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Factors influencing stress among mothers of preterm infants hospitalized in neonatal intensive care unit

PAICHIT AMSRI

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ไพรจิตร อ่ำศรี

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Factors influencing stress among mothers of preterm infants hospitalized in neonatal intensive care unit

PAICHIT AMSRI

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Giving preterm birth can cause stress to mothers especially if the baby is admitted in neonatal intensive care unit [NICU]. This study aimed to examine levels of stress and identify influencing factors of maternal stress which included nursing support, preterm birth weight, delivery type, and experiences of having premature birth. A convenience sample of 90 mothers with preterm infants hospitalized in NICU, Roi-Et Regional hospital, was recruited in this study. Data was collected during March to May, 2018. Research instruments included a personal information form, a medical record form, the nurse parent support tool, and parental stressor scale: neonatal intensive care unit. Descriptive statistics and standard multiple regression analysis were used to analyze data.

Results showed the mean score of overall maternal stress was 69.12(SD = 11.57), where 68 % of the mothers reported high levels of stress. Preterm birth weight and emergency caesarean section were significantly influencing maternal stress (R^2 = .442, $p < .001$). In addition, preterm birth weight was the strongest influencing factor of maternal stress in this sample ($\beta = -0.61$, $p < .001$), followed by emergency caesarean section ($\beta = .27$, $p < .05$).

Mothers have several stressful perceptions when in NICU with their premature infant. NICU nurses can discourse these concerns and emotional states with empathetic information skills and being mindful of the importance of involving the mothers as much as possible in their preterm care.

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CHAPTER 1
INTRODUCTION

Statements and significance of the problems

An estimated 15 million babies are born preterm (before 37 completed weeks of gestation), and this number is increasing every year. Preterm birth complications are the leading cause of death among children under 5 years of age, accountable for approximately 1 million deaths in 2015. Preterm birth refers to an infants born before 37 weeks of pregnancy. Premature birth can be sub-divided based on gestational age: extremely preterm (< 28 weeks of gestation), very preterm (28 to < 32 weeks) and moderate preterm to late preterm (32 to < 37 weeks). More than 60 % of preterm births occur in Africa and South Asia. In the developing countries, on average, 12 % of babies are born preterm compared with 9 % in developed countries. In Thailand preterm birth rate is 12 % (World Health Organization [WHO], 2018).

Preterm birth adversely affect newborns, economic, and parents, especially their mothers. Preterm birth negatively affects newborns' health both short-term and long-term. Short-term effects include infection, breathing problem, feeding difficulty, necrotizing enterocolitis, bronchopulmonary dysplasia, intraventricular hemorrhage, and retinopathy. For long-term effects, their complications include cerebral palsy; vision, hearing, and neurosensory problems; developmental delay; learning disability; and behavior problem (Centers for Disease Control and Prevention [CDC], 2013; Fanaroff & Fanaroff, 2013; (Aagaard and Hall 2008)Hawes, McGowan, O'Donnell, Tucker, & Vohr, 2016; MacDonald & Seshia, 2016; Shapiro-Mendoza & Lackritz, 2012; Treyvaud, 2014).

Preterm birth influences economics cost of health care specifically. Preterm infants is a main health care issue worldwide due to it economics burdens

(Provenzi et al., 2016). Preterm infant care needs expert specialists, high cost medical support, and extended length of hospitalization. It is more difficult to measure the true cost of preterm care beyond the birth hospitalization (MacDonald & Seshia, 2016). In 2005, the Institute of Medicine [IOM] estimated annual expenditures related to preterm birth as $26.2 billion or $51,600 per infant born preterm. Medical services contributed to $16.9 billion, maternal delivery contributed to $1.9 billion, early intervention service cost for newborns contributed to $611 million. Special education service for four disabling conditions including cerebral palsy, mental retardation, vision impairment and hearing loss, among preterm birth added $1.1 billion whereas lost family income related to those disabilities contributed to $5.7 billion (IOM, 2007; March of Dimes, 2015).

Preterm babies impacts their parents. Parenthood have been known as a period of stress and change for mothers and fathers put an effort to hold a normal development process of parenthood. Parents with preterm infants have higher stress than parents of term infants for years, especially parents with newborns' hospitalization (Schappin, Wijnroks, Uniken Venema, & Jongmans, 2013; Treyvaud, Lee, Doyle, & Anderson, 2014). Newborns' hospitalization and unexpected events from preterm birth can be overwhelming for their parents. Families of these preterm infants may perceive infants' hospitalization as a crisis event (Eutrope et al., 2014). They may felt stress from their inability to succeed their expected role as parents caused by separation from infants (Helle et al., 2015; Kantrowitz-Gordon, Altman, & Vandermause, 2016). Parents may experience acute and/or prolonged stress attributable to having intense emotion due to facing uncertainty of newborns' health conditions (Fanaroff & Fanaroff, 2013).

Preterm birth directly affect maternal stress. In postpartum period, mothers are normally stressful about their new roles, and multi-complex life changes and demands. Mothers may be concerned with their infant care, their body change, and their exercise. Previous studies has found that more than half of mothers experienced

physical discomfort and emotional stress regarding to their new life, maternal role adaptation, and preterm infant care (Wu & Hung 2016). Mothers with preterm infants might confront with their preterm hospitalization and uncertainty outcomes impacting to mothers' capability of coping with their stress (Howe, Sheu, Wang, & Hsu, 2014; Teerarungsikul, Sananreansak, & Thechaverakorn, 2002; Teerarungsikul, 2012). Mothers with preterm babies have risk of negative feelings more than mothers with term newborn (Bener, 2013; Howe et al., 2014). They may experience higher stress and depression, difficulty to sleep, and decreased sense of competence (Baker, McGrath, Pickler, Jallo, & Cohen, 2013). Long term stress in postpartum period might also affect mother-newborn attachment and mothers' psychiatrics morbidity (Wu & Hung, 2016).

Psychological stress concept of Lazarus (1999) has been well-defined. Psychological stress refers to a "balance of forces between environmental demands and the person's psychological resource" for dealing with stress. If persons cognitively appraise environment as exceed their resources endangering their well-being, persons will feel stressful. Persons proceed their interaction with environment via primary and secondary appraisal. Persons primarily appraise environment whether it is relevant to their wellbeing. They will have stress if they appraise it as harm, threat, or challenge. For secondary appraisal, persons focus on how to manage their stress.

Neonatal intensive care unit [NICU] environment has the possible to extremely stress for mothers of infants. NICU mothers especially experience numerous stressors related to preterm birth, medical illness of the infants, difficulty of the NICU environment and perceived vulnerability of the preterm newborn, in addition to stressors related with the normal transition process to motherhood (Miles, Funk, & Kasper, 1991). This study was included three subscales identifies maternal stress sources: the NICU physical environment (sights and sounds of the unit), the change in parental roles, and the infants' appearance and behavior. To define the stress that mothers experience, this study focuses on the relations between factors nursing

support, preterm birth weight, experience of having premature birth, and delivery type that can influence maternal stress during their infant admitted in NICU.

Unfortunately, mothers with infant hospitalized in NICU might take them to stressful situations of their infant. Those conditions might include "the severity of their infant's diagnosis, the infant's appearance and level of functioning, and the duration of their infant's length of stay". Environmental aspects that may influence the mothers' unique response to having an infant in the NICU might consist of difficulty fulfilling their maternal role, the medical equipment used for treatment, and the communication patterns and activities of the staff. All of these factors result in the mothers having a unique perception of their infant's situation, status, and condition (Miles & Carter, 1983).

From previous studies stress of mothers with preterm newborns hospitalized in NICU depends upon nursing support, delivery type, preterm birth weight, and experience of having premature birth. Nursing support is associated with maternal stress. In transition with stressful period, mothers with preterm infants may need support from healthcare provider specifically nursing staff to help them overcome both physical and emotional susceptibility and improve their parental role (Singsuwan, 2015; Tandberg, Sandtro, Vardal, & Ronnestad, 2013; Utasongkawat, 2010). On the other hand, lack of nursing support might increase maternal stress and impact their newborn care skills. Mothers of preterm newborns with lack of nursing support, have higher stress in comparison with mothers who have support from others (Kyno, Ravn, Smeby, Torgersen, & Gundersen, 2013; Mousavi & Keramat, 2016; Turner, Chur-Hansen, Winefield, & Stanners, 2015; Utasongkawat, 2010; Valizadeh, Zamanzadeh, Mohammadi, & Arzani, 2014).

Nursing support is thought increase coping strategies, whereas the belief that support from nursing staff available might increase the perception of situations as less stressful. Previous study found that during their infant's admission in NICU, mothers experienced higher stress comparable with fathers. Mothers of preterm infants might need support from nursing staff in NICU, especially the information and nursing care

(Tandberg et al., 2013). The investigators found that parents indicating a high perception of support from nursing staff and experienced low level of stress (Lam, Spence, & Halliday, 2007). The experimental design was evaluate parent's satisfaction and stress level during their infants admitted in NICU. The results found significant in the supportive group. Parents' satisfaction with the healthcare team including knowledge and understanding; communication and collaboration; and privacy and confidentiality compared with parents in control group. Thus, those parents in the supportive group reported lower stress level comparable with control group (Bernardo, Svelto, Giordano, Sordino, & Riccitelli, 2017). The previous studies show a moderate correlation between stress and nursing support in the neonatal intensive care unit ($R^2 = 0.35$). That mean "with a high level of nursing support, the stress perceived by the families would be less" (Lam et al., 2007; Magliyah & Razzak, 2015).

Preterm birth weight additionally impact maternal stress. Preterm birth weight additionally impacts maternal stress. Preterm birth with very low birth weight [VLBW] infants or infants born before 32 week gestation usually have higher medical complications and need to stay in NICU for longer period of time (Bender et al., 2013). Moreover, preterm with extremely low birth weight [ELBW] (< 1,000 grams) are related to neonatal death within 24 hours after birth three times higher than VLBW infants. During hospitalization of their VLBW babies, mothers may face situations that activate their stress including preterm health impairment, length of stay at hospital, and uncertainty conditions. (De Castro, Leite, & Guinsburg, 2016).

Preterm birth with VLBW infants or infants born before 32 week gestation usually have higher medical complications and need to stay in NICU for longer period of time (Bender et al., 2013). Moreover preterm with ELBW (< 1,000 grams) are related to neonatal death within 24 hours after birth three times higher than VLBW infants (De Castro et al., 2016). Therefore, preterm birth weight affect family relationship, and income, and specifically maternal stress. During hospitalization of their VLBW

babies, mothers may face situations that activate their stress including preterm health impairment, length of stay at hospital, and uncertainty conditions.

On the other hand, mothers having preterm with lower birth weight report higher stress comparable with mothers with VLBW (Helle et al., 2015; Potharst et al., 2015; Schappin et al., 2013). In addition, mothers with VLBW infants report more mental health problems, and experience higher emotional stress related to their preterm health and development in the first year of life comparing with mothers having term infants (Gonzalez-Serrano, Lasa, & Hernanz, 2012; Howe et al., 2014; Miceli et al., 2000; Treyvaud et al., 2014).

Delivery type also influence maternal stress. Delivery type influenced maternal stress after birth. The results found that mode of delivery have strong relation with women's psychological and physical outcomes after birth. Especially, women who had forceps-assisted vaginal births and unplanned caesareans section seemed to have poor psychological wellbeing after birth. Those women might experience lack of control, worry and have intense period of uncertainty during labor and birth (Rowlands & Redshaw, 2012). Cesarean birth increases additional stress, including the stress of surgery. Mothers who experience cesarean section have described feelings of depression, nervousness, guiltiness, less satisfaction with the birth experience, loss of control, and loss of self-esteem. The most common indications of emergency caesarean section were dystocia, fetal distress, and mal-presentation. During labor, women who have induced labor, oxytocin for augmentation, and epidural as pain relief are more likely to have emergency caesarean section. Moreover, their infant were three-times more likely to be admitted in the NICU after birth (Costa-Ramon, Rodriguez-Gonzalez, Serra-Burriel, & Campillo-Artero, 2018). Cesarean birth adds additional stress, including the stress of surgery. Women who experience cesarean delivery have reported feelings of depression, anxiety, guilt, less satisfaction with the birth experience, loss of control, and loss of self-esteem (Benzouina, Boubkraoui et al. 2016). In addition, having forceps-assisted vaginal birth or unplanned caesareans

section seem to have poor psychological well-being, such as anxiety and/or posttraumatic stress disorders, at 1 and 3 month after birth. In addition, results of a qualitative study has been found that postpartum women with emergency cesarean section had higher stress than women with vaginal birth (Guittier, Cedraschi, Jamei, Boulvain, & Guillemin, 2014; Rowlands & Redshaw, 2012).

Mother's experience of having premature birth might impact their stress. Posttraumatic stress response characteristics have been identified in mothers who have experienced the birth of a preterm infant and NICU admitted (Holditch-Davis, Bartlett, Blickman, & Miles, 2003). Mothers might described their experience including stress, perceived that their life has change, taking in maternal role, and concerned more about baby health at least 6 month following preterm birth (Teerarungsikul, 2012). Several mothers who deliver preterm and have infants hospitalized in the NICU environment reported suffering and stressful memories of the NICU experience 2 months, 6 months, 9 months, and 12 months after discharge (Bener, 2013; Holditch-Davis et al., 2003; Miles, Carlson, & Brunssen, 1999). Whereas some mothers continue to report symptoms of distress related to the experience after 8 years (Kantrowitz-Gordon et al., 2016).

