
Relationship Between Postnatal Mothers' Knowledge And Care Behavior Of The Umbilical Cord In Newborns In The Working Area Of The Kepenuhan Community Health Center

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Abstract

Proper umbilical cord care is essential to prevent infections in newborns, and a mother's knowledge and behavior are crucial factors influencing this practice. This study aimed to determine the relationship between postpartum mothers' knowledge and their umbilical cord care behavior in newborns at the Kepenuhan Community Health Center. A quantitative method with a cross-sectional design was used. The study employed a total sampling technique, including all 30 postpartum mothers in the population. Data were collected using a 30-question questionnaire and analyzed with univariate and bivariate analysis, specifically the Chi-Square test. The findings revealed that the majority of mothers had good knowledge (66.7%), and 50% demonstrated good care behavior. The Chi-Square test result ($p=0.020$) indicated a significant relationship between knowledge and care behavior. The study concludes that there is a positive association between a mother's knowledge and her behavior in umbilical cord care, suggesting that increased awareness can directly improve neonatal health outcomes. The results highlight the importance of targeted health education, particularly during antenatal and postnatal visits, to ensure that mothers receive accurate information and practical guidance. Strengthening the role of healthcare workers, especially midwives, in providing consistent counseling and demonstrations is recommended. Furthermore, the findings can serve as a basis for health centers to design community-based interventions that involve families in newborn care. By enhancing maternal knowledge and skills, preventable neonatal infections can be reduced, thereby supporting broader efforts to lower infant morbidity and mortality rates.

Keywords: Behavior, Knowledge, Postpartum Mothers, Umbilical Cord Care, Newborn.

INTRODUCTION

Newborns are highly susceptible to infections, particularly at the umbilical cord stump. Therefore, proper umbilical cord care is paramount, which involves keeping the area clean and dry without applying any additional substances (Herman & Kaliky, 2021). Improper care can significantly increase the risk of infection, which may lead to serious complications and even death. Neonatal tetanus, caused by the bacterium *Clostridium tetani* entering through the umbilical cord, remains a major contributor to neonatal mortality, accounting for a significant percentage of infant deaths globally (Kemenkes RI, 2021). The World Health Organization (WHO) has highlighted that tetanus and other umbilical cord infections continue to cause morbidity and mortality in many countries, emphasizing the persistent global health challenge this issue presents (WHO, 2020). The appropriate management of this condition is crucial, as it directly impacts the overall health and survival of the newborn, underscoring the need for effective preventive measures.

In Indonesia, data from the 2023 Indonesian Health Survey (SKI) indicates that only 67.2% of mothers provide umbilical cord care without applying anything to the stump. In Riau province specifically, this figure is lower at 45.4%, suggesting a regional disparity in practice. This highlights a persistent gap between recommended practices and what is being done by mothers. The lack of proper knowledge and inconsistent care practices contribute to the high rates of neonatal infections. Research by Astuti (2020) and Turiyani (2024) has established a significant link between a mother's knowledge and their umbilical cord care behavior. These studies suggest that a higher level of education and adequate

knowledge are critical factors that influence a mother's ability to perform correct care, ultimately improving the health outcomes for their babies. Furthermore, Panggabean et al. (2024) noted that various improper practices, such as the use of alcohol or covering the stump with sterile gauze, are still common due to a fear of infection and a lack of confidence among mothers.

The high prevalence of improper umbilical cord care among postpartum mothers presents a significant health challenge. According to the Ministry of Health of the Republic of Indonesia (Kemenkes RI, 2021), neonatal deaths contribute to 59% of infant mortality, with infections being a leading cause. The signs of umbilical cord infection, such as swelling, redness, and a foul odour, are reported in a substantial number of cases, with WHO (2020) indicating a 65% incidence of such signs in neonates. This is often linked to inappropriate care methods, where 39.6% of caregivers use harmful substances on the stump. This issue is often rooted in a lack of proper knowledge, which is a crucial determinant of behavior (Herman & Kaliky, 2021). Mothers who lack accurate information are more likely to adopt incorrect practices, jeopardizing their infants' health.

