

**PARENTS' STRESS LEVEL AT NEONATAL INTENSIVE
CARE UNIT HOSPITAL USM**

BY

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**DISSERTATION SUBMITTED IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF
BACHELOR OF HEALTH SCIENCE (NURSING)**

JUNE 2014

ACKNOWLEDGEMENT

First and foremost, I would like to thank Madam Jayah K. Pubalan who shared her knowledge and expertise as my supervisor throughout the whole process of making a proposal, presentation, until the completion of whole dissertation. Without her guidance, I would not able to progress and complete my thesis. My deepest appreciation goes to her for her informative guidance and constructive suggestion.

Next, I wish to send my appreciation to Ms Nur Sulwana bt Mohd Hanapi, the statistical consultant at Unit Biostatistics and Research Methodology for her help on data analysis of this study. Thanks for her patience and kindness in providing a clear and useful suggestion for my data analysis and SPSS guidance.

I would also like to thank the parents who participated in this study for their kindness and willingness to spend their time answering the questionnaire and make this research possible. Besides, my appreciation also goes to all my colleagues for their support, encouragement, advice and guidance to finish this research.

Last but not least, I wish to thank to my beloved family for their financially and spiritually support that lead me to finish my thesis. May my dearest father Lim Bong Nai, my beloved mother Kuek Siew Geok and my beloved siblings be blessed and happy throughout their life.

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LIST OF ABBREVIATIONS

NICU	Neonatal Intensive Care Unit
Hospital USM	Hospital Universiti Sains Malaysia
PSS: NICU	Parental Stressor Scale: Neonatal Intensive Care Unit
CIA	Central Intelligence Agency
WHO	World Health Organization
HREC	Human Research Ethics Committees

ABSTRACT

Background: Medically fragile infants are born into families regardless of races, religious, cultural background, socio economical status and nationality. The undesirable and unexpected event of having own child admitted to Neonatal Intensive Care Unit (NICU) causes stress to parents that is characterized by uncertainty and fear. This study aims to assess the level of stress among parent whose infant admitted to NICU and factors contributing to parental stress.

Methods: A cross-sectional, descriptive study was conducted in 104 respondents whose infant admitted to NICU Hospital Universiti Sains Malaysia using convenience sampling method. Respondents were surveyed using a structured self-administered questionnaire. The questionnaire consisted 26 questions and respondents evaluated each questions on a five- point Likert scale. Data were analyzed using IBM SPSS Statistics version 20.0. Chi-Square test and Fisher's Exact Test were used to analyze the data. A *p*-value of equal or less than 0.05 was considered significant.

Results: 104 respondents participated in this study. Respondents generally reported low (60.6%) to moderate (36.5%) level of stress when their infant admitted to NICU. Mothers perceived higher level of stress than fathers when their child admitted to NICU by showing significant difference with *p*-value of 0.002. Although there was no significant association between educational level and overall stress of parents ($p= 0.280$), there was significant mean difference between educational level and parental stress on subscales of infant appearance and behavior ($p= 0.010$). On the other hand, there was no significant association between gestational age and stress experienced by parents of infant admitted to NICU with *p*-value 0.204. There was also no significant difference between length of stay and stress of parents when their infant admitted to NICU ($p= 0.180$).

Conclusions: The results warrant a need to increase awareness of health care providers especially for nurses towards stress of parents. Health care professionals must be attuned to individual differences of parents and be alert of likelihood for gender differences in stress responses between fathers and mothers. Good communication skill is also

important as effective communication helps to relieve parental stress, too. It is essential to remove sources of parental stress that ultimately impaired parent infant bonding and lead to child vulnerability in future.

Key words: parental stress, Neonatal Intensive Care Unit (NICU), stressors

ABSTRAK

Latar Belakang: Bayi yang lemah dari segi perubatan dilahirkan ke dalam keluarga tidak mengira bangsa, agama, latar belakang budaya, status sosio ekonomi dan kewarganegaraan. Peristiwa yang tidak diingini ini iaitu mempunyai anak sendiri dimasukkan ke NICU menyebabkan tekanan kepada ibu bapa. Kajian ini adalah bertujuan mengkaji prevalen stress yang dialami oleh ibu bapa berkenaan bayi di Unit Rawatan Rapi Neonat dan faktor menyumbang kepada stress yang dialami oleh ibu bapa.

Kaedah: Kajian keratin rentas dan deskriptif telah dijalankan pada 104 responden yang anak mereka dimasukkan ke NICU Hospital USM. Responden diminta untuk menjawab satu soal selidik yang mengandungi 26 soalan. Responden menilai setiap soalan dengan memberi markah pada skala likert lima mata. Pakej Statistik untuk Sains Sosial (SPSS) versi 20.0 telah digunakan untuk menganalisis data dalam kajian ini. Ujian 'Chi-Square Test' dan 'Fisher's Exact Test' telah digunakan untuk menganalisis data. Nilai p yang sama atau kurang daripada 0.05 dianggap sebagai ketara.

