories in human milk and 20% in formula. There are two types of proteins in milk: casein and whey. Human milk is 40% casein and 60% whey. Cow's milk is 80% casein and 20%



whey. Casein is the protein responsible for forming curd. Since formula has a greater percentage of casein, it results in more rubbery stools. The greater proportion of whey in breast milk results in quicker and easier digestion and softer stools (Biancuzzo, 1999). Human milk casein is predominately the beta type, whereas cow's milk casein is predominately alpha type. The high alpha-casein ratio in cow's milk decreases iron absorption. The high beta-casein ratio in human milk allows about 80% of iron to be absorbed. The primary whey protein in human milk is alpha-lactalbumin. Additional key proteins included in human milk are lactoferrin and secretory immunoglobulin A. Lactoferrin has several antibacterial properties. Lactoferrin is also responsible for binding iron and inhibits the growth of iron-dependent bacteria in the gastrointestinal tract. It also enhances antibacterial activity against E-coli. Secretory IgA protects the infant against respiratory and enteric bacterial and viral organisms and allergies. Formula does not contain Secretory IgA. Other whey proteins found in human milk include serum albumin and B-lactoglobulins. Cows milk contains B-lactoglobulins however in the composition of cow's milk they predominate over alpha-lactalbumin. This can predispose the body to diabetes (Lawrence, 1999).

The percentage of carbohydrates in human milk differs from cow's milk. Carbohydrates provide 42% of the calories

in human milk and 30% of the calories in cow's milk. The main carbohydrate in human milk is lactose. Lactose is important because it is easily broken down into simple sugars for energy. Human milk contains 6.8g/100ml of lactose whereas cow's milk contains only 0.3g/100ml. The higher amount of lactose in human milk creates a more acid environment for the gut, which decreases the amount of undesirable bacteria. This improves the absorption of calcium, magnesium and phosphorus (Biancuzzo, 1999).

Fats provide approximately 50% of the calories in both human milk and cow's milk, however, the composition of those fats differs. The fat content in human milk consists of medium-chain triglycerides and monounsaturated fats. Cow's milk contains saturated, short and long chain fatty acids. Human milk contains higher levels of cholesterol than cow's milk. The higher levels are desirable because cholesterol is essential for brain growth (Biancuzzo, 1999). Human milk also contains more of the essential fatty acids such as linoleic acid and arachidonic acid than cow's milk. A mother who consumes a diet rich in these essential fatty acids will pass these beneficial nutrients on to the infant through the human milk (Lawrence, 1999).

The mineral content of human milk also differs from cow's milk. Cow's milk contains more calcium, phosphorous, sodium, potassium and chloride than human milk. This is responsible for a larger renal solute load. Minerals in

human milk tend to be highest in the first few days after birth and slightly decrease throughout lactation. Eventually human milk has lower levels of calcium, phosphorous, sodium and potassium than formula. This aids in producing a smaller renal solute load, thus aiding in kidney function. In addition, the excessive amounts of sodium in formula require additional water for excretion. The absorption of iron is significantly different from human milk than it is for cow's milk. Infants absorb 50% of the available iron in human milk, while they absorb only 4% from iron-fortified cow's milk formulas. At age 4-5 months, iron stores start to deplete and iron supplementation is needed in formula fed infants. The infant who is exclusively breastfed for the first 6 months of life is not at risk for iron deficiency anemia or the depletion of iron stores. Human milk has constant composition of vitamins and mineral. In severe malnutrition, when nutrients are in short supply, less milk will be supplied, however it will still have the proper composition. Human milk is an outstanding source of water-soluble vitamins (Vitamin C, Vitamin B12, Vitamin B6 and Riboflavin) and reflects maternal dietary intake. As a mother's intake of water-soluble vitamins increases the vitamin level in her milk increases and the infant benefits for her dietary intake (Lawrence, 1999).

There are compositional differences between the milk produced by mothers who deliver prematurely and those who deliver term. Preterm milk is more suited to the growth and immunological needs of the preterm infant, has higher concentration of IgA and other antiinfective properties, protein, fat, sodium, chloride and iron. Preterm milk has higher concentration of medium chain triglycerides and long chain polyunsaturated fatty acids. These differences in lipids may provide for short-term energy needs and for long term neurological and visual development (Lawrence, 1999).

Although infant formula companies have tried to match the resemblance of formula to human milk, the composition remains significantly different. Formulas do not contain essential ingredients such as hormones, enzymes, growth factors, macrophages, lysozymes or long-chain polyunsaturated fatty acids (Biancuzzo, 1999). Human milk best meets the nutritional needs of the infant.

Cunningham, Jelliffe, and Jelliffe (1991) did an extensive review of research and listed several physiologic advantages of breastfeeding over formula-feeding. The authors' goal was to provide a summary of published information to support the epidemiologic advantages of breastfeeding. The authors' global epidemiologic review included 99 articles that were readable, practical and methodologically sound. Formula is associated with increased rates of respiratory illness, otitis media,

bacteremia, meningitis, and gastroenteritis. Formula also puts the infant at increased risk for sudden infant death syndrome, childhood cancers, allergies, insulin-dependent diabetes mellitus, ulcerative colitis and Crohn's disease (Cunningham, Jelliffe & Jelliffe, 1991). The authors discuss mortality risk of infant formula across different countries. The United States has the greatest risk of mortality among the countries discussed, which included Egypt, Rwanda, England, Brazil, Latin America, Malaysia and Bangladesh.

Cunningham, Jelliffe, and Jelliffe (1991) state that the public should be made aware of the methodologic problems with epidemiology of illness and infant feeding. First, the definition of breastfeeding can be a problem. The definition can include infants who are breastfed exclusively or infants who receive only a single daily feeding of breastmilk. The largest morbidity differences are found when exclusive breastfeeding is compared with exclusive formula feeding. Another methodologic problem is determining how illness is assigned to feeding method. Morbidity comparisons are most accurately made when the illness is assigned to the feeding method used just before the onset of illness. Studies may be biased either toward bottle-feeding or breastfeeding by failing to account for any feeding changes before the onset of an illness. Finally, associated variables must be considered in the

outcome of morbidity. It is impossible to determine whether decreased morbidity rates are a result of breastfeeding or if they include protected environments, nonsmoking families, families with higher educational levels, or excellent standards of home care (Cunningham, Jelliffe, & Jelliffe, 1991).

Cognitive outcomes can be different in breastfed infants than in those that were given formula. Biancuzzo (1999) reports that formula fed infants have lower neurodevelopmental responses at 4 months of age, lower developmental scores at 18 months of age, lower cognitive scores at age 3 years, and lower IQ's at ages 11 to 16 years (Biancuzzo, 1999).

Breastfeeding provides economic advantages. The cost of formula is significant, whereas human milk is free. Typically, a newborn consumes 2 ounces of formula with each feeding, and receives about eight feedings a day. The cost of formula for a single week would be about twenty dollars. The cost of formula feeding only increases as the infant grows since the infant's consumption increases. Adding to the cost of formula are the items needed to bottle-feed. These items include nipples, bottles, and bottle-brushes. Additional expenses may also occur with formula feeding as a result of increased health care costs due to infant illness (Biancuzzo, 1999).

### Breastfeeding knowledge

Although national breastfeeding promotional activities exist, previous literature has focused on nurses' lack of lactation knowledge as a barrier to promoting breastfeeding. Hayes (1981) surveyed 203 maternal-child nurses from 27 hospitals in south central Pennsylvania regarding breastfeeding knowledge. She found that nurses had an inadequate knowledge base about breastfeeding. The results demonstrated that inconsistent information and advice were given by the nurses. Areas where nurses gave incorrect answers included initiation of breastfeeding, counseling on breastfeeding problems and timing of introduction of solid foods. Fifty-five of the 203 participants admitted uncertainty in their competence to counsel about breastfeeding. Hayes concluded that information received during nursing school, work experience or personal experience does not provide nurses with enough information to assist mothers with breastfeeding. In addition, nurses in this study did not use resource material or actively pursue continuing education to assist their clinical skills of fostering breastfeeding.