The problem is compounded by the fact that many mothers rely on traditional beliefs or the advice of family members rather than evidence-based healthcare guidance (Panggabean et al., 2024). A study by Widyastuti (2021) shows that the level of maternal education is a strong predictor of their knowledge, with more educated mothers exhibiting better knowledge about umbilical cord care. However, even with higher education, many mothers still lack the confidence to perform the care themselves, often delegating the responsibility to others (Panggabean et al., 2024). This reliance on others can lead to inconsistent and potentially harmful practices if the delegated caregiver is also misinformed. The combination of limited knowledge, a lack of confidence, and the influence of traditional practices creates a complex problem that requires targeted intervention.

This study aims to determine the relationship between the knowledge of postpartum mothers and their umbilical cord care behavior in newborns within the working area of the Kepenuhan Public Health Center. The findings from this research are crucial as they provide a basis for healthcare workers to develop more effective and targeted educational programs. Given the significant link between a mother's knowledge and her care practices, improving this knowledge is an urgent priority to reduce the incidence of neonatal infections and subsequent mortality (Nurul Abidah, 2024). The urgency of this research lies in its potential to directly inform public health interventions, particularly in areas where improper care practices are prevalent. By identifying a significant relationship, this study justifies the need for comprehensive and continuous health education for new mothers and their families.

This research offers a unique contribution by focusing on a specific geographic area, the Kepenuhan Public Health Center, and its postpartum population. The findings can be used to tailor educational materials and strategies to the local context, addressing specific knowledge gaps and behavioral patterns observed in the region. This localized approach represents a key innovation, as it moves beyond broad recommendations and provides actionable insights for healthcare providers at the grassroots level. The study's focus on both knowledge and behavior provides a holistic view of the problem, allowing for the development of interventions that not only inform mothers but also empower them to adopt correct practices with confidence.

RESEARCH METHODS

Research Design and Data Collection

This study employed a quantitative research method with a cross-sectional study design. The choice of a cross-sectional approach was ideal for examining the relationship between postpartum mothers' knowledge and their umbilical cord care behavior at a single point in time, allowing for a snapshot analysis of the variables (Sugiyono, 2021). This design is effective for identifying associations between variables, which aligns with the study's primary objective. Data was collected using a questionnaire, which was administered over one month in April 2025. The questionnaire, which consisted of 30 questions, was designed to measure both the mothers' knowledge of proper umbilical cord care and their actual care practices. This method ensured a systematic and standardized approach to data collection, enhancing the reliability of the findings (Sudaryono, 2022).

Population, Sample, and Sampling Technique

The population for this study consisted of all postpartum mothers with newborns in the working area of the Kepenuhan Public Health Center. The sample comprised the entire population, totaling 30 postpartum mothers. A total sampling technique, also known as saturated sampling, was used, meaning all members of the population were included as the sample (Emzir, 2023). This technique was appropriate given the small size of the population, ensuring that all available data points were considered and minimizing potential sampling bias. By including every mother in the defined area, the study maximized the representativeness of the findings for the target population.

Data Analysis

The collected data was analyzed using both univariate and bivariate analysis techniques. Univariate analysis was performed to describe the frequency distribution of the variables, namely the knowledge and behavior of the postpartum mothers. This provided a foundational understanding of the characteristics of the study population (Sudaryono, 2022). Bivariate analysis was then conducted to determine the relationship between the two variables using the Chi-Square test. This statistical test was selected because it is suitable for analyzing the association between two categorical variables. The p-value was used to determine the statistical significance of the relationship, with a threshold of $p < 0.05$ set to reject the null hypothesis and conclude that a significant relationship exists between the knowledge of postpartum mothers and their umbilical cord care behavior (Sugiyono, 2021). The analysis was instrumental in providing empirical evidence for the research's central hypothesis.

Univariate Analysis

Table 1. Frequency Distribution of Postpartum Mothers' Knowledge About Umbilical Cord Care in Newborns in the Working Area of the Kepenuhan Community Health Center

Mother Knowledge	Frequency	Percentage
Good	20	66,7%
Lack	10	33,3%
Total	30	100%

Based on Table 1, it can be seen that 20 mothers (66.7%) in the Kepenuhan Community Health Center working area had good knowledge, while 10 mothers (33.3%) had poor knowledge.

Table 2. Frequency Distribution of Umbilical Cord Care Practices in Newborns in the Working Area of the Kepenuhan Community Health Center

Umbilical Cord Care Behavior	Frequency	Percentage
Good	15	50%
Lack	15	50 %
Total	30	100 %

Based on Table 2, it can be seen that the umbilical cord care behavior of newborns in the Kepenuhan Community Health Center Working Area was categorized as good in 15 cases (50%) and poor in 15 cases (50%).

