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# Creating and Establishing Content Validity of a Tool Kit to Educate Mothers of Premature Babies

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# Walden University

College of Health Sciences

This is to certify that the doctoral study by

Lilian Ofoegbu

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the review committee have been made.

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Walden University  
2016

Abstract

Creating and Establishing Content Validity of a Tool Kit to

Educate Mothers of Premature Babies

by

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MS, Walden University, 2012

BS, University of Texas Health Science Center at Houston, 2009

Capstone Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

November 2016

## Abstract

Delivering a preterm baby who is admitted to a neonatal intensive care unit can be an enormous hardship for parents and families, and especially for mothers. The consequences of prematurity alter the parental role, affect their confidence in caring for the baby, and subsequently may impact infant outcomes. Adequately educating mothers of premature babies using an evidence-based practice approach may help them gain the confidence and skills needed to care for their infants. The purpose of this project was to create a tool kit to educate mothers of premature babies about the essential components of caring for their babies, establish content validity of the tool kit among clinical experts, and make recommendations about the use of the tool kit in the neonatal intensive care unit. Polit, Beck, and Owen's framework was used to establish content validity. Neonatal intensive care nurses who were considered "experts" using Benner's novice-to-expert theory ( $n = 7$  reviewed the tools which were quantitatively computed and yielded an Item Content Validity Index value range of 0.86 to 1.00, and a Scale Content Validity Index of 0.97, reflecting that the content met the objectives of the toolbox. Positive social change can be realized through use of the tool kit in the neonatal intensive care unit to educate mothers in the care of their preterm babies, thus improving both maternal and infant outcomes.

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## Dedication

This project is dedicated to my children Nneka, Kelechi, Ikenna, and Chidi.

Thank you for your patience, love, and occasional technical support throughout the period that I have been in school.

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## Section 1: Nature of the Project

### Introduction

Preterm birth (PTB) means the birth of a baby, whether vaginal or cesarean section, before 37 weeks gestation, normal gestation is 40 weeks. Preterm birth is one of the leading causes of infant mortality in the United States (Schetter & Glynn, 2008), and also contributes to low birth weight ( $\leq 2,500$  grams). PTB has been one of the most debated issues in the field of nursing practice for the past three decades. In 2010 the United States ranked 26<sup>th</sup> at 6.1 for PTB and infant mortality (MacDorman, Mathews, Mohangoo & Zeitlin, 2014). Other developed countries within such as Germany, and United Kingdom, had mortality rates of 3.4 and 4.2 respectively. High rates of PTB and related adverse outcomes are a public health concern because of their severe consequences. Besides risk of the death for those born especially early and/or small (neonatal and infant mortality), PTB poses significant risk of complications at birth, pediatric problems in infancy and childhood, developmental disorders, adult health risks, and lifelong disabilities.

PTB not only has an impact on U.S. infant mortality rates, PTB is an indicator of the nation's health (Mathews & MacDorman, 2012). As previously mentioned, the United States ranks 26th in infant mortality and ranks last among 11 industrialized countries on measures of health system quality, efficiency, and access to care (The Commonwealth Fund, 2014). Like the United States, the State of Texas has a high burden of caring for premature births. In Texas, PTB was at a rate of 12.3% in 2013, a rate higher than the Healthy People 2020 U. S. preterm rate of 11.4% (March of Dimes, 2015). The March of Dimes reported an estimated cost of inpatient and outpatient care for one preterm baby to be at \$64,713 in 2008. In Texas, the cost of PTBs and

low birth weight babies has continued to escalate, and is estimated to be reaching \$3 billion a year (Texas Department of State Health Services, 2013). PTB is also one of the leading causes of infant mortality in Texas (Texas Department of State Health Services, 2013).

Preterm infants are often hospitalized in the neonatal intensive care unit (NICU) for several weeks and sometimes for several months, and suffer high rate of respiratory problems, infection, and feeding difficulties, together with disrupted parent-infant contact (Affleck, Tennen, & Rowe, 1991). Put differently, PTB adversely impacts parent, families, and the society at large as the care of preterm babies incur huge medical and healthcare cost from serious and long-term complications (Tough, 2013). Having a preterm baby who is admitted to the NICU constitutes an emotional hardship on families, but especially on mothers. With the birth of a preterm baby, the parents are overwhelmed, stressed, anxious, and depressed leading to altered parenting practices, which affect parental confidence among other variables (Brett, Staniszewska, Newburn, Jones, & Taylor, 2011; Holditch-Davis, Miles, Burchinal, & Goldman, 2011; Liu, Chao, Huang, Wei, & Chie., 2010; Melynk, Feinstein, & Fairbanks, 2002; Obeidat, Bond, & Callister, 2009).

The global effects of premature births are significant. Prematurity is the (a) leading cause of newborn deaths, with over 1 million babies dying annually from complications (World Health Organization [WHO] Fact Sheet, 2014), (b) the second leading cause of death after pneumonia in children under the age of 5 (Center for Disease Control and Prevention [CDC], 2014), and (c) the source of long-term neurological and cognitive disabilities that create complex health needs and require long-term treatment (CDC, 2014).

In the United States and around the world, prematurity is associated with infant mortality, long-term morbidity, and financial burdens for health care system (Beck et al. 2010). In the United States, PTB remains a national health crisis with economic impact is astronomical. In 2005 alone, PTB cost the U.S. health care system more than \$26.2 billion, including medical and educational costs that included special educational services for disabilities and developmental delays, as well as lost productivity (CDC, 2014; Institute of Medicine, 2006).

Caring for preterm babies can be a daunting task for mothers. Adequate and constructive education using evidence-based strategies may empower them and increase their skills and confidence (Schlittenhart, Smart, Miller & Severtson, 2011). As the associated complications of PTB go beyond the neonatal period (Howson, Kinney, McDougall & Lawn, 2013), there is a high priority on adequately educating mothers of preterm babies during their stay in the NICU. Such education is advocated by important stakeholders in the United States health care system: American Academy of Pediatrics, Institute of Medicine, March of Dimes, Association of Women's Health, Obstetric and Neonatal Nurses, the Joint Commission (2012), and many other agencies and organizations (American Academy of Pediatrics Committee, 2008; Cantor, 2007)

NICU nurses recognize the need to improve strategies for teaching mothers of premature babies, but they do not have the tools. According to Hall, Brinchmann, and Aagaard (2012), nurses are trained to provide high quality care but limitations surrounding the healthcare environment present challenges. To improve both maternal and infant outcomes, developing a tool kit becomes imperative in training mothers of premature babies. To assure the relevance and appropriateness of the tool for the intended audience of the developed tool, the content validity of the instrument must be established. Using the developed tool kit, NICU nurses can facilitate

the education of mothers of premature babies, and enable them to gain confidence and become progressively more autonomous in the care of their babies, thus empowers mothers and has physical and psychological benefits for family health (Kelo, Martikainen, & Eriksson, 2013). Improving parental education also provides support to mothers in their continued effort to parenthood and may improve the conditions of childhood growth (Petersson, Petersson, & Hakansson, 2004).

