



**Factors Related to Discharge Readiness Among First-time  
Mothers After Cesarean Section in China**

**Mingfei Ran**

**A Thesis Submitted in Partial Fulfillment of the Requirements for the  
Degree of Master of Nursing Science in Adult and Gerontological  
Nursing (International Program)**

**Prince of Songkla University**

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### **ABSTRACT**

The purpose of this descriptive correlation study was to determine the level of discharge readiness and its related factors of first-time mothers after CS. 233 first-time mothers were purposively selected from two of the largest referral centers for high-risk pregnancies in Guiyang city, Guizhou province, China. The discharge readiness questionnaire for a new mother (RHDS-NMF) and the discharge teaching questionnaire - new mother form, (QDTS-NMF) which yielded Cronbach's alpha values of .95 and .96 respectively, were used to collect the data. Descriptive statistics and Pearson correlation were applied for data analysis.

The results showed that the discharge readiness of first-time mothers after CS was at a moderate level. There were statistically significant relationships between discharge readiness and related factors: age, having complications related to CS and discharge teaching. The findings suggest the need for nursing administrators and nurses to develop some interventions in improving discharge readiness for those first-time mothers who are older, have complications after CS, and to increase the quality of discharge teaching. Discharge readiness could be beneficial to enhance maternal health outcomes after discharge.

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## CHAPTER 1

### INTRODUCTION

This chapter presents the introduction of the study. It includes background information and significance of the study, objectives, research questions, theoretical framework, hypothesis, and the significance of the study.

#### **Background and Significance of the Problem**

Cesarean section [CS] rates vary widely around the world from 4 to 60% and one-third of cesarean sections are primary CS (Betran et al., 2021; Fong et al., 2016; Nagy & Papp, 2021), which is growing at 4% per year (Boerma et al., 2018). In 2015-2016, in China, the overall CS rate was 38.9% (95% CI 38.6–39.3%) (Zhang et al., 2022), which was one of the highest cesarean delivery rates in the world (Zhang et al., 2022; World Health Organization [WHO], 2010). However, due to significant differences in geography, economy and living environments, the CS rate varies from 4% to 68 % in 31 provinces across the country (Zhang et al., 2022). This is mainly due to an increase in initial cesarean deliveries and a decrease in vaginal deliveries after cesarean deliveries (Boerma et al., 2018; Nagy & Papp, 2021; Zhang et al., 2022). Moreover, in 2015, there were 90 million Chinese women who had the chance to have a second child after China implemented its universal two-child policy, and in 2021, the three-child policy was implemented (National Health Commission of China, 2021), therefore the characteristics of pregnant women may change even more. In addition, the health service resources for mothers and infants have been further

challenged. (Hellerstein, 2017; Hou et al., 2017; Zhang et al., 2022).

Although CS is the most common and safe surgical procedure performed worldwide, when it is medically indicated, it can also result in both short-term and long-term complications for women (Antoine & Young, 2021; Nagy & Papp, 2021). The short-term complications are hysterectomy, massive bleeding, blood transfusions, thromboembolism, cardiac arrest, wound hematoma, bowel obstruction, surgery for bowel obstruction, incisional hernia, surgery for incisional hernia and abdominal pain, puerperal infection, complications of anesthesia, and higher mortality (Antoine & Young, 2021; Nagy & Papp, 2021). The long-term complications include surgical adhesion, pain, infertility or low fertility, intrauterine growth delay and premature birth, spontaneous abortion, ectopic pregnancy, stillbirth, placenta praevia, and cesarean scar pregnancy, uterine rupture, irregular bleeding, dyspareunia, menstrual pain, and endometriosis (Antoine & Young, 2021; Mylonas & Friese, 2015). Long-term complications are also associated with obesity, increased blood pressure, type 1-diabetes, asthma, weight gain, altered liver function immune-related diseases, neurological and stress-related problems, and autoimmune gastrointestinal diseases in children (Antoine & Young, 2021; Keag et al., 2018; Sandall et al., 2018). In addition, other negative effects of CS include an increased rate of advanced postpartum hemorrhage, post-traumatic stress disorder [PTSD], postpartum depression, breastfeeding problems and lack of infant care skills (Malouf et al., 2019; Weiss & Lokken, 2009). When compared to multiparous women experiencing CS, the first-time mother not only experiences the same physical difficulties but she also needs to transit into the motherhood role. First-time mothers need to build their confidence and learn new skills which are inversely associated with stress anxiety and postpartum



depression (Leahy-Warren et al., 2012; Sun et al., 2019).

Due to the COVID-19 pandemic, hospital stays have been shortened worldwide (Handley et al., 2022). The first-time mothers have to discharge from hospital to home and continue their recovery at home after short and fragmented postpartum care (McLeish et al., 2020). The transition period is important for the first-time mothers. Meleis's middle-range transition theory holds that it is a transition process in which changes in health status, role relationships, expectations or abilities will lead to a period of vulnerability (Meleis et al., 2000). Discharge is divided into three stages during this transition period: (1) the hospitalization phase during which discharge preparation occurs; (2) the discharge when short-term outcomes of the preparatory process can be measured; and (3) the post-discharge period when patients' perceptions of their ability to cope with the demands of care at home and their needs for support and assistance from family and health services provide evidence of positive or adverse outcomes of the patient's transitional process. Indicators of health transition include subjective well-being, role control and interpersonal well-being. However, even under similar circumstances, different people experience different transitions (Meleis, 2010).

Discharge readiness is a measurable short-term outcome of the discharge transition phase, and higher scores indicate greater readiness (Meleis, 2010). Previous studies have reported levels of discharge readiness in terms of readiness and unreadiness respectively. For readiness report, previous studies from Turkey and the United States reported the readiness level from 84.7 percent to 98 percent (Dag et al., 2013; Malagon-Maldonado et al., 2017; Weiss et al., 2004; Weiss & Lokken, 2009; Şenol et al., 2017; Yanikkerem et al., 2018), and a study in China reported a moderate

level (Zhou et al., 2019). For the unreadiness report, a large study of 49 U.S. states, the District of Columbia, Puerto Rico and Canada, with a sample size of 4,300, shows that unreadiness was identified in 17% as determined by the mother (11%), pediatrician (5%), obstetrician (1%), and 2 informants (1%) (Bernstein et al., 2007). Those mothers who felt unready were associated with increased use of health care resources and poor health outcomes for the mothers in the first week after birth. The poor outcomes included pain (wound, back, hand), bleeding, puerperal infection, difficulty feeding, feeling sad or blue, fatigue, breast care, incision care, or any other worry (Bernstein et al., 2013 ; Cheng et al., 2006; Kirca & Ozcan, 2018); Additionally, the increased use of health care resources for the baby are for nutrition, feeding, breathing, sleeping, bowels, diarrhea, constipation, jaundice, or any other worry identified by the mother.

In China, in the early postpartum period, first-time mothers experience a variety of physical discomfort, and are anxious about the body changes and healing process they are experiencing, including wound pain caused by CS, nipple pain caused by breastfeeding, waist and wrists pain caused by childbirth, recovery of pelvic floor muscles, and whether lochia is normal (Xiao et al., 2020). In addition, first-time mothers have concerns about their lack of knowledge about nutritional supplements and their ability to care for their infant, including feeding, defecating, rashes and crying (Xiao et al., 2020). Moreover, concerns about husbands' lack of post-natal support and infant care skills, and the old ways in which mothers/mothers-in-law care for babies have even led to disputes in some families (Xiao et al., 2020). As a result, there was a concern about how to help the mother and her infant move safely home from hospital and promote early post-natal health outcomes in the face of

shorter hospital stays worldwide (Fahey & Shenassa, 2013; Jones et al., 2016). Of most concern is the insufficient post-natal care resources (i.e., busy post-natal wards, insufficient time for effective support, and communication and attitude of staff to prevent mothers and families from receiving meaningful support for infant care and feeding) (Malouf et al., 2019), especially for first-time mothers who require time for preparation.

There are many factors that influence the discharge readiness of mothers having given birth. These include discharge teaching ( $p < .001$ ) (Malagon-Maldonado et al., 2017; Weiss & Lokken, 2009; Yanikkerem et al., 2018; Zhou, et al., 2019); postpartum support ( $p < .001$ ) (Şenol et al., 2017; Weiss, 2009; Yanikkerem et al., 2018), socio-demographic characteristics of mothers [i.e., age, education level ( $p < .001$ ), marital status, economic status, having a private payer source ( $p < .0001$ ) (Malagon-Maldonado, 2017); a mother's reproductive characteristics [i.e., Number of pregnancies] (Malagon - Maldonado et al., 2017; Şenol et al., 2017; Weiss, 2004), infants feeding ( $p < .001$ ) (Malagon-Maldonado et al., 2017; Zhou et al., 2019); the characteristics of pediatricians (Bernstein et al., 2007), lack of prenatal and post-natal services (Bernstein et al., 2007), women with a history of chronic disease (OR=1.73,  $p=0.0004$ ) and complications (OR=1.54,  $p=0.0128$ ) (Bernstein et al., 2007). However, the majority of studies that looked at the factors affecting the discharge readiness of mothers were targeted to all postpartum mothers and very few studies focused on the factors related to the discharge readiness of first-time mothers experiencing CS. Therefore, it is necessary to conduct a study to explore the factors associated with discharge readiness of first-time mothers after CS which will provide a basis for developing and improving the quality of postpartum care and strategies or policies to

promote first-time mothers after CS and the healthy outcomes of infants

### **Objectives of the Study**

1 To assess the level of discharge readiness among first-time mothers after CS in China.

2 To examine the correlations between factors (i.e., Mode of CS delivery [planned and unplanned]; feeding methods; mother's age; educational background; mother's complications]; discharge teaching) related to discharge readiness among first-time mothers after CS in China.

2.1 To examine the relationship between mode of CS delivery (planned and unplanned) and discharge readiness.

2.2 To examine the relationship between feeding methods (breastfeeding only, bottle feeding only or mixed breastfeeding and bottle feeding) and discharge readiness.

2.3 To examine the relationship between a mother's age and discharge readiness.

2.4 To examine the relationship between educational background and discharge readiness.

2.5 To examine the relationship between a mother's complications and discharge readiness.

2.6 To examine the relationship between discharge teaching and discharge readiness.

## **Research Questions**

1. What is the level of discharge readiness among first-time mothers after CS in China?
2. Is there a significant relationship between mode of CS delivery and discharge readiness?
3. Is there a significant relationship between feeding methods and discharge readiness?
4. Is there a significant relationship between a mother's age and discharge readiness?
5. Is there a significant relationship between educational background and discharge readiness?
6. Is there a significant relationship between a mother's complications and discharge readiness?
7. Is there a significant relationship between discharge teaching and discharge readiness?

## **Hypothesis**

1. There is a significant relationship between mode of CS delivery and discharge readiness.
2. There is a significant relationship between feeding methods and discharge readiness.
3. There is a significant relationship between a mother's age and discharge

readiness.

4. There is a significant relationship between educational background and discharge readiness.

5. There is a significant relationship between a mother's complications and discharge readiness.

6. There is a significant relationship between discharge teaching and discharge readiness.

### **Conceptual Framework**

Transition is defined as the process of moving from one life stage or state to another (Meleis, 2010, pp. 11) (Helping a first-time mother who has just undergone a CS and transitioning from hospital to home with her infant is considered a complex process, including the discharge transition and the transition to motherhood which is considered and recognized to be to of cultural and psychosocial importance. Meleis's middle-range situation-specific theory (Weiss & Lokken, 2009) provides a relevant conceptual framework for first-time mother adaptation to changes in discharge factors during the transition home after CS.

The theoretical framework consists of four key elements of transition, and these are nature of transition, transition conditions, nursing therapeutics, and patterns of response (Im, 2013; Meleis, 2010). Firstly, the nature of the transition is the type, guidance and resources for inpatient care. In this study, the nature of the transition is a mother's age, and educational background (Weiss & Lokken, 2009). Secondly, transitional conditions refer to the individual or entity conditions that promote the

transition of health, including the characteristics of patients. In this study, the transitional conditions include the mode of CS delivery (planned and unplanned), and the feeding methods (breastfeeding only, bottle feeding only or mixed breastfeeding and bottle feeding), and any complications of the mother. Thirdly, nursing therapeutics pay attention to the health outcomes through the discharge teaching process to respond a new role and to carry out new skills before the patient's discharge from hospital. In this study, first-time mothers reported quality of teaching on their discharge day as a measure of the hospital postpartum mother's health education during the stay in the baby-friendly ward and the skills of educators in this regard on the discharge day, normally within 4 hours before discharge (Weiss et al., 2011). Nursing therapeutics, as measured in this study, are described as a combination of all discharge related teaching which mainly includes content (the amount of content received, the differences in content needed and received) and delivery (Malagon-Maldonado et al., 2017; Weiss & Lokken, 2009; Yanikkerem et al., 2018; Zhou et al., 2019). Fourthly, response patterns are the development of patients' understanding of disease diagnosis, treatment and medication, preventive care and rehabilitation, as well as strategies for managing health problems, patient confidence in recovery and self-care, and a sense of connection between support staff and the health care community. This pattern reflects the patient's readiness for discharge. In this study, the patterns of response refer to discharge readiness which is an important intermediate outcome in the transition period from hospital care in returning a first-time mother and her infant to home, and this includes personal status, knowledge, coping ability, expected support and services after discharge (Weiss et al., 2007).

Discharge readiness is considered to be a measurable, healthy mediator of

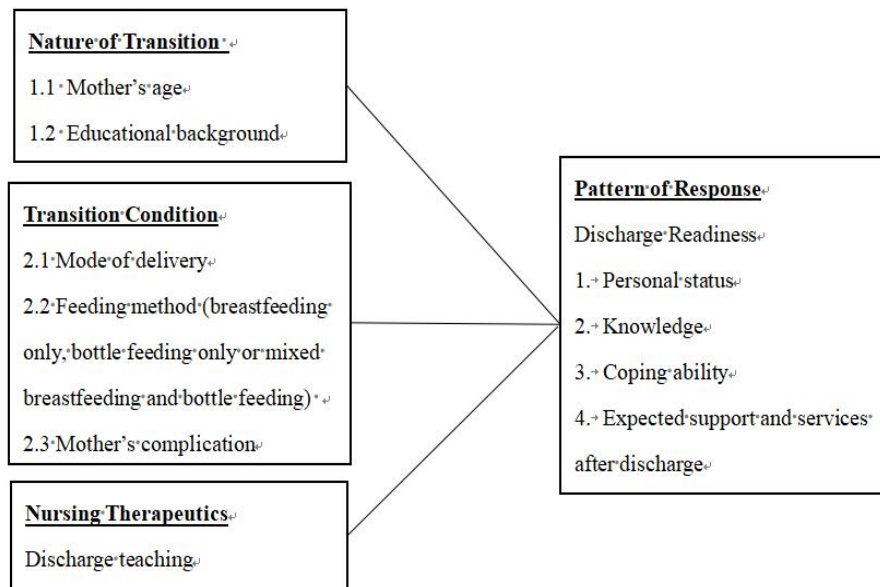
transition outcomes, a sense of readiness to cope with post-discharge difficulties in daily life, health maintenance and emotional regulation, and the possibility of social support. In this study, discharge readiness refers to feeling prepared to manage post-discharge difficulties of daily living, CS wound care, analgesia at home, and the provision of monitoring on possible risks associated with CS birth and possible complications, emotional adjustment, feeding difficulty, family burden, and accessibility of the health-care community services and the perceptions of other social support resources.

Discharge readiness is composed of four sub-scales; 1) Individual status. 2) Knowledge. 3) Coping ability 4) Expected support (Meleis, 2010). Personal status is the physical-emotional state of the patient immediately prior to discharge. Knowledge is the perceived adequacy of information needed to respond to common concerns and problems in the post-discharge period. Coping ability refers to the perceived ability of the patient to self-manage personal and health care needs after discharge. Expected support is defined as the emotional and instrumental assistance including services expected to be available following hospital discharge during transition to home (Weiss et al., 2007; Weiss et al., 2014; Weiss & Piacentine, 2006).

According to Meleis et al. (2000), some factors or conditions may facilitate or inhibit the readiness in transitions. Regarding the literature review of factors related to maternal post CS readiness, there may be a significant relationship between mode of CS delivery, feeding methods of infants, characteristics of a mother [i.e., age, education background], any complications experienced by the mother, discharge teaching, and discharge readiness (Figure 1).



Figure 1.

