

The Relationship Between Breastfeeding and Length of Hospital Stay in Neonates with Respiratory Distress Syndrome (RDS) at Pasirian Regional General Hospital

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ABSTRACT

Introduction: Prenatal complications in premature infants are one of the leading causes of neonatal mortality. One such complication is Respiratory Distress Syndrome (RDS). Infants receiving care in the NICU, particularly those with RDS, still require nutrition to boost their immune system and improve their health status, as RDS in neonates is a major contributor to increased morbidity and mortality in newborns and is one of the factors determining the length of hospital stay for neonates. This study aims to determine the relationship between breastfeeding and length of hospital stay in neonates with RDS in the NICU at Pasirian Regional General Hospital.

Method: This study uses a retrospective design with an analytical correlation method. The study sample consisted of infants aged 0–28 days who were diagnosed with Respiratory Distress Syndrome.

Result: The conclusion is that breastfeeding among infants with RDS in the NICU at Pasirian Regional General Hospital was divided into three categories: exclusive breastfeeding (47.4%), a combination of breastfeeding and formula (50%), and exclusive formula feeding (2.6%). Meanwhile, the length of hospital stay for infants with Respiratory Distress Syndrome in the NICU at Pasirian Regional General Hospital was categorized into three groups: < 5 days for 18 respondents (47%), 5–7 days for 14 respondents (36.8%), and > 7 days for 6 respondents (15.7%).

Conclusion: The results of this study conclude that infants who are exclusively breastfed will have a shorter length of hospital stay for Respiratory Distress Syndrome.

Keywords: Preterm; Breastfeeding; Respiratory Distress Syndrome; Length of Hospital Stay

Introduction

Prenatal complications are a major contributor to neonatal mortality. One such complication is Respiratory Distress Syndrome (RDS). Respiratory Distress Syndrome (RDS) is a severe acute lung disease that primarily affects preterm infants, in which the infant's respiratory system is unable to perform normal gas exchange without assistance. RDS in neonates is typically characterized by tachypnea, chest retractions, cyanosis, grunting during exhalation, and weak respiratory muscles, which occur immediately after birth. These symptoms usually worsen within the first 12 to 24 hours after birth. This is one of the most common reasons a baby is admitted to the neonatal intensive care unit (NICU) (Hermansen & Anand, 2015).

In 2020, the World Health Organization (WHO) recorded 2.4 million child deaths in the first month of life, with approximately 6,700 newborn deaths each day. Nearly 47% of deaths among children under the age of 5 occur during the neonatal period. Globally, in 2018, 2.5 million children died in the first month of life. Globally, in 2018, 2.5 million infants died during their first month of life. In Indonesia, the neonatal mortality rate in 2018 was 33.78 per 1,000 live births. According to a study by Marfuah et al. (2013) in Lumajang Regency, infant mortality in 2012 was reported at 24.03%—or 56 cases caused by respiratory distress, specifically Respiratory Distress Syndrome (RDS). Based on a preliminary study from January to March 2025, there were 42 cases of infants with RDS in the NICU at Pasirian General Hospital.

Infants under care in the NICU, particularly those with RDS, still require nutrition to enhance their immune system and overall health status, as Respiratory Distress Syndrome in neonates is a major contributor to morbidity and mortality rates among newborns (WHO, 2019). Armina's research findings indicate that all newborns admitted to Hospital X were provided with a nutritional diet consisting of breast milk, administered via an orogastric tube. Breast milk was initially given to newborns starting at 0.5–1 ml every 2 hours via the orogastric tube, gradually increasing to 40 cc during the course of care. Infants diagnosed with RDS who had an orogastric tube inserted underwent gastric residue checks. Additionally, the infant's oral motor skills are stimulated through massage of the cheeks and mouth area to enhance the sucking reflex. Breast milk is highly beneficial for boosting a newborn's immune system and reducing

the risk of nutritional deficiencies. Therefore, when the infant gains weight, it supports the infant's overall health (Armina, 2024).

