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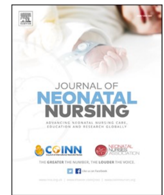

Indonesian mothers of premature infants' experiences in achieving initial motherhood independence in the neonatal unit: A qualitative study

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ABSTRACT

Objective: To explore Indonesian mothers' experiences in achieving initial independence motherhood in the neonatal unit of the national referral hospital in eastern Indonesia.

Methods: Descriptive phenomenology was used. Eight purposively sampled mothers of preterm infants participated. Each had a preterm infant who had been discharged from the neonatal unit and had been hospitalized for at least one week. In-depth interviews were conducted in Bahasa Indonesia and audio-recorded. The recordings were transcribed verbatim, translated in English and back-translated to Bahasa to ensure meanings did not deviate from original intentions. Thematic analysis by Braun and Clarke (2006) was performed to analyze the data.

Result: Three themes emerged from the analysis describing how mothers achieved initial independence in the neonatal unit: (1) New reality of entering motherhood; (2) Upside-down emotional swings in parenting in the neonatal unit; and (3) Health service's role for initial motherhood independence achievement. Initial motherhood independence was achieved through early participation in care, support from others, and health service program. Emotional and physical interaction throughout participation in daily care assisted with establishing mother-infant relationships and maternal role attainment.

Conclusions: Neonatal nurses can facilitate this process by providing psychological support, communication, health education, and empowering mothers to participate in care using mentoring approaches.

1. Introduction

A preterm birth is defined as one occurring before 37 weeks of gestation and can cause problems in children under the age of 5 years globally (World Health Organization, 2018). Worldwide, there were an estimated 15 million premature births in 2015 (World Health Organization, 2018). and 2.7 million deaths in the neonatal period (Liu et al., 2016). Preterm birth influences serious morbidity in the neonatal period because of physiological immaturity and low neonatal weight (Lee et al., 2019; Medina et al., 2018). This condition results in the baby requiring specialized medical care and treatment in a neonatal unit, such as a special care nursery (SCN) or neonatal intensive care unit (NICU) (Australian Institute of Health and Welfare, 2019). Sudden preterm labor and admission of the infant to the SCN or NICU are described by mothers as particularly challenging, causing stress, fear of losing their infant, emotional ambivalence, trauma and distress, uncertainty and unpredictability, bewilderment, and feeling unprepared to face parenthood (Australian Institute of Health and Welfare, 2019).

Parenting a preterm infant in the neonatal unit is challenging and considered both terrifying and overwhelming for mothers (Vazquez and Cong, 2014). Environmental conditions, maternal factors, and infants' conditions are recognized as barriers to parenting in the neonatal unit

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(Medina et al., 2018; Whittingham et al., 2014). The highly technological environment and medical equipment attached to the infant can create feelings of induced shock, fear, stress, lack of privacy for parenting, loss of contact, and physical separation (Howe et al., 2014; Medina et al., 2018; Roque et al., 2017; Whittingham et al., 2014). This potentially hampers later mother–infant interaction and transition to motherhood (Vazquez and Cong, 2014). On the other hand, mothers have responsibility for the daily care of their infants at home, so they must achieve confidence in caring during the baby's hospitalization (Jefferies, 2014; Murdoch and Franck, 2012).

A smooth transition to motherhood can be achieved if there is internal harmony between the role and expectations of the mother, such as being aware of her identity as a mother, an emotional bond with the baby, satisfaction, and achievement of competence in her role (Alligood, 2014). Recently, neonatal nurses' responsibilities have been challenged to not only provide optimal developmental care for babies but also encourage mothers to attain initial motherhood independence during periods of forced separation in the neonatal unit by providing information, education, and early hands-on contact and care (Vazquez and Cong, 2014; Whittingham et al., 2014). Such efforts seek to ensure that parents provide their baby's care independently during hospitalization, to enhance their readiness for discharge (Hariati et al., 2021b).

Indonesian neonatal services face a range of limitations in providing optimal neonatal services, including a limited number of nursing staff for the number of patients, uneven competencies of nurses (Gunawan, 2016), and limited medical equipment (Maimanah and Rochmah, 2020). NICU policies in Indonesia that do not restrict parental visitation of their infants help parents to bond early and enhance their abilities to care for their baby (Hariati et al., 2022). Although previous research has focused on mothers' perceptions of mothering in the NICU (Howe et al., 2014; Medina et al., 2018; Roque et al., 2017; Whittingham et al., 2014), limited research exists on their experiences in achieving initial motherhood independence before hospital discharge. In this context, this qualitative research sought to explore this gap.