It showed that examining stress in postpartum period especially mothers with preterm newborns hospitalized in NICU is important. Postpartum women were often feel overwhelmed, exhausted and isolated in their roles (Osman, Saliba, Chaaya, & Naasan, 2014). The feeling inadequacy and helplessness can generate awful suffering (Finkelstein, 2017).They might experience for few hours to a few weeks after child birth. Unfortunately, stress go on to develop clinical depression (Finkelstein, 2017). Long term stress in postpartum period might also affect mother-newborn attachment and mothers' psychiatrics morbidity (Wu & Hung, 2016). More specifically, maternal stress after giving birth can have a long-term adverse effect on the infants' quality of attachment to their mothers, as well as on their interactive, mental, and socio-emotional functioning (Hall et al., 2017).

Nursing support is thought increase coping strategies, whereas the belief that support from nursing staff available might increase the perception of situations as less stressful. Mothers might expect support from nursing staff regarding to information on their infants requiring special care, empowerment in decision making, a pleasant environment, and emotional support during their infants admitted in NICU (Sikorova & Kucova, 2012). On the other hand, preterm characteristics ELBE/ VLBW were more severity and higher medical complications. Mothers' perception higher stress level for their infants during hospitalization association with maternal role, their infant's appearance, and sight and sound, and a number of staff around their babies (Alkozei, McMahon, & Lahav, 2014; Tandberg et al., 2013; Wormald et al., 2015). Moreover, maternal characteristics such as experienced having preterm birth, delivery type unplanned and/or emergency caesarean section also affect mother's ability to coping with stressful situations with preterm infants. (Bener et al., 2013; Guittier et al., 2014; Howe et al., 2014; Potharst et al., 2015; Rowlands & Redshaw, 2012; Sampson, Volanda, & Padilla 2015; Wormald et al., 2015). It is related with concept of stress and coping "balance of forces between environmental demands and the person's psychological resource" for dealing with stress (Lazarus, 1999).

Previous study in Thailand examined stress level in mothers with preterm infants and coping of Muslim adolescent mothers having premature infants admitted in neonatal intensive care units in the three southern border provinces (Singsuwan, 2015). Another results revealed mothers experienced infants hospitalized in NICU as an uncertainty and unexpected situation. Mothers might describe their experience including stress, perceived them life has change, taking in maternal role, and concerned more about baby health at least 6 month following preterm birth (Teerarungsikul et al., 2002; Teerarungsikul, 2012). And experimental study showed maternal stress level decrease in experimental group at the .05 level ($p < .05$) (Utasongkawat, 2010). Suggestion about stress level and identifying factors influences stress in mothers with preterm infants hospitalized in NICU are limit classify. This

study aim to examine the level of stress and influencing factors including nursing support, preterm birth weight, experience of having premature birth, and delivery type to maternal stress with preterm infants hospitalized in NICU. The results of this study may increase nurses' understanding factors related mothers stress level and nurse might identify mother's needs.

Research objectives

1. To determine level of stress among mothers with preterm infants hospitalized in neonatal intensive care unit.

2. To identify influencing factors of maternal stress including nursing support, preterm birth weight, delivery type, and experience of having premature birth.

Research hypothesis

Nursing support, preterm birth weight, delivery type, and experience of having premature birth influence stress among mothers of preterm infant's hospitalized in neonatal intensive care unit.

Scope of the study

The study focused on determine the level of stress in mothers, and identified influencing factors of stress among mothers with preterm infants hospitalized in NICU, at Roi-Et regional hospital with. Data were collected from March to May, 2018.

Variables of this study were as follows:

1. Independent variables: nursing support, preterm birth weight, delivery type, and experience of having premature birth

2. Dependent variable: maternal stress

Conceptual framework

This study is guided by evidences from literature reviews and the parental stress intensive care unit model, developed by Miles and Carter (1983). The model is commonly used in nursing profession as it provides a comprehensive approach for understanding, describing, and assessing sources of potential parent stress in NICU. Those conditions might include the severity of their infant's diagnosis, the infant's appearance and level of functioning, and the duration of their infant's length of stay. Environmental factors that may influence the mothers' unique response to having an infant in the NICU might consist of difficulty fulfilling their maternal role, the medical tools used for intervention, and the communication patterns and activities of the staff. Miles and Carter clarified that as a result of the several factors that can influence the mothers, each mother develops her own method of cognitively evaluating, or making decisions about the NICU experience. All of these factors result in the mothers having a unique perception of their infant's situation, status, and condition (Miles & Carter, 1983).

This study included three subscales identifies maternal stress sources: the NICU environment (sights and sounds), parental roles, and infants' appearance and behavior. Miles et al. (1991) revealed the most stressful feature of the NICU for 122 parents to be change in the parent–infant relationship, and the infants' appearance. The sights and sounds of the NICU caused lesser stress, and few parents reported stress in the area of staff communication and interactions. To define the stress that mothers experience, this study focuses on the relations between factors nursing support, preterm birth weight, experience of having premature birth, and delivery type that can influences maternal stress during their infant admitted in NICU.

Nursing support is associated with maternal stress. Mothers' perception support provide by nursing staff during infants hospitalization including: supportive communication and information giving; emotional support; esteem support; and caregiving support (Miles et al., 1999). Coping mechanisms such as utilization of social support are effective in managing the effects of stress and promoting individual

well-being. Thought coping strategies (mechanisms used to deal with a stress-inducing situation (Reeve, Shumaker, Yearwood, Crowell, & Riley, 2013). Accessibility and use of social support may be serve as protection from stress. Support from mothers' partner and/or family member, and healthcare providers help them overcome emotional susceptibility (Wu & Hung, 2016). On the other hand, lack of support might increase maternal stress. Mothers of preterm newborns with lack of support, have higher stress comparable with mothers who have support from others (Kyno et al., 2013). The previous studies show a moderate correlation between stress and nursing support in the neonatal intensive care unit ($R^2 = 0.35$). That mean "with a high level of nursing support, the stress perceived by the families would be less (Lam et al., 2007; Magliyah & Razzak, 2015).

Preterm birth weight additionally impact maternal stress. Mothers having preterm with ELBW reported higher stress comparable with mothers with VLBW (Helle et al., 2015; Potharst et al., 2015; Schappin et al., 2013). Preterm birth with VLBW infants or infants born before 32 week gestation usually have higher medical complications and need to stay in NICU for longer period of time (Bender et al., 2013). Moreover, preterm with ELBW (< 1,000 grams) are related to neonatal death within 24 hours after birth three times higher than VLBW infants. During hospitalization of their VLBW babies, mothers may face situations that activate their stress including preterm health impairment, length of stay at hospital, and uncertainty conditions. (De Castro et al., 2016).

Delivery type has an influence on maternal stress after birth. An unplanned emergency cesarean delivery can especially be very stressful because mothers whose emergency caesarean section confront with uncertainty outcome NICU admitted. The unexpected and uncertainty about their infants conditions have negative affect to stress level (Benzouina, Boubkraoui et al. 2016). In addition, mothers with its unfamiliar and invasive procedures occurring in rapid process, tension to ability of mothers to adjust their experience. Therefore, they develop tension in order to cope with their

unpleasant experience and its increase their stress.Those women might experience lack of control, worry and intense period of uncertainty during labor and birth (Rowlands & Redshaw, 2012).

Experience of having premature birth has negative affect to mothers stress. Mothers might described them experience including stress, perceived them life has change, taking in maternal role, and concerned more about baby health at least 6 month following preterm birth. Mothers of preterm may also have to cope with the awareness that they cannot care for their own infant, particularly if the infants are removed to special care, in which case they may be forced to come to terms with an extended hospital stay of unidentified length and the risk of life-threatening situations. This may lead to a sense of disappointment. Moreover, the consequences of giving preterm birth might be experienced differently when it is accompanied by additional sources of stress including financial, medical, social network, occupational. (Teerarungsikul, 2012).

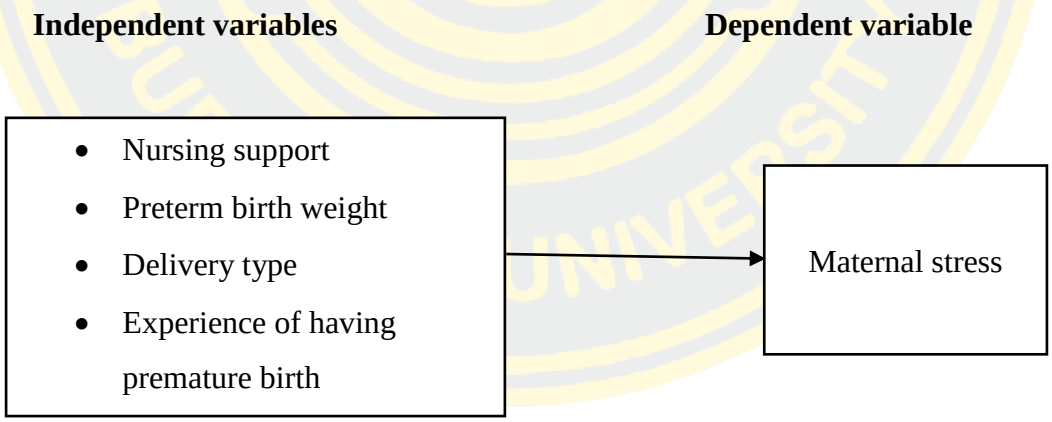

Figure 1 Conceptual framework

Definition of terms

Nursing support referred to maternal perception of received support from nursing staff when they needed. Support included 4 dimensions, communication and

provision of information, parental esteem support, caregiving support and emotional support. It was measured by the nurse parent support tool (Miles et al., 1999).

Preterm birth weight meant weight of preterm newborn at birth with a unit as gram. It was categorized in to 3 groups by weight independent of gestational age: low birth weight (LBW < 2,500 grams), very low birth weight (VLBW < 1,500 grams), and extremely low birth weight (ELBW < 1,000 grams). This data was from medical record of infants.

Delivery type was categorized in to 4 types: vaginal delivery, assisted vaginal delivery, elective cesarean section, and emergency cesarean section. This data was recorded from medical record of mothers.

Maternal stress meant mother's self-perceived stress associated with having a preterm infants hospitalized at the intensive care unit, divided into 3 subscales: sights and sounds, infant's behavior and appearance, and parental role. Maternal stress was measured by the parental stressor scale: intensive care unit (Miles, Funk, & Carlson, 1993).

Experience of having premature birth meant mothers' previous having preterm delivery (infants born before 37 weeks of pregnancy). This data recorded from medical record of mothers.

CHAPTER 2
LITERATURE REVIEWS

In this chapter, the researcher presented overviewed about issues and empirical finding about factors influencing stress among mothers with sick preterm newborn.

1. Preterm birth
   1.1 Definition of preterm birth
   1.2 Consequences of preterm birth
2. Concept of maternal stress in neonatal intensive care unit
3. Factors influence stress among mothers with preterm infant hospitalized in NICU
   3.1 Nursing support
   3.2 Preterm birth weight
   3.3 Delivery type
   3.4 Experience of having premature birth
4. Gaps of knowledge

Preterm birth

Definition of preterm birth

Preterm birth refers to an infants born before 37 weeks of pregnancy or fewer than 259 days since the first day of the women's last menstrual period (Quinn et al., 2016; CDC, 2013; WHO, 2016). Premature birth can be sub-divided based on gestational age: extremely preterm (< 28 weeks of gestation), very preterm (28 to < 32 weeks) and moderate preterm (32 to < 37 weeks). Moderate preterm birth may be added divided to late preterm birth (34 to < 37 weeks) (Blencowe et al., 2013). In 2011, March of Dimes has categorized preterm infants by weight independent of gestational age: low birth

weight (LBW < 2,500 grams at birth), very low birth weight (VLBW < 1,500 grams), extremely low birth weight (ELBW < 1,000 grams) (March of Dimes, 2011).

Consequences of preterm birth

From literature reviews, in year 2012, more than 1 in 10 infants were born preterm, disturbing families globally. And more than 1 million infants die each year due to complications of preterm birth. Moreover many survivors face a lifetime of disability, through education incapacities, visual and hearing problems (WHO, 2012). Preterm infants were face specific risks such as feeding problem cause by the coordinated suck and swallow process only starts at 34 weeks gestation. Preterm newborn's requirement help to feed and are higher possible to aspirate. Severe infections were additional common, and preterm infants were at higher possibility of threatened life when they get an infection. Preterm babies also have higher rate of respiratory distress syndrome, because preterm infant's lung are immaturity and lack of surfactant in the alveoli, affecting in collapsing lung that take extra pressure to inflate (Lawn et al., 2013; WHO, 2012).

Unfortunately, preterm babies less than 32 weeks gestation, are at higher risk to develop respiratory distress syndrome [RDS], even though this risk can be reduced by antenatal corticosteroids administration to pregnancy women with preterm labor. The most common condition in preterm newborn is neonatal jaundice, cause by the undeveloped liver cannot easy absorb bilirubin, and after neonatal hyperbilirubinemia, the preterm newborn's brain is at higher risk because of their blood-brain barrier is less well advanced to guard the brain. The brain injury in preterm newborn that most frequently is intraventricular hemorrhage. It's happening in the first few days after birth in about 1 in 5 newborn weight less than 2,000 grams. And it is frequently related to severity of RDS and hypotension (Lawn et al., 2013; WHO, 2012).