Armina's research findings also indicate that RDS infants who were breastfed experienced an improvement in respiratory rate to below 60 breaths per minute (no tachypnea). Based on a study in Karachi, changes in infant oxygen saturation were found to be 94.7% before breastfeeding and increased to 95.8% after breastfeeding (Indonesian Ministry of Health, 2021). Infants with RDS are typically hospitalized for an average of 4–15 days. Infants with mild RDS generally have a shorter hospital stay compared to those with moderate or severe RDS. Indications for discharge in infants with RDS include a respiratory rate of less than 50 breaths per minute, oxygen saturation in preterm infants of more than 91%–100%, vital signs within normal limits, and body weight that has not decreased by more than 10% of birth weight (MTBS, 2022).

Breast milk was administered via an OGT because the patient's sucking and swallowing reflexes were still weak. According to Calik and Esenay (2019), the use of an OGT is highly recommended for infants breathing nasally, as the sucking reflex in premature infants is still weak and thus unable to meet their nutritional needs. To reduce mortality among RDS infants in the NICU, attention must be paid to the fluid intake of the infants; therefore, the researchers were interested in conducting a study titled "The Relationship Between SI Administration and Length of Hospitalization in Infants with Respiratory Distress Syndrome (RDS) in the NICU of Pasirian Regional General Hospital."

Method

The population in this study consisted of all neonates aged 0–28 days with RDS in the NICU at Pasirian Regional General Hospital. The sample was selected using purposive sampling. Data collection was conducted in March 2025 with a sample of 38 neonatal patients aged 0–28 days with RDS in the NICU at Pasirian Regional General Hospital.

Results

1. Characteristics of respondents by age

Table 1.1 Frequency distribution of respondents by age of infants with Respiratory Distress Syndrome (RDS)

| No. | Age | Total | Percentage (%) |
|-----|-----------|-------|----------------|
| 1 | 0-28 days | 38 | 100 |
| | Total | 38 | 100 |

Data Source: Questionnaires from Researchers, March 2025

Based on Table 1.1, all 38 infants (100%) diagnosed with Respiratory Distress Syndrome (RDS) in the NICU at Pasirian Regional General Hospital were between 0 and 28 days old.

2. Characteristics of respondents by gender

Tabel 2.1 Frequency distribution of respondents by gender of infants with Respiratory Distress Syndrome (RDS)

| No. | Gender | Total | Percentage (%) |
|-----|--------|-------|----------------|
| 1 | Boys | 14 | 36.84 |
| 2 | Girls | 24 | 63.16 |
| | Total | 38 | 100 |

Data Source: Questionnaires from Researchers, March 2025

Based on Table 2.1, it was found that the majority of infant patients with Respiratory Distress Syndrome (RDS) in the NICU at Pasirian Regional General Hospital were female (24 patients, or 63.16%), while 14 patients (36.84%) were male.

3. Breastfeeding

Tabel 3.1 Frequency Distribution of Breastfeeding Among Infants with Respiratory Distress Syndrome (RDS)

| No. | Breastfeeding | Total | Percentage (%) |
|-----|-------------------------|-------|----------------|
| 1 | Exclusive Breastfeeding | 18 | 47.4 |
| 2 | Breastmilk and Formula | 19 | 50 |
| 3 | Formula | 1 | 2.6 |
| | Total | 38 | 100 |

Data Source: Questionnaires from Researchers, March 2025

Based on Table 5.3, breastfeeding practices for infants with Respiratory Distress Syndrome (RDS) in the NICU at Pasirian Regional General Hospital fall into three categories: 19 respondents (50%) reported a combination of breast milk

and formula, 18 respondents (47.4%) reported exclusive breastfeeding, and formula-only feeding involving 1 respondent (2.6%).

4. Length of Hospital Stay

Tabel 4.1 Frequency Distribution of Length of Hospital Stay for Infants with Respiratory Distress Syndrome (RDS) in the NICU at Pasirian Regional General Hospital

| No. | Length of Hospital Stay | Total | Percentage (%) |
|-------|-------------------------|-------|----------------|
| 1 | < 5 days | 18 | 47.37 |
| 2 | 5-7 days | 14 | 36.84 |
| 3 | > 7 days | 6 | 15.77 |
| Total | | 38 | 100 |

Data Source: Questionnaires from Researchers, March 2025

According to Table 5.4, the length of hospital stay for infants with Respiratory Distress Syndrome (RDS) in the NICU at Pasirian Regional General Hospital was divided into three categories: < 5 days (18 respondents, 47.37%), 5–7 days (14 respondents, 36.84%) > 7 days, totaling 6 respondents (15.77%).