2. Materials and method

2.1. Design

This study employed a descriptive phenomenological approach, with semi-structured in-depth interviews. The descriptive phenomenological approach was used as an approach that seeks to explore, understand, and describe as faithfully as possible, the firsthand experience of NICU mothers, so that others could see, feel, and interpret the main experience without having to experience it themselves (Matua and Wal, 2015). This study aimed to explore mothers' experiences of their initial motherhood independence in the neonatal unit.

2.2. Setting and participants

This study was carried out in a tertiary hospital in South Sulawesi, the national referral hospital in eastern Indonesia with the largest neonatal unit facility in the region. The study participants consisted of mothers who have a premature baby. Purposive sampling was used to recruit participants. Potential participants were mothers (1) who had given birth to a premature baby who had been treated in the neonatal unit for at least 1 week, (2) with babies who had been discharged less than 1 month ago from the neonatal unit, and (3) who could speak Bahasa Indonesia. Exclusion criteria were mothers who were not physically or mentally fit to be interviewed or had infants with congenital conditions. Eight mothers participated in this study. The majority were primigravidas (n = 5). Five held bachelor's degrees, one held diploma's degree and the remaining two had graduated from senior high school. Most (n = 7) were housewives. Half birthed vaginally (n = 4), and their infants' birth weights ranged from 1000 to 2350 g. Gestational age ranged from 28 to 34 weeks. Demographic data are presented in Table 1.

2.3. Data collection

One-to-one semi-structured in-depth interviews were used to explore mothers' experiences and were carried out between June and October 2018. An interview guide with key open-ended questions and associated probes was used to help the interviewer ensure that the research aim was addressed. The questions focused on experiences in parenting their babies in critical and stable conditions, how they achieved independent motherhood, the health services and support that they received in the NICU, and their perceived readiness for hospital discharge.

Interviews were conducted in participants' homes by the first author after explaining the study objectives, process, confidentiality, and their right to withdraw at any time before commencing the interview. Demographic data about the mother and baby were collected prior to the interview. A total of eight interviews were conducted, ranging from 30 to 60 min in duration. Interviews were conducted in Bahasa (Indonesian language) and recorded using a smartphone application. Field notes were taken to record circumstances during and immediately after the interviews. Interviews were conducted until no new information

Table 1
Descriptive characteristics of participants (N = 7).

Participants	Mothers Characteristic						Baby Characteristic			
	age (years)	gravida	education	occupation	Family living	type of birth	Birth weight (grams)	Gestational age (weeks)	Length of Stay (days)	Weights on discharge (grams)
1	32	1	Bachelor	Housewife	sister and parents	Caesarean Section	1100	30	30	1800
2	18	1	High school	Housewife	Husband and Parents in law	Vaginal	1400	30	12	1750
3	36	4	Bachelor	Housewife	Husband and children	Caesarean Section	2100	32	14	2400
4	30	1	Bachelor	Housewife	Parents in law	Caesarean Section	2350	34	11	2450
5	38	3	High school	Housewife	Husband, children & parents	Vaginal	1000	28	24	1400
6	36	2	Diploma	Housewife	Husband and children	Vaginal	1400	28	26	1700
7	36	1	Bachelor	Private employee	husband and parents	Vaginal	1560	30	17	1760
8	27	2	Bachelor	Housewife	Husband, parents and siblings	Caesarean Section	1360	34	25	1900

emerged and data saturation was reached after the eighth interview.

2.4. Data analyses

Interviews were conducted in Bahasa Indonesia, transcribed, and then analyzed. Meaning statements, coding, categories, and themes were translated into English and validated by another researcher whose first language was English, to ensure that meanings did not deviate from the participants' original intent. Finally, the English version was translated back into Bahasa to ensure that the meaning did not deviate. Open code version 3.6 was used to make the process of analysis less complicated. Thematic analysis by Braun and Clark (2006) was performed to analyze the data. This commenced with reading entire transcripts to construct a general sense of the meanings of the mothers' experiences. These meaning statements were segmented into codes and grouped into categories. Initial sub-themes were then generated, which were subsequently clustered into themes. All data analyses were checked and discussed by all researchers to ensure that analyses reflected the meanings emerging from the dataset. The team members discussed any different interpretations until consensus was reached (Clarke and Braun, 2017).