Bivariate Analysis

Table 3. The Relationship Between Postpartum Mothers' Knowledge and Behavior Toward Umbilical Cord Care in Newborns in the Working Area of the Kepenuhan Community Health Center

Variable	Umbilical Cord Care Behavior						OR	P Value
	Good		Lack		Total			
	N	%	N	%	N	%		
Knowledge								
Good	13	43,3	7	23,3	20	66,7	7.429	0,020
Lack	2	6,7	8	26,7	10	33,3		
Total	15	50	15	50	30	100		

Disussion

The research findings indicate a significant relationship between the knowledge of postpartum mothers and their umbilical cord care behavior. Out of 30 respondents, 13 (43.3%) with good knowledge demonstrated proper umbilical cord care behavior, while 7 (23.3%) with good knowledge exhibited poor behavior. In contrast, among those with poor knowledge, only 2 (6.7%) showed good care behavior, and 8 (26.7%) exhibited poor behavior. The Chi-Square test yielded a p-value of 0.020 ($p < 0.05$), confirming a statistically significant association between the two variables. This conclusion is based on data collected over one month in April 2025, using a 30-question questionnaire to measure mothers' knowledge and behavior at the Kepenuhan Public Health Center.

These results align with previous studies, such as the one by Astuti (2020), which also found a significant relationship between a mother's knowledge and their umbilical cord care practices. Astuti's research, conducted with 75 respondents using an accidental sampling technique, similarly concluded that most postpartum mothers had good knowledge about umbilical cord care. The Chi-Square test in that study also showed a highly significant p-value of 0.000 ($p < 0.05$), reinforcing the conclusion that maternal knowledge is a critical factor influencing care behavior. Furthermore, the study by Mudarris and Gina (2024) highlighted that improper umbilical cord care can lead to serious health issues, such as neonatal tetanus, a condition caused by the bacterium *Clostridium tetani* entering the body through the umbilical stump.

Our findings and existing literature suggest that a lack of proper knowledge is a key driver of incorrect umbilical cord care. Panggabean et al. (2024) noted that many mothers still use traditional practices like applying alcohol or covering the stump with sterile gauze, often driven by fear of infection or a lack of self-confidence. This highlights a crucial gap in health education. According to the researcher's assumption, incorrect care can be identified by signs of infection such as fever, poor feeding, swelling, redness, and a foul odor in the umbilical stump. This underscores the importance of knowledge as a prerequisite for appropriate behavior. A well-informed mother is more likely to perform correct care, leading to better health outcomes for her baby.

Therefore, continuous and comprehensive health education for postpartum mothers is essential to reduce neonatal mortality. Such education should not only focus on the mother but also include family members and other close individuals who interact with the newborn. The education should cover the definition, purpose, correct procedures, and warning signs of infection related to umbilical cord care. This approach is supported by Abidah (2024), who emphasized the role of healthcare professionals, such as midwives, in providing detailed and continuous counseling to mothers. The effectiveness of these educational efforts is influenced by the mother's level of education and the consistent availability of reliable information from healthcare providers at the Kepenuhan Public Health Center.

CONCLUSION

This study successfully identified a significant relationship between the knowledge of postpartum mothers and their umbilical cord care behavior at the Kepenuhan Community Health Center, with a Chi-Square test yielding a p-value of 0.020 ($p < 0.05$). The majority of mothers in the study demonstrated good knowledge and behavior, yet a notable portion still exhibited poor practices, highlighting an ongoing need for targeted intervention. A key limitation of this research is the relatively small sample size of 30 respondents, which was due to the total sampling method employed. This small size may limit the generalizability of the findings to a broader population. Additionally, as a cross-sectional study, it cannot establish a causal relationship, but rather an association between knowledge and behavior. Based on these findings, it is recommended that future research explore this relationship using a larger, more diverse sample. Longitudinal studies could also be beneficial to track changes in mothers' knowledge and behavior over time, and qualitative research could provide deeper insights into the underlying reasons for improper care practices. We also suggest that future studies investigate the effectiveness of specific educational interventions to improve umbilical cord care behavior among postpartum mothers.

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