

# The Factors Associated with the Placement of Neonatal ward at Prof. Dr. Margono Soekarjo Hospital

Fatma Qurrotunnada<sup>1</sup>, Happy Dwi Aprilina<sup>2</sup>

<sup>1,2</sup>Faculty of Health Sciences, Universitas Muhammadiyah Purwokerto, Indonesia

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## ABSTRACT

Background: Neonatal placement increases the need of perinatology room. The mortality rate of neonates in the perinatology room reached a progressive rate in Indonesia in 2021. Some severe conditions in neonates placed in the perinatology room included asphyxia, low birth weight, sepsis, and infection. The importance of segregating the neonatal ward in perinatology as a special treatment room for emergency conditions is to achieve optimal health and to reduce the mortality in neonates. Objective: The study aimed to determine the factors associated with the neonatal ward at Prof. Hospital Dr. Margono Soekarjo Purwokerto. Methode: This was an analytical observational study with a cross-sectional design. The study was carried out from March 24th-April 24th, 2022. The population in this study was 100 respondents. There were two groups of 50 respondents selected from the non-perinatology room and the perinatology room using a consecutive sampling technique. Result: The result showed that four significant factors were found that were associated with neonatal ward placement in perinatology based on the Bivariate analysis and Chi-Square test with 95% CI and a p-value of 0.05. They include birth weight (0.014), APGAR score (0.001), gestational period (0.003), and type of delivery (0.009). Then, the results of a multivariate analysis of the four factors indicated that the type of delivery was the most dominant (B=1.371). Conclusion: In this study, the variable of the type of delivery done by cesarean section was the most dominant factor in the placement of the neonatal ward in perinatology.

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### Corresponding Author:

**Happy Dwi Aprilina**

Faculty of Health Sciences, Universitas Muhammadiyah Purwokerto,  
Soepardjo Rustam Street KM. 7, Banyumas, Indonesia

Email: [happydwiaprilina@gmail.com](mailto:happydwiaprilina@gmail.com)

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## 1. INTRODUCTION

Neonates or newborns are babies who experience the birth process aged 0-28 days and adjust from intrauterine life to extrauterine life (Br Sembiring, 2019). During this period, circulation adjusts to environmental conditions, begins to breathe and other bodily functions (Saputra, 2014). Babies up to the age of one month are the age group that has the highest risk of experiencing health problems. The greatest risk of neonatal death occurs in the first 24 hours of life, first week and first month of life. Complications in the neonatal period are in the form of sepsis (42%), congenital abnormalities (39%), cardiovascular disorders (30%), asphyxia (19%) which can cause death (Parulian et al., 2017). The incidence is influenced by various factors such as maternal factors (preterm birth, surgical delivery, fever in the mother), environmental factors,

and the most important factors from the neonates themselves, such as twin status, gender, invasive procedures, birth weight, and birth weight (Sari & Mardalena, 2016).

Every year worldwide an estimated 4 million newborns die in the first month of life and two thirds die in the first week (Sanusi & Djafri, 2018). According to data from the Indonesian Demographic and Health Survey (IDHS) in 2012, the NMR was 19/1000 live births and some cases were caused by congenital abnormalities, pneumonia, sepsis, respiratory distress syndrome, and jaundice (Pratama, 2018). Central Java province in 2019 the AKN was 5.8 per 1000 live births. Attention to efforts to reduce neonatal mortality (0-28 days) is important because neonatal mortality contributes to 69.9% of neonatal deaths in the province of Central Java. Banyumas Regency, AKN is 4.1 per 1000 live births (Dinas Kesehatan Provinsi Jawa Tengah, 2019).

The importance of sorting the treatment room for newborns with severe conditions so that the baby is treated according to his condition. The factors that affect newborns entering perinatology, namely neonates who require special care such as low birth weight, less than perfect respiratory function, premature, and babies who have difficulty in childbirth and show worrying signs in the first few days of life (Huston, 2019).

