A BREAST ASSESSMENT TOOL TO IDENTIFY INVERTED NIPPLES IN PREGNANT WOMEN

Scholarly Project for the Degree of M. S. N.

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A BREAST ASSESSMENT TOOL TO IDENTIFY INVERTED NIPPLES IN PREGNANT WOMEN

By

Tamra J. Harris-Ashley

A SCHOLARLY PROJECT

Submitted to
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To my husband Ted:

. . . for there is nothing greater than this-- when a husband and wife keep a household in oneness of mind.

-- Homer, c. 700 B.C.

ACKNOWLEDGMENTS

The rewards of being led down life's path by the gifts bestowed from the Almighty God can never be fully expressed in words. But I am thankful for joining the nursing profession and the enrichment it brings to one's life. I eagerly await what the next level of learning nursing will bring in my life's path to come.

Thanks to the committee Chairperson Louise Selanders and members Kathy Dontije and Kate Lein for their direction in this project.

To my wonderful children Bekah, Abby, Chelsea, and Austin: Thanks for your understanding and love throughout this project and the demands it put on all our lives.

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Introduction

Professional associations endorse the recent increase in breastfeeding because of its many benefits to mother, infant, and society (American Academy of Pediatrics, 1997; American Dietetics Association, 1997; Dermer, 1995; U.S. Department of Health & Human Services, 1990; Cunningham, Jellife, & Jellife, 1991). Women who nurse their infants experience decreased incidences of osteoporosis, premenopausal breast cancer, and cancer of other reproductive organs (Moore, Zale, & Moramarco, 1998; Shadigian, Van Bonn, & Cook, 1998). In addition, lactational amenorrhea reduces the risk of anemia (Adamson & Williams, 1992).

To the nursing baby, "this living fluid [breast milk] provides bioactive compounds with specific physiological functions" (McCamman & Page-Goertz, 1999, p. 3), especially during the first year of life (Cunningham, Jellife, & Jellife, 1991). Benefits include protection from illnesses, decreased gastrointestinal problems, prevention of diabetes, increased IQ scores, and decreased

incidences of childhood diseases (U.S. Department of Health and Human Services, 1990).

Given the positive outcomes of breastfeeding, it is important to educate and support mothers during the prenatal period when they are considering feeding options. Inverted nipples are a problem that may deter pregnant women from considering breastfeeding and/or lead to unsuccessful breastfeeding. Healthy People 2000 (the 1990 promotional program of the U.S. Department of Health and Human Services) was targeted at increasing breastfeeding participation to at least 75% of the breastfeeding population in the early postnatal period. It further promoted increasing breastfeeding numbers to 50% at six months. Ryan (1997) stated that in 1995, despite the Healthy People guidelines, only 59.4% of women initiated breastfeeding and only 21.6% were still breastfeeding at 6 months. Despite the governmental education and support of breastfeeding, the statistics did not support the efforts.

The dramatic health benefits to nursing mothers and breastfed babies have an economic benefit to society. The American Dietetics Association (1997) states that cost projections for the difference in morbidity of the newborn translates into savings of millions of dollars. Medical expenses for families and companies are significantly

reduced in both direct and indirect costs. Fewer absences of mothers to care for ill infants result in an expense reduction for workplaces. In addition, families do not suffer from lost revenues related to missed employment. Finally, there are savings to medical insurance companies due to fewer physician visits and pharmacy costs (Adamson & Williams, 1992).

In preparing mothers for successful breastfeeding, a major factor needing thorough assessment is the prenatal anatomy of nipple inversion (Shadigian et al, 1998; Walker & Driscoll, 1989). Nipple inversion is defined as the inability of the breast nipple to protrude outward from the breast anytime when stimulated. Although nipple inversion only affects 10% of the population, it can potentially make nursing extremely difficult for infants to start a correct breastfeeding technique (Shadigian et al., 1998). Nipples with slight inversion will not require interventions in most cases, but in nipples that are unable to protrude outward with compression the inverted nipple may and will benefit from treatment before birth (Mohrbacher & Stock, 1991).

Given the positive outcomes of breastfeeding, it is important to educate and support mothers during the prenatal period when they are considering feeding options.

Inverted nipples is one problem that may deter pregnant women from considering breastfeeding and/or lead to unsuccessful breastfeeding. This paper explores the prenatal use of a breast anatomy assessment tool for Advanced Practiced Nurses (APNs) to educate and support breastfeeding mothers with inverted nipples. In the primary care setting, APNs have the opportunity and ability for early assessment of breast abnormalities. Through use of an assessment tool to evaluate degrees of inversion and with a decision tree to determine appropriate interventions, APNs can demonstrate a health-promotion and problem-prevention approach for women with inverted nipples.

Statement of the Problem

Nipple inversion is defined as the inability of the breast nipple to protrude outward from the breast when it is stimulated. Although only 10% of the population is affected, inverted nipples can make breastfeeding extremely difficult (Shadigian et al., 1998). The La Leche League (1991) claims that treating inverted nipples before delivery will improve the breastfeeding outcome (Mohrbacher & Stock, 1991).

DeCoupman (1993) defines inverted nipples as the inability of nipples to be elastic and be compressed

outward from the breast with external manipulation. Inverted nipples do not normally respond to stimulation or exposure to cold, and thus do not become erect or protrude outward (Auerbach & Riordan, 1993; Mohrbacher & Stock, 1991). The La Leche League Answer Book defines inverted nipples as "retracted rather than protrude when the areola is compressed" (Mohrbacher & Stock, 1991, p. 165). Such inversion can be unilateral or bilateral, with degrees of inversion ranging from the nipple being flat with the breast to completely disguised inside the breast tissue. It is unclear what causes the inability of the tissue to be elastic and protrude, but it does appear to have a genetic component (Auerbach & Riordan, 1993). Breastfeeding aids (i.e., nipple shields) have been used with success to correct inverted or flat nipples after an infant's birth, especially in the premature population (Meir, Brown, Hurst, Spatz, Engstrom, Borucki & Krouse, 2000). However, preventative and promotional approaches can assist pregnant women to evert the nipple rather than compensating.