Keputusan: 104 responden telah menyertai kajian ini. Secara umumnya, responden melaporkan tahap stress mereka pada tahap rendah (60.6%) ke sederhana (36.5%) apabila bayi mereka dimasukkan ke NICU. Ibu melaporkan tahap stres yang lebih tinggi daripada bapa dan menunjukkan perbezaan yang signifikan dengan nilai p 0.002. Walaupun tidak ada hubungan yang signifikan antara tahap pendidikan dan tekanan keseluruhan ibubapa ($p = 0.280$), terdapat perbezaan yang signifikan antara tahap pendidikan dan tekanan ibu bapa pada sub skala penampilan dan tingkah laku bayi ($p = 0.010$). Sebaliknya, tidak ada hubungan yang signifikan antara usia kandungan dan tekanan yang dialami oleh ibu bapa apabila bayi mereka dimasukkan ke NICU dengan nilai p 0.204. Perbezaan antara tempoh penginapan dan tekanan daripada ibu bapa apabila bayi mereka dimasukkan ke NICU juga didapati sebagai tidak signifikan ($p = 0.180$).

Implikasi: Keputusan kajian ini mewajarkan keperluan untuk meningkatkan kesedaran ahli penjagaan kesihatan terutamanya jururawat terhadap tekanan ibu bapa. Ahli penjagaan kesihatan haruslah biasa dengan perbezaan setiap individu dan peka terhadap perbezaan jantina dalam tekanan yang dialami antara ibu bapa. Kemahiran komunikasi

yang baik juga penting kerana komunikasi yang berkesan membantu untuk melegakan tekanan ibu bapa, juga. Ini adalah penting untuk menghapuskan punca tekanan ibu bapa yang seterusnya terjejas ikatan antara ibu bapa dan bayi dan akhirnya kepada penderaan kanak-kanak di masa hadapan.

Kata Kunci: tekanan ibu bapa, unit rawatan rapi neonat, punca tekanan

CHAPTER 1

INTRODUCTION

Background of the Study

Stress occurs when a person feels that he has too much emotional or mental pressure. Emotional pressure eventually turns into stress when it becomes overwhelming. Stress can be further divided into eu-stress and distress. Eu-stress is good stress that motivates a person to move further or perform better while distress is bad stress that occurs when good stress becomes too much to bear or cope with, creating tension to a person (Brock University, 2010).

Many demands in men's life can cause stress, particularly work, relationships, and money problems (NHS choices, 2012). Stress can affect the way a person feels, thinks, behaves and the body mechanism. Stress experienced by parents of neonatal intensive care unit (NICU) is well documented which is associated with a concerning constellation of physical and emotional outcomes consisting anxiety, depression, fatigue and stress (Busse, Stromgren, Thorngate, & Thomas, 2013).

The neonatal intensive care unit, also known as NICU, is an intensive care unit specially designed with special equipment in order to provide holistic care for premature or seriously ill newborn. The NICU combines advanced technology and trained healthcare professionals to provide specialized care for the tiniest patients. NICUs may also have intermediate or continuing care areas for babies who are not as sick but do need specialized nursing care. The first official intensive care unit for neonates was established by Professor Mildred Stahlman at Vanderbilt University in 1961 (National Library of Medicine, 2013). The aim of NICU is to provide an environment, which replaces the womb as much as possible for optimal health recovery and growth (Freudenthal, Stuijvenberg, & Goudoever, 2012)

Medically fragile infants are born into families regardless of races, religious, cultural background, socio economical status and nationality. The undesirable and unexpected

event of having own child admitted to NICU causes stress to parents that is characterized by uncertainty and fear. Dudek-Shriber (2004) claimed that parent-infant bonding process occurred during the newborn period establishes the foundation for a lifelong relationship. The stress experienced by parents during the admission of their infant to NICU influences maternal sensitivity and responsiveness in interaction with the infant and subsequently affects the child development outcomes. Therefore parental stress of infant admitted to NICU should be identified and addressed as soon as possible to prevent further impact to parent-infant bonding that can impair lifelong relationship between parents and their infants.

Welcoming a new life to the family has always been an exciting experience to parents. Parents anticipate how their child looks during pregnancy, providing an experiential basis for knowing their newborn child. This anticipatory mind set anchors parent's perception to the newborn regarding how their child looks like, sex, size and shape. Stress develops when there are differences between parent's perception and actual appearance of the newborn. According to Meijssen (2011) cited in Tandberg, Sandtrø, Vårdal, & Rønnestad (2013), parental stress can be caused by a variety of factors, including mismatch between the perceived demands of parenting and the resources available to meet those demands.

The stressful environment of NICU is recognized with considerable stress for parents. Miles & Holditch-Davis (1997) cited in Valizadeh, Zamanzadeh, Akbarbegloo, & Sayadi (2012) also stated that the stressful nature of the NICU environment for parents of ill infants is well-documented. The physical environment such as bright light, noisy life support and monitoring equipment and chemical odour, are the major source of stress for them. Thomas & Martin (2000) found that caregivers are also exposed to the unique sound environment of the NICU apart from infant. The sight of their ill infants connected to equipment by tubes and wires and surrounded by medical personnel can be very disturbing.

However, the greatest source of stress often cited by these parents is loss of their expected and desired parental role (Franck, Cox, Allen, & Winter, 2005). These barriers

may negatively influence parent-infant bonding and may have long term negative effect on infant's development outcome. NICU staffs may also contribute to parental stress through words and actions that convey to parents that their existence disturbs NICU staffs to provide care to infants and parents are incapable to care for their own child. Affleck (1999) cited in Frank et al. (2005) emphasized that the postponement of parenting resulted in extended emotional and psychological stress can lead to parent not being emotionally attached to their infant at the time of discharge, and may contributed to greater parenting risk and child vulnerability.