Trustworthiness, as described by Lincoln and Guba (1985), was established through ensuring credibility, dependability, transferability, and confirmability (Holloway and Wheeler, 2010). Credibility was performed using member checking with two mothers reading the analyses and providing feedback and corrections to ensure accuracy of interpretation. This feedback was combined into descriptions of the findings. Reporting the detailed processes undertaken was conducted to promote dependability and facilitate future researchers seeking to replicate the work. Broad descriptions supported by quotations enabled transferability. Peer debriefing through discussions of data analyses, interpretation, and findings reported until consensus was reached by all researchers aided confirmability.

2.5. Ethical considerations

This research was approved following ethics review by one of the ethics committees in Indonesia. Permission to conduct the research was received from the education and research department at the hospital. All participants provided informed oral and written consent prior to their interview. The audio files, transcripts, and analyses are securely stored and used only for research purposes. The themes and sub-themes in this study presented in Table 2.

Table 2
Themes and sub-themes.

No	Themes	Sub-Themes
1	New reality of entering motherhood	Despondency feeling as a mother of a preterm infant Delayed interaction with preterm infant Breastmilk problems in early days after admission
2	Upside down parenting process	Upside-down feelings of parenting in NICU Mother-infant dyad interaction Indonesian mothers support system for parenting in NICU
3	Health service's role for initial motherhood independence achievement	Focus on baby's health needs and condition Empowering mothers to care for their babies when stable KMC readiness before discharge from hospital Mothers' perspectives on enhancing health services

3. Results

Indonesian mothers' experiences of achieving initial motherhood independence in the NICU before hospital discharge are described through three themes that emerged from the analyses: (1) new reality of entering motherhood; (2) upside-down parenting process; and (3) role of the health service in achieving initial motherhood independence.

3.1. New reality of entering motherhood

The sudden preterm labor and receiving information about the baby's low birth weight, underdeveloped body, and health problems were expressed as an unreal situation by the mothers. They reported feeling sorrow, shock, pity, and refusal at giving birth to a preterm baby. These feelings, and the medical equipment installed around their babies, led the mothers to have delayed interactions with their babies. On the other hand, they needed to supply breastmilk for their infants to meet nutritional needs but reported facing problems with this in the early days after their babies' NICU admissions.

3.1.1. Feeling despondent as a mother of a preterm infant

All the mothers of preterm infants reported feeling disappointed with their preterm labor, because they had prepared for the birth of their babies during pregnancy. Initial feelings were described as despondency and sorrow, shock and frightening, and denial about their labor and babies' birth weights; they could not easily describe what they felt and expressed this through crying. Immersed in despondency in the early days after their labor, some mothers expressed being shocked about their baby's weight and conditions after their efforts in pregnancy and denial about their labor.

> *"The first time I was shocked because I had predicted seven months into the pregnancy that the baby is well developed, and the weight always improved. Suddenly when giving birth the doctor said that the baby has low weight, so I was shocked. I felt disappointed, why is my baby too small? Even though I eat well, and the development was also good. So, there is a sad feeling."* (Mother 3)

3.1.2. Delayed interaction with preterm infant

Delayed interaction with the infant was described as an impact of the preterm labor and NICU admission. Some mothers delayed this moment because they faced their own health problems after the birth, whereas some were not ready to see their babies because they still experienced denial of the situation. Three of the eight mothers postponed visiting their infants in the NICU for around 1 week, during which only their husbands visited the babies. One mother stated that her husband and other family support were key to her accepting the situation.

> *"Initially, I did not visit my baby because I was still treated in the hospital. One week later, I always got constant advice to visit my baby from my husband and my family. They said, 'Please, visit your baby, now the condition is going better than before.' Finally, I visited my baby."* (Mother 1)

Two mothers who had vaginal births went directly to the NICU on day two but were afraid to go near their infants. They described just observing the babies behind the room's glass window. They reported not feeling ready to touch their babies, a condition that lasted about 3 days.

> *"The next day I requested hospital discharge from the doctor and that night I directly went to the NICU. The first time I visited the NICU, I hadn't met directly, had not touched my baby. I observed from the glass window and cried all the time. Three days later, I was ready to visit my baby. I started to sit beside my baby all the time and never wanted to go home again."* (Mother 6)

3.1.3. Breastmilk problems in early days after admission

Breastmilk as the main nutritional source for preterm babies was the policy in the hospitals in this study. Mothers were required to provide breastmilk to fulfill their babies' nutrition, but all mothers reported facing difficulties with the production of breastmilk in the early days, both primigravida and multigravida. Some mothers described experiencing no onset of milk production because of flat nipples, fever after delivery, and other unidentified reasons. One participant stated that she lost her milk supply because she had a fever and did not know how to resolve the problem.