### **Problem Statement**

An improved parent teaching in the NICU utilizing a valid tool kit may enhance maternal confidence and facilitate maternal engagement in the care of their premature babies that may translate to improved maternal and infant outcomes. As noted above, PTB is one of the leading causes of high infant mortality in the United States; it poses serious threat to the United States health care system. The problems encountered by mothers of premature births during the trajectory of their babies' admission, in the NICU are legion and range from inadequate early and structured education for mothers, and inconsistency in educating parents in the NICU, which are identified problems that affect maternal and infant outcomes in the NICU (Cleveland, 2008; Raffray, Semenic, Osorio, & Ochoa, 2014; Russell et al., 2014). For example, in a qualitative study conducted by Russell et al. (2014), parents reported inconsistencies in the caregiving advice and information provided by the NICU nurses. Mok and Leung (2006) also agreed that mothers of premature babies are not adequately informed about their preterm babies by NICU nursing staff.

In another qualitative, descriptive study, Raffray et al. (2014) explored the perception of barriers by both healthcare providers and facilitators in the NICU in preparing for discharge.

Participants identified factors that facilitated the discharge process: consistent and continuous education by the nursing staff and use of a standardized teaching tool. In an integrative review, Butt, McGrathy, Samra, and Gupta (2013) explored parents' satisfaction with the care provided in the NICU and reported a lack of communication and inconsistencies in practice by NICU nurses. Cleveland (2008) noted that some parents reported that they were inadequately prepared for transition to the home environment and were overloaded with information at the time of discharge. Kuo, Chen, Mao, and Tsou (2000) identified inadequate early and structured education as one of the many factors that affect maternal outcomes in the NICU. According to Kuo et al. (2000), inadequate preparation and education of mothers of premature babies diminish mother's confidence and competence in caring for their infants. Lack of confidence hinders maternal participation in the care of their babies, and delays the discharge process, which entails preparing mothers for transition to the home environment beginning at the early stage of NICU admission (Sims, Jacob, Mills, Nett, & Novak, 2006). The adverse effect of a prolonged discharge process further results in prolonged hospitalization, increased medical costs, and reduced patient satisfaction (Melynk et al., 2006).

### **Purpose Statement**

The purpose of this project was (a) to create a tool kit to educate mothers of premature babies about the essential components of caring for their babies, (b) to establish the content validity of the tool kit by clinical experts, and (c) to provide recommendations for implementing the tool kit in the organization's NICU.

### **Significance of the Project**

Evidence-based-practice (EBP) nursing entails a combination of research evidence, clinical expertise, and patients' values in order to make clinical decisions that achieve the best patient outcomes (Hain & Kear, 2015). The Institution of Medicine highlighted the importance of EBP and urged nurses to use it in order to meet the demands of the 21<sup>st</sup> century health care system (Winters & Echeverri, 2012). The critical appraisal of research evidence and its translation to the point of care for effective clinical decision making is also described to be integral to evidence-based nursing practice (American, Association of Colleges of Nursing, 2006). Replacing non-evidence-based routines with those based on evidence is a professional duty of every nurse (Hain & Kear, 2015). This project used an EBP that was pragmatic in helping to improve mothers' confidence in giving care to their preterm babies.

Mothers of premature babies who are inadequately educated about their preterm babies may experience difficulty in establishing confidence and adapting to the care of their preterm newborns resulting in undesirable maternal and infant outcomes. Therefore, developing a tool kit using best practice resources is an evidence-based approach that will improve care practice in a NICU, which in turn will improve infant and maternal outcomes. EBP is anticipated to fill the gap between researches, theory, and practice (Tagney & Haines, 2009).

Lack of confidence due to teaching mothers in an unstructured manner is still a problem for them in the NICU. This project sought to generate a strategy that would facilitate teaching mothers using an evidence-based approach to the clinical problem. The expectation was that, when integrated into the daily routine care of premature babies in the NICU, it would be beneficial to mothers and their babies. Using the tool kit, NICU bedside nurses are to teach

mothers, in a structured manner, the essential components of caring for premature babies. The goal is to improve the mother's confidence in caring for her baby in the hospital and at home. According to Hain and Kear, (2015) quality and safety are critical components of a quality dynamic health care environment; therefore translating newfound evidence into practice will improve the quality of nursing care and promote consistency in the delivery of care. Improving nursing care will translate to improved outcomes for both mother and infant (Hain & Kear, 2015).

### **Nature of Doctoral Project**

PTB puts heavy emotional and financial burdens on families (CDC Reproductive Health, 2014). According to Blencowe, Cousens, and Lawn (2013), the advancement in technology has improved the survival rates of preterm babies and has further increased the economic, social, and emotional burdens of PTB. Families of preterm babies who survived are even more affected with their long-term care, resulting in lost economic productivity. Mothers of preterm babies therefore need family and social support in restructuring their families as the birth of a preterm baby disrupts family dynamics. The increase in survival rates of preterm babies and associated challenges of educating mothers during periods of admission in the NICU requires that the teaching needs of mothers be adequately addressed in order to improve both mothers' and infants' outcomes. Nurses can play important role by developing strategies to optimize parenting and thus improve the outcomes of both parents and infants. This approach may secondarily reduce the adverse impacts of PTB on parents and families, as well as reduce the medical, and economic impact of PTB (Tough, 2013).



When engaging in an EBP project, nurses question their current practice and seek better alternatives by searching the literature, critically appraising research findings, synthesizing empirical and contextually relevant evidence, and then using the findings to provide high-quality, cost-effective nursing care. In this EBP project, I was empowered to take initiatives to develop strategies to improve patients' outcomes. I built a knowledge base of EBP and translated that knowledge to improve practice and patient outcomes in the NICU unit setting.

