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Analysis the Incidence of Neonatal Umbilical Cord Infections

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Abstract

The number of neonatal deaths this year has increased very significantly compared to last year, namely 265 deaths. Neonatal deaths contribute 59% to infant deaths, where one of the biggest causes is neonatal tetanus, which is an umbilical cord infection that occurs in babies. Therefore, proper umbilical cord care is needed to prevent umbilical cord infections. Objective: The aim of this research is to analyze the incidence of umbilical cord infections at Hospital X, South Jakarta. Methods: Using quantitative research methods with a case control approach design. With 15 cases and 30 controls. The research instrument used a questionnaire on knowledge, attitudes, maternal support and how to care for the umbilical cord. Statistical tests use the Chi-Square test. Result: With the research results, the average age of respondents is 20-35 years, the mother's level of knowledge is good (47.5%), the mother's attitude (62.2%), family support (60%), and how to care for the umbilical cord is good (57, 8). Conclusion: There is no significant relationship between maternal age, p-value 0.545 and the incidence of umbilical cord infection, there is a significant relationship p-value 0.000 of knowledge, maternal attitudes, family support, how to care for the umbilical cord and the incidence of infection. Suggestions for workplaces can be used as input to improve nursing interventions such as education about umbilical cord care, for mothers who have neonates it is hoped that the pocket book can be used as a reference in umbilical cord care, for educational institutions can facilitate post-partum mothers through health education, suggestions for future researchers are to consider other variables that might influence the incidence of umbilical cord infections, such as environment and culture.

Keywords: neonatal infection, umbilical cord care, umbilical cord infection

Introduction

According to data from the World Health Organization (WHO) in Oktarina (2024), the Infant Mortality Rate (IMR) is 27 deaths per 1000 live births. IMR is caused by preterm birth complications (34%), intrapartum complications (24%), sepsis (15%), congenital abnormalities (11%), pneumonia (6%), tetanus (1%), diarrhea (1%), and others (7%). According to the Indonesian Health Profile (2022), the Infant Mortality Rate (IMR) in Indonesia has decreased, but it still requires acceleration and efforts to maintain the target of 16/1000 live births by the end of 2024.

The total deaths of children aged 0 – 59 months in 2022 will be 21,447 deaths. Most of these occurred in the neonatal period (0-28 days) with 18,281 deaths (75.5% of deaths of babies aged 0-7 days and 24.5% of deaths of babies aged 8-28 days). The number of deaths is quite large in the neonatal period, the most common causes of death in 2022 are Low Birth Weight (LBW) (28.2%) and asphyxia (25.3%). Other causes of death include congenital abnormalities, infection, Covid-19, and neonatal tetanus.

The number of neonatal deaths reported in 2022 is 509 neonatal deaths. The number of neonatal deaths this year has increased very significantly compared to last year, namely 265 deaths (Dinkes, 2022). Neonatal deaths contribute 59% to infant deaths where one of the biggest causes is tetanus neonatorum disease, namely an umbilical cord infection that occurs in babies which is caused by the presence of the anaerobic bacteria Clostridium tetani, where the germs live and develop without oxygen (Oktarina, 2024).

Caring for newborns requires skills, therefore postpartum mothers of parity 1 must have optimal knowledge. Maternal knowledge can improve skills in providing optimal, good and correct care for neonates (Sintijak, 2022). According to Budiman in Arum (2024), the reality is that in society there are still many mothers who follow the cultural traditions that exist in society. For example, placing or wrapping traditional herbs around the umbilical cord so that the umbilical cord falls off quickly ‘puput’ or covering it with coins so that the umbilical cord doesn't become bulging. Even though this action does not need to be done, it can actually be dangerous, so if you give it concoctions, coffee grounds, coins, it can transmit germs. As a result, infection or tetanus occurs which is very dangerous because the mortality rate is high.

Method

Method should be structured as follows:

1. Research design

The research design was quantitative research, using a case control approach. The researcher makes a comparison between the number of cases and control samples does not have to be 1: 1, but can also be 1: 2 with the aim of obtaining better results (Vionalita, 2020).

2. Setting and samples

This research was conducted on March – July 2024 in outpatient clinic Hospital X Jakarta Selatan. The sample in this study totaled 45 respondents who met the inclusion criteria

3. Intervention (applies to experimental studies)

This study used a comparison of 15 case samples and 30 control samples of post-partum mothers and used inclusion and exclusion criteria. Instruments in the research included a questionnaire on knowledge of umbilical cord care, attitudes towards umbilical cord care, a family support questionnaire, and a questionnaire on how to care for the umbilical cord.

4. Measurement and data collection

In this research, data collection was carried out through two methods, namely primary and secondary data. Primary data was obtained directly from respondents used prepared questionnaires, interviews and observation. This questionnaire contains questions and related statements knowledge, attitudes, family support in umbilical cord care. Data secondary is obtained from previously existing sources. Like previous studies, journals, books, or statistical data. This secondary data used as support and comparison with primary data obtained from respondents.

5. Data analysis;

Univariate analysis described the frequency distribution of the independent variable's: knowledge, mother's age, how to care for the umbilical cord, mother's attitude, family support and variables dependent on the incidence of umbilical cord infection.

Results

The frequency distribution of variables in this study includes the incidence of umbilical cord infection, maternal age, maternal knowledge, maternal attitude, family support, and umbilical cord care. The majority of respondents were aged 20-35 years (95.6%), had good knowledge (47.2%), had a positive attitude (62.2%), had family support (60%), and had good methods of caring for the umbilical cord (57.8%).

