Effectiveness of In-service Education to Enhance the Knowledge of Newborn Pain and Nonpharmacological Management in the Mother-Baby Unit

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Abstract

The need to enhance the effectiveness of in-service education of the nurses in the Mother and Baby Unit (MBU) on neonatal pain assessment and in providing comfort measures is an expected obligation. In-service education of nurses plays an essential role in improving the quality of newborn care, promotes empowerment, competency, professional skills development, best practices, and active participation at the unit level. The purpose of this project is to determine the effectiveness of the education of nurses in the MBU and their ability to assess neonatal pain and offer comfort measures (nonpharmacological). With a better understanding of Watson's comfort theory model, nurses will better recognize the effects of pain on the neonate and provide adequate comfort measures during a heel stick. The project was a quality improvement project. A pre-educational questionnaire was presented to the nurses on the MBU before the presentation of in-service education on newborn pain assessment and the provision of comfort measures during a heel stick. After the power-point presentation, a post-educational questionnaire was given to the nurses on the MBU. The knowledge level on pain assessment and the provision of comfort measures was assessed by analyzing the data, i.e., the comparison of the pre and post educational questionnaire findings using a descriptive method. The results of the project indicated that in-service education made a difference in the improvement in nurses' knowledge in newborn pain assessment and the provision of comfort measures during a heel stick.

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I. Introduction

The American Academy of Pediatrics (2018) recommends mandatory Newborn screening on all newborns; hence newborns in the Mother-Baby Unit (MBU) undergo heel stick procedures within a few hours or days of life. The State of Florida Newborn screen detects 55 congenital disorders; 90% are metabolic disorders, and the remaining 10% are disorders such as cystic fibrosis, sickle cell disease, and congenital hypothyroidism (Florida Health, 2018). The MBU is a unit where postpartum mothers and their babies are taken care of after delivery during their transition home. Procedures such as heel sticks cause pain and can have adverse physiological effects on the newborn (Pillai et al., 2015). To prevent the potential risks of emotional stresses, e.g., crying, increased heart rate, and increased respiration rate in the newborns, evidence-based comfort measures must be implemented. Research concedes the phenomena that patient response to pain and the likely impact of clinical actions on resolving health problems is essential (Melnyk & Fineout-Overholt, 2015). The consequences of unattended pain management can vary from exaggerated responses to pain in later life and may potentially alter the newborn's psychosocial development (Lago et al., 2014). Newborns perceive pain and require the same level of pain assessment and management as their adult counterparts. Providing comfort measures such as skin to skin, swaddling, holding, and breastfeeding during heel sticks will provide nonpharmacological effects to the newborn. Therefore, nurses providing evidence-based comfort measures offer a promising nonpharmacological relief for the infant. There are a variety of opinions among healthcare providers on why pain management is not implemented in the most defenseless or vulnerable patients. Educating nurses in the MBU on assessing and realizing the physiological and developmental consequences of unattended newborn pain, and the provision of

a variety of evidence-based comfort measures to newborns, such as skin to skin, holding, and swaddling of the newborn is essential to improve comfort and quality care to newborns during a heel stick.

Background and Significance

Due to the perception that newborns do not perceive pain, it can be common for nurses to not adequately assess and manage pain related to newborns. Cong, Delaney, and Vazquez (2013) supported the validation that newborns can detect painful processes, respond to painful stimuli, and have a 30% to 50% lower threshold of pain than adults. Prolonged unrelieved pain in newborns can contribute to potential physiological damage and long-term developmental outcomes. The study by Cong, Delaney, and Vazquez (2013), demonstrated that nurses' perception of well-managed pain significantly correlates with education and the provision of appropriate and accurate pain assessment tools. According to Pillai Riddell et al., (2015), there is evidence that different nonpharmacological interventions can be used with neonates to manage pain behaviors associated with acute pain procedures significantly. Boyle, Bradshaw, and Blake (2018) stated that newborn pain assessment is challenging for staff due to a lack of knowledge on the physiological consequences of prolong pain in newborns. Despite these findings, significant barriers still exist in ineffective pain management in newborns.

Needs Assessment

Performing a needs assessment to determine the areas that inhibit Mother and Baby Unit (MBU) nurses from initiating pain assessment and providing nonpharmacological intervention to neonates. This is paramount in the MBU in aiding to improve the physiological and psychological outcomes of the newborn.

Nurses are the primary caregivers of newborns in the MBU, and therefore, understanding the assessment of pain and its nonpharmacological management is vital. According to Cong, Delaney, and Vazquez (2013), studies about healthcare providers' knowledge and attitudes towards newborn pain assessment and management are limited. Effective pain prevention and control have been endorsed as a standard of care in the MBU. However, nonpharmacological pain interventions for procedures are not utilized or are underutilized on the MBU. Nurses are supposed to be advocates for their patients, especially those patients who are vulnerable, such as newborns who cannot verbally communicate. Therefore, healthcare providers must be competent in recognizing newborn pain response in the neonatal population by utilizing evidence-based newborn pain assessment tools and initiating nonpharmacological pain management.

Working in the MBU for about ten years, and observing nurses perform heel sticks without any comfort measures prompted the DNP student to initiate this project. Secondly, the organization promotes family-centered care, where there should be no separation of newborns from their mothers unless the newborn is admitted to the Neonatal Intensive Care Unit. However, the nurses do not feel comfortable enough to perform a heel stick in the room with the mother holding the newborn. The nurse will instead take the newborn to the nursery to perform the heel stick, where the provision of comfort measure is limited.

Problem Statement

Most newborns in the Mother-Baby Unit (MBU) undergo heel stick procedures for mandatory newborn screening, blood glucose, and other laboratory tests, such as complete blood count and basic metabolic profile. Most of the nurses in the MBU who perform the heel sticks do not utilize the newborn pain assessment tool available in the Procedure Manual of the MBU to provide evidence-based comfort measures to the newborns. Some of the nurses on the MBU are

not aware of the existence of the newborn pain assessment tool, and others feel that documentation takes too much of their time; therefore, the newborn pain assessment is another time-wasting task. Educating the MBU nurses via continuing in-service education will help ease this insufficient knowledge on pain assessment and in providing comfort measures to the newborns. Studies indicate that underutilization of the newborn pain assessment and nonpharmacological pain management (comfort measures) is due to a lack of knowledge of the behavioral responses and the physiological consequences of pain in the newborn. According to Norushe, Van Rooyen, and Strumpher (2004) the importance of continuing in-service education programs can be worthwhile and lead to increasing nurses' awareness, knowledge, competence, and potentially improve newborn outcomes.