### **Summary**

This section presented the meaning of PTB, explored the burdens associated with PTB and explained the purposes and significance of the study. Mothers of premature babies do not receive adequate information from the nursing staff due to lack of structured approach to educating them. Nurses caring for premature babies and their families are in a unique position to develop strategies to help teach mothers in the NICU. Maternal and infant outcomes are affected by the lack of standardization and the inconsistencies in teaching parents of premature babies. Lack of education reduces maternal confidence and involvement in caring for their babies. Developing appropriate tools and resources to educate these mothers will prepare them for caring for their babies. Adequately educating mothers of premature babies using the tool kit is a key and essential strategy for empowering mothers. Subsequently, mothers gain confidence and consistently participate in caregiving activities.

## Section 2: Background and Context

### **Conceptual Model**

Benner's novice to expert theory, established in the early 1980s, guided this project. The theory was adapted from the Dreyfus model of skill acquisition and outlined five stages of skill development and acquisition (Altmann, 2007): novice, advanced beginner, competent, proficient, and expert. The theory, which has been applied in nursing practice, research, administration and education, focuses on experiential learning. Benner posits that individuals pass through these stages in the process of acquiring skill (Altmann, 2007). In this project, Benner's theory was used to clarify the nature of an expert and to interpret the use of a clinical expert in validating the content of the tool kit that was developed to educate mothers of premature babies. NICU nurses are expected to pass through the novice stage to become expert practitioners. As expert practitioners, when compared with their novice counterparts, it is assumed that they (a) have a better knowledge base, drawn from much greater experience over many more years in the field; (b) have more relevant information that is used in decision-making process, and (c) have better problem-solving skills (Unsworth, 2001).

The selected NICU nurses have gained knowledge, mastery, and experience in caring for preterm babies, and have advanced past the novice level of Benner's skill acquisition model. Guided by Benner's theory of the transformation to expertise, the NICU nurses applied their clinical expertise to validate the content of the tool kit for educating mothers of premature babies. NICU nurses experts who have progressed through the process of competency development in Benner's theory, utilized their knowledge, mastery and experience in validating the contents of the developed tool kit.

### **Relevance to Nursing Practice**

It is expected that (a) the knowledge that went into the project's educational tool kit will inform practice and enhance the care nurses deliver to premature babies in the NICU. ; (b) the change in practice will improve outcomes for premature babies, foster a solid base for a lifetime of good health, optimize parenting, and reduce the burden of preterm birth on family, community, and society; (c) NICU nurses will incorporate these practices as standard of care; (d) NICU nurses will use the tools and strategies derived from the project to design educational programs for their newborns' parents and families; (e) the project will provide a valuable evidence base for nurses doing research on improving the health outcomes of premature babies; and (f) disseminating the findings will advance nursing practice and ultimately the nursing profession.

The educational tool kit, developed as a part of this project, will inform knowledge that will improve practice change and enhance excellent care delivery to premature babies among nurses in the NICU. NICU nurses can also utilize the tools and strategies derived from the project to design educational programs for their patients and families. Neonatal nurses will not only have the knowledge that discharge education and preparation starts upon admission, but will incorporate these practices as standard of care in their daily practice. The project also provides a valuable evidence base for nurses doing research on improving health outcomes of premature babies. Disseminating project findings will also contribute to the advancement of nursing practice, and ultimately advance the nursing profession. The change in practice will not only improve patient outcomes but will foster a solid base for a lifetime of good health for premature babies, optimize parenting, and improve family, community, and the society at large.

## Local Background and Context

### Introduction

Lack of maternal confidence in caring for their newborn preterm babies in a NICU has been linked to lack of structured education (Shieh et al., 2010). Providing a consistent approach, and developing a standardized teaching tool will facilitate the education of mothers of premature babies, enabling them to gain confidence and skills in the care delivery of their preterm babies. The purpose of this project was to create a tool kit to educate mothers of premature babies about the essential components of caring for their babies, establish content validity of the tool kit among clinical experts, and recommend the use of the tool kit in an organization's neonatal intensive care unit.

### Literature Review

**Search strategies.** A review of literature was conducted electronically in the following databases: portals that included EBSCOhost and ProQuest, CINAHL, PubMed, and Harris Health Nursing Reference Center. The following keywords were used, premature babies, preterm babies, maternal confidence, discharge teaching, discharge instructions, educational interventions, and structured educational program. The literature review focused on the following terms: understanding PTB, and meaning of preterm babies, understanding confidence/self-confidence and maternal confidence, and educational interventions that enhanced maternal confidence, knowledge and mother-infant interaction in the NICU. The search was limited to the past 5 years. However, old articles were included if they were deemed relevant. Articles reviewed for this project were peer reviewed including systematic reviews and meta-analysis, randomized controlled trials, and case report. Reputable professional organizations and

government websites were also searched. Articles were included if they supported the maternal-infant relationship or improved maternal knowledge in order to enhance mother's confidence in caring for her infant in the NICU. A total number of twelve articles were used for the review.

**Understanding PTB.** The concept of PTB is a buzzword with antique development, and a meaning that has no universal acceptable connotation. The concept of PTB has generated robust literature that ranges from the meaning, nature, and to the impact of PTB. Dunkel and Glynn (2008) attested that PTB is the birth of a baby by any means (vaginal or Caesarian section) before 37 weeks gestation. PTB starts with a preterm labor and a preterm labor occurs when a regular contractions occurs that causes the cervix to begin to open before a pregnant mother reaches 37 weeks of pregnancy.

**Understanding confidence/ self-confidence, and maternal confidence.** Perry (2011) explained that self-confidence is a measure of a person's belief of the ability to succeed. According to Perry, self-confidence is related to self-efficacy and is displayed through performance of several activities. Confidence is postulated to inform self-efficacy and influence learning, which further influences confidence (Perry, 2011).

Maternal confidence is the perception of a mother in her ability to care for and understand her infant (Liu, Chen, Yeh, & Hsieh, 2012; Shieh et al., 2010). According to Liu et al., lack of confidence in mothers during early postnatal period negatively impacts motherhood experience leading to altered parenting practices. PTB also impacts maternal confidence as most parents lack the knowledge of how to care for their babies admitted in the NICU (Sims et al., 2006). Maternal confidence bears similarities to maternal self-efficacy, maternal competence, perceived role attainment, and self-esteem (Salonen et al., 2009). Maternal confidence is a

significant predictor of dysfunctional parenting among other variables (Morawska & Sanders, 2007). Providing NICU nurses with a structured educational plan to inform mothers of premature babies will enhance maternal confidence in the care of their babies (Shieh et al., 2010).