Crowder (1981) conducted a study on knowledge of breastfeeding at two urban hospitals. Fifty-three maternal-newborn nurses participated. A multiple-choice questionnaire, constructed by Crowder, was used to collect

data. A test-retest procedure was used to check reliability. The correlation coefficient, using the Pearson R, was 0.86 at 95% confidence level. Content validity was established by three, maternal-child nursing faculty members. The mean score for all participants was 19.7 (53.2%), out of a possible 37 questions. The areas of weakness included drugs, maternal emotions, physiology and breastfeeding success factors. Maternity nurses' level of education affected test scores positively while length of experience affected the scores negatively.

An Australian study done by Lowe (1990) surveyed the attitude and knowledge of breastfeeding among midwives, general practitioners, maternal and child health nurses, state enrolled nurses, mothercraft nurses, obstetricians and pediatricians (n=300). The questionnaire, developed by Lowe, contained 35 knowledge questions and 4 attitude questions. Questionnaire reliability was examined with a pilot survey using a test-retest procedure (n=10). Using the Pearson R coefficient, a correlation coefficient was determined to be 0.96. Results showed that, overall, health professionals showed a decrease in knowledge with advancing age and number of years since training. Health professionals who reported a positive experience of breastfeeding had a higher average score (69%) compared with those who had never breastfed (66%) and those who reported a negative experience of breastfeeding (56%).



Anderson and Geden (1991) tested the knowledge of maternal-neonatal nurses (n=293) from 50 different hospitals in the western North-central United States. A 20-item questionnaire was designed to assess nurses' knowledge of breastfeeding and whether education, clinical experience or personal experience predicted their knowledge of breastfeeding. The tool contained questions that reflected current breastfeeding research. After item evaluation, six questions failed to discriminate and were dropped. Results were based on 14 questions. Results of the questionnaire reflected a mean score of 7.4 and a standard deviation of 2.5. Anderson and Geden (1991) found that nurses had limited breastfeeding knowledge and that no single variable consistently predicted knowledge. Even though nurses' generic education was not correlated with test scores, this study did find that registered nurses had higher test scores than licensed practical nurses. Only 31% of the nurses in this study reported that they had received breastfeeding education in nursing school and only 38% said they attended inservices to update their knowledge of breastfeeding. This study included a large sample size. It gives a good indication of general level of breastfeeding knowledge, however the hospitals are confined to only the Western North-central United States. The results of this study are similar to studies done by

Crowder (1981) and Hayes (1981), suggesting that nurses' knowledge of breastfeeding has not improved since 1981.

A study done by Lewinski (1992) assessed the level of nurses' knowledge of breastfeeding to determine if nurses in different settings differed in their knowledge of breastfeeding. This study included 88 maternity nurses from three nonrandom samples in different maternity units. A questionnaire was developed for this study based on current research. The tool was piloted at a hospital not included in this study. The authors stated that face validity was established by four nurses with lactation expertise, and one lactation consultant. Reliability was not established prior to this study. Results of the survey found that more than 50% of the nurses had answered only seven of the 16 questions correctly. The areas in which nurses demonstrated poor knowledge included timing of the baby at the breast, physiology of milk production, use of glucose water, and the use of nipple shields. Correlation of demographic data and knowledge scores were not done in this study due to requests of nurses to keep the demographic sheet separate from the questionnaire to maintain anonymity.

A study done by Bagwell, Kendrick, Stitt and Leeper (1993) looked at differences in knowledge and attitude about breastfeeding among dietitians, nurses, and physicians. The authors developed a questionnaire to

measure knowledge and attitudes of health professionals with items from a questionnaire used by Lawrence (1982). Respondents were asked to indicate their level of agreement with each attitude and knowledge statement on a Likert-type scale of 1 to 5. The nurses demonstrated the lowest knowledge scores of the three professions. The mean knowledge score for nurses was 73.0. The mean score for physicians was 75.0. Dieticians demonstrated the greatest knowledge with a mean score of 79.6. Dieticians demonstrated the highest attitude score (78.6). The mean attitude score for nurses was 74.5. Physicians demonstrated the lowest mean attitude score of 70.2. Health professionals in this study were more knowledgeable about how breastfeeding benefits the infant rather than maternal concerns such as weight loss, use of oral contraceptives during lactation, and complications such as mastitis and engorgement.

Leadley (1994) examined nurses' attitudes and knowledge related to breastfeeding and the effects of an educational program on nurses' attitudes and knowledge of breastfeeding. The survey included nurses from three regional conferences. The experimental group consisted of nurses (n=108) from two breastfeeding education workshops in Michigan and Nebraska. The control group consisted of perinatal nurses (n=93) from southwest Michigan who attended a perinatal conference that contained no

breastfeeding related information. Both groups consisted of nurses that were involved in maternal-child healthcare. Leadley used a modified version of Anderson & Geden's (1991) survey of breastfeeding knowledge in a pre and post-test design. In order to update the original instrument to reflect more current knowledge, 10 questions were modified or replaced. In addition, 5 attitude questions were added. Content validity was established by the faculty of the breastfeeding conference and maternal-child faculty at a school of nursing. The Kuder-Richardson 20 was calculated for the revised questionnaire with a correlation of 0.80. Results of this study indicated that the experimental group (breastfeeding conference participants) had higher pre-test knowledge scores than the control group (perinatal conference participants). The mean pre-test score of the experimental group was 13.16 out of 16 questions compared with the control group's mean pre-test score of 7.78. This data supported Leadley's hypothesis that pre conference knowledge scores of nurses attending a breastfeeding conference would be higher than pre conference knowledge scores of nurses attending a conference not related to breastfeeding. The mean post-test knowledge scores did not differ significantly for either group. For the total sample (451), the number of correct pre-test answers out of a possible 20 questions ranged from 2 to 20 with a mean of 14.83 and a standard deviation of 4.01. Leadley (1994)

found positive relationships between breastfeeding knowledge and attitudes, level of education, job position, type clinical experience and personal experience with breastfeeding. No relationships were found between breastfeeding knowledge and age or with years of experience. Consistent with Hayes (1981) study, participants indicated receiving little education about breastfeeding from nursing schools and colleges. Data from Leadley's study revealed that most knowledge was gained from hospital inservices. Data also revealed that participants were able to accurately assess their ability to help breastfeeding mothers based on their knowledge (Leadley, 1994).

A North Carolina study completed by Barnett, Sienkiewicz, & Roholt (1995) surveyed 2209 health professionals in 31 hospitals and 25 public health agencies in North Carolina on beliefs about breastfeeding. The survey included nurses, nutritionists, pediatricians, family physicians, obstetricians and health educators. The researchers found that although most health professionals had an overall positive belief, nutritionists and pediatricians had more positive beliefs about breastfeeding than nurses. The results of this study are similar to the study done by Lowe (1990) showing that personal experience was positively associated with knowledge and attitudes about breastfeeding. Barnett and associates (1995)

suggested that without appropriate lactation training, health professionals rely on their personal experience as a basis for supporting breastfeeding mothers. However, not all health professionals have experience with breastfeeding. The differences found in breastfeeding beliefs by profession, work environment, and personal experience indicate the need for professional lactation-management training for health care providers.

McIntyre and Lawlor-Smith (1996) set out to determine the level of breastfeeding knowledge of a group of health care professionals (n=65) and to determine if their knowledge could be improved by attending two breastfeeding workshops. The health care professionals included maternal and child health nurses, midwives, pharmacists, and Nursing Mothers' Association counselors. All participants were from a southern metropolitan area of Adelaide, Australia. Questionnaires were administered prior to the workshops and after the workshops. Information was presented based on Piterman's factors that are considered to promote learning. These factors included assessing specific content in which the participants needed information, using real life case studies to present information, and keeping the group of participants small in order to promote a comfortable learning environment. Results showed a significant improvement in breastfeeding knowledge immediately after attending the workshops ( $p < 0.001$ ). The questionnaires that

were administered prior to the workshop indicated positive association with breastfeeding knowledge and personal breastfeeding experience.

