



Study of Exclusive Breastfeeding Problems in Postpartum Mothers and Early Neonates who experience Neonatal Jaundice

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ABSTRACT

Introduction: The percentage of infants under six months who were exclusively breastfed in Indonesia was 66.99% in 2019, 69.2% in 2021, and 71.58% in 2022. Although these figures show a gradual increase, they still fall short of the national target for exclusive breastfeeding.

Objectives: This study aimed to examine issues related to exclusive breastfeeding among postpartum mothers and early neonates diagnosed with neonatal jaundice at Semarang City Hospital.

Methods: This research employed a quantitative approach using a descriptive observational design. Observational studies involve no manipulation or intervention with research subjects; instead, they focus solely on observing variables of interest. The study population comprised all mothers and babies born at Semarang City Hospital between September and October 2023. A total sampling technique was used, including all individuals who met the inclusion criteria. The study was conducted from August to December 2023. Data were analyzed using univariate analysis to assess the frequency and percentage distribution of each variable.

Results: Univariate analysis revealed that the majority of respondents were aged 20–35 years (76.3%) and had a secondary education level (76.3%). Most were primiparous (55.3%) and unemployed (65.8%). In terms of infant characteristics, 63.2% had birth weights appropriate for gestational age, and 73.7% of mothers had prominent nipple shapes. The mode of delivery was evenly split between cesarean section and vaginal birth (50.0%). Breastfeeding frequency was 8–12 times per day in 81.6% of cases. A limited breast milk supply was reported on days 1 to 3 (55.3%) and days 4 to 7 (84.2%). Additionally, 52.6% of mothers reported no nipple pain. The average neonatal bilirubin level was 15.58 mg/dL.

Conclusions: Raising public awareness about common postpartum and neonatal issues is essential. Stakeholders play a vital role in formulating effective strategies to address these challenges and support the achievement of exclusive breastfeeding targets.

Keywords: *Bilirubin Levels, Birth Weight, Birth Methods, Exclusive Breastfeeding, Neonatal Jaundice*

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INTRODUCTION

The global prevalence of exclusive breastfeeding remains relatively low. According to data from the World Health Organization (WHO, 2021), only 42% of infants under six months were exclusively breastfed, far below the global target of 75% set for 2020 (United Nations Children's Fund (UNICEF), 2021). In Indonesia, exclusive breastfeeding rates have shown a gradual increase over recent years: 66.99% in 2019, 69.2% in 2020, and 71.58% in 2022. However, these figures still fall short of the national target (Badan Pusat Statistik, 2022).

The success of exclusive breastfeeding is influenced by various maternal and infant factors. Infant-related factors include normal birth weight, adequate physical condition, and a strong sucking reflex (Tim Pokja SDKI DPP PPNI, 2017). On the maternal side, challenges such as limited knowledge, cultural practices, and lack of support can hinder breastfeeding practices (Hardiani, 2017). Additional obstacles include delayed onset of lactation, low milk production, poor latching, maternal employment, lack of confidence, nipple problems, and aggressive promotion of breast milk substitutes.

Parity also plays a role. Some primiparous mothers are successful in exclusive breastfeeding due to active efforts to seek

information and support from their surroundings. Conversely, others may face difficulties due to inexperience, psychological unpreparedness, and lack of knowledge about proper breastfeeding techniques, often resulting in nipple pain (Royaningsih & Wahyuningsih, 2018).

Family support is another significant determinant of breastfeeding success. Emotional encouragement—such as affection, trust, and attentiveness—can enhance maternal confidence and comfort, helping mothers persevere through breastfeeding challenges (Hartanti & Handayani, 2022).

Maternal age also affects breastfeeding outcomes. Younger mothers may lack the physical, emotional, or psychological maturity needed to breastfeed successfully, and are often unprepared for the demands of motherhood (Gemilang, 2020). Research indicates that the optimal age for exclusive breastfeeding is between 20 and 35 years, when women are generally more physically and mentally prepared. In contrast, mothers over 35 may experience reduced reproductive function, potentially affecting milk production. Social and financial pressures, particularly among working mothers, can further complicate the ability to breastfeed exclusively (Husaidah et al., 2020).

