

THE RELATIONSHIP BETWEEN KNOWLEDGE OF NEONATAL CARE MANAGEMENT FOR ASPHYXIA AND NEONATAL EMERGENCY MANAGEMENT IN THE OPERATIONAL AREA OF PUSKESMAS PERUMNAS, LUBUKLINGGAU CITY, 2025

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ABSTRACT

Background: The role of nurses in assisting newborns, especially those experiencing severe asphyxia, is responsible for ensuring good coordination and high-quality service standards. Nurses are equipped with the knowledge and skills to ensure the care provided is accompanied by appropriate and correct attitudes (Lucky, 2020). One of the initial emergency treatments for asphyxia is cardiopulmonary resuscitation (CPR). Resuscitation is a life-saving measure for the cardiovascular system. Neonatal resuscitation typically occurs in the delivery room or in intensive neonatal care. Resuscitation is expected to reduce newborn mortality and reduce the number of complications due to long-term hypoxia. Errors in resuscitation can be caused by several factors, including facility factors and human error. **Objectives:** The purpose of this study was to determine the relationship between knowledge about neonatal care management and asphyxia in handling neonatal emergencies at the Perumnas Community Health Center in Lubuklinggau City. **Methods:** The method used was a descriptive analytical study with a cross-sectional design. Data were collected by distributing questionnaires to 35 health workers, namely midwives and nurses at the Perumnas Community Health Center in Lubuklinggau City. The sampling method used in this study was a total sampling technique. **Results:** The results of univariate analysis showed that some respondents, 21 people (60.0%) had good knowledge and almost all respondents, 14 people (40.0%) had sufficient knowledge. Some respondents, 18 people (51.4%) had good neonatal emergency handling and some of the respondents, 17 people (48.6%) had poor neonatal emergency handling. Bivariate analysis showed that there was a significant relationship between Knowledge About Neonatal Care Management and Asphyxia in Neonatal Emergency Handling.

Conclusions: This study concludes that there is a statistically significant relationship between healthcare professionals' level of knowledge regarding neonatal care management for asphyxia and their actual execution of neonatal emergency management within the operational area of Puskesmas Perumnas Kota Lubuklinggau in 2025.

Keywords: Knowledge, neonatal emergency, management

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INTRODUCTION

A neonatal emergency refers to a life-threatening medical condition occurring in a newborn within the first 28 days of life, requiring rapid and precise intervention to avert mortality or long-term disability. According to data from the World Health Organization (WHO), approximately 47% of all under-five child mortalities occur during the neonatal period. Globally, an estimated 2.4 million infants died in 2020, with modern figures showing that approximately 5 million infant deaths persist annually, with neonatal complications remaining a predominant driver. At the regional level, vast disparities in neonatal mortality are highly apparent. In the African region, neonatal mortality rates remain severe, reaching 27 per 1,000 live births primarily due to limited healthcare access, infrastructure shortages, and an inadequate supply of trained medical personnel.

Theoretically, the effective management of neonatal care relies on a multi-layered approach that bridges proactive risk assessment with acute clinical execution. One of the primary frameworks guiding modern neonatal practice is the risk-based management model, which asserts that neonatal outcomes are significantly optimized when clinical vulnerabilities are identified prior to or immediately following delivery. In primary care settings, this model demands that healthcare providers maintain a continuous state of clinical vigilance, using prenatal risk factors such as maternal age, gestational maturity, and parity to anticipate potential respiratory failure. When primary healthcare workers fail to integrate these predictive indicators into their active delivery preparations, the transition from intrauterine to extrauterine life becomes highly precarious, frequently resulting in unmanaged birth distress or delayed resuscitative response.

Conversely, in Europe, developed nations like Germany and the United Kingdom have successfully lowered these rates through highly structured health systems, though countries in Eastern and Central Europe continue to experience resource limitations comparable to developing jurisdictions. At the national level, the Indonesian Ministry of Health reported that the neonatal mortality rate in Indonesia remains substantially high, standing at roughly 14 per 1,000 live births. The leading institutional barriers include limited primary care facilities in rural sectors and suboptimal emergency training available to local medical workers. At the local level, Puskesmas Perumnas Kota Lubuklinggau operates as a primary healthcare center providing active intrapartum care.