5. The Relationship Between Infant Breastfeeding and Length of Hospital Stay in Infants with Respiratory Distress Syndrome (RDS)

Tabel 5.1 Cross-Tabulation of the Relationship Between Breast Milk Feeding and Length of Hospital Stay in Infants with Respiratory Distress Syndrome (RDS) in the NICU at Pasirian Regional General Hospital

| No. | Breastfeeding | Length of Hospital Stay | | | Total |
|----------------------|-------------------------|-------------------------|----------|----------|-------|
| | | < 5 Days | 5-7 Days | > 7 Days | |
| 1 | Exclusive Breastfeeding | 17 | 0 | 1 | 18 |
| 2 | Breastmilk and Formula | 1 | 14 | 4 | 19 |
| 3 | Formula | 0 | 0 | 1 | 1 |
| Total | | 18 | 14 | 6 | 38 |
| | | p | q | | |
| Spearman's Rank Test | | 0,004 | 0,05 | | |

Data Source: Questionnaires from Researchers, March 2025

According to Table 5.5, among infants with RDS who were exclusively breastfed, 17 respondents (94.44%) had a hospital stay of < 5 days, and 1 respondent (5.56%) had a hospital stay of > 7 days. RDS infants fed a combination of breast milk and formula had a hospital stay of < 5 days in 1 respondent (5.27%), 5–7 days in 14 respondents (73.68%), and > 7 days in 4 respondents (21.05%). RDS infants fed formula had a

length of hospital stay of < 5 days in 0 respondents (0%), 5–7 days in 0 respondents (0%), and > 7 days in 1 respondent (100%).

The results of the correlation analysis between the two variables using SPSS 20 for Windows with the Spearman Rank Test yielded a p-value of 0.004 with a correlation coefficient of $\alpha = 0.05$. Since $p < \alpha = 0.05$, it can be concluded that there is a relationship between the administration of breast milk and the length of hospital stay for RDS infants in the NICU at Pasirian Regional General Hospital.

Discussion

The study shows that most infants were fed either exclusive breast milk or a combination of breast milk and formula. Based on Table 5.3, breastfeeding practices for infants with RDS in the NICU at Pasirian Regional General Hospital were divided into three categories: a combination of breast milk and formula (19 respondents, 50%), exclusive breastfeeding (18 respondents, 47.4%), and formula-only feeding involving 1 respondent (2.6%).

Breast milk, also known as ASI, is milk obtained from a mother and contains essential nutrients required by infants for their growth and development (Mufdlilah, 2017). Breast milk fundamentally contains components that meet the infant's macro- and micronutrient needs (such as carbohydrates, protein, fat, Vitamins A, D, E, K, and various minerals)

Breastfeeding is influenced by various factors. Factors affecting the success of breastfeeding include diet, contraceptive use, breast care, sleep patterns, mental and emotional well-being (including family support), sucking ability, and breast anatomy (Amalia, 2022). Infants who are born prematurely or have certain medical conditions may require special care and support when it comes to exclusive breastfeeding. One such condition is Respiratory Distress Syndrome.

Breastfeeding offers several benefits for infants, particularly in reducing the risk of illness and accelerating the healing process. The benefits of breast milk for infants include containing antibodies that protect them from infections and illnesses, enhancing cognitive development, reducing the risk of allergies, and providing essential nutrients for growth and development.

Length of stay for infants with Respiratory Distress Syndrome (RDS) in the NICU at Pasirian Regional General Hospital was divided into three categories: < 5 days (18 respondents, 47.37%), 5–7 days (14 respondents, 36.84%), and > 7 days (6 respondents, 15.77%).

Length of hospital stay is one of the elements or aspects of care and service in a hospital that can be assessed or measured. When a person is hospitalized, the expectation is, of course, that there will be an improvement in their health status. If the desired outcome—as expected by both medical staff and the patient—has been achieved, then naturally no one wants to linger in the hospital. The length of hospital stay has significantly decreased since the advent of knowledge regarding accurate diagnosis. To determine whether this reduction in length of stay improves efficiency or indicates inappropriate care, further examination is needed regarding the severity of the illness and the outcomes of treatment (Lubis, 2017).