A preliminary study involving 10

postpartum mothers revealed that only four exclusively breastfed for seven days, while three provided formula due to perceived insufficient milk production. These findings highlight ongoing challenges in meeting exclusive breastfeeding goals.

Based on these observations, this study aims to explore the challenges associated with exclusive breastfeeding among postpartum mothers and early neonates at Semarang City Hospital, providing insights that may inform strategies to improve exclusive breastfeeding rates in healthcare settings.

OBJECTIVES

To examine the problems of exclusive breastfeeding among postpartum mothers and early neonates at the Semarang City Hospital.

METHOD

This study employed a quantitative approach with a descriptive observational design. Observational research involves no manipulation or intervention with research subjects; rather, it focuses solely on observing and recording existing conditions or behaviors.

The population in this study consisted of all postpartum mothers and their newborns who delivered at Semarang City Hospital between September and October 2023, and who met the inclusion criteria. The

inclusion criteria were: (1) mothers who had recently given birth during the study period, (2) neonates aged 0–7 days, and (3) willingness of the mother to participate in the study. Exclusion criteria included: (1) mothers with serious postpartum complications, (2) neonates with congenital abnormalities, and (3) incomplete medical records. A total sampling technique was used, in which all members of the target population who met the criteria were included in the study. A total of 38 postpartum mothers and their newborns participated in the study.

Data Collection and Analysis: The study was conducted over a period from August to December 2023 at Semarang City Hospital. Data were collected using structured questionnaires and medical record reviews. The collected data were analyzed using univariate analysis to determine the frequency and percentage distribution of each variable. Statistical analysis was performed using IBM SPSS Statistics software.

Ethical issues: This study was approved by the ethical committee of Health Research Ethics Committee Ministry of Health, Semarang Health Polytechnic with number 0251/EA/KEPK/2024.

Statistical analysis: Data were analyzed using descriptive statistics, including frequencies and percentages for categorical

variables. A univariate analysis was conducted to examine the distribution of each variable related to exclusive breastfeeding issues among postpartum mothers and early neonates. Variables analyzed included maternal age, education level, parity, employment status, type of

delivery, nipple condition, breastfeeding frequency, early milk output, nipple pain, and infant birth weight. The average bilirubin level in neonates was also calculated. All statistical analyses were performed using IBM SPSS Statistics software.

RESULTS

The following is a table of age, education, occupation, parity, delivery method, nipple anatomy, nipple pain, frequency of breastfeeding, baby's birth weight.

Table 1. Frequency distribution of age, education, occupation, parity, method of delivery, nipple anatomy, nipple pain, frequency of breastfeeding, baby's birth weight

No	Variable	n	%
1.	Age		
	< 20 Years	6	15,8
	20-35 Years	29	76,3
2.	Education		
	Basic education	1	2,6
	Middle education	29	76,3
3.	Parity		
	Primipara	21	55,3
	Multiparous	17	44,7
4.	Work		
	Doesn't work	25	65,8
	Work	13	34,2
5.	Baby Birth Weight		
	Small Pregnancy Period	14	36,8
6.	Breast Nipple Anatomy		
	Doesn't stand out	10	26,3
7.	Delivery method		
	SC	19	50,0
8.	Frequency of Breastfeeding		
	8 – 12 x/day	31	81,6
9.	Breast milk production on days 1 to 3		
	Not coming out	17	44,7
10.	Breast milk production on days 4 to 7		
	A little	21	55,2
10.	Breast milk production on days 4 to 7		
	A little	32	84,2
	Enough	6	15,8

11. Nipple pain		
Yes	18	47,4
No	20	52,6
Total	38	100%

Sumber: Data Primer, 2023

Table 1 is a univariate analysis of the problems of postpartum mothers and early neonates. From the frequency distribution table above, it shows that the majority of respondents were 20-35 years old (76.3%), secondary education (76.3%), parity of primiparous respondents (55.3%), not working (65.8%), birth weight of the baby according to the gestational period

according to the gestational period (63.2%), prominent nipple shape (73.7%), delivery method respectively seksio sesaria sectio caesarea and normal (50.0%), frequency of breastfeeding 8-12x/day (81, 6%), little milk production on days 1 to 3 (55.3%), little milk production on days 4 to 7 (84.2%), and no nipple pain (52.6%).