Every individual has his own unique characteristics. According to Dudek-Shriber (2004), when parents have an infant in neonatal intensive care, they bring with them their own unique characteristics and set of circumstances. Apart from that, Dudek-Shriber (2004) also stated that parents are also influenced by the specific situational condition of their infants, such as infant's appearance, length of stay, infant's diagnosis and others. All these factors interact with each other, creating emotional pressure to parents and eventually become stress with parents failed to cope with perceived emotional pressure.

Problem Statement

Crude birth rate is the number of total birth in a given years per 1,000 populations. Infant mortality rate is the number of death of infants under one year old in a given year per 1,000 live births. This rate is often used as an indicator of level of health in a country. Neonatal mortality rate is the number of neonates dying before reaching 28 days of age, per 1,000 live births in a given year (The World Bank, 2013).

According to Central Intelligence Agency (CIA) 2013, the estimated birth rate for Malaysia year 2013 worldwide is 18.9 births/ 1,000 population while the estimated infant mortality rate for year 2013 is 37.61/1,000 live births. The Central Intelligence Agency (CIA) is an independent US government agency responsible for providing national security intelligence to senior US policymakers.

In Malaysia, with reference to Ministry of Health Virtual Library (2013), the crude birth rate (per 1,000 populations) for year 2010 is 17.5 while the infant mortality rate is 6.8 per 1,000 live births (Ministry of Health Virtual Library, 2013). The neonatal mortality rate stated in Health Facts 2012 for year 2010 is 4.4 per 1,000 live births. However, according to The World Bank (2013), the estimated neonatal mortality rate in Malaysia year 2011 is decreased to 3 per 1,000 live births.

The decrease in neonatal mortality rate indicates improvements in health care services in Malaysia. More infants admitted to neonatal intensive care unit survived and recovered from serious illness or prematurity. However, infant with serious illness and prematurity may need longer time for them to recover from illness, thus length of stay of infant may increase. The longer the duration of stay, the higher the risk for parents experience higher level of stress.

Pregnancy, childbirth and the puerperium is the highest among the 10 principal causes of hospitalization in Malaysia government hospitals in year 2011, comprises of 25.94% (Ministry of Health Virtual Library, 2013). Hospitalization of newborn to neonatal intensive care unit creates potential sources of stress due to uncertainty about the outcome, and concern about the infant. Thus, parents of infant admitted to neonatal intensive care unit experienced higher level of anxiety and depression compared to parents of healthy infants.

Unaddressed stress brings a lot of psychological impacts to parents, further affects parent-infant bonding. Parents who experience alteration in parent-infant bonding are at higher risk of ineffective parenting role since they are not emotionally attached to their infant. This ultimately leads to child vulnerability and further affects child development in future.

Data of admission is obtained from NICU Hospital USM (1 Nilam and Nilam 2) and the mean number of infant admission from August 2012 to August 2013 was 141 infants. This also indicates that there are average of 141 pair of couples are exposed to the risk of experiencing stress every month at NICU Hospital USM. Moreover, the infant of these

141 couples are also at risk of child vulnerability in future. Therefore it is necessary to investigate parental stress of infant admitted to NICU at Hospital Universiti Sains Malaysia so that sources of stress are identified and further actions can be taken to ally parental stress before child vulnerability happens.

The Parental Neonatal Intensive Care Unit Stress Model (Wereszczak, Miles, & Holditch-Davis, 1997) was applied in this study. The Parental Neonatal Intensive Care Unit Stress Model was developed and applied to nursing profession, providing a comprehensive approach for understanding, describing and assessing sources of potential parental stress in the NICU. This model was developed based on Parental Intensive Care Unit Stress Model by Miles and Carter, 1983. The Parental Intensive Care Unit Stress Model framework is based on Magnusson's stress theory that describes stress as an individual reaction to demands that approach or exceed the limit of coping resources. This model describes and focuses on the interaction between personal factors, family background, situational conditions and environmental stimuli that affect parent's response to stress.

1.3 Research Objectives

1.3.1 General Objective

To explore the stress level experienced by parent of infant admitted to neonatal intensive care unit (NICU) in Hospital Universiti Sains Malaysia (Hospital USM).

1.3.2 Specific Objectives

1. To determine the stress level experienced by parents of infant admitted to NICU in Hospital USM.
2. To determine the association between parent's characteristic (gender and educational level) and stress experienced by parents of infant admitted to NICU Hospital USM.

3. To determine the association between infant characteristic (length of stay and gestational age) and stress experienced by parents of infant admitted to NICU Hospital USM.

1.4 Research Questions

1. What is the stress level experienced by parents of infant admitted to NICU Hospital USM?

2. Is there any association between parent's characteristic (gender, educational level) and stress experienced by parents of infant admitted to NICU Hospital USM?

3. Is there any association between infant characteristic (length of stay, gestational age) and stress experienced by parents of infant admitted to NICU Hospital USM?

1.5 Research Hypothesis

1.5.1 Ho: There is no significant association between parent's characteristic (gender, educational level) and stress experienced by parents of infant admitted to NICU Hospital USM.

HA: There is a significant association between parent's characteristic (gender, educational level) and stress experienced by parents of infant admitted to NICU Hospital USM.