Patton, Beaman, Csar, and Lewinski (1996) explored obstetric nurses' (n=230) attitudes toward breastfeeding and how attitudes affected the promotion of breastfeeding. This study included the obstetric units of 20 hospitals in urban, suburban, and rural areas of Missouri and Illinois. Only 64% of the nurses in this study would actively encourage breastfeeding. Barriers identified by nurses assisting mothers to breastfeed were time factors, short length of hospital stay and nurses' lack of knowledge of breastfeeding. Patton et al (1996) found that nurses with higher education and personal experience with breastfeeding demonstrated increased support and encouragement to breastfeeding mothers. Encouragement and support from the nurses was positively correlated with nurses' education ( $p=.024$ ) and with personal breastfeeding experience ( $p=.02$ ). Patton et al. emphasized that it is important to identify personal biases that may be directly or indirectly passed on to the patient.

Karipis and Spicer (1999) surveyed pediatric nurses' (n=150) knowledge about breastfeeding. They found a lack of knowledge in physiology of lactation, nutritional requirements of the lactating mother, composition of breast milk and formula, recognizing signs of milk transfer,

length and frequency of breastfeeding, weaning, recognition of thrush, and management of mastitis. Overall, this research found that the more experienced nurses did not have more knowledge than the least experienced nurses. Karipis and Spicer (1999) also found that there were minimal differences in knowledge scores between employment positions of managers, Clinical Nurse Specialists and clinical nurses.

#### Promotion of breastfeeding

There are many factors involved in breastfeeding promotion. Freed, Clark, Harris, and Lowdermilk (1996) assessed the breastfeeding knowledge, attitudes, training, and experience of a sample of nursing students (n=272). Two baccalaureate nursing programs and three associate degree programs in North Carolina participated in the study. This research found that none of the nursing programs adequately prepared nursing students for their role in assisting breastfeeding mothers. Although students had completed an obstetric clinical rotation, which included breastfeeding instruction, one-quarter of the students did not know basic breastfeeding information. The clinical OB experience did not provide opportunities for lactation counseling or teaching breastfeeding techniques. Students with personal breastfeeding experience showed no more knowledge compared with those with no personal experience. Personal experience did however positively



influence managing common lactation problems. Furthermore, students did not even realize the inadequacy of their training. Over 90% of the nursing students thought that their training had adequately prepared them to assist breastfeeding mothers (Freed et. al). This lack of emphasis on breastfeeding in nursing school education conveys the message that breastfeeding is of minimal importance and leaves nurses unable to promote lactation as a preventive health practice.

Studies by Freed, Clark and Sorenson (1995) and Michelman, Faden and Fielen (1990) demonstrated that the attitudes of a woman's partner and her mother affect her decision to breastfeed, and that her decision to breastfeed is made early in pregnancy or before conception. Humenick, Hill and Spiegelberg (1998) make the point that many families have lost that experiential knowledge because of the low breastfeeding rates in past decades. New mothers are thus more dependent upon help from nurses for advice regarding breastfeeding education and issues. This research indicates that not only do post partum nurses serve an important role in providing breastfeeding education but nurses that are involved prenatally should be knowledgeable about lactation as well.

A survey completed by Houston and Field (1988) explored policies and practices in hospitals in Alberta, Canada that may affect breastfeeding. They discovered that

nurses did not incorporate findings from lactation research into practice. Over half of the nurses restricted time of the infant at the breast. Complimentary supplemental feedings were offered to a majority of the infants in this study. These practices clearly do not promote successful breastfeeding.

Winikoff, Laukaran, Myers and Stone (1986) studied hospital practices of one municipal hospital located in a low-income community, as one aspect of understanding constraints to breastfeeding. Data was collected by direct observation of hospital practices, chart reviews (n=95), health personnel questionnaires (n=123) and interviews with new mothers (n=60). It was concluded that hospital practices interfered with breastfeeding. Results revealed that in 37% of women who wanted to breastfeed, initiation was delayed past 24 hours post-birth. All of the breastfeeding babies had been supplemented with formula at some time during the hospital stay. At hospital discharge, no woman was breastfeeding exclusively. It was also found that only 16% of infants had ever been breastfed at all.

A study done in England by Garforth and Garcia (1989) demonstrated variations between and inconsistencies within maternity hospital policies and practices on breastfeeding. This national survey involved 180 English Health Districts. Practices were identified that actually hindered the establishment of successful breastfeeding. These practices

included; the tendency to separate mother and baby for routine activities, the use of hospital gowns for mothers and lack of active encouragement from midwives about breastfeeding. The problem of conflicting advice was also identified. The authors of this study recommend district wide policy discussion and intensive in-service training to all levels of staff.

#### Problems associated with breastfeeding

Some of the breastfeeding literature focuses on problems with or obstacles to breastfeeding. Biancuzzo (1999) discussed factors that have been shown to shorten breastfeeding duration. The primary reason reported for breastfeeding cessation is the mother's concern of not having enough milk. The second biggest concern mothers report is sore breasts or sore nipples. Other common concerns include fatigue and feelings of being tense and overwhelmed. Mothers also report specific concerns about the infant related to breastfeeding. These concerns usually relate to the frequency of feeding, the need for supplementation and techniques for feeding. Some mothers do not understand how to read their newborn's signs of hunger and satiety, or they expect the newborn to have longer intervals between feedings. This leads to mothers asking for supplemental feedings with formula, which disrupts the normal cycle of supply and demand. The most common question related to technique for feeding is about

positioning and latch-on (Biancuzzo, 1999). These problems indicate the lack of understanding of the breastfeeding process.

Bell and Rawlings (1998) explored diagnosis and management options for common maternal lactation problems including sore nipples, eczema, candidal infection, and mastitis. They found that health care providers continue to recommend that the women faced with such difficulties stop breastfeeding. The authors question whether the recommendation to stop breastfeeding is due to lack of knowledge about problems, lack of time, or lack of consideration of the problem as a medical entity. The health care provider, who is not knowledgeable about managing breastfeeding problems, is not providing optimum care to the mother and infant. Bell and Rawlings (1998) suggest that the office setting of health care providers with severe time constraints or little interest in breastfeeding should have a lactation consultant to refer their patients to for education and support.

A British study done by Aggarwal & Aggarwal (1997) investigated the advice given on breastfeeding problems by community health professionals. Ninety-nine health professionals (general practitioners, health visitors, midwives and breastfeeding counselors) responded to a questionnaire on advice given on 10 common breastfeeding problems. The wide range of responses to the questions

indicated that inconsistent advice was being given to breastfeeding mothers. Conflicting advice can contribute to breastfeeding attrition. The effect of an educational intervention was also evaluated in this study. The intervention involved returning the questionnaires to the health care providers with a detailed explanation of correct answers. One-year later, healthcare providers were asked to answer the questionnaires again. The scores were compared to determine the effect of the educational intervention. There was a significant improvement in scores after the educational information was provided, despite the one-year interval. This study reveals that health care providers continue to provide conflicting advice and that there is a need for consistent up-dated breastfeeding information.

Kearney (1988) discusses some of the psychosocial influences that can interfere with breastfeeding success. The mother's personality, personal and cultural attitude and her emotional state can effect the outcome of breastfeeding. These psychosocial influences could become psychosocial obstacles, which could create guilt and unhappiness and ultimately destroy confidence in the parenting role. Kearney (1988) suggests that nurses use psychosocial assessment, support and counseling in addition to educating the patient about breastfeeding. This author points out an important aspect (psychosocial influences)

that should be included along with the clinical training while educating new nurses on breastfeeding. Nurses should be aware of the psychosocial influences that can be involved in breastfeeding problems or outcomes.