*Theoretical Framework of Study***Definition of Terms**

**Discharge Readiness.** Discharge readiness is a state of people who feel ready to be discharged home. Discharge readiness has four characteristics: 1) physical stability, including functional ability and ability to take care of oneself at home; 2) good support to cope with multiple needs after leaving the hospital; 3) the mental ability of the patient to have sufficient confidence to handle the transition or process; and 4) have sufficient information and knowledge to deal with common problems after discharge (Galvin et al., 2017). The postpartum version of the Readiness for Hospital Discharge Study (RHDS) is specifically used to measure postpartum mothers' perceptions of discharge readiness. This version was developed by Weiss

and Lokken. (2009) and translated into the Chinese Mandarin language by Chen et al. (2020). The higher scores indicate a higher level of discharge readiness.

**Selected factors of discharge readiness.** In this study, the selected factors included a mother's age, educational background, mode of delivery, feeding method, a mother's complications and discharge teaching. The definition of each of these factors are as follows:

*Age.* Age refers to the age of a first-time mother which is classified in three groups according to the influence on pregnancy outcomes; the average age of childbearing is 18-34 years, and advanced maternal age is generally considered 35 years or older with an increased incidence of adverse pregnancy outcomes.

*Education background.* This refers to the education level of a first-time mother which includes being illiterate, or having an education level of primary and secondary, university or above.

*Mode of delivery.* The delivery of CS consists of: 1) necessary CS for planned CS with medical indications, unplanned and emergency CS during pregnancy and delivery that require surgical intervention to save maternal and neonatal death and morbidity, 2) unnecessary CS like elective CS.

*Feeding methods.* Feeding methods include breastfeeding only, bottle feeding only, mixed breastfeeding and bottle feeding.

*Mother's complications.* In this study, complications of the mother are mainly related to CS and include PPH, SSI, postpartum baby blue, urinary symptoms (American Academy of Pediatrics & American College of Obstetricians and Gynecologists, 2017).

The researcher developed a mother sociodemographic characteristics scale to

collect related information on the discharge day through a computerized electronic medical record.

**Discharge Teaching.** Discharge teaching refers to all the teaching that patients receive during their stay in hospital to prepare for discharge from hospital. In this study discharge teaching refers to quality discharge teaching and usually includes 1) the amount of informational content needed and received; 2) the skills of nurses in delivering discharge teaching. The measuring tool for discharge teaching of first-time mothers is translated from the Quality of Discharge Teaching Scale New Mother Form (QDTS-New Mother Form) which was developed by Weiss and Lokken. (2009). The higher score means the higher quality of discharge teaching.

### **Scope of the Study**

The purpose of this descriptive study was to measure the level of discharge readiness of first-time mothers after CS and to explore the factors associated with discharge readiness among first-time mothers. The study was conducted in the maternity ward of two tertiary hospitals in Guizhou Province, China, and was conducted from February to June 2021.

### **Significance of the Study**

The results of this study are useful to identify the level of discharge readiness and related influencing factors of the current practice of CS first-time mothers in Guizhou province, China. It provides evidence for a better understanding of discharge

readiness and concern for nurses to seek strategies to improve the quality of discharge education and postnatal care, promote healthy outcomes for first-time mothers going back home from hospital, and provides evidence for policy makers in postnatal care services and support. In addition, this study provides baseline data for postpartum continuation care studies in first-time mothers in hospital settings.

## **CHAPTER 2**

### **LITERATURE REVIEW**

This chapter describes the literature review for discharge readiness among first-time mothers after cesarean section (CS). The outline of the literature review is presented as follows.

1. The Statistics and Policy of CS and Routine Care of CS
2. Overview of the Caring of CS Mothers
  - 2.1 Positive and Negative Outcomes of CS
  - 2.2 Nursing Role and Management for CS Mothers in Discharge Period
  - 2.3 Quality Discharge Teaching for Mothers and Infants After CS
3. Transitional Theory and Its Application to Discharge Readiness among Post Cesarean Section First-time Mothers
4. Factors Associated with Discharge Readiness among Mothers after CS
5. Summary of Literature Review

#### **The Statistics and Policy of CS and Routine Care of CS**

Since 1985, caesarean sections (CS) have become increasingly common in both developed and developing countries. When medically necessary, a caesarean section can effectively prevent maternal and newborn mortality. The CS rate is still on the rise globally from 4 to 60 % and is growing at 4% per year (Boerma et al., 2018). In addition, the postoperative complications of CS are a huge challenge. The

increased CS rate has been observed particularly in China. In 2015-2016, in China, the overall CS rate was 38.9% (95% CI 38.6–39.3%) which was one of the highest cesarean delivery rates in the world (Zhang et al., 2022). However, due to significant differences in geography, economy and living environments, the CS rate varies from 4% to 68% in 31 provinces across the country (Zhang et al., 2022). This is mainly due to an increase in initial cesarean deliveries and a decrease in vaginal deliveries after cesarean deliveries (Boerma et al., 2018; Nagy & Papp, 2021; Zhang et al., 2022). Moreover, in 2015, there were 90 million Chinese women who had the chance to have a second child after China announced its universal two-child policy, and in 2021, the three-child policy was implemented (National Health Commission of China, 2021), therefore, the characteristics of pregnant women may change even more. Thus, the health service resources for mothers and infants are further challenged. (Hellerstein et al., 2017; Hou et al., 2017; Zhang et al., 2022).

In order to reduce unnecessary CS and reduce long-term complications which include: intrauterine growth retardation and preterm delivery, spontaneous abortion, ectopic pregnancy, stillbirth, uterine rupture, infertility, placenta previa, increta, or accreta and associated risks e.g., need for blood transfusion or hysterectomy (Mylonas & Friese, 2015), the government has come up with a range of policies, including financial incentives or penalties, and guidelines for providers and public education (Hellerstein et al., 2017).

Clinical interventions that could help to reduce CS rates have been addressed in the WHO guidelines. In addition, there is the new guideline in the WHO recommendations (2018) on non-clinical interventions to reduce unnecessary CS to support the direction of interventions for mothers and health care professions.

However, the implementation of both clinical and non-clinical interventions to reduce CS rates is still a challenge and requires long term monitoring and evaluation.

**Routine Care of CS.** A series of guidelines published in the American Journal of Obstetrics and Gynecology (AJOG, 2018; 2019) recommends that Enhanced Recovery After Surgery (ERAS), which is a standard perioperative care program, be used for maternal care after CS to enhance maternal and infant care quality, and safety and health outcomes. It has been used by several surgical disciplines, including colorectal, urological, gynecological surgery and hepatobiliary surgery, and has been shown to reduce hospital stays and surgery-related complications and readmission, as well as reduce the costs to the health system (Caughey et al., 2018; Macones et al., 2019; Wilson et al., 2018). There are three phases: preoperative, intraoperative and postoperative in caring for CS as follows:

Preoperative phase, Firstly, from 10 to 20 weeks of gestational age, a multidisciplinary team provides prior to admission information, education and counseling for pregnant women with pregnancy and maternal complications to prepare for delivery. Secondly, after admission, pregnant women undergoing planned CS with medical indications and their partners are provided with surgical related information by obstetricians and anesthesiologists, so as to achieve guidance and comfort. An ERAS Checklist summarizes the overall preoperative/intraoperative/post-operative content of cesarean delivery and the informed knowledge needed by the surgeon, the pregnant woman and her family. When it is determined that the newborn needs neonatal care, if time permits, the pregnant woman and her partner should meet with the neonatologist and visit the neonatal unit before performing a CS. In addition, for unplanned and emergency cesarean delivery, there is less time for the obstetrician

to meet with a pregnant woman and her partner so the risks and benefits of CS for mothers and infants without medical indications may not be evaluated before admission (Wilson et al., 2018).

Intraoperative phase, all modes of cesarean delivery follow the same procedure based on the best evidence. For maternal CS, the standard procedures are mainly through preoperative prophylactic use of antibiotics, surgical site skin preparation, prevention of intraoperative hypothermia and maintenance of intraoperative body fluid balance to prevent the incidence of postoperative surgical site infection and reduce the length of hospital stay. In addition, to reduce the incidence of urinary tract infections, the catheter is removed immediately after CS rather than the previous 12-hours after CS. For infants, the following evidence is addressed such as delay clamping the umbilical cord for at least 1 minute during delivery, keep the infants body temperature between 36.5 and 37.5 after birth, routine suctioning of the airways or gastric aspiration should be performed only when secretions or meconium cause symptoms of airway obstruction, regular indoor air supplements instead of oxygen, including the ability to resuscitate the newborn immediately must be available as necessary (Caughey et al., 2018).

Postoperative phase, mothers after CS should be provided with standardized written discharge instructions to facilitate discharge counseling, use of the Discharge Readiness Perception Scale New Mother Form to help clinicians identify mothers who are at increased risk for problems after discharge (Macones et al., 2019).

However, reducing the length of maternal hospital stay and the safe transition of both mother and child to home for continued care are influenced by a number of factors. This includes maternal pain management, newborn health status, and success



in breastfeeding, which lack in the series ERAS guidelines which published in AJOG (Caughey et al., 2018; Macones et al., 2019; Wilson et al., 2018). Moreover, The Society for Obstetric Anesthesia and Perinatology (SOAP) have added/modified more measures focusing on maternal and newborn outcomes (such as breastfeeding success rate, mother-infant relationship), improved postoperative hospital stay, postoperative opioid demand, patient satisfaction and nursing experience (Bollag et al., 2021).

In China, Geng and Sun, (2020) translated these series ERAS guidelines which have been published in the (AJOG, 2018; AJOG, 2019) and updated in the Chinese Journal of Obstetrics and Gynecology (CJOG, 2020) and are currently being used in China.

### **Overview of the Caring of CS Mother**

With the development of surgical and anaesthesia techniques, the incidence and mortality of CS have decreased, leading to a broader perception that CS is safe. However, the morbidity and mortality rates of CS are still several times higher than vaginal delivery. An ecological study using longitudinal data in 159 countries showed that the CS rates of more than 10% at the population level were not associated with a reduction in maternal and neonatal mortality (Ye et al., 2016). Another study showed that in WHO member states (Molina et al., 2015), up to 19% of deaths were associated with lower maternal and neonatal mortality. Therefore, the focus of maternal care after CS is to improve the outcomes of pregnant women and infants by improving the quality of nursing and optimizing the quality of postoperative recovery (Bollag et al., 2021).

### **Positive and Negative Outcomes of CS**

CS is often classified as necessary and unnecessary according to the impact on maternal and neonatal morbidity and mortality (WHO, 2015). Therefore, in practice, the indications for CS vary slightly from country to country. In China, the clinical obstetric guidelines for CS include: non-reassuring foetal heart tracing, failure to progress or cephalopelvic disproportion in labour, malpresentation, suspected macrosomia, preeclampsia/ eclampsia, oligohydramnios, late pregnancy bleeding, prior uterine surgery, multiple fetus, fetal growth restriction, other medical disease and other indications (Wang et al., 2017). CS is worth considering when the risk of death or disability is high for the mother and/or the baby during vaginal delivery. However, few health benefits outweigh the risks of surgery for elective CS, with the exception of a few positive outcomes related to mothers', including CS to avoid pelvic floor and perineal injury (Leijonhufvud et al., 2011), pelvic organ prolapse and urinary incontinence (Serati et al., 2016). As a surgical procedure, the risks to the mother and baby are significant, and the morbidity and mortality associated with cesarean delivery is still several times higher than that of vaginal delivery, especially in emergency situations (Hall & Bewley, 2018). A similar study from Austria also found that compared with patients with vaginal delivery, patients with elective CS have significantly higher incidence of puerperium fever, wound infection and high blood loss (Bodner et al., 2011). Some studies have found a negative relationship between postpartum depression and CS (Stewart & Vigod, 2016). The long-term negative outcomes of CS that were previously surgical, selective CS and CS without vaginal trial delivery for the first time include: increased risk of placental problems, uterine rupture, stillbirth and ectopic pregnancy in future pregnancies (O'Neill et al.,

2014). In addition, CS has some negative outcomes for the baby such as impaired lung function, reduced thermogenic response, altered metabolism and blood pressure and altered sleep patterns (Korotchikova et al., 2016). Negative long-term risks to the infant associated with cesarean delivery include increase in obesity, increased blood pressure, type 1-diabetes, asthma, weight gain, altered liver function immune-related diseases, neurological and stress-related problems, and autoimmune gastrointestinal diseases in children. Many of these can be linked to inadequate colonization of the infant gut at the time of cesarean delivery (Sandall et al., 2018).

### **Nursing Role and Management for CS Mother in Discharge Period**

As health care continues to family centered and community-based health service development particularly for the mother, infant and their families to provide care, nurses play various roles such as care providers, teachers, partners, advocates and managers. The teacher is one of the most important roles, teaching begins from prenatal and continues to recovery after childbirth, include teaching new mothers learning to care for themselves and newborns, the support and opportunities for the obtaining of follow-up care in the home. In addition, the nurse acting through the cooperation with other members of the medical team, obtains health history, assesses maternal needs, monitors the growth, implements health screening procedures, develops a comprehensive plan of care, treatment and nursing, develops comprehensive discharge planning, referrals, and evaluates the nursing outcomes (Perry et al., 2022).

As a result of the continuum of the care process, current evidence shows that despite the shorter length of hospital stay, maternal readmission rate does not increase

and has no impact on the risk of maternal and newborn mortality, neonatal complications, duration of breastfeeding and maternal depression (Jones et al., 2021).

### **Quality Discharge Teaching for Mothers and Infants After CS**

Family-centered nursing is the best way for the care of mothers and infants, and continuous evaluation of the mother and her newborn throughout the hospital stay is essential. This helps ensure safe discharge and transition, including the assessment of the mother's discharge readiness, the newborn's health and stability, the mother's ability to self-care and care for the newborn at home, postpartum support and access to follow-up care (Lemyre et al., 2018). The teaching content for discharged preparation after CS should include the following:

1. Ideal discharge preparation teaching starts with pre-pregnancy care, including neonatal care program, breast-feeding education and contraceptive program. In addition to the self-empowerment of patient initiative in health care, the postpartum supporter involvement in education is emphasized. Obstetrician-led ERAC during hospitalization offers an optimal recovery path for women undergoing CS, including reduction of postpartum depression, improved neonatal safety, reduction of chronic pain and maternal morbidity (e.g., surgical site infection, acute kidney injury and wound dehiscence) (Bollag, 2021). Moreover, before discharge, the mother should be evaluated for discharge readiness of perception, as well as identifying and resolving harm when mothers and newborns have some risk factors. Generally, the doctor's decision is normally based on the hospital clinical and physical factors of a mother and her infant. Compared with the health care service providers, mothers are more likely to think they are not ready to go home with their newborn, especially if they are

the first-time mothers who lacked prenatal care, had a delivery at irregular hours and received inadequate hospitalized education (Bernstein, 2013). Perceived lack of preparedness may lead to increased use of health care services and poorer health outcomes for infants one month after discharge from hospital (Bernstein, 2013). In addition, for postpartum CS mothers, especially for first-time mothers who lack experience, they need more time to recover and learn to care for their newborns (ACOG, 2019). Therefore, to overcome the related factors, quality discharge teaching by shortened hospitalization time requires good delivery skills of a nurse's teaching, reduced pain, the promotion of physical recovery and the increased understanding of post-discharge skills and knowledge for self-care and infant care. Special discharge instructions for a CS mother is a good remedy which contains the following information: Firstly, CS wound care: if a shower is needed, keep the wound dry, watch for signs of infection, such as increasing redness or drainage, cesarean wounds usually take about six weeks to fully heal. In addition, the mother needs to press her hand against the wound when she needs to change position, laugh or cough, and she is not to hold anything heavier than the baby. Secondly, in regards to appropriate activities, do deep breathing and coughing exercises after surgery, rest more, according to the mother's own physical strength, gradually increase activity, do not need to go up and down stairs, the more active, the more bleeding there will be, do not try to take care of anyone but yourself and your infant, do not drive until the doctor says so. Thirdly, situations that require a call to a healthcare provider include: incision site redness, drainage or pain, a fever of 38 degrees Celsius or higher, abdomen severe pain, vaginal discharge with foul odor, bleeding that is more than normal menstruation, trouble with urinating or emptying the bladder, pain or urgency with

urination, feelings of anxiety, depression or panic, red, swollen, painful area in the leg, red, sore, painful areas on the breasts and especially with flu-like symptoms, and for infants, no bowel movement for 1 week, or infants with rash (Berghella, 2019).