## 2. RESEARCH METHOD

This study uses an analytic observational research type with a cross sectional design. The sampling technique in this study used consecutive sampling as many as 100 respondents, each of which 50 respondents were in the non-perinatology room or inpatient unit and 50 respondents were in the perinatology room or in isolation. The goal of this research is to know the factors related to the neonatal care room at Prof. Hospital. Dr. Margono Soekarjo, Purwokerto. This research was conducted on March 24 – April 24, 2022 in the delivery unit, Flamboyan, and Melati wards. The inclusion criteria in this study also included neonates who were in the non-perinatology room and the perinatology room. The exclusion criteria were newborns with congenital defects (heart disorders and body deformities), neonate age, and referral babies. The data were analyzed using Chi Square test.

The instrument used for data collection in this study was an observation sheet. To ensure the safety and security of respondents, researchers went through a series of ethical licensing processes and informed consent for handling actions. This research has obtained permission from the faculty and the hospital. The permit letter number from the faculty was C9.II./048-S.Ph/FIKES/UMP/2022 and hospital ethics approval with the number: 420/00830.

## 3. RESULT AND DISCUSSIONS

### Univariat

Table 1. Characteristics of the Research Subject (n=100)

Variable	Non-perinatology (n)	Perinatology (n)	%
<b>Gender</b>			
Male	22	19	41.0
Female	28	31	59.0
<b>Birth Weight</b>			
Low Birth Weight	24	36	60.0
Normal Birth Weight	26	14	40.0
<b>APGAR Score</b>			
Low (1-3)	0	10	10.0
Moderate (4-7)	21	23	44.0
Normal (8-10)	28	17	46.0
<b>Gestational Period</b>			
Preterm	19	34	53.0
Aterm	31	17	47.0
<b>Type of Delivery</b>			
Normal	34	21	55.0
Sectio Caesarean	16	29	45.0
<b>Placement</b>			
Non-perinatology	50	-	50
Perinatology	-	50	50
<b>Total</b>	50	50	100

Based on the table 1, there are 100 respondents. The dominant respondent was female, as many as 59 (59%). Babies with low birth weight are the most dominant there are 60 (60%) respondents. Neonates with a low APGAR score in table 1, there were 1 (10%) neonates who had poor APGARscore (1-3) and there were 44

(44%) neonates who had moderate APGAR score (4-7). The most dominant gestation period was those whose gestation period was preterm (<37 weeks) as many as 53 (53%) respondents. There were 55 (55%) respondents who gave birth spontaneously and 45 (45%) respondents who gave birth by cesarean section.

Newborns who had low APGAR values or < 7 usually had problems with the diagnosis of neonatal asphyxia, hypoglycemia, LBW, and Hyaline Membrane Disease (HMD). The accumulation of several diagnoses that existed in newborns can certainly reduce the condition of the neonates. Therefore, this affects the increasing degree of emergency and other complications in neonates (Suparti, 2021).

## Bivariate

Table 2. Relationship between Gender, Birth Weight, APGAR Score, Gestational Period, and Type of Delivery with Neonatal Care Room Placement

Variable	Factors related to the placement of the neonatal ward				Total	OR (95% CI)	p-value
	Non-perinatology		Perinatology				
<b>Gender/Sex</b>							
Male	22	44.0	19	38.0	41	1.282 (0.577-2.849)	0.542
Female	28	56.0	31	62.0	59		
<b>Birth Weight</b>							
Low Birth Weight	24	48.0	36	72.0	60	0.359 (0.157-0.823)	0.014
Normal Birth Weight	26	52.0	14	28.0	40		
<b>APGAR Score</b>							
Low (1-3)	0	n<5	10	20.0	10	-	0.001
Moderate (4-7)	21	42.0	23	46.0	44		
Normal (8-10)	28	58.0	17	34.0	45		
<b>Gestational Period</b>							
Preterm	19	38.0	33	68.0	52	0.288 (0.127-0.658)	0.003
A-term	31	62.0	17	32.0	48		
<b>Type of Delivery</b>							
Normal	34	68.0	21	42.0	55	2.935 (1.296-6.647)	0.009
Sectio Caesarean	16	32.0	29	58.0	45		