Table 2. Frequency Distribution of Infant Bilirubin Levels

Variable	Mean	Median	Min-Max	SD
Bilirubin Levels	15,58	16,00	11,16 – 21,90	2,527

Sumber: Data Primer, 2023

Table 2 is a univariate analysis of the infant bilirubin levels. The frequency distribution table for infant bilirubin levels shows the frequency distribution of infant bilirubin levels including an average value (mean) of

15.58, a middle value (median) of 16.00, a minimum value of 11.16, a maximum value of 21.90 and a standard deviation of 2.527.

DISCUSSION

Description of Age, Parity, Occupation, Mother's Education at Semarang City Hospital

Age data indicates that the majority of mothers fall within the 25-30 year age range. Maternal age plays a significant role in

determining maternal health, as it directly influences pregnancy, childbirth, postpartum conditions, and the ability to care for and breastfeed the infant. The age range of 20-35 years is considered an optimal reproductive period, which supports exclusive

breastfeeding. Mothers under the age of 20 may lack the physical and social maturity needed for pregnancy, childbirth, and breastfeeding, which can disrupt their psychological balance and negatively impact milk production. Conversely, mothers over the age of 35 may experience a decrease in hormone production, which can impair lactation. Although older mothers may have babies with good nutritional status, advanced maternal age is associated with increased risks for both the mother and the infant, including potential congenital issues and complications during pregnancy, childbirth, and the postpartum period (Assriyah et al., 2020).

Regarding education, the majority of respondents have completed secondary education. A person's level of education influences their knowledge, though informal education (such as personal experiences) also plays a crucial role (Hardiani, 2017). Lower maternal education levels can limit decision-making skills, particularly regarding exclusive breastfeeding. Maternal knowledge can be enhanced through health education, informational brochures, and guidance from healthcare professionals during routine check-ups or visits to maternal and child health centers (Assriyah et al., 2020).

Parity data reveals that most mothers are primiparous. Parity influences the extent to which mothers seek information about breastfeeding. The experience gained from

previous pregnancies expands a mother's knowledge of the breastfeeding process. Primiparous mothers generally have less experience than multiparous mothers, but once a breastfeeding routine is established, there is no significant difference in milk production between primiparous and multiparous mothers (Subekti & Faidah, 2019). On the fourth postpartum day, multiparous mothers tend to produce more milk compared to primiparous mothers, though this difference diminishes once breastfeeding patterns are well-established.

Employment data shows that most mothers are housewives. Housewives typically handle multiple responsibilities, including cooking, cleaning, and caring for their children and spouses. These duties often lead to fatigue, which can negatively affect breast milk production. Stress can also interfere with the letdown reflex, as the release of adrenaline constricts blood vessels in the alveoli, hindering oxytocin from reaching its target, the myoepithelial cells. An impaired letdown reflex may result in milk buildup in the alveoli, causing the breasts to become engorged (Hardiani, 2017).

Studies have shown a relationship between employment status and breastfeeding success. Employment can disrupt milk production if it leads to stress, tension, or delays in breastfeeding. Emotional states such as depression, lack of confidence, and physical

fatigue can reduce oxytocin release, negatively impacting milk production. Therefore, it is important for breastfeeding mothers to manage stress and avoid excessive household chores (Hardiani, 2017). Roesli (2007) emphasized that mothers who are calm, confident, and stress-free are more likely to have successful breastfeeding experiences.

Description of Breast Anatomy, Nipple Pain, and Maternal Delivery Methods at Semarang City Hospital

Breast anatomy data indicates that most mothers have prominent nipples. Nipple shape can be classified into four types: normal, short/flat, long, and inverted. The shape of the nipple is an important factor influencing the success of breastfeeding. Research shows that mothers with prominent nipples generally experience more success in breastfeeding their babies between 0 to 24 months (Firdasary, 2017). A nipple length of at least seven millimeters has been proven to be a key factor in successful breastfeeding. In contrast, short, flat, or inverted nipples can be associated with both physical and psychological challenges for breastfeeding mothers (Zucca-Matthes et al., 2016).