### **General Literature**

**Enhancing maternal confidence.** The provision of a structured parental education has been shown to enhance confidence in the provision of safe and competent care in mothers of premature babies admitted in the NICU. For example, Shieh et al. (2010) conducted a study to examine how structured discharge education affected maternal confidence in the care of their premature newborns and found that structured discharge education increased maternal confidence and caring knowledge of mothers of preterm babies at the day before discharge to 1 month after discharge. In this randomized controlled study, the researchers recruited 59 mothers of premature babies and compared the use of structured education to traditional education among these women. The researchers also found improved infant outcome with the structured education that include significant increase in growth percentage on body height of the preterm babies.

**Enhancing maternal knowledge and infant –parent interaction.** Evidence from literature also showed that various educational interventions improved maternal knowledge, and foster parent-infant relationship, thus enhancing maternal confidence in caring for their premature babies. A study conducted by Melynk et al. (2006) showed how educational-behavioral intervention known as Creating Opportunities for Parent Empowerment (COPE) could affect parent’s interaction with their preterm babies. Researchers in this study used audiotapes and written information to provide education to mothers at different phases of their infant’s hospitalization from time of admission to discharge. The authors found that providing

educational-behavioral program early and throughout the period of admission using audiotapes and written materials is effective in enhancing parent interaction with their preterm infants. The researchers also found that the educational program improved parental mental outcomes, and reduced the length of hospital stay.

Brown and Talmi (2005) found that a short-term family-based NICU intervention could enhance mother's knowledge of their infant's behavior and reduce maternal stress in the NICU. In this study, researchers explored the effect of a family-based intervention on parental knowledge, behavior, and stress by presenting educational materials to the intervention group while the control group received informal discussion about preterm care. The researchers also found that the short-term family-based NICU interventions may reduce maternal stress in the neonatal intensive care unit, and improve mother's participation in infant care.

Implementing parent education in the NICU and identifying strategies to engage parents could enhance mothers' knowledge and confidence in the care of preterm babies. Dusing, Van Drew, and Brown (2012) in a single descriptive case report evaluated a clinical practice; developed, and implemented a new parent education program in the NICU, and identified strategies that can engage parents and enhance education of mothers of preterm babies. These strategies include, early initiation of parent education, using multiple education formats, offering educational information in more than one session to reduce information overload, and offering one-on-one educational information. The researchers concluded that early educational program for parents in the NICU can improve maternal knowledge, help parents incorporate developmental activities into infants daily routine, and reduce maternal anxiety, thus improving both maternal and infant outcomes in the NICU.

**Enhancing competency and facilitating transition.** Educational interventions provided to mothers in the NICU enhanced maternal competency and facilitated the transition of preterm babies from the hospital to the home environment. Shroeder and Pridham (2006) in a randomized longitudinal study examined how mothers of preterm babies who were in a guided participation intervention developed competency and found that mothers who experienced guided participation demonstrated relationship competencies with their infants before discharge from NICU than mothers who received Standard Care Teaching (SCT). Broedsgaard and Wagner (2005) identified the difficulties experienced by parents of premature babies through clinical experience and observation. Understanding that families of premature infants have special needs, Broedsgaard and Wagner conducted an educational intervention to support parents in the delivery of care and to facilitate the transition of their premature babies to the home environment.

Schlittenhart, Smart, Miller and Severtson (2011) in an article, discussed an evidenced-based teaching tool that could be useful for nurses to prepare parents in the NICU for transition to home care. The authors advocated early planning –beginning education at time of admission, and continuing teaching throughout infant’s hospital stay, using DVD/video for parents who are unable to attend class, and offering one hour group discharge teaching class once a week. Schlittenhart et al., recommended educating mothers on discharge teaching topics to enable acquisition of the needed skills by mothers of premature babies. These educational topics include safety (car seat, CPR, Sudden Infant Death Syndrome), hygiene, signs and symptoms of infection, exercise and development, parent care including suggestion for coping, and symptoms of baby blues.



**Policy statement.** Policies from reputable professional organizations have also supported educating mothers of premature babies during NICU admission. For example, the American Academy of Pediatrics Committee on Fetus and Newborns (2008) policy statements recommend individualized teaching plan in order to target each patient's specific educational needs and facilitate active program of parental involvement among other things. The American Academy of Pediatric Committee in addition, advocate beginning parental contact and involvement from the time of admission, and to develop a checklist of specific areas to be mastered in order to keep the nursing staff and parents on track in performing task and preparing parents for discharge.

The review of literature supported the existence of gaps in maternal confidence in the care of their babies admitted in the NICU. Evidence from the literature provided support that various educational interventions are beneficial and enhances maternal confidence in the care of their babies, and fosters parent-infant relationship. To address this gap, an intervention that is evidence-based will be implemented by NICU nursing staff with the goal of enhancing maternal confidence in the caring of their preterm babies.

### **Role of the DNP Student**

The DNP program prepares advanced nursing students to make knowledge transfer to the point of care, and this is the cornerstone of their careers (American Association of Colleges of Nursing, 2006). As pointed out by American Association of Colleges of Nursing, the DNP-prepared nurse is a leader in the evaluation, implementation, and dissemination of research evidence that would translate to patient-centered quality care with positive outcomes. Zaccagnini and White (2011) echoed the pivotal role of the DNP-prepared nurse as a leader in the translation of EBP to enhance quality of health care and improve patient outcomes. This project focused on

improving the education of mothers of premature babies in the NICU and to enhance their confidence in caring for their premature newborn babies. Specifically, the role of the DNP student in this project was to engage in innovative ways that are evidence-based and cost-effective aimed at providing the highest quality of care in the neonatal intensive care environment. Utilizing the best practice recommendations based upon research evidence from literature, the author created a tool kit that would enhance the education of mothers in the NICU. The author also developed a standardized teaching plan and a checklist to track performance of tasks. Once the content validity of the tool kit was determined, the findings were disseminated to important stakeholders. Finally, the tool kit was recommended for use in an organization's NICU.

### **Summary**

The section critically explored the literature on PTB and the innovative role of the DNP student in creating and establishing content validity of a tool kit to educate mothers of premature babies. The project observed that improving the education process for mothers of premature babies will improve both maternal and infant outcome. American Academy of Pediatric Committee policy advocates developing teaching plans that will facilitate the education of mothers of premature babies in the care of their babies. Creating a tool kit using evidence-based resources will improve the education process in the NICU and enhance a structured educational program that is provided early and throughout period of admission until discharge, while reinforcing teaching as needed. The tool kit will facilitate the use of multiple-format parent education that includes brochure, evening group class, and individualized teaching plan, and offering of the educational information in more than one session to reduce information overload.