1.5.2 Ho: There is no significant association between infant characteristic (length of stay, gestational age) and stress experienced by parents of infant admitted to NICU Hospital USM.

HA: There is a significant association between infant characteristic (length of stay, gestational age) and stress experienced by parents of infant admitted to NICU Hospital USM.

1.6 Definition of Operational Terms

1.6.1 Stress

Stress is a reaction to a stimulus that disturbs our physical or mental equilibrium. The conditions caused depression, mental illness and worry (Ruse, 1999).

1.6.2 Stressor

Stressor is an agent or stimulus that causes stress (MNT, 2013). Examples of stressors are noises, unpleasant environment, death of beloved ones and unexpected events that are undesirable to someone.

In this study stressors referred to the sight and sound of NICU environment, infant appearance and behavior and parenting role.

1.6.3 Neonatal Intensive Care Unit (NICU)

Neonatal Intensive Care Unit is a unit that providing intensive care for preterm, very low-birth weight and seriously ill babies (Martin, 2007).

1.7 Significance of Study

Infants were admitted to the NICU for a variety of reasons including prematurity, sepsis, respiratory defects, birth defects maternal problems such as eclampsia and gestational diabetes mellitus. The admission NICU can be an alarming and distressing experience to parents. Obeidat, Bond, & Callister, (2009) stated that parents of infant admitted to NICU were believed to experience high level of distress, including increased anxiety, depression, and trauma symptoms as compared to parents of healthy infants. High level of stress may increase the risk for maladaptive parenting.

This study was aimed to measure and identify sources of parental stress of infant admitted to NICU. This is important for parents to allay their parental stress and develop emotional attachment to their baby that may help to prevent child vulnerability in future.

Affleck (1999) cited in Frank et al. (2005), said that the delayed of parenting results in extended emotional and psychological stress can lead to parent not being emotionally attached to their infant at the time of discharge, and may contributed to greater parenting risk and child vulnerability. De Ocampo, Macias, Saylor, & Katikaneni (2003) also found that NICU graduates who perceived vulnerability by their parents have significant behavioral difficulties compared to others.

According to Franck et al. (2005), identification of the sources of NICU- related parental stress and qualification of its degree is essential to determine effective strategies to promote optimal parenting in this high-risk setting. By identifying parent's stress level in NICU, appropriate intervention can be done to relieve their stress that may alters parent-infant bonding if left unattended. Early interventions are necessary and this was proven by study conducted by Benzies, Magill-Evans, Hayden, & Ballantyne (2013). Benzies et al. (2013) found the link between interventions and outcomes stated that early interventions have positive and clinically meaningful effects on the psychological aspects of mothers.

When sources of stress are identified, effective communication can be given by health care professionals to parents. Punthmatharit, 2007 cited in Cockcroft (2012) stated that when information being given meets parents' needs, their stress was minimized. Gavey (2007) also stressed the importance of neonatal staff positively reinforce the benefits to both baby and family which a move into special care will bring, so that fears are allayed. Wigert, Dellenmark, & Bry (2013) found that effective communication at the NICU helps to improve parental well-being. These showed the importance of effective communication as an intervention to allay parent's fear when their child admitted to NICU. The unfamiliar hospital environment makes parents to be dependent on doctors and nurses to cope with their situation and therefore good communication between parents and staff is an essential part of the support offered to parents in the NICU.

Moreover, increased information about sources of parental stress in NICU and understanding of the factors contributing to stress may help NICU staff to identify parent at risk. Early identification of parent at risk enables the planning of interventions that

help to relieve, moreover prevent parental stress in NICU. Furthermore, when NICU staff understands psychological changes of parents of infants admitted to NICU, feeling of empathy will arise, quality of care will be improved and friendly service will be provided not only to infant but also to their parents.

Nurses have the unique opportunity to assist family members especially during this critical time. However, before all this could be done, nurses must possess good understanding on the needs of parents and how to address them. Thus, continuing research in this area is needed. Franck (2005) cited in Cleveland (2008) also emphasized the importance for nurses to remain active in setting the agenda for neonatal research and for protecting the rights of this vulnerable population.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

According to Tooten et al. (2012), there are 2% to 9% of the newborns require specialized care in NICU every year. The admission of own child to a neonatal intensive care unit (NICU) is often an unexpected event for parents and health care professionals. Immediately after delivery, which itself can be a frightening experience, parents are separated from the infant in an atmosphere filled with uncertainty and feelings of anxiety and loss of control. The highly stressful and overwhelming hospitalization is likely to be one of the greatest challenges for parents. Carter, Mulder, Bartram, & Darlow (2005) stated that parents of infants admitted to NICU are believed to experience heightened distress, including increased anxiety, depression and trauma symptoms, compared to parents of healthy infants. It is important to understand the experience of parents of infant admitted to NICU to meet their needs better through the provision of holistic care.

According to Khee Loo, Espinosa, Tyler, & Howard (2003), it was well documented that NICU hospitalization is very stressful for families. High level of stress can be deleterious to bonding and attachment, parenting confidence, and parent-child interaction. Khee Loo et al. (2003) also stated that the lack of parenting confidence will result in lower level of child competency, less developed maternal care-giving skill, poor quality of home environment as well as diminished parent-child interaction.