A smaller number of preterm infants might have hypoxic brain injury with white matter loss which differently from that seen in the brain of term newborns. Another problem, necrotizing enterocolitis is a fewer illness disturbing the intestinal wall of very preterm infants, with a characteristic X-ray image of gas in the bowel

wall. From this condition, formula feeding rises the risk compared to newborn who are feeding only breast milk. Born too early, also facing retinopathy of preterm because of abnormal proliferation of the blood vessels around the retina of the eyes, the condition might more severe if the preterm infant had administration high level of oxygen. Anemia of preterm newborn, also frequently develops at a few weeks of age by reason of delay in producing red blood cells as the bone marrow is undeveloped (Lawn et al., 2013; WHO, 2012).

Preterm infants with very low birth weight < 1,500 grams were at risk for mortality rates higher than 100 times that of those infants weight > 2,500 grams. Preterm newborn with low birth weight were also face at higher risk of long-term disability and reduced growth rates. Preterm babies with weight < 2,500 grams were more likely delayed motor and social development. Infants with low birth weight also have negative outcomes to a child's likelihood of having an education incapacity. Moreover, the impact of preterm with very low birth weight were associated to economic: high cost in medical care and treatments, special services in school and social, and reduced output in maturity (March of Dimes, 2012). Preterm with ELBW survival has improved with the extensive use of exogenous surfactant agents, maternal steroids, and advancements in newborn equipment's. The smallest age of possibility survival is now considered to be 23 weeks' gestation, with distributed information of survivors born at 21 - 22 weeks' expected gestation. In 2010, infant mortality rates were 24 times greater than preterm infants with low birth weight less than 2,500 grams, and 100 times greater than preterm babies with very low birth weight. For preterm infants' first year survival was 15.5 % for preterm birth with weight less than 500 grams. Preterm newborn with extremely low birth weight were more vulnerable to all problems of early birth, both in the immediate newborn period and after discharge from the hospital (March of Dimes, 2012).

Preterm birth influences economics cost of health care specifically. Preterm infants is a main health care issue worldwide due to it affect economics (Provenzi et

al., 2016). Preterm infant care needs expert specialists, high cost medical support, and extended length of hospitalization. It is more difficult to measure the true cost of preterm care beyond the birth hospitalization (MacDonald & Seshia, 2016). In 2005, the Institute of Medicine [IOM] estimated annual expenditures related to preterm birth as $26.2 billion or $51,600 per infant born preterm. Medical services contributed to $16.9 billion ($33,200 per preterm infant). Maternal delivery cost contributed to $1.9 billion ($3,800 per preterm infant). Early intervention services cost for newborns contributed to $611 million ($1,200 per preterm infant). Special education services for four disabling conditions including cerebral palsy, mental retardation, vision impairment and hearing loss, among preterm infants added $1.1 billion ($2,200 per preterm infant). Whereas lost family income related to those disabilities contributed to $5.7 billion (11,200 per preterm infant) (IOM, 2007, March of Dimes, 2015).

Preterm babies impact their families. The birth of preterm or sick babies are unexpected stressful life events for parents, especially psychological unprepared. A recent studied found that the perceived loss of parental role (e.g., separation from the infants) was the most stressful aspect in the NICU (Helle et al., 2015). Parenthood have been known as periods of stress and change during which mothers and fathers are determined effort to holder the normal development process of parenthood. These major life changes have been referred to as developmental or maturational stressors. The effect of hospitalization and unexpected events from preterm birth can be overwhelming for their parents. The families of these preterm infants may experience multiple crisis events during the infant's hospitalization. The parents usually feeling anxiety, weakness, fear, powerlessness, controlling and unsure outcomes or even threatened life for their preterm newborn (Eutrope et al., 2014).They also may show physiologic signs of stress such as cardiovascular or cognitive problems (Ionio et al., 2016; Fanaroff & Fanaroff, 2013).

The parents of preterm births had experience acute stress disordered and prolonged stress if their preterm infants admission in NICU after 3 to 5 days (Fanaroff

& Fanaroff, 2013). Therefore the severity and illness conditions of preterm infant's directly influences parents stress (De Roose, Beeckman, Eggermont, & Vanhouche, 2017). Parents with preterm infants reported higher level of mental health experienced and higher stress level than parents of term infants in a years (Treyvaud, 2014). Especially parents with preterm and had lower gestational ages and lower birth weights (Schappin et al., 2013). The current studies presented the parents' experienced during the hospitalization of preterm infants and admitted in NICU have intense emotional facing the uncertainty outcomes (Teerarungsikul et al., 2002; Teerarungsikul, 2012). And the characteristics of preterm infants (very preterm/ very low birth weight) were strongly related with parents and family that leading psychological distress in the first months (Treyvaud, 2014). The parents were experienced such as urgently needed without plan situations. And facing a critical crisis such as discuss about withdrawal or withholding of life-sustaining therapy for their preterm child (James et al., 2017).

In developed counties, high technology and medical treatment lead to improve preterm infants' survival. Therefore in long-term period for parents with preterm child care, might related to emotional mental health to mothers. Such as separation from their preterm infants was found the most stressful aspect in mothers. (Helle et al., 2015). This finding also similar to be with the qualitative studies in long-term stress. Parents with preterm infants may felt stress from their inability to succeed their expected role as parents. Parents of those preterm infants are particularly concerned about the prevention of respiratory infections and re-admission. Some parents also expressed their concern between parents and admission infants (Kantrowitz-Gordon et al., 2016).

Preterm birth directly affect to maternal stress. In postpartum period, as a mother role are normally stressed about their new role, and multi-complex life changes and demanded. Mothers may concern towards their infants care, the body change and loss of exercise. The studied findings more than half of primiparas experienced physical discomfort and emotional stress regarding to their new life

(Wu & Hung, 2016). Another studies also similarly reveled that first-time mothers were experience mixed emotions such as anxiety, stress over infants care. Maternal may identify them stressed as a difficulty with adaptation maternal role. In addition experienced time stress in maternal may leading to increased risk of emotional illness. Howe et al. (2014) examined the degree and type of parent stress in families of very low birth weight preterm infant over the first two years of life. They revealed that mothers with preterm infants have significantly high level of stressed than mothers of term infants. Mothers with preterm infants might confront with their preterm hospitalization and uncertainty outcomes. As a period of time it may impact to mothers' ability to cope with and related to their stress (Teerarungsikul et al., 2002; Teerarungsikul, 2012).

Concept of maternal stress in neonatal intensive care unit

This study is guided by evidences from literature review and the parental stress intensive care unit model, developed by Miles and Carter (1983). It is commonly used in nursing profession as it provides a comprehensive approach for understanding, describing, and assessing sources of potential parent stress in NICU. Those conditions might include the severity of their infant's diagnosis, infant's appearance and level of functioning, and the duration of their infant's length of stay. Environmental factors that may influence the mothers' unique response to having an infant in the NICU might consist of difficulty fulfilling their maternal role, the medical tools used for intervention, and the communication patterns and activities of the staff. Miles and Carter clarified that as a result of the several factors that can influence the mothers, each mother develops her own method of cognitively evaluating, or making decisions about the NICU experience. All of these factors result in the mothers having a unique perception of their infant's situation, status, and condition (Miles & Carter, 1983).

This study was included three subscales that identifies maternal stress sources: the NICU environment (sights and sounds), parental roles, and infants'

appearance and behavior. Miles et al. (1991) revealed the most stressful feature of the NICU for 122 parents to be change in the parent–infant relationship, and the infants' appearance. The sights and sounds of the NICU caused lesser stress, and few parents reported stress in the area of staff communication and interactions. To define the stress that mothers experience, this study focuses on the relationship between factors like nursing support, preterm birth weight, experience of having premature birth, and delivery type that can influences maternal stress during their infant admitted in NICU.

Neonatal intensive care unit is a situation that has a number of challenges to getting information and considerate. The premature infants that are cared for might have severe and multiple medical complications. For mothers, the NICU experience is stressful, fear, sadness, guilt and shock of having newborn infant in NICU (Magliyah & Razzak, 2015). Unfortunately, Mothers with infant admission in NICU might take them to specific situational conditions of their infant. Those conditions might include the severity of their infant's diagnosis, the infant's appearance and level of functioning, and the duration of their infant's length of stay. Environmental factors that may influence the mothers' unique response to having an infant in the NICU might consist of difficulty fulfilling their maternal role, the medical tools used for intervention, and the communication patterns and activities of the staff. Miles and Carter clarified that as a result of the several factors that can influence the mothers, each mother develops her own method of cognitively evaluating, or making decisions about the NICU experience. All of these factors result in the mothers having a unique perception of their infant's situation, status, and condition (Miles & Carter, 1983).

Mothers of preterm infants are more stressful. Previous studies about stress among mothers with preterm newborns have found that mothers with preterm birth have higher stress within 7 to 10 days and continued up to the first month. Mother's expectations were associated with low self-esteem, depression, anxiety, and stress. Moreover, mothers who lack of social support, and life stress were experiences postpartum depression (Lazarus & Rossouw, 2015; Reid & Taylor, 2015; Valizadeh et

al., 2014). Researchers examined the impact of preterm infants to maternal stress in long term. The results found that, preterm with ELBW/ VLBW infants are associated with maternal stress, isolation, self-limitation, anxiety, depression, marriage breakdown, and poor family function comparable with mothers with term newborns (Howe et al., 2014; Schappin et al., 2013; Treyvaud et al., 2014).

From literature reviews, vary factors that influence maternal stress after childbirth including baby's birth weight, respiratory support, nursing support, and maternal education. Birth with preterm baby might affect mothers' stress. Especially when their newborn admitted in hospital. In USA, more than half infants born were preterm babies and mostly of them needed admissions in NICU (MacDonald & Seshia, 2016). Another studies in India measured preterm baby admissions in NICU was 31.06 % from totally infants who admissions in NICU (Kuppusamy, Balasubramaniin, & Krithiga, 2016). And a qualitative studied found infants admissions in NICU approximately 71 % were preterm infant (29 % of those preterm between 32 to 36 weeks gestation, 21 % between 24 to 28 weeks, and 14 % between 28 to 32 weeks) (Alburke, Ashur, & Assadi, 2015). The severity of preterm birth such as sepsis, necrotizing enterocolitis, and surgery need longer hospitalization (Bender et al., 2013). Indeed, preterm infant with hospitalization can impact maternal risk for continuing emotional stress (Alkozei, McMahon, & Lahav, 2014). Unfortunately, when their preterm infants admission in NICU, maternal stress level were increase (Alkozei, McMahon, & Lahav, 2014).

Throughout hospitalization mothers may interruption the development of their capability for taking care their child. Also they may sense difficulty to encompass with nursing action for premature newborn and cause to maternal stress (Aagaard & Hall, 2008). Additionally, mothers with preterm in NICU care also experienced stress and anxiety about treatment team in term of relationship. Mothers need to involve in decisions and care for their preterm child (Malakouti, Jabraeeli, Valizadeh, & Babapour, 2013). The highest parental stress score after preterm birth was obtained for

the parental role, infant's appearance, sight and sound in NICU, lower education level, not having been hold the newborn infant, and respiratory support requirement. And mothers experienced three times higher stress than fathers (Tandberg et al., 2013; Wormald et al., 2015). In addition, previous study identified highest stress level in mothers with preterm infants admitted in NICU was parental role (Alkozei, et al., 2014; Sikorova & Kucova, 2012; Tandberg et al., 2013;Wormald et al., 2015).

A several factors influence maternal stress level during their preterm infants admitted in NICU such as maternal role, infant's conditions, support from healthcare provider, and experience of premature birth (Benner, 2013; Lam et al., 2007; Sikorova & Kucova, 2012; Tandberg et al., 2013; Wormald et al., 2015). In this study, the researcher focus on factors nursing support, preterm birth weight, delivery type, and experience of having premature birth to maternal stress during their infant hospitalized in NICU.

Factors influencing maternal stress in NICU

Nursing support

Nursing support during preterm infants hospitalized in NICU was reduce mothers stress level. Nurses have an important role in helping mothers as they provide care to the sick infant. Miles et al. (1993) reported that mothers of infants hospitalized in NICU rated the helpfulness of support from nurses as very high. Nursing support is thought to improve coping strategies, and it is believed that availability of support from nursing staff might lead to perception of situations as less stressful. Thus, interpersonal role of the nursing staff is considered their direct and indirect support. Supportive behaviors of nurses have been known as listening and empathizing, giving information and explanations, encouraging and comforting, providing validation, showing interest and valuing, preserving integrity, and giving suggestions and problem solving. In addition, providing expert physical nursing care is also important (Miles et al., 1999). Mothers might expect support from nursing staff regarding information on their infants requiring special care, empowerment in decision making,

a pleasant environment, and emotional support when their infants are admitted in NICU (Sikorova & Kucova, 2012).

Previous study found that during their infant's admission in NICU, mothers experienced higher stress comparable with fathers. Mothers of preterm infants might need support from nursing staff in NICU, especially the information and nursing care. The investigators found that parents indicating a high perception of support from nursing staff experienced low level of stress (Tandberg et al., 2013). Nursing support during preterm infants hospitalized in NICU affect mothers stress level. Previous study found that during their infant's admission in NICU, mothers experienced higher stress comparable with fathers. Mothers of preterm infants might need support from nursing staff in NICU, especially the information and nursing care (Tandberg et al., 2013). The experimental design was evaluated parent's satisfaction and stress level reveal during their infants admitted in NICU. The result found significant in the supportive group. Parents' satisfaction with the healthcare team including knowledge and understanding; communication and collaboration; and privacy and confidentiality compared with parents in control group. Thus, those parents in the supportive group reported lower stress level comparable with control group (Bernardo et al., 2017).