### Summary

Review of the literature continues to reveal a low level of breastfeeding knowledge among nurses (Hayes, 1981; Crowder, 1981; Anderson & Geden, 1991; Lewinski, 1992; Karipis & Spicer, 1999; McIntyre & Lawlor-Smith, 1996 and Lowe, 1990). Much of the literature reveals that not all nurses maintain a professional attitude towards breastfeeding and are not committed to promoting successful breastfeeding. There is evidence of inadequate education in nursing programs (Hayes, 1981; Anderson & Geden, 1991 and Freed, Clark, Harris & Lowdermilk, 1996). Once in the working arena, nurses are not taking responsibility for breastfeeding continuing education. Few healthcare institutions are implementing up-to-date recommended protocols to promote breastfeeding. There was no evidence in the literature about any of the institutions providing mandatory breastfeeding educational opportunities in order for the nurses to maintain up-to-date knowledge. There was limited discussion in the literature regarding having a breastfeeding expert or lactation consultant on staff. There are many opportunities for the maternal-child nurse to assist the breastfeeding mother. The nurse must be

knowledgeable in the physiology of breastfeeding and know how to solve problems when they arise.

### Research Questions

1. What is the level of breastfeeding knowledge among maternity nurses in a hospital setting?
2. Is there a relationship between nurses' breastfeeding knowledge and level of education?
  - (a) basic nursing education
  - (b) highest degree obtained
3. Is there a relationship between nurses' breastfeeding knowledge and type of clinical experience?
4. Is there a relationship between nurses' breastfeeding knowledge and years of experience?
5. Is there a relationship between nurses' breastfeeding knowledge and personal experience with breastfeeding?

### Definition of Terms

Breastfeeding knowledge-accurate, up-to-date lactation information, necessary to assist, support, and instruct mothers who breastfeed.

Level of education-level of education refers to the (a) basic nursing education and (b) the highest degree obtained.

Type of clinical experience-type of experience refers to the nurses' primary area of responsibility (labor and delivery, post-partum, newborn nursery or antepartum)

Years of experience- refers to the number of years of experience in maternal-newborn nursing.

Personal experience with breastfeeding- whether the nurse had ever breastfed an infant, and whether breastfeeding was a positive or negative experience.

### Significance for Nursing

The purpose of this study was to assess nurses' knowledge of breastfeeding and to identify what factors contribute to their level of knowledge. This problem has importance for nursing due to the current nationwide emphasis on the promotion of breastfeeding and obvious benefits to mother and infant. Maternity nurses are in a unique position to assist mothers to initiate and maintain breastfeeding. The literature supports that successful breastfeeding can be achieved and the promotion of breastfeeding can be enhanced



when the nurse provides the mother with accurate information and reassurance. Current knowledge is essential in assisting mothers to establish successful breastfeeding practices to prevent and solve lactation problems.

### Theoretical Framework

The transition to parenthood can be overwhelming. During the post-partum period a woman experiences physical, emotional and psychosocial changes. The mother is developing her new role and needs support in adapting to these changes and new responsibilities. Maternity nurses are in an opportune position to provide their expert knowledge with mothers in order to facilitate this transition to parenthood. This transition process can be guided by Dorothea Orem's theory of self-care. The self-care framework focuses on the person's ability to perform self-care. Self-care is defined as "behavior that exists in concrete life situations directed by persons to self or to the environment to regulate factors that affect their own development and functioning in the interests of life, health, or well-being" (Orem, 1991, p. 64). The purposes of self-care are called self-care requisites. Self-care requisites are broken down into three categories: universal, developmental, and health deviation (Fawcett, 1989). Universal self-care requisites are actions

essential to maintain life processes (Fawcett, 1989). According to Marriner-Tomey (1994), universal self-care requisites include maintenance of air, water food, elimination, activity, rest, solitude and social interaction as well as prevention of hazards and promotion of human functioning. Developmental self-care requisites are purposes for self-care that are associated with developmental processes and with life situations that occur during various developmental stages. Health deviation self-care requisites are associated with alterations in structural or functional integrity and result in medical diagnostic and treatment measures (Fawcett, 1989).

According to Orem (1991), nursing care arises when individuals experience health-related limitations in their ability to perform self-care, such as in the immediate postpartum period. Nursing is characterized as a human service based on specialized knowledge, skills, and attitudes (Orem 1991). Nursing is a helping service provided to those that need help (Fawcett, 1989).

In relation to Orem's theory, breastfeeding could be considered a developmental self-care requisite. The maternity nurse is responsible for assisting the mother in as much self-care as possible and assisting the mother in achieving breastfeeding competence. The nursing agency is the ability of the nurse to utilize specialized training to help people attain their therapeutic self-care demands

(Marriner-Tomey, 1994). Nursing systems are actions performed as nurses provide care. There are three types of nursing systems: wholly compensatory, partly compensatory, and supportive-educative. The wholly compensatory nursing system consists of the patient being totally dependent. The nurse provides total care and supports and protects the patient. The partly compensatory system exists when both the nurse and the patient participate in performing care. The supportive-educative nursing system exists when the patient is able to perform self-care measures however, needs assistance or needs to learn how to perform required tasks (Marriner-Tomey, 1994). An environment which supports personal development is required in the supportive-educative nursing system.

In order to promote a successful breastfeeding experience, mothers need assistance through the supportive-educative nursing system. Unfortunately hospital stays are short and opportunity for learning is limited. The nurse must take advantage of this time to provide information needed by the patient. Nursing actions are directed toward increasing knowledge about breastfeeding. The education process is individualized for each patient's needs. Each action the nurse engages in depends upon the mothers' type of self-care deficit. Each nursing action is referred to as methods of helping. Orem (1991) identified five different types of methods of helping. These methods

include doing for another, guiding and directing, providing physical or psychological support, providing a developmental environment and teaching. In providing breastfeeding assistance the nurse can physically assist the mother by demonstrating proper techniques such as positioning, getting the baby to suck and taking baby off the breast. The nurse can guide and support the mother by providing praise, encouragement and positive feedback. The teaching involves providing the mother with knowledge about breastfeeding and answering questions. The nurse is also responsible for providing an environment that is conducive for learning in order to promote the success of breastfeeding. The goal is to assist the mother to resume self-care by breastfeeding more independently.

Goal: Self Care  
Breast Feeding Independently

Self Care Requisites

Universal

Developmental  
(Breast Feeding)

Health Deviations  
(Post-Partum)

Nursing

Wholly

Partly

Supportive-Educative

Demonstrating  
Techniques

Praise  
Encouragement

Provide Info

## Chapter 3

### Methodology

#### Design

A descriptive-correlational design was used to explore the relationship between breastfeeding knowledge of currently employed maternal-infant nurses and their level of education, type of clinical experience, years of experience, and personal experience with breastfeeding.

#### Sample and setting

A convenience sample of 67 female nurses, ranging in age from 23 to 58 years participated in this study. Subjects included 53 registered nurses, 13 licensed practical nurses and one nurse who did not indicate whether she was an R.N. or a L.P.N.

This study was conducted on the obstetric unit of a 400 bed Southwest Michigan hospital. The obstetric unit includes 11 labor and delivery beds, 10 antepartum beds, and 35 mother-baby beds. This institution has approximately 2,800 live births per year.

#### Instrument

A modified version of the Breastfeeding Knowledge and Attitude Survey (Leadley, 1994) was used, with permission,

to collect data for this study (Appendix B & C). The survey, with 20 breastfeeding knowledge questions, 5 attitude questions and 18 demographic questions was developed to survey nurses' knowledge of breastfeeding and examine variables related to knowledge of breastfeeding. The knowledge questions reflect content related to in-hospital breastfeeding management, management when a breastfeeding problem is present, anticipatory guidance, anatomy and physiology of breastfeeding and nutrition of breastfeeding. Demographic and personal questions elicit information about age, level of education, work position, length of work experience, source of breastfeeding knowledge, number of children, and if their children were breastfed and for how long (Leadley, 1994).

Leadley (1994) used the Survey of Breastfeeding Knowledge to evaluate the effect of an educational program on attitudes and knowledge, and to test the revised tool. Leadley's study included 451 participants. The number of correct answers ranged from 2 to 20 with a mean of 14.83 and a standard deviation of 4.01. The reliability, using the Kuder-Richardson 20 was 0.80 (Leadley, 1994).