## Section 3: Collection and Analysis of Evidence

### Introduction

The objectives of this project were to develop a tool kit to educate mothers of premature babies during periods of admission in the NICU, establish the content validity of the created tool, and subsequently recommend the tool to an organization's NICU. Seven nursing experts from NICU participated in the project and determine the content validity of the tool kit created to help educate mothers of premature babies during periods of admission in the NICU.

### Sources of Evidence

. The primary source of evidence in this study was of the literature and it included systematic reviews, meta-analysis, randomized controlled trials, case report, policy statements and articles from reputable professional organizations and government websites. Other elements of evidence included books and the author's personal experience in a neonatal intensive care setting.

### Project Method / Design

The following steps were used as the method and design/:

- Step 1: Develop of a tool kit to educate mothers of premature babies based upon best practice resources and policy from literature review.
- Step 2: Establish of content validity of the developed tool kit from expert reviewers
- Step 3: Make recommendations to an organization's NICU nurses to use the tool kit to educate mothers of premature babies.

**Development and description of the tool kit.** To date, there are limited resources to guide NICU nurses in educating mothers of premature babies. The first step in this project was to

develop a tool kit that will be used to educate mothers of premature babies, and an accompanying checklist tool to track the teaching activities (Appendix B). Information about the project proposal was submitted and received approval from Walden Institutional Review Board (Approval No. 04-27-16-0231784). The process of developing the tool kit involved reviewing relevant literature and identifying evidence-based recommendations and resources on providing consistent education in the NICU (Schlittenhart et al., 2011; Sims et al., 2006), reviewing policies on educating the parents and families of premature babies (American Academy of Pediatric Committee, 2008), identifying parents' high-priority needs in the NICU (Cleveland, 2008; Raffray et al., 2014; Russell et al., 2014), and using existing educational materials and handouts.

The tool kit, which was created based on literature review, contained four major components: (a) the days to provide education to mothers, (b) the key contents or topics to teach mothers, (c) the learning objectives for the daily educational topic, and (d) an accompanying handout or brochure to reinforce the teaching (Appendix A). The educational topics were modified to include the essential elements of care delivery and components of discharge teaching: general orientation to the unit, management of the preterm baby, safety, signs and symptoms of infection, feeding, kangaroo care, several newborn screenings, and general infant care. The tool kit gave nurses a unified approach for educating mothers and helped them develop the confidence and skill needed to care for their preterm babies.

**Establishing content validity.** Following the development of the tool kit, content validity of the developed tool was established. The method recommended by Polit, Beck and Owen (2007) for selecting and use of content experts for establishing content validity was used.

According to Polit et al. (2007), the establishment of content validity of any scale was a critical step undertaken in order to obtain high quality measurements. Content Validity Index (I-CVI), which evaluates each item relevance, and the scale-level content validity index (S-CVI) that reflects a Full-scale validity of all items provided evidence for the content validity. Polit et al. suggested using these approaches as they are the most widely used method to quantify content validity for multi-item scales.

A panel of 8 experts in neonatal intensive care nursing were handpicked and requested to analyze the content of the tool kit, and determine whether the topics covered represent the skills and tasks needed to build mothers' confidence and skill in the NICU (Polit et al., 2007). According to Polit (2007), about 8-12 reviewers with expert knowledge of the material should be recruited for content validation of an instrument. The inclusion criteria for selecting the nurses included being knowledgeable about issues surrounding the care of premature babies, having a minimum of Bachelor's degree in nursing, and having at least ten years of experience in neonatal intensive care unit. These criteria met Benner's explanation of an expert (Unsworth, 2001). The reviewers were provided with a copy of the developed tool by email and were requested to rate the tool kit using a Likert scale.

A survey design was used to reach the selected participants. Invitation was sent to the NICU nurses via email for participation in the study. The email was linked to an online survey and participants were directed to rate the relevance of each item in the tool. A clear and concise instruction on how to rate the items in the tool kit was provided to the participants. The reviewers were asked to rate the adequacy and relevance or importance of each item (I-CVI) on a 4-point Likert scale of (1) *not relevant*, (2) *somewhat relevant*, (3) *quite relevant*, and (4) *highly*

*relevant*. Responses from the survey were received anonymously within one week. The two CVI indices explained by Polit et al. (I-CVI and S-CVI) were computed and content validation of the tool was established. Completing the survey was voluntary and returning the survey indicated consent to participate in the study.

**Making recommendations for implementation and use.** The final step in the project was to make recommendations for implementation and use of the tool kit in a neonatal intensive care unit (NICU). The tool kit was presented and explained to an organization's NICU nurses and their manager. Suggestions for implementation were discussed and the tool was readily adopted for use in the organization's NICU by the nursing staff through general consensus. It is hoped that the tool kit will provide a valuable resource to NICU clinicians to address mothers' education in the NICU.

**Population and setting.** The participants for this project were nurses with clinical expertise in neonatal intensive care nursing. A total number of 8 NICU nurses with clinical expertise were handpicked and requested to voluntarily complete a survey, rating the relevance of the created tool kit. The survey was sent electronically to the participating expert clinicians using their personal email addresses. Inclusion criteria for selection were having a minimum of Bachelor's degree in nursing, and having worked in a NICU setting for a period of 10 years and over. This met Benner's criteria for experiential expertise (Unsworth, 2001).

**Instrument and data collection.** A survey tool that incorporated the essential elements of educational needs of mothers of preterm babies with a 4-point Likert scale questionnaire (Appendix C) was used for data collection in this project. After institutional ethical approval, seven expert NICU nurses were hand selected and requested to participate in the survey.

Participants' personal emails were collected in person. An anonymous survey design was sent to participants through survey monkey design to the participants' personal emails. The survey included all the elements of informed consent. Participants that agreed to participate in the project completed the survey within a period of one week. The completed survey with reviewers ratings were received electronically for data analysis.