The parents' perceived support from nursing during their preterm infants hospitalized including: emotional or psychological support such as their feeling, worries and concerns; information support such as tests, treatments, medicines; esteem support such as motivate mothers to be involved in their baby care, included mothers in discussions when made about their baby's care; caregiving support such as taking good care of their infants (Bernardo et al., 2017; Magliyah & Razzak, 2015; Mousavi & Keramat, 2016; Sikorova & Kucova, 2012; Tandberg et al., 2013; Wormald et al, 2015). The satisfied support from nursing staff were associated with low level stressful for patents, specifically mothers. The highest level of stress during NICU stay was parental role, especially the inability to help their infants remain

separate from mother, inability to feed their baby (Sikorova & Kucova, 2012; Tandberg et al., 2013; Wormald et al, 2015).

Lack of nursing support with mothers having preterm infants might impact maternal stress. The qualitative study revealed the influence of formal social support from healthcare professional to mothers having preterm birth. The mediation group reported that social support (knowledge, advice, guidance and emotional) given made them less stressed and additional self-confident, capable and secure to caring for preterm infants. In order with the control group they recognized less involve, lack emotionally support, and more worry about their preterm infant's development (Kyno et al., 2013). During preterm infants hospitalized in NICU, parents were satisfied with support provide by nurses particularly on the information and nursing care. But less satisfaction related to the emotional support (Tandberg et al., 2013).

Preterm birth weight

Preterm birth weight additionally impacts maternal stress. Preterm birth with VLBW infants or infants born before 32 week gestation usually have higher medical complications and need to stay in NICU for longer period of time (Bender et al., 2013). Moreover, preterm with ELBW (< 1,000 grams) are related to neonatal death within 24 hours after birth three times higher than VLBW infants. During hospitalization of their VLBW babies, mothers may face situations that activate their stress including preterm health impairment, length of stay at hospital, and uncertainty conditions. (De Castro et al., 2016). Preterm birth weight have affects to maternal stress after birth. Mothers with VLBW newborns associated with mental health problems about 4 to 18 times higher than mothers of term newborns. Preterm with VLBW was stressful life event for mothers that impact early adaptation to parenthood, mother's role, relationship in family, and separation from their VLBW babies. During hospitalization of their VLBW babies, mothers may face situation that higher intense and higher distress (Helle et al., 2015).

Preterm newborns with VLBW have vary effects include the extent of health impairment, length of stay at hospital and uncertainty condition during admit that impact maternal stress. Mothers with VLBW infants may still perceive their child as vulnerable. Moreover, maternal stress may associated with their preterm children behavior problem than term born children (Potharst et al., 2015). Previous study has examined the degree and type of parenting stress in the families of VLBW preterm newborn in first two year of life. The results found that mothers of preterm babies reported more health associates difficulty, greater depression, social separation, limitation of their role, and lack of support from their partner that cause them to have higher stress (Howe et al., 2014). Another study examined stress in parents with term and preterm with LBW infants, the result showed mothers have higher stress than fathers. And researchers found that stress decrease when infant's gestational age and birth weight were higher. Since lower gestational age and low birth weight were associated with higher newborn mortality and morbidity those impact maternal stress. Smaller newborn normally more ill and stay in the NICU for longer times. Those preterm infants with VLBW may suffer from more health conditions than those preterm with LBW (Schappin et al., 2013).

Another study found in long-term effect of very preterm birth to parents' mental health. The results found parents of those very preterm born children experience higher stress; anxiety, depression symptoms; and poorer family functioning compared with parents of term born children. Parental stress were influence by characteristics, developmental outcomes associate with their preterm. Preterm with VLBW children were related with higher behavior difficulty and lower Intelligence Quotient. Furthermore, parents with very preterm children experienced poorer family functioning compared with those term-born children family. Preterm children family may facing solving problem, communication with one another expressing a wide range of emotions and avoiding over involvement with one another's actions and lives (Treyvaud et al., 2014; Williamson & Jakobson, 2014).

Delivery type

Delivery type was influence maternal stress after birth. An unplanned emergency cesarean delivery can especially be very stressful because mothers whose emergency caesarean section confront with uncertainty outcome NICU admitted. The unexpected and uncertainty about their infants conditions have negative affect to stress level. In addition, mothers with its unfamiliar and invasive procedures occurring in rapid process, tension to ability of mothers to adjust their experience. Therefore, they develop tension in order to cope with their unpleasant experience and its increase their stress (Benzouina, Boubkraoui et al. 2016). The data from maternity care in England had shown the relation between women's self-reported emotional signs, health problems and mode of birth. The results found mode of birth might have a strong relation with women's psychological and physical outcomes after birth. Especially, women who had forceps-assisted vaginal births and unplanned caesareans section seemed to have poor psychological wellbeing after birth. Those women might experience lack of control, worry and intense period of uncertainty during labor and birth (Rowlands & Redshaw, 2012). That was consistent to a qualitative study had determine the association between vaginal and cesarean section. The researchers found that women with emergency cesarean section had negative emotional vulnerability after birth (Guittier et al., 2014).

Experience of having premature birth

Mothers experienced having preterm birth might impact their stress. Mothers having preterm birth is another stressful life events and its unplanned situations. Posttraumatic stress response characteristics have been identified in mothers who have experienced the birth of a preterm infant and NICU admitted (Holditch-Davis et al., 2003). Mothers might describe them experience including stress, perceived them life has change, taking in maternal role, and concerned more about baby health at least 6 month following preterm birth (Teerarungsikul, 2012). Several mothers who deliver premature and have infants hospitalized in the NICU environment report suffering and stressful memories of the NICU experience 2 months, 6 months, 9 months, and 12

months after discharge (Benner, 2013; Holditch-Davis et al., 2003; Miles et al., 1999). Whereas some mothers continue to report symptoms of distress related to the experience after 8 years (Kantrowitz-Gordon et al., 2016).

Gaps of knowledge

It shown that there are several factors might influence to maternal stress during their preterm infant hospitalized in NICU. Reviewing literature showed that there are a few studies revealed correlation between these topics. Iranmanesh, Sakine-Sadat, Rayyani, Razban, and Pooraboli (2014) reviewed that there was a negative correlation between nursing support and stress in category of "emotional support and parental role alteration" ($p = .009$, $r = .20$) (Iramanesh et al., 2014). Study in Norway examined experiences of parental stress and nursing support in parents of preterm infants using nurse parent support tool [NPST] and the parental stressor scale [PSS: NICU]. They reported parents experienced high stress levels in relation to the infant's appearance and evaluated nursing support as positive (Tandberg et al., 2013). Factors such as nursing support, preterm birth weight, and delivery type and experience of having premature birth might influences maternal stress. To identify and make understanding which factor have impact to mothers stress might benefit for mothers.

Identifying aspects of the infant, mothers and the environment that can influences stress might be valuable in assisting healthcare provider in understanding their importance and in improving the quality of care. Understanding maternal stress may also help healthcare provider in assisting them concerning their ability to meet the needs of their infant and to develop the skills required for fulfilling their role. The perception of support from nursing staff during their preterm admitted in NICU also important. Nurses might evaluate how quality nursing care they given and how satisfy mothers received. Moreover, early stress assessment after birth of preterm thought direct to nurses provide stress reducing program for mothers. In nursing, more understanding the prevalence and factors related stress in mothers might help

moderate and prevent stress outcomes. Interventions to decrease existing perceptions of stress and improve nursing support for mothers of preterm infants, hospitalization in NICU during the postpartum period may reduce maternal mental health symptoms.

CHAPTER 3
RESEARCH METHODOLOGY

Research design

A predictive design was used in this study aiming to examine the level of maternal stress and to identify influencing factors of maternal stress including nursing support, preterm birth weight, delivery type, and experience of having premature birth at Roi-Et regional hospital.

Population and sample

Population for this study were mothers who gave birth to preterm newborn and were hospitalized in NICU, at Roi-Et regional hospital. Women who meet the following criteria were selected to participate in this study.

1. Age 18 years or older.
2. Delivered preterm infant (less than 37 weeks gestation).
3. Had no severe complications after delivery.
4. Had visited their infant between 3 to 5 times.
5. Be able to speak, read, and write in Thai language.

Sample size

In this study, researcher used Tabachnick and Fidell (2007) to calculate the sample size, due to the calculation method of Tabachnick and Fidell had been recommended to use multiple regression test with several independent variables. Formulation of Tabachnick and Fidell:

$n = 50 + 8m$

Explanation:

n = the sample size

m = the number of independent variables

There were 4 independent variables that were used, so the sample size:

$n = 50 + 8m$

$n = 50 + 8(4)$

$n = 82$

In this study, the sample size was 82. In social science research dose not rule out the presence of missing data. The determination of the number of missing data is not consistent definition of variety of literature, but the literature suggests that 20 % or less of values. Therefore, this study used 10 % to compensate for uncomplete data, so the total number of sample in this study was 90 participants.

Sampling technique

The sample was recruited by using convenience sample, women who meet the criteria were selected to participate in this study.

Setting

The study was conducted at Roi-Et regional hospital. The mothers who meet the inclusion criteria were invited to participate in this study. NICU provided medical personnel and services needed to keep a sick or premature neonate alive. The NICU provided specialized care to newborn babies with the following conditions: premature babies (born before 37 weeks gestation), low birth weight babies (less than 2,500 grams), twins, triplets or other multiple births, respiratory disorders, cardiovascular disorders, digestive disorders, neurological disorders, bowel movement problems, birth defects, infections, low blood sugar level. Professional team including 8 pediatricians, 62 registered nurses, 1 advance practice nursing, and 15 nursing assistant. Medical equipment including: respirator, high frequency ventilator, infant ventilator, nasal CPAP, EKG monitor, radiant warmer, transport incubator, infusion pump, syringe pump, neo-puff, resuscitate car, defibrillator, and phototherapy. All infants fee were supported from the universal health coverage [UHC]. Top 5 disease in NICU were preterm with low birth weight, preterm with RDS, pneumonia, infant with gestational diabetes mellitus, and infant with maternal mild/ think meconium. Visiting

time were: 11am-1pm, and 5 pm-7 pm. The unit separate into 2 sub-unit: unit one had 12 bed for infants who were in crisis and complex conditions, and unit two had 30 bed for sick infants.

Research instruments

The research instruments for this study contained 4 parts of self report questionnaire. There were medical record form, personal information, nurse parent support tool, and parenteral stressor scale: neonatal intensive care unit.

1. Medical record form

Medical record form developed by researcher. It consists of parity, previous preterm birth, delivery type, infant birth weight, gestation at birth, and infant gender. The information were recorded by the researcher through mother medical records and nursing flow sheets.

2. Personal information

Personal information developed by the researcher. It consists of questions for age, educational level, occupation, monthly income, marital status. The information were recorded at the time of the interview.

3. The nurse parent support tool [NPST]

The NPST evaluated parental perception of nursing support. It was developed by Miles et al. (1999). These questionnaires designed to measure mothers' perception of nursing support during their infant's hospitalization. The NPST was based on the nurse parent support model developed from House's conceptualizations of four domains of support. The tool included 21 items identify four dimensions of support including: information, appraisal, emotional support, and nursing care (Miles et al., 1999). For this study mothers were asked to rate the amount of nursing support they received from the nursing staff on a Likert-type rating scale as follows:
1 = almost never; 2 = not very often; 3 = some of the time; 4 = most of the time; and

5 = almost always. The instrument was scored by summing the items that were rated and divided by the number of items completed. The range of scores was from 1 to 5, with higher scores reflecting greater amounts of perceived support from the nursing staff. The NPST was available in Thai translation prior developed by Kantahong, Niyomkar, & Lamchang, (2015).

4. Parental stressor scale: neonatal intensive care unit [PSS: NICU]

The PSS: NICU was designed to determine maternal perception of stress arising from the physical and psychological environment in the NICU (Miles et al., 1993). The PSS: NICU was a widely used tool to evaluated parental sources of stress experienced during NICU hospitalization, that was, the experience which had caused parents to feel anxious, upset, or tense (Turner et al., 2015).This study was included three subscales identifies maternal stress sources: the NICU physical environment (sights and sounds of the unit), the change in parental roles, and the infants' appearance and behavior. Each item in the PSS: NICU asked the mother whether or not she had experienced a particular situation, for example, seeing the baby with tubes and equipment on near her. Those mothers who had such experience were asked to rate its stressfulness on a scale from 1 (not at all stressful) to 5 (extremely stressful). The PSS: NICU was available in Thai version developed by Utasongkawat (2010). Maternal stress level were classified according to point on Likert scale as follows: low (1.00 - 2.59), moderate (2.60 - 3.59), and high (3.60 - 5). Score 0 meant no experience with the described situation or phenomenon.

Quality of instruments

Content validity

The researcher used the Thai version from the original of the instrument, which were back translated from the original English version and verified for the validity by Utasongkawat (2010) and Kantahong et al. (2015). Therefore content validity checking was skipped.

Reliability

The nurse parent support tool [NPST], Thai version that had internal consistency reliability was very high with Cronbach's alpha coefficients of .96 (Kantahong et al., 2015). And the parental stressor scale: neonatal intensive care unit [PSS: NICU] in Thai version internal consistency was good with Cronbach's alpha coefficient .82 (Utasonhkawat, 2010). In this study the reliability of the NPST with Cronbach's alpha coefficient was .89 and reliability of the PSS: NICU with Cronbach's alpha coefficient was .92.

Ethical consideration

The study proposal and all research instruments were approved by the IRB committee of Faculty of Nursing, Burapha University Thailand (IRB code 01-02-2561). The researcher asked permission from the hospital director and the research ethics committee, Roi-Et regional hospital. All the participants were informed regarding the purpose of the study and the procedure. Their participation in the study was on voluntary basis and their decision to withdraw from the study was respected. Informed consent was obtained from each participant prior to data collection. Confidentiality was maintained and no names were disclosed in the research report. All data was stored in a specific file using specific password and only researcher have access to it. The data will be destroyed after publication of this research.

