Enhancing Nursing Practice in Developmental Care for Preterm Infants

Tipawan Daramas, Ratanawadee Chontawan, Jarassri Yenbut, Jariya Wittayasooporn, Pikul Nantachaipan

Abstract: *This study aimed to enhance nursing practice in developmental care for preterm infants. A participatory action research (PAR) model was used as a catalyst for changing nursing practice. Participants were 30 neonatal nurses working in a neonatal intensive care unit (NICU) at a university hospital in Bangkok. Data was collected using multiple methods. The findings revealed that enhancing nursing practice in developmental care for preterm infants was an empowering process which covered three components: nurses, administrators and the health care team and hospital policy. The nurses' component comprised six strategies: 1) the provision of knowledge and practice skills; 2) the provision of opportunities for sharing knowledge and experiences; 3) the encouraging of self-directed learning; 4) the provision of opportunities for creative innovations; 5) motivation; and 6) the encouraging of regular developmental care practice. The outcomes of the process of enhancing nursing practice in developmental care could be categorized into two themes: 1) positive changes of nurses and 2) innovation. The knowledge gained from this study will provide guidance for future nursing research into ways of enhancing nursing practice, and thereby improve developmental care for preterm infants.*

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Background and significance

Technological advances in neonatal care have dramatically improved survival rates of infants born prematurely and hospitalized in neonatal intensive care units (NICUs). Despite the improved survival rates, many infants continue to face a significant risk of severe neurodevelopmental problems, including major permanent neurosensory impairments; cognitive and language delays; motor deficiencies; neurobehavioral and socioemotional problems; and

Tipawan Daramas, *R.N., Ph.D. candidate, Faculty of Nursing, Chiang Mai University, Thailand*
Ratanawadee Chontawan, *R.N., Ph.D., Associate Professor, Faculty of Nursing, Chiang Mai University, Thailand*
Jarassri Yenbut, *R.N., Ph.D., Assistant Professor, Faculty of Nursing, Chiang Mai University, Thailand*
Jariya Wittayasooporn, *R.N., Ph.D., Assistant Professor, Department of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Thailand*
Pikul Nantachaipan, *R.N., Ph.D., Assistant Professor, Faculty of Nursing, Chiang Mai University, Thailand*

learning disabilities.[1-4] Preterm infants hospitalized in NICUs are exposed to numerous stressors, including painful stimuli, disruption of sleep, excessive noise and light level, and frequent handling associated with medical or nursing procedures.[5-6] Many research studies have indicated that these stressful stimuli in NICU cause damage to the brain and nervous system.[7-10]

Developmental care has been found to minimize the stress experienced by preterm infants and help these infants improve their neurodevelopmental outcomes.[7,11-13] Developmental care activities include decreasing light and noise in the neonatal unit, the clustering of nursing care, using specific positions, and the involvement of active parental participation in care-giving.[14] The goal is to promote stable, well-organized infants who can conserve energy for growth and development.[15] Research regarding the effects of developmental care has shown a positive trend towards improved short-term growth, decreased respiratory support, decreased length and cost of hospital stay, and improved neurodevelopmental outcomes.[12] Furthermore, there are no harmful effects of developmental care described in the literature. Additionally, developmental care is currently a central concept in neonatal care and accepted as best practice in the NICU.[15,16-17] However, changing nursing practice to incorporate a developmental care model continues to be an on-going challenge. It was important to initiate systematic changes in developmental care with the full involvement of staff nurses because their cooperation and support was essential to successful implementation. The purpose of this study was to enhance nursing practice in developmental care for preterm infants and to investigate the process of enhancing nursing practice in developmental care in NICU.