Project Purpose

The purpose of the DNP Project is to determine the effectiveness of in-service education related to newborn pain assessment and the provision of nonpharmacological interventions (comfort measures) for newborns during a heel stick procedure. Nurses caring for newborns must be knowledgeable and competent about the harmful effects of unmanaged pain during heel stick procedures on newborns and the initiation of the different nonpharmacological interventions available to reduce the impact of procedural pain (Aydin, Sahiner, & Ciftci, 2017). The provision of continuous educational practices is critical in achieving positive and better learning outcomes (Bluestone et al., 2013).

Project Objectives

Nurses in the MBU will enhance their awareness on the potential impact of untreated pain in newborns; the use of evidence-based newborn pain assessment tool; and the provision of

comfort measures during a heel stick on newborns by the end of January 2020, after the DNP student presents an in-service education on newborn pain assessment and the provision of comfort measures during a heel stick. The enhancement of the awareness will be reflected in about 80% or higher on the responses of the post educational questionnaire as compared to the pre-educational questionnaire.

Clinical Question

Various research articles, dissertations, and texts were reviewed, as well as the direct observation of nurses in the Mother and Baby Unit (MBU) during a heel stick procedure on newborns prompted the awareness of the clinical research question: "Do nurses in the MBU demonstrate increased awareness of newborn pain assessment and the use of comfort measures (nonpharmacological intervention) during a heel stick procedure during three weeks after receiving in-service education on newborn pain assessment than was provided in three weeks before receiving education on the newborn pain assessment education?"

Congruence with the Organizational Strategic Plan

Every organization has a philosophy, vision, and mission statement. Included in the philosophy is a strategic plan on education for nurses. The mission, vision, and values of the organization outline the provision of exceptional care, innovative health care, which is accompanied by clinical excellence, thereby, providing quality healthcare and wellbeing of the community and caregivers. To support the healthcare organization's mission in providing and maintaining high-quality care to the community, continuing education through in-service education is a priority. The in-service education of the DNP project will increase the knowledge

and skills of nurses in newborn pain assessment and nonpharmacological pain management, thereby improving patient outcome and satisfaction.

Education plays a significant role in attaining the goals of the organization and providing continuing in-service education to nurses yields greater skill competence. Efficiency among healthcare providers is an excellent investment for the nurses, patients, and the organization. Continuing education increases staff retention rate, promotes staff empowerment, continuing innovations, increase in productivity, and improvement in the quality of services provided to the community (Bluestone et al., 2013). The organization acknowledges that in-service education of nurses plays a vital role in the provision of quality patient care. Therefore, the education of nurses is a needed requirement. As a result, benefits for continuing education opportunities for nurses in the organization requires all employees to attend mandatory education. The participation of in-service education is a requirement for all departments based on their job description, and the organization allocates funds for educational purposes. With the approval of managers, employees are responsible for scheduling their mandatory education, and the managers are responsible for staffing coverage and budgeting for in-service expenses. The policy of the organization on continuing education states that "employees who do not fulfill the obligations of attending mandatory education courses will have disciplinary actions instituted to them". The rapid changes in healthcare focus on patient-centered care models in most healthcare facilities. These patient-centered care models have changed from newborn nursery to Mother-Baby Unit (MBU), thereby, requiring nurses with an adult nursing background to now provide care to newborns. Nurses with adult nursing care background find it a challenge to care for newborns, which enhances the problem of the underutilization of new pain assessment and the application of a nonpharmacological tool for the evaluation and management in newborns. There

is a need for continuing in-service education training program on newborn pain assessment and management for nurses. In maintaining high-quality nursing care and a family-centered model, MBU nurses must be abreast of evidence-based practice on newborn pain assessment and nonpharmacological management (comfort measures) to safely and effectively care for the newborns. The integration of evidence-based practice is perceived as an essential part of job satisfaction by clients and the competing arena of other healthcare organizations. Despite the organization's goal to improve the quality of service, some barriers hinder the implementation of in-service education. Some of the obstacles are, time constraints, financial issues, staff motivation, poor organizational support, shortage of nurses, managers' commitment towards in-service education, and the lack of nurse's perception and knowledge on newborn pain assessment and the implementation of nonpharmacological pain management (comfort measures) (Shahhosseini, & Hamzehgardeshi, 2014).

Search Strategy

The various search engines that were used for evidence for this project include PubMed, NIH, Google Scholar, and the Cochrane database. A total of 30 articles were reviewed, with the year of publication ranging from 2011 to 2017. Three of the articles were published in 2004, 2010, and 2011; these articles were retained due to their significance to the clinical question. Twenty of the articles met the inclusion criteria. The inclusion criteria are registered nurses working on the MBU, the effectiveness of in-service education, barriers of in-service education, and nonpharmacological pain management of newborns. The keywords used during the literature review are in-service training, continuing education, nonpharmacological intervention (skin to skin, (kangaroo care), breastfeeding, and infant pain.

Synthesis of Evidence

In-Service Education. In-service education for nurses plays a vital role in the quality of care rendered to patients. According to Chaghari, Ebadi, Ameryoun, and Safari (2017), the need to enhance the effectiveness of in-service education is an essential requirement.

Norushe et al. (2004) conducted a study on in-service education and training as experienced by registered nurses. The study was a qualitative, exploratory, descriptive, contextual, and phenomenological. The participants were nine registered nurses working in a community health center; their findings concluded that nurses have the practical and theoretical knowledge to function well at the workplace, but in-service education improves the competencies of the nurses. Another study conducted by Bluestone et al., (2013) utilized multiple databases. Bluestone et al., (2013) concurred that continuous education and the use of proper techniques are critical in achieving adequate learning outcomes. The number of participants in the study done by Norushe et al., (2004) was limited because the study was in a small community clinic where less heel stick procedures are performed. The study discovered the multifaceted training needs of registered nurses. However, Chaghari et al., (2017) stated that empowerment training with a good outcome is based on willingness, attitudinal, and active participation of the nurses. The current trend in nursing, i.e., the emphasis placed on quality improvement, and healthcare organizations being a business entity with numerous competitors, and guidelines on pain management, must be well developed and implemented effectively. Maintaining positiveness and emotional stability among nurses at the workplace will promote better attitudes towards in-service education, resulting in efficient, quality, and effective patient care.