### **Data Analysis and Synthesis**

A quantitative computation of each item I-CVI and the scale S-CVI of the content validity indices was done using Polit's method. I-CVI was computed by dividing the number of reviewers that gave a rating of 3 or 4 by seven (the total number of NICU experts). The S-CVI was calculated using the averaging method S-CVI/AV as proposed by Polit et al. (2007). The S-CVI/AV was determined by computing the I-CVI for each item on the tool kit, and then calculating the average I-CVI across items. According to Polit et al. (2007), achieving a value of 0.80 or greater reflects excellent content validity while items with a value lower than 0.79 should be removed from the tool kit.

### **Summary**

The above section has clearly explained the strategy of the study by lucidly stating the population and setting, method or instrument of data collection, and strategy adopted in analyzing the data. The author argues that the need for effective and consistent parent education in newborn care cannot be overemphasized. This is especially true for mothers of premature babies. Preparing mothers of premature babies to adequately care for their babies require that parent education be reframed during periods of NICU admission with focus on building confidence (Sneath, 2008) and much more.

Developing a tool kit will facilitate the education of mothers of premature babies and help them gain confidence and the necessary skills needed for caring their babies in the NICU as well as in the home environment. The tool kit will also enable standardization of education in the NICU and reduce variability and inconsistencies in providing education to mothers. Finally, the tool kit will improve information communication and better prepare mothers for transitioning their babies to the home environment as nurses will educate mothers daily and provide information in bits, thus reducing information overload. Also, establishing content validity of the tool kit is an important step to be undertaken using experts judgment to determine whether contents in the tool kit are relevant to addressing the education of mothers in the NICU (Polit et al., 2007). The tool kit will serve as a useful and practical guide to nurses working in a neonatal intensive care unit and will facilitate the education of mothers of premature babies in any neonatal intensive care setting.



## Section 4: Findings and Recommendations

### Introduction

The purpose of this project was to develop a tool kit to educate mothers of premature babies during periods of admission in the NICU, establish the content validity of the created tool, and subsequently recommend the tool to an organization's NICU. Eight nursing experts from NICU participated in the content validity of the tool kit created to help educate mothers of premature babies during periods of admission in the NICU.

### Findings, Discussions, and Implications

#### Discussion of Findings

In this project, an educational tool kit was developed to enable NICU nurses to educate mothers of premature babies when their infants were in the NICU. Prior to this project, no tool had been used to educate these mothers during their stay in the NICU. Accordingly, seven nursing experts from the NICU participated in establishing the content validity of the tool kit. The Seven experts responded and examined the appropriateness of the contents of the tool to educate mothers of premature babies in the NICU. They completed the survey, yielding a response rate of 88%. The nurses in the sample had an average total nursing experience of 28.9 years (SD = 3.11) with 20 years (SD =3.87) of NICU experience. All of the nurses who responded to the survey were BS/BSN prepared (Appendix D). All 17 items in the tool kit met the requirement for acceptable content validity of 0.79 or greater and were retained. The overall scale content validity (S-CVI) was 0.97 reflecting excellent content validity as postulated by Polit et al. (2007). While 8 experts are recommended in content validation, Polit et al., agreed

that an I-CVI of 0.78 or higher is an acceptable content validity when 3 or more experts are consulted. Based on this premise, the overall response rate for this study is acceptable.

Seven experts rated 14 items as a 3 (*quite relevant*) or a 4 (*highly relevant*), yielding an I-CVI of 1.00 (Table 5). Two items on the tool kit were rated 2 (*somewhat relevant*) by a participant. The same reviewer failed to rate one item. The item-content validity index (I-CVI) range for the tool was 0.86–1.00. The scale –content validity index (S-CVI) is shown in Appendix E. The S-CVI for the tool was 0.97, indicating that no items should be removed. The result from this study also support that the tool is acceptable in terms of content validity

Content validity is a critical step in a scale development. It uses the expertise of participants to examine a tool prior to formal use (Polit et al., 2007). Feedback from experts enables a researcher to discard, revise, or replace one or more items not deemed relevant (Rutherford-Hemming, 2015).

The main outcome of this evidence-based project was to empower mothers by enhancing maternal confidence in the care of their premature babies. According to Kelo et al. (2013), empowering mothers in the care of their premature babies has physical and psychological benefits that helps to promote of family health. Educating mothers of premature babies in the NICU using an evidence-based, valid tool kit can improve infant-mother relationship, and have a long term effect in infant outcomes (Melynk et al., 2006).

The findings from the project enabled the validity of the tool kit to educate mothers in the NICU. The project has also indicated the use of best practices advocated in research literature to translate research to the point of care. The findings from the project was shared with an organizational NICU nurses, and the tool kit was subsequently presented to the organization's

NICU nurses for use to improve the education of mothers of premature babies during periods of admission in the NICU. The tool kit was presented to the organizational NICU nursing staff only and was readily adopted by the NICU nursing staff with no rejection or substitution of any item on the tool kit.

### **Recommendations for Implementation**

Nurses are mandated to integrate research finding into practice and to utilize evidence-based strategies in their practice (Winters & Echeverri, 2012). This project integrated an EBP approach that could be used in the provision of a consistent education to mothers of premature babies by utilizing the tool kit to improve nursing practice in the NICU and enhance the confidence of mothers in the care of their premature babies. The author therefore recommended that NICU nurses utilize the tool kit to educate mothers of premature babies from the onset of admission in the NICU until discharge. The author further recommended the utilization of the created checklist (Appendix B) to track the educational activities provided to mothers of premature babies during periods of admission. Given that mothers of premature babies need consistent and structured education to be able to gain confidence in caring for their babies (Shieh et al., 2010), NICU nurses could conduct further study and utilize the tool kit in the provision of a structured education to mothers in the NICU and measure the effect of a structured education on maternal confidence. When fully implemented, NICU nurses will discern improvements in the care delivery of premature babies and their mothers in the NICU. Important predictors of successful implementation of the tool kit will include increased maternal confidence in caring for their premature babies in the NICU, a decrease in maternal apprehension with a reduction in dysfunctional or aberrant parenting, an improvement in mother-infant relationship, and an easy

transition to the home environment. Mothers will assume more parenting roles and feel capable of providing care to their preterm babies in the NICU environment.

### **Implications for Nursing Practice**

The challenges faced by mothers when caring for their premature babies in the NICU demanded the need for adequate preparation through structured education utilizing a standardized evidence-based tool. In this project, the challenges faced by mothers of premature babies admitted in a neonatal intensive care unit were challenging and concerning to the author that cares for these babies. In the immediate care of premature babies, mothers are often overwhelmed and apprehensive, making transition to the home environment a difficult and costly task. Adequately preparing mothers of premature babies and helping them to learn, gain confidence, and care for their babies facilitates an easy transition to the home environment. The integration of an EBP approach in the provision of a consistent education to mothers of premature babies utilizing a valid tool will improve nursing practice in the NICU and have a promising effect in enhancing the confidence of mothers in the care of their premature babies in the NICU. The successful implementation and disseminating of the project findings may in addition to improving nursing practice motivate NICU nurses to engage in the discovery and application of EBP, thus transforming nursing care from a tradition-based to an EBP approach.