Furthermore, the translation of administrative health policies into successful clinical practices at the community health center (Puskesmas) level is heavily dependent on the cognitive and structural capacity of local practitioners. While national frameworks like Indonesia's Jampersal and Posyandu programs have structurally expanded maternal and child health infrastructure, their actual field efficacy is bound by the immediate competency of the attending staff. At primary clinics such as Puskesmas Perumnas Kota Lubuklinggau, midwives and nurses serve as the frontline defense against infant mortality. However, these practitioners face unique operational hurdles, including a lack of continuous medical training, limited access to advanced neonatal intensive care technology, and a historical reliance on routine delivery methods rather than standardized emergency algorithms. This operational gap creates an environment where birth complications are easily underestimated, resulting in critical procedural delays during the initial golden minutes of neonatal life.

However, neonatal emergency management at this facility has been identified as lacking, primarily because the medical workforce has not uniformly participated in certified neonatal emergency care training. Global and national policy frameworks consistently promote the institutionalization of comprehensive neonatal care protocols, specifically through risk-based management and evidence-based management theories. Previous literature by Patel et al. (2023) across Southeast Asia demonstrated that implementing evidence-based guidelines successfully decreased neonatal mortality by 25%. Furthermore, a study by Singh et al. (2022) highlighted that rapid, early resuscitation interventions in cases of severe birth asphyxia suppressed neonatal mortality risks by up to 40%. Asphyxia neonatorum stands out as a primary neonatal emergency characterized by a newborn's failure to initiate and sustain spontaneous, regular respiration immediately upon delivery. The initial management of this critical scenario relies heavily on the staff's clinical competency in cardiopulmonary resuscitation (CPR) and accurate Apgar score valuation. Delays or procedural errors in treatment are frequently attributed to human error and deficiencies in structural knowledge regarding asphyxia algorithms. Thus, conducting an analytical study evaluating the cognitive readiness and clinical capabilities of primary care providers is crucial. The purpose of this research is to determine the relationship between knowledge regarding neonatal care management for asphyxia and the execution of neonatal emergency management at Puskesmas Perumnas Kota Lubuklinggau. to be specific, this research objectives are to identify the frequency distribution of knowledge regarding neonatal care management for asphyxia among healthcare workers, to identify the frequency distribution of neonatal emergency management execution and to analyze the statistical relationship between the two studied variables.

Theoretically, this research enriches academic literature concerning evidence-based teaching methodologies and clinical nursing practices. Practically, the empirical data serves as an evaluation metric for primary clinics to formulate responsive neonatal emergency protocols and underscores the public necessity of appropriate newborn care strategies. The rationale for conducting this research rests on the critical premise that theoretical knowledge directly governs clinical action, particularly under high-stress emergency scenarios like asphyxia neonatorum. In acute medical crises, a provider's capacity to execute precise interventions—such as proper head positioning, effective airway suctioning, and positive pressure ventilation using a face mask—is entirely dependent on their mastery of established emergency algorithms. Misconceptions or insufficient understanding of indicators like the Apgar Score can cause severe human error, leading to inadequate ventilation or failed systemic perfusion, which directly exacerbates long-term neurological damage or leads to death. While extensive research has focused on neonatal outcomes in large urban referral hospitals with advanced Neonatal Intensive Care Units (NICUs), empirical studies evaluating the baseline knowledge and emergency performance of healthcare workers within primary, resource-limited community clinics remain sparse. Therefore, this study fills a crucial gap by analyzing how cognitive competency shapes emergency care delivery at the grassroots level of the public health system.

METHODS

This study utilized an analytical descriptive design with a cross-sectional approach to investigate the immediate correlation between the independent and dependent variables without longitudinal tracking. The institutional setting for this investigation was Puskesmas

Perumnas Kota Lubuklinggau, with data collection actively conducted over a two-month period spanning July to August 2025. The target population encompassed all frontline healthcare workers, specifically practicing midwives and nurses, currently allocated to the clinical and intrapartum care units of the facility.