This study aimed to explore the parental stress of infants admitted to NICU using parental stressor scale: neonatal intensive care unit (PSS: NICU). By gaining the information from the questionnaire answered by parents in NICU, further analysis will be conducted to investigate the relationship between gender, educational level, length of stay, gestational age and parental stress in NICU. Literature and studies results had been reviewed for better understanding on the relationship between each subjects and parental stress.

2.2 Gender Differences on Parental Stress in NICU

Several studies conducted to investigate the difference between father and mother on their parental stress during the hospitalization of their infant found that mother experiences more stress compared to father. Noyes (1999) cited in Obeidat et al. (2009), found that mother experience feelings of shock and a sense of crisis during the admission of their infant to the NICU. Besides that, Carter, Mulder, & Darlow (2007), Matricardi, Agostino, Fedeli, & Montiroso (2013) and Montiroso, Provenzi, Calciolari, Borgatti, & Group (2012) stated that mothers found the NICU to be much more stressful than fathers. Shaw, Deblois, Ikuta, Ginzburg, et al (2006) also found that acute stress disorder among parents of infants admitted to neonatal intensive care unit NICU was associated with female gender. Salonen (1998) cited in Obeidat et al. (2009) described maternal perceptions of disappointment, loneliness, insecurity, and frustration. Mothers have higher preliminary expectations due to their bonding with the child during pregnancy (Schappin, Wijnroks, Venema, & Jongmans, 2013).

Nevertheless, Franck (2005) cited in Tandberg et al. (2013) found that when measuring NICU-related parental stress, the stress levels among father was significantly higher than mother in NICU's in the USA, which was different from his own finding when investigating parental stress in NICU's in the UK. Joseph (2007) cited in Tandberg et al. (2013) also explored the stress in fathers of surgical NICU babies with parental stressor scale: infant hospitalization and found higher stress levels in father especially in "parental role alteration" and "infant appearance and behaviour".

It is obvious that fathers play an important role in caring their children too; nevertheless, little studies have conducted to explore their stress and experiences in NICU. In fact, father may be the earliest person to have contact with their newborn and with the health care team as mother is post delivery and may be ill. Study conducted by Arockiasamy, Holsti, & Albersheim (2008) stated that fathers reported primarily experiencing a lack of control when they had an ill infant in NICU. This finding is similar to the finding of Joseph (2007) cited in Tandberg et al. (2013).

Poblman (2009) cited in Cockcroft (2012) stated that the ingrained culture of neonatal care places the needs of babies and mothers ahead of fathers and can result in fathers feeling left out. According to Arockiasamy et al. (2008), the support for mothers increased over time while the support for fathers waned. The cultural background differences placing mothers needs ahead of fathers may be the significant cause of higher stress level of fathers as theirs needs are being ignored and they have fewer support compared to mothers.

While the above studies report different findings of parental stress in NICU, the German randomized controlled trial by Van der Paal (2007) cited in Tandberg et al. (2013) found no significant gender differences in perceived nursing support and parental stress scores.

2.3 Educational Level on Parental Stress in NICU

The effect of educational level on parental stress in NICU is still remains debatable. The results of studies conducted by Tsironi (2012) and Ahn & Kim (2007) to investigate the effect of educational level on parental stress were significantly different. Tsironi (2012) found that parents with lower educational level reported lower stress level while results of Ahn & Kim (2007) were not. Parents who have lower educational level having lower stress level may be due to less demands and expectation on treatments given to their child. They may also have less knowledge on the illness and medical treatment being given. High educational level parents with lower stress level can be explained by they have better understanding on their infant illness and medical treatment being given. Besides, they may also have better stress management skills if compared to parents with lower educational level. Khee Loo et al. (2003) also stated that parental knowledge acquisition itself can be conceptualized as part of the adaptive and coping process.

Ahn & Kim (2007) conducted a study to examine the effects of NICU educational support on perception of neonates and parental stress level between mothers and fathers. Findings stated that NICU education with both parents improved perception of neonates and parental stress levels of fathers but not in mothers. Mothers might not readily express

the changes in perception of their neonates and stress levels during the acute postpartum period, possible due to greater expectation of their parenting role and responsibility as well as having more feelings of being overwhelmed and guilt.

2.4 Length of Stay on Parental Stress in NICU

Although studies have proven the relationship between length of stay and parental stress in NICU (Tsironi et al., 2012; Reid & Bramwell, 2003; Obeidat et al., 2009; Dudek-Shriber, 2004), related literature reviews are quite limited. The infant's length of stay appears to be another significant factor that affects parent satisfaction. Parents who have higher satisfaction will have lower stress level.

According to Tsironi et al. (2012), the very sick or very preterm baby usually stays the longest time, and these parents will have had many emotional upheavals. Emotional upheavals trigger stress response when it is not addressed properly. Thus, longer length of stay triggers parental stress when their infant admitted to NICU.

Reid & Bramwell (2003) used parental stressor scale: NICU as their instrument in their study, suggested that factors which indicate the infant's subsequent medical progress (length of stay, days to full feeds) showed weak to moderate correlations with the "sights and sounds" and "appearance and behavior" subscales.

It is important to conduct studies on the effect of length of stay of infant on parental stress. Longer stay of infants at NICU may have negative effect on parent-infant bonding. Obeidat et al. (2009) stated that early separation of the infant from parent greatly affects infant-parent relationship, especially during the lengthy stays in the NICU, because it is important for parents to be able to see, hold and touch their newborn in order to facilitate early attachment and bonding.