Multiple textbooks on lactation (Auerbach & Riordan, 1993; DeCoupman, 1993; Mohrbacher & Stock, 1991) have discussed in depth the need for assessment and intervention for inverted nipples, using customized plans based on suggestions for treatment. The following techniques have

been used to promote breastfeeding for mothers with inverted nipples: Exercises to increase the elastic area surrounding the breast, use of shells to exert consistent pressure around the areola, and electric breast pumps (Auerbach & Riordan, 1993; DeCoupman, 1993). However, there are no specific guidelines related to degrees of inversion.

Significance of the Problem

Despite the federal promotional efforts of Healthy People 2000, breastfeeding trends in the United States are still far from the target goal of 75 percent (U.S. Department of Health and Human Services, 1990). Following a decline in the 1980s, the rate increased to 59% by 1995 (Ryan, 1997). Because there is such a significant failure rate among women with inverted nipples, any improvement in their success would affect the overall numbers of breastfeeding women.

A woman's decision to breastfeed can be undermined by health professionals who lack necessary training and clinical experience to support her (Newman, 1999). This lack of support may contribute to the mother's discomfort and subsequent mismanagement of lactation issues (McCamman & Page-Goertz, 1999). Up to 96% of women experience nipple pain that could be prevented by teaching proper positioning

and attachment techniques (Cable & Stewart, 1997). For mothers with inverted nipples, the difficulty of latching the baby to the breast is compounded by the nipple's inability to evert.

Purpose of the Project

This scholarly project encourages the use of a breast assessment tool for inverted nipples in outpatient clinics delivering care to mothers. Early identification and education about inverted nipples can guide the mother toward correct diagnosis, treatment, or referral to a lactation specialist for early intervention (DeCoupman, 1993).

For this project, an assessment tool was designed as a guide for those who work in broad-based primary care settings (Appendix A). Directions for basic interventions and patient education would be included separately, with space to document an initial plan and subsequent reassessment.

Because APNs provide primary care and education to pregnant women, they are in an excellent position to implement a tool for nipple assessment. Role characteristics of APNs demand that they appraise individuals by collecting subjective and objective data and assimilate this information into a clinical judgment. In

addition, their assessments include social, psychological, and spiritual dimensions. When combining this process with a specific assessment tool for inverted nipples, APNs can provide enhanced health care to a group of patients with special needs. Thus, by improving outcomes for lactating women with inverted nipples, APNs can contribute to a general improvement in numbers of breastfeeding women.

Conceptual Framework

The purpose of a conceptual framework is to define the functioning of a phenomenon -- in this case, nursing. Major components within the model describe how the nurse should conduct the practice of nursing. As with all models, the goal of nursing is improved health status.

The major concept utilized by Nightingale was environmental adaptation (Selanders, 1993, 1998). The framework is a linear model implemented by the nurse in order to assess the environment, alter the environment, and assess the resulting outcome. Major concepts of this model are health and "dys-ease."

Health is defined as being the best one can be at any given point in time and is not dependent on any disease status (Selanders, 1993, 1998). Further health is impacted by the biological, psychological, social, and spiritual realms of a holistic individual.

Figure 1 describes the client of nursing. The biological and psychological spheres frequently show dominance in nursing interaction and therefore are graphically represented by larger circles. The social sphere delineates social support systems. The spiritual influence permeates all aspects of life and therefore is represented as an encompassing sphere which is permeable to the environment.

"Dys-ease" is a state in which environmental concerns, internal or external both, create a condition which is not optimal for health. In this case, the patient is the expectant mother with inverted nipples. The environment (mother) is manipulated by the nurse to aid the mother in helping herself correct the biological problem (inverted nipples).

Figure 2 describes the general process of nursing intervention as outlined by Nightingale. Initially, the nurse would determine the health status of the client through observation and collection of both objective and subjective data. For future use, this information is entered into the health-care record. The nurse then identifies specific need for change in the environment and how this change might occur. Interaction with the client