Nonpharmacological Intervention. Shah et al., (2019), Kostandy et al., (2016), Johnston et al., (2014), Warnok et al. ,(2010), Saeidi et al., (2011), and Pillai Riddell et al., (2015) examined the effectiveness of pain management with nonpharmacological intervention during a heel stick on neonates. Pillai Riddell et al., (2015) used randomized control trials (RCT) to study 4905 infants undergoing heel stick procedures and nonpharmacological interventions, namely, suckling, swaddling, and holding, were utilized. The studies by Pillai Riddell et al., (2015) concluded that there is a significant gap in the existing literature on the nonpharmacological management of pain in the neonate. Saeidi et al., (2010) used RCT on 60 newborns, where kangaroo care (KC) was applied. Saeidi et al., (2010) reported that KC helped to decrease pain severity in neonates. The study by Shah et al., (2019) was based on breastfeeding while a heel stick was performed on infants. Shah et al., (2019) conducted a literature search of 20 articles from various studies. Shah et al., (2019) concluded that newborns had significant pain reduction during a heel stick while the newborns are breastfed. All the studies recommended that nonpharmacological interventions, i.e., KC, breastfeeding, swaddling, holding, and nonnutritive sucking, minimize pain during heel stick procedures on newborns. Based on the findings by Shah et al., (2019), Kostandy et al., (2016), Johnston et al., (2014), Warnok et al., (2010), Saeidi et al., (2010), Pillai Riddell et al., (2015), and Warnok et al., (2010) nurses must be educated regarding nonpharmacological pain management (comfort measures) on newborns.

Infant Pain. Alotabi, Higgins, Day, and Chan (2018) conducted an extensive literature search on the improvement of infant pain management and increasing nurse's knowledge. The outcome of the search indicated that there is a need for collaboration between the interprofessional team in the management of newborn pain.

In contrast, Boyle, Bradshaw, and Blake (2017) supported the notion that specific signs of pain in infants are not well defined and that few validated clinical tools exist to assess pain in newborns. There is a need for newborn pain to be evaluated and managed just as adult pain is assessed and managed. Education of newborn pain assessment should, therefore, be mandatory in all healthcare organizations where newborn care is rendered.

Conceptual Framework

To understand the phenomenon of the project in a broader perspective, and to provide evidence of academic standard, one must look at various frameworks that apply to the project.

Watson's Comfort Theory. Jean Watson's (1985) theory states the importance of the humanistic character of nursing as it links scientific knowledge and nursing practice. According to Watson, caring is the center of the practice of nursing and believes that there should be a holistic approach in the provision of health care. Watson's theory emphasizes on ten Caritas processes that guide nurses in refining caring moments and caring occasions in their profession. The term carative used by Watson helps to differentiate nursing from medicine (Wayne, 2016). The carative factors assist the nurse in improving the caring process and in maintaining optimum health. The Watson Caring model presents an opportunity for nurses to be in a relationship for choosing to be engaged now (Sitzman, 2018). This moment (now), as applied to this project, is when nurses engage in assessing and alleviating pain in a nonpharmacological approach (comfort measures) for their vulnerable patients (newborns). An empathetic nurse is sensitive to the feelings of others, which is vital in the development of the nurse-patient relationship.

Watson's nursing model implies that caring for patients promotes growth, maintains or attains health and that the caring environment accepts a person for who he or she is, as well as to

what they become (Wayne, 2016). Watson (1985) stated that the science of caring is complementary to the science of curing, and the practice of caring is central to nursing. Watson's carative factors and processes (Appendix A).

II. Methodology

Project Design

The DNP project is a quality improvement project to increase the nurse's awareness and knowledge to identify newborn pain and to implement nonpharmacological management of pain (comfort measures). There is evidence that various nonpharmacological interventions have a significant impact on newborn pain management and can be used with a newborn to significantly manage pain behaviors associated with a heel stick (Pillai Riddell et al., 2015). The implementation of a pre and post-educational questionnaire, which includes a 20-minute PowerPoint presentation of newborn pain assessment and nonpharmacological interventions is used for the project. The results assisted in determining the effectiveness of in-service education to nurses on the MBU. Eslamian, Moeini, and Soleimani (2015) emphasized that there is a need to review the educational method in in-service education. Thus, in achieving this objective, there should be a needs assessment, planning, and evaluation of the technique. The knowledge and attitudes regarding newborn pain management are measured through the questionnaire before the education, and then a post-questionnaire after the in-service education. According to the study by Germossa, Sjetne, and Helleso (2018), the level of knowledge by the nurses on pain management improved significantly after an in-service education.

Setting

The setting for this project is a ten-bed Mother Baby Unit (MBU) in a suburban hospital, with average births of about 800 babies per year. The gestational age ranges from 35 to 40 weeks. The organization supports in-service education to empower nurses.

Population

The MBU employs 15 full-time registered nurses; the population consists of two Master of Science in Nursing, six Bachelor of Science in Nursing, and seven registered nurses with Associates degree. The participation in this project was voluntary through informed consent. This setting was selected because screenings on all newborns are required by the State of Florida (Florida health, 2018). The screening is, therefore, performed on all newborn babies in the unit, and occasional laboratory tests such as blood glucose, complete blood count, and complete metabolic profile are performed as indicated by the health status of the newborn.

Data Collection Instrument

Assessment and evaluation are the processes used to evaluate the skills of nurses. The instrument or tool chosen for this project is The Likert Scale questionnaire invented by Renis Likert in 1961 (Brown, 2011). The Likert Pre and Post knowledge questionnaire, was formulated by Cong and Vazquez (2013), was used for the project. Permission to use the questionnaire was obtained from Dr. Cong. (Appendix B). The Likert scale consists of ten items starts with the phrase "strongly agree and ends with strongly disagree." One indicates, "strongly disagree, two agree, three neutral, four disagree, and five indicates strongly agree" (Cong & Vazquez, 2013).

Project plan

A 10 question Likert scale questionnaire was given to the 15 Registered nurses on the Mother-Baby Unit (MBU), (Appendix C).The outcome of the results of the responses of the pre-questionnaire was evaluated, and a PowerPoint presentation on Newborn pain assessment and nonpharmacological management (comfort measure) of a newborn was presented. Three weeks after the power-point presentation, the same 10 Likert scale questionnaire was given to the MBU

nurses, and the results of the pre and post educational questionnaire was analyzed. The outcome of the power-point presentation on Newborn pain assessment and nonpharmacological is to enhance the knowledge, competency, and skills on new pain assessment and the implementation of nonpharmacological management to MBU nurses.