Data collection procedure

After obtained IRB approval, data collection procedure was discussed with the head nurse of NICU. The researcher presented at the NICU to collect the data from 8:30 am to 4:00 pm, then explained to the participants about the purpose, method and confidentiality of this study as well as how to respond to the questionnaires and let them fill the questionnaire in the private room provided. Each participant took

approximately 30 minutes to complete all questionnaires. The researcher checked for completeness of the questionnaire before the participant left.

Data analyses

Data were analyzed by using a statistical software program. An alpha level of .05 was set as a level of significance for the study. Descriptive statistics including frequency, percent, mean and standard deviation was used to describe the demographic characteristics of the sample. Multiple regression analysis was performed to examine the influence factors nursing support, preterm birth weight, delivery type, experience of having premature birth to maternal stress.

CHAPTER 4
RESULTS

The purpose of this study was to examine the level of stress and identify influencing factors of maternal stress including nursing support, preterm birth weight, delivery type, and experience of having premature birth at Roi-Et regional hospital. Data were collected from 90 mothers of preterm infant hospitalized in NICU at Roi-Et regional hospital. The results of the study were presented in threes part as follows.

Part 1 Characteristics of the samples

Part 2 Description of study variables

Part 3 Factors influencing maternal stress

Part 1 Characteristics of the samples

1. Demographic characteristics

As shown in table 1, participants age ranged from 19 to 48 years old, with a mean age of 28.98 (*SD* = 6.31) years. Most of samples were married (75.56 %), while 24.44 % were unmarried. All of samples had completed general education (primary, lower secondary, upper secondary school education), 33 of them had completed diploma or higher education (36.67 %). Most of participants were housewife (44.44 %), while 41.11 % were private company employee. The majority of the sample had family income more than 10,000-20,000 baht (51.11 %).

Table 1 Demographic characteristics (n = 90)

Characteristics	Frequency	Percentage
Age (years)		
≤ 35	76	84.44
> 35	14	15.56
Mean = 28.98, SD = 6.317, Range = 19 - 48 years		
Marital status		
Married	68	75.56
Unmarried	22	24.44
Education level		
Primary school	12	13.33
Lower secondary school	14	15.56
Upper secondary school	31	34.44
Diploma/ or higher	33	36.67
Employment		
Housewife	40	44.44
Private company employee	37	41.11
Government employee	7	7.78
Own business	6	6.67
Family income/ month (baht)		
< 5,000	12	13.33
5,001 - 10,000	30	33.34
10,001 - 20,000	46	51.11
> 20,000	2	2.22

2. Obstetric characteristics

An investigation of obstetric data was shown in table 2, obtained information revealed that there were as many as 33 people (36.67 %) mothers who were the first time mother, while 63.3 % of other respondents were not first time mother. Half of samples were normal vaginal delivery (55.56 %), emergency caesarean section were 40 %, and elective caesarean section were 4.44 %. More than a half of samples were no experience of premature birth (68.89 %). Slightly over half of participants gave

birth to a male infant (51.11 %). Mean birth weight of all infants was 1,784.56 grams (*SD* = 511.85; range 700 - 2,750 grams). Mean of gestation at birth was 31.57 weeks (*SD* = 2.64; range 24 - 36 weeks). The sample information obtained from the interviews of mothers was, 72.22 % of their infants required for mechanical ventilation or continuous positive airway pressure [CPAP], 67.78 % were in an incubator, and 45.56 % of them were on phototherapy. The mean of age of all infants was = 3.68 days (*SD* = 1.80, Range = 2 - 10 days), 84 infants were age less than 7 days.

Table 2 Obstetric and infant history (n = 90)

Obstetric and infant history	**Frequency**	**Percentage**
Parity		
Nulliparous	33	36.67
Multiparous	57	63.33
Mode of delivery		
Normal vaginal delivery	50	55.56
Elective caesarean section	4	4.44
Emergency caesarean section	36	40.00
Previous experience of premature birth		
Yes	28	31.11
No	62	68.89
Baby gender		
Male	46	51.11
Female	44	48.89
Baby birth weight(grams) Mean = 1784.56, *SD* = 511.85, Range = 700 - 2,750		
< 1,000	6	6.67
1,001 - 1,500	21	23.33
1,501 - 2,500	56	62.22
> 2,500	7	7.78

Table 2 (Cont.)

Obstetric and infant history	Frequency	Percentage
Gestation at birth (weeks)		
< 28 weeks	5	5.56
28 - 32 weeks	37	41.11
33 - 37 weeks	48	53.33
Mean = 31.57, *SD* = 2.64, Range = 24 - 36 weeks		
Respirator support (mechanical/ CPAP)		
Yes	65	72.22
No	25	27.78
On Incubator		
Yes	61	67.78
No	29	32.22
Phototherapy		
Yes	41	45.56
No	49	54.44
Baby age (day) (as of date of data collection)		
2 - 7 days	84	93.33
8 - 10 days	6	6.67
Mean = 3.68 days , *SD* = 1.80, Range = 2 - 10 days		

Part 2 Description of the study variables

This part presented description of study variables including range, mean, standard deviation, of nursing support and maternal stress.

1. Nursing support

The mean score of overall nursing support received was 89.68 (*SD* = 8.25),

with a range of 69 to 105 which indicated that women in this study perception support from nursing staff as showed in table 3.

Table 3 Nursing support (n = 90)

Dimensions	Possible range	Actual range	Mean	*SD*
Information support	7 - 35	23 - 35	30.23	3.30
Emotional support	5 - 25	13 - 25	19.93	2.80
Parental support	4 - 20	12 - 20	18.07	1.52
Nursing care support	5 - 25	16 - 25	21.47	2.38
Overall nursing support	21 - 105	69 - 105	89.68	8.25

2. Maternal stress

In this study, dependent variable was maternal stress which was measure by the parental stress scale: neonatal intensive care unit [PSS: NICU]. The results revealed that the mean score of overall maternal stress was 69.12 (*SD* = 11.57), with a range of 35 to 85. Table 4 provided the results which indicated that mothers in this study received stress regarding the NICU environment in three subscales.

Table 4 Maternal stress (n = 90)

Subscales	Possible range	Actual range	Mean	SD
Sights and sounds	0 - 30	10 - 27	22.01	3.64
Behavior and appearance	0 - 30	5 - 30	23.01	6.24
Parental role alteration	0 - 30	11 - 30	23.68	4.09
Overall maternal stress	0 - 90	35 - 85	69.12	11.57

When overall maternal stress level was classified in 3 levels, it was found that most of mothers (67.78 %) reported high stress level. The results provided in table 5.

Table 5 Maternal stress level (n = 90)

Stress level	Frequency	Percentage
Low (1.00 - 2.59)	10	11.11
Moderate (2.60 - 3.59)	19	21.11
High (3.60 - 5.00)	61	67.78

Part 3 Factors influencing maternal stress

Standard multiple regression analysis was conducted to test influencing factors of maternal stress among mothers with preterm infant hospitalized in NICU, at Roi-Et regional hospital, Thailand.

Testing assumptions

1. For normality, to test whether the research samples have normal data distribution, then in this research used Kolmogorov-Smirnov Goodness of Fit Test on each variables. The result of one-sample Kolmogorov-Smirnov test showed a significance *p*-value = .164, greater than alpha .05, indicated that nursing support, birth weight, and maternal stress were normal distribution.

2. For multicollinearity, to test whether the regression model found the correlation between independent variables, one of them was by using VIF (Variance inflation factor). If the value of VIF more than 10 then occurs multicollinearity. In this study the VIF value of all independent variables less than 2, indicated no multicollinearity.

For correlation between the dependent and the independent variables, a Pearson correlation was computed to find out the correlation between maternal stress, birth weight, and nursing support. The results provided the details of correlation in table 6.

Table 6 Pearson's correlation coefficient between variables (n = 90)

	1	**2**	**3**	**4**	**5**	6
Nursing support	1.00					
Preterm birth weight	-.232*	1.00				
Vaginal delivery	$.002_{pb}$	$.130_{pb}$	1.00_{pb}			
Emergency caesarean section	$-.081_{pb}$	$.211_{pb}$	$-.176_{pb}$	1.00_{pb}		
Experience of having preterm birth	$.150_{pb}$	$-.110_{pb}$	$.104_{pb}$	$.235_{pb}$	1.00_{pb}	
Maternal stress	.204	-.567**	$.002_{pb}$	$.157_{pb}$	$.292_{pb}$	1.00

*p < .05, **p < .001, pb = point bi-serial correlation coefficient

3. For linearity, the normal P-P plot of regression standardized residuals showed the relationship between dependent and independent variables. The scatterplot showed the variables were close to the straight line, therefore linearity assumption was met.

4. Autocorrelation, to detect whether or not an autocorrelation in the regression model was used Durbin Watson test which value between -2 and +2. The result of analysis showed that Durbin-Watson value in this study equals to 1.754. It could indicated that the error of observation values were free (no autocorrelation).

5. Homoscedasticity, the result of analysis in scatterplot table showed the variance of Z residual across all values of Z predicted was equally distributed. It meant that homoscedasticity. In addition, no data was beyond the values of -3 to +3. So, there were no outlier.

Results standard multiple regression

For this study, mothers were delivery in three type (normal vaginal delivery, planned caesarean section, and emergency caesarean section). The researcher recode as a dummy variables and used variable planned caesarean section as a reference group. The results of standard multiple regression analysed two independent variables

including preterm birth weight, emergency caesarean section were could explain approximately 44.2 % of the variance maternal stress (R^2 =.442, $F_{(5, 84)}$ = 13.29, p < .001).

Nursing support, normal vaginal delivery, and experience of having premature birth were not significant influencing maternal stress. Details were showed in table 7.

Table 7 Summary of multiple regression analysis (n = 90)

Independent variables	***B***	**SE**	**Beta**	***t***	***p*-value**
Nursing support	.06	.12	.04	.53	.594
Preterm birth weight	-.01	.00	-.61	-6.90	<.001
Normal vaginal delivery	-6.08	4.85	-.02	-1.25	.214
Emergency caesarean section	6.47	2.10	.27	3.08	.003
Experience of having premature birth	2.82	1.73	.14	1.62	.107
Constant = 80.33					
R^2 = .442, Adjusted R^2 = .408, $F_{(5,84)}$ = 13.29, p < .001					

CHAPTER 5
CONCLUSION AND DISCUSSION

This chapter presented summary of the findings, discussion about study findings, limitations of study, and implications of the study results. Furthermore, recommendations for future research are also proposed.

Summary of the findings

This prediction design aimed to examine the level of stress and identify influencing factors among mothers with preterm infant hospitalized in NICU, Roi-Et regional hospital. The convenience sample technique was used to recruit 90 mothers who had their premature infant hospitalized in NICU. The research instruments included the medical record form, personal information, the nurse parent support tool [NPST], and parental stressor scale: neonatal intensive care unit [PSS: NICU]. Descriptive statistics and standard multiple regression were used for data analysis.

Findings of the study revealed that, participants age ranged from 19 to 48 years old, with a mean age of 28.98 years (*SD* = 6.31). Most of samples were married (75.56 %). All of samples had completed general education (primary, lower secondary, and upper secondary school education). Most of participants were housewife (44.44 %), while 41.11 % were private company employee. The majority of samples had family income more than 10,000 - 20,000 baht (51.11 %).

An investigation of obstetric data was obtained information that there were as many as 36.67 % mothers who were the first time mother, while 63.3 % of them were not first time mother. Half of samples were normal vaginal delivery (55.56 %), emergency caesarean section were 40 %, and elective caesarean section were 4.44 %. More than a half of samples were no experience of premature birth (68.89 %), while participants with premature birth experience were 31.11 %. Slightly over half of participants gave birth to a male infant (51.11 %). Mean birth weight of infants was

1,784.56 grams (SD = 511.85; range 700 - 2,750 grams). The mean of gestation at birth was 31.57 weeks (SD = 2.64; range 24 - 36 weeks). The sample information obtained from the interviews of mothers were, 72.22 % of their infants required for mechanical ventilation or CPAP, 67.78 % were on incubator, and 45.56 % of them were phototherapy. The mean of age of infants was = 3.68 days (SD = 1.80, Range = 2 - 10 days), 84 infants were age less than 7 days as of date of data collection.

The mean score of nursing support was 89.68 (SD = 8.25) with its range from 69 to 105. Mothers evaluated the support of nursing staff in most of four dimensions areas as high. The mean score of overall maternal stress was 69.12 (SD = 11.57). When overall maternal stress level was classified according to point on Likert scale. Overall, most of mothers (68 %) reported high stress level.

According to results of standard multiple regression analysis have shown that preterm birth weight ($\beta = -.61$, $p < .001$), emergency caesarean section ($\beta = 0.27$, $p < .05$) were significant influencing maternal stress and accounted for 44.2 % in the variance of maternal stress ($R^2 = .442$, $F_{5, 84} = 13.29$, $p < .001$). Nursing support, normal vaginal delivery, and experience of having premature birth were not significant influencing maternal stress.

Discussion

The finding of this study were discussed based on the research purposes. Mostly mothers reported high stress level after preterm infant hospitalized in the NICU. Preterm birth weight and emergency caesarean section were influences maternal stress.