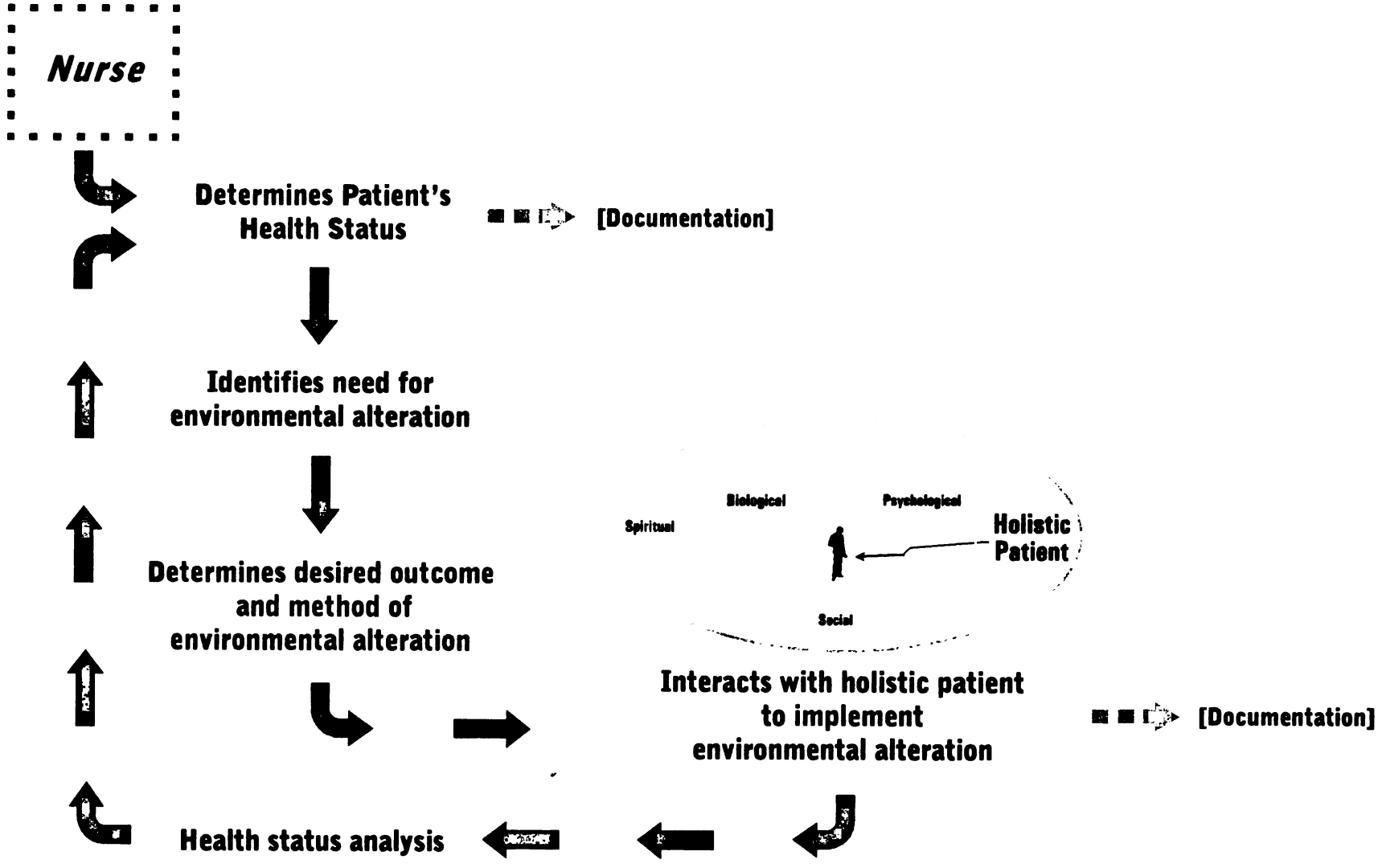


Figure 1. Nightingale's Model of Nursing Practice (Selanders, ©2000).

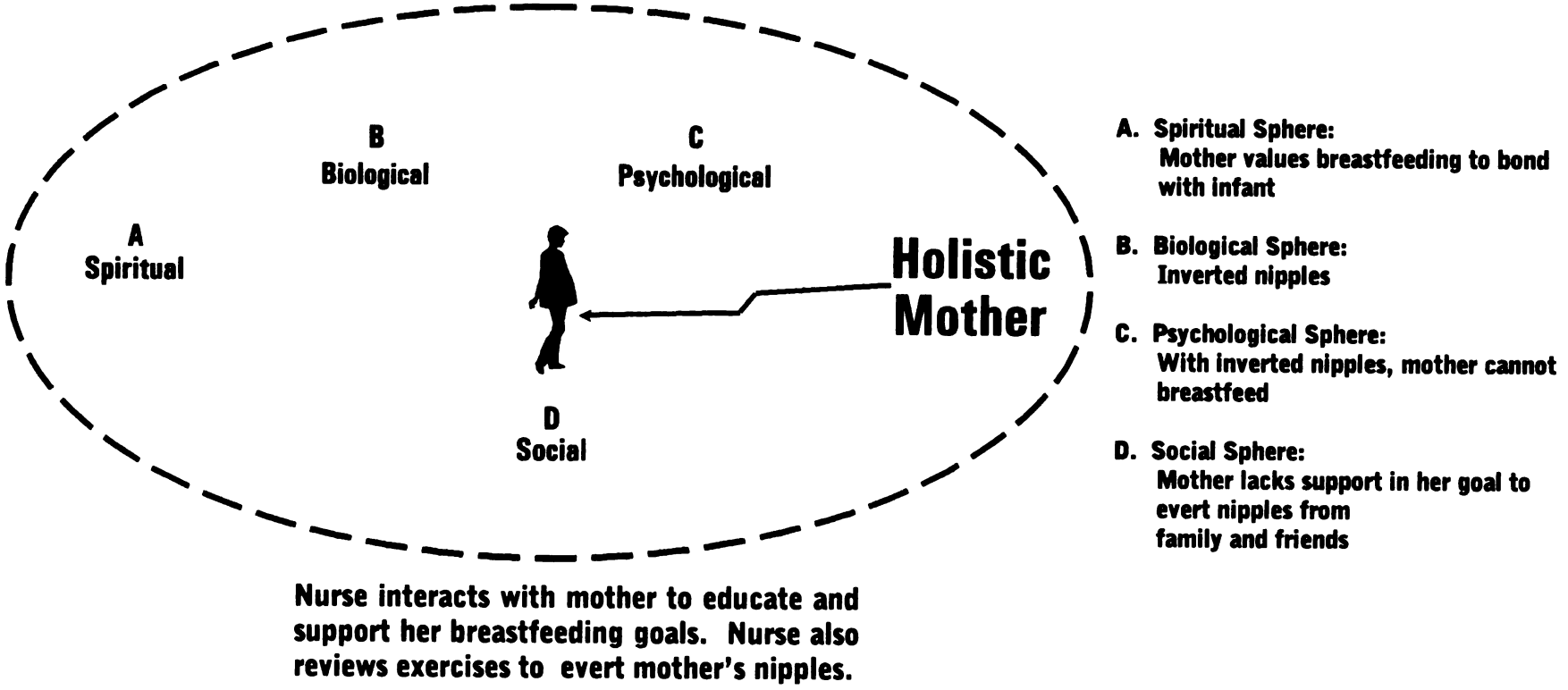


Figure 2. Modified Holistic Patient: Mother with Inverted Nipples.

implements the environmental alteration, and this interaction is documented.

Nursing

Nursing knowledge is achieved through environmental alteration. Through assessing and manipulating the environment and utilization of this knowledge, nursing becomes individualized to specific client situations. The nursing process is goal-directed and research-driven to aid patients in improving their condition. According to Nightingale's theory, nursing consists of the nurse acting upon the patient's environment to facilitate change; the patient is a recipient of nursing care and not an active partner (Selanders, 1993).

In the case of inverted nipples and in order to perform a consistent assessment, a tool should be routinely utilized. Such a tool will assist those providers lacking knowledge of breast anatomy in facilitating mothers to breastfeed successfully. But if a mother does not have inverted nipples, the tool is still used to educate the patient about the best way to feed the newborn. For inverted nipples, the tool also provides the health care professional with a structured decision-making model predicted from clinical observations. For instance, degree of nipple inversion would dictate the level of intervention

needed in the plan of care. In both instances of normal or abnormal nipples, the nurse influences the environment to achieve successful breastfeeding.

Patient

With Nightingale's holistic approach, the nurse's role is one of promoting the breastfeeding environment in a manner that promotes health of the patient. Figure 3 describes this process. In this instance, the mother with inverted nipples is the patient. Use of this paradigm promotes the mother-baby dyad through successful breastfeeding. In turn, by overcoming the inverted nipple barrier to nursing the infant, successful breastfeeding influences the mother's sense of psychological and spiritual well-being.