Inverted or flat nipples refer to a condition where the nipples are retracted inward. This condition may be congenital, resulting from adhesions between the milk ducts, which causes the ducts to shorten and pull the nipple

inward (Zainiyah et al., 2019). If this occurs during breastfeeding, it can make it difficult for the baby to latch properly, leading to reluctance to breastfeed. As a result, mothers may reduce the frequency of breastfeeding, which in turn can decrease milk production (Julu et al., 2019). In some cases, the nipple may temporarily protrude with stimulation, but in other cases, inversion persists regardless of stimulation (Zucca-Matthes et al., 2016). Inadequate breast care and lack of knowledge about proper breastfeeding techniques can also contribute to this condition.

Regarding nipple pain, data shows that the majority of mothers do not experience pain. However, studies have found a significant relationship between breast redness, pain, and breastfeeding success, with an odds ratio (OR) of 5.2. This suggests that mothers who do not experience red, painful breasts are 5.2 times more likely to successfully breastfeed exclusively compared to those who do experience breast pain. Inadequate breast emptying and decreased breastfeeding frequency can lead to breast swelling and blocked milk ducts, resulting in pain (mastitis). Other contributing factors to mastitis include the use of overly tight bras, which can exert pressure on the breasts, leading to discomfort and complications (Asnawati et al., 2022).

Regarding delivery methods, the data shows

that a similar number of mothers gave birth through vaginal delivery and cesarean section. Normal vaginal delivery is particularly supportive for breastfeeding, as it allows for immediate interaction with the baby, particularly within the first hour post-delivery (Kusumawati et al., 2020). The mode of delivery is also closely linked to the occurrence of hyperbilirubinemia. Vacuum-assisted delivery may lead to cephalic hematoma, which increases the risk of elevated bilirubin levels in the baby, resulting in jaundice (Newmann's TB). Cesarean sections can have a depressive effect on the fetal respiratory center, leading to apnea, which may contribute to higher bilirubin levels and the development of jaundice (Parulian et al., 2017).

Description of Baby Birth Weight, Frequency of Breastfeeding, Breast Milk Production and Baby Bilirubin Levels at Semarang City Hospital

Data on birth weight indicates that most mothers give birth to babies with a birth weight appropriate for their gestational age. Fetal growth and development during the prenatal period are influenced by the mother's health and environment, including nutrition, immune system transfer, maternal stimulation, and overall health. Adequate nutrition during pregnancy supports proper fetal growth, while malnutrition can lead to Low Birth Weight (LBW) (Riawati &

Suparti, 2018).

The birth weight of a baby is significantly influenced by gestational age. Research shows a strong correlation: the smaller the gestational age, the higher the likelihood of the baby being born with low birth weight. Additionally, mothers who give birth prematurely are 6.2 times more likely to have a low birth weight baby (Fajriana & Buanasita, 2018). Low birth weight increases the risk of mortality and morbidity, including respiratory disorders, sepsis, and retinopathy (Boghossian et al., 2018).

Other studies have shown a significant relationship between maternal weight (BMI) and gestational age. Thin women are at greater risk of giving birth to a baby with small gestational age, while obese mothers are more likely to deliver larger babies. Therefore, a mother's BMI prior to pregnancy and weight gain during pregnancy play critical roles in determining neonatal weight (Nowak et al., 2019).

Regarding breastfeeding frequency, most mothers breastfeed their babies 8-12 times per day. Breastfeeding stimulates nerve endings in the nipple, sending signals to the hypothalamus, which triggers the anterior pituitary to release prolactin. Increased prolactin levels promote milk production in the breast, and the more frequently the baby breastfeeds, the more milk is produced ASI (Hardiani, 2017). Similarly, the more often a

mother breastfeeds or expresses/pumps breast milk, the greater the milk production. If breastfeeding is infrequent or brief, the frequency of sucking decreases, leading to reduced milk production. This is because the baby's suckling reflex is activated as soon as the nipple touches the mother's mouth (Julu et al., 2019).