Maternal stress

In this study, maternal stress was assessed soon after NICU admission between 2 - 10 days. The findings revealed 90 mothers with preterm infant hospitalized in NICU, most of them (68 %) reported high stress level ($p < .001$). The greatest level of stress were found in the areas of parental role alteration, followed by

infant behaviour and appearance, and sights and sounds in the NICU. The findings showed an important source of maternal stress was parental role alteration. In this category, the highest score item was "not being able to hold my baby" (Mean = 4.34). In the behaviour and appearance subscale, the most stressful item for mothers was "unusual breathing of my baby" (Mean = 4.50). Finally, in the sights and sounds subscales, the most stressful item of mothers was "the presence of monitors and equipment in the room" (Mean = 4.13).

This study, mother's age ranged from 19 to 48 years old, with a mean age of 28.98 years. Adult's mothers might feel more responsible for their maternal role. Unfortunately, mothers with preterm infant NICU admitted facing situations that they could not do their mother's role and it increase their stress level. These finding was consistently to previous study that have used the PSS: NICU. Mothers' perception highest stress level with maternal role alteration ($p < .001$, Mean = 3.61), followed by infant behaviour and appearance ($p < .001$, Mean = 2.92), and sights sounds in NICU ($p < .001$, Mean = 2.2) (Alkozei et al., 2014).

The results showed an important source of maternal stress was parental role alteration. In this category, the highest scoring items were not being able to hold my baby with an average score 4.34, followed by not being able to regular care for my baby with an average score 4.30, and not being able to protect my baby from pain and painful procedures with an average score 4.23. In the behaviour and appearance subscale, the most stressful factor for mothers were unusual breathing of my baby with an average score 4.50, followed by seeing needles and tubes put in my baby with an average score 4.06, and seeing my baby in pain, be upset or cry a lot with an average score 3.80. Finally, in the sights and sounds subscales, the most stressful items of mothers were the presence of monitors and equipment in the room with an average score 4.13, followed by the constant noise of equipment or sudden noise of monitor alarms with an average score 3.83, and the large number of nurses, doctor, and other staff working in the unit with an average score 3.66.

According to the environmental factors that may influence the mothers' unique response to having an infant in the NICU might consist of difficulty fulfilling their maternal role, the medical tools used for intervention, and the communication patterns and activities of the staff (Miles & Carter, 1983). In this study, mothers reported higher stress level in response to their infant appearance (i.e. the unusual breathing of my baby), and parental role alteration (i.e. not being able to hold, regular care, protect from pain and painful procedures, and not having a chance to be alone with my baby), sights and sounds (i.e. presence of monitors and equipment in the room, the constant noise of equipment or sudden noise of monitor alarms).

These finding was consistently to several studies that have used the PSS: NICU. Mothers' perception highest stress level for their infants during hospitalized association with maternal role, followed by infant's appearance, and sights and sounds in NICU (Alkozei et al., 2014; Sikorova & Kucova, 2012; Tandberg et al., 2013; Wormald et al., 2015).

Despite, previous study in Thailand examined stress level in adolescent mothers with preterm infants admitted in NICU. Mothers reported moderate stress level in both subscales in NICU during their infant admitted (Mean = 3.07). The highest score of stress found in subscale infant behavior and appearance (Mean = 3.48) (Singsuwan, 2015).

Influencing factors of maternal stress

Nursing support

The mean score of overall nursing support was 89.68 (*SD* = 8.25), with a range of 69 to 105 which indicated that mothers' perception support from nursing staff as high. However, in this study nursing support was not significant influence that increased maternal stress ($\beta = -.06$, $p < .594$). The possible explanation of this finding could be due to the fact that, 53.33 % infants were born moderate preterm, 41.11 % were born very preterm, while 5.56 % of them were born with extremely preterm.

Infant born extremely preterm usually have higher medical complications and need to stay in NICU for longer period of time (Bender et al., 2013). Moreover, infants born extremely preterm are related to neonatal death within 24 hours after birth three times higher than very preterm infants (De Castro et al., 2016). Mothers in this study seem satisfied with nursing support provided by nurses during their infant hospitalized. In additions, 75 % mothers were married it could be explained mothers possible perceived support from husband during their preterm admission.

Preterm birth weight

The finding showed moderate negative correlation and significant between preterm birth weight and maternal stress ($\beta = -.613$, $p < .001$). The results showed mean preterm birth weight overall infants was 1,784.56 grams ($SD = 511.85$; range 700 - 2,750 grams). In this study, mothers with ELBW, VLBW, and Low birth weight (LBW) were 6.7, 23.33, and 62.22 % respectively. In relation to 72.22 % of their infants requiring respiratory support, and 67.78 % were on incubator, at the time of assessment. After giving preterm infant mothers might facing a numbers of tension, worries, and concerns. The health status of the infant might differ on a day-to-day basis and might affect maternal stress. Infant with respirator required seem to increased maternal stress level. Mothers might experience such as urgently needed without plan situations. And facing a critical crisis such as discuss about withdrawal or withholding of life-sustaining therapy for their preterm infant. This study also revealed similar findings. Very sick preterm including the infant being respirator support were significant increased maternal stress ($p < .05$) (Wormald et al., 2015).

Our finding was consistently to previous studies. During hospitalization of their VLBW babies, mothers may face situations that activate their stress including preterm health impairment, length of stay at hospital, and uncertainty conditions. On the other hand, mothers having preterm with ELBW report higher stress comparable with mothers with VLBW (Helle et al., 2015; Potharst et al., 2015; Schappin et al., 2013). In addition, mothers with VLBW infants report more mental health problems,

and experience higher emotional stress related to their preterm health and development in the first year of life comparing with mothers having term infants (Gonzalez-Serrano et al., 2012; Howe et al., 2014; Miceli et al., 2000; Treyvaud et al., 2014).

Delivery type

Finding of the study revealed 40 % mothers had emergency caesarean section. The mean of gestation at birth was 31.57 weeks (*SD* = 2.64; range 24 - 36 weeks). The results showed correlation and significance between emergency caesarean section and maternal stress ($\beta = .27$, $p < .05$). An unplanned emergency cesarean delivery can especially be very stressful because mothers whose emergency caesarean section confront with uncertainty outcome NICU admitted. The unexpected and uncertainty about their infants conditions have negative affect to stress level. In addition, mothers with its unfamiliar and invasive procedures occurring in rapid process, tension to ability of mothers to adjust their experience. Therefore, they develop tension in order to cope with their unpleasant experience and its increase their stress.

On the other hand, mothers whose normal vaginal delivery was not influencing to their stress ($\beta = -.02$, $p > .05$). The results showed 55.56 % mothers were normal vaginal delivery. Though mothers with normal vaginal delivery were less pain and easier to visit their infant in NICU comparable with mothers whose emergency caesarean section. This study also revealed similar findings with the previous studies. In general, several women need emergency caesareans at the same times, they will be prioritised according to the level of risk. Usually, the mother and/ or baby most at risk goes first. The most common indications of emergency caesarean section were dystocia, fetal distress, and mal-presentation. And during labor, women were more likely to have labor induced, oxytocin for augmentation, and epidural as pain relief. Moreover, their infant were three-times more likely to be admitted in the NICU after

birth. Mothers with emergency cesarean section statistically significant associations infants lower birth weight ($p < .016$) and admission in NICU ($p = .024$) (Benzouina, Boubkraoui et al. 2016).

In this study, mostly infant were LBW (62.22 %), with 72.22 % of their infants requiring respiratory support, and 67.78 % infants on incubator at the time of assessment. It can be explained that, this finding 40 % mothers with emergency caesarean section with infants risk factors can be especially stressful. Previous study revealed that, the commonest indication of emergency cesarean section was fetal distress (30.49 %), while the most frequent indication in elective cesarean section was previous cesarean delivery (47.18 %). In terms of indications for carrying out cesarean section, 48.5 % were for maternal reasons, 30.41 % were for fetal reasons, and 17.17 % were elective. And for infants with complications at birth, 40.59 % need admitted in NICU (Benzouina, Boubkraoui et al. 2016). This finding was consitent with previous study, some investigators reported that women who have emergency cesarean deliveries express more negative perceptions of the birth experience than those who have planned cesarean deliveries (Chen, Lai et al. 2017).

Experience of having premature birth

The finding showed low correlation without significant between experience of premature birth and maternal stress ($\beta = -.142$, $p < .107$). Our finding was contrast with previous study. It can be explained by our data collected was initial after preterm hospitalized in NICU. Mothers answered questionnaires after the third visit of their infant in NICU by the PSS: NICU. The sources of stress were more related to NICU environment experienced (sights and sounds, infant behaviour and appearance, and maternal role). In this study, 31 % mothers were experience of premature birth, while 69 % were no experience of preterm birth. Small sample size might not represent the result. Previous qualitative study discovered long term stress in mothers after their premature infant out of the hospital between 15 months and 8 years old. The study asked how their long term stress without restricting them to a psychological

framework. The stress of mothers is modified, in part by social norms for emotional and psychological responses to the challenges of preterm birth. Mothers feared that the new born would die as importance. Moreover, mothers describe their stress as isolation, difficult relationship, and difficult mother (Kantrowitz-Gordon et al., 2016).

Implications of the study

Nursing practice: The results of this study underscore the important of early identification maternal stress soon after a preterm birth. Antenatal care nurses should provide antenatal care guidelines including preterm births educations about normal appearance of premature babies and their common physical behaviours, and ensuring a positive pregnancy experience for all women. Nursing intervention base on reduce maternal stress should be design.

Nursing education: Further, a sound curriculum for student nurses on various factors influences stress among mothers with preterm infant during hospitalized in NICU could provide a better understanding of how these factors lead to maternal stress. This would help them to provide appropriate care, when they themselves start working as a full-fledged nurse in the future.

Future research: Future research should include samples from more than one hospital and a larger sample size should be considered. And study using a qualitative approach that could provide more detailed information about maternal stress.

APPENDICES

APPENDIX A

Questionnaire in English and Thai

Personal information

Direction: please mark ˇ in the box □ or write down your answers in the blank (…)

1. How old are you.....years?
2. What is your highest educational level?
   - □ 1 primary school
   - □ 2 Lower secondary school
   - □ 3 Upper high school
   - □ 4 Diploma/higher
3. What is your current occupation?
   - □ 1 Housewife
   - □ 2 Private company employee
   - □ 3 Unemployed
   - □ 4 Government employee
   - □ 5 Own business
4. Family income……baht/month
5. What is your marital status?
   - □ 1 Married
   - □ 2 Unmarried

Medical record Form

1. What is mode of delivery?

   □ 1 Normal vaginal delivery □ 3 Elective caesarean section

   □ 2 Assisted vaginal delivery □ 4 Emergency caesarean section

2. What is gender of this baby?

   □ 1 Male □ 2 Female

3. How weight of your baby at birth? ..... grams

4. Is this your first baby?

   □ 1 yes, first baby (primiparous) □ 2 No (multiparous)

5. Gestation at baby birth……..week

6. Previous experience of premature birth

   □ 1 Yes □ 2 No

Parental stressor scale: neonatal intensive care unit [PSS: NICU]

According to your infant hospitalized in the NICU, please answer in each experience that cause you to feel anxious, upset, or tense. For each question below, please remark ˇ the response that best indicates how stress to you during your baby hospital admission.

1 = Not at all stressful
2 = A little stressful
3 = Moderately stressful
4 = Very stressful
5 = Extremely stressful

Situations	**Not at all stressful**	**A little stressful**	**Moderately stressful**	**Very stressful**	**Extremely stressful**	**No situation**
	1	**2**	**3**	**4**	**5**	**0**
1. The presence of monitors and equipment in the room						
2. ……						
3. ……						
4 ……...						
5. ……						
18. Not being able to understand treatment and nursing care for my baby walking around my baby						

The nurse parent support tool [NPST]

We are interested in learning your views about how much the nursing staff caring for your infants have been supportive to you during your infant's hospitalization. For each question below, please remark ˇ the response that best indicates how often the nurses have helped you during this hospital admission.

1 = almost never, 2 = not very often, 3 = some of the time, 4 = most of the time, 5 = almost always

Nursing support items	**Almost never**	**Not very often**	**Some of the time**	**Most of the time**	**Almost always**
	1	**2**	**3**	**4**	**5**
1. Help talk about feelings, worries, concerns					
2. ……					
3. ……					
4 ……					
5. ……					
6. ……					
7. ……					
8. ……..					
9. ……					
21. Are optimistic about child					

แบบสอบถามข้อมูลส่วนบุคคล

คำชี้แจง : โปรดทำเครื่องหมายถูก ˇในช่อง ☐ หรือเติมคำในข้อความที่ตรงกับความเป็นจริงของท่าน มากที่สุด และกรุณาตอบให้ครบทุกข้อ

1.อายุ.....ปี

2.ระดับการศึกษาสูงสุด

☐ 1 ประถมศึกษา ☐ 3 มัธยมศึกษาตอนปลาย

☐ 2 มัธยมศึกษาตอนต้น ☐ 4 อนุปริญญา/ ปริญญา

3. อาชีพปัจจุบัน

☐ 1 แม่บ้าน ☐ 3 พนักงานของรัฐ/รับราชการ

☐ 2 พนักงานบริษัทเอกชล ☐ 4 ธุรกิจส่วนตัว

☐ 5 อื่นๆ (โปรดระบุ).....

4. รายได้.....บาท/เดือน

5. สถานภาพสมรส

☐ 1 แต่งงาน ☐ 2 ไม่มีสามี/คู่สมรส

แบบสอบถามประวัติการคลอด

1. ชนิดของการคลอด

☐ 1 คลอดเองทางช่องคลอด ☐ **3** นัดผ่าตัดคลอดทางหน้าท้อง

☐ **2** คลอดโดยใช้เครื่องมือช่วยคลอด ☐ **4** ผ่าตัดคลอดทางหน้าท้องแบบฉุกเฉิน

2. เพศของทารก

☐ 1 ชาย ☐ 2 หญิง

3. น้ำหนักตัวทารกแรกเกิด .....กรัม

4. การคลอดครั้งนี้เป็นการคลอดลูกคนแรกของท่านใช่หรือไม่?