Environment

Improving the condition of breast anatomy alters both external and internal environments, allowing the patient to cure herself. One external environmental component is health-care providers. Their outside influences include the initial identification of the biological problem (inverted nipples) and subsequent intervention to correct it. The tool helps nurses classify breast abnormalities and the decision-tree portion assists them with selecting appropriate interventions.

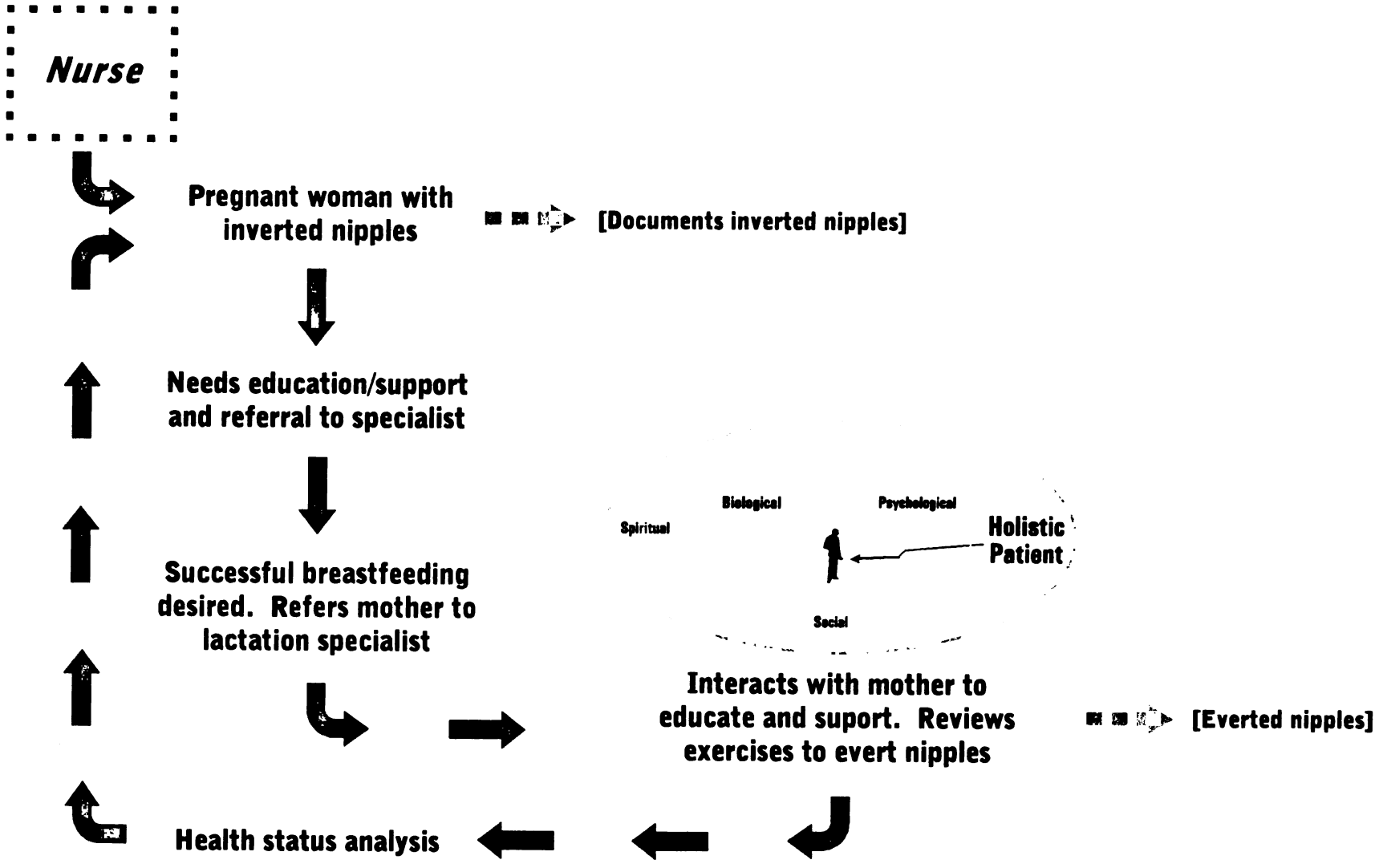


Figure 3. Nightingale's Model of Nurse/Mother Relationship (Selanders, ©2000).

Once these interventions prove successful, the internal environment is affected. A mother with inverted nipples will experience alterations in the nipple anatomy, resulting in eversion and ability to nurse. Biological components for alterations in the actual anatomy of the mother's breast will influence the mechanical ability of the newborn to latch correctly and to stimulate milk production.

Social and Psychological

Failure to overcome the biology of inverted nipples may affect the mother's ability to feel successful at achieving the goal of breastfeeding the newborn. The health care professional's challenge is to support the mother in her drive to overcome the breast abnormality in order to support her as the recipient of nursing care in the treatment of the inverted nipple.

The social barrier is the lack of support from friends, family, and others who have influence upon the mother's life. In particular, the holistic needs of the family are multidimensional and may affect any or all of the spheres in the Nightingale model. The nurse may work with the family, who helps the new mother and child by positively influencing the outcome of successful breastfeeding.

The psychological barrier is the mother's fear of failure at nursing. The spiritual need of the mother to bond with the baby is an integral part of her desire to accept nursing care to learn how to overcome both the physiological breast abnormalities as well as the psychological fear of failure.

Health

This Nightingale model of nursing is based on experiential observations made in relationship to individuals and their health status, thereby creating more positive conditions for the patient to influece the outcome of successful breastfeeding (Selanders, 1993, 1998). The nurse helps mothers with inverted nipples by observing the degree of nipple inversion, documenting the degree of inversion, and planning nipple alteration.

The tool assists providers, expecially with limited knowledge of inverted nipples, to make correct evaluations of the problem and assist the patient to help herself. Through rehabilitation, activities directly focusing on the inversion result in the restorative phase of the difficulty, thus also improving the mother's health (Selanders, 1998). Feedback is based on the process and observable outcomes: Does the nipple begin to make anatomical changes and become evert? If the nipple becomes

evert, the nurse knows the interventions have worked and the health of her patient has revived; if the nipple does not evert, reassessment is necessary.

