

Timing of Umbilical Cord Removal in Infants: Comparison of Topical Breastfeeding and Dry Care

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ABSTRACT

Umbilical cord care is one of the efforts to prevent neonatal infections. The umbilical cord can be an entry point for infection into the baby's body, so proper cord care measures are needed so that the baby avoids infection, one of which is tetanus neonatorum infection. One of the cord treatments can be done by giving topical breast milk. The purpose of this study was to determine the effect of topical breastfeeding on cord release time in newborns. This study is a quantitative study conducted to determine the effect of topical breastfeeding on newborns, with a time series research method, two group post test design. The sampling technique used random sampling technique, the sample of this study was 40 newborns born in May-July 2022. This research instrument uses an observation sheet, the results of the study found that in the group with topical breastfeeding 3 days as many as 5 people (33.3%) and 4 days as many as 10 people (66.7%). The time of umbilical cord release with dry care 5 days was 3 people (20%), 6 days was 6 people (40%), 7 days was 4 people (26.7%) and 8 days was 2 people (13.3%). There was a difference between topical breastfeeding and dry care on cord release time with a value of $p = 0.000$ ($p < 0.05$).

Keywords: umbilical cord detachment, topical breast milk, dry care

INTRODUCTION

One of the goals of child health efforts is to ensure the survival of children through efforts to