☐ 1 ใช่ ☐ 2 ไม่ใช่

5. อายุครรภ์เมื่อคลอดทารก.....สัปดาห์

6. ประวัติการคลอดก่อนกำหนด

☐ 1 เคย ☐ 2 ไม่เคย

แบบประเมินความเครียดของมารดาหลังคลอด

คำชี้แจง:แบบสอบถามชุดนี้เป็นข้อความเกี่ยวกับเหตุการณ์ที่ทำให้มารดาเกิดความเครียด ขณะที่บุตรของมารดารักษาอยู่ในหออภิบาลทารกแรกเกิดต้องการทราบว่าท่านมีความเครียดอยู่ในระดับใด โปรดอ่านข้อความในแต่ละ □ และพิจารณาว่าข้อความนั้นตรงกับความรู้สึกของท่านมากน้อยเพียงใดและกรุณาทำเครื่องหมายถูก ˇ ลงในช่องว่างที่ตรงกับความรู้สึกของท่าน มากที่สุด ขอให้ท่านตอบเพียงคำตอบเดียว ที่ได้จะไม่มีถูกหรือผิด โปรดพิจารณาคำตอบดังนี้
ให้คะแนน

0 คะแนน หมายถึง ไม่พบเหตุการณ์นั้น

1 คะแนนหมายถึง เมื่อท่านเห็นว่าเหตุการณ์นั้นไม่ตรงกับความรู้สึกหรือไม่เป็นมีผลต่อความรู้สึกของท่านเลย

2 คะแนน หมายถึง เมื่อท่านเห็นว่าเหตุการณ์นั้นตรงกับความรู้สึกหรือเป็นความจริงเพียงส่วนน้อยหรือเป็นบางครั้ง

3 คะแนน หมายถึง เมื่อท่านเห็นว่าเหตุการณ์นั้นตรงกับความรู้สึกหรือเป็นความจริงของท่านปานกลางแต่ไม่มาก

4 คะแนน หมายถึงเมื่อท่านเห็นว่าเหตุการณ์นั้นตรงกับความรู้สึกหรือเป็นความจริงของท่านค่อนข้างมากแต่ไม่ทั้งหมด

5 คะแนนหมายถึง เมื่อท่านเห็นว่าเหตุการณ์นั้นตรงกับความรู้สึกหรือเป็นความจริงของท่านมากที่สุดหรือทั้งหมด

เหตุการณ์หรือสถานการณ์ในหออภิบาลทารกแรกเกิด	ความรู้สึกของมารดาต่อเหตุการณ์					
	ไม่พบเหตุการณ์นั้นเลย	ไม่เครียดเลย	เครียดเล็กน้อย	เครียดปานกลาง	เครียดมาก	เครียดมากที่สุด
	(0)	(1)	(2)	(3)	(4)	(5)
1. เมื่อฉันเห็นจอภาพและเครื่องมือต่างๆ เช่นเครื่องช่วยหายใจ เครื่องวัดความดันโลหิตในหออภิบาลทารก						
2. ……						
3. ……						
4 ……..						
18. ฉันไม่สามารถรับรู้แผนการรักษาของลูกฉันจากบุคลากรทางการแพทย์						

แบบประเมินการสนับสนุนจากพยาบาลของบิดามารดา

คำชี้แจงข้อคำถามต่อไปนี้เกี่ยวข้องกับการที่ได้รับการช่วยเหลือหรือสนับสนุนจากพยาบาลในระหว่างที่บุตรของท่านเข้ารับการรักษาในโรงพยาบาล กรุณาทำเครื่องหมายถูก ˇ ในช่องว่างตามความคิดเห็นของท่านเกี่ยวกับการช่วยเหลือหรือการสนับสนุนจากพยาบาลที่คุณได้รับ ซึ่งแต่ละคำตอบมีความหมายดังนี้

1 คะแนน หมายถึง เกือบไม่ได้รับการสนับสนุน
2 คะแนน หมายถึง ได้รับการสนับสนุนน้อยมาก
3 คะแนน หมายถึง ได้รับการสนับสนุนเป็นบางครั้ง
4 คะแนน หมายถึง ได้รับการสนับสนุนเกือบสม่ำเสมอ
5 คะแนน หมายถึง ได้รับการสนับสนุนสม่ำเสมอ

สถานการณ์หรือเหตุการณ์	การได้รับการสนับสนุนจากพยาบาล				
	เกือบไม่ได้รับ	น้อยมาก	เป็นบางครั้ง	เกือบสม่ำเสมอ	สม่ำเสมอ
	(1)	(2)	(3)	(4)	(5)
1. พยาบาลช่วยทำให้ฉันพูดระบายความรู้สึกความวิตกกังวลหรือความตระหนักที่มีต่อบุตร					
2. ……...					
3. ……...					
4 …….					
21. พยาบาลมองลูกของฉันในเชิงบวก					

APPENDIX B

Participant’s information sheet and consent

INFORMED CONSENT

Title: “Factors influencing stress among mothers of preterm infant hospitalized in neonatal intensive care unit”

IRB approval number: 01-02-2561

Date of collection data: March to May, 2018

Before I give signature in below, I already be informed and explained from Miss Paichit Amsri about purposes, method, procedures, and benefit of this study, and I understood all of that explanation. I agree to be as a participant of this study.
I’m Miss Paichit Amsri as a researcher had explained all of explanation about purposes, method, procedures, and benefits of this study to the participant with honestly; all of information of the participants will only be used for purpose of this research study.

……. ……

Name and signature of the participant Date

…… ……

Name and signature of witness Name and signature of the researcher

INFORMATION SHEET

Dear……..

My name's Paichit Amsri, a student studying Master of Nursing science at the Faculty of Nursing in Burapha University, Thailand. My study entitled, "Factors influencing stress among mothers of preterm infant hospitalized in neonatal intensive care unit". The objective are to examine the prevalence of stress and its factors in mothers of preterm infant's hospitalized in neonatal intensive care unit. The number of samples will be 90 mothers recovering in postpartum ward at Roi-Et regional hospital, during March to May, 2018.

This study will be a survey study. If you agree to participant in this study, you will be asked to fill out the general characteristics questionnaire, the nurse parent support tool, and parental stressor scale: neonatal intensive care unit. It will take about 30minutes to complete the questionnaire. The finding of this study will provide the useful for nurse and health care personal relevant to caring for postpartum women such as early screening, detecting maternal stress after giving preterm infants. Thus improve mothers and infants health.

The participant is voluntary; you have the right to refuse to answer any question or withdrawal at any time. A coding number will be assigned to your name will not be used. Any information received from this study including your identity will be kept confidential by researcher and my major-advisor. The results of this study will be showed as a group of participants, no specific information from any individual participant. All data will be destroyed completely within 1 year after publishing or presenting the findings.

The study will be conducted by Paichit Amsri under supervision of my major-advisor, Associate Professor Dr. Wannee Deoisres. It you have any questions, please contact me at telephone: 061-6477035 or by email: paichit97@hotmail.com

and/ or my advisor's email address: wannee@buu.ac.th. Your cooperation is greatly appreciated.

Please sign your name below to indicate your consent to participate in this study. You will be given a copy of this consent form to keep.

Paichit Amsri

Researcher

เอกสารชี้แจงผู้เข้าร่วมการวิจัย

การวิจัยเรื่อง ปัจจัยทำนายความเครียดของมารดาต่อทารกเกิดก่อนกำหนดที่เข้ารับการรักษาในหออภิบาลทารกแรกเกิด

รหัสจริยธรรมการวิจัย 01-02-2561

ชื่อผู้ทำวิจัย นางสาวไพรจิตร อ่ำศรี

การวิจัยครั้งนี้ทำขึ้นเพื่อศึกษาปัจจัยทำนายความเครียดของมารดาต่อทารกเกิดก่อนกำหนดที่เข้ารักการรักษาในหออภิบาลทารกแรกเกิด จากปัจจัยต่างๆ ได้แก่ การสนับสนุนจากพยาบาล น้ำหนักตัวทารกแรกเกิด ชนิดของการคลอด และประสบการณ์การคลอดลูกก่อนกำหนด

ท่านได้รับเชิญให้เข้าร่วมการวิจัยครั้งนี้เนื่องจากท่านเป็นมารดาของทารกเกิดก่อนกำหนดที่เข้ารักษาในหออภิบาลทารกแรกเกิด เมื่อท่านเข้าร่วมการวิจัยแล้ว สิ่งที่ท่านจะต้องปฏิบัติ คือ ตอบแบบสอบถามตามความเป็นจริงด้วยตัวของท่านเอง แบบสอบถาม 3 ชุดได้แก่ 1) แบบสอบถามข้อมูลส่วนบุคคลจำนวน 5 ข้อ 2) แบบ แบบประเมินความเครียดของมารดาหลังคลอดจำนวน 18 ข้อ 3) แบบประเมินการสนับสนุนจากพยาบาลของบิดามารดาจำนวน 21 ข้อ ใช้เวลาทั้งสิ้นประมาณ 30 นาที

ประโยชน์ที่จะได้รับจากการวิจัยครั้งนี้ เพื่อเป็นข้อมูลพื้นฐานสำหรับพยาบาลในการพัฒนาการดูแลมารดาและทารกหลังคลอดโดยเฉพาะอย่างยิ่งมารดาที่มีทารกเกิดก่อนกำหนดเข้ารับการรักษาในหออภิบาลทารกแรกเกิด และเป็นข้อมูลพื้นฐานในการพัฒนาการดูแลมารดาที่มีความเครียดต่อการมีลูกเกิดก่อนกำหนดเข้ารับการรักษาในหออภิบาลทารกแรกเกิดต่อไป อย่างไรก็ตามท่านอาจเกิดความกังวลต่อการตอบคำถาม ซึ่งผู้วิจัยจะจัดสถานที่สำหรับตอบแบบสอบถามให้เป็นสัดส่วน ให้ข้อมูลที่มีความชัดเจนและก่อนส่งแบบสอบถามคืน ผู้วิจัยจะให้ท่านเป็นตรวจสอบคำตอบในแบบสอบถามทุกข้อด้วยตนเอง

การเข้าร่วมวิจัยของท่านครั้งนี้เป็นไปตามความสมัครใจ ท่านมีสิทธิในการเข้าร่วมโครงการวิจัยหรือถอนตัวออกจากโครงการวิจัยได้ตลอดเวลาโดยไม่มีผลกระทบใดๆทั้งสิ้น และไม่ต้องแจ้งให้ผู้วิจัยทราบล่วงหน้า ผู้วิจัยจะเก็บรักษาข้อมูลของท่านโดยใช้รหัสตัวเลขแทนการระบุชื่อและสิ่งต่างๆที่อาจอ้างอิงหรือทราบได้ว่าข้อมูลนี้เป็นของท่าน ข้อมูลของท่านที่เป็นกระดาษแบบสอบถามจะถูกเก็บอย่างมิดชิด และปลอดภัยในตู้เก็บเอกสารและล็อคกุญแจตลอดเวลา สำหรับ

ข้อมูลที่เก็บในคอมพิวเตอร์ของผู้วิจัยจะถูกใส่รหัสผ่าน ข้อมูลที่กล่าวมาทั้งหมดจะมีเพียงผู้วิจัยและอาจารย์ที่ปรึกษาเท่านั้นที่สามารถเข้าถึงข้อมูลได้ ผู้วิจัยจะรายงายผลการวิจัยและเผยแพร่ผลการวิจัยในภาพรวม โดยไม่ระบุข้อมูลส่วนบุคคลของท่าน ดังนั้นผู้อ่านงานวิจัยจะทราบเฉพาะผลการวิจัยเท่านั้น สุดท้ายหลังจากผลการวิจัยได้รับการตีพิมพ์เผยแพร่ในวารสารเรียบร้อยแล้วข้อมูลทั้งหมดจะถูกทำลาย

หากท่านมีปัญหาหรือข้อสงสัยประการใด สามารถสอบถามได้โดยตรงจากผู้วิจัยในวันทำการรวบรวมข้อมูลหรือสามารถติดต่อสอบถามเกี่ยวกับการวิจัยครั้งนี้ได้ตลอดเวลาที่ นางสาวไพรจิตร อ่ำศรี หมายเลขโทรศัพท์ 061-6477035 หรือที่ รองศาสตราจารย์ ดร. วรรณี เดียวอิศเรศ อาจารย์ที่ปรึกษาหลัก

นางสาวไพรจิตร อ่ำศรี
ผู้วิจัย

หากท่านได้รับการปฏิบัติที่ไม่ตรงตามที่ได้ระบุไว้ในเอกสารชี้แจงนี้ ท่านจะสามารถแจ้งให้ประธานคณะกรรมการพิจารณาจริยธรรมฯ ทราบได้ที่ เลขานุการคณะกรรมการจริยธรรมฯ ฝ่ายวิจัย คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา โทร. 038-102823

ใบยินยอมเข้าร่วมการวิจัย

หัวข้อวิทยานิพนธ์ เรื่อง ปัจจัยทำนายความเครียดของมารดาต่อทารกเกิดก่อนกำหนดที่เข้ารับการรักษาในหออภิบาลทารกแรกเกิด

วันให้คำยินยอม วันที่.....เดือน.....พ.ศ.....