Table 1
The Incidences

Incidences	f (n)	Percentage (%)
No umbilical cord infections	15	13
Umbilical cord Infections	104	87

The incidence of minor umbilical cord infections is only 13%. This data is shown in the following table:

Table 2
Research Variables

Variables	f (n)	Percentage (%)
Mother's Ages		
20 – 35 y.o.	43	95.6
More than 35 y.o	2	4.4
Knowledge		
Good	21	47.2
Enough	9	20.2
Less	15	33.3
Mothers Attitude		
Positive	28	62.2
Negative	17	37.8
Family Support		
Full support	27	60
Do not support	18	40
Umbilical Cord Care		
Good	26	57.8
Enough	17	37.8
Less	2	4.4

Bivariate analysis was carried out between variables. All variables are interrelated except the variable maternal age. The largest OR value is for the mother's attitude variable, namely the Odds Ratio (OR) for attitude is 8.5, indicating that mothers with a negative attitude are 8.5 times more likely to experience an incident of umbilical cord infections compared with mothers who have a positive attitude.

Table 2
Research Variables

Variable	Incidence of Umbilical Cord Infections				p-value	OR
	Infection		No Infection			
	n	%	n	%		
Mother's Ages						
21 – 35 y.o.	15	33.3	28	62.2	0.545	0.6
More than 35 y.o	0	0	2	4.4		
Knowledge						
Good	0	0	21	46.7	0.000	2.46
Enough	2	4.4	7	15.6		
Less	13	28.9	2	4.4		
Mothers Attitude						
Positive	0	0	28	62.2	0.000	8.5
Negative	15	33.3	2	4.4		
Family Support						
Full support	0	0	27	60	0.000	6.0
Do not support	15	33.3	3	6.7		
Umbilical Cord Care						
Good	0	0	26	57.8	0.000	2.6
Enough	13	28.9	4	8.9		
Less	2	4.4	0	0		

The research results showed that there was a significant relationship between knowledge, maternal attitudes, family support, how to care for the umbilical cord and the incidence of umbilical cord infections at Hospital X, South Jakarta and there was no significant relationship between maternal age and the incidence of umbilical cord infections.

Discussion

Based on the results of research conduct on 45 participants, it can be concluded that: 87% did not experience umbilical cord infections, the majority of respondents were aged 20 – 35 years (95.6%), good knowledge (47.2%), mother's positive attitude (62.2%), supportive family support (60%), wow to care well for the umbilical cord (57.8%). There was no significant relationship between maternal age and the incidence of umbilical cord infections. The largest odds ratio (OR) value is the mother's attitude towards umbilical cord care with a value of 8.5. Where the negative attitude variable of mothers has an 8.5 greater chance of experiencing an umbilical cord infection compared to mothers who have a positive attitude.

This research is in line with research by Elisa (2022) and Lisdayanti (2021) which shows that there is a significant relationship between maternal knowledge about umbilical cord care and the incidence of umbilical cord infections in babies. Based on

the findings and theory, it was found that respondents who experienced umbilical cord infections on average had poor, sufficient and medium levels of education, and did not know how to care for the umbilical cord properly, such as placing coins on the umbilical cord. Respondents answered that they could make the umbilical cord not 'stupid'. Meanwhile, this is not necessary because it can cause umbilical cord infection. Meanwhile, for respondents who did not find any incidence of umbilical cord infection, the respondents had good and sufficient knowledge. The average education level of respondents is high.

Respondents who experienced umbilical cord infections were due to negative attitudes in caring for the umbilical cord, such as when wearing a baby's diaper, the umbilical cord is covered with a diaper, this can cause the umbilical cord to be exposed to urine or feces, and respondents agreed to place coins on the umbilical cord so that it doesn't become bulged. This is because respondents still follow the cultural traditions that exist in society. Respondents did not experience umbilical cord infections, because the respondents took good care of the umbilical cord. So that the incidence of umbilical cord infections can be prevented. In this and other research, it turns out that attitude is related to the incidence of umbilical cord infections (Panggabean, 2024) (Elisa, 2022) Lisdayanti (2021).

Family support is a condition that is beneficial for individuals and comes from those closest to them, such as support from husbands, parents, siblings, people around them who care and love them. Family support can have a positive effect on the health of family members. This form of support can be provided in two ways, directly and indirectly. The better the family support, the better the mother will be in caring for the umbilical cord (Novarinda, 2023).

Umbilical cord care must be carried out correctly, according to procedures and attention must be paid to cleanliness. The positive impact of caring for the umbilical cord using dry and clean principles is that the baby will be healthy with a clean umbilical cord condition and no infection. The results of the baby's umbilical cord treatment were healthy and there were no signs of infection. Umbilical cord care is an action that aims to care for the umbilical cord in newborn babies to keep it dry and prevent infection. Based on findings and theories, respondents who experienced an umbilical cord infection were found to have redness around the umbilical cord, pus or

pus, and a foul or unpleasant smell. This is because the respondents were not good at carrying out umbilical cord care.

Limitation

The manuscript should describe the limitations of the study.

Conclusion

The research results showed that there was a significant relationship between knowledge, maternal attitudes, family support, how to care for the umbilical cord, and the incidence of umbilical cord infections at Hospital X, South Jakarta and there was no significant relationship between maternal age and the incidence of umbilical cord infections. Suggestions for future researchers are to consider other variables that might influence the incidence of umbilical cord infections, such as environment and culture.

Ethical Considerations

This research had approval from the health research ethics committee.

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Conflict of Interest

There is no conflict of interest among authors.

Author contribution

The conceptualization of the study was led by Author 2. Author 1 and Author 3 were responsible for data collection and methodology. Author 3 provided statistical analysis, and Author 1 contributed to the manuscript revision. All authors contributed to the final approval of the manuscript.

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