The Breastfeeding Knowledge and Attitudes Survey (Leadley, 1994) was chosen because of its relevance to the research questions being investigated. Prior to using the survey modifications were made. In order to reflect the most recent research information on breastfeeding, the

wording of 5 questions was revised with the assistance of 3 Lactation Consultants. For example, one of the responses to the question "how frequently newborns needed to breastfeed?" was changed from "10-12 times in 24 hours" to "8-10 times in 24 hours." One of the options to the question "when is the newborn's sucking reflex most intense?" was changed from "the first 20-30 minutes after birth" to "the first 20 minutes to 2 hours after birth." Another option in this same question was changed from "2 hours after birth" to "3 hours after birth." For the question that asked the participant to choose the answer that did not indicate good signs of latch on, the word "slightly" was removed from the option "the infants nose and chin are positioned slightly away from the mother's breast". In the question referring to breastmilk jaundice, the option "usually develops 5-7 days past birth" was changed to "usually develops after 5-7 days past birth". One of the responses to the statement "after the first week of life, the neonate is probably receiving enough fluids when he or she:" was changed. The phrase "and at least 2-3 yellow, seedy stools" was added to the response "has 6-8 wet diapers per day." The reliability of the knowledge portion for the revised questionnaire, using the Kuder-Richardson 20 was 0.51 (n=67).



## Procedure

Prior to conducting this study permission was granted by the hospital research committee and Grand Valley State University's Human Subjects Committee (Appendix D & E). The Survey of Breastfeeding Knowledge was distributed to 100 obstetrical nurses currently working in the three obstetrical areas in the hospital. The researcher distributed the survey by placing it in each of the nurse's workplace mailbox, located on the unit. A cover letter explaining the study and providing written instruction for completion of the study and a return envelope were attached to the survey (Appendix F). The nurses were asked to return the survey to the researcher's mailbox in the envelope provided, within 1 week. At the end of the first week a reminder note was placed in the nurses' mailboxes informing them that they had one more week to return the survey. The nurses were informed that participation was voluntary. They were informed that they were consenting to participate by completing and returning the survey. Anonymity was assured by asking the nurses not to identify themselves on the survey. Responses to the survey were kept confidential. Results were reported based on group data rather than individual data. There was no risk involved for the participants.

## Chapter 4

### Results

The data were analyzed using the Statistical Package for Social Sciences. Statistical tests appropriate for a descriptive-correlational design, were used to answer the research questions. The level of significance accepted for this study was  $<.05$ .

One hundred surveys were distributed to nurses working in the three obstetrical areas in the hospital. Sixty-seven nurses chose to participate in the study, which resulted in a 67% response rate.

#### Demographic Data

Age. The respondents' age ranged from 23 to 58 years, with a mean of 37.65, a median of 37.00, and a standard deviation of 9.15. Four nurses did not answer this question.

Education. Of the 67 nurses who participated 53 were RN's and 13 were L.P.N.'s. One participant chose not to indicate whether she was a R.N. or a L.P.N. The nurses were asked to indicate their basic level of education. See Table 1 for the distribution of respondents by basic nursing education.

Table 1

Distribution of Nurses by Basic Nursing Education

Basic Nursing Education	n	Per Cent
L.P.N.	13	19.7%
R.N. Diploma	17	25.8%
R.N. Associate Degree	28	42.4%
R.N. Baccalaureate	8	12.1%
No response	1	

The respondents were asked to indicate their highest degree earned. Thirty-four of the nurses (72.3%) held an associate degree, twelve of the nurses (25.5%) held a bachelor's degree, and 1 (2.1%) held a master's degree. It is unknown whether the degree's earned were obtained in nursing or another field. Twenty participants did not respond to this question.

Focus of practice. Twenty-seven respondents worked in labor and delivery, 17 in postpartum, 4 in antepartum, and 2 in the nursery. Ten of the nurses worked in more than one area and 6 worked in more than 2 areas. One participant did not respond to this question.

Length of Experience. Twenty-seven nurses had 1-5 years of experience working with newborns and/or new mothers. Twelve nurses had 6-10 years of experience,

fourteen nurses had 11-20 years of experience, 5 had more than 20 years of experience, and 5 nurses had less than 1 year of experience. One participant did not respond to this question.

Protocol/Lactation Consultant. The nurses were asked whether they had a breastfeeding protocol and/or a lactation consultant at their hospital. Sixty-two nurses (93.9%) reported having a breastfeeding protocol, two nurses (3.0%) said they did not have one, and two nurses (3.0%) did not know. All of the nurses who responded (n=67) were aware of having a lactation consultant on staff. One participant did not respond to this question.

Received Breastfeeding Knowledge in Basic Nursing Program. Thirty-five (52.2%) nurses reported that they did not receive breastfeeding education in nursing school. Nineteen (28.4%) reported receiving breastfeeding information in their basic nursing program and thirteen (19.4%) of the nurses did not remember if they had received breastfeeding information in their nursing program.

Sources of Breastfeeding Knowledge. The nurses were asked where they received their breastfeeding knowledge. Most of the nurses reported multiple sources of breastfeeding knowledge. Table 2 identifies the sources of breastfeeding knowledge. Sources of breastfeeding knowledge identified under other are video at orientation,

home study course, lactation consultant, reading, and coworkers (see Table 2).

Table 2

Sources of Breastfeeding Knowledge

Sources	n	Per Cent
On the job	61	91.0%
Hospital inservices	49	73.1%
Personal experience	43	64.2%
Workshops/Conferences	26	38.8%
Nursing School	19	28.4%
Family & Friends	16	23.9%
College	2	3.0%
Other	5	7.5%

Keep Current on Breastfeeding Knowledge. A majority of the nurses (n=56, 83.6%) kept current on breastfeeding knowledge through hospital in-services. Seven nurses reported doing nothing to keep current on breastfeeding knowledge. Table 3 lists a summary of sources identified by nurses for keeping current on breastfeeding knowledge. Other sources of information included the hospital breastfeeding center, on the job experience, and the Lactation Consultant.

Table 3

Sources of Keeping Current on Breastfeeding Knowledge

Sources	n	Per Cent
Hospital Inservices	56	83.6%
Reading Journals/Books	30	44.8%
Workshops/Conferences	25	37.3%
Other	8	11.9%
Nothing	7	10.4%

Nurses Ability to Assist the Mother to Breastfeed. The nurses were asked to self-rate their individual ability to assist mothers with breastfeeding. Seven nurses rated their ability as excellent, 44 as good, and 15 as fair. None of the nurses rated themselves as poor in their ability to assist mothers with breastfeeding. One participant did not answer this question.

Number of Children. Fifty-six of the nurses had children, six did not have children. Five of the nurses did not answer the question. The number of children ranged from 1 to 5 with a median of 2.0.

Personal Breastfeeding Experience. Of the 56 nurses that had children, 48 breastfed their infants, while eight

did not. Six nurses answered "not applicable" to this question and five did not respond.

Personal Satisfaction with Breastfeeding. The nurses who did have experience breastfeeding their infants were asked to rate their satisfaction level with the experience. Twenty-nine of the nurses indicated that they were extremely satisfied, 13 indicated they were moderately satisfied, two were somewhat satisfied, and three were minimally satisfied. Fourteen nurses answered "not applicable" to this question and six did not answer the question.

Length of Time Breastfed and Reasons for Discontinuation. The nurses were asked to report the length of time they breastfed their infants. Fourteen (23.0%) of the nurses breastfed 6 months to 1 year. Ten (16.4%) of the nurses reported breastfeeding for over 1 year, nine (14.8%) of the nurses breastfed for 6-12 weeks, seven (11.5%) of the nurses breastfed for 4 to 6 months, and seven (11.5%) reported only breastfeeding for 0 to 6 weeks. Fourteen answered "not applicable to this question while six did not answer this question.