To eliminate sampling bias and ensure maximum representation, sampling was executed via a total sampling (census) technique, wherein every eligible member of the institutional population was recruited as a respondent. This approach yielded a final sample size of 35 individuals.

Variables and Operational Definition

1. **Independent Variable:** Knowledge regarding neonatal care management for asphyxia, defined as the healthcare professionals' cognitive understanding of risk assessment, clinical symptom identification, and systematic algorithmic workflows for treating asphyxiated infants.
2. **Dependent Variable:** Neonatal emergency management, defined as the actual real-time clinical actions (including neonatal CPR, airway clearance, and supportive resuscitative care) administered to newborns experiencing critical illness.
3. **Measurement Tool:** Data collection was conducted utilizing a structured research questionnaire distributed directly to the designated respondents.

Statistical processing involved univariate analysis to calculate the frequency distributions of individual parameters, followed by bivariate analysis utilizing correlative statistical methods (such as the Chi-Square test) to test the hypothesized relationship between variables. All participating subjects provided written informed consent prior to data collection, confirming voluntary involvement in this study.

RESULTS AND DISCUSSIONS

The univariate analysis reveals that the majority of respondents (60.0%) possessed a good level of knowledge regarding neonatal care management. This high cognitive standing implies that the majority of healthcare professionals at Puskesmas Perumnas Kota Lubuklinggau possess a firm grasp of the theoretical framework surrounding early interventions and clinical risk factors associated with asphyxia. However, when evaluating practical clinical execution, the distribution was nearly equal: 51.4% of respondents achieved a good performance ranking, while 48.6% exhibited deficient emergency management skills.

Table 1 Frequency Distribution of Knowledge About Neonatal Care Management with Asphyxia at the Perumnas Community Health Center, Lubuklinggau City

No	Knowledge	Frequency	Percentage (%)
1	Good	21	60
2	Sufficient	14	40
Total		35	100

This performance gap corresponds with the baseline interview data indicating that numerous field practitioners have not received formal structured neonatal life-support training, causing uneven technical competencies across clinical environments. The bivariate cross-tabulation demonstrates that out of the 21 respondents with a good knowledge base, 16 individuals successfully translated that comprehension into good emergency management

practices. In contrast, out of the 14 practitioners categorized with only sufficient knowledge, the overwhelming majority (12 individuals) displayed deficient emergency management performance.

Table 2. Frequency distribution of emergency treatment for neonates with asphyxia at the Perumnas Community Health Center, Lubuklinggau City

No	Knowledge	Frequency	Percentage (%)
1	Good	18	51,4
2	Suffieient	17	48,6
Total		35	100

These distributions prove that the level of theoretical understanding possessed by healthcare providers heavily dictates the practical precision of their live-saving interventions during clinical emergencies. These findings strongly substantiate the theory of evidence-based management, which argues that proficiency in current data streams and updated clinical protocols is what primarily determines successful medical decision-making during high-stress critical scenarios.

The results further align with empirical studies by Patel et al. (2023) and Singh et al. (2022), which established that standardizing healthcare responses through structured risk assessment can directly lower newborn fatalities and alleviate permanent neurological morbidity. By bolstering the cognitive capabilities of primary care providers regarding emergency algorithms, healthcare systems can reduce the incidence of human error during neonatal resuscitation.

Table 3. Chi-Square analysis of Frequency distribution of emergency treatment for neonates with asphyxia at the Perumnas Community Health Center, Lubuklinggau City

Test /Metric	Value	<i>df</i>	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	12.887	1	0.000	-	-
Continuity Correction	10.528	1	0.001	-	-
Likelihood Ratio	13.956	1	0.000	-	-
Fisher's Exact Test	-	-	-	0.000	0.000