Other factors influencing the length of hospital stay include the child's age. The younger the child, the more difficult it is for them to adjust to the experience of being hospitalized. Gender: girls may react differently to illness and the treatment process compared to boys. A neonate's medical condition, such as RDS, can affect the length of hospital stay. It is important to note that every case of RDS in a neonate is unique, and the impact of breastfeeding on the length of hospital stay may vary depending on the neonate's condition.

According to Amalia (2022), factors influencing the length of hospital stay in neonates include birth weight, APGAR score, and the neonate's sex. The APGAR score reflects the infant's condition at birth. In infants with RDS, there is a deficiency of surfactant—a substance in the alveoli that prevents lung collapse (Regina, 2018). This aligns with the researchers' findings: when infants are not breastfed, their hospital stay tends to be longer.

A two-variable analysis using SPSS 20 for Windows with the Spearman's rank test yielded a p-value of 0.004 with a correlation coefficient of $\alpha = 0.05$. Since $p < \alpha = 0.05$, it can be concluded that there is a relationship between breast milk feeding and length of hospital stay in infants with Respiratory Distress Syndrome (RDS) in the NICU at Pasirian Regional General Hospital.

Nutrition in the early stages of an infant's life is known to play a fundamental role in regulating the development and maturation of specific tissue and organ functions, both in the short and long term. Thus, the first month of an infant's life is a critical period for preventing metabolic disorders.

Many mothers still have insufficient breast milk production to meet their infants' needs, which is why they combine breastfeeding with formula feeding for their babies. Very few are aware of the proper use of formula, including the appropriate amount, type, method of administration, and weight gain in the early stages of life.

Breastfed infants tend to have a stronger immune system, which may help reduce the length of hospital stays. Research indicates that breast milk can help reduce the risk of respiratory illnesses in infants, which can impact the duration of hospitalization.

Conclusion

The results of this study conclude that infants who are exclusively breastfed will have a shorter length of hospital stay for Respiratory Distress Syndrome.

References

- Aprilia, Devi. 2024, *Faktor-faktor yang mempengaruhi Kelancaran Pengeluaran ASI Pada Ibu Post Partum*, Stikes William Booth Surabaya
- Armina, 2024. *Jurnal Akademika Baiturrohim Jambi, Profil status Oksigenasi, Berat badan dan Lama Hari Rawat Bayi Respiratory Distress Syndrom yang diberikan Air Susu Ibu Diruang Perinatologi*
- Khalifahani, Risma. 2021, *Hubungan Tingkat Pengetahuan Ibu tentang pemberian ASI dan MP-ASI Terhadap resiko kejadian stunting*. Tugas akhir, tidak diterbitkan, Fakultas Keperawatan dan Kebidanan, Jakarta.
- Lisnawati, Naintina. 2023, *Jurnal Kreatifitas Pengabdian Kepada Masyarakat Volume 6, Edukasi Pemberian ASI Pada Bayi yang Baik dan Benar Pada Ibu Menyusui Melalui Media Booklet*
- Marfuah, 2013. *Faktor Risiko Kegawatan Nafas Pada Neonatus di RSUD.DR.HARYOTO Kabupaten Lumajang*.
- Maynarti, Septi. 2021, *Jurnal Kesehatan saelmakers, Hubungan Pendidikan, Pekerjaan ibu dan Riwayat Pemberian ASI Dengan Kejadia Stunting pada Anak Sekolah Dasar*
- Monica, 2014. *Buku pintar ASI dan menyusui*, Naura book, Jakarta.
- Rahmani, suci. 2022. *Cairan Emas Air Susu Ibu*, Salim Media Indonesia, Jambi

Iswatun Hasanah, Widya Addiarto, Zainal
Abidin, Suhari

The Relationship Between Breastfeeding...

Rahmi,Junaidi. 2024,*Buku mewujudkan Keberhasilan Menyusui*, Edisi I,Kaizen media
Publising. Bandung.

RSUD Pasirian Kabupaten Lumajang (2024-2025). *Data Rekam Medis Pelayanan
Persalinan, Perinatologi dan NICU*, Lumajang : RSUD Pasirian Kabupaten
Lumajang

Soetjiningsih,1997. *ASI petunjuk untuk tenaga kesehatan*, Seri II, Buku Kedokteran,
Jakarta.

Wibawati,Fitria. 2021, *Kupas tuntas seputar Neonatus, Bayi, Balita dan Anak
Prasekolah untuk Mahasiswa Kebidanan*,Wijaya Kusuma Press. Malang