2. For the health and stability of a newborn, nurses should provide parents and their family with consistent teaching and a discharge plan to increase satisfaction and confidence, and reduce confusion and stress. Firstly, in the first few days of life, the objectives of neonatal evaluation include ensuring a successful transition from intrauterine life, identifying abnormal clinical manifestations (such as respiratory distress, hypoglycemia, unstable body temperature, lethargy and sepsis), following up prenatal problems, and measuring head circumference, length and weight, breast-feeding support, etc. A structured checklist can help document test results and ensure tests are complete. Secondly, during preparation for discharge, the discharge nurse uses the Discharge Readiness checklist to check: 1) completion of neonatal metabolic and other serious diseases and hearing impairment screening programs, vaccinations, and physical examinations; 2) infant feeding, including the importance of breastfeeding, recognition of normal neonatal behavior and care. Recognizing early signs of illness, including jaundice and dehydration, and what to do about it, infant safety, including use of car seats, safe sleep practices and other measures to reduce the risk of Sudden Infant Death Syndrome (SIDS) (Canadian Paediatric Society [CPS], 2018), infection control measures, the importance of smoke-free environments, and parents of infants at risk for sepsis should be aware of the signs of infection and when to seek medical help (Jefferies, 2017); 3) The American Academy of Pediatrics recommends a post-discharge evaluation in the first week after discharge, the mother can choose to visit an outpatient clinic or be visited by a nurse or midwife to improve

breastfeeding outcomes, reduce hospital readmission rates or reduce emergency room or clinic visits. After discharge, the evaluation content for a newborn mainly includes weight loss, jaundice, hydration, general health, and feeding and the first time examination/assessment in the hospital can reveal the presence of any congenital anomaly. In addition, nurses should assess and pay attention to the interaction between parents and babies, ask about any social psychological or social and economic pressure, and give advice on infant safety, feeding, further predictive guidance on vitamin D supply and routine infant care.

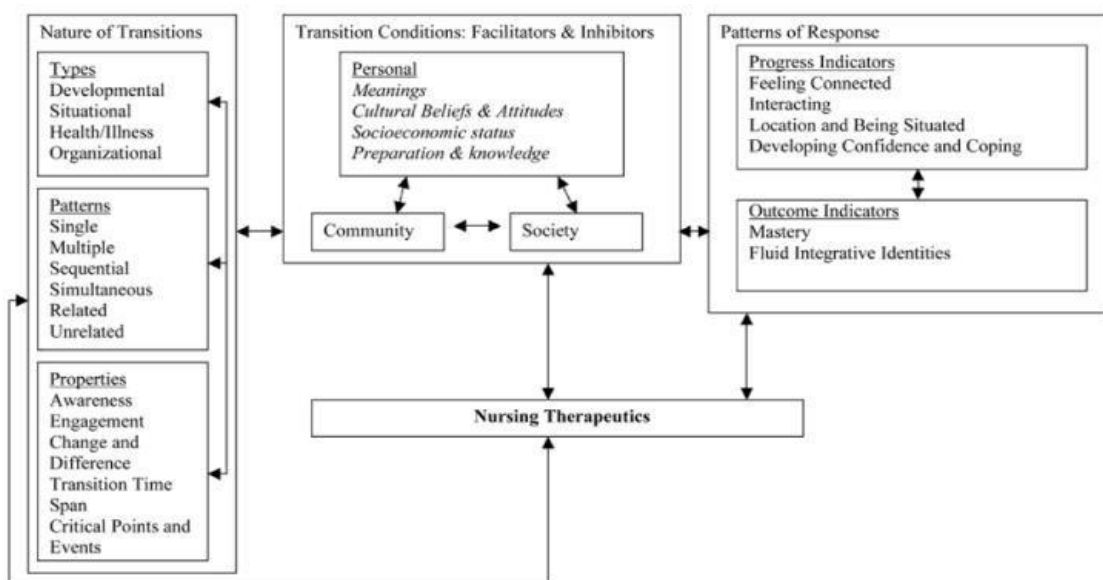
In addition, the teaching approach is impotent to provide patient understanding through educational concepts, modules, communication with nurses, and information booklets. Sometimes there is a need to provide consistent information to family members, improve their ability to care for themselves and their infant, and to know what to do in an emergency. Nurses should be able to provide more education when the mother needs it, as well as their willingness to take the time to educate the patient, while promoting discharge preparation by providing quality discharge teaching skills (Malagon-Maldonado et al., 2017; Weiss & Lokken, 2009). In another study from a Large Northern California Healthcare System, the finding showed that readmission dropped from 2.2% to less than 1% for postpartum mothers who received standard discharge teaching six months later (Day-Herzog, 2021). Moreover, studies have suggested that postnatal care consultation and education are of great importance for vulnerable groups of first-time mothers, and for those who have complications during or after childbirth and for those who have not received postnatal information and have not attended childbirth courses. Primary health-care providers should provide information on post-natal care and social support to women and their families (Weiss, & Lokken, 2009).

## Transitional Theory and Its Application to Discharge Readiness Among Post Cesarean Section First-time Mothers

Meleis's intermediate theoretical definition of transition is a process of passage from one life phase, condition, or status to another during which changes in health status, role relations, expectations, or abilities create a period of vulnerability (Meleis et al., 2000; Meleis, 2010). The four components of this theory are the nature of transitions, transition conditions: facilitators and inhibitors, nursing therapeutics, and pattern of response. The relationships between the four components of the framework are illustrated in Figure 2 (cited from Meleis, 2010, FIGURE 2.1.1, p. 56).

Figure 2

*Transitions: A middle-range theory*





Going home after hospitalization is generally considered as a transitional phase between the patient and the family before and after discharge from the hospital. Discharge is considered to be a transitional process that occurs in three successive stages: (1) the hospitalization phase during which discharge preparation occurs; (2) the discharge when short-term outcomes of the preparatory process can be measured; and (3) the post-discharge period when patients' perceptions of their ability to cope with the demands of care at home and their needs for support and assistance from family and health services provide evidence of positive or adverse outcomes of the patient's transitional process. Indicators of health transition include subjective well-being, role control and interpersonal well-being. However, even under similar circumstances, different people experience different transitions (Meleis, 2010). As a result of technological progress, economic, medical and health conditions, the length of postpartum hospital stay is shortening. Mothers and their infants often need to leave the hospital earlier and continue their recovery transition at home or in other care facilities. If mothers and their families do not receive specialist and competent care during the transition, (they will experience many complications, such as those experienced by mothers: pain, bleeding, feeling sad or blue, lack of breast care, lack of incision care, or any other worry. The issues related to the baby include: feeding, breathing, sleeping, bowels, diarrhea, constipation, jaundice, or any other worry identified by the mother (Bernstein et al., 2013).

For first-time mothers who undergo CS, this has been previously identified as a risk factor for more adverse health outcomes. Therefore, there is an urgency to explore the factors that support or hinder the health transition of first-time mother

undergoing CS, and the transition theory provides a consistent and directional framework for the presentation and research of this issue.

There are two studies that apply the transition theory to maternal discharge preparation and serve as a conceptual framework to guide the study variables. A 141 sample study from a tertiary perinatal center in the United States divided the transition process of discharge into three stages: first stage is the hospitalization stage during which discharge preparation occurs; second stage is the preparatory discharge phase that can be measured as a short-term outcome; third is during the post-discharge period, patients perceive their ability to cope with home care needs, and the need for support and assistance from home and health services provides evidence of positive or negative outcomes during the post-natal transition for women. The study defines three "hospitalization factors" accounting for differences in delivery hospitalization as transitional in nature, and these factors are: 1) parity of the women, 2) type of birth event (either vaginal or cesarean section), 3) feeding method (breast or bottle or both of them). Patient characteristics represent personal and environmental conditions that may facilitate or inhibit the transition process, including the mother's age, race/ethnicity, socio-economic status, whether she lived with the baby's father, and the type of insurance. Discharge teaching was selected as a predictor of discharge readiness; Response patterns in the post- discharge transition phase were studied with coping with difficulties and use of health services as the final response patterns (Weiss & Lokken, 2009). Another study of 249 pregnant women also came from a specialized hospital in the same area of the United States. This study developed a heuristic conceptual framework consisting of concept-related variables supported in the literature and Roy's model of nursing adaptation as well as Meleis's transition

theory to guide the identification of factors contributing to the mother's transition from prenatal and postnatal to home discharge preparation. The study also divided the transition process into three phases and considered that factors identified in all three phases may influence post-natal discharge. The first phase is the antepartum period, the nature of transition is represented by factors that account for differences in a mother's characteristics, birthing plans, and environmental conditions. The second phase is the intrapartum period; transition conditions are represented by birthing circumstances facilitating or inhibiting the transition to the postpartum period. The third is the postpartum period, the response patterns are examined by assessing the mother's readiness for hospital discharge. The nursing intervention is discharge teaching because this may impact on discharge readiness and the transition to home (Malagon-Maldonado et al., 2017).

### **Factors Associated with Discharge Readiness among Mothers after CS**

Based on the literature review, very few studies have focused on factors related to discharge readiness among mothers after CS. The review, therefore, includes factors related to discharge readiness among mothers after delivery or birth. Previous studies revealed that discharge readiness among mothers after birth was associated with several factors including socio-demographic characteristics (age, race/ethnicity, education, a partner's age and education, number of deliveries, delivery mode, types of insurance, economic income), discharge teaching, postpartum support, infant feeding, pediatricians' characteristics, lack of prenatal and post-natal services, and women with a history of chronic disease and/or

complications.

### **Socio-demographic Characteristics**

In almost all of the studies, age, race/ethnicity, length-of-stay, education, a partner's age and education, number of deliveries, delivery mode, types of insurance, economic income and other characteristics were collected based on postpartum hospitalization prior to discharge. However, there was no unanimous conclusion. A study in Turkey (n=190) found that age, education level, income level, having social security, displayed a statistically similar distribution ( $p > .05$ ) (Şenol et al., 2017). On one hand, those women who were older, had more than three children, had a good socioeconomic status, high level of education ( $R^2 = .42$ ,  $F [10,174] = 14.52$ ,  $p < .001$ ) (Malagon-Maldonado et al., 2017), and had a private payor source ( $OR=1.35$ ,  $p = .0001$ ) (Weiss et al., 2004), in addition to the age and education of their partner ( $p = .043$ ) (Yanikkerem et al., 2018), and a long length hospital stay ( $OR=0.96$ ,  $p = .0014$ ), reported a high score of discharge readiness. They had the experience and sufficient knowledge and skills to take care of themselves and take care of their infants including a good perception of social support from a good socioeconomic and education status (Şenol et al., 2017). On the other hand, those women who were younger, had public insurance (Bernstein et al., 2007), were a first-time mother (Bernstein et al., 2007; Şenol et al., 2017), had maternal education less than high school ( $p = .01$ ) reported lower discharge readiness scores and felt unready for discharge from hospital. Due to such reasons for the difficulties in mothers transitioning to the motherhood role, they experience for the first time the shortage of knowledge and skills regarding their own self-care

and the care of their infants, and they are often scared of the kinds of health problems they and their baby may suffer at home (Şenol et al., 2017). In addition, the discharge readiness was not affected by such variables as age, length of hospital stays and mode of delivery (Bernstein et al., 2007).

### **Discharge Teaching**

Discharge teaching was used to measure the patient's perception of the quality of discharge teaching provided by nurses during a hospital stay in preparation for discharge. Discharge teaching is described as a combination of all the teaching that patients receive during their stay in hospital to prepare for discharge from hospital and to cope with post-operative recovery (Şenol et al., 2017; Weiss & Lokken, 2009; Yanikkerem et al., 2018; Zhou et al., 2019). This teaching was emphasized in all studies as a significant positive correlation factor in discharge readiness. A study explored that new mother reported high discharge readiness score who has been studied in a school for pregnant women and received health education by nurses ( $R^2=0.52$   $p<0.05$ ) (Zhou et al., 2019). The quality of discharge teaching about the postpartum period, specifically found the relative difference in the amount of informational content needed and received and the skills of nurses in delivering discharge teaching, explained 38% ( $R^2=0.38$   $p < .001$ ) of the variance in postpartum mothers' perceptions of discharge readiness (Weiss & Lokken, 2009), and similar findings were reported in another study ( $R^2 =0.42$ ,  $F [10,174] = 14.52$ ,  $p < .001$ ) (Malagon-Maldonado et al., 2017). Studies from Iran, Turkey, China and the United States have shown that mothers report high discharge readiness scores if they receive consistent and adequate information

on themselves and infant care during the third trimester and hospitalization, as well as information and skills training to reduce the development of any complications. It can help women overcome the needs of their infants and families (Altuntug & Ege, 2013; Dag et al., 2013; Weiss & Piacentine, 2006; Zhou et al., 2019). So, quality of discharge teaching is a significant factor related to discharge readiness.

### **Postpartum Support**

Postpartum support could be one important factor of a mother's readiness for discharge. A study among (n=635) three hospitals in Turkey with factor related discharge readiness ( $r=0.270$ ) ( $p < .001$ ) after birth showed that women needed social support after giving birth but did not receive sufficient support (Yanikkerem et al., 2018). Those who did not feel ready for discharge had a fear of a lack of support at home (Bernstein et al., 2007). Another study explored the lower perception of discharge readiness increased the use of support when mothers were discharged from hospital (Coffey & McCarthy, 2013). Studies from China and Turkey have shown that social support meets a mother's physical and psychological social needs, reduces depression, and helps her adjust to infant care and her new role at home (Altuntuğ & Ege, 2013; Herguner et al., 2014; Zhang & Jin, 2016). The main members of social support are the mother, mother-in-law and spouse, and the others are sister, sister of partner, aunt, wife of brother-in-law and so on (Yanikkerem et al., 2018). As for the relationship between descriptive characteristics of women and social support, some studies suggest that the need for support may decrease as age and experience increase (Aksakallı et al., 2012; Turkoglu et al., 2014), and in multipara (Aksakallı et al., 2012; Yumur & Ulukoca, 2010). However, more social support was required or increased

among women with an unplanned pregnancy (Yagmur & Ulukoca, 2010), among women who have had an adverse birth experience as well as a lack of information about the date of delivery (Aksakall et al., 2012). Some studies indicated that family type is an important factor affecting social support, as well as educational level and employment status of the spouse and the educational level of the women (Aksakall et al., 2012; Yagmur & Ulukoca, 2010; Turkoglu et al., 2014). Due to inconsistent findings and various definitions of postpartum support types, this factor requires further exploration.

### **Breastfeeding**

Breastfeeding is a highly feasible and cost-effective intervention with benefits that include not only significantly improved infant survival, but also short and long-term health and development outcomes, and breastfeeding is also good for women's health (Rollins et al., 2016; Victora et al., 2016). The UN (2016) considers breastfeeding a human right for women and children and recommends that governments ensure that all mothers are protected and supported (International Board of Lactation Consultant Examiners, 2017a). However, global breastfeeding rates remain grim, and breastfeeding rates vary across countries and regions due to such factors as: economy, and certain interventions during childbirth and postpartum (e.g., oxytocin, epidural anesthesia, forceps, CS, inadequate skin contact, lack of skin-to-skin, and infant wrapping) (Chen et al., 2018; Dudeja et al., 2018; Wen et al., 2015). A study in the UK, showed that breastfeeding rates among women who had a CS were twice as lower than those who delivered vaginally. The reasons may include: low education levels of mother and father, random breastfeeding, rare breastfeeding at

night, breast and nipple problems, bottle or pacifier use, and lack of social support (Karaçam & Sağlık, 2018; Yılmaz et al., 2017).

According to the literature review, the problem of breastfeeding in the early postpartum period is largely responsible for the low rate of breastfeeding (Karaçam & Sağlık, 2018). The possible reasons were: the mother and the newborn's own health problems (Azeze et al., 2019); mothers lack technical nursing knowledge, information and experience, need education and assistance (Chipojola et al., 2020); busy postnatal wards with no access to midwives and nurses and no consistent support information (McLeish et al., 2020). Two studies found that infants whose parents were first-time parents and were discharged on the day of birth had a higher risk of readmission to hospital (OR=1.21) than those whose parents were discharged 1-2 nights after hospitalization. From discharge to neonatal readmission, parents experienced sleep deprivation, inexperience, and mothers experienced breastfeeding difficulties and pain that left them feeling unprepared to be discharged from the hospital (Feenstra et al., 2018, 2019). Guidelines from the Academy of Breastfeeding Medicine suggest that discharge readiness and having a clear transition plan during hospitalization during childbirth is part of best practices for postnatal and newborn care. The problem of breastfeeding which is related to discharge readiness may be due to various issues. Firstly, a problem with breastfeeding is assessed and addressed by a lactation counselor, counselor, or health care provider with clinical lactation care prior to the discharge of the mother and newborn. Secondly, before discharge, maternal pain is managed and breastfeeding successfully initiated, all clinicians (e.g. doctors, midwives, nurses and lactation consultants) provide consistent and practical advice to families. Thirdly, to increase a new mother's self-efficacy in breastfeeding, family-



centered guidance on expectations should be provided, along with appropriate evidence-based educational materials, recommended or produced online forums or mobile apps to provide ongoing support after discharge (Hoyt-Austin et al., 2022).