Review of the Literature

Scope of the Problem

Misinformation to a mother is at a critical juncture when she is commencing breastfeeding and can have serious, negative effects upon her breastfeeding success (Losch, Dungy, Russell & Dusdieker, 1995). Perhaps the professionals have sustained the myth that reduced milk supply cannot be recovered (Elliot, 1996). Or perhaps she has been told (by both professionals and family/friends) she will never be able to breastfeed because of her inverted nipples (Personal Communication, 1998). One survey of 35 focus groups found that in at least one-third of the patients seen, the health care professional did not discuss prenatal feeding plans for the pregnant women (Shadigian et al., 1998). Another study made the assumption that health care providers had information about breastfeeding but did not act on that information, either because it was not in their scope of practice or they did not feel it was a necessity (Coreil, Bryant, Westover & Bailey, 1995).

One author suggested providers should enter into discussion with the patient about the positive physical,

psychological, and sociological effects of breastfeeding in order to encourage open dialogue, informed decision making, and anticipatory guidance for the mother (Newman, 1999). Such discussions would establish the necessary rapport between mother and health care professional to help determine any physical abnormalities of the breast which could have a negative impact upon successful lactation (Shadigian et al., 1998).

Limitations

Literature older than five years consisted primarily of surveys of small numbers, thus lacking the statistical power to be generalized. But a significant limitation of the literature was that breastfeeding assessment and lactation specialization are relatively new fields. Historically, pre-World War II mothers nursed their infants unless there was a medical necessity to stop lactation and supplement feeding. The bulk of information about breastfeeding was passed on by mothers and midwives to new mothers (Aurebach & Riordan, 1993). Scientific and statistical rationalization was not needed because breastfeeding was the cultural norm and infants were thriving on breast milk (Huffman, 1991). In a new era of scientific inquiry to prove breastfeeding as preferable to other feeding methods, organizations like La Leche League

and International Board of Lactation Consultants emerged to reeducate the public on breastfeeding benefits and build a new body of research information (Auerbach & Riordan, 1993).

There were no specific studies looking at morbidity and mortality, though one article described "the detrimental health consequences" of infant formula feeding. In determining causes of infant deaths, mothers and researchers began to examine the deceptive advertising that bottlefeeding was "like breastfeeding". Formula was incorrectly mixed or incorrectly formulated at the factory, causing newborns to experience nutritional deficits and even death (Palmer, 1991). Such deaths implied a need to begin new research and also indicated benefits of breastfeeding demanded greater exploration. But research inquiries into breastfeeding problems are still very limited in the literature.

Provider Knowledge and Support

Much of the literature showed a distinct lack of breastfeeding information and support exchanged between health care providers and patients. Coreil et al. (1995) used 6 focus groups and 22 in-depth individual interviews of health department Anglo-American and African-American clients and professionals. They found that when problems

arose, clients were frustrated by conflicting health education information versus that provided by health-care professionals. The authors concluded that providers had a gap in knowledge between promotion of breastfeeding and support assistance in problem situations. The Coreil study would suggest if counsel and assistance in the more general problems of breastfeeding were not adequately addressed, then the more technical difficulties associated with inverted nipples might be missed as well (Coreil et al., 1995).

Anderson and Geden (1990) surveyed 290 nurses in 50 hospitals in a descriptive study focusing on breastfeeding knowledge of maternal-neonatal nurses. The study had a low response rate (38%), perhaps implying that those who participated shared at least some interest in breastfeeding. Results indicated that nurses had limited knowledge of breastfeeding basics and were supplying inaccurate information to patients (i.e., about frequency of feeds, proper newborn sucking, treatment of plugged ducts, and mastitis). If respondants to the study were indeed concerned about breastfeeding knowledge and nonparticipants were not, then the amount of misinformation passed on to nursing mothers could be higher than that found by the authors.

To understand the experience of individual persistence in breastfeeding, Bottoroff (1992) found the commitment of a mother to breastfeed her infant was the best indicator of success when difficulties arose, such as sore nipples, growth spurts, or engorgement. In this phenomenological investigation, the everyday experiences of three breastfeeding mothers were reviewed. Initially, no assistance seemed available and the mothers felt alone without help of an experienced person. Their anxiety increased. But with perseverance and resolve to nurse and with good family support they were able to continue breastfeeding. Though the research did not offer nurses a prescription for effective interventions, similar studies might offer insights into the need for increased sensitivity to mothers whose inverted nipples could cause a difficult lactation experience.

In a national, random survey of 1,920 practicing and 3,115 resident physicians (68% response rate), more than 30% of professionals were able to choose correct advice to give a mother, but less than 20% had demonstrated breastfeeding techniques in residency. The authors concluded that doctors were ill prepared to counsel breastfeeding mothers (Freed, Clark, Sorenson, Lohr, Cefalo & Curtis, 1995).

Another survey of 464 nurses and doctors (33% response) predominately in private practice found that only 4% even discussed prenatal topics with the mother. Nurses, rather than physicians, tended to have more contact with mothers, with nurses supplying the bulk of information throughout pregnancy (Lazzaro, Anderson & Auld, 1995).

A problem frequently cited in the literature was the nonsupportive behaviors and attitudes of physicians when breastfeeding difficulties arose (Heinig, 1998). Most frequently, the physician's response was to recommend commencement of bottle feeding (Dermer, 1995; Newman, 1999; Raj & Plichta, 1998). Providers did not adequately assess why difficulties in breastfeeding arose. Nevertheless, one recent study found that health care providers were the most influential and trusted sources of information to nursing mothers, yet many professionals were neither prepared nor able to be good sources of counsel to their nursing patient mothers (Coreil et al., 1995).

In short, the literature clearly indicated that, in general, health care providers lacked appropriate knowledge and counseling techniques for mothers wishing to breastfeed. For example, Armstrong (1996) concluded professionals had contributed to nipple confusion because of their lack of correct assessment of a breastfeeding

infant's attachment at the breast. He proposed confusion was based in part on peer-reviewed medical journals' failure to have breastfeeding articles reviewed by knowledgeable individuals and the inadequacy of short-term studies. More specifically, while incidences of inverted nipples are relatively low (10%), this inability of the health care professional to adequately assess or support a prenatal breastfeeding plan for this population has a greater impact on postnatal breastfeeding success (Coreil et al., 1995).