Regarding breast milk output, data shows that most mothers produce small amounts of milk during the first 1-3 days (55.3%) and on days 4-7 (84.2%). Some mothers may face challenges in milk production during this period due to a lack of understanding of the milk formation process. During the early days of delivery, milk production may be low, leading to reduced confidence in breastfeeding. This often causes delays in expressing milk beyond the initial three days. Misconceptions, often stemming from hearing negative experiences from others, can further discourage mothers from breastfeeding, especially those with prior breastfeeding experience (Kusumawati et al., 2020).

Postpartum mothers, particularly those with low education or knowledge, often face challenges such as exhaustion from childbirth and concerns about insufficient milk supply. This can cause anxiety and stress, which negatively impacts milk production. Motivation and support are essential to help mothers maintain confidence and optimize

milk expression (Kusumawati et al., 2020).

A mother's psychological well-being plays a crucial role in successful breastfeeding. A positive psychological state encourages breastfeeding and enhances milk production. Conversely, anxiety, fear, and stress can inhibit the release of hormones necessary for milk production, leading to reduced milk flow. Mothers who are anxious about their milk supply may experience slower and less consistent milk production, which can affect the baby's nutrition (Kusumawati et al., 2020).

Data on infant bilirubin levels shows that neonatal jaundice (hyperbilirubinemia) in babies ranges from 11.16 mg/dL to 21.90 mg/dL, with an average level of 15.58 mg/dL. Neonatal jaundice occurs when indirect bilirubin levels exceed the normal threshold (<12 mg/dL), particularly in premature babies. In utero, the fetus relies heavily on red blood cells to transport oxygen and nutrients. After birth, the baby no longer requires these red blood cells, which break down into bilirubin. Since the baby's liver is immature, it cannot process indirect bilirubin effectively, leading to a buildup in the liver and tissues. This is visually observed as jaundice, with yellowing of the skin, sclera, and mucous membranes (Purnamiati, 2019).

Newborns have low albumin levels, which increases the risk of bilirubin entering the tissues and causing kernicterus (bilirubin

buildup in the brain), leading to potential mental retardation, high-level deafness, and speech disorders. Blood type incompatibility (ABO or Rh) between mother and baby can also increase the risk of jaundice. For example, mothers with blood type O are more likely to give birth to babies with blood types A or B, leading to immune reactions that damage the baby's red blood cells and increase bilirubin levels (Purnamiati, 2019). Other factors, such as low birth weight and breastfeeding practices, can contribute to the occurrence of jaundice in newborns (Bahar et al., 2023).

CONCLUSIONS

This research showed that the majority of mothers at Semarang City Hospital were aged 20-35 years (76.3%), had secondary education (76.3%), were primiparous (55.3%), and did not work/were housewives (65.8%). Most of the mothers at Semarang City Hospital had prominent nipples (73.7%), no nipple pain (52.6%) and the delivery method was SC and normal (50.0%). The majority of mothers at Semarang City Hospital gave birth to babies with birth weight according to the gestational age (63.2%), the frequency of breastfeeding was 8-12x/day (81.6%), the milk output on days 1 to 3 was small (55.3%), breast milk output on days 4 to 7 was small (84.2%) and the baby's bilirubin level was an average value (mean),

For the management of neonatal jaundice, light therapy can be used, particularly exposure to sunlight, as bilirubin is sensitive to light and can be broken down and excreted more efficiently. However, newborns should not be placed directly in the sun but should be exposed to indirect light. In cases of severe jaundice caused by pathological factors, such as blood group incompatibility, treatments like blood exchange transfusion or the use of phenobarbital (an enzyme inducer) may be necessary to accelerate the breakdown of indirect bilirubin (Purnamiati, 2019).

namely 15.58.

Thus, it is important to provide information to the public about common problems that occur during the postpartum and newborn period. And the role of stakeholders is needed in developing strategies related to common problems that occur so that exclusive breastfeeding targets can be achieved.

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