Overall, discharge readiness improves breastfeeding outcomes, with midwives and nurses in baby-friendly wards playing an important role in promoting and supporting breastfeeding. Mothers with experience of breastfeeding and perceived continued breastfeeding support were more likely to be discharged earlier and have a higher rate of breastfeeding only.

### **Pediatrician characteristics**

Although maternal perception of discharge readiness is the most important, the pediatrician's opinion also affects maternal perception. The mother may feel unready with no pediatrician visits (Bernstein et al., 2007). Younger, less experienced pediatricians, who were not parents themselves and are not board certified, were more likely to think the mother and their infant were not ready to discharge from hospital (Bernstein et al., 2007).

### **Other factors**

Other factors such as prenatal and post-natal services or a history of chronic disease and complications during a pregnancy period could be associated with discharge readiness. A prospective observational cohort study with 4,300 samples reported that fewer prenatal and postpartum services were associated with a greater degree of unreadiness (Bernstein et al., 2007). In addition, this study also found that women having a known chronic disease (OR=1.73,  $p = .0004$ ) and complications

(OR=1.54,  $p=0.0128$ ) were more likely to report not being ready to discharge from hospital. In addition, their baby with a complication was also a negative factor in discharge readiness (Bernstein et al., 2007).

In conclusion, several factors are associated with discharge readiness. Few studies have identified factors related to discharge readiness of first-time mothers after CS, therefore, the potential variables among first-time mothers who undergoing CS in this study are selected based on the relevant literature that were explored a moderate level of discharge readiness among postpartum. There are the socio-demographic characteristics such as mother's age; educational background; mode of delivery [planned and unplanned]; the discharge teaching provided by nurses, feeding methods (breastfeeding only, bottle feeding only or mixed breastfeeding and bottle feeding), and a mother's complications which maybe important factors affecting the discharge readiness of the first-time mother after CS.

### **Summary of Literature Review**

The rate of CS continues to increase worldwide, with primary CS predominating. Although it is now a common and safe operation that saves the lives of mothers and infants when necessary, unnecessary CS brings higher mortality, morbidity and economic costs to mothers and infants. China has one of the highest CS rates in the world, of which a quarter does not have medical indications of primary CS. In China, medical resources are further challenged with the third child policy. Moreover, during the COVID-19 situation, in order to reduce exposure to the virus, hospitalization times have been shortened. Maternal time reduced by education,

women need to continue to recover and take care of their infants at home. In order to transit mothers and infants home safely, the evidence-based practice recommendations are: discharge preparation begins with prenatal care and continues after delivery, mothers' reported readiness for discharge helps medical personnel to identify high-risk mother and infant duos discharge from hospital and predict maternal and infant health outcomes at home. ERAC offers a continuum of care that includes pre-pregnancy care, prenatal optimization, and postpartum inpatient care and outpatient support, high-quality, family-centered discharge teaching provided by nurses provides mothers with all the knowledge and skills they need to care for themselves and their newborns. However, mothers' reported readiness to leave the hospital was not encouraging, as the first-time mother reported a lower score. According to the transition theory, the concepts of discharge readiness and its related factors from the literature review, the first-time mother's age, education background, mode of delivery, feeding method, mother's complications and discharge teaching were selected in this study. This theory guides the study to explore factors related to discharge readiness after CS in first-time mothers which will add to the previous knowledge for all mothers.

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

This chapter presents the research methodology which consists of the research design, settings, sample and sampling, research instruments, data collection procedure, ethical considerations, and data analysis.

#### **Research Design**

A descriptive correlation design was used to assess the discharge readiness level and related factors (i.e., mother's age; education background, mode of delivery, feeding method, mother's complications; discharge teaching) among first-time mothers having CS.

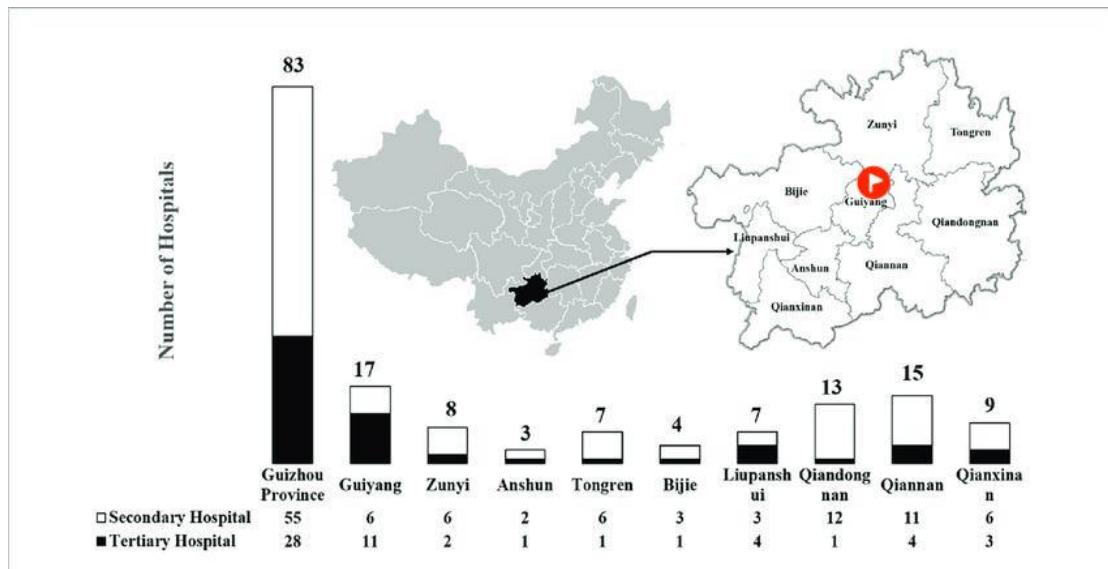
#### **Setting**

The Affiliated Hospital of Guizhou Medical University in Guiyang city, which is the capital city of Guizhou province in China, is located in the southwest of China. The population numbered 38.56 million in 2021. There are three layers of maternal and child health care services in Guizhou province. The first layer is comprised of 28 tertiary government hospitals. The second layer is comprised of the 55 secondary government hospitals and 88 maternal and child health care services. The third layer consists of town hospitals and community hospitals which provide services to residents in the towns and communities (see figure 3). Within each of the three layers

of maternal and childcare health care services, the proportion of staff and provision of care as well as the types of patient are similar. The Affiliated Hospital of Guizhou Medical University and the Maternal and Child Health Care Hospital of Guiyang are two of the four largest referral centers for high-risk pregnancies in Guiyang city, and are responsible for all the province's critical patients in the corresponding area (in order to balance medical resources, the government has defined responsibility areas for the four hospitals). According to the Bulletin of the Seventh National Census (No. 3) of National Bureau of Statistics, People's Republic of China (2020), the number of infants delivered in Guizhou province in 2020 was 526 thousand, around 5 thousand of whom were delivered in the Affiliated Hospital of Guizhou Medical University and around 10 thousand of whom were delivered in the Maternal and Child Health Care Hospital of Guiyang, which has provided enough samples to meet the required number of samples for this study. In addition, because of COVID-19, access to more hospitals was restricted, therefore, only two of the largest hospitals with the highest number of cases were then selected from the four largest referral centers for high-risk pregnancies in Guiyang city.

Figure 3

*Distribution of three layers of maternal and child health care services in Guizhou province, China*



### Samples and Sampling

Samples: In this study, Power analysis was used to estimate the total number of first-time mothers. A huge sample size was highly representative of the study population. The larger the sample, the smaller the sampling error. However, this requires larger budget costs including money and researchers, takes more time, and can cause difficulties in recruiting subjects for quantitative studies. Power analysis is mostly significant in determining the study findings (Polit & Beck, 2017). An appropriate sample size must be feasible, economical, and have a strong power, thus the sample size estimation/ determination refers to the calculation of the required sample size for achieving some desired statistical assurance of accuracy and reliability such as 80% power and controlling an overall type I error rate at the nominal

significance level (e.g., 5%) (Chow et al., 2017).

There is no study that has distinguished the discharge readiness of first-time mothers who had undergone CS, although there are studies that have included a part rate of first-time mothers who had undergone CS. In this study, we initially surveyed the first-time mothers who had undergone CS. Therefore, according to Polit and Sherman's (1990) study, the average correlation of around 0.2 was used to estimate the sample size of this study. The researcher intended to achieve 80% power with 5% level of significance. Using Table 17.7 of Polit and Beck (2017), the required sample size was 194. In addition, about 20 percent was added for refusal rate (Polit & Beck, 2012). Therefore, the estimated sample size was 233 first-time mothers.

**Sampling methods.** The same proportion of samples was taken from both hospitals using quota sampling. Finally, 117 first-time mothers were taken from the Affiliated Hospital of Guizhou Medical University and 116 first-time mothers were taken from the Maternal and Child Health Care Hospital of Guiyang.

**The inclusion criteria.** The first-time mother who was (1) age > 18 years old, can communicate with the researcher, (2) admitted together with their infant to a baby- friendly ward (3) discharged together with their infant from the baby-friendly ward.

## **Instrumentation**

Three instruments were used in this study. These were the Demographic Data Questionnaires (DDQ), the Discharge Teaching Scale-New Mother Form (QDTS- NMF) and the Readiness for Hospital Discharge Study-New Mother Form (RHDS- NMF) which measured the discharge readiness perceived by the respondents. For the details

of each questionnaire, see Appendix A.

### **Part I: The Demographic Data Questionnaire (DDQ)**

The researcher developed the respondents' demographic data questionnaire. This questionnaire consisted of the mothers' age, marital status, education background, family income, postpartum support (family support [mother, mother-in-law, husband, others], social support ["having a support "maid" for month, "staying the month in a "maternity hotel", community hospital, friends, others]), feeding methods (breastfeeding only, bottle feeding only, mixed breastfeeding and bottle feeding), problem/difficulty breastfeeding, diagnosis on discharge day, length of hospital stay, mode of CS delivery (planned and unplanned), and all complications collected from medical records which included symptoms of any complications after CS (PPH, SSI, postpartum baby blue, urinary symptoms and others).

### **Part II: The Quality Discharge Teaching Scale-New Mother Form (QDTS-NMF)**

The Chinese version of the QDTS-NMF, which was translated based on the original version, was used to measure the postpartum mother's discharge knowledge preparation. This is a patient's self-report tool that was developed by Weiss et al. (2009) to measure a postpartum mother's discharge education preparation. This questionnaire mainly measures whether the mother receives sufficient content and whether the nurse demonstrates high quality discharge teaching skills during the mother's hospital stay. There are 20 items in the QDTS-New Mother form, including content and delivery. The content scale includes two subscales: "contents needed" and "contents received" in preparing for discharge teaching which consists of seven pairs



of entries. The delivery sub-scale reflects the skills of nurses as educators to provide discharge teaching, which consists of 12 items. The Cronbach's alpha reliability coefficients for the postpartum mother sample in the Midwestern United States were .87 for the total scale and .85 and .84 for the "content received" and "delivery" subscales, respectively. A "content difference" subscale can be generated by subtracting "content needed" from "content received" creating a score that reflects the amount of informational content received in excess of reported need. The "content difference" subscale can be used as an alternative to the "content received" subscale (Weiss et al., 2009). The Cronbach's  $\alpha$  for the "content difference" subscale was .88 (Weiss et al., 2009). This scale was tested in a Chinese population of postpartum mothers: The content validity index of the Chinese version of the QDTS-NMF was 0.96. Two factors were extracted by exploratory factor analysis, and the cumulative variance contribution rate was 69.56%. The load values of each item on the corresponding common factor were 0.40, therefore, the scale items in the Chinese version are the same as the original version. The Cronbach's  $\alpha$  coefficients of the total scale was 0.95, and the subscale "Content" and "Delivery" were 0.98 and 0.94 respectively (Li et al., 2021).

According to Piacentine et al. (2018), the subscales have a different predictive relationship with discharge outcomes, therefore, the content and delivery subscales scores are calculated separately. Content received and delivery subscales scores are calculated as the mean of the item scores (sum items divided by number of items). The content needs to be calculated in a similar way. The mean score of each subscale is used to explain the outcome. The score of QDTS is a 10-point Likert- scale format from 0 (none) to 10 (A great deal). The higher subscales total score indicates higher

“content need” and “content receive” and higher quality discharge teaching separately with the interpretation as follows:

Mean of per-item score	Level of QDTS
< 7	Low
7-7.9	Moderate
8-8.9	High
9-10	Very high

### **Part III: Readiness for Hospital Discharge Scale-New Mother Form (RHDS-NMF)**

The postpartum version of the RHDS was specifically used to measure postpartum mothers' perception of discharge readiness. This version was developed by Weiss and Lokken (2009) from RHDS. There were 22 items in RHDS-NMF, which were composed of four subscales: personal status (8 items), knowledge (7 items), coping ability (3 items) and expectation support (4 items). The Cronbach's  $\alpha$  reliability was estimated to be 0.82, 0.84, 0.86 and 0.81 respectively. The main difference from the master RHDS was that in addition to all the 21 items of the master, the RHDS-NMF includes the mother's evaluation of her own physical ability to take care of the infant in the personal status scale. In the Chinese version of the RHDS-NMF, the Cronbach's  $\alpha$  reliability was 0.98. Exploratory factor analysis and confirmatory factor analysis were used to test the structural validity of the Chinese population of postpartum mothers. In regards to the content validity index of the Chinese version of the RHDS-NMF, items 2, item 5, item 7 and item 8 were deleted according to the factor selection criteria. The reason given by the author is that item 2

and item 5 are scored in reverse, while the other items are not, which may affect the judgment of respondents' perception degree. In addition, items 7 and 8 investigate the evaluation of maternal self-care ability and infant care ability in the first few days after arriving back home from hospital. First time mothers may have an inaccurate judgment of their own status over these next few days (Chen et al., 2020). Therefore, the final version of RHDS-NMF included 19 items, which could explain 69.92% of the total variance. Confirmatory factor analysis showed that each index reached the ideal value. The model fitted well. The Cronbach's  $\alpha$  coefficient of the total scale was .90, and the Guttman-split half reliability was .83 (Chen et al., 2020). The RHDS-NMF is a self-reported evaluation scale with project scores on an 11-point scale (0-10) using anchor words (e.g., not at all, totally) to indicate the meaning of the subject number range. The score was calculated by adding the project scores, dividing by the number of projects, and calculating the RHDS score as the average of the project scores. This method was applicable to the total scale and subscale scores and the mean score of each subscale used to explain the outcome. A higher score indicates a higher level of readiness (Weiss & Lokken, 2009). In this study, the score of the RHDS-NMF was categorized into four levels as follows:

Summed per-item score	Level of RHDS
< 7	Low
7-7.9	Moderate
8-8.9	High
9-10	Very high

## **Translation of the Instruments**

All questionnaires were originally designed in English. Among them, the RDHS-NMF has been translated into Chinese by Chen et al. (2020), while the QDTS-NMF has been translated into Chinese by Li et al. (2021).

## **Validity and Reliability of the Instruments**

The reliability and validity of the questionnaires were tested and validated prior to data collection.

**The validity of the instruments.** Three experts consisting of a methodologist, obstetric care specialist, and a language professional were invited to test the content validity index (CVI) of the original English questionnaires in this study. Each item was rated by a 4-point scale for the appropriateness and adequacy that captured the construct being measured. According to Polit & Beck (2017), a scale-CVI (S-CVI) of .90 is acceptable. In this study, the S-CVI values for the RDHS-NMF and QDTS-NMF were .98 and .99 (Appendix D).