### Relationship of Gender with Placement of Neonates Room in Perinatology Room

Based on table 2 above, there is no relationship between gender and the placement of the neonatal care room at Prof. Dr. Margono Soekarjo hospital ( $p$ -value=0.542). The degree of pain experienced by newborns in the NICU varies greatly and is influenced by many factors. One of them is gender. Gender is not related to the degree of illness in newborns who are at risk of causing problems and even death in neonates. The severity of illness experienced by neonates is more determined because of the physiological instability of the newborn while still in the womb or after birth (Deden et al., 2019).

### Correlation between Birth Weight and Neonatal Care Room Placement in the Perinatology Room

Based on table 2 above, there is a significant relationship between birth weight and the placement of the neonatal care room in the perinatology room of Prof. Hospital. Dr. Margono Soekarno. The value of  $p$ -value was 0.014 ( $p < 0.05$ ). The data of this study also showed that most of the LBW neonates were in the perinatology room.

Screening of newborns with premature conditions at the earliest age can identify any factors that positively or negatively affect development in newborns and recognize that starting early intervention is a major aspect of health for these newborns (Szabina, 2022).

According to Sema et al., (2019), newborns with premature conditions are more likely to have low birth weight compared to neonates born at 37 weeks of gestation. Several other findings suggest that this may be due to the increase in newborns with maximum weight in the third trimester of pregnancy and having low levels of physical development and neonates with premature birth conditions. In addition, this is also due to the fact that immature neonates can experience low birth weight, immature respiratory function and different complications.

This study is in line with research conducted by Jaya et al., (2019), where newborns with a weight condition of less than 2500 or said LBW are more likely to have a 2.6 times greater risk of experiencing physiological disorders, one of which is experiencing neonatal sepsis. This is because the maturation of the newborn's organs is not yet perfect which can make the baby more susceptible to infection.

### Correlation between APGAR Score and Neonatal Care Room Placement in the Perinatology Room

Based on table 2 above, there is a relationship between the APGAR score and the placement of the neonatal care room in the perinatology room of RSUD Prof. Dr. Margono Soekarno. The results of statistical tests using Chi Square at  $\alpha = 0.05$  obtained a value of 0.001 ( $p < 0.05$ ). Newborns who have a low APGAR score  $< 7$  usually have problems or problems with the diagnosis of neonatal asphyxia, hypoglycemia, and low birth weight. This can reduce the condition of the neonate, so that it affects the increasing degree of emergency and other complications in neonates (Suparti, 2021).

In line with the research conducted by Aro'fah (2019) that newborns with low APGAR scores have less than perfect physiological functions and are less mature in growth and the tools in their bodies, because they are very sensitive to respiratory disorders, trauma. Birth, hypothermia, and infection. Statistical results obtained value of 0.011 ( $p < 0.05$ ).

A low or low APGAR value, either at the 1st or 5th minute of measurement and the birth of a newborn with a premature condition can significantly increase the likelihood of disturbances or problems with the neonate's bodily functions [4]. The close relationship between infection and low APGAR scores may be due to the high intervention procedures performed on newborns, which may cause the newborn to be infected with pathogens in the delivery room. Low APGAR values in neonates can result in impaired immune system and inappropriate resuscitation in newborns (Nurrosyida et al., 2019).

### Correlation between Gestational Period and Neonatal Care Placement in the Perinatology Room

Based on table 2 above, there is a relationship between gestational age and placement of the neonatal care room in the perinatology room of Prof. Hospital. Dr. Margono Soekarno. The results of statistical tests using Chi Square at  $\alpha = 0.05$  obtained a value of 0.003 ( $p < 0.05$ ), Judging from the data of this study, it also showed that most of the neonates who had premature births were in the perinatology room.