> *"I had no breastmilk, it 'got lost' because I had a fever for two days when I was being treated at the hospital. I was confused and did not know what else to do and what was done to solve this. My milk is gone."* (Mother 7)

3.2. Upside-down emotional swings in parenting in the NICU

Parenting in the NICU throughout the baby's hospitalization was described by the mothers as a rollercoaster, with emotional swings from sadness to happiness. The mothers reported being challenged in performing their maternal roles in the NICU environment. Positive mother–infant dyad interactions and the support systems mothers received during their infants' hospitalization helped them to achieve their maternal roles in the NICU.

3.2.1. Upside-down feelings of parenting in the NICU

Mothers reported experiencing mixed emotions, from sadness, insecurity, and being frightened to happiness, throughout the babies' hospitalizations in the NICU. Babies' fluctuating conditions, along with the interventions given, created sadness and insecurity throughout parenting in the NICU. One participant said that she was always watchful and alert and panicked every day if a value on the monitor went up or down:

> *"I worried myself. Why was this? Why was that? Especially, when the medical equipment detached itself, I became afraid because the condition was not detected on the screen. I panicked when I watched the monitor go up and down."* (Mother 6)

Medical equipment was a barrier to establishing their maternal roles and parenting their babies. They indicated being frightened with medical equipment, which delayed them touching their babies and being involved in baby care.

> "I was afraid to see the medical equipment attached to my baby, so I did not enter the NICU. At that time, I was very scared to see a red light in his hand … Every time a doctor called for the parents of my baby, I asked my husband to come in because I
>
> was afraid to see the device. I started entering the NICU when most of the medical equipment on my baby's body was removed." (Mother 5)

Hospital discharge was good news for these mothers of preterm infants. This was the moment most awaited by all parents. Three of the eight mothers described experiencing feelings between happiness and worry after hearing that the baby could be discharged from hospital. One mother reported feeling happy and worried, and only half-ready at the time of her baby's hospital discharge:

> "*I also want my child to go home quickly and to be healthier if treated at home. But I feel worried about what actions I can take if something happens. There are happy feelings but there are also feelings of worry. My readiness to go home is not up to 60% and only around 50%.*" (Mother 7)

3.2.2. Mother–infant dyad interaction

One of the most basic and important parts in parenting a preterm infant in the NICU is the mother–infant dyad interaction. Interaction in the NICU is not just about physical contact and providing the baby's needs but also about presence of the mother beside the baby. Initially, participants were not ready to be beside their babies, but as time passed, they began to strengthen their feelings to be alongside and touch their babies. One way to strengthen their bonding was reportedly through touching, caressing and talking to the baby.

> *"I touched my baby, caressing, continuously talking to my baby, praying together and strengthening my baby. That's all I did. I wished my baby could hear and feel it. I kept watching my baby, I went back and forth. I just left my baby to eat."* (Mother 4)

The mothers indicated that they did not feel ready to care for their babies while the baby was still in a critical condition and had medical equipment around their body. One mother stated:

> *"I was not ready to take care of my baby because my baby still used CPAP. I perceived readiness would be when the baby was transferred to the next room (Level 2A)."* (Mother 7)

3.2.3. Indonesian mothers' support system for parenting in the NICU

Support was the main need for mothers to achieve their maternal roles and for successful parenting in the NICU. The mothers in Indonesia received much support from their husbands, other family members, other mothers of preterm infants, and the NICU staff. They received peer support from other mothers of preterm infants who shared their experiences of having contact with their baby and strengthened each other.

> *"The other baby's mother who was treated next to me said, 'Why don't you hold your baby?' … She said that the mother's strength here was needed, touch our baby. She shared her experience of always touching the baby was like medicine for the baby."* (Mother 4)

The NICU staff provided support to enhance the mother–infant interaction. The mothers described the nurses as always friendly, providing information when asked, and always responsive to the baby's condition, and were considered as the main support for the mothers.