Timeline. With the approval and collaboration with the Clinical educational director and the director of the MBU (Appendix C) and after the approval of the Institutional Review Board (IRB), the data collection was ten questions on a Likert scale. Nurses from the MBU were invited to participate (informed consent) (Appendix D). The participants were given the Pre-educational questionnaire at a staff meeting and returned the completed Pre- educational questionnaire at the end of the meeting. Two weeks after the Pre- educational questionnaire, a 20-minute power-point presentation on Newborn pain assessment and nonpharmacological management was presented to the participants. The post educational questionnaire was given to the nurses three weeks after the power-point presentation. The responses were analyzed to evaluate if there is an enhancement in knowledge. The time frame for the project was about six to eight weeks.

Data Analysis

The DNP student consulted a statistician to evaluate the Pre and Post educational questionnaire. A power-point presentation on Newborn pain assessment and nonpharmacological management (comfort measure) of a newborn was presented to the MBU. The pre- educational questionnaire was used to assess the knowledge of the nurses. The responses of the post educational questionnaire were analyzed and compared to the responses of the Pre-education questionnaire in assessing if the objective of the project was achieved. There was a significant

difference in the responses of the post-educational questionnaire as compared to the pre-educational questionnaire.

Institutional Review Board (IRB) /Ethical Issues

The DNP Project was designed for the nurses on the Mother-Baby Unit (MBU) to determine their knowledge on newborn pain assessment and the provision of comfort measures during a heel stick procedure. A consent form provided information about the purpose and benefit of the project. The nurses consented for their participation in the project voluntarily. The responses to the questions aided in the development of the educational PowerPoint on newborn pain assessment and the nonpharmacological management (comfort measures) during a heel stick. The outcome of the project helped in improving the skills, competency, and knowledge of the MBU nurses. The participants were made aware of how the information collected was to be utilized. The in-service education promoted enhanced evidence-based knowledge on the pain assessment and the provision of comfort measures to newborns during heel stick procedures in the MBU (Bluestone et al., 2013). Ethical considerations are critical in a quality improvement project since ethical behavior promotes collaboration, trust, accountability, and mutual respect among all parties of the project (Center for Innovation in Research & Teaching, n.d.). The IRB of Bradley University approved the project.

III. Organizational Assessment and Cost-Effectiveness Analysis

Organizational Assessment

Quality patient care is based on an excellent continuing education program for nurses. Therefore, in-service education for nurses is an essential element to assist professional nurses to possess the most recent up to date evidence-based knowledge and skills to meet the demands of the community the organization serves.

Readiness for Change. The organization is keen on the development and evaluation of evidence-based health care delivery systems to meet the current and future needs of the patient population. Healthcare organizations need to change the service delivery model to achieve high Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores. HCAHPS encourages organizational changes by creating an intentional focus to improve healthcare; by promoting a focus on improving healthcare outcomes; and enhancing the hospital experience of care (CMS. Gov., 2017). The DNP student identified the need for education of newborn pain assessment and the provision of comfort measures. The need was discussed with the MBU manager and the unit educational specialist. The educational specialist coordinates with the manager to assess the overall educational needs of the nurses on the unit. The director then approves the in-service education to be rendered to the MBU nurses. The director, unit manager, and educational specialist supported the idea of the need for newborn pain assessment and the nonpharmacological (comfort measures) intervention during heel sticks. Approval of project by Director of MBU (Appendix F). Leaders of the healthcare organization can expand the prospect of successfully implementing change efforts by assessing organizational readiness to change.

Barriers. If high-quality care is to be sustained, education is needed to offer nurses the essential knowledge and skills to adapt to the changing requirements of health care. However, there were several barriers during the initiation of the quality improvement project. Some of these barriers included the nurse manager's concerns about finance and time factors, MBU nurses' resistance to change due to time constraints, lack of motivation, and attitudinal issues (Lam, O'Donnell, & Robertson, 2015). However, these barriers were overcome by collaborating with stakeholders with a focus on the improvement of quality patient care which is cost-effective. The involvement of nurses to ascertain their educational needs helped improve the overall perception and the lack of motivation for in-service education. The awareness of the fact that nurses' workload could interfere with in-service attendance was overcome by the co-operation from the nurses. Therefore, the in-service education was organized in such a way that the nurses were motivated to attend.

Interprofessional collaboration. The application of effective communication and collaborative skills in the development and implementation of evidence-based practice models is beneficial to the organization. Employing the skills of other multidisciplinary members in assisting in the planning, designing, implementation, and evaluation of therapeutic interventions based on nursing science and the other sciences is essential. The commissioning of flexible, collaborative, and in-service educational programs can assist in ensuring that change is sustainable and can produce healthcare practitioners who have the required knowledge and skills to practice in their field of nursing (Livesley, Waters, & Tarbuck, 2009).

Cost Factors. In collaborating with the director and manager of the MBU, the nurses were paid per their hourly wage for the time spent at the in-service education presentation. The organization supported the project, therefore, the cost for the payment of the MBU attendance

was covered by the director of the department from the educational budget. $238.00 was used to pay all the nurses for the 30minutes spend at the in-service education. There was no cost to the student.

IV. Results

Analysis of Implementation

The DNP Project is a quality improvement project, facilitated in improving MBU nurses' awareness and knowledge in identifying newborn pain and providing non-pharmacological intervention (comfort measures) to newborns during a heel stick procedure. Thus, improving the newborn's pain outcome. The purpose and benefits of the project were shared with the participants; after that, the consent forms were given to the participants.

Provision for the protection of privacy and confidentiality was maintained, i.e., the pre and post educational questionnaire bore no names nor codes of the participants. The data collection tool used was A Likert scale with 10 questions. The participants were given the pre-educational questionnaire at a staff meeting. The participants were asked to drop the completed questionnaire in a questionnaire box placed at the nurse's breakroom. Participants were informed that they could withdraw from the project at any time during the completion of the pre educational questionnaire or post educational questionnaire. There was no incomplete disclosure nor deception. Two weeks after the Pre- educational questionnaire, a 20-minute PowerPoint presentation on Newborn pain assessment and nonpharmacological management (comfort measures) was presented to the participants. The post educational questionnaire was given to the nurses three weeks after the PowerPoint presentation. The post-educational questionnaires were dropped in the questionnaire box. The responses were analyzed to evaluate if there is an enhancement in knowledge on newborn pain assessment and the provision of comfort measures during a heel stick. The time frame for the project was eight weeks. The student and the statistician had access to the data, namely, the pre and post educational questionnaires. The questionnaires will be destroyed in the hospital secure shredder after the completion of the

project. The result of the analysis was shared with the course chairperson Dr. Peggy Flannigan at the Department of Nursing, Bradley University, the MBU manager, the Departmental educational specialist, and all the participants on the MBU.