Belief in the concepts of "nurses have their own capacities, nurses have a wealth of practice knowledge, and nurses can change their practice by themselves," PAR is considered the most appropriate methodological choice for this study. The principle of PAR focuses on collaboration between researcher and participants. Moreover, in regard to PAR, the participants are seen as the experts who can explore and develop their own circumstances in the best possible way.[18] The PAR process will help to identify the problems and enhance appropriate clinical practice in developmental care for preterm infants. This process would enable nurses to move gradually from current practices of premature infant care to the use of the developmental care interventions, and this should lead to sustained change.

Theoretical Framework

This study was guided by critical social theory, and the research model was participatory action research. Based on critical social theory, nursing practice in developmental care was initiated by the staff nurses rather than by managers or academics, the latter of whom have little current clinical experience; indeed, the staff nurses had previously experienced oppressive social conditions which had prevented them from exercising their potential. Notably, when many practice guidelines were developed predominantly by the Nursing Section and then sent to the wards, the nurses who were familiar with this top-down kind of practice lacked any purposeful participation in the decision-making. The PAR approach helped to empower participants by their active participation as co-researchers in the study in order to initiate actions and changes during the research process that could be sustained once the project was completed. Problems and solutions were identified by the nurses themselves. This

study follows the steps of PAR process which involves repeated cycles of self-reflection followed by planning a change, taking action and then observing the processes and consequences of the change, reflecting on these processes and consequences, and then planning, acting, and observing.[19]

Research Design

Participants and Setting

The participants were 30 nurses working in the neonatal intensive care unit during the study period. Of these NICU nurses, a head nurse and seven staff nurses were formed as a developmental care team. Their participation was procured on a voluntary basis. In addition, all thirty NICU nurses committed themselves to participate in the study for the entire period.

The research setting was a neonatal intensive care unit at a university hospital in Bangkok, Thailand.

Method of Data Collection

Four methods were used to conduct the investigation in this study. There were group meetings, participant observations, interviews, and the maintenance of a research diary. The aims of these methods were to identify the problems related to developmental care practice, to determine the potential problems that need to be resolved, and finding the solutions to such problems.

Research Process and Protection of Human Rights

Before conducting the research project, approval was obtained from the ethic committees of the institutes in which the study was carried out. All participants were ensured of confidentiality, and asked to sign the informed consent agreement. Participants were informed that they could withdraw their participation at any time. The research process consisted of the following six steps:

Step 1: Gaining cooperation from administrators and participants

After having first received approval from the nurse administrator, the researcher subsequently contacted the Head Neonatologist of the Pediatric Department and the head nurse of the NICU to explain the project. The head nurse acted as a gatekeeper to assist the researcher in arranging a meeting to introduce the researcher to all staff nurses. During the meeting, the researcher introduced herself to all of the staff nurses and informed them about the objectives, research processes, benefits of the study to the NICU, their involvement in the study, and the benefits to them as participants. All of them agreed to participate in the research project and indicated their agreement by duly completing and signing the informed consent form.

Step 2: Developmental care team formation

A head nurse and seven staff nurses volunteered to be a working group, namely, the developmental care team. They rationalised that the NICU is a critical care setting where patients' clinical condition changes rapidly, which necessitates the constant requirement of emergency care and patient monitoring. In view of this observation, the participation of all of the nurses was impracticable from the beginning of the study, yet all staff nurses received comprehensive information from the meetings, and their suggestions and comments were fully considered at group discussions.

Step 3: Problem identification

The current problems of developmental care practices in the unit were identified through three assessments: 1) participant observations,

2) individual interviewing, and 3) group meetings. The researcher worked in the NICU and observed developmental care practices. Observation notes included a record of the following considerations: What were the developmental care practices being implemented on the unit? Were there any problems with the developmental care practices? What comments have been said about the developmental care practices? In regard to these questions, an interview was conducted with the head nurse. The goal of this interview was to gain a better understanding of the developmental care practice situation in the unit. Additionally, the group meetings with all the staff nurses aimed to identify any problems by reflective process. The participants were encouraged to explore, identify, brainstorm, and clarify any existing or potential developmental care practice problems in the unit by group discussion and reflection.