> *"The nurses in here were excellent and always on standby. They woke me up when it was time to breastfeed. They were always on standby."* (Mother 2)

On the other hand, Indonesian mothers reported employing spiritual beliefs as self-support. One participant stated:

> *"There was nothing to do because he was in the incubator. I just prayed for my baby. I accepted the fact and felt this was the way from God."* (Mother 1)

3.3. Health service's role in initial motherhood independence achievement

Maternal role attainment is important to be initiated early after birth. The NICU staff played an important role in assisting mothers to attain this role during their babies' hospitalization. In the early days after admission, nurses reportedly focused on the baby's critical health needs while not communicating well with the mothers. However, once the baby was physiologically going well, nurses began to educate them about daily care, giving demonstrations and opportunities for the mother to be involved in daily care by herself, such as changing diapers, feeding according to the schedule, weighing the baby after feeding, and kangaroo mother care (KMC) implementation. At the end of the baby's care in the NICU, nurses needed to ensure that the mother was competent with KMC and to emphasize the need to continue KMC at home.

3.3.1. Focus on baby's health needs and condition

The NICU staff focused on the baby's health needs in the early days after admission or while the baby was in a critical condition. They monitored the baby continually and attended to all the baby's needs, including feeding, dressing, changing diapers, etc. The mothers stated that all care was performed by the nurses and they just touched and

monitored their babies. All mothers reported receiving good treatment and were satisfied with the services provided.

> *"They [NICU staff] care intensively, they control the baby at all times, never leave the NICU. They are always in the NICU because they care all the time. They focus on caring for my baby. There is nothing we do."* (Mother 3)

The mothers stated that the NICU staff provided health information, but they reported feeling a lack of communication with the NICU staff.

> "*I didn't communicate well with the nurses. I asked the nurse about how my baby was doing. What is the weight? Only about that. When I asked that, they answered it. But that's all.*" (Mother 4)

3.3.2. Empowering mothers to care for their babies when stable

The NICU staff began educating and empowering the mothers after their babies had become physiologically stable or left the critical care room (level 3 or 2B). They taught mothers about feeding (breastfeeding or cup feeding), preparing milk (breastmilk or formula), changing diapers, and KMC (technique and benefit). They also gave demonstrations directly as an educational technique and after that, the mothers undertook the care by themselves, so finally, the mothers were independently caring for their babies before hospital discharge.

> "*They gave an example and after that we did it ourselves. They gave examples only once, but sometimes if there is something, I call them again. I did it slowly until I could and still needed to be monitored.*" (Mothers 2)

Participants expressed that in level 2A, they began independently caring for their babies and had minimal communication with the nurses after achieving independence in caring for their babies in the NICU.

> *"There I began to be independent because all nurses were working in level three. I had no knowledge about changing diapers, so I was taught by them. In level two, I was mostly independent, so I rarely communicated with them because I was already independent.*" (Mother 4)

3.3.3. KMC readiness before discharge from hospital

KMC readiness is a hospital policy before discharge from the hospital to the home. Hence, mothers must be knowledgeable and independent to perform KMC before discharge. All mothers stated that the KMC technique and its benefits were the focus of education about KMC. One mother stated that she searched on the internet about KMC theory and memorized it; after that, she demonstrated it to the NICU staff and was given permission to go home:

> *"Because one of the requirements to go home is to master KMC. Finally, I searched for KMC theory on Google and memorized it and the next day my baby could go home."* (Mother 3)

Supplementary instruction that NICU staff provided was different for each mother. One participant said that she received instruction about drying the baby, sunlight exposure, continuing breastfeeding, and KMC at home.

> "*They explained, once you are home, please expose your baby to sunlight in the morning for warming and preventing jaundice, do not be long and be exposed to direct sun. Do not give formula milk because breastmilk is better. They said to do KMC so they will go to sleep and gain weight. His mother must always be eating vegetables." (Mother 4)*

3.3.4. Mothers' perspectives on enhancing health services

All mothers stated that the NICU services were good because they just needed their baby to be monitored intensively and become healthy. However, they had several suggestions to improve NICU services, including enhanced facilities and human resources, enhanced communication with parents, and accompanying and guiding mothers to take care of their babies in the NICU. Even though they looked adept at doing baby care, they wanted to be given psychological support and continued support after hospital discharge.