The nurses that reported breastfeeding for less than 12 months were asked their reason for discontinuing breastfeeding. The most frequently indicated reasons were returning to work (n=10, 16.4%) and not wanting to continue (n=10, 16.4%). The next most frequent reason was not

having enough milk (n=3, 4.9%). Seven nurses indicated other reasons such as infant weaned self, distracted infant, no support, sore nipples and engorgement. Some of the nurses (n=5, 8.2%) reported more than one reason for stopping. Twenty-six nurses answered "not applicable to this question. Six nurses did not answer this question.

#### Research Question One

The first research question was "What is the level of breastfeeding knowledge among maternity nurses in a hospital setting?" The number of correct answers out of a possible 20 questions, ranged from 9 to 19 with a mean of 13.2 and a standard deviation of 2.5.

#### Research Question Two

The second research question was, "Is there a difference in knowledge of breastfeeding scores based on level of education? The basic level of education of the nurses was compared using t-tests. The mean scores were 13.2 for R.N.'s and 13.0 for L.P.N.'s. There was no significant difference in knowledge scores between R.N.'s and L.P.N.'s ( $t=.16, p=.871$ ). The highest degree earned was compared among the nurses. Since there was only 1 masters prepared nurse and no doctorally prepared nurses, the nurses prepared beyond the bachelor's level were combined into one group. There was no significant difference between the two groups of nurses who held an associate degree and bachelor or higher prepared nurses



( $t=1.2$ ,  $p=.240$ ). The mean score for nurses who held an associate degree ( $n=30$ ) was 12.8, and the mean score for bachelors or higher prepared nurses ( $n=23$ ) was 13.7.

#### Research Question Three

The third research question was "Is there a difference in knowledge of breastfeeding scores based on clinical experience?" ANOVA indicated there was no significant difference between type of clinical experience (labor & delivery, postpartum, newborn nursery or antepartum) and breastfeeding knowledge scores ( $F(2,64)=.10$ ;  $p=.91$ ).

#### Research Question Four

The fourth research question was, "Is there a relationship between nurses' breastfeeding knowledge and years of experience?" Comparison of knowledge scores and years of experience using Spearman's Rho indicated there was no relationship between scores and years of experience ( $p=.150$ ,  $p=.228$ ,  $n=66$ ).

#### Research Question Five

The fifth question was "Is there a difference in knowledge scores and personal breastfeeding experience? T-tests indicated no significant difference ( $t=.232$ ,  $p=.817$ ) between mean knowledge scores for nurses who had breastfed ( $x=13.3$ ) and nurses who had not breastfed ( $x=13.1$ ).

## Summary of Results

This study explored the level of breastfeeding knowledge among maternal-infant nurses and the relationship of knowledge to level of education, type of clinical experience, years of experience and personal experience with breastfeeding. Results of the survey revealed a mean breastfeeding knowledge score of 13.2 out of 20 questions. There was no significant difference in knowledge scores based on level of education, clinical experience, years of experience, or personal experience.

## Chapter 5

### Discussion

#### Knowledge of breastfeeding

The purpose of this study was to assess nurses' knowledge related to breastfeeding and determine whether nurses' education, clinical experience, and/or personal experience correlated with their knowledge of breastfeeding. The most interesting finding was the low mean score of 13.2 out of 20 questions. This finding was similar to the findings of Crowder (1981), Hayes (1981), Anderson & Geden's (1991), Lewinski (1992) and Leadley's (1994). This suggests that breastfeeding knowledge of maternity nurses has not increased in nearly two decades.

In this study the nurses responded incorrectly to questions in a variety of knowledge areas including physiology, frequency of feeding, newborn jaundice, storage of breastmilk and correct use of nipple shields. This suggests that the nurses have an overall lack of breastfeeding knowledge.

Nurses reported receiving knowledge from many different sources. The sources included: on the job (91%, n=61), hospital inservices (73%, n=49) and personal

experience (64%, n=43). This is consistent with Hayes (1981) who found that work experience or personal experience does not always provide the nurse with the professional knowledge needed to counsel mothers, and the information may not be consistent among staff members. This leaves the new mothers being exposed to many different opinions and suggestions. This is inconsistent with Lowe (1990), Leadley (1994), Barnett, Sienkiewicz & Roholt (1995) and McIntyre & Lawlor-Smith (1996) who found increased knowledge with those that had personal experience with breastfeeding.

Only 28.4% of the nurses reported receiving breastfeeding information in nursing school. This suggests that nursing programs are lacking the component of breastfeeding education in their maternal-newborn curriculums. Possibly the significance of breastfeeding is not recognized. Schools of nursing may want to reevaluate their obstetrical curriculum in order to provide enough basic breastfeeding information to counsel breastfeeding mothers.

Lack of attendance at workshops/conferences may be due to an overall lack of interest in the topic of breastfeeding or lack of available continuing educational opportunities. Five (7.5%) nurses indicated other sources of obtaining breastfeeding knowledge including the

Lactation Consultant and coworkers. This suggests that the nurses are seeking additional knowledge.

Most of the nurses (n=56) indicated that they keep current through hospital inservices (83.6%). Eight nurses (11.9%) indicated other reliable sources of keeping current on breastfeeding management. These sources included the Breastfeeding Center and the Lactation Consultant. This suggests that the Lactation Center is a benefit to the nurses as well as the patients and that every institution should have access to a Lactation Consultant to support breastfeeding.

It was interesting to find that although the overall test scores were low, most of the nurses (65%) rated themselves as "good" in their ability to help a mother breastfeed. None of the nurses rated their ability as poor. This indicates a poor recognition that there is a lack of knowledge. This was consistent with the results of a study done by Freed, Clark, Harris, and Lowdermilk (1996), in which 90% of the nursing students thought that their training had adequately prepared them to assist breastfeeding mothers. This was in contrast to Leadley's (1994) results, which noted that participants were able to accurately assess their ability to help breastfeeding mothers based on their knowledge. Those who rated themselves higher in their ability to assist had higher knowledge scores.

Not all of the nurses knew that their institution had a breastfeeding protocol. Two of the nurses indicated that there was no protocol and two of the nurses did not know. This suggests a lack of consistency in teaching practices among the nurses. This also suggests that there may be a lack of orientation to hospital policies and procedures.

#### Knowledge and level of education

There was no difference in knowledge scores between RN's and LPN's. RN's with more education (BSN or higher) scored only slightly higher than associate degree prepared nurses, 13.7 and 12.8 respectively. However this result was not statistically significant. This finding concurs with Anderson & Geden (1991) but differs from Crowder (1981) and Leadley (1994).

#### Type of clinical experience

It was speculated that the nurses consistently working with postpartum mothers would have higher test scores due to continuous exposure to breastfeeding. This was shown not to be true. There was no significant difference in scores among nurses that worked in the different areas (labor & delivery, post partum, newborn nursery or antepartum). This differed from Anderson & Geden's (1991) and Leadley's (1994) results which suggested that those with leadership credentials and more breadth of experience had more knowledge about breastfeeding.

### Knowledge and years of experience

As in the study by Hayes (1981), no relationship was found with length of experience with mothers and babies. This differed from Crowder (1981) and Lowe (1990) who found a negative association, and with Anderson & Geden (1991) who found a weak positive association with breastfeeding knowledge and length of experience.

As in the studies by Anderson & Geden (1991) and Leadley (1994), no relationship was found between nurse's age and breastfeeding knowledge. This differed from Lowe (1990) who reported decreasing knowledge scores with increasing age.

### Knowledge and personal experience

There was no difference in scores between the nurses that had breastfed and those that did not breastfeed. This differed from Anderson & Geden's (1991) results. There was a wide range in duration of breastfeeding experience among this group of nurses, from only a few weeks to 2 years. This may explain the lack of difference between the groups. The nurses who breastfed for only a short time may not have had the opportunity to actually gain experience with breastfeeding. Additionally, not all of the nurses that breastfed may have had positive experiences. A negative experience may have affected interest in increasing their knowledge base.