Step 4: Planning for solving problems and preparing for readiness for implementation

After the consensus concerning any problems had been obtained, the researcher arranged a group meeting for the developmental care team to consider the problems and plan for appropriate solutions. The problems identified in the problem identification step were presented and discussed in a group meeting. Once the problems were clarified, the problem solving strategies were designed. Additionally, the participants were encouraged to discuss corresponding responsibilities and appropriate time frame for the execution of each task.

Step 5: Implementation

The developmental care practice was introduced into the unit. The participants were mainly the health care providers who implemented and monitored the plan during and after the execution. Developmental care was provided to preterm infants by following the developmental care protocol. The "QUIET PLEASE" signs were placed around the infants' bedsides and nursing stations throughout the NICU. The incubators were covered and the lights were dimmed. The monitor alarm sound levels were turned down. The infants were nestled and positioned in flexed position. Care-giving activities were organized to provide longer periods of rest without interruptions. The developmental care protocol was also included in the infant record file as a reminder for staff to follow the developmental care practices. The developmental care protocol along with the developmental care assessment and record form were incorporated into a single page to facilitate ease of completion of the evaluation form. After performing the developmental care practices, the participants indicated their practice in the developmental care assessment and record form.

Step 6: Evaluation

The researcher conducted activities to evaluate the implementation of developmental care practices in the NICU including 1) analyzing data from the developmental care assessment and record form, and 2) analysing results of participant observations and reflections from the participants.

Trustworthiness

The strategies used to achieve validity in this study were Guba's criterion for validation of qualitative research[20] by applying the criterion of credibility, transferability, dependability, and conformability. Credibility in this study was strengthened by using multiple data sources to confirm the accuracy of the findings. Data sources included group meetings, participant observations, individual interviews, and a research diary. A second method to ensure the credibility was asking the participants to read the findings of the study

to confirm the reliability of the data. The researcher's interpretation of the data was checked for validity on an ongoing basis by the participants. Moreover, by being at the research for the duration of eight months, the researcher ensured that there was prolonged participation at the study site to overcome distortions produced by the presence of the researcher. The transferability of this research was assured by providing a thick description of the data, then, the readers would be able to decide if the findings could be transferred to their settings. In relation to dependability, the researcher used several methods in such a way that the weakness of one was compensated by the strength of another. Conformability of this study was supported by the researcher's subsequent documentation of the participants' appropriate and adequate reflection to support the findings.

Results

The findings consisted of the process and outcomes of enhancing nursing practice in developmental care for preterm infants.

The process of enhancing nursing practice in developmental care for preterm infants was the empowering process which covered three components: nurses, administrators and the health care team, and hospital policy.

Nurses

Nurses played vital roles in delivering developmental care in the NICU. The process to empower nurses to cooperate and maintain developmental care in their practice included the following activities.

1. Providing knowledge and practice skills

The developmental care team provided knowledge and skills to all staff nurses who worked in the NICU. The strategies used for improving nurses' knowledge and skills consisted of two methods: conference and workshop.

1.1 Conference: The conference was used as a main method to increase staff knowledge because it was the most feasible and appropriate that allowed all of the 22 other staff nurses including practical nurses to participate. The educational contents were composed of the importance of delivering developmental care, the impact of the NICU environment for preterm infants, Als' synactive theory of development, research studies related to developmental care, and how to bring it back to practice in the setting. The physician residents who provided care in the NICU also attended the educational sessions.

1.2 Workshop: The workshop was set up after the lecture session in the afternoon for everyone to practice positioning and nestling. This was achieved by the demonstration and return demonstration by the developmental care team. All staff nurses had a chance to practice and the team provided suggestions for the correct techniques. The return demonstration reassured that all staff nurses positioned and nestled the infants correctly.