According to Ambarsih & Solikhah (2020), One of the factors that can affect the condition of the neonate is the period of pregnancy. The results of this study are in accordance with research conducted by Oktavianty & Wayan (2020), that neonates with premature conditions with a maternal gestation period of less than 37 weeks are susceptible to immature conditions. The younger the gestational age of the neonate, the higher the risk of experiencing emergency and physiological problems in newborns.

Khotimah & Subagio, (2021), The problems that occur in newborns, the proportion tends to be greater at the age of preterm birth or less than 37 weeks because it is a factor that plays an important role and determines the quality and health of neonates born and is very influential on the health of the newborn. The immune system is not ready to adapt and accept environmental conditions outside the womb, so it can potentially experience complications.

### Correlation between Type of Delivery and Neonatal Care Room Placement in the Perinatology Room

Based on table 2 above, there is a relationship between the type of delivery and the placement of the ward in perinatology with ( $p$ -value = 0.009). Complications are said to be more common in the delivery process by cesarean section and increase the need for a perinatology room because delivery is indicated by the fetus. This shows that there may be an emergency in the fetus since in the womb that can affect the prognosis for newborns (Deden et al., 2019).

This is in line with the research conducted by (Liston, 2020) with the title "Analysis of Types of Delivery with Newborn Health" that neonates and their mothers who cannot be cared for together have other criteria or conditions: low APGAR scores in newborns, The newborn has a congenital abnormality that requires special care, the gestational age is less than 34 weeks and the birth weight of the baby is less than 1800 grams, the neonate is born by cesarean section, and there is birth trauma or other severe morbidity. Neonates born by cesarean section have a greater risk of experiencing physiological problems in their organs (Adytia, 2020).

### Multivariate

Table 3. The Most Dominant Factor Associated with Placement in the Neonatal Care Room

Variable	B	Wald	P value	OR	CI (95%)
Type of Delivery (SC)	1.371	8.067	0.005	3.940	1.530-10.149

Based on the results of the multivariate analysis in table 3 above, the most dominant factor with the placement of the neonatal care room in perinatology is the type of delivery. The results of the OR were 3,940,

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which means that respondents with sectio caesarean had a nearly 4 times greater chance of having a baby having problems so that the newborn was placed in the perinatology room.

Giving birth by sectio caesarean tends to increase the risk of neonates having problems or disorders in the newborn's body because its functions are still immature. Hemorrhage in the subarachnoid is often found due to tearing of the superficial veins due to complications of cesarean delivery. This is what can cause an imbalance of physiological functions in newborns because they have not yet reached the perfect maturity process (Andreas et al., 2020).

A similar study was also conducted by Khotimah & Subagio, (2021), that the proportion of neonates experiencing disturbances in their body functions would be greater in mothers who gave birth by cesarean section. The result of OR 7,875, which means that respondents with cesarean section delivery have almost 8 times the chance of experiencing physiological disturbances compared to the type of spontaneous or normal delivery.

There are 60% of neonates who were born by cesarean section and placed in the NICU or perinatology room while 40% of neonates with normal delivery. This may occur due to bacterial contamination that occurs after the delivery process, such as tools that have been contaminated during labor (Jaya et al., 2019).

#### 4. CONCLUSIONS

Most of the elderly who became respondents were female with a total of 40 elderly (55.3%), while the number of men was. Based on the results of the study, it was found that the variables that had a significant relationship with the placement of the neonatal care room in perinatology were Birth Weight ( $p = 0.014$ ), APGAR score ( $p=0.001$ ), gestational period ( $p = 0.003$ ), and type of delivery ( $p = 0.009$ ). Multivariate analysis showed that the variable that most influenced the placement of the neonatal care room in perinatology was the type of delivery by cesarean section ( $B=1.371$ ).

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