The results of research conducted by Dudek-Shriber (2004) indicated that scores measuring a feeling of general stress were highest on the PSS: NICU, suggesting that the stress experienced by parents may often be diffuse, especially for parents of infant with

longer length of stay. Thus, it is important to identify specific stressors that promote stress in parents in order for intervention to be effective. Specific stressors that cause parental stress in NICU can be identified through PSS: NICU. This is one of the areas that necessitated for more research.

2.5 Gestational Age on Parental Stress in NICU

According to WHO (2013), preterm is defined as babies born alive before 37 weeks of pregnancy are completed. Gestational age related parental stress is less being discussed. Studies being conducted worldwide focus more on parental stress of premature infant in neonatal intensive care unit rather than comparing parental stress between parent of premature and full-term infant.

In study by Ravn (2011) cited in Tandberg et al. (2013), fathers of moderately or late preterm infants were found to be significantly more stressed than fathers of term infants. This result proved the relationship between gestational age of infant and parental stress in NICU. Fathers of preterm infant are more stressed possibly due to the NICU environment and the infant appearance and behaviors (Tandberg et al., 2013). Mackley, Locke, Spear, & Joseph (2010) also found that fathers of premature infants in NICU demonstrated high level of stress that persisted over time. Klassen, Lee, Raina & Lisonkova (2004) also stated that mothers of preterm infant experience more severe level of psychological distress in the neonatal period than do mothers of healthy full-term infants. The studies above concluded that parents of preterm infant experience higher stress level compared to parents of term infant.

However, according to study conducted by Reid & Bramwell (2003), low gestation did not show a significant correlation with any sub scale in PSS: NICU. This is an unexpected finding as it conflicts with the belief that sicker infants will provoke higher stress levels in parents. Reid & Bramwell (2003) also stated that a study conducted by Spear (2002) to examine family reactions to NICU and scored infant morbidity using SNAP (Score for Acute Neonatal Physiology) found no relationship between infant

morbidity and the overall level of stress in families. Schappin et al. (2013) explained this phenomenon as parents tend to perceived their premature infant as vulnerable, thus lowering their expectations on their child development and subsequently, lowering parent's level of stress.

The findings of Ravn (2011) cited in Tandberg et al. (2013) were different from the findings of Reid & Bramwell (2003). This may be due to the difference in cultural belief and educational level that alters the parent's perception on infant admitted to NICU. Thus the effects of infant gestation on parental stress are debatable and further research should be conducted for further clarification.

2.6 Parental Stressor Scale (PSS: NICU)

PSS: NICU is a well-validated scale developed in the US to measure NICU related parental stress. It is developed by Miles and colleagues to measure parental perception of the stressors encountered in the NICU related to the physical environment, infant behavior and appearance, staff relationships, and parental role alterations (Dudek-Shriber, 2004). The PSS: NICU provides important information for research and clinical practice about how stressful parents found on particular NICU situations and the level of stress they experience from various aspects of the NICU environment. Numerous studies conducted to measure parental stress of infant admitted to NICU use PSS: NICU as their instruments as the tool has demonstrated excellent validity and reliability (Reid & Bramwell, 2003; Seideman et al., 1997; Busse et al, 2013; Franck et al., 2011; Shaw et al., 2006; Chourasia, Surianarayanan, Adhisivam, & Vishnu Bhat, 2013; Pfau, 2005).

Miles (1989) cited in Seideman et al. (1997) emphasized that the appearance of fragile, sick infant seemed to cause more stress than alteration in parental role. However, in subsequent and larger study Miles, Funk and Kasper (1991) cited in Seideman et al. (1997) found that alterations in parental role cause the greatest stress for parents of children in NICU, with the second highest being the appearance of fragile, sick infant. Besides that, they also found that alteration of parental role were stressful for both

mothers and fathers. Study conducted by Busse et al. (2013) also stated that alteration in parenting role was the largest source of parental stress. Franck et al. (2011) found that parental perceived incompetence in altered parental role such as feeling helpless, not being able to help their infant are sources of stress for parents of high risk infants. Studies conducted by Shaw et al. (2006) to examine the prevalence of acute stress disorder (ASD) found that ASD was associated with alteration in parental role.

Chourasia, et al. (2013) and Pfau (2005) found that parental role alteration the most stressful of all dimensions, infant appearance and behavior the next most stressful and the site and sounds to the unit the least stressful. The inconsistency of results found by previous studies urges the researcher to further investigate the major sources of stress experienced by parents of infants admitted to NICU at Hospital USM.

Alfonso et al. (1992) cited in Seideman et al. (1997) determined that stressors for parents of children in the NICU changes over time. According to Seideman et al. (1997), in a qualitative study by Hughes, McCollum, Sheftel, and Sanchz (1994) found that the majority of stressors are caused by the separation due to the hospitalization and the infant's appearance, health and course of hospitalization.

2.7 Conceptual Framework

The conceptual framework used in this study was Parental NICU Stress Model proposed by Wereszczak et al. (1997). Parental NICU Stress Model was the only model specially designed for parents who have infant admitted to NICU. It was modified from Parental Intensive Care Unit Model developed by Miles, Funk, & Carlson (1993) which framework was based on Magnusson's Stress Theory. This model also has been used by Steedman (2007) as conceptual framework for his study in evaluating stress experienced by parents from NICU. This model described and focused on the interaction between personal factors, family background, situational conditions and environmental stimuli that affect parent's responses to stress. The Parental NICU Stress Model identified multiple factors contribute to stress response, as shown in figure 1.