By doing this, the staff nurse could perform developmental care with confidence. The participants stated that they gained more knowledge regarding developmental care and learned how to implement developmental care in their own practices. The head nurse also gave opinion that staff nurses were very enthusiastic about performing developmental care in the ward. They actively worked to change unit routines of their own care-giving practices to provide care that provided supportive development. Knowledge and skills could enhance nurses' confidence and power in making decisions about developmental care practice. These are prerequisites to nursing autonomy. Equally important was the fact that the participants mentioned that they were

now able to communicate the developmental care practices to other disciplines within the hospital. They said they would suggest to medical teams to be quiet on their respective rounds. Moreover, they dared to negotiate with the medical residents requesting them to perform unnecessary procedures at other times and to not disturb the rest period of the infants.

2. Providing opportunities for sharing knowledge and experiences

After staff nurses received knowledge and practice skills, developmental care was implemented in the ward. The participants were then empowered to share their knowledge and experiences to enhance developmental care practices. Group meetings were used as the main method to provide the opportunities for the participants to reflect on their daily practices. Reflections and discussions allowed the participants to share knowledge and experiences regarding developmental care. The sharing of knowledge and experiences helped to develop nursing knowledge and clinical expertise. Nurse participants pointed out that they acquired valuable knowledge about developmental care from group members' shared experiences which resulted in enhanced changes to their practices. Importantly, the participants took great pride in their unit when they stated that developmental care had been implemented in their unit better than at other units. Most participants were proud of their developmental care activities, and especially that they had been incorporated into the practices of the unit.

3. Encouraging self-directed learning

To enhance developmental care for preterm infants, the encouragement of self-directed learning was also important. Nurse participants were encouraged to continuously learn by themselves. The reading materials and poster presentations were used to encourage self-directed learning of staff nurses. The developmental care team searched articles of developmental care from internet, nursing journals, and books. Articles were passed around to other nurses on the unit so that they could study the developmental care information in their own time. In addition, poster presentations allowed their colleagues to study as often as they needed. The contents on the posters were changed on a monthly basis by the team.

4. Providing opportunities for creative innovation

In the process of enhancing nursing practice in this study, the developmental care team had opportunities to learn, discuss, and share knowledge in the group meetings. By providing these opportunities, innovation creation occurred amongst the nurses. The two most important components of innovation in this study were as follows

4.1 Developmental care protocol: The developmental care team pointed out that the protocol could provide a clear picture of practices for care-givers and for nursing care standards. The developmental care protocol was developed based on evidence and work experiences, and the members of the team also considered whether the protocol was appropriate and feasible to implement in the practice setting. Accordingly, the protocol was sent to the developmental care experts for review of its content clarity and feasibility of the limits of its utility in the clinic. The other 22 staff nurses also collaborated to improve the developmental care protocol by writing comments and suggestions on the protocol which was thereafter inserted in the flowchart record for every infant. The participation of staff nurses in the improvement of the developmental care protocol gave a sense of

ownership. By doing this, staff nurses were enhanced to cooperate in changing their practices.

4.2 *Making a supporting pillow:* During the planning stage, a member of the developmental care team had an idea of making a supporting pillow to use instead of the blanket roll that made positioning and comfortable nestling easier and more convenient to achieve. The supporting pillow was tried out with the infants and the developmental care team agreed to use it in the NICU. After some experimentation and adjustment, the pillows were utilised by all nurses and it was found that not only were the pillows easy and convenient to use, but they also assisted

5. Motivation

During the implementation stage, the developmental care team raised the idea of staff nurse motivation. The aims were to increase nurses' awareness and to gain staff nurses' cooperation in developmental care practice. The strategies used for motivation consisted of two methods: 1) rewards; and 2) the progress report of the developmental care practice.

5.1 Rewards: Rewards were given to those who followed the developmental care protocol such as utilising a low level voice while they were performing their duties. Rewards were the gifts that staff nurses wanted and proposed to the head nurse. The rewards helped to motivate the staff nurses to practice developmental care due to the fact that they acquire the gifts that they wanted if they incorporated developmental care into their practice. The honour rewards were given to the winners by the head nurse in the ward's monthly meeting.