Mechanics of Breastfeeding

Assessing if an infant is correctly feeding is difficult if health care providers are unable to assess the newborn for latching difficulties. Most professionals presume the infant is feeding if contact with the breast is made (Shrago, & Bocar, 1990). It is only determined later, by a newborn's poor feeding and weight loss as well as intense breast pain reported by the mother, that there may be a preexisting physiological problem interfering with successful latching. If the nipple is inverted, it does not stand out and the infant has nothing to grasp onto (Walker & Driscol, 1989; Shrago & Bocar, 1990).

Ignorance of breastfeeding technique is also responsible for lack of proper diagnosis. Traditionally,

physicians in office practices have utilized prepackaged gift sets and readily available consumer publications to support new parents (Valaitits, Sheeshka & O'Brein, 1997). These methods, while time efficient, are not effective in determining causes of difficulties in nursing. This time factor, while not readily acknowledged, plays a significant role in the lack of proper physician support in difficult breastfeeding caused by inverted nipples (Valaitis et al., 1997).

Milk Production

Many difficulties in breastfeeding can be avoided or successfully addressed with a proper assessment of the breast structure and its suitability for feeding (Alexander, Grant & Campbell, 1992). One of the most common myths relates to the size of the breast and its ability to produce milk. Because milk production results from hormonal stimulation of the target breast cell, studies have shown there is no causal effect between milk production and the breast size Auerbach & Riodan, 1993; DeCoopman, 1991). Yet the most common reason for mothers discontinuing breastfeeding is the assumption that milk supply is inadequate (Kim, 1997).

Milk production is partly regulated by the hormone prolactin. Increases in prolactin production occur when

the nipple and areola are stimulated during breastfeeding. But when the nipple is inverted, sufficient stimulation to produce the hormone level necessary to produce milk does not occur (Shrago & Bocar, 1990).

The term "milk ejection reflex" accurately describes the physiologic movement of the milk through and out of the breast. The lactiferous ductal system connects the alveoli with nipple openings. Contraction of the myoepithelial cells causes milk to eject through the ductal transport system once the myoepithelial cells contract under the influence of the hormone oxytocin (Shrago & Bocar, 1990). Oxytocin acts as a messenger asking the brain to secrete prolactin which, based on secretory amount, tells the milk cells to produce milk. There is a delicate balance between correct stimulation of breast tissue to secrete the hormones and feedback to the secretary milk cell located in the breast (Auerbach & Riordan, 1993).

Milk production is also affected by mechanical compression, both external and internal, of the lactiferous sinuses that lie under the areolar surface. Externally, the infant's mouth should cover these sinuses. Internally, the correct movement of the infant's tongue on the nipple provides areolar compression between the infant's tongue and palate (Desmarais & Browne, 1992; Shrago & Bocar,

1990). Proper tactile stimulation of the nipple and areola commences the neurohormonal operation of milk production and milk ejection, a process called lactogenesis (Righard & Alade, 1990; Walker & Driscol, 1989). Breast abnormalities can hamper this process.

In the case of inverted nipples, if the nipple cannot be adequately placed in the mouth, compression of the lactiferous sinuses cannot occur (Desmarais & Brower, 1992; Shrago & Bocar, 1990). The inability of the newborn to draw out the nipple does not stimulate the hormonal feedback loop and causes a reduction in milk supply. This also causes increased pressure within the alveoli, significant because breast milk production occurs in the breast alveoli which are located distally to the nipples (Ogle & Alfano, 1987). The result is a cascade of lactation failure (Figure 4), influenced by pressure of overfullness or pressure atrophy due to oversupply caused by the infant's inability to latch to remove milk.

Correction of Inverted Nipples

Breastfeeding aids (i.e., nipple shields covering the nipple during feeding) have been used successfully to correct inverted or flat nipples after infant birth. These devices are constructed of silicone and are placed over the breast and nipple. Nipple shields are harder and more

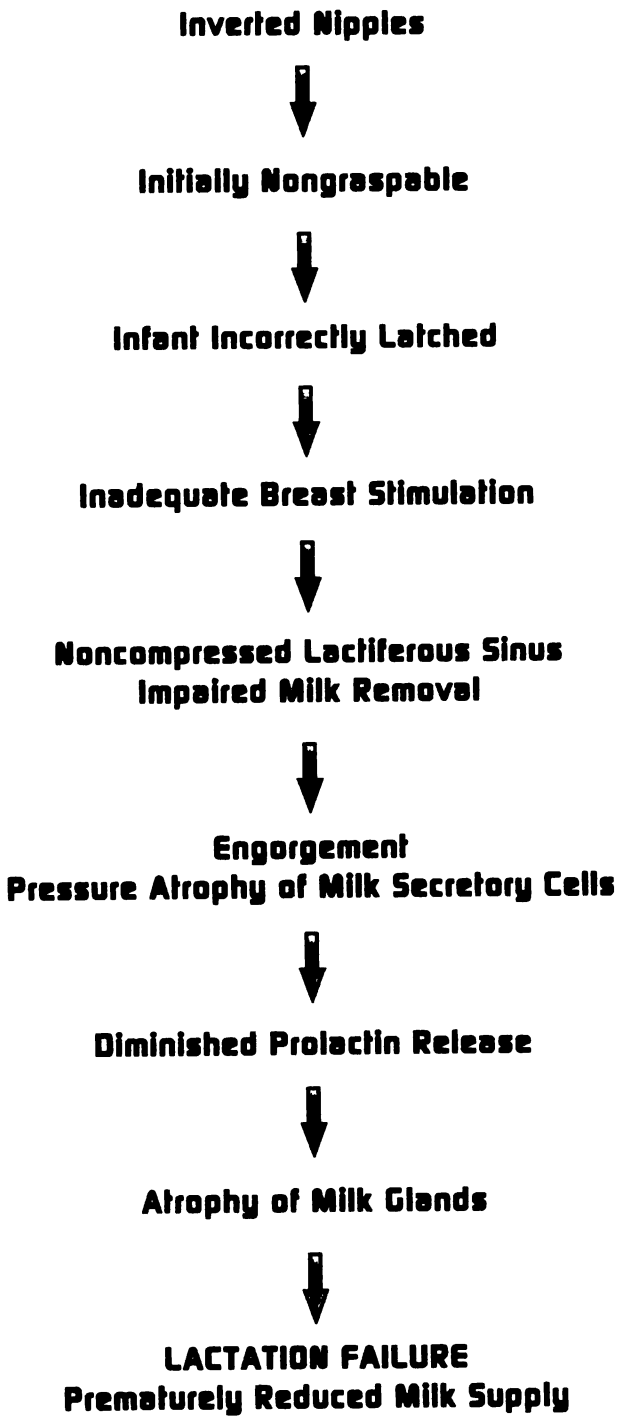


Figure 4. Cascade of Lactation Failure with Inverted Nipples.

graspable for the infant, facilitating latching at thebreast (Meir, et al., 2000; Elliot, 1996).