**Reliability of the instruments.** The Chinese version of the questionnaires consisted of; 1) RHDS-NMF questionnaire, 2) QDTS-NMF questionnaire. There was a sample that consisted of 20 postpartum mothers from China (Terwee et al., 2012) which included five first-time mothers who had vaginal delivery, five multiparas who had CS, five first-time mothers who had vaginal delivery, five multiparas who had CS to examine the internal consistency (Cronbach's alpha coefficient) (Polit & Beck, 2017). In this study, the reliability of the internal consistency for the RHDS-NMF and

QDTS-NMF were .96 and .97 (Appendix D).

### **Data Collection Procedure**

The researchers collected the data through the following process:

1. First of all, ethical approval was obtained from the Institutional Review Board, Behavioral and Social Science, Prince of Songkla University, Thailand.
2. The researchers visited the head of the hospital's scientific research department with detailed purpose and procedures of the study, and presented the application documents for approval of the data collection in China.
3. The researcher explained the study purpose and the details of the study process to the head nurse of the baby friendly ward and got help from her.
4. Based on the inclusion criteria, the researchers evaluated the medical records of each first-time mother as she returned to the ward after the CS from an operating room. The DDQ was used to collect the basic information and medical diagnosis related to any complications of the first-time mother from the computer system.
5. Informed consent was explained to the participants and they were asked to sign an agreement before data collection.
6. The researcher interviewed the participant in the ward and introduced herself to eligible first-time mothers four hours before the mother left the hospital on the discharge day, and explained the study, including purposes, benefits, potential risks of the study and data collection procedures, and then collected data from the

participants once permission was obtained.

7. The researchers read the questionnaires to the participants and explained the instructions for answering the questions. Then the researcher waited for the first-time mother to fill out the questionnaires by herself. The whole process took about 20 minutes.

8. Before the participants left, the researchers checked the questionnaires for completeness.

### **Ethical Considerations**

This study follows Polit & Beck. (2017) who proposed the ethical principles of beneficence, respect for human dignity, and justice.

Firstly, the data collection was conducted after obtaining permission from the Institutional Review Board, Behavioral and Social Science, Prince of Songkla University (2021-St-Nur 014), Thailand, as well as obtaining ethical approval from the IRB of the Affiliated Hospital of Guizhou Medical University (2021-152), China.

Secondly, the researcher asked permission from the translation author and the original author for instrument use and translation.

Thirdly, during the study procedure, the researcher always followed the beneficial ethical principle of ensuring the maximum benefit of patients and minimum harm (Polit & Beck, 2012). Therefore, after data collection, the researcher provided supplement teaching to mothers and their family members regarding post-partum care and infant care if they mentioned the need for this in the questionnaires.

Fourthly, respect for human dignity is reflected in the fact that participants

voluntarily participated or refused to participate. Before the questionnaire survey, the purpose, risks and benefits of the survey through a notification form were explained. In addition, a hospital number was used instead of a participant's name.

Fifthly, according to the justice principle of Polit and Beck (2012), researchers also ensure that participants have the right to fair treatment and privacy. For example, the researchers interviewed the first-time mother and her family in a separate room, data related to the study were disclosed to individuals directly involved in the study after data analysis was completed, and the participants' data were kept confidential and destroyed later.

### **Data Analysis**

The statistical software IBM SPASS 23 was used to analyzed the data set in the data analysis phase. Data sets were analyzed using descriptive and inferential statistics that aimed to answer the research questions. The significant level alpha was set at .05.

1. Descriptive statistics were analyzed and presented the demographic characteristics of the first-time mothers by frequency, percentage, range, mean, and standard deviation. The range, M, SD and Level of discharge readiness were used to described the total RHDS-NMF score and the four sub-scales: self-status, knowledge, coping difficult, expect support.
2. Inferential statistics of correlation was used to test the research hypothesis in this study. Before performing correlation analysis, the assumptions of normality, linearity, homoscedasticity, were tested.

**2.1 Assumption of normality.** Normality of each data set was tested by investigating the absolute skewness and kurtosis. According to Kim 2013, if the absolute skewness and kurtosis are within the range of  $\pm 3.29$  with the alpha level .05 when the sample size is between 50 to 300, the data set is considered to be normally distributed. The test results showed that the RHDS-NMF total score and QDTS total score were normally distributed. Whereas, the four sub-scales of RHDS-NMF: self-status, knowledge, coping difficult, expect support and the three sub-scales of QDTS: Content need, Content received, and Delivery were not normally distributed. The researcher then transformed these negative skewed variables by square root (Tabachnick, & Fidell, 2013). The re-test results showed the data sets were normally distributed except for two subscales of the QDTS: Content needed, and Content received. In addition, the researcher checked assumptions of homogeneity of discharge readiness scores categorized by the factors: mode of CS delivery, feeding method, feeding problems, a mother's age, education level, a mother's complications (symptoms of the complications of CS) (Appendix G).

**2.2 Assumption of linearity.** The "Lack of Fit" result shows that a linear model between dependent and independent variables was appropriate for the sample as a whole (Appendix G).

**2.3 Assumption of homoscedasticity.** The scatterplot was used to check the assumption of homoscedasticity. The chart showed that the dependent variable exhibits similar amounts of variance across the range of values for an independent variable (Appendix G).



Furthermore, the data sets were further calculated as follows.

1. The Pearson Rank Order Correlation ( $\rho$ ) was used for ordinal level or ranked data.
2. Point-biserial correlation was used for dichotomous variable.
3. The Pearson product-moment correlation coefficient ( $r$ ) was used for interval level variables. One standard that reflects the correlation strength between study variables was the correlation strength mentioned in a statistical book by Tabachnick and Fidell (2013) as weak ( $\pm .10$ ), moderate ( $\pm .30$ ), and substantial ( $\pm .50$ )

## **CHAPTER 4**

### **RESULTS AND DISCUSSION**

The results and discussion of this study are presented in this chapter, which are consistent with the objectives of this study. These are; 1) to assess the level of discharge readiness among first-time mothers after CS in China, and 2) to examine the correlations between factors, (i.e., mode of CS delivery (planned, unplanned), feeding method, feeding problems, mother's age, education level, mother's complications, discharge teaching related to discharge readiness) among first-time mothers after CS in China.

#### **Results**

The results of this study consist of seven sections: 1) First-time mothers' demographic characteristics, 2) level of first-time mothers' discharge readiness, 3) the relationship between factors (i.e., mode of CS delivery [planned, unplanned], feeding method, mother's age, education background, mother's complications); discharge teaching related to discharge readiness among first-time mothers.

#### **Characteristics of first-time mothers**

The total sample was 233 first-time mothers from two of the four largest referral centers for high-risk pregnancies in Guiyang city, China. The first-time mother's demographic data and related information are presented in Table 1. The mean age of the first-time mothers was  $29.63 \pm 4.402$  years old. All of them were

married (100%). More than half of the first-time mothers (75.1%) possessed a university level or above degree and none of the mothers were illiterate. (The mean family income was \$1607.6±1049.316. Most first-time mothers have post-discharge support (76.4%), mainly from their families (86.3%). More than half of the participants opted for mixed breastfeeding and bottle feeding (55.4%). Only a few of them had problems/difficulty with breastfeeding (34.8%). The mean gestational age of the first-time mothers was 38.52±1.657. The length of hospital stay ranged from 1 to 19 days(M=4.88±1.986). Most first-time mothers opted for a planned CS (58.4%). 14.6% of participants had symptoms of complications.

Table 1

*Frequencies and Percentages of First-time Mothers Demographic Characteristics (N=233)*

Characteristic	n	%
<i>Age (M=29.63, SD=4.402, Min-Max=19-46)</i>		
18-34	201	86.3
≥35	32	13.7
<b>Marital Status</b>		
Married	233	100
<b>Education Background</b>		
Primary and Secondary	58	24.9
University level or above	175	75.1

Table 1 (continued)

Characteristic	n	%
Family Income ( $M=1607.6$ , $SD=1049.316$ , $Min-Max=155-7795$ )		
<\$760	28	12.0
\$760-1520	83	35.6
\$1521-2280	69	29.6
\$2281-3040	21	9.0
$\geq$ \$3040	32	13.8
Family Support		
Yes	201	86.3
No	32	13.7
Social Support		
Yes	178	76.4
No	55	23.6
Feeding methods		
Breastfeeding only	14	6.0
Bottle feeding only	90	38.6
Mixed breastfeeding and bottle feeding	129	55.4
Problems/Difficulty breastfeeding		
Yes	81	34.8
No	152	65.2

Table 1 (continued)

Characteristic	n	%
Gestational age ( $M=38.52$ , $SD=1.657$ , $Min-Max=28-41$ )		
28-36 weeks	15	6.4
>37 weeks	218	93.6
Length of hospital stay ( $M=4.88$ , $SD=1.986$ , $Min-Max=1-19$ )		
1-3 days	44	18.9
4-5 days	126	54.1
>5 days	63	27.0
Mode of CS		
planned	136	58.4
unplanned	97	41.6
Having complications of CS		
- no	226	97.0
- yes (PPH and SSI)	7	3.0

### Level of discharge readiness among first-time mothers

Table 2 shows that first-time mothers reported a discharge readiness at a moderate level with a total item mean score of  $(7.40 \pm 1.63)$ . On the sub-scales, the theme of “personal status”  $(7.70 \pm 1.63)$ , “knowledge”  $(6.84 \pm 2.20)$ , “coping ability”  $(7.31 \pm 1.91)$ , “expected support”  $(8.14 \pm 1.81)$  were found to be moderate, low, moderate and high level with item mean score, separately.

Table 2

*Range, Mean, Standard Deviation, and Level of Discharge Readiness of Participants  
(N = 233)*

Discharge readiness	Range	<i>M</i>	<i>SD</i>	Level
Personal status	2-10	7.70	1.63	Moderate
Knowledge	0-10	6.84	2.20	Low
Coping ability	1-10	7.31	1.91	Moderate
Expected support	2-10	8.14	1.81	High
RHDS-NMF Total Score	3-10	7.40	1.63	Moderate

In addition, two items of the personal status subscale and all the items of the expected support subscale were reported as the highest scores. These were about physically ready to go home ( $8.27 \pm 1.95$ ), and help with household activities (for example, cooking, cleaning, shopping, babysitting) after returning home ( $8.27 \pm 1.99$ ). Furthermore, three items of the knowledge subscale were reported as the lowest scores which were about caring for baby ( $6.64 \pm 2.42$ ), who and when to call if there are problems after returning home ( $6.73 \pm 2.95$ ), services and information available in the community after discharged home ( $6.73 \pm 2.89$ ). (as shown in Appendix Table 11).

**Level of quality discharge teaching among first-time mothers**

Table 3 shows that the content needed ( $7.20 \pm 2.34$ ) and delivery subscale ( $7.66 \pm 1.97$ ) of quality discharge teaching were reported at a moderate level while the content received subscale was reported at a low level ( $5.75 \pm 2.63$ ), and the content difference subscale was ( $-1.45 \pm 2.51$ ).

Table 3

*Range, Mean, Standard Deviation, and Level of Quality Discharge Teaching of Participants (N = 233)*

Discharge teaching	Range	M	SD	Level
Content need	0-10	7.20	2.34	Moderate
Content received	0-10	5.75	2.63	Low
Delivery skill	2-10	7.66	1.97	Moderate
Content difference	7.14-9.43	-1.45	2.51	

In addition, three items were reported with the highest score in delivery skill (see in appendix Table 12). These were nurses were sensitive to the personal beliefs and values ( $8.58 \pm 2.16$ ), received consistent information from nurses, doctors, and other health workers ( $8.13 \pm 2.15$ ), and the way that nurses taught about how to care for yourself and your baby at home ( $8.08 \pm 2.28$ ). Three items reported as having the lowest scores were about information received from nurses related to emotional care after returning home ( $4.95 \pm 3.54$ ), information about who and when to call if there are problems after returning home ( $5.70 \pm 3.01$ ), and practice with baby care skills before going home ( $5.73 \pm 2.84$ ).

**Relationship between factors, discharge teaching and discharge readiness among first-time mothers**

Table 4 reveals that only the mother's age ( $r = -.129$ ,  $p < .05$ ), and having symptoms of complications of CS- PPH/SSI ( $r = -.136$ ,  $p < .05$ ) had a negative significant relationship with discharge readiness. The rest of the factors showed no significant relationship with discharge readiness. Table 5 shows that there was a significant substantial and positive relationship between the sub-scales of quality of

discharge teaching and discharge readiness. The positive relationships were found between content subscale in quality of discharge teaching and discharge readiness ( $r = .519, p < .001$ ), delivery in discharge teaching and discharge readiness ( $r = .643, p < .05$ ), content difference (need and received) in discharge teaching and discharge readiness ( $r = .368, p < .001$ ). There was a weak and positive relationship between content need of discharge teaching and discharge readiness ( $r = .261, p < .001$ ).

Table 4

*The Relationship between Factors and Discharge Readiness among First-time Mothers (N=233)*

Variable	RHDS-NMF	
	<i>r</i>	<i>p</i>
1. Mode of CS delivery (planned, unplanned) <sup>b</sup>	-.038	.564
2. Feeding method (Breastfeeding only, Bottle feeding only, Mixed breastfeeding and bottle feeding) <sup>c</sup>	-.020	.757
3. Mother's age (18-34, >35) <sup>a</sup>	-.129*	.049
4. Education background (Primary and Secondary, University level or above) <sup>b</sup>	-.031	.643
5. Having complications of CS- PPH & SSI (yes, no) <sup>b</sup>	-.136*	.038

*Note.* *a* = Pearson correlation. *b* = Point-biserial correlation. *c* = Spearman Rho correlation \*\*:  $p < .001$ . \*:  $p < .05$ . RHDS-NMF = Readiness for Hospital Discharge Scale-New Mother Form. QDTS = Quality of Discharge Teaching Scale.



Table 5

*The Relationship between Quality of Discharge Teaching and Discharge Readiness among First-time Mothers (N =233)*

Variable	RHDS-NMF	
	<i>r</i>	<i>p</i>
Content needed subscale	0.261**	0.000
Content received subscale	0.515**	0.000
Delivery subscale	0.643**	0.000
Content difference	0.368**	0.000

*Note: \*\*:  $p < .001$ . RHDS-NMF = Readiness for Hospital Discharge Scale-New Mother Form. QDTS = Quality of Discharge Teaching Scale.*

## **Discussion**

This study investigated the discharge readiness of first-time mothers in baby friendly wards of two tertiary public hospitals in Guiyang, Guizhou Province, China, and the relationship between discharge readiness and related factors. The discussion of the findings mainly consists of: 1) level of discharge readiness among first-time mothers after CS, and 2) the correlations between factors (i.e., mode of CS delivery (planned, unplanned), feeding method, a mother's age, education background, a mother's complications, discharge teaching) and discharge readiness among first-time mothers after CS in China.

### **Level of discharge readiness among first-time mothers**

In this study, the overall discharge readiness score was at a moderate level with a total item mean score ( $7.40 \pm 1.63$ ). This finding is similar to a previous study in China that included first-time mothers and multipara mothers who had CS and vaginal delivery with a moderate level total item mean score ( $7.09 \pm 1.28$ ) (Zhou et al., 2019). The possible reasons for this, in this study, may be as follows: Firstly, most mothers are cared for by family members during hospitalization and after discharge as this is a common Chinese tradition, especially in the first 30 days after giving birth which is called “doing in a month”, in which most mothers are taken care of and receive support from family members. Secondly, the sample was recruited from the same context of resources where two tertiary hospitals usually provide similar high quality medical and nursing care in maternal services and follow the procedures/guidelines and routine care after CS. Thirdly, the samples had similar education levels of university level or above, and were better at understanding and receiving medical information. In addition, the total item mean score of discharge readiness in this finding ( $7.40 \pm 1.63$ ) is consistent with a previous study conducted in the United States in that the first-time mothers reported a moderate level although this had lower ( $7.42 \pm 0.83$ ) discharge readiness item scores than multiparas ( $7.52 \pm 1.06$ ) (Weiss et al., 2006). The likely reason, as reported in previous studies when compared with multiparas, was that the first-time mothers lack the knowledge and skills to care for themselves and their infants after delivery (Bernstein et al., 2013; Dağ et al., 2013; Şenol et al., 2017; Weiss et al., 2006).