5.2 Progress report of developmental care practice: The developmental care practice was recorded by the staff nurses who provided developmental care to the preterm infants and presented to staff nurses in the ward's monthly meeting. The aim was to show the trend of developmental care practice and to encourage staff nurses to adhere to it. In addition, the evaluation of the progress in developmental care practice was presented on the board in the NICU, so the participants could monitor their progress in practice.

6. Encouraging regularity of developmental care practice

The strategies used to stimulate all nurses to regularly perform developmental care included peer reminder, posting a quiet sign, role modeling, screensaver of computers and the developmental care assessment and record form.

6.1 Peer reminder: During performance of nursing care for preterm infants, the developmental care team encouraged the staff members to use gentle reminders to remind each other to adhere to developmental care practice. Staff nurses acknowledged that they should be careful not to offend their peers and used diplomatic reminders to encourage developmental care practice.

6.2 Posting a "QUIET PLEASE" sign: The "QUIET PLEASE" signs were designed to raise the awareness of staff and visitors regarding noises in the NICU to ensure their cooperation in controlling environmental noises. The team designed the "QUIET PLEASE" sign with an aim to make it eye-catching with the use of a cartoon to convey the intended meaning. A cartoon picture of a sleeping baby was used as a sign. The signs were posted around the incubators and nursing stations, saying "SHHH, I'M GROWING" and "QUIET PLEASE, I'M SLEEPING."

6.3 Role modeling: The developmental care team represented a role model by following the developmental care practices as stated in the protocol on a regular basis so that other members would similarly follow. This was also to show that developmental care could be integrated in routine nursing care.

6.4 Screensaver of Computer: A screensaver of a desktop computer in the NICU was designed to remind the staff and visitors to cooperate in developmental care practices. All computers in the ward were programmed to show the developmental care symbol on the screensaver. A cartoon picture of a sleeping baby was made colorful to catch the attention of the passers-by, with the wording "SHHH, I'M GROWING" which could easily be seen by those who used the computer or by those who walked by. This was to remind everyone to comply with developmental care practices and to encourage caution when talking or making noises.

6.5 Developmental care assessment and record form: The developmental care assessment and record form was constructed for two purposes. Firstly, it was used to assess the developmental care practice in the ward. Secondly, it was a tool to remind all staff to perform developmental care. This form was designed by the participants based on their work experience, and the record form was included on the same piece of paper with the developmental care protocol which was inserted in the flowchart record for ease of use. Nurses who were responsible for providing care to the infants recorded their practices onto the form. Rechecking was carried out during shift changes to see if developmental care had been practiced. The developmental care assessment and record form was used as a medium for nurses to remind themselves to regularly practice developmental care.

Administrators and the health care team

Both nurse administrators and hospital administrators strongly supported the proposed project as it helped to promote the infants health at the initial step in the hospital and it was consistent with the hospital policy for health promotion within the hospital. The administrators supported the initiation of developmental care in the unit through staff education by providing resources including budget, time, and facilities. The hospital administrators provided further funding support for two-day conferences and workshops. Concurrently, the days of attendance were designated as regular working days for the attendants.

Apart from the support from the hospital administrators, nurse administrators and the physicians, the team also considered the scheduling of procedures performed by other hospital departments such as in the laboratories, radiology, and other diagnostic departments. The team provided them with information about the project which proved to be helpful in gaining their cooperation. Most procedures were scheduled at convenient times for the infants although there were times that needed to be compromised due to scheduling demands of other departments.