### **Project Strengths and Limitations**

This project presented several strengths. One strength for this project was the use of content experts who have worked in the NICU and are certified in NICU nursing. Raters of the developed tool were selected from the same pool of experts and represented NICU nurses who care for premature babies. Selecting experts who have worked in a related field helps determine

the suitability and the constructs of a measure, and ensures a representation of the population for which the tool kit is developed (Rutherford-Hemming, 2015). Also, the experts from the NICU population reflected the current neonatal intensive care clinical practice, which facilitated the validity of the items in the tool kit, and enabled a buy in of the tool kit by the NICU nurses. Another strength for the study was the reporting of the I-CVI range values for the project and the method used in calculating the CVI indices. Polit et al. (2007) mentioned that researchers often do not report CVI range values and the method used in computing CVI indices, which are confounding and problematic in acceptability of the content validity of a tool.

One limitation to the study was the evaluation of the tool kit by only clinical nursing experts therefore, future studies are recommended that will, in addition to professional nursing experts, recruit other healthcare professionals with NICU expertise for provision of additional information that can be used to improve the tool. Using varied content expert reviewers may have yielded more information about the developed tool kit. Another limitation to the project was the lack of provision of open-ended commentary section for the reviewers to provide additional feedback. Other studies conducted should allow content experts opportunity to provide comment that could be useful in revising or rewording items in the tool.

### **Summary**

The challenges faced by mothers when caring for their premature babies in the NICU demand the need for adequate preparation through structured educational utilizing a standardized evidence-based tool. In this study, the challenges faced by mothers of premature babies admitted in a neonatal intensive care unit were challenging and concerning to the author that cares for these babies. In the immediate care of premature babies, mothers are often overwhelmed and

apprehensive, making transition to the home environment a difficult and costly task. Adequately preparing mothers of premature babies and helping them to learn, gain confidence, and care for their babies facilitates an easy transition to the home environment. The integration of an EBP approach in the provision of a consistent education to mothers of premature babies utilizing a valid tool will have a promising effect in enhancing the confidence of mothers in the care of their premature babies in the NICU

## Section 5: Dissemination Plan

### **Introduction**

The DNP program prepares the advanced practice nurse to design, implement, evaluate, and disseminate findings from research for quality patient care and positive patient outcomes (American Association of Colleges of Nursing, 2006). Findings in this EBP project were disseminated to an organizational neonatal nursing staff and the tool kit was recommended for providing consistent education to mothers of premature babies during periods of admission, from admission until discharge, to enhance the confidence of mothers in the care of their premature babies in the NICU. The tool kit was generally accepted and incorporated as a standard care.

The project findings, discussion, and implications will also be disseminated through publication in a peer-reviewed neonatal journal. Appropriate journals include Journal of Obstetric, Gynecologic and Neonatal Nursing, Journal of Perinatology, and Neonatal Network. These journals targets not only practitioners but also a wider audience within the neonatal network. This DNP project could also be disseminated at a Neonatal National Conference using a poster presentation approach.

### **Analysis of Self as a Scholar**

According to Zaccagnini and White (2011), the cornerstone of the DNP-prepared nurse is an ability to translate research findings into practice in order to improve practice and patient outcomes. Conrad and Pape (2014) described nurse scholars as engaging in activities that include discovery, integration, application and dissemination, and teaching. These activities culminate in the provision of better care for patients; they contribute to the profession and enriching nursing as a science. In line with the description by Conrad and Pape, nurse scholars generate new

knowledge using current research, and they disseminate the newfound knowledge to all stakeholders, including the neonatal nursing community in order to improve health outcomes for the premature babies, their mothers and families.

As a project developer, the project offered me an opportunity to develop and establish competencies and confidence to design and implement an EBP project as well as comprehend the process and challenges in addressing change. Such challenges included organizational barrier and resistance from colleagues to engage in an EBP project. I discovered that translating evidence into clinical practice requires adequate planning, adequate resources and sustained commitment to ensure that critical activities and outcomes are successfully achieved.

Engaging in the EBP project empowered my ability to engage in innovative transformation of knowledge to clinical practice. The project also fostered my professional growth and development through enhanced leadership ability and acquisition of transformational leadership characteristics needed to successfully engage in innovative changes and navigate the new and dynamic health care system. The project establishes the basis for my future scholarly work of integration and application (Zaccagnini & White, 2011). Dissemination and sharing the work, strategies, and tools used in this project to all stakeholders and the neonatal nursing community contributes to nursing practice and also fosters my professional growth.

As a practitioner, I engaged in an EBP project that sought to improve the quality of education and care delivery provided to mothers of premature babies in the neonatal intensive care unit. Successfully implementing and disseminating this practice change may motivate NICU nurses to engage in the discovery and application of EBP, thus transforming nursing care from tradition-based to EBP. NICU nurses can also be empowered to seek current knowledge related



to other nursing practices in the neonatal intensive care unit as well leading to the furtherance of a nurse-led clinical climate of inquiry and utilization of research.

### **Summary**

Neonatal nurses can play significant role in preparing mothers to overcome the challenges of caring for their premature babies during periods of admission in the NICU. While caring for this smallest aggregate of patient population can be daunting, providing care based on an evidence-based approach will help meet the needs of NICU mothers who undergo overwhelming challenges in caring for their premature newborn babies, thus optimizing the quality of care and enhancing patients' outcome. As such, a tool kit was developed to help NICU nurses educate mothers of premature babies during periods of NICU admission. An expert panel of clinical NICU nurses evaluated the tool, and result yielded support for content validity of the tool. The tool, which was recommended for use in an organization's NICU will contribute to the delivery of appropriate and excellent care to mothers and their premature infants in the NICU.