Analysis of Outcome Data

The purpose of the DNP Project was to determine the effectiveness of in-service education related to newborn pain assessment and the provision of nonpharmacological interventions (comfort measures) for newborns during a heel stick procedure. Inservice education serves to update nurses' professional knowledge and aids in improving best practices. Fifteen nurses on the MBU participated in the project, and their responses to the pre-educational questionnaire showed that three of the nurses knew that newborns are at a higher risk of neurodevelopmental impairment due to repeated unmanaged pain; three acknowledged that they feel confident in using the newborn pain assessment tool in the department; three said they always recognize when a newborn is experiencing pain; three said they feel confident in pain management using comfort measures during a heel stick and four responded that they feel the newborn pain is managed well in the MBU. The participants provided no comments on the pre-educational questionnaire. Three weeks after the in-service education, some of the comments by the nurses on the post educational questionnaire are:

Newborns are at a higher risk of neurodevelopmental impairment due to repeated unmanaged pain

"I know that newborns perceive pain, but I did not realize that pain can cause long term neurodevelopmental impairment."

I can always recognize when a newborn is experiencing pain

"Recognizing that a newborn is in pain makes me feel that I should always use comfort measures during a heel stick procedure."

I feel confident with my skill in pain management using a nonpharmacological (comfort measures) approach

" I feel confident with my skill in providing comfort measures to a newborn during a heel stick procedure." "I feel empowered in assessing newborn pain and involving the parents to calm the newborn by holding the newborn during a heel stick."

Newborns can experience pain during heel sticks

" The in-service education was an eye-opener, realizing that newborns can also perceive pain."

I feel that a newborn pain in my department is well managed during a heel stick

"Before the education, I was not bothered much about the management of newborn pain, but now I realize the importance of assessing their pain and managing it even without prescribed medication."

I document on the newborn pain assessment tool after a heel stick

"I knew there was a column on the flow sheet to document the newborn pain assessment, but honestly speaking, I never paid attention to it, I thought it was time-consuming, the managers always giving us more to do, but after the in-service, I will be documenting because I have realize its importance."

The in-service education enhanced the MBU nurses' awareness of the potential impact of untreated pain in newborns, the use of evidence-based newborn pain assessment tool, and the

provision of comfort measures during a heel stick on newborns. Some changes in practice have been noted; namely, the MBU nurses performing heel sticks on newborns in the mother's room while the mother holds the baby or breastfeeding. The nurses are utilizing the unit's newborn pain assessment tool in assessing and documenting newborn pain.

V. Discussion

Summary of Finding and Outcomes

The implementation of a quality improvement project is challenging, and thorough knowledge about the factors that may facilitate or hinder in the implementation is essential for success. The education on newborn pain assessment and the provision of comfort measures during a heel stick enhanced the knowledge and awareness of the nurses in the MBU on the potential impact of untreated pain in newborns. Before the in-service education, most participants had no comments on the pre-education questionnaires with few participants agreeing with some of the questions. However, participants' responses were different after the in-service education. The use of evidence-based newborn pain assessment tool and the presentation of in-service education on newborn pain assessment and the provision of comfort measures during a heel a stick reflected a higher percentage on the responses of the post educational questionnaire as compared to the pre-educational questionnaire. More than 80% of participants had positive responses post educational questionnaire, i.e., agreed or strongly agreed with the questionnaires. The average score of the pretest questionnaire responses was 3.4 and the average score of the post questionnaire was 4.2. Therefore, the difference in the average scores indicates that the in-service education made a significant improvement in nurses' knowledge in newborn pain assessment and the provision of nonpharmacological interventions (comfort measures). Table of participants' responses to questionnaires (Appendix F).

The role of the director, manager, and the clinical educational specialist are vital to the success of a quality improvement project. Identifying the need for the project and having a director who was enthusiastic about the project aided in the implementation process. Having the MBU nurses to understand the purpose of the project promoted motivation for their participation.

Most of the nurses expressed how the in-service education helped them achieve mastery of their professional skills in regard to newborn pain assessment and the provision of nonpharmacological pain management.

Limitations

The setting was appropriate and supported relevant and realistic practice. One limitation was the inability to control all confounding variables, such as lack of motivation during the power point presentation in some of the participants due to high workload and several new responsibilities. Another limitation is the time constraint of participants attending the in-service education. The organization could consider providing more learning time to nurses to enable them attend more in-service education sessions.

Implications and Impact to Practice

In-service education is the most significant driver for service quality, and it is, therefore, one of the essential process a company can have (Andersen and Horn, 2012). In-service education promotes knowledge acquisition, which presents a substantial profit and economic success in an organization. In-service education promotes empowerment and competency among employees for better understanding of the nurse's tasks, thus helping the organization to achieve its goals. Therefore, the organization must support and sustain skills and competence by healthcare providers through continuous education. Nurses are to be encouraged to improve their functional skills. However, the education of nurses should be based on strong evidence-based guidelines in alleviating pain in newborns during painful procedures. Educating nurses will assist in meeting the needs of their patients and raising the reputation of the organization in the community. Providing in-service education on the provision of comfort measures to newborns

during a heel stick assists nurses in modifying their behavior in practice, which contributes to the attainment of the organization's goals and objectives. Therefore, education is an essential factor in the development and maintenance of competences in delivering quality services by nurses. Repetitive interventions can result in better learning outcomes. Incorporating this project in the orientation of new employees will be beneficial to the patients, nurses and the organization as a whole. There is evidence that educating nurses in quality improvement has the potential to impact positively on attitudes, knowledge, and behaviors. There is an ongoing discussion by management of the MBU in incorporating the in-service education on newborn pain assessment and the provision of comfort measures during a heel stick in the orientation program of new hirers and the unit's biannual continuing education program.

Future Research

Future research should include registered nurses in the Neonatal Intensive Care Unit and Labor and Delivery department, as well as patient care technicians, as they perform heel sticks on newborns. One of the main features of in-service education is applicability. All caregivers on the MBU department must be updated about theoretical and practical knowledge in the policies of minimizing pain in the newborns, thus improving best practices whilst fulfilling their responsibilities.