> *"I hoped the nurse could be close to the baby's mother. I think it is very significant. Parents also need friends, need a place to share, need a place to ask questions, and there is someone there to answer it. That's all I needed when in hospital and after hospital discharge." (Mother 2)*

4. Discussion

Our findings represented a comprehensive process by which mothers of preterm babies in Indonesia initiated their motherhood independence and daily care competencies in the NICU before hospital discharge. These findings reflect those from previous research describing that, in the early days after preterm admission to the NICU, mothers experienced emotional crises from denial to feelings of despondency, including being frightened, shocked, between hope and hopelessness, worried, stressed, grieving, and feeling unprepared for parenthood (Medina et al., 2018; Roque et al., 2017; Whittingham et al., 2014). Such emotional crises can influence mothers delaying visiting and interacting with their babies. Research conducted in one NICU in the southeast of Spain supports this study. That research found that the environment and machines surrounding babies led mothers to delay seeing and touching their babies in the early days after admission (Medina et al., 2018). Mothers in the current study reported delaying contact because of their own health conditions and unreadiness to meet their babies, needing time to manage their own feelings first.

In this study, the mothers reported having breastmilk production problems in the early days after admission; meanwhile, NICU staff demanded that mothers provide breastmilk to ensure the best nutrition for their preterm infants. The mother's physiological and emotional problems may adversely affect breastmilk production following preterm birth and NICU admission (Wu et al., 2015). However, they may not have optimal support to improve breastmilk production, because NICU staffs are focused on the baby, without providing effective communication and health education for mothers in the early days after admission. Neonatal staffs play a key role in lactation initiation, as early as possible. They can encourage mothers to provide breastmilk for their babies calmly and thoughtfully when stress about the preterm birth has begun to lessen, beginning through discussion, counseling, and quiet support to start expressing milk or breastfeeding. Indirectly, this intervention can also reduce maternal stress and anxiety (Meier et al., 2010).

Our findings revealed that maternal stress was experienced throughout parenting infants during hospitalization until the day the baby was discharged from hospital. This finding aligns with several studies indicating that maternal stress fluctuates from sadness, insecurity, and being frightened, combined with happiness induced by the baby's health condition and maternal interaction with the baby (Mäkelä et al., 2018; Medina et al., 2018; Vazquez and Cong, 2014). Mother–infant interaction events, even though just eye contact, have been described as significant moments to encourage bonding and maternal identity (Vazquez and Cong, 2014), beginning by empowering mothers in daily infant care in the hospital (Hariati et al., 2021b). The mothers' knowledge and abilities to care daily for their infants can be stimulated in the hospital as they independently cup and breastfeed their baby, change their baby's diapers, and perform KMC (Hariati et al., 2021b).

Support systems are needed to achieve maternal role attainment in the NICU (Rossman et al., 2017). Mothers in this study received support from their husbands, other family members, other mothers of preterm infants, and neonatal staff though interaction with their babies and helped them to provide care in the NICU. Neonatal staffs are considered to be the main support for mothers in helping them press forward in parenting in the NICU, even though a lack of communication with neonatal staff has been found to be a barrier for parenting (Vazquez and Cong, 2014). In this study, mothers not only had external support but also reported internal support through their own beliefs and spiritual

connections to God.

Neonatal nurses must provide interventions to facilitate mother–infant attachment by performing daily care, promoting initial maternal identity (Joaquim et al., 2018). In this study, all mothers had competence in providing daily care, including feeding (breast or cup), preparing milk (breast or formula), changing diapers, and KMC implementation before hospital discharge. Indonesian intensive care units have limited high-technology medical equipment, a limited number of nursing staff compared with the number of patients, and uneven competence of intensive care nurses (Gunawan, 2016). Hence, in this study, mothers were taught skills by nurses once, after which mothers performed them by themselves until their babies were discharged from the NICU. The chance to participate in care was used by mothers to establish mother–infant relationships and perform meaningful parental roles (Joaquim et al., 2018).

In this study, husbands and other family members were identified as the support to help them provide daily care for their babies at the hospital and help them with KMC implementation. KMC implementation is one intervention that provides skin-to-skin contact and closeness with the infant to enhance emotional relationships, as an important role in the bonding process between mother and infant (Norén et al., 2018). The Indonesian mothers continued KMC implementation in the early days after hospital discharge and almost all discontinued KMC in the first week after discharge (Hariati et al., 2021a). Hence, KMC implementation, health education, communication, and participation in daily infant care are identified as important interventions in fostering the optimal mother–infant interaction for achieving independent motherhood. The neonatal unit should initiate early maternal role attainment by perceived mother–infant dyad interaction and involve mothers in daily care, with sufficient understanding about the medical status and needs of their infants. For this reason, comprehensive discharge planning is needed once the infant is admitted to the neonatal unit.