## Limitations

The limitations of this study were related to design, sampling and the instrument. This study employed a simple descriptive correlational design using a questionnaire to obtain data regarding nurses' knowledge of breastfeeding and to identify what factors contribute to their knowledge level. Multiple variables were measured in this study. While the response rate was adequate for this study (67%), the sample size was small (n=67). The sample size may have been too small to identify statistically significant relationships and therefore limited the study's generalizability. Although a relationship between the variables may exist it is recognized that the convenience sample and small sample size would limit the predictive power and generalizability of the data (Polit & Hunglar, 1995). There was no way to ensure that each survey was completed without discussion among colleagues, which may have affected the results.

A convenience sample was used in this study, this poses a threat to external validity. Participation in the study was voluntary. Those nurses who chose not to participate in the study may have differed from those nurses who participated in the study. They may have demonstrated different knowledge levels, educational background or experience. According to Polit & Hunglar (1995) the response rate was adequate for this study. However, it is



important to note that one-third of the potential participants did not return the questionnaire. Loss of these potential participants may affect the generalizability. Some of the participants did not answer all of the questions on their survey. It is possible that important information was lost as a result of this or differences in results may have been found. The sample in this study was representative of one institution which limits its generalizability.

The instrument was a major limitation to this study. The instrument is new, has only been used in a limited number of studies (n=3) and has been modified with each use. Validity and reliability have not been well established. For this study, the tool was reviewed by 3 lactation consultants for content validity. It is possible that changing five of the questions to reflect more up to date breastfeeding information affected the reliability of the instrument in this study. A pilot study was not done after changing five of the questions. Reliability may have been improved by doing a pilot study with the tool prior to using it in this study. The Breastfeeding Knowledge and Attitude Survey did not demonstrate good reliability in this study (KR=0.51) compared with Leadley (KR=0.80). However, it was similar to that reported by Anderson & Geden (KR=0.53).

### Findings Related to Theoretical Framework

The use of Orem's Self-Care framework works very well to increase the self-care agency of mothers becoming independent in breastfeeding management. The nurse plays an important role in supporting the mother in becoming independent in breastfeeding management. The supportive-educative component of nursing offers the new mother correct techniques, praise, encouragement and accurate information to reach her goal of self-care ie, successful breastfeeding. The nurses' level of knowledge related to breastfeeding may impact the outcome of successful breastfeeding for a new mother. It is important that nurses take responsibility for what they are teaching. They must possess an accurate knowledge base in order to facilitate successful breastfeeding.

### Nursing Implications

This study has important implications for maternal child nurses as well as nursing programs and hospital education programs. Nurses have the opportunity to influence the success of breastfeeding for new mothers. The nurse holds the unique role as the educator. It is essential that the nurse possess accurate, up to date knowledge to provide the mother with the information and support necessary to foster successful breastfeeding.

Many areas of nursing practice require certification. This investigator believes that maternal child nurses should be required to obtain some type of breastfeeding certification in order to work with mothers and infants. The orientation process for new maternal child nurses should include basic breastfeeding information. This could be offered through education services or the Lactation Consultant. During orientation the breastfeeding protocol could be clearly introduced and reviewed. The Breastfeeding Knowledge and Attitudes survey could be included as a tool to assess knowledge of new nurses orienting to Obstetrical areas. As part of ongoing education to the nurses, the educators could work with the Lactation Consultant and offer breastfeeding inservices or workshops based on identified needs of the nurses. Nurses working with breastfeeding mothers should be required to attend these educational opportunities as part of their annual evaluation process.

Nursing education programs may want to reevaluate the amount of emphasis placed on breastfeeding education, considering that 52% (n=35) of the nurses reported that they had not received breastfeeding education in nursing school and 19% (n=13) did not remember. Nursing students should also be given more opportunity to practice what they have learned. It is crucial that nursing programs

adequately prepare nurses for their role in breastfeeding promotion.

### Recommendations

Future research using the Breastfeeding Knowledge and Attitude Survey is necessary to establish the instruments' reliability in measuring nurses' knowledge of breastfeeding. It is suggested that further instrument development studies be done in order to establish validation of the instrument and develop greater reliability. Content validity should be further evaluated in order to ascertain how representative the questions on the survey are to the topic of breastfeeding. This could be done by administering the survey to a group of breastfeeding experts such as members of the International Lactation Consultant Association.

Based on the recommendations and conclusions from the American Academy of Pediatrics (1997), the U.S. Department of Health and Human Services (1985), the World Health Organization/United Nations Children's Fund (1990) and Healthy People 2000, it is recognized that breastfeeding has become an important health choice for women and children. It is important that all nurses involved in the care of infants and children take the responsibility of providing accurate up to date information regarding breastfeeding.

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## APPENDICES

## Appendix A

### The Ten Steps to Successful Breastfeeding

1. Have a written breastfeeding policy that is communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mother's initiate breastfeeding within an hour of birth.
5. Show mothers how to breastfeed and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breastmilk, unless medically indicated.
7. Practice rooming-in by allowing mothers and infants to remain together 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats, pacifiers, dummies, or soothers to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or birthing center.

## Appendix B

### BREASTFEEDING KNOWLEDGE AND ATTITUDES SURVEY

1. How frequently do newborns generally need to breastfeed?
  1. on demand
  2. 6 times in 24 hours
  3. 8-10 times in 24 hours
  4. on the same schedule as bottle-fed babies
  5. I do not know
  
2. During the neonatal period, how long should a mother breastfeed at each feeding?
  1. 1-2 minutes per side; two sides only.
  2. 3-4 minutes per side; one side per feeding
  3. 5-8 minutes per side; two sides per feeding
  4. according to infant demand
  5. I do not know
  
3. Which of the following is the best description of the neonate's tongue, if breastfeeding properly?
  1. It makes a clicking sound
  2. It can be seen over the lower gum
  3. It thrusts forward to stop the flow of milk.
  4. It is not visible when the lower lip is pulled down
  5. I do not know
  
4. When is the newborn's sucking reflex most intense?
  1. the first 20 minutes-2 hours after birth
  2. 3 hours after birth
  3. 12 hours after birth
  4. 24 hours after birth
  5. I do not know

5. All of the following are signs of good latch-on EXCEPT:
  1. The infant's head is aligned with the trunk and facing the other's breast
  2. The infant's lips are flanged out and relaxed
  3. The infant's nose and chin are positioned away from the mother's breast
  4. The infant's tongue is curved around and below the areola
  5. I do not know
  
6. The size and prominence of the mother's nipple is of little importance when the baby is properly positioned.
  1. True
  2. False
  3. I do not know
  
7. When a breastfed neonate has physiologic jaundice, the feeding protocol should be as follows.
  1. breastfeed frequently and do not give supplements.
  2. Discontinue breastfeeding temporarily
  3. Breastfeed and give formula supplement.
  4. Breastfeed and give water supplement.
  5. I do not know.
  