VI. Conclusion

Value of the Project

In-service education is the key to improving patient outcomes; nurses, therefore, have to be empowered through in-service education that is evidence-based. Adequate knowledge is vital in the assessment of newborn pain and providing comfort measures and, therefore, should be emphasized. Understanding the neurosensory needs of the neonate assists nurses in the MBU to provide the utmost care to the newborns. The quality improvement project yielded a positive outcome, i.e., the nurses in the MBU have started utilizing the newborn pain assessment tool to assess newborn pain and provide comfort measures during a heel stick. Managers should try to conduct more in-service education and evaluate the effectiveness based on useful tools. The results of the project have a direct effect on improving patient care and have increased the knowledge of registered nurses. Management has verbalized the need to sustain or maintain continuity of the practice by conducting more continuing education for existing clinical staff and including the subject in the new employee's orientation program regarding newborn pain assessment and provision of comfort measures during a heel stick.

Doctor of Nursing Practice (DNP) Essentials

To articulate the competencies for all nurses practicing as DNP practitioners, the DNP essentials have to be mastered by all DNP students (American Association of Colleges of Nursing, 2006). During the process of the DNP Project, the DNP student was able to achieve and incorporate all the competencies of the DNP Essentials effectively.

Essential 1: Scientific Underpinnings for Practice. The review of literature, integration of research and understanding the integration of a conceptual framework aided in identifying advancements in patient care that promoted evidence-based care. The application of nursing theories provides the principles of nursing practice and generates further nursing knowledge.

Essential II: Organizational and Systems Leadership for Quality Improvement. Initiating a needs assessment to improve patient care and developing a budget by collaborating with the leadership of the organization helped in understanding some of the roles of the director and clinical education specialist of the unit.

Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice. The application of Evidence-based practice (EBP) yields better patient outcome and this is an essential component of safe, quality patient care. Incorporating EBP into healthcare delivery promotes optimal professional nursing practice. The use of information technology broadened my knowledge on the methodologies on quality improvement in healthcare.

Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care. Patient care has become a primary focus in the development of new concepts and knowledge in healthcare technology. Technological development in clinical applications is the current trend in healthcare and prompted me to look further into using technology to advance my practice in patient care delivery systems.

Essential V: Health Care Policy for Advocacy in Health Care. Nurses engage in advocacy every day on behalf of their patients. The DNP project has really helped me to strive

more to protect the health, safety, and rights of my patients. Furthermore, I have been able to advocate for the nursing profession and professional standard of practice at my workplace.

Essential VI: Inter-Professional Collaboration for Improving Patient and Population Health Outcomes. The DNP project assisted in improving my communication and collaborative skills with the multi-professional teams within the organization.

Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health. Using a questionnaire to assess knowledge in the improvement of newborn care and evaluating knowledge enhancement via in-service education aided in improving patient care outcomes.

Essential VIII: Advanced Nursing Practice. All the components in Essential VIII are essential for an advanced nurse practitioner and applicable for the DNP project. Working with my mentors made me aware of the importance of having a good and educated mentor. My mentors have been very resourceful, and I hope that someday I will be able to mentor other students.

Plan of Dissemination

Identifying the need for in-service education to nurses by the organization helps to develop a plan of action, and provides resources needed for the purpose. Continuous education through PowerPoint presentations will aid in achieving and sustaining this quality improvement project.

Attainment of Personal and Professional Goal

Changing an already existing behavior is very difficult; however, with effective communication and the application of effective strategies, a behavioral change could be achieved. Communication creates meaning for any information given. Improving my communication skills during this DNP Project has allowed me to be able to collaborate with other healthcare teams. Continuing engagement with the stakeholders in the MBU improved my leadership skills, i.e., having meetings to discuss the purpose, objectives, planning, implementation, and results of the project with the stakeholders. Conflict resolution is another skill I mastered during this process by overcoming barriers and applying effective strategies. Overall, the DNP Project has enabled me to gain the skills needed to assess current processes and identify areas for improvement, especially those of patient safety and quality patient care. Such knowledge will be beneficial in future practice and allow me to participate in committees in institutional improvement processes. All these acquired skills will assist me in being a better advocate to the patients and nurses. Being knowledgeable in the DNP Essentials will assist me to effectively mentor other nurses.

References

Alotabi, K., Higgins, I., Day, J. & Chan, S. (2018). Pediatric pain management: Knowledge, attitudes, barriers, and facilitators among nurses - An integrative review. *Int Nurs Rev. 65*(4), 524-533. doi: 10.1111/inr.12465. Epub 2018 Jun 29.

American Academy of Pediatrics. (2018). *Program to Enhance the Health & Development of Infants and Children (PEHDIC*). Retrieved from https://www.aap.org/en-us/advocacy-and policy/app-health-initiatives/PEHDIC/Pages/Newborn-Screening.aspx

American Association of Colleges of Nursing (2006). *The Essentials of Doctoral Education for Advanced Nursing Practice*. Washington, D.C. Retrieved from http://www.aacn.nche.edu/dnp/Essentials.pdf

Andersen, M.K. & Horn, G. (2012). Effective training of front-line service employees. *Servicefutures*. Retrieved from https://www.servicefutures.com/the-key-processes-to-make-service-employee-training-effective

Aydin, D., Sahiner, N.C., & Ciftci, E.K. (2017). Nonpharmacological strategies used to reduce procedural pain in infants by nurses at family health centers. *J Pak Med Assoc*. *67*(6), 889-894.Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/28585588

Boyle, E.M., Bradshaw, J. & Blake, K.I. (2018). Persistent pain in neonates: Challenges in assessment without the aid of a clinical tool. *Acta Paediatr*. *107*(1), 63-67. doi: 10.1111/apa.14081

Bluestone, J., Johnson, P., Fullerton, J., Car, C., Alderman, J,& BonTempo, J. (2013). Effective in-service training design and delivery: Evidence from an integrative literature review. *Hum Resour Health*. 1;11:51. doi: 10.1186/1478-4491-11-51.