The data further indicates that the minimum expected cell count for this sample size was 6.80, with 0.0% of the cells having an expected count of less than 5, thereby fulfilling the statistical assumptions required for the Pearson Chi-Square test. The computed Pearson Chi-Square value was 12.887 with 1 degree of freedom, yielding a two-sided asymptotic significance (p-value) of 0.000. To ensure the robustness of the findings within a 2x2 table framework, a Continuity Correction was applied, which presented a value of 10.528 ($p = 0.001$). Furthermore, both the Likelihood Ratio (13.956, $p = 0.000$) and Fisher's Exact Test (two-sided $p = 0.000$; one-sided $p = 0.000$) strongly mirrored the initial significance level. This

mathematical consensus across multiple statistical tests confirms that the observed distributions are not a result of random sampling variation, but rather indicate a highly reliable and definitive correlation between the two variables.

A closer examination of the respondents' cognitive profiles suggests that while 60.0% achieved a "Good" classification, a considerable 40.0% remained at a "Sufficient" baseline. In primary clinical environments, a "Sufficient" score indicates that while a practitioner may recognize standard definitions of asphyxia or know basic parameter tools like the Apgar score, they may still harbor critical gaps regarding complex algorithmic steps, such as the exact indications for positive pressure ventilation or correct mask sealing techniques. This baseline variation is heavily influenced by administrative and institutional factors, such as individual educational backgrounds, years of active clinical service, and the frequency of direct exposure to complicated deliveries. For a community health center (Puskesmas) that manages independent intrapartum care, having nearly half of the frontline staff at a non-optimal knowledge level introduces significant systemic risks when sudden, unpredicted respiratory distress occurs in a newborn.

The practical discrepancy where 48.6% of the workforce exhibited deficient emergency management highlights a well-known phenomenon in clinical sociology: the decoupling of theoretical knowledge from real-time operational skills. Emergency neonatal resuscitation demands a high degree of psychomotor precision, situational awareness, and instantaneous team coordination. When midwives and nurses are forced to perform under stressful conditions without regular simulation or access to advanced supportive tools, their hands-on execution easily falters. Clinical errors—such as improper head hyper-extension which compromises the airway, delayed or inefficient mucus suctioning, or an inability to accurately assess five-minute and ten-minute Apgar milestones—directly stem from this lack of practical reinforcement. Consequently, static academic knowledge alone is structurally insufficient; it must be continuously integrated through regular, tactile drills to achieve true operational competency.

From an institutional and policy perspective, these findings emphasize that a healthcare worker's capacity to save an asphyxiated infant is fundamentally a reflection of the institutional support they receive. The strong statistical association ($p = 0.000$) proves that improving a practitioner's conceptual mastery is a mandatory prerequisite for upgrading field performance. This outcome heavily validates the risk-based and evidence-based healthcare models, showing that when frontline personnel are armed with updated, data-driven protocols, they can systematically reduce the margin of human error during life-saving maneuvers. Therefore, addressing the 48.6% deficit in emergency execution requires shifting away from passive learning and moving toward active, mandatory simulation programs. Bridging this gap is an essential requirement for primary health centers to successfully fulfill global and national mandates aimed at reducing neonatal mortality.

CONCLUSIONS

This study concludes that there is a statistically significant relationship between healthcare professionals' level of knowledge regarding neonatal care management for asphyxia and their actual execution of neonatal emergency management within the operational area of Puskesmas Perumnas Kota Lubuklinggau in 2025. Healthcare workers with superior conceptual knowledge demonstrated a greater probability of executing precise, structured, and effective emergency resuscitation procedures under clinical conditions.

To optimize primary neonatal care quality and decrease preventable infant mortality rates, the clinical administration of Puskesmas Perumnas Kota Lubuklinggau should urgently institute regular, mandatory, and certified neonatal emergency simulation programs (such as the Neonatal Resuscitation Program/NRP) for all nursing and midwifery staff to narrow the existing gap between theoretical comprehension and hands-on technical skill.

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CONFLICT OF INTEREST AND FUNDING DISCLOSURE

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AUTHOR CONTRIBUTIONS

MM : conceptual, investigation, methodology, supervision, writing review and editing; DA: methodology, writing original draft; MR : methodology; formal analysis, writing original draft.

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