In the past, nipple shields have been discouraged because of the assumption that they decreased milk consumption from lack of compression of the lactiferous sinus. However, one study found the device increased suction and acted as a mini breast pump, thereby increasing milk to the infant (Meir et al., 2000). Though this was a small study of 34 premature infants in which only some of the mothers had inverted nipples, the implications were significant: A premature infant is weaker than a full-term baby, but the authors noted a statistical increase (p=02) in milk consumption. Thus, using a nipple shield not only provided more milk, but also created a negative pressure (similar to a breast pump) to encourage nipple eversion. However, Elliot (1966) recommended that the mother should be carefully assessed and assisted by skilled help or a lactation consultant to insure proper usage of a nipple shield.

Of studies reflecting outcomes of shield use to correct latching difficulties, one study (Brigham, 1996) conducted interviews with 51 clients using ultra light nipple shields, of which 30% had flat nipples and 16% inverted to varying degrees. The shields were used until

breastfeeding problems were resolved and were no longer necessary. Of these clients, 86% were satisfied with the shield and thought its use helped them start and continue breastfeeding. Limitations to this study were that it was retrospective and subjective.

Alexander et al. (1992), in a randomized, trial study of 96 women with inverted nipples, evaluated the use of a breast "shell" to increase elasticity around the nipple. These shells were hard, plastic discs with a dome-shaped cap worn inside the bra to exert outside pressure against the breast tissue to increase elasticity of connective tissue around the nipple. Their goal was to stretch the tissue either through exercises or mechanical manipulation with the shell and compare the two. There was a negative correlation between the group using nipple shell and the group using Hoffman exercises. The women who were prescribed the shell found the it was uncomfortable to wear, caused leaking of colostrum, and broke down tissue. The mothers also found wearing the shells was embarrassing. Many in this group discontinued nipple-shell use, opting instead to bottle feed. By comparison, the group prescribed Hoffman's exercise program showed a 20% increase in breastfeeding rates. The results of the study were not statistically significant; however, the author thought

antenatal use of the shell could be detrimental and, in fact, reduce chances of successful breastfeeding.

Assessment and Support

Prenatal Assessment.

One helpful assessment question is to ask the mother is whether her nipples become naturally everted when in the cold. Most women will readily be able to respond and may not feel as uncomfortable at a formal physical examination from a provider. Placing the thumb on the upper areolar margin and the index finger on the lower margin assesses the nipple. It is gently press inward slightly toward the rib cage. Then the fingers are brought together as if closing a "C" into an "O" (Johnson & Apkar, 1998). The normal nipple should stay everted and no resistance should be felt (Shadigian et al, 1998).

Anticipatory Support.

Healthcare providers need to be proactive not only in relation to pregnancy but to a plan for infant feeding. Nipple anomalies can be identified during pregnancy, most ideally through an assessment conducted at 24 to 28 weeks gestation. A true inverted nipple can be recognized by the presence of a ring of circular fibers which restrict the ability of the nipple to be everted even slightly (Johnson & Apkar, 1998). The provider should discuss feeding plans

with the mother and discuss the need for a nipple assessment. The examination is relatively simple and can be used as opportunity to discuss the benefits of breastfeeding (Shadigian et al., 1998).

Project Description

The Breast Assessment Tool is a vital link for providers to correctly assess their patients for inverted nipples prenatally. It provides anticipatory breastfeeding support for mothers by providing initial education about breastfeeding, even in mothers without inverted nipples. The tool would be fully utilized in women with inverted nipples during the initial prenatal exam for all providers in primary care clinics.

As described in the Nightingale model of nursing practice (see Figure 2), assessment is the nurse's initial step for assisting the mother. Only a small percentage (10%) of the population is afflicted with inverted nipples, the research does not reflect consensus on the problem's solution. Nevertheless, the initial breast exam for mothers can be done prenatally as part of a complete health screening physical. By asking a mother at this visit if she intends to breastfeed, the health care provider may begin dialogue with the patient and educate her about her body. The provider, by inspection, can visually see if the

nipples naturally are everted. If they are, then no other intervention is needed. If the nipples are flush with the breast, then a simple discussion with the patient can determine if they evert or "stick out" with exposure to cold or to touch. If response is no, a more extensive physical exam and use of a grasp test is warranted.

The assessment tool (Appendix A) gives the provider an easy way to evaluate breast anatomy and customize a plan of care. It begins with a breast history of the patient (i.e., did other family members have inverted breast nipples) and is followed by breast examination and nipple grasp test and assessment. Individuals providing care to pregnant women would use the tool at the initial prenatal physical exam for mothers demonstrating inverted nipples. The tool's format is designed for ease of use, with a quick check-off format and checklist for interventions. If a patient shows nipple abnormalities, the tool offers and intervention plan based upon such assessment, with an education plan and when to refer for lactation consultant assistance.

The shaded area of the tool guides the provider by cueing them with what interventions are appropriate, based on the assessment of the grasp test. The documentation of the exam is available on the first page, and the shaded

area of the tool is dated when the intervention is utilized. The primary care provider can then date the intervention when initiated on the tool's plan grid, then date further interventions as utilized. Provider comments document the progress of the nipple eversion as a brief narrative note below the tool's plan grid.

For the mother with inverted nipples, the provider should then schedule regular prenatal visits to evaluate progress in making the nipples evert and then reevaluate the plan's success at each regularly-scheduled prenatal visit. If progress is insufficient, referral to a lactation consultant is appropriate. Emotional and environmental needs can also be evaluated in preparation for the postnatal breastfeeding and intervention effectiveness. Quite often, mothers are potentially worried about being successful at the transition to nursing and caring for a newborn. Guiding a mother through this developmental experience is especially important. Success in breastfeeding is one aspect of the mother's need to feel emotionally secure with her new role as a mother and help her provide care for her newborn.