Brown, J.D. (2011). Likert items and scales of measurement? SHIKEN: *JALT Testing & Evaluation SIG Newsletter*. *15*(1), 10-14. Retrieved from http://hosted.jalt.org/test/bro_34.htm

Center for Innovation in Research & Teaching. (n.d.). *Ethical consideration*. Retrieved from https://cirt.gcu.edu/research/developmentresources/tutorials/ethics

Chaghari, M., Ebadi, A., Ameryoun, A., & Safari, M. (2016). An attempt for empowering education: A qualitative study of in-service training of nursing personnel. *Journal of advances in medical education & professionalism. 21*(5), 498-503. Retrieved from http://ijnmr.mui.ac.ir/index.php/ijnmr/article/view/1360

CMS.gov.(2017). HCAHPS: *Patients' Perceptions of Care Survey*. Retrieved from https://www.cms.gov/Medicare/Quality-Initiatives-patient-assessment-instruments/hospitalqualityinits/hospitalhcahps.html

Cong, X., Delaney, C., & Vazquez, V. (2013). Neonatal nurses' perceptions of pain assessment and management in NICUs: A national survey. *Adv Neonatal Care. 13*(5), 353-60. doi: 10.1097/ANC.0b013e31829d62e8

Eslamian, J., Moeini, M., & Soleimani, M. (2015). Challenges in nursing continuing education: A qualitative study. *Iranian journal of nursing and midwifery research*. *20*(3), 378-86. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4462065/

Florida Health. (2018). *Newborn Screening*. Retrieved from http://www.floridahealth.gov/programs-and-services/childrens-health/newborn-screening/index.html

Germossa, G. N., Sjetne, I. S., & Helleso, R. (2018). The impact of an in-service educational program on nurses' knowledge and attitudes regarding pain management in an Ethiopian university hospital. *Frontiers in public health, 6* (229). doi:10.3389/fpubh.2018.00229

Johnston, C., Campbell-Yao, M., Fernandes, A., Inglis, D., Streiner, D., & Zee, R. (2014). Skin to skin care for procedural pain in neonates. *National Institutes of health*. doi:10.1002/14651858.CD008435.pub2

Kostandy, R.R., & Ludington- Hoe, S. M. (2016). Kangaroo care (skin-to-skin) for clustered pain procedures: A case study. *World Journal of Neuroscience, 6* (1). doi: 10.4236/wjns.2016.61006

Lago, P., Garetti, E., Pirelli, A., Merazzi, D., Bellieni, C. V., Levet, P. S., Pieragostini, L., & Ancora, G. (2014). Nonpharmacological intervention for neonatal pain control. *Italian Journal of Pediatrics*, *40* (2), doi:10.1186/1824-7288-40-S2-A52

Lam, M., O'Donnell, M., & Robertson, D. (2015). Achieving employee commitment for continuous improvement initiatives. *International Journal of Operations & Production Management,* (35) 2, 201-215. doi.org/10.1108/IJOPM-03-2013-0134

Livesley, J. Waters, K. & Tarbuck, P. (2009). The management of advanced practitioner preparation: A work-based challenge. *J Nurs Manag*. *17*(5):584-93. doi: 10.1111/j.1365-2834.2009.00967.x.

Melnyk, B. M. & Fineout-Overholt, E. (2015). *Evidence-based practice in nursing and healthcare. A guide to best practice*. 3rd ed. Philadelphia: Wolters Kluwer.

Norushe, T. F., Van Rooyen, D., & Strumpher, J. (2004). In-service education and training as experienced by registered nurses. *Curationis*. *27*(4), 63-72

Pillai Riddell, R.R., Racine, N.M., Gennis, H.G., Turcotte, K., Uman, L.S., Horton, . . . Lisi, D.M. (2015). Non- pharmacological management of infants and young child procedural pain. *PubMed*. doi:10.1002/14651858.CD00675.pub3

Saeidi, R., Asnaashari, Z., Amirnejad, M., Esmaeili, H., & Robatsangi, M. G. (2011). Use of "kangaroo care" to alleviate the intensity of vaccination pain in newborns. *Iranian Journal of Pediatrics. 21*(1), 99-102.

Shah, P.S., Aliwalas, L., & Shah V. (2012).Breastfeeding or breast milk for procedural pain in neonates. *Cochrane Database Syst Rev*.*19*(3). Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/16856069

Shahhosseini, Z., & Hamzehgardeshi, Z. (2014). The facilitators and barriers to nurses' participation in continuing education programs: a mixed-method explanatory sequential study. *Global journal of health science*. *7*(3), 184-93. doi:10.5539/gjhs.v7n3p184

Sitzman, K. (2018). Caring science, mindful practice: Implementing Watson's human caring theory. Springer Publishing Company.

Warnock, F.F., Castral, T.C., Brant, R., Sekilian, M., Leite, A. M., de la Presa Owens, S., Carmen GS Scochi, C.G.S. (2010). Brief report: Maternal kangaroo care for neonatal

pain relief: A systematic narrative review. *Journal of Pediatric Psychology*, *35* (9), 975–984. doi.org/10.1093/jpepsy/jsp123

Watson, J. (1985). *The philosophy and science of caring*. Retrieved from http://www.nursing-theory.org/theories-and-models/watson-philosophy-and-science-of-caring.php

Wayne, G. (2016). Jean Watson's theory of human caring. *Nursing labs*. Retrieved from https://nurseslabs.com/jean-watsons-philosophy-theory-transpersonal-caring/

Appendices

Appendix A

Table of Watson's Carative factors & Carative Processes

Carative Factors	Caritas Process
1. "The formation of a humanistic-altruistic system of values."	"Practice of loving-kindness and equanimity within the context of caring consciousness."
2. "The cultivation of faith-hope."	"Being authentically present and enabling and sustaining the deep belief system and subjective life-world of self and one being cared for."
3. "The cultivation of sensitivity to one's self and others."	"Cultivation of one's spiritual practices and transpersonal self-going beyond the ego-self."
4. "Development of a helping- trust and caring human relationship."	"Developing and sustaining a helping-trusting authentic caring relationship."
5. "The promotion and acceptance of the expression of positive and negative feelings."	"Being present to, supportive of, the expression of positive and negative feelings as a connection with deeper spirit and self and the one being cared for."
6. "The systemic use of the creative problem-solving caring process ."	"Creative use of self and all ways of knowing as part of the caring process; to engage in the artistry of caring-healing practices."

7. "The promotion of transpersonal teaching-learning."	"Engaging in genuine teaching-learning experience that attends to the unity of being and meaning, attempting to stay within others' frame of reference ."
8. "The provision of the supportive, protective, and (or) corrective mental, physical, societal, and spiritual environment."	"Creating a healing environment at all levels (physical as well as a nonphysical, subtle environment of energy and consciousness, whereby wholeness, beauty, comfort, dignity, and peace are potentiated)"
9. "The assistance with the gratification of human needs."	"Assisting with the basic needs, with an intentional caring consciousness, administering 'human care essentials,' which potentiate alignment of mind, body, spirit, wholeness, and unity of being in all aspects of care.'
10. "The allowance for existential-phenomenological spiritual forces."	“Opening to spiritual- mysterious and existential dimensions of one’s own life-death; soul care for self and the one-being-cared for”

(Wayne, 2016).