Hospital policy

During the study period, hospital accreditation was developed and implemented as standardization in the hospital policy. The neonatal intensive care unit proposed a developmental care project as a quality care project to serve the hospital policy. The researcher and team members realized that the hospital accreditation policy encouraged staff nurses to cooperate in improving the quality of nursing care and helped the team to work more easily. Moreover, health promoting hospital was

currently the hospital policy, developmental care aimed at promoting infants' development and preventing developmental problems started from the first day of the infants in the NICU. Naturally therefore, this project was fully supported by the hospital administrators and nurse administrators and a consequence of this support, was that the project was more successful.

Discussion

Through the process of enhancing nursing practice in developmental care for preterm infants, the nurses were empowered to maintain control over their practice. A key element that empowered the staff nurses was providing knowledge and skills. In this study, the nurse participants learned much of their developmental care knowledge from conferences, workshops, articles, poster presentations, and role models. The increase in developmental care knowledge served to enhance the power of the nurses in relation to developmental care practice. The increased knowledge that the nurse gained about developmental care means that the nurses have gained the power of practice or exerted greater power (ie. responsibility) that hitherto. Mrayyan[21] pointed out that implementing changes requires improving the efficiency of nurses. Having a good level of knowledge and skills will enhance nurses' confidence in making decisions about their practices.

In regard to the activities of the group meetings, the nurses were encouraged to become involved in decision making regarding their patient care, improving the quality of their nursing care, and enhancing their autonomy. Autonomy is an essential element of the nursing profession[22-23] and is often addressed in the context of accountability, authority and responsibility.[24-25] The freedom to make independent decisions about one's practice is an essential aspect of autonomy.[21] The nurse participants in this study were encouraged to participate in decision making in group meetings, which was a part of their autonomy and thus, enhanced their power.[26-27] Enhancing the nurses' autonomous decision making is viewed as a strategy to strengthen their overall autonomy, and in turn, improve patient care.

Developmental care was considered by the NICU team to be a specialized nursing care in the field of neonatal nursing. Implementing developmental care in the NICU challenges the successful implementation of the roles of the advanced practice nurse (APN). The process of enhancing the nursing practice in developmental care using the PAR model in this study helped the staff nurses to develop the skills that would allow them to practice at an advanced level. Pickler and Reyna[28] asserted that implementing developmental care in the NICU provides opportunities for advanced practice nursing in the care of high-risk infants. Delamatter[29] also mentions that advanced practice nursing encompasses the respective components of specialization and autonomy. As a result of the study, the nurses became richer in knowledge, skills, experience, and confidence in their developmental care practice. This knowledge will help them to strengthen advanced practice nursing in terms of achieving sustainability in developmental care practice.

In the process of enhancing nursing practice, the nurse participants had opportunities for creative innovation. From this, new materials were created by the nurse participants to make their practice more effective and easier to implement. Specifically, the developmental care protocol was developed and the supporting pillow was invented. The nurses had opportunities to use their competence to develop work routines and this demonstrated the current health care

environment requirement of creative changes necessary to improve nursing practices. Hence, it would be advantageous if, where it would be appropriate; administrators provided all staff nurses opportunities to use their potential for creative innovation in order to enhance nursing practices over a wider sphere of care.

Conclusion and Recommendations

The process of enhancing nursing practice in developmental care enabled the staff nurses to improve their knowledge, clinical skills, and to gain greater confidence in their nursing practices. Most nurses were proud of the developmental care that was incorporated into the standard care of their unit. The nurses also expressed their opinions that the NICU infants who had received developmental supportive care exhibited longer sleep periods, more stable vital signs and oxygen saturation. This information was obtained from the nurses' reflections during the developmental care implementation. Even though it might not be possible to conclude with complete assurance that developmental care has a positive influence on the development of infants, the process of enhancing the nursing practice in this study did help the nurses to feel good about the special care they offered to the NICU infants.

This study showed that PAR is an effective method to improve nursing practice and provide the opportunity for nurses to develop new skills of developmental care. It would be advantageous if the NICU nurses continued to increase their knowledge and skills and develop greater expertise in developmental care. This would further increase the nurses' autonomy and also provide advances in developmental care practice of NICU nurses.