Furthermore, a moderate level was found in personal status and the coping difficulty subscale of discharge readiness, however the knowledge subscale showed a

low level. After the initial physical recovery of the first-time mothers who had undergone CS and had met the discharge criteria, participants reported to be ready for discharge with the support of their family, the staff of “doing the month” hotel and “doing the month” maid. However, the discharge readiness score was not high among the first-time mothers in this study partly due to lack of the knowledge and information at home which were mainly about caring for baby, who and when to call if there are problems after returning home, and services and information available in the community after being discharged home. Moreover, the results of additional analysis for the level of quality discharge teaching among first-time mothers in this study confirmed that content needed and the delivery subscale of quality discharge teaching were reported at a moderate level while the content received subscale was reported at a low level. There was quite a large difference in the content subscale ( $-1.45 \pm 2.51$ ) which indicated that the quantity of discharge teaching received by the first-time mother was less than the content needed.

#### **Relationship between factors, discharge teaching and discharge readiness among first-time mothers**

The results showed the relationships between the discharge readiness and some factors namely, participants' ages, complications after CS, and discharge teaching.

The first factor was age and current research shows that the different age groups of first-time mothers reported different discharge readiness score. The older the person was the lower the discharge score ( $r = -0.129$ ,  $p < .05$ ). This is similar to previous studies that reported that the discharge readiness score was related to age

groups (Şenol et al., 2017; Zhou et al., 2019). The possible reason is, most of the first-time mothers are all professional women with university level or above in this study, who pursue higher education and career development outside the family, leading to the delay of childbearing age. In obstetric practice, women who become pregnant for the first time after the age of 35 are considered to be at high risk, leading to many maternal and infant complications during pregnancy and delivery (Shan et al., 2018). Moreover, doctor and first-time mother had difference discharge readiness perception in making the appropriate discharge decision, doctors tend to focus on maternal and infant's clinical and physical factors, although the mother's age, social support, fatigue, pain and stress is an important consideration, compared with the health care service provider, elderly first-time mothers are more likely to think they are not prepare to bring their infant back to home, especially if they do not receive adequate prenatal care and in-patient education. You need to provide the reason to support this finding.

Secondly, discharge readiness was also found to have a negative relationship with a mother's complications after CS regarding having PPH/SSI ( $r = -.136$ ,  $p < 0.05$ ). This may be related to the belief in Traditional Chinese Medicine that childbirth is associated with a great transformation of a woman's energy and body. According to the principle of Yin and Yang in Traditional Chinese Medicine, pregnancy and childbirth are believed to deplete a woman's Yang, leaving her in a temporary state of imbalance between Yin and Yang, just like a disease. Yin, originally meant dark, is associated with cold winter and dark phenomena; it symbolizes femininity, inner inferiority and negativity, whereas, Yang is translated as sunny, and is associated with heat, summer and brightness. Yang symbolizes masculinity, externality, superiority,

and positivity. PPH after CS is thought to alternate the state of Yin and Yang imbalance (Ding et al., 2018), and first-time mothers lack the experience to restore the balance of Yin and Yang (Ding et al., 2018; Xiao et al., 2020).

Thirdly, the results of this study show that the correlation between discharge teaching and discharge readiness was substantial strong. Discharge teaching is a key aspect of discharge readiness (Weiss et al., 2017). Patient-reported quality of teaching at discharge is a measure of hospital care outcomes (Weiss et al., 2011) and is described as a combination of all discharge related teaching (Weiss & Lokken, 2009). In this study, first-time mothers reported less content received than they needed, the content difference negatively correlated with discharge readiness, which may be because of a number of reasons. Firstly, the factor related to the sample population of this study was inexperienced first-time mothers and the delivery skills of nurses were based on routine care. In addition, the majority of the participants had family to support them to recover and to care for the infants, and their service started from hospitalization, therefore, busy ward nurses may have paid less attention to the first-time mothers and these mothers also did not recognize their own needs. Studies from Iran, Turkey, China and the United States have shown that mothers reported high discharge readiness scores if they have received consistent and adequate information on caring for themselves and caring for their infant during the third trimester and hospitalization, as well as information and skills training to reduce the development of any complications. This can help new mothers overcome the needs of their infants and families (Altuntug & Ege, 2013; Dag et al., 2013; Weiss & Piacentine, 2006; James et al., 2020; Zhou et al., 2019). Teaching is, therefore, important for the unexperienced first-time mothers and should be provided by nurses, lactation consultants, doctors,

practice nurses and midwives (James et al., 2020; Yanikkerem et al., 2018).

According to SOAP, (2021), the ideal discharge teaching routine should start from pre-pregnancy care. Besides emphasizing patients' self-care initiative, the ideal discharge teaching routine would also emphasize postpartum supporters' participation in education. In routine care of CS, parents and families were provided with consistent discharge planning and teaching for the mother-baby duo during hospitalization to increase satisfaction and confidence, reduce confusion and stress, and provide possible ongoing breastfeeding teaching support. Moreover, during hospitalization, discharge teaching provided by experienced nurses is considered the most basic support. If mothers are first-time parents, inpatient education is inadequate (Bernstein, 2013), and low self-efficacy perception of lack of preparation for discharge may lead to increased use of health care services and poorer maternal and infant health outcomes after discharge (Bernstein, 2013). In this study, the three items reported as the lowest scores were in regards to information received from nurses related to emotional care, who and when to call if there are problems after returning home and practice in baby care skills before going home. This study confirms the negative relationship between discharge teaching and discharge readiness.

Finally, in this study, there were no significant statistical relationships of discharge readiness score and other factors (i.e., mode of CS delivery [planned, unplanned], feeding method, education level) ( $p>0.05$ ). This is in contrast to the previous research which suggests that discharge readiness was particularly affected by education level and delivery mode (Dağ et al., 2013; Weiss et al., 2004; Xiao et al., 2020; Zhou et al., 2019). This may be related to the fact as follow. For mode of CS delivery, the difference in maternal and fetal health outcomes between planned and

unplanned CS was smaller, which may cause of physicians may have performed more lenient indications for CS in order to reduce medical risk stress, in addition, the maternal requested a CS during labor process because various reasons like fear of fetal injury or death, no longer able to tolerate the pain of labor, anxiety about gynecological examinations, previous infertility, anxiety about losing control and so on. As regard feeding methods and education level, a possible influencing factor is that first-time mother employed a professional worker who can provide care of both mother and infants for 24 hours while in hospital, and accompany home to continue taking care for a month. So, the mother and her family are not aware of the impact of different feeding methods during the short hospital stay.

## CHAPTER 5

### CONCLUSION AND RECOMMENDATIONS

This chapter is a summary of the study, the strengths and limitations, and the recommendations.

#### **Conclusion**

The purpose of this study was to evaluate the level of discharge readiness and the related factors of first-time mothers via cesarean delivery in Guizhou Province, China. The data were collected between March 31 and June 20, 2021 from participants from two of the largest referral centers in Guiyang city, Guizhou province, China. The Demographic Data Questionnaires, QDTS-NMF and the RHDS-NMF were utilized to collect data related to respondents' demographic characteristics, quality of discharge teaching and the discharge readiness perceived by the respondents. All the questionnaires were validated by three experts and S-CVI values were .99 for RHDS-NMF and .99 for QDTS-NMF. The reliability test among 20 postpartum mothers revealed that the Cronbach's alpha values were .95 for RHDS-NMF and .96 for QDTS-NMF.

The results indicate that the self-reported discharge readiness of first-time mothers who had undergone CS was at a moderate level. Regarding the sub-scale analysis, personal status and coping ability sub-scale were moderate, knowledge sub-scale was low while expected support sub-scale was high. It means that first-time



mothers perceptions of their physical recovery and ability to cope after discharge home were moderate on the day of discharge, while there were low level of knowledge and skills in the care for self and for infant, and expected high assistance and support during the initial transition.

The results showed that selected factors were related to the discharge readiness of first-time mothers who had undergone CS which supported the concepts and relationships proposed by the transition theory. Discharge teaching significantly related to the discharge readiness of first-time mothers at discharge. Transitional conditions (a mother's complications after CS) and transitional nature (a mother's age) and nursing therapeutics (quality of discharge teaching) are associated with response patterns at discharge. The theory is an appropriate and useful theoretical guiding framework in the study of transition situations, mothers' assessments and the outcomes.

### **Strengths**

1. This primary study to explore the level of discharge readiness of first-time mothers who have undergone CS found some factors related to discharge readiness. The results of this study can provide a basis for further testing the predictive factors in improving the quality of discharge teaching and supportive care of first-time mothers.

2. The standard tool for data collection, the questionnaire for discharge readiness and discharge teaching have been subjected to rigorous psychometric tests in previous studies and in this study.

## **Limitations**

This study has some limitations. The sample of this study only included women who gave birth in two tertiary perinatal hospitals in one region of China during COVID-19, which limited the universality of the survey results. In addition, this was a cross-sectional survey which may not be used to assess causality.

## **Implication and Recommendations**

The results of this study provide valuable baseline information and evidence that should be applied to nursing practice, health policy and further research.

### **Nursing Practice**

The results of this study showed that discharge readiness of first-time mothers with CS is at a moderate level but some knowledge was at low level regarding care of themselves and their infants, problems to watch for, when and who to call if the mother has problems, and what is the follow-up medical care for an infant as well as social support when they are discharged from hospital to home. In order to improve discharge readiness for first-time mothers, nursing practice should focus on discharge teaching content related to a first-time mother's needs at home and delivery skills following the CS routine care guidelines, and carry out a comprehensive assessment of first-time mothers preparing for discharge from hospital. This will, therefore, improve the discharge readiness and promote the health outcomes after discharge of first-time mothers who have had CS.

### **Health Policy**

The findings suggest that hospital stakeholders should attach importance to the quality of postpartum teaching. Participants believe that the content and skills of postpartum teaching provided by nurses are very important. Therefore, updating knowledge and the application of guidelines with regular content and skills training for nurses is required. This is conducive to the improvement of discharge teaching quality.

### **Further Research**

This study was a descriptive correlation study measuring first-time mothers experiencing CS via self-reported questionnaires, therefore, future studies should be replicated through larger samples and use mixed methods study design to explore the nurse's perception as well as observation methods to assess nurses' provision of quality discharge teaching for first-time mothers who experience CS. In addition, an intervention study is necessary for improving the discharge readiness of first-time mothers who have had CS and the quality of discharge teaching.

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**APPENDICES**

## Appendix A

### Instruments

#### Part I: The Demographic Data Questionnaire (DDQ)

Participant ID:

Date and time:

#### **Instruction**

The following items are some information about yourself. Please answer by making a “(✓)” in the blank that is appropriate for you.

#### **Filled by**

Mother's information

1. Age:            years

2. Marital Status

a. ( ) Single                      b. ( ) Married                      c. ( ) Divorce

3. Education Background

a. ( ) Illiterate                      b. ( ) Primary and Secondary

c. ( ) University or above

4. Family Income                      average/month

5. Family Support

a. ( ) Yes                              b. ( ) No

a1. ( ) Mother                      a2. ( ) Mother-in-law

a3. ( ) Husband                      a4. ( ) Others



## 5. Having complications of the CS

a. ( ) Yes

b. ( ) No

a1. ( ) Pain

a2. ( ) PPH

a3. ( ) SSI

a4. ( ) Postpartum baby blues

a5. ( ) Urinary symptoms

a6. ( ) Others

## Part II: Readiness for Hospital Discharge Scale-Postpartum Form

Please check or circle your answer. Most of the responses are on a 10-point scale from 0 to 10. The words below the number indicate what the 0 or the 10 means. Pick the number between 0 and 10 that best describes how you feel. For example, circling number 7 means you feel more like the description of number 10 than number 0 but not completely

1. Are you ready to go home as planned?	Yes	No
2. How physically <b>ready</b> are you to go home?	0 1 2 3 4 5 6 7 8 9 10 Not ready	A great deal
3. How would you describe your <b>strength</b> today?	0 1 2 3 4 5 6 7 8 9 10 Weak	Strong
4. How would you describe your <b>energy</b> today?	0 1 2 3 4 5 6 7 8 9 10 Low energy	High energy
5. How <b>emotionally</b> ready are you to go home today?	0 1 2 3 4 5 6 7 8 9 10 Not ready	Totally ready
6. How much do you <b>know about caring for yourself</b> after you go home?	0 1 2 3 4 5 6 7 8 9 10 Know nothing at all	Know all
7. How much do you <b>know about caring for baby</b> after you go home?	0 1 2 3 4 5 6 7 8 9 10 Know nothing at all	Know all
8. ....	0 1 2 3 4 5 6 7 8 9 10	
9. ....	Know nothing at all	Know all
10. ....		
18. ....		
19. How much <b>help</b> will you have with <b>baby care</b> after you go home?	0 1 2 3 4 5 6 7 8 9 10 None	A great deal



### Part III: Quality of Discharge Teaching Scale New Mother Form

Please check or circle your answer. Most of the responses are on a 10-point scale from 0 to 10. The words below the number indicate what the 0 or the 10 means. Pick the number between 0 and 10 that best describes how you feel. For example, circling number 7 means you feel more like the description of number 10 than number 0 but not completely.


1a. How much information did you need from your nurses about <b>taking care of yourself</b> after you go home?	0 1 2 3 4 5 6 7 8 9 10 None A great deal
1b. How much information did you receive from your nurses about <b>taking care of yourself</b> after you go home?	0 1 2 3 4 5 6 7 8 9 10 A great deal
2a. How much information did you need from your nurses about your <b>emotions</b> after you go home?	0 1 2 3 4 5 6 7 8 9 10 None A great deal
2b. How much information did you receive from your nurses about your <b>emotions</b> after you go home?	0 1 2 3 4 5 6 7 8 9 10 None A great deal
3a. How much information did you need from your nurses about <b>taking care of your baby</b> after you go home?	0 1 2 3 4 5 6 7 8 9 10 None A great deal
3b. How much information did you receive from your nurses about <b>taking care of your baby</b> after you go home?	0 1 2 3 4 5 6 7 8 9 10 None A great deal
4a. How much information did you need from your nurses about <b>feeding your baby</b> after you go home?	0 1 2 3 4 5 6 7 8 9 10 None A great deal
4b. How much information did you receive from your nurses about <b>feeding your baby</b> after you go home?	0 1 2 3 4 5 6 7 8 9 10 None A great deal
5a. How much <b>practice</b> did you need with <b>baby care skills</b> before going home?	0 1 2 3 4 5 6 7 8 9 10 None A great deal

5b. How much <b>practice</b> did you have with <b>baby care skills</b> before going home?	0 1 2 3 4 5 6 7 8 9 10 None A great deal
6a. How much information did you need from your nurses about <b>who and when to call</b> if you have problems after you go home?	0 1 2 3 4 5 6 7 8 9 10 None A great deal
6b. How much information did you receive from your nurses about <b>who and when to call</b> if you have problems after you go home?	0 1 2 3 4 5 6 7 8 9 10 None A great deal
7a. How much information did your family member(s) or others need about <b>care for you your baby</b> after you go home from the hospital?	0 1 2 3 4 5 6 7 8 9 10 None A great deal
7b. How much information did your family member(s) or others receive about <b>care for you and your baby</b> after you go home from the hospital?	0 1 2 3 4 5 6 7 8 9 10 None A great deal
8. How much did the information provided by your nurses answer your <b>specific concerns and questions?</b>	0 1 2 3 4 5 6 7 8 9 10 None A great deal
9. .... 10. .... ..... 19. ....	
20. Did the information your nurses provided about your care and your baby's care at home <b>decrease your anxiety</b> about going home?	0 1 2 3 4 5 6 7 8 9 10 None A great deal


## Appendix B

### Permission for Using the Chinese Version of RHDS-NMF and QDTS-NMF

**回复: Ask permission for using Chinesization of QDTS-NMF** 📎 1 ▾ 🗑


 Dear Dr Lili Wei, I really appreciate your reply and help. I will cite your team's Chinese article which published in the Chinese Journal of Nursing i... 周四 2021/6/3 22:47

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 Buddha 📎

Good Evening, Mingfei Ran. I'm so happy that my research can help you, the Chinese version of the QDTS is attached. If you use the tool in your a... 周四 2021/6/3 22:40

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 将消息翻译为 中文 (简体) | 始终不翻译 英语

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 MINGFEI RAN (MINGFEI RAN) 👍 ↶ ↷ → ...

周四 2021/6/3 22:27

收件人: 2142319805@qq.com


Dear Dr Lili Wei,

First of all, I would like to introduce myself, my name is Mingfei Ran from the Affiliated Hospital of GuiZhou Medical University, China who is a master student of of Nursing Science in Prince of Songkla University, Thailand.