8. Which of the following regarding breast milk jaundice is correct?
  1. usually requires bili lights
  2. usually develops 2-3 days past birth
  3. usually develops after 5-7 days past birth
  4. usually requires permanent termination of breastfeeding
  5. I do not know
  
9. Which is considered best for a premature baby who weighs more than 1500 grams:
  1. pooled breast milk from other mothers
  2. mother's own breast milk
  3. special premie formula
  4. it does not matter
  5. I do not know
  
10. Breast fed babies should be offered an initial bottle of water (prior to the first feeding) to assess the infants ability to suck and swallow.
  1. True
  2. False
  3. I do not know

11. **Newborns who are offered bottles or pacifiers may have difficulty breastfeeding.**
  1. True
  2. False
  3. I do not know
  
12. **After the first week of life, the neonate is probably receiving enough fluids when he or she:**
  1. has 6-8 wet diapers per day and at least 2-3 yellow, seedy stools
  2. gains 2 ounces per week
  3. sleeps through the night
  4. breastfeeds every 3-4 hours
  5. I do not know
  
13. **Which of the following is correct regarding the storage of breastmilk?**
  1. It can be thawed and then refrozen
  2. Bacteria will be destroyed by freezing
  3. It can last only one month at 0 degree F.
  4. It can be used after 48 hours in the refrigerator.
  5. I do not know
  
14. **It is advisable to tell mothers that breast milk may be thawed in the Microwave.**
  1. True
  2. False
  3. I do not know
  
15. **Which of the following is most likely to cause sore nipples?**
  1. Improper positioning of the baby at the breast.
  2. Breastfeeding on both breasts
  3. Daily shower and shampoo
  4. Inadequate bra support
  5. I do not know
  
16. **Which of the following is true concerning plugged ducts?**
  1. requires immediate weaning of the baby
  2. can be prevented with an adequate diet
  3. mother experiences flu-like symptoms and fever.
  4. May occur when the baby is breastfed infrequently
  5. I do not know
  
17. **The best treatment for mastitis is to remove milk with an electric breast pump.**
  1. True
  2. False
  3. I do not know

18. Which of the following statements regarding nipple shields is correct?
1. They are indicated when engorgement occurs.
  2. They are one reason a mother's milk supply may be decreased.
  3. They are worn over the mother's own nipples between feedings
  4. They are frequently needed to help mothers with flat nipples keep breastfeeding.
  5. I do not know
19. Which of the following statements describes a correct use of breast shells?
1. They are worn after the baby is born to prevent sore nipples.
  2. They are worn to collect milk, between feedings, and give to the newborn.
  3. They are worn to correct an inverted nipple.
  4. They are worn only at night.
  5. I do not know.
20. Oxytocin is the hormone responsible for milk production.
1. True
  2. False
  3. I do not know

Please answer the next five questions according to your own feelings or opinion.

21. Circle the statement that is closest to your feelings
1. Breastfeeding is much better than formula feeding.
  2. Breastfeeding is better, but, formula is a very good alternative.
  3. Breastfeeding and formula feeding are so close that mother's preference should be the only deciding factor.
  4. Formula feeding is much better than breastfeeding.
22. Breastfeeding is convenient.
1. Agree
  2. Disagree
  3. Unsure
23. Breastfeeding is embarrassing.
1. Agree
  2. Disagree
  3. Unsure
24. Breastfeeding is difficult and complicated.
1. Agree
  2. Disagree
  3. Unsure



25. Breastfeeding promotion is an important priority for the health of women and children.
1. Agree
  2. Disagree
  3. Unsure

## PART II

Please answer the following demographic questions. Circle the appropriate answer. Fill in the answers where indicated.

1. Indicate the level of your basic nursing program and the year you graduated.
  1. LPN year \_\_\_\_\_
  2. Diploma RN year \_\_\_\_\_
  3. Associate RN year \_\_\_\_\_
  4. Baccalaureate RN year \_\_\_\_\_
  
2. Indicate the highest degree earned and year of graduation.
  1. Associate Degree year \_\_\_\_\_
  2. Bachelors Degree year \_\_\_\_\_
  3. Masters Degree year \_\_\_\_\_
  4. Doctoral Degree year \_\_\_\_\_
  
3. Primary focus of practice
  1. Labor and delivery
  2. Postpartum
  3. Newborn nursery
  4. Antepartum
  
4. How long have you worked with newborns and/or new mothers?
  1. less than 1 year
  2. 1-5 years
  3. 6-10 years
  4. 11-20 years
  5. more than 20 years
  
5. Does your hospital have a breastfeeding protocol?
  1. Yes
  2. No
  3. I do not know

6. Do you have a lactation consultant on staff?
1. Yes
  2. No
  3. I do not know
7. Were you taught breastfeeding management in you basic nursing program?
1. Yes
  2. No
  3. I do not remember
8. Where have you received your breastfeeding knowledge? (Circle all that are applicable.)
1. Nursing school
  2. College
  3. Hospital in-services
  4. Workshops/conferences
  5. On-the-job
  6. Family and/or friends
  7. Personal experience
  8. Other (please specify) \_\_\_\_\_
9. How do you keep current on breastfeeding management? (Circle all that are applicable.)
1. Workshops/conferences
  2. Reading journals/books
  3. Hospital in-services
  4. Other \_\_\_\_\_
  5. I do not do anything
10. How would you rate your ability to help a mother succeed at breastfeeding?
1. excellent
  2. good
  3. fair
  4. poor
11. How many children do you have? \_\_\_\_\_  
(If none, go to No. 18)
12. Did you breastfeed?
1. Yes (if yes, go to No. 13)
  2. No (if no, go to No. 18)

13. How satisfied were you with breastfeeding?
1. extremely
  2. moderately
  3. somewhat
  4. minimally
14. What was the longest time you breastfed a child?
1. while in the hospital
  2. 0-6 weeks
  3. 6-12 weeks
  4. 4-6 months
  5. 6months-1 year
  6. over 1 year
15. If less than a year, why did you discontinue breastfeeding?
1. not enough milk
  2. had to return to work/school
  3. family did not approve
  4. did not want to continue
  5. other \_\_\_\_\_
16. How old are you? \_\_\_\_\_

COMMENTS:

Appendix C

June 23, 2000

To Whom It May Concern:

Wendy Kershner has my permission to use and modify the Breastfeeding Knowledge and Attitudes Survey. This includes permission to print it in any appendices in her thesis.

Thank you,

A solid black rectangular redaction box covering the signature of the sender.

Jeanne Leadley, M.S., R.N., C.P.N.P., I.B.C.L.C.

Appendix D

June 28, 2000

Wendy Kershner, R.N., B.S.N.  
Kirkhof School of Nursing  
Grand Valley State University  
Allendale, MI 49401

RE: -2000-0004 Breastfeeding Knowledge of Maternal-Infant Nurses

Dear Ms. Kershner,

This is a note informing you that the above named protocol was indeed approved as submitted at the June 8, 2000 . Human Use  
Committee Meeting.

Respectfully,

  
Linda Nichols /  
Administrative Assistant  
Human Use Committee

cc: Protocol File

Appendix E



GRAND VALLEY  
STATE UNIVERSITY

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May 31, 2000

Wendy Kershner  
5144 N. 39<sup>th</sup> St.  
Augusta, MI 49012

Dear Wendy:

Your proposed project entitled **Nurses Knowledge of Breastfeeding** has been reviewed. It has been approved as a study which is exempt from the regulations by section 46.101 of the Federal Register 46(16):8336, January 26, 1981.

Sincerely,

[Redacted signature]

Paul A. Huizenga, Chair  
Human Research Review Committee

Appendix F

June 15, 2000

Dear Nurse Colleague,

My name is Wendy Kershner. I am a graduate student in nursing at Grand Valley State University. As part of the requirements for my Master's degree I am conducting a study on nurses' knowledge and attitudes about breastfeeding. I am interested in learning more about the relationship between nurses' knowledge of breastfeeding, length of clinical experience, education, and personal experience with breastfeeding. This information will assist me in identifying the sources of breastfeeding knowledge among maternity nurses. It will also help me identify recommendations for ways to increase and improve nurses knowledge of breastfeeding.

I would greatly appreciate your participation in this study by completing the enclosed *Breastfeeding Knowledge and Attitudes Survey*. This survey will take about ten minutes to complete. Participation in this study is voluntary. Please complete the survey on your own without help from others. Please do not identify yourself on the survey. Your responses will remain confidential. Results will be reported based on group data rather than individual data. When you have completed the survey please return it to my mailbox on mother-baby unit (#57) in the envelope provided. Returning the completed survey means that you are consenting to participate in this study.

This study has been approved by the Human Research Review Committee at Grand Valley State University and the Human Subjects Review Committee at Bronson Methodist Hospital. Feel free to call me with any questions you may have. Questions about your rights as a participant in this study should be directed to Professor Paul Huizenga, Chair of the Human Research Review Committee at Grand Valley State university, (616) 895-2472.

Thank you for your participation in this study.

Sincerely,

Wendy Kershner, R.N., B.S.N  
Home phone: 731-2971