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## Appendix A: Teaching plan for mothers of premature babies

Days	Parent objectives	Content	Handout provided
1	<ul style="list-style-type: none"> <li>Tell about your baby's unit</li> <li>Tell why your baby is in the hospital</li> <li>Tell about equipment</li> <li>Learn about hand washing</li> <li>Learn how to breastfeed</li> <li>Learn how to do skin to skin</li> </ul>	<ul style="list-style-type: none"> <li>Orientation to unit</li> <li>Speak up program</li> <li>Identification process</li> <li>Reason for admission</li> <li>Equipment</li> <li>Hand hygiene</li> <li>Getting started with breastfeeding</li> </ul>	<p>Patient rights and responsibilities /speak up 240787 (01/08)</p> <p>Information for parents, guardians and visitors of Level 2 nursery and Level 3 neo icu 283299(08/11)</p> <p>Milk for premature babies/leche maternal para bebes prematuros Stock no. 13-45A</p> <p>Breastfeeding guide Stock no. 13-220 rev 11/12</p> <p>Baby's first milk: colostrum Skin to skin</p>
2	<ul style="list-style-type: none"> <li>Learn pain management</li> <li>Learn about newborn screening, jaundice testing</li> </ul>	<ul style="list-style-type: none"> <li>Pain management</li> <li>Newborn screen and jaundice testing</li> </ul>	Newborn screen
3	<ul style="list-style-type: none"> <li>Learn how to bath your baby</li> <li>Show how to bath baby</li> <li>Show how to take temperature</li> <li>Eye care</li> </ul>	<ul style="list-style-type: none"> <li>Bathing a baby</li> <li>Taking temperature</li> </ul>	Caring through education facts: Caring for your baby at home
4	<ul style="list-style-type: none"> <li>Learn cardio pulmonary resuscitation</li> </ul>	<ul style="list-style-type: none"> <li>CPR</li> </ul>	CPR video

5	<ul style="list-style-type: none"> <li>• Learn about hearing Screen</li> <li>• Learn about respiratory syncytial virus (RSV)</li> </ul>	<ul style="list-style-type: none"> <li>• Hearing screen</li> <li>• RSV/synagis</li> </ul>	Synagis/palivizumab Syn 07-0495
6	<ul style="list-style-type: none"> <li>• Tell signs and symptoms of infection</li> <li>• Learn car seat safety</li> <li>• Learn safe sleeping position</li> <li>• Learn feeding plan</li> </ul>	<ul style="list-style-type: none"> <li>• Infection</li> <li>• Safety issues</li> <li>• Feeding plan</li> <li>• Support system</li> </ul>	Car seat handout Safe sleep handout
7	<ul style="list-style-type: none"> <li>• Tell signs and symptoms of infection</li> <li>• Learn discharge medication</li> <li>• Learn Car Seat Safety</li> <li>• Learn Safe sleeping position</li> <li>• Learn feeding plan</li> <li>• Learn when to seek medical help</li> <li>• Tell follow up for baby</li> </ul>	<ul style="list-style-type: none"> <li>• Infection</li> <li>• Discharge medication</li> <li>• Safety issues</li> <li>• Feeding plan</li> <li>• When to seek medical help</li> <li>• Ask my nurse program</li> <li>• Follow up appointment</li> </ul>	

## Appendix B: Discharge teaching checklist for mothers of premature babies

Target times admission days	Activities to be completed	Completed			Date/Initial	Comment
		Y	N	NA		
Day 1	1. Unit orientation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	2. Infection control measures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	3. Breastfeeding /skin-to-skin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Day 2	1. Pain management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	2. Newborn screen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	3. Jaundice test	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Day 3	1. General newborn care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	2. Bathing/temperature taking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Day 4	1.CPR education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	2. Back to sleep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	3. Car seat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Day 5	1. Hearing screen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	2. RSV- for RSV season					

		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Day 6	1. Signs of infection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2. Safe sleeping /car seat safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3. Feeding plans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Day 7	1. Signs of infection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2. Feeding plans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3. Car seat safety /safe sleep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4. Discharge medications/ follow up appointment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix C: Contents of the tool kit to educate mothers of premature babies in NICU with rating instructions

Item no.	Topic	Rating			
		Not relevant	Somewhat relevant	Quite relevant	Highly relevant
1	Orientation to Unit	1	2	3	4
2	Speak Up Program	1	2	3	4
3	Identification Process	1	2	3	4
4	Reason for Admission	1	2	3	4
5	Equipment	1	2	3	4
6	Hand Hygiene	1	2	3	4
7	Breastfeeding and Kangaroo care	1	2	3	4
8	Pain Management	1	2	3	4
9	Newborn Screenings including newborn screen, Critical Congestive Heart Disease (CCHD), and hearing screen	1	2	3	4
10	Jaundice Testing	1	2	3	4
11	General newborn care including bathing, temperature taking, feeding	1	2	3	4
12	Respiratory Syncytial Virus (RSV)	1	2	3	4
13	Signs and Symptoms of Infection	1	2	3	4
14	Car Seat Testing	1	2	3	4
15	Back to Sleep	1	2	3	4
16	Discharge Medications	1	2	3	4
17	Follow-up Appointments	1	2	3	4

## Appendix D: Professional demographic characteristics of participants

	Mean (SD)	Frequency (%)
Number of years in nursing	28.9 (3.11)	na
Number of years in NICU	20 (3.87)	na
Level of education		
In nursing		
BS/BSN		7 (100)
MS/MSN		

Appendix E: Tool for Education Mothers of Premature Babies in NICU: Content Validity Index Ratings by Seven Experts: Items rated 3 or 4 on a 4-Point Relevance Scale

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Number in agreement	Item CVI
1	3	4	4	3	4	4	4	7	1.0
2	3	4	4	3	4	4	3	7	1.0
3	3	4	4	3	4	4	4	7	1.0
4	3	4	4	4	4	4	4	7	1.0
5	3	4	4	3	4	3	4	7	1.0
6	3	4	4	4	4	4	4	7	1.0
7	3	4	4	4	4	4	4	7	1.0
8	3	4	4	4	4	4	3	7	1.0
9	3	4	4	4	4	4	-	6	0.86
10	3	4	4	4	4	4	4	7	1.0
11	3	4	4	4	4	4	4	7	1.0
12	3	4	4	3	4	4	2	6	0.86
13	3	4	4	4	4	4	4	7	1.0
14	3	4	4	4	4	4	2	6	0.86
15	3	4	4	4	4	4	4	7	1.0
16	3	4	4	4	4	4	4	7	1.0
17	3	4	4	4	4	4	4	7	1.0
									Mean I-CVI =0.96
Average	1.0	1.0	1.0	1.0	1.0	1.0	0.8	1.0	0.97