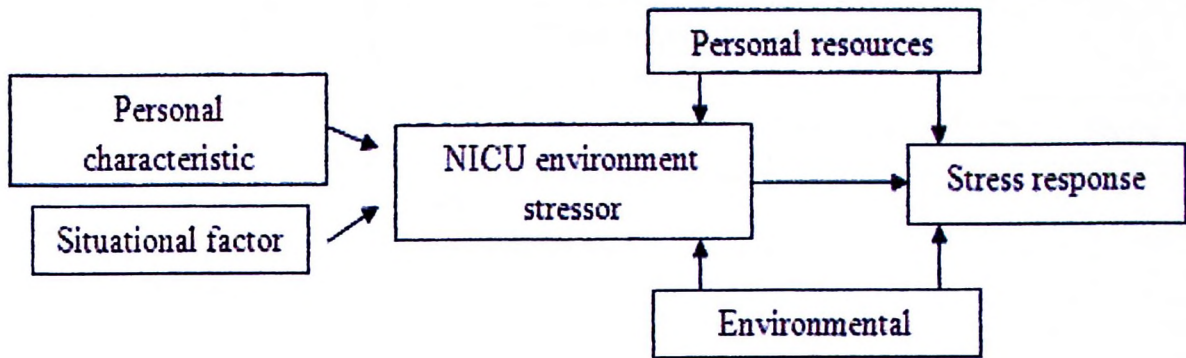


Figure 2.1: Parental NICU Stress Model by Wereszczak et al. (1997)

In Parental NICU Stress Model, NICU environment stressors played vital role in influencing parent’s stress response. Miles, Funk, & Carlson (1993) identified three NICU environment stressors contribute to parental stress response. First is the “sights and sounds” that describes the environment of NICU. Second is the “infant appearance and behavior” that describes how infant looked and behaved while third is the “parent-infant relationship” that describes as the alterations of parental role.

Apart from that, when parents had their infant being admitted to neonatal intensive care unit, they brought along with their own unique characteristic and set of circumstances. Every individual is unique and carry their own characteristic that makes them differ from others. While in the NICU, parents may also be influenced by some situational conditions of their infants. In this study situational factors had included length of stay and gestational age. Figure 2 represents the conceptual framework adapted and modified from Parental NICU Stress Model.

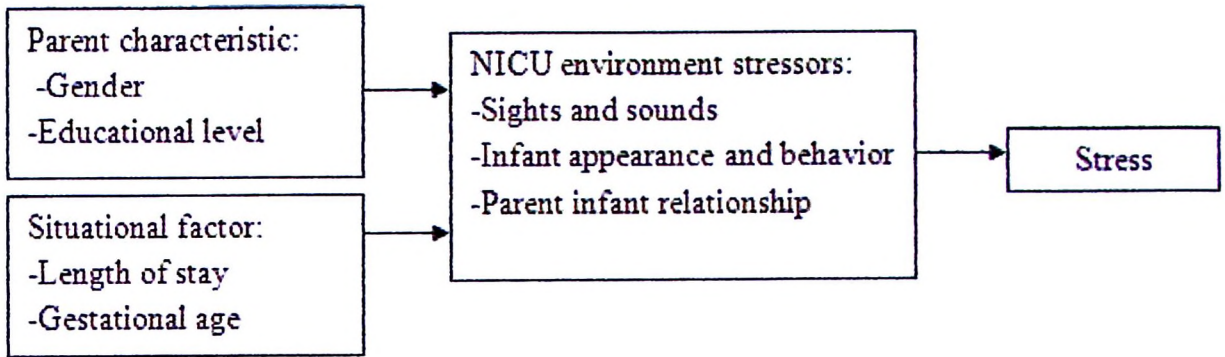


Figure 2.2: Conceptual Framework for Current Study Adapted from Parental NICU Stress Model by Wereszczak et al. (1997)

All these factors created emotional pressure to parents, resulted in stress response when the emotional pressure was far beyond a person's ability to cope or coping resources.

CHAPTER 3

METHODOLOGY AND METHODS

3.1 Research Design

A cross-sectional, descriptive study was employed to measure the stress experienced by parents of infant admitted to NICU Hospital USM. Cross-sectional design was relatively convenient and quick for respondent as they only have to answer self-administered structured questionnaire. =\

3.2 Population and Setting

The study population for this study was parents of infant admitted to NICU (Nilam 1 and Nilam 2) while the study setting for this study was at Hospital USM.

3.3 Sample Plan

A sample plan is a detailed outline of which measurements was designed in such a way that the resulting data contains a representative sample of the parameters of interest and allows for all questions, as stated in the goals, to be answered.

3.3.1 Sample

When conducting a research, certain inclusion and exclusion criteria were applied.

Inclusion criteria

- Parents of infant admitted to neonatal intensive care unit (NICU), including parents of preterm infant, term infant, ventilated infant and non-ventilated infant.
- Willing to participate in this study.
- Able to understand, speak and write in English or Bahasa Malaysia.

Exclusion criteria

- Parent who refused to participate in this study.

- Parents who were mentally not fit to participate in this study.
- Parents of infant admitted to ward other than neonatal intensive care unit.
- Parents who were not able to understand, speak and write in English and Bahasa Malaysia.