The breast assessment tool's effectiveness could be evaluated after three months of pilot use in primary care offices in a single county. Individuals providing prenatal

care could be acquired from a local health insurance directory. Personnel would drop off the tool to area providers' offices, accompanied with a brief written explanation as well as a verbal explanation, if time permits. A telephone follow-up two weeks after initial contact should be made to answer questions and inquire about patient progress. An evaluation of the tool would be a confidential survey mailed to providers three months after the tool's initial use. After collecting the number of patients on which the tool was employed, providers would be asked if the tool was easy to use. If the tool was perceived as inadequate or difficult to understand, providers would be less likely to use it. Further evaluation of providers' perceptions of the tool's effectiveness in supplying information necessary for accurate assessment of inverted nipples and in comfort of doing so would be directly related to the level of use by providers. The amenity would allow for honest evaluation of the tool, with revisions made, as necessary, before more widespread use.

Implications for Practice

A breastfeeding assessment tool is an important intervention for the APN. Correctly assessing the mother prenatally for inverted nipples should increase the

likelihood of successful breastfeeding at 85% from the Healthy People 2000 goals (U.S. Department of Health and Human Services, 1990). The tool evaluates degrees of inverted nipples and prescribes a plan of care to promote nipple eversion. A grading system makes assessment easier, so providers can accurately utilize the tool to help breastfeeding mothers. By the tool's design, any provider can describe the degree of inversion described on the tool's first page, and, utilizing the shaded grid, date when the plan was initiated. It also gives a comprehensive guide to interventions for the provider and allows for reassessment of progress and documentation of further interventions or referrals to a lactation consultant within the dated grid or narrative note.

Implications for Research

Implications for further research on this topic are vast. The tool is designed in steps, so it could be used to note the prevalence of the problem and degrees of inversion by using an explorative-descriptive study design. By first documenting through the grasp test the occurrence and degree of nipple inversion, numbers on grasp degrees of inversion can be identified. Prevalence of each occurrence can than be described in preparation for the next research step. Research could then evaluate the success of the

intervention in relation to the degree of inversion by using qualitative and unstructured data methods to do a content analysis and constant comparison. Patients with grasp levels would then be evaluated for the intervention's effectiveness. Each grasp test degree of inversion could be paired to look at interventions in relationship to problem occurrences and outcome of nursing experience. The level-one research would provide descriptive processes or phenomena to the mother with inverted nipples.

The psychological impact on the mother's attitudes about nipple inversion, with respect to interventions used and outcomes of breastfeeding the infant, could also be addressed. However, these interventions have not at this time been evaluated for actual outcomes of individual interventions that the tool could later provide for research projects using a descriptive-correlation design. The tool could initially look at one specific problem in breastfeeding and then identify other problems related to breastfeeding. One example is to identify how many mothers with Grasp 3 experience nipple pain, tissue breakdown, and redness. Another issue is what effect this has on the duration of the breastfeeding experience. Once other problems related to breastfeeding are identified, further research can be undertaken to look at effective means to

help the mother. Actual numbers of occurrences of certain problems and success of interventions could be evaluated.

The educational implications for providers delivering healthcare to pregnant mothers from this tool are considerable. First, it educates the provider that this is a problem for some pregnant mothers, which can lead to breastfeeding difficulties. Secondly, the tool's step-by-step design guides the provider through the assessment, plan, evaluation, and reevaluation process. Thirdly, it provides a guide when referral to a lactation specialist is warranted.

The tool could also be incorporated into existing documents, such as American College of Obstetrics and Gynecology prenatal forms. Currently, the forms do not mention the breast except as a planned way of feeding. The literature has repeatedly stated that talking with the mother during prenatal visits about the mother's plans for infant feeding successfully increases breastfeeding numbers. By giving health care providers the information they need in utilizing an assessment tool, the grid then provides the information to educate mothers while assessing potential problems.

In summary, the breast assessment tool can be an effective means for the APN to assess the need for prenatal

intervention for mothers with inverted nipples. The tool is in a format that would allow further analysis of the effectiveness of interventions by evaluating the actual numbers of mothers diagnosed. A more specific plan for additional assistance to a mother with inverted nipples could then be developed and refined. The end goal of assisting the mother with inverted nipples can benefit the provider in delivering care to the mother and newborn. The breast assessment tool would be an effective method of treating inverted nipples in pregnant women who are choosing to breastfeed.

APPENDIX A

INVERTED NIPPLE ASSESSMENT AND INTERVENTION

Inverted Nipple Assessment and Intervention

Name: _____ Date of Birth: __/__/__

Expected Due Date: __/__/__ First Baby: Yes / No Nursed Before: Yes / No

SUBJECTIVE

Concerns about breastfeeding: _____

Family difficulties with breastfeeding: Yes / No _____

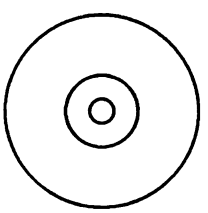
Other problems: _____

_____

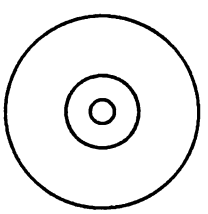
OBJECTIVE

Size: A B C D Symmetrical: Yes / No Nipples in Midline: Yes / No

Consistency of tissue: _____



Left



Right

Grasp Test:

1. Everts with compression
   Full nipple exposure
2. Everts with compression
   Tip of nipple exposed
3. Everts with compression
   Nipple flush with tissue
4. No eversion slit for nipple opening

LEFT	RIGHT

Assessment:

Grasp 1. Normal response

Grasp 2. Potential for problems. *Intervention needed.*

Grasp 3. Abnormal, nongraspable. *Prenatal intervention needed.*

Grasp 4. Abnormal, severely nongraspable. *Prenatal intervention needed.*

PLAN ***See attached table.***

Inverted Nipple Assessment and Intervention Plan

ASSESSMENT OF NIPPLES FROM TOOL

Interventions	*Grasp 1*	*Grasp 2*	*Grasp 3*	*Grasp 4*
Educate in basic breastfeeding positions and techniques				
Discuss potential latching difficulties				
Discuss psychological and spiritual needs				
Reinforce that newborns adjust to mother's nipple anatomy				
No rubber nipples initially				
Refer if latching problems to lactation consultant or experienced provider				
NOTES:				

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