5. Limitations

There were several limitations to this study. First, the study was undertaken in one hospital in the eastern part of Indonesia. However, this hospital was a national referral hospital and had the largest NICU facility in the region. Second, limited medical equipment and available space when compared with the number of infants sometimes caused placement and transfer of infants according to NICU level criteria to not be adhered to by neonatal staff. This condition may have influenced the mothers' experiences, but this limitation was minimized by the researcher in probing during the interview.

6. Conclusion

This qualitative study presented a comprehensive description of initial independence for mothers of preterm infants throughout their hospitalization in the neonatal unit. Fluctuating feelings were experienced throughout parenting their infants in the neonatal unit, but the emotional and physical interaction with the babies by early participation in care when stable promoted mother–infant relationships and initial independence in motherhood. Neonatal nurses are in a unique position to guide mothers by providing psychological support, communication, health education, and empowering mothers to participate in care. Further research is required to explore health needs and maternal factors that influence their abilities to achieve initial motherhood independence before hospital discharge.

CRediT author statement

Suni Hariati had primary contribution to conceptualization and methodology of the study, carried out the investigation, data curation, visualization, and writing - original draft. Lisa Mckenna were significant involved visualization, writing – review and editing the manuscript. Lely Lusmilasari, Andi Dwi Bahagia Febriani, and Retno Sutomo were embroiled in conceptualization and methodology, visualization, review the manuscript.

Ethical statement

The ethical approval for this recent study was obtained from Hasanuddin University Medical Faculty Ethics Committee (admission number: 356/H4.8.4.5.31/PP36-KOMETIK/2017). This research conforms to the provisions of the Declaration of Helsinki in 1995 (as revised in Edinburgh, 2013).

Declaration of competing interest

There are no conflict of interest regarding this study.

References

Alligood, M.R., 2014. Nursing Theory: Utilization and Application, fifth ed. Mosby Inc, Elsevier, united States of America.

Australian Institute of Health and Welfare, 2019. Admission to a Special Care Nursery or Neonatal Intensive Care Unit [WWW Document]. Aust. Inst. Heal. Welf. URL. https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies-data-visualisations/contents/baby-outcomes/admission-to-a-special-care-nursery-or-neonatal-intensive-care-unit.

Clarke, V., Braun, V., 2017. Thematic analysis. J. Posit. Psychol. 12, 297–298. https://doi.org/10.1080/17439760.2016.1262613.

Gunawan, A.H., 2016. Analysis of nursery needs of intensive services units based on work loads and competency in Intensive Services Units in Dr. Oen Solo Baru Hospital, Year 2015. J. ARSI 2, 98–114.

Hariati, S., Febriani, A.D.B., Sutomo, R., Lusmilasari, L., McKenna, L., 2022. Exploring Indonesian nurses' perspectives on preparing parents of preterm infants for hospital discharge: a qualitative study. J. Neonatal Nurs. 28, 59–66. https://doi.org/10.1016/j.jnn.2021.07.002.

Hariati, S., Sutomo, R., Lusmilasari, L., Febriani, A.D.B., 2021a. Related factors of discontinue kangaroo mother care at home for low birth weight infant after NICU discharge. Int. J. Pharma Med. Biol. Sci. 10, 120–124. https://doi.org/10.18178/ijpmbs.10.3.120-124.

Hariati, S., Sutomo, R., McKenna, L., Reisenhofer, S., Lusmilasari, L., Febriani, A.D.B., 2021b. Indonesian mothers' beliefs on caring practices at home for preterm babies after hospital discharge: a qualitative study. J. Spec. Pediatr. Nurs. (JSPN) 1–12. https://doi.org/10.1111/jspn.12330.

Holloway, I., Wheeler, S., 2010. Qualitative Research in Nursing and Healthcare, third ed. Wiley-Blackwell, Chichester.

Howe, T.H., Sheu, C.F., Wang, T.N., Hsu, Y.W., 2014. Parenting stress in families with very low birth weight preterm infants in early infancy. Res. Dev. Disabil. 35, 1748–1756. https://doi.org/10.1016/j.ridd.2014.02.015.

Jefferies, A.L., 2014. Going home: facilitating discharge of the preterm infant. Paediatr. Child Health 19, 31–36. https://doi.org/10.1093/pch/19.1.31.

Joaquim, R.H.V.T., Wernet, M., Leite, A.M., Fonseca, L.M.M., Mello, D.F. de, 2018. Early interactions between mothers and hospitalized premature babies: the focus on the essential needs of the child. Cad. Bras. Ter. Ocup. 26, 580–589. https://doi.org/10.4322/2526-8910.ctoAO1051.