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การส่งเสริมการปฏิบัติพยาบาลเพื่อส่งเสริมพัฒนาการในทารกเกิดก่อนกำหนด

ทิพวัลย์ ดารามาศ, รัตนาวดี ชอนตะวัน, จรัสศรี เย็นบุตร, จริยา วิทยะศุภร, พิกุล นันทชัยพันธ์

บทคัดย่อ: การศึกษานี้มีวัตถุประสงค์ที่จะส่งเสริมการปฏิบัติพยาบาลเพื่อส่งเสริมพัฒนาการในทารกเกิดก่อนกำหนด โดยใช้การวิจัยเชิงปฏิบัติการแบบมีส่วนร่วมเป็นตัวกระตุ้นให้เกิดการเปลี่ยนแปลงการปฏิบัติพยาบาล ผู้ร่วมวิจัยเป็นพยาบาลที่ปฏิบัติงานในหอผู้ป่วยวิกฤตทารกแรกเกิดของโรงพยาบาลมหาวิทยาลัยแห่งหนึ่ง ในกรุงเทพมหานครจำนวน 30 คน การเก็บข้อมูลใช้หลายวิธีร่วมกัน ผลการศึกษาพบว่า การส่งเสริมการปฏิบัติพยาบาลเพื่อส่งเสริมพัฒนาการในทารกเกิดก่อนกำหนด เป็นกระบวนการเสริมพลังอำนาจซึ่งประกอบด้วย 3 องค์ประกอบคือ พยาบาล ผู้บริหารและทีมสุขภาพ และนโยบายของโรงพยาบาล ในส่วนขององค์ประกอบด้านพยาบาลประกอบด้วยกลยุทธ์ 6 วิธีคือ 1) การให้ความรู้และฝึกทักษะการปฏิบัติ 2) การเปิดโอกาสในการแลกเปลี่ยนความรู้และประสบการณ์ 3) การกระตุ้นการเรียนรู้ด้วยตนเอง 4) การเปิดโอกาสในการสร้างนวัตกรรม 5) การจูงใจ และ 6) การกระตุ้นให้มีการปฏิบัติเพื่อส่งเสริมพัฒนาการในทารกเกิดก่อนกำหนดอย่างสม่ำเสมอ ผลลัพธ์ของกระบวนการในการส่งเสริมการปฏิบัติพยาบาลเพื่อส่งเสริมพัฒนาการในทารกเกิดก่อนกำหนดสามารถแบ่งออกได้เป็น 2 ประเด็นคือ 1) การเปลี่ยนแปลงในทางที่ดีของพยาบาล และ 2) การสร้างนวัตกรรม ความรู้ที่ได้จากการศึกษาครั้งนี้สามารถใช้เป็นแนวทางสำหรับนักวิจัยทางการพยาบาลในการศึกษาแนวทางในการเปลี่ยนแปลงการปฏิบัติพยาบาลและการส่งเสริมพัฒนาการในทารกเกิดก่อนกำหนด

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ทิพวัลย์ ดารามาศ *R.N. นักศึกษาปริญญาเอก คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่ ประเทศไทย*
รัตนาวดี ชอนตะวัน *R.N., Ph.D. รองศาสตราจารย์ คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่ ประเทศไทย*
จรัสศรี เย็นบุตร *R.N., Ph.D. ผู้ช่วยศาสตราจารย์ คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่ ประเทศไทย*
จริยา วิทยะศุภร *R.N., Ph.D. ผู้ช่วยศาสตราจารย์ ภาควิชาพยาบาลศาสตร์ คณะแพทยศาสตร์โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล ประเทศไทย*
พิกุล นันทชัยพันธ์ *R.N., Ph.D. ผู้ช่วยศาสตราจารย์ คณะพยาบาลศาสตร์ มหาวิทยาลัยเชียงใหม่ ประเทศไทย*