Appendix B

Permission to use Questionniare

Re: Permission to use questionnaire Inbox x

Cong, Xiaomei Sep 2, 2019, 9:46 AM (9 days ago)

to me

Hi Agatha,
Yes, please feel free to use my questionnaire with my permission. please let me know if you need further help.
Xiaomei

On Sep 2, 2019 9:33 AM, Agatha Adjei <aadjei@mail.bradley.edu> wrote:

Hello Dr. Cong,
Please am following up on the request to permit me to use your questionnaire in my DNP project. Your response will highly be appreciated.
Regards,
Agatha Adjei
Bradley University

On Mon, Aug 19, 2019 at 11:07 AM Agatha Adjei <aadjei@mail.bradley.edu> wrote:

Hello Dr. Cong,

My name is Agatha Adjei a DNP student at Bradley University. The title of my DNP Project is " Effectiveness of In-service Education to Enhance the knowledge of Newborn Assessment and the Non-Pharmacological Management in the Mother-Baby Unit". During my literature review, I came across your research article entitled "Neonatal Nurses' Perceptions of Pain Assessment and Management in NICUs. A National Survey". (2013). I would like to request permission to use the Questionnaires in the article for my DNP Project. Your acceptance will highly be appreciated.

Please find attached the Letter for Permission.

Sincerely,

Agatha Adjei

DNP Student

Appendix C

Questionnaire

Questions	Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1
Newborns are at a greater risk of neurodevelopmental impairment due to repeated unmanaged pain.					
Newborns can experience pain during heel sticks.					
Newborn pain has a long- term adverse effects.					
I can always recognize when a newborn is experiencing pain.					
I utilize the newborn assessment tool whenever I perform a heel stick.					
I document on the newborn pain assessment tool after a heel stick.					
The pain assessment tool in my department is an accurate tool to measure newborn pain					
I feel confident in using the newborn pain assessment tool in my department.					
I feel confident with my skill in pain management using a non-					

pharmacological (Comfort Measures) approach					
I feel that a newborn pain in my department is well managed during a heel stick.					

Thank you for completing this questionnaire. Your participation will help improve skills in newborn pain assessment and the non-pharmacological interventions.

Adopted from Cong, X., Delaney, C., & Vazquez, V. (2013).

Appendix D

Consent Form for Participants

Newborn Pain Assessment and Provision of Comfort Measures

You are invited to participate in a quality improvement project. To participate, you must be a Registered Nurse working in the Mother and Baby Unit. Taking part in this project is voluntary.

I freely and voluntarily consent to be a participant in a project to determine how an in-service education can enhance newborn pain assessment and the non-pharmacological pain intervention (comfort measures) by nurses on the Mother Baby Unit (MBU). The project will be conducted on the MBU at Martin Health Center, Florida, by Agatha Adjei, a DNP student at Bradley University.

I understand that I will be given a pre-questionnaire, followed by a 20 minutes In-service education on Newborn pain assessment and Non-pharmacological intervention of newborn pain management. After 30 day of the presentation, the same questionnaire will be given to assess the effectiveness of in-service education. The study will enhance the knowledge of newborn pain assessment and the provision of comfort measures during a heel stick procedure, thereby improving the quality of care to the newborns on the MBU.

I understand that there are no known risks involved in this project, and the benefit of this project is expected to contribute to the quality of care provided to newborns on the MBU. I have been told that my responses will be confidential, and I will not be identified in any way.

I understand that I may withdraw my consent to participate in this project at any time with no adverse consequences. I have been given the right to ask questions, and all my questions have been answered to my satisfaction. There are no incentives offered for participating in the project.

I understand that if I have any further questions or concerns, I should contact Agatha Adjei at 772-288-5883 or Dr. P. Flannigan at 309-677-568 of Bradley University, Instructor of the DNP Program.

I have read and understand the above and voluntarily consent to participate. I have been offered a copy of this signed informed consent.

_____ _____

Participant Signature Date

_____ _____

Project Conductor Signature Date

Appendix E

Letter of Approval by the Director of the Mother and Baby Unit

Cleveland Clinic
Martin North Hospital

P.O. Box 9010
Stuart, FL.
34995.

May 22, 2019

Mrs. Agatha Adjei

Graduate Student

Bradley University,

Dear Mrs. Adjei,

Re: Newborn pain Assessment and Management

I am pleased to inform you that the above-referenced request for the Approval of the above-mentioned study/presentation has been approved on behalf of the Director and Manager of the Mother Baby Unit. This approval is in effect for twenty-four months from the above date. Any changes in the study /Presentation should be reported to the Director / Manager of the Mother Baby Unit. This approval is in effect only while you are a registered student at Bradley University.

Best wishes in your studies.

Sincerely,

L. Grady, R/N.

Director Postpartum Unit.

Appendix F

Participant's Response to Questionnaires

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total Score	Average Score
Pretest Response							
Q1	0	0	8(53.33%)	4(26.66%)	3((20%)	55	3.6
Q2	0	0	0	0	15(100%)	75	5
Q3	0	0	9(60%)	3(20%)	3(20%)	54	3.6
Q4	0	0	10(66.67%)	4(26.66%)	1(6.67%)	51	3.4
Q5	0	0	10(66.67%)	4(26.66%)	1(6.67%)	51	3.4
Q6	0	0	10(66.67%)	4(26.66%)	1(6.67%)	51	3.4
Q7	0	0	11(73.33%)	3((20%)	1(6.67%)	50	3.3
Q8	0	0	10(66.67%)	4(26.66%)	1(6.67%)	51	3.4
Q9	0	0	11(73.33%)	3((20%)	1(6.67%)	50	3.3
Q10	0	0	9(60%)	5(33.33%)	1(6.67%)	52	3.5
Posttest Response							
Q1	0	0	0	12(80%)	3((20%)	63	4.2
Q2	0	0	0	0	15(100%)	75	5
Q3	0	0	0	9(60%)	6(40%)	66	4.4
Q4	0	0	1(6.67%)	11(73.33%)	3((20%)	63	4.2
Q5	0	0	0	14(93.33%)	1(6.67%)	61	4
Q6	0	0	0	12(80%)	3((20%)	63	4.2
Q7	0	0	9(60%)	5(33.33%)	1(6.67%)	52	3.4
Q8	0	0	5(33.33%)	9(60%)	2(13.33%)	56	3.7
Q9	0	0	1(6.67%)	13(86.67%)	1(6.67%)	60	4
Q10	0	0	1(6.67%)	13(86.67%)	1(6.67%)	60	4