Currently, my thesis entitled "Discharge Readiness and Related Factors Among First-time Mothers After Cesarean Section in China" and "Discharge Teaching" is one of the main variable. In the process of ask permission to translate from original tool author Professor Weiss, she told me you have tranlated and will publish within them websit next week, Therefore, I would like to ask permission to use the Chinesization of QDTS - NMF in my thesis. I will follow Professor Weiss's requirements to identify she as the author and you as responsible for the translation. I would be grateful if you could allow me to do this and send me the Chinesization of QDTS - NMF tool. Any advice from you would be very much appreciated. I am looking forward from you.


Best wishes  
Mingfei Ran

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 手术室 赵体玉 <970341249@qq.com> 👍 ↶ ↷ → 🗑 ...

周一 2021/3/1 8:36

收件人: MINGFEI RAN (MINGFEI RAN)

 中文版产妇出院准备度量表 (... ▾)

16 KB

亲爱的冉同学:

祝贺你进入研究生学习并开始选题, 愿意为你顺利毕业提供微博的帮助, 现将汉化的量表发送给你, 祝学业顺利, 身体健康!

赵体玉  
2021-03-01

...

回复: Ask permission for using Chinesization of QDTS-NMF

1 1



Dear Dr Lili Wei, I really appreciate your reply and help. I will cite your team's Chinese article which published in the Chinese Journal of Nursing i...

周四 2021/6/3 22:47



Buddha

Good Evening, Mingfei Ran. I'm so happy that my research can help you, the Chinese version of the QDTS is attached. If you use the tool in your a...

周四 2021/6/3 22:40



将消息翻译为 中文 (简体) | 始终不翻译 英语



MINGFEI RAN (MINGFEI RAN)

周四 2021/6/3 22:27

收件人: 2142319805@qq.com

👍 ↶ ↷ → ...

Dear Dr Lili Wei,

First of all, I would like to introduce myself, my name is Mingfei Ran from the Affiliated Hospital of GuiZhou Medical University, China who is a master student of of Nursing Science in Prince of Songkla University, Thailand.

Currently, my thesis entitled "Discharge Readiness and Related Factors Among First-time Mothers After Cesarean Section in China" and "Discharge Teaching" is one of the main variable. In the process of ask permission to translate from original tool author Professor Weiss, she told me you have translated and will publish within them website next week, Therefore, I would like to ask permission to use the Chinesization of QDTS - NMF in my thesis. I will follow Professor Weiss's requirements to identify she as the author and you as responsible for the translation. I would be grateful if you could allow me to do this and send me the Chinesization of QDTS - NMF tool. Any advice from you would be very much appreciated. I am looking forward from you.

Best wishes

Mingfei Ran



Buddha <2142319805@qq.com>

周四 2021/6/3 22:40

收件人: MINGFEI RAN (MINGFEI RAN)

👍 ↶ ↷ → 🗑️ ...



产妇出院指导质量量表 (最终...)

57 KB

Good Evening, Mingfei Ran. I'm so happy that my research can help you, the Chinese version of the QDTS is attached. If you use the tool in your article, please cite our team's Chinese article which published in the Chinese Journal of Nursing, thanks!

Best wishes

Lili Wei

...

## **Appendix C**

### **List of Experts for Instrument Validation**

The three experts validating the content of the research instruments are:

1. Dr. Sopen Chunuan

Head of Master of Nursing Science Program (Midwifery),

Faculty of Nursing, Prince of Songkla University, Thailand

2. Dr. Ratjai Vachprasit

Associate Professor, Faculty of Nursing,

Prince of Songkla University, Thailand

3. Miss Jie Lu


Head nurse, Department of Obstetrics and Gynecology, Third Hospital,

Peking University Health Science Center, China

## Appendix D

### Approval Letters

#### 1. Ethical Approval from Health and Social Science Institutional Review Board (SBS-IRB), Prince of Songkla University

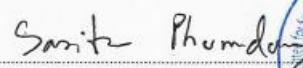


Certificate of Approval of Human Research Ethics  
Center for Social and Behavioral Sciences Institutional Review Board,  
Prince of Songkla University

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Document Number:	2021 – St - Nur – 015 (Internal)
Research Title:	Discharge Readiness and Related Factors Among First-time Mothers after Cesarean Section in China
Research Code:	PSU IRB 2021 - St - Nur 014 (Internal)
Principal Investigator:	Miss Mingfei Ran
Workplace:	Master of Nursing Science Program in Adult and Gerontological Nursing (International Program), Faculty of Nursing, Prince of Songkla University
Approved Document:	1. Human Subjects 2. Instrument 3. Informed Consent
Approved Date:	May 27, 2021
Expiration Date:	May 27, 2023

This is to certify that the Center for Social and Behavioral Sciences Institutional Review Board, Prince of Songkla University has approved for Ethics of this research in accordance with Declaration of Belmont. And please report the research result every year in the AP-007 form.



(Professor Dr. Sasitorn Phumdoung)

Committee Chairman of Center for Social and Behavioral Sciences Institutional Review Board, Prince of Songkla University



## 2. Ethical Approval from the IRB of Guizhou Medical University

贵州医科大学人体试验伦理委员会

伦理审查批件

The Ethics Committee of GuiZhou Medical University

### Ethics Approval Document

批件号 (Approval Number) : 2021 伦审第 152 号

项目名称 (Protocol Name)	中国剖宫产初产妇出院准备情况及相关因素分析(Discharge Readiness and Related Factors Among First-time Mothers after Cesarean Section in China)		
项目类别 (Protocol Source)	<input checked="" type="checkbox"/> A.基础研究 (basic research) <input type="checkbox"/> B.应用基础研究 (basic research for application) <input type="checkbox"/> C.临床研究(clinical research) <input type="checkbox"/> D.药学研究 (pharmacy research) <input type="checkbox"/> E.新技术应用(New technology test) <input type="checkbox"/> F.限制类技术 (Restricted technology) <input type="checkbox"/> G.其他(Other) (请注明 please specify)		
申请部门 (Research Department)	贵州医科大学护理学院	部门负责人 (Deputy of Department)	李亚玲 Yaling Li
项目负责人 (Principle Investigator)	冉明飞 Mingfei Ran		
研究目的 (Aim of Project)	(1) 评估中国剖宫产初产妇的出院准备水平 (Discharge Readiness and Related Factors Among First-time Mothers after Cesarean Section in China) (2) 检验各因素之间的相关性(例如, 剖宫产的方式[计划和非计划];新生儿喂养方法方法;产妇年龄;教育背景;产妇并发症;出院教学)与中国剖宫产初产妇的出院准备情况有关 (To examine the correlations between factors (i.e., Mode of CS delivery [planned and unplanned]; feeding methods; mother s age; educational background; mother s complication]; discharge teaching) related to discharge readiness among first-time mothers after CS in China)		
涉及人体研究内容 (The Contents Related to <i>in vivo</i> Human Study)	本研究方案基于自愿原则, 对贵州省两家三级医院满足纳入标准的初产妇的出院准备情况及相关因素进行问卷调查 (Based on the principle of voluntary, this study conducted a questionnaire survey on the discharge readiness and related factors of first-time mother who meeting the inclusion criteria in two tertiary hospitals in Guizhou Province)。		



<p>可能出现的不良反应与危害和防治与补偿措施 (Possible Adverse Reactions and Hazards and Prevention and Compensation Measures)</p>	<p>该研究是观察性的研究，没有使用干预性的实验方案。不会对研究对象造成任何危害，且研究结果将为护士及相关部门为提高产后护理质量，促进产妇出院后的健康结局提供证据。因此是有益于研究对象的。另外，研究者将对本次研究对象的所有信息保密。研究对象的姓名和其他与隐私相关的信息不会出现在任何报告中，数据将在数据处理完成后3年内销毁 (This study is a descriptive correlation design. There's no intervention and no harmful in this study. The results of this study will provide evidence for nurses and related departments to improve the quality of postpartum care and promote maternal health outcomes after discharge. Therefore, it's beneficial to the participant. In addition, The investigator will keep confidential all information about the participants in this study, like the name of the participant is replaced by the hospitalization code, the participant's name and other information which link to participant's privacy will not appear in any report, and the data will be destroyed within 3 years after the completion of data processing).</p>						
<p>申请人(项目负责人)承诺: 以上所填内容属实,本人承诺待该项目批准后,我将遵循GCP、方案以及伦理委员会的要求,开展本项临床研究。所有涉及人类遗传资源采集、收集、买卖、出口、出境的研究,待获得人类遗传办批件后再开展。 <b>The Promises of Applicant or Principle Investigator:</b> The above contents are true. If approved, I will strictly abide by the "Articles of Association of the Human Ethics Committee of Guizhou Medical University" and conduct project research according to the provided scheme.</p> <p style="text-align: center;">签字(Sign): _____ 日期(Date): _____</p>							
<p>审查途径 Approval Category</p>	<p>快速审查(Quick Review) <input checked="" type="checkbox"/> / 书面审查(Written Review) <input type="checkbox"/> 会议审查(Meeting Review) <input type="checkbox"/> 会议日期(Meeting Date): _____ 结论(Result): <input checked="" type="checkbox"/> 同意 (approval)      <input type="checkbox"/> 修改后同意(approval after revising) <input type="checkbox"/> 不同意 (disapproval)      <input type="checkbox"/> 修改后重审(Appraisal after revising) <input type="checkbox"/> 暂停已批准的试验(Terminate or suspend its prior approval)</p>						
<p><b>审查意见(Review Recommendation):</b> 经我校伦理委员会讨论审核,认为该项目符合《涉及人的生物医学研究伦理审查办法(试行)》及赫尔辛基宣言关于生物人体试验的相关规定,同意在我校收集样本开展本项研究。  After discussion or review by the ethics committee of our hospital, the project was found to be in compliance with the Ministry of Health's "《Methods for Ethical Review of Biomedical Research Involving Human Beings (Trial)》" and the relevant provisions of the Helsinki Declaration on biological human testing, and agreed to collect samples from our hospital for this research.</p> <p style="text-align: center;">主任委员签字: (Signature by the Ethics Chairman) _____ 盖章 (Stamp)  _____ 日期(Date) _____</p>							
<p>附: 申请人(项目负责人) 简要信息 Attachment: Information of Applicant or Principle Investigator</p>							
<p>姓名 (Name)</p>	<p>冉明飞 Mingfei Ran</p>	<p>性别 Sex</p>	<p>女 Female</p>	<p>学历学位 Education Background</p>	<p>本科 Bachelor</p>	<p>职称 Title</p>	<p>主管护士 supervisor nurse</p>
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<p>手机(Mobile Phone)</p>		<p>13329612292</p>		<p>邮编(Zip Code)</p>		<p>550004</p>	



## Appendix E

### The Quality of Research Instruments

#### The Content Validity Index of Research Instruments

##### 1. RHDS-NMF Questionnaire

Items	Expert 1	Expert 2	Expert 3	I-CVI
<b>Theme 1: Personal status (8 items)</b>				
1. Are you ready to go home as planned?	4	4	4	1
2. How physically <b>ready</b> are you to go home?	4	4	4	1
3. How would you describe your <b>strength</b> today?	4	4	4	1
4. How would you describe your <b>energy</b> today?	4	4	4	1
5. How <b>emotionally</b> ready are you to go home today?	4	4	4	1
<b>Theme 2: Knowledge (7 items)</b>				
6. How much do you <b>know about caring for yourself</b> after you go home?	4	4	4	1
7. How much do you <b>know about caring for baby</b> after you go home?	4	4	4	1
8. How much do you <b>know about problems to watch for</b> after you go home?	4	4	4	1
9. How much do you <b>know about who and when to call</b> if you have problems after you go home?	4	2	4	0.67
10. How much do you <b>know about restrictions</b> (what you are allowed and not allowed to do) after you go home?	4	4	4	1
11. How much do you <b>know about follow-up medical care</b> you and your baby need after you go home?	4	4	4	1
12. How much do you <b>know about services and information</b> available to you in your community after you go home?	4	4	4	1

Items	Expert 1	Expert 2	Expert 3	I-CVI
<b>Theme 3: Coping ability (3 items)</b>				
13. How well will you be able to <b>handle the demands</b> of life at home?	4	4	4	1
How well will you be able to <b>perform your personal care</b> (for example, care of your stitches, incision, breast care, hygiene, bathing, toileting, eating)?	4	4	4	1
15. How well will you be able to <b>perform baby care</b> ?	4	4	4	1
<b>Theme 4: Expectation support (4 items)</b>				
16. How much <b>emotional support</b> will you have after you go home?	4	4	4	1
17. How much <b>help</b> will you have with your <b>personal care</b> after you go home?	4	4	4	1
18. How much <b>help</b> will you have with <b>household activities</b> (for example, cooking, cleaning, shopping, babysitting) after you go home?	4	4	4	1
19. How much <b>help</b> will you have with <b>baby care</b> after you go home?	4	4	4	1
S-CVI				0.98

Note: ✓ indicates the expert rate on 3 (Quite relevant) or 4 (Very relevant);

× indicates the expert rate on 1 (Not relevant) or 2 (Somewhat relevant).

## 2. QDTS-NMF Questionnaire

Items	Expert 1	Expert 2	Expert 3	I-CVI
Theme 1:Content (The amount of informational content needed and received by first-time mothers :7 pairs)				
1a. How much information did you need from your nurses about <b>taking care of yourself</b> after you go home?	4	4	3	1
1b. How much information did you receive from your nurses about <b>taking care of yourself</b> after you go home?	4	4	4	1
2a. How much information did you need from your nurses about your <b>emotions</b> after you go home?	4	4	4	1
2b. How much information did you receive from your nurses about your <b>emotions</b> after you go home?	4	4	4	1
3a. How much information did you need from your nurses about <b>taking care of your baby</b> after you go home?	4	4	4	1
3b. How much information did you receive from your nurses about <b>taking care of your baby</b> after you go home?	4	4	4	1
4a. How much information did you need from your nurses about <b>feeding your baby</b> after you go home?	4	4	4	1
4b. How much information did you receive from your nurses about <b>feeding your baby</b> after you go home?	4	4	4	1
5a. How much <b>practice</b> did you need with baby care skills before going home?	4	4	4	1
5b. How much <b>practice</b> did you have with baby care skills before going home?	4	4	4	1
6a. How much information did you need from your nurses about <b>who and when to call</b> if you have problems after you go home?	4	4	3	1

Items	Expert 1	Expert 2	Expert 3	I- CVI
7a. How much information did your family member(s) or others need about <b>care for you and your baby</b> after you go home from the hospital?	4	4	4	1
7b. How much information did your family member(s) or others receive about <b>care for you and your baby</b> after you go home from the hospital?	4	4	4	1
Theme 2: Delivery (The skills of nurses in delivering discharge teaching:13 items)				
8. How much did the information provided by your nurses answer your <b>specific concerns and questions</b> ?	4	4	4	4
9. How much did your nurses <b>listen</b> to your concerns?	4	4	4	4
10. Were your nurses <b>sensitive</b> to your personal beliefs and values?	4	2	4	4
11. Did you like the way your nurses <b>taught</b> you about how to care for yourself and your baby at home?	4	4	4	4
12. Was the information your nurses provided about caring for yourself and your baby presented to you <b>in a way you could understand</b> ?	4	4	4	4
13. Did your nurses break up your <b>teaching into small amounts</b> to help you learn?	4	4	4	4
14. Did your nurses <b>check</b> to make sure you understood the information and instructions?	4	4	4	4
15. Did you receive <b>consistent</b> (the same) information from your nurses, doctors, and other health workers?	4	4	4	4
16. Was the information about caring for yourself and your baby given to you <b>at times that were good for you</b> ?	4	4	4	4
17. Was the information you received from your nurses provided at <b>times when your family member(s) or others could attend</b> ?	4	4	4	4
18. Did your nurses help you to feel <b>confident</b> in your ability to care for yourself and your baby at home?	4	4	4	4

Items	Expert 1	Expert 2	Expert 3	I- CVI
19. How confident do you feel that you would <b>know what to do in an emergency?</b>	4	4	4	4
20. Did the information your nurses provided about your care and your baby's care at home <b>decrease your anxiety</b> about going home?	4	4	4	4
S-CVI				0.99

Note: ✓ indicates the expert rate on 3 (Quite relevant) or 4 (Very relevant);

× indicates the expert rate on 1 (Not relevant) or 2 (Somewhat relevant).