3.3.2 Sampling Designs

The selection of sample was done through convenience sampling method due to time limitation for data collection. The sample consisted of parents of infant admitted to NICU Hospital USM who met the inclusion criteria.

3.3.3 Sampling Size

The population size for parents of infant admitted to Neonatal Intensive Care Unit was calculated using the mean number of infant admission from August 2012 to August 2013. The mean number of infant admitted to Neonatal Intensive Care Unit was 141.

Raosoft sample size calculation software was used to calculate the sample size and ensure the accuracy of the sample by avoiding sampling error at the same time determines the representatives and parameters of the sample. The margin of error was set at 5%, the confidence level at 95% while the response distribution at 50%. The recommended sample size for this study was 104.

With consideration of the dropout rate for this study, 10% of the calculated sample size was added. Therefore the total participants required for this study were:

$$\begin{aligned}
 \text{Number of parents} &= 104 + \text{dropout of } 10\% \\
 &= 104 + 10.4 \\
 &= 114 \text{ participants}
 \end{aligned}$$

3.4 Variables

This study used a self-administered questionnaire PSS: NICU. All the variables were collected through this questionnaire that involved socio-demographic data, and parents' perceived level of stress to NICU environment stressor.

The dependent variable of this study was the level of stress reported by parents. The independent variables on the other hand were educational level, gender, length of stay and gestation of infant.

3.4.1 Variables Measurements

The independent variables in this study were educational level, gender, length of stay and gestation of infant.

For the variable gender, the respondents were given options either male or female. For the variable educational level, the options were divided into five categories: not schooling, primary school, secondary school, university and others. For the variable gestation of infant, with gestation weeks less than 37 weeks was considered as preterm birth and term birth for infant born with gestation week 37 weeks or more. The variable length of stay was measured with reference to Chourasia et al. (2013), which are short (less than 7 days) and long (more than 7 days).

Each variable stressors item from NICU environment were measured on a five point Likert Scale consisting:

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

The data were analyzed using descriptive statistics, which are mean, percentage, standard deviation and frequency. After mean stress score were obtained and with reference to Chourasia et al. (2013), stress levels were classified according to points on Likert scale as follows:

Low	=	1.0 - 2.9
Medium	=	3.0 - 3.9
High	=	4.0 - 5.0

3.5 Instrumentation

3.5.1 Instrument

The instrument that used in this study was questionnaire PSS: NICU. The questionnaire consisted of two parts with Part A was for demographic data and Part B for 26 items of Parental Stressor Scale (PSS: NICU). Part A consisted demographic data of respondent (gender, age, occupation, educational level, infant length of stay and gestational age).

Part B consisted 26 items of Parental Stressor Scale measuring parental stress towards the stressor of NICU environment. The PSS: NICU consisted of three parts: sights and sound, infant appearance and behavior and parental role.

3.5.2 Translation of Instrument

The questionnaire which was in English version (Appendix 5) has been translated into Bahasa Malaysia version (Lampiran 6) by the researcher, checked by the supervisors and validated by experts from nursing. The questionnaire was translated by the back-translation method to ensure it maintains the original meaning of the questionnaire.

3.5.3 Validity and Reliability

The translated questionnaire was validated by three experts from nursing to confirm its validity. The original English version of questionnaire, Parental Stressor Scale: Neonatal Intensive Care Unit (PSS:NICU) had Cronbach Alpha 0.89 (Holditch-Davis, Barlett,

Blickman& Miles, 2003). The pilot study was done to test the reliability of the questionnaire with good Cronbach Alpha value 0.96 for PSS: NICU. The questionnaire was rechecked and reconstructed before it was given to the respondent.

3.6 Ethical Considerations

While conducting the study, much sensitive and private information may be used and researcher had to fully observed the guidelines stated in the Human Research Ethics Committees (HREC) of Universiti Sains Malaysia (USM). Before conducting this study, approval was obtained from the HREC and permission from the Director of Hospital USM.

The selected respondent was approached to ask for willingness to participate in the study. The respondent was explained thoroughly on the procedure and purpose of study, and be informed of the risk that may happened to them, including emotional disturbance since the study may exposed them to the stressor and sadness that they may have tried not to remember.

It was also important to inform the respondent that their participation must be voluntary and they had the rights to discontinue whenever they feel uncomfortable. All information collected from the respondent was kept confidential, anonymous and only be used for academic purposes only. The researcher must also not to disturb the respondent when they answering the questions to prevent bias and alteration of the answers.

3.7 Data Collection Plan

Once the approval was granted from the academic and ethical department, data collection was started as the next stage of study using a self-administered questionnaire with the parents of infant admitted to NICU, Hospital USM.

After obtaining permission from Sister of NICU ward, the researcher employed the convenience sampling based on the inclusive criteria and exclusion criteria stated to

recruit the study subject. The researcher approached and explained to the respondent about the purpose and procedure of questionnaire and obtained written consent from them. Researcher then distributed questionnaire, information sheet and consent form to the respondent and left the respondent to answer the questionnaire. The respondent was given 15-20 minutes for answering the questionnaires. To minimize bias that would occur during data collection, the researcher left the respondent to answer the questionnaire without interrupting them unless they needed some clarification. Upon completion, the researcher collected and checked the questionnaire to make sure all the data was completed and filled.

3.7.1 Flow Chart of Data Collection