ก่อนที่จะลงนามในใบคำยินยอมเข้าร่วมการวิจัยนี้ ข้าพเจ้าได้รับการอธิบายจากผู้วิจัยถึงวัตถุประสงค์ของการวิจัย วิธีการวิจัย ประโยชน์ที่จะเกิดขึ้นจากการวิจัยอย่างละเอียดและมีความเข้าใจดีแล้ว ข้าพเจ้ายินดีเข้าร่วมโครงการวิจัยนี้ด้วยความสมัครใจ และข้าพเจ้ามีสิทธิที่จะบอกเลิกการเข้าร่วมในโครงการวิจัยนี้เมื่อใดก็ได้ และการบอกเลิกการเข้าร่วมการวิจัยนี้ จะไม่มีผลกระทบใดๆ ต่อข้าพเจ้า

ผู้วิจัยรับรองว่าจะตอบคำถามต่างๆที่ข้าพเจ้าสงสัยด้วยความเต็มใจ ไม่ปิดบัง ซ่อนเร้น จนข้าพเจ้าพอใจ ข้อมูลเฉพาะที่เกี่ยวกับตัวข้าพเจ้าจะถูกเก็บเป็นความลับและจะเปิดเผยในภาพรวมที่เป็นการสรุปผลการวิจัย

ข้าพเจ้าได้อ่านข้อความข้างต้นแล้ว และมีความเข้าใจดีทุกประการ และได้ลงนามในใบยินยอมนี้ด้วยความเต็มใจ

ลงนาม.....ผู้ยินยอม

(.....)

ลงนาม.....พยาน

(.....)

ลงนาม.....ผู้วิจัย

(นางสาวไพรจิตร อ่ำศรี)

APPENDIX C

IRB approval and asking permission for collecting data

THE INSTITUTIONAL REVIEW BOARD (IRB) FOR GRADUATE STUDIES
FACULTY OF NURSING, BURAPHA UNIVERSITY, THAILAND

Thesis Title Factors Influencing Stress in Mothers of Preterm Infants Hospitalized in Neonatal Intensive Care Unit

Name Ms. Paichit Amsri
ID: 59910031
Master of Nursing Science Program, Pathway of Maternity Nursing and Midwifery (International Program)

Number of the IRB approval **01 – 02 – 2561**

The Institutional Review Board (IRB) for graduate studies of Faculty of Nursing, Burapha University reviewed your submitted proposal. The contingencies have been addressed and the IRB **approves** the protocol. Work on this project may begin. This approval is for a period of one year from the date of this letter and will require continuation approval if the research project extends beyond **February 9th, 2019**.

If you make any changes to the protocol during the period of this approval, you must submit a revised protocol to the IRB committee for approval before implementing the changes.

Date of Approval February 9th, 2018

Chintana Wacharasin

Chintana Wacharasin, R.N., Ph.D.

Chairperson of the IRB
Faculty of Nursing, Burapha University, THAILAND

Tel.: 66-038-102823
Fax: 66-038-393476
E-Mail: naruemit@buu.ac.th

รอง พรส. รับเลขที่ 429 วันที่ 19 ก.พ. 2561 เวลา 9.18 น.

โรงพยาบาลร้อยเอ็ด รับเลขที่ 2807 วันที่ 16 ก.พ. 2561 เวลา 11.06 น.

ที่ ศธ ๖๒๐๖/ ๐๙๖๘

มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์
ต.แสนสุข อ.เมือง จ.ชลบุรี ๒๐๑๓๑

๑๕ กุมภาพันธ์ ๒๕๖๑

เรื่อง ขอความอนุเคราะห์ในการเก็บรวบรวมข้อมูลเพื่อการวิจัย

เรียน ผู้อำนวยการโรงพยาบาลร้อยเอ็ด

สิ่งที่ส่งมาด้วย ๑. เครื่องมือที่ใช้ในการวิจัย
๒. รายงานผลการพิจารณาจริยธรรมการวิจัยฯ
๓. โครงการวิจัยฉบับย่อ

ด้วย นางสาวไพรจิตร อ่ำศรี รหัสประจำตัว ๕๙๙๑๐๐๓๑ นิสิตหลักสูตรพยาบาลศาสตรมหาบัณฑิต (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์เรื่อง "ปัจจัยทำนายความเครียดของมารดาต่อทารกเกิดก่อนกำหนดที่เข้ารับการรักษาในหออภิบาลทารกแรกเกิด" โดยมี ผู้ช่วยศาสตราจารย์ ดร.วรรณพนา ศุภสีมานนท์ เป็นประธานกรรมการควบคุมวิทยานิพนธ์

ในการนี้ คณะฯ จึงขอความอนุเคราะห์จากท่านอำนวยความสะดวกให้นิสิตเก็บรวบรวมข้อมูลเพื่อการวิจัยในวิทยานิพนธ์ดังกล่าวจากกลุ่มตัวอย่าง คือ มารดาของทารกเกิดก่อนกำหนดที่เข้ารับการรักษาในหออภิบาลทารกแรกเกิด จำนวน ๙๐ ราย ระหว่างวันที่ ๑ มีนาคม – วันที่ ๓๐ พฤษภาคม พ.ศ. ๒๕๖๑

จึงเรียนมาเพื่อโปรดพิจารณาให้ความอนุเคราะห์ด้วย จะเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(รองศาสตราจารย์ ดร.นุจรี ไชยมงคล)
คณบดีคณะพยาบาลศาสตร์ ปฏิบัติการแทน
ผู้ปฏิบัติหน้าที่อธิการบดีมหาวิทยาลัยบูรพา

เรียน ผอ.รพ.รอ.
- เพื่อโปรดทราบ
- เห็นสมควรให้ดำเนินการ

(นางสาวรวงทอง จันทร์คา)
เจ้าพนักงานธุรการชำนาญงาน
16 ก.พ. 2561

(นางเธียไพร บุญรินทร์)
หัวหน้ากลุ่มงานบริหารทั่วไป
16 ก.พ. 2561

(นายณรงค์ชัย สังขา)
รองผู้อำนวยการด้านพัฒนาระบบบริการ และสนับสนุนบริการสุขภาพ
ปฏิบัติราชการแทนผู้อำนวยการโรงพยาบาลร้อยเอ็ด
19 ก.พ. 2561

งานบริการการศึกษา (บัณฑิตศึกษา)
โทรศัพท์ ๐ ๓๘๑๐ ๒๘๓๖
โทรสาร ๐ ๓๘๓๙ ๓๔๗๖
ผู้วิจัย ๐๖ ๑๖๔๗ ๗๐๓๕
๐๙ ๖๙๑๙ ๒๗๓๘

จองคณบดี ฝ่ายบริหารทั่วไป
ประธานหลักสูตร ป.โท พยาบาลฯ
(รศ.ดร.วรรณี)
อ.ที่ปรึกษา (รศ.ดร.วรรณี)
งานบัณฑิตฯ
ที่ ศธ ๖๕๙๓(๒๓)/ ๕๔๖

บัณฑิตวิทยาลัย มหาวิทยาลัยเชียงใหม่
๒๓๙ ถนนห้วยแก้ว ตำบลสุเทพ
อำเภอเมืองเชียงใหม่ ๕๐๒๐๐

๙ กุมภาพันธ์ ๒๕๖๑

เรื่อง อนุญาตให้ใช้เครื่องมือวิจัย

เรียน คณบดีคณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา

อ้างถึง หนังสือ ที่ ศธ ๖๒๐๖/๐๒๒๕ ลงวันที่ ๑ กุมภาพันธ์ ๒๕๖๑

ตามที่ คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา มีความประสงค์จะขออนุญาตให้ นางสาวไพรจิตร อ่ำศรี นิสิตหลักสูตรพยาบาลศาสตรมหาบัณฑิต (หลักสูตรนานาชาติ) นำเครื่องมือวิจัย ในวิทยานิพนธ์**ของนางสาวกาญจนา กันทาหงษ์** ไปใช้ในงานวิจัยนั้น

บัณฑิตวิทยาลัย มหาวิทยาลัยเชียงใหม่ พิจารณาแล้วไม่ขัดข้อง และยินดีอนุญาต ให้นำเครื่องมือดังกล่าวไปใช้ประโยชน์ในการศึกษาวิจัยได้

จึงเรียนมาเพื่อโปรดทราบ

ขอแสดงความนับถือ

(รองศาสตราจารย์ ดร.อภิชาต โสภาแดง)
รองคณบดี ปฏิบัติการแทน
คณบดีบัณฑิตวิทยาลัย

งานบริการการศึกษา
โทร. ๐-๕๓๙๔-๒๔๐๗
โทรสาร. ๐-๕๓๙๔-๒๔๓๕

เรียน คณบดี

ด้วย บัณฑิตวิทยาลัย มหาวิทยาลัยเชียงใหม่ ได้ตอบอนุญาตให้นางสาวไพรจิตร อ่ำศรี นิสิตหลักสูตรพยาบาลศาสตรมหาบัณฑิต (หลักสูตรนานาชาติ) ใช้เครื่องมือวิจัยของนางสาวกาญจนา กันทาหงษ์ ดังรายละเอียดข้างต้นได้

๑. จึงเรียนมาเพื่อโปรดทราบและพิจารณา

๒. เห็นควรสำเนาแจ้งรองคณบดีฝ่ายบัณฑิตฯ ประธานหลักสูตรพยาบาลศาสตรมหาบัณฑิต (หลักสูตรนานาชาติ) (รศ.ดร.วรรณี) อาจารย์ที่ปรึกษา (รศ.ดร.วรรณี) ทราบ และงานบัณฑิตฯ เพื่อแจ้งนิสิต (นางสาวไพรจิตร อ่ำศรี) ทราบต่อไป

ชาลินี/ ๑๙ ก.พ. ๖๑

ที่ ศธ ๖๒๐๖/ ๐๒๒๔

มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์
ต.แสนสุข อ.เมือง จ.ชลบุรี ๒๐๑๓๑

๑ กุมภาพันธ์ ๒๕๖๑

เรื่อง ขออนุญาตใช้เครื่องมือเพื่อการวิจัย

เรียน คณบดีบัณฑิตวิทยาลัย มหาวิทยาลัยราชภัฏนครสวรรค์

ด้วย นางสาวไพรจิตร อำศรี รหัสประจำตัว ๕๙๙๑๐๐๓๑ นิสิตหลักสูตรพยาบาลศาสตรมหาบัณฑิต (หลักสูตรนานาชาติ) ได้รับอนุมัติเค้าโครงวิทยานิพนธ์ เรื่อง "Factors Influencing stress in mothers of preterm infants hospitalized in Neonatal Intensive Care Unit" โดยมี รองศาสตราจารย์ ดร.วรรณี เดียวอิศเรศ เป็นประธานกรรมการควบคุมวิทยานิพนธ์ มีความประสงค์ขออนุญาตใช้เครื่องมือการวิจัย คือ แบบประเมินความเครียดของมารดาคลอดก่อนกำหนด (The parental stressor scale: Neonatal intensive care unit) ซึ่งเป็นส่วนหนึ่งของงานวิทยานิพนธ์ เรื่อง "ผลการใช้โปรแกรมมีส่วนร่วมในการลดปัจจัยที่ทำให้เกิดความเครียดของมารดาที่คลอดบุตรก่อนกำหนดในหออภิบาลทารกแรกเกิด โรงพยาบาลสวรรค์ประชารักษ์" ของคุณสุวารี อุตสงควัฒน์ หลักสูตรครุศาสตรมหาบัณฑิต สาขาการส่งเสริมสุขภาพ พ.ศ. ๒๕๕๓ โดยมี รองศาสตราจารย์เฉลี่ย พิมพันธุ์ เป็นประธานกรรมการควบคุมวิทยานิพนธ์ เพื่อนำมาใช้ในการเก็บข้อมูลการทำวิทยานิพนธ์ในครั้งนี้

จึงเรียนมาเพื่อโปรดพิจารณาอนุญาตด้วย จะเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(รองศาสตราจารย์ ดร.นุจรี ไชยมงคล)
คณบดีคณะพยาบาลศาสตร์ ปฏิบัติการแทน
ผู้ปฏิบัติหน้าที่อธิการบดีมหาวิทยาลัยบูรพา

เรียน หัวหน้าสำนักงานบัณฑิตวิทยาลัย
O โปรดพิจารณาอนุมัติ
O เพื่อทราบ
✓ เพื่อพิจารณา
O เพื่อพิจารณาลงนาม
(.....)

งานบริการการศึกษา (บัณฑิตศึกษา)
โทรศัพท์ ๐๓๘ ๑๐๒ ๘๐๘
โทรสาร ๐๓๘ ๓๙๓ ๔๗๖
ผู้วิจัยโทร ๐๖๑ ๖๔๗ ๗๐๓๕

ดร.ประจักร์ รอดอาวุธ
รองอธิการบดีมหาวิทยาลัย

ที่ พิเศษ ๒๑๑/ ๑๙ ก.พ. ๖๑

REFERENCES

BIOGRAPHY

NAME	PAICHIT AMSRI	
DATE OF BIRTH	9 December 1975	
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POSITION HELD	2000-2001	Registered nurse Dansai Hospital, Loei province, Thailand.
	2001-2013	Registered nurse Chureevetch Hospital, Roi-Et, Thailand.
	2013-2016	Registered nurse Bangkok Pattaya Hospital, Chonburi, Thailand.
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INSTITUTIONS ATTENDED	1996-2000	Bachelor of Nursing Science, Faculty of Nursing, Khon Kaen University, Khon Kaen, Thailand.
	2016-2018	Master of Nursing Science (International Program) Faculty of Nursing, Burapha University, Chonburi, Thailand.