## The Reliability of Research Instruments

### 1. RHDS-NMF Questionnaire

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.957	.957	18

### 2. QDTS-NMF Questionnaire

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.963	.968	27

## **Appendix F**

### **Informed Consent Form**

Dear Participant,

My name is Mingfei Ran, and I am a Master student in the Faculty of Nursing (International Program) of Prince of Songkla University. My title of research is “Discharge Readiness and Related Factors Among First-time Mothers after Cesarean Section in China”. This study is carried out under the guidance of my major advisor: Assoc. Prof. Dr. Praneed Songwathana and co-advisor: Assoc. Prof. Dr. Jintana. (This study will be approved by ethical research as well.- I think you mean ‘This study has been ethically approved.’)

#### **The main purpose of this study**

The purpose of this study is to evaluate the level of discharge readiness of first time mothers who have undergone a CS in Guizhou province, China, and to explore the factors related to the discharge readiness of first time mothers after CS.

#### **Benefits**

The immediate benefits of this study are that the researchers and their team will provide you with personalized postpartum care support based on the information from your completed questionnaire. In addition, the findings of this study will help nurses, nursing managers and policy makers to understand the level of discharge readiness for first time mothers after CS in Guizhou, China, and to develop new strategies to improve the quality of postpartum care.

**Potentials risks and discomforts**

This study will not hurt you and the process of completing the questionnaire will help you prepare for discharge. It takes about 15 minutes to complete one set of questionnaires. If you have any questions about the questionnaires, please feel free to ask me, and I will explain in more detail to you.

**Confidentiality**

I plan to publish the results of this study, however all the information about all of the participants will be kept confidential. For example, a hospital number will be used instead of a name, and your name will not appear in any written report of the study.

**Voluntariness**

We cordially invite you to participate in this study. Please read the document carefully before signing your consent to participate in this study. You can leave the study at any time for any reason and you will not be punished or lose your rights.

**Additional Information**

Your signature below represents your agreement to participate in this study. If you have any questions about this study, please contact me directly on my mobile phone +8613329612292 or WeChat 13329612292



**Statement of Consent**

I have read the above information carefully and understood the content. I agree to participate in this study.

-----

(Signature of Participant)

-----

(Date/ Month/ Year)

-----

(Signature of Researcher)

-----

(Date/ Month/ Year)

## APPENDIX G

### Testing Assumption

Testing Assumption (N=233)

Table 6

*Assumption of Normality by Skewness and Kurtosis of Study Variables*

Variables	Skewness /SE	Absolute Skewness	Kurtosis /SE	Absolute Kurtosis	Distribution
RDHS total_score	-.354/.159	-2.226	-.477/.318	-1.5	<b>Normal</b>
Personal status	-.739/.159	-4.648	.201/.318	0.632	Not meet
Knowledge	-.598/.159	-3.761	-.141/.318	-0.443	Not meet
Coping difficult	-.747/.159	-4.698	.529/.318	1.663	Not meet
Content need	-1.140/.159	-7.170	1.127/.318	3.544	Not meet
Content receive	-.249/.159	-4.22	-.616/.318	-1.937	Not meet
Delivery	-.841/.159	-5.289	-.064/.318	-0.201	Not meet

Table 7

*Assumption of Normality by Skewness and Kurtosis of Study Variables after Square*

*Root Transformation*

Variables	Skewness /SE	Absolute Skewness	Kurtosis /SE	Absolute Kurtosis	Distribution
Sqrt personal status	-.099/.159	-0.623	-.395/.318	-1.242	Normal
Sqrt Knowledge	-.323/.159	-2.031	-.371/.318	-1.167	Normal
Sqrt Coping difficult	-.123/.159	-0.774	-.388/.318	-1.22	Normal
Sqrt Delivery	.009/.159	0.057	-.798/.318	-2.509	Normal

Table 8

*Assumption of Normality by Skewness and Kurtosis and Homogeneity of Factors*

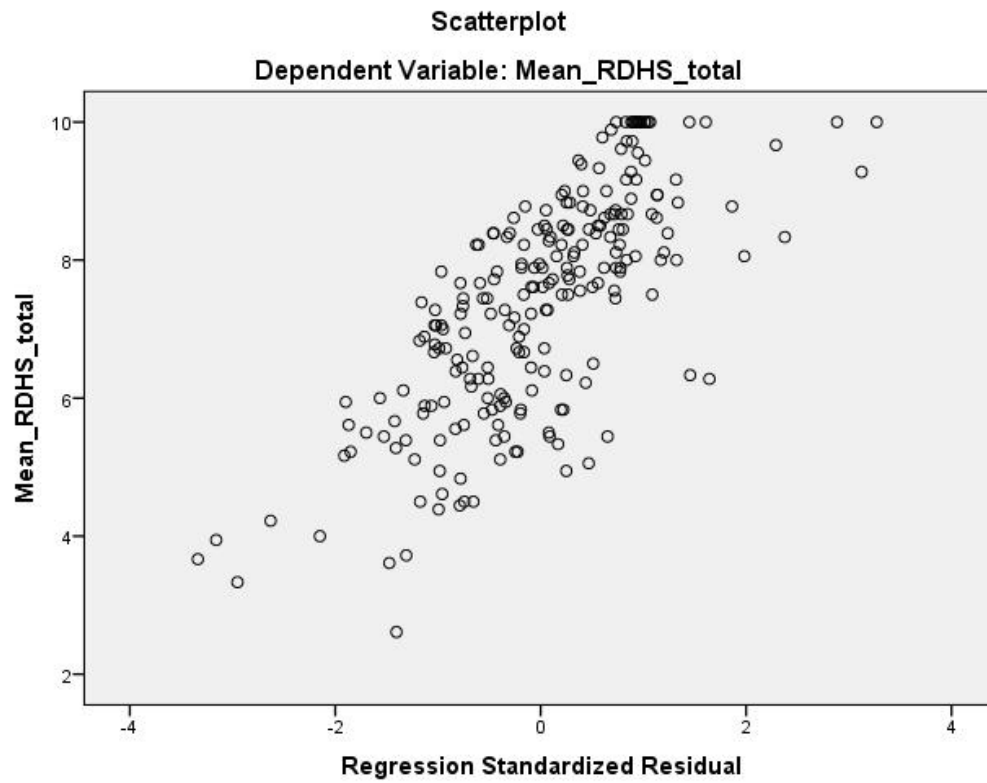
Factors	Skewness /SE	Absolute Skewness	Kurtosis/SE	Absolute Kurtosis	Distribution	Levene Statistic	Sig.
1. Mode of CS delivery						2.247	.135
1=planned,	-.451/.208	-2.17	-.502/.413	-1.22	Normal		
2=unplanned	-.195/.245	-.80	-.432/.485	-.89	Normal		
2. Feeding method						.137	.872
1=Breastfeeding only,	.166/.597	.28	-.782/1.154	-.68	Normal		
2=Bottle feeding only,	-.421/.254	-1.66	-.638/.503	-1.27	Normal		
3=Mixed breastfeeding and bottle feeding	-.359/.213	-1.69	-.273/.423	-.65	Normal		
4. Mother's age						2.335	.128
1=18~34,	-.358/.172	-2.08	-.421/.341	-1.23	Normal		
2=>35	-.237/.414	-.57	-.800/.809	0.99	Normal		

Table 8 (continued)

Factors	Skewness /SE	Absolute Skewness	Kurtosis/SE	Absolute Kurtosis	Distribution	Levene Statistic	Sig.
5. Education level						4.187	0.042
1=Primary and Secondary,	-.121/.311	-.389	-1.158/.613	-1.89	Normal		
2=University level or above	-.503/.184	-2.73	-.147/.366	-0.40	Normal		
6. Mother's complications							
Having pregnancy complications						1.863	.174
1=yes	-.195/.272	.72	-.650/.538	-1.21	Normal		
2=no	-.378/.195	-1.94	-.508/.387	-1.31	Normal		
Pain after CS						.062	.803
1=yes	-.985/.512	-1.92	.667/.992	.67	Normal		
2=no	-.307/.167	-1.84	-.661/.332	-1.99	Normal		

Figure 4

*Assumption of Linearity & Homoscedasticity by Scatterplot*



**APPENDIX H**  
**Additional Analyses**

Table 9

*Range, Mean, Standard Deviation, and Level of Discharge Readiness of Participants  
Categorized by Total Score and Four Sub-Scales (N = 233)*

Discharge Readiness	Low ( $\leq 7$ [based on 1 <sup>st</sup> quartile])		Moderate(7 to 7.99 [based on 2 <sup>nd</sup> quartiles])		High(8to 8.99 [based on 3 <sup>rd</sup> quartiles])		Very High (9 to 10 [based on 4 <sup>th</sup> quartile])	
	<i>N</i>	(%)	<i>N</i>	(%)	<i>N</i>	(%)	<i>N</i>	(%)
Personal status sub-scale	71	30.5	39	16.7	63	27.0	60	25.8
Knowledge sub- scale	113	48.5	39	16.7	40	17.2	41	17.6
Coping difficult sub-scale	103	44.2	27	11.6	48	20.6	55	23.6
Expected support sub-scale	64	27.5	25	10.7	37	15.9	107	45.9
RDHS Total Score	89	38.2	49	21.0	58	24.9	37	15.9

Table 10

*Participant's Discharge Readiness and Discharge Teaching Classified by Level (N = 233)*

Level	Discharge readiness	Discharge teaching
	N (%)	N (%)
Low (<7)	89(38)	102(43.8)
Moderate (7-7.9)	47(20.2)	56(24.0)
High (8-8.9)	57(24.5)	39(16.7)
Very high (9-10)	40(17.2)	36(15.5)

*Note. Discharge readiness:  $\bar{x}$  (SD)=7.40(1.63), discharge teaching:  $\bar{x}$  (SD)=7.04 (1.83)*

Table 11

*Range, Mean, Standard Deviation, and Level of Readiness for Hospital Discharge Scale-New Mother Form of Participants Classified by Total and Each Subscale (N = 233)*

<b>Items</b>	<b>Range</b>	<b>M</b>	<b>SD</b>	<b>Level</b>
<b>Personal status subscale</b>	2-10	7.70	1.63	Moderate
2. How physically <b>ready</b> are you to go home?	0-10	8.27	1.95	
3. How would you describe your <b>strength</b> today?	0-10	7.20	1.82	
4. How would you describe your <b>energy</b> today?	1-10	7.22	1.83	
5. How <b>emotionally</b> ready are you to go home today?	0-10	8.1	1.91	
<b>Knowledge subscale</b>	0.14-10	6.84	2.2	Low
6. How much do you <b>know about caring for yourself</b> after you go home?	0-10	7.14	2.18	
7. How much do you <b>know about caring for baby</b> after you go home?	0-10	6.64	2.42	
8. How much do you <b>know about problems to watch for</b> after you go home?	0-10	6.83	2.37	
9. How much do you <b>know about who and when to call</b> if you have problems after you go home?	0-10	6.73	2.95	



Table 11 (continued)

<b>Items</b>	<b>Range</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>Level</b>
10. How much do you <b>know about restrictions</b> (what you are allowed and not allowed to do) after you go home?	0-10	6.88	2.39	
11. How much do you <b>know about follow-up medical care</b> you and your baby need after you go home?	0-10	6.93	2.69	
12. How much do you <b>know about services and information</b> available to you in your community after you go home?	0-10	6.73	2.89	
<b>Coping ability subscale</b>	1-10	7.31	1.91	Moderate
13. How well will you be able to <b>handle the demands</b> of life at home?	1-10	7.42	2.16	
14. How well will you be able to <b>perform your personal care</b> (for example, care of your stitches, incision, breast care, hygiene, bathing, toileting, eating)?	0-10	7.63	2.03	
15. How well will you be able to <b>perform baby care</b> ?	0-10	6.86	2.26	

Table 11 (continued)

<b>Items</b>	<b>Range</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>Level</b>
<b>Expected support subscale</b>	2.25-10	8.14	1.81	High
16. How much <b>emotional support</b> will you have after you go home?	2-10	8.08	1.98	
17. How much <b>help</b> will you have with your <b>personal care</b> after you go home?	1-10	8.12	1.95	
18. How much <b>help</b> will you have with <b>household activities</b> (for example, cooking, cleaning, shopping, babysitting) after you go home?	2-10	8.27	1.99	
19. How much <b>help</b> will you have with <b>baby care</b> after you go home?	1-10	8.08	2.03	
<b>RDHS total scale</b>	3-10	7.40	1.63	Moderate

Table 12

*Range, Mean, Standard Deviation, and Level of the Quality of Discharge Teaching  
First-time Mothers (N = 233)*

<b>Items</b>	<b>Range</b>	<b>M</b>	<b>SD</b>	<b>Level</b>
<b>Content need subscale</b>	0-10	7.20	2.34	Moderate
1a. How much information did you need from your nurses about <b>taking care of yourself</b> after you go home?	0-10	7.03	2.96	
2a. How much information did you need from your nurses about your <b>emotions</b> after you go home?	0-10	6.00	3.42	
3a. How much information did you need from your nurses about <b>taking care of your baby</b> after you go home?	0-10	7.54	2.84	
4a. How much information did you need from your nurses about <b>feeding your baby</b> after you go home?	0-10	7.43	2.87	
5a. How much <b>practice</b> did you need with baby care skills before going home?	0-10	7.66	2.68	
6a. How much information did you need from your nurses about <b>who and when to call</b> if you have problems after you go home?	0-10	7.21	2.81	

Table 12 (continued)

Items	Range	<i>M</i>	<i>SD</i>	Level
7a. How much information did your family member(s) or others need about <b>care for you and your baby</b> after you go home from the hospital?	0-10	7.50	2.71	
<b>Content receive subscale</b>	0-10	5.75	2.63	Low
1b. How much information did you receive from your nurses about <b>taking care of yourself</b> after you go home?	0-10	6.10	2.95	
2b. How much information did you receive from your nurses about your <b>emotions</b> after you go home?	0-10	4.95	3.54	
3b. How much information did you receive from your nurses about <b>taking care of your baby</b> after you go home?	0-10	5.83	3.12	
4b. How much information did you receive from your nurses about <b>feeding your baby</b> after you go home?	0-10	6.09	3.14	
5b. How much <b>practice</b> did you have with baby care skills before going home?	0-10	5.73	2.84	

Table 12 (continued)

<b>Items</b>	<b>Range</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>Level</b>
6b. How much information did you receive from your nurses about <b>who and when to call</b> if you have problems after you go home?	0-10	5.70	3.01	
7b. How much information did your family member(s) or others receive about <b>care for you and your baby</b> after you go home from the hospital?	0-10	5.85	2.95	
<b>Content difference subscale = (Content received-Content needed)</b>	-9.43-7.14	-1.45	2.51	
<b>Delivery subscale</b>	2.15-10	7.66	1.97	Moderate
8. How much did the information provided by your nurses answer your <b>specific concerns and questions</b> ?	0-10	7.22	2.59	
9. How much did your nurses <b>listen</b> to your concerns?	0-10	7.40	2.60	
10. Were your nurses <b>sensitive</b> to your personal beliefs and values?	0-10	8.58	2.16	
11. Did you like the way your nurses <b>taught</b> you about how to care for yourself and your baby at home?	0-10	8.08	2.28	

Table 12 (continued)

Items	Range	<i>M</i>	<i>SD</i>	Level
12. Was the information your nurses provided about caring for yourself and your baby presented to you <b>in a way you could understand?</b>	0-10	8.03	2.24	
13. Did your nurses break up your <b>teaching into small amounts</b> to help you learn?	0-10	7.66	2.59	
14. Did your nurses <b>check</b> to make sure you understood the information and instructions?	0-10	7.42	2.65	
15. Did you receive <b>consistent</b> (the same) information from your nurses, doctors, and other health workers?	1-10	8.13	2.15	
16. Was the information about caring for yourself and your baby given to you <b>at times that were good for you?</b>	0-10	7.60	2.57	
17. Was the information you received from your nurses provided at <b>times when your family member(s) or others could attend?</b>	0-10	7.30	2.61	
18. Did your nurses help you to feel <b>confident</b> in your ability to care for yourself and your baby at home?	0-10	7.73	2.34	
19. How confident do you feel that you would <b>know what to do in an emergency?</b>	0-10	7.00	2.58	

Table 12 (continued)

Items	Range	<i>M</i>	<i>SD</i>	Level
20. Did the information your nurses provided about your care and your baby's care at home <b>decrease your anxiety</b> about going home?	0-10	7.42	2.34	

**VITAE**

**Name** Ms. Mingfei Ran

**Student ID** 6210420057

**Educational Attainment**

<b>Degree</b>	<b>Name of Institution</b>	<b>Year of Graduation</b>
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