Lee, A.C., Blencowe, H., Lawn, J.E., 2019. Small babies, big numbers: global estimates of preterm birth. Lancet Global Health 7, e2–e3. https://doi.org/10.1016/S2214-109X(18)30484-4.

Liu, L., Oza, S., Hogan, D., Chu, Y., Perin, J., Zhu, J., Lawn, J.E., Cousens, S., Mathers, C., Black, R.E., 2016. Global, regional, and national causes of under-5 mortality in 2000–15: an updated systematic analysis with implications for the sustainable development goals. Lancet 388, 3027–3035. https://doi.org/10.1016/S0140-6736(16)31593-8.

Maimanah, T., Rochmah, T.N., 2020. Readiness analysis of NICU services on low birth weight neonates at Gresik Ibnu Sina Hospital. Bul. Penelit. Sist. Kesehat. 23, 71–79. https://doi.org/10.22435/hsr.v23i2.1213.

Mäkelä, H., Axelin, A., Feeley, N., Niela-Vilén, H., 2018. Clinging to closeness: the parental view on developing a close bond with their infants in a NICU. Midwifery 62, 183–188. https://doi.org/10.1016/j.midw.2018.04.003.

Matua, G.A., Wal, D.M. Van Der, 2015. Differentiating between descriptive and interpretive phenomenological research approaches. Nurse Res. 22, 22–27. https://doi.org/10.7748/nr.22.6.22.e1344.

Medina, I.M.F., Granero-Molina, J., Fernández-Sola, C., Hernández-Padilla, J.M., Avila, M.C., Rodriguez, M.D.M.L., 2018. Bonding in neonatal intensive care units: experiences of extremely preterm infants' mothers. Women Birth 31, 325–330. https://doi.org/10.1016/j.wombi.2017.11.008.

Meier, P.P., Engstrom, J.L., Patel, A.L., Jegier, B.J., Bruns, N.E., 2010. Improving the use of human milk during and after the NICU stay. Clin. Perinatol. 37, 217–245. https://doi.org/10.1016/j.clp.2010.01.013.

Murdoch, M.R., Franck, L.S., 2012. Gaining confidence and perspective: a phenomenological study of mothers' lived experiences caring for infants at home after neonatal unit discharge. J. Adv. Nurs. 68, 2008–2020. https://doi.org/10.1111/j.1365-2648.2011.05891.x.

Norén, J., Nyqvist, K.H., Rubertsson, C., Blomqvist, Y.T., 2018. Becoming a mother – mothers' experience of kangaroo mother care. Sex. Reprod. Healthc. 16, 181–185. https://doi.org/10.1016/j.srhc.2018.04.005.

Roque, A.T.F., Lasiuk, G.C., Radünz, V., Hegadoren, K., 2017. Scoping review of the mental health of parents of infants in the NICU. J. Obstet. Gynecol. Neonatal Nurs. 46, 576–587. https://doi.org/10.1016/j.jogn.2017.02.005.

Rossman, B., Greene, M.M., Kratovil, A.L., Meier, P.P., 2017. Resilience in mothers of very-low-birth-weight infants hospitalized in the NICU. JOGNN - J. Obstet. Gynecol. Neonatal Nurs. 46, 434–445. https://doi.org/10.1016/j.jogn.2016.11.016.

Vazquez, V., Cong, X., 2014. Parenting the NICU infant: a meta-ethnographic synthesis. Int. J. Nurs. Sci. 1, 281–290. https://doi.org/10.1016/j.ijnss.2014.06.001.

Whittingham, K., Boyd, R.N., Sanders, M.R., Colditz, P., 2014. Parenting and prematurity: understanding parent experience and preferences for support. J. Child Fam. Stud. 23, 1050–1061. https://doi.org/10.1007/s10826-013-9762-x.

World Health Organization, 2018. Preterm Birth [WWW Document]. World Heal. Organ. URL. https://www.who.int/news-room/fact-sheets/detail/preterm-birth.

Wu, B., Zheng, J., Zhou, M., Xi, X., Wang, Q., Hua, J., Hu, X., Liu, J.Q., 2015. Improvement of expressed breast milk in mothers of preterm Infants by recording breast milk pumping diaries in a Neonatal Center in China. PLoS One 10, 1–10. https://doi.org/10.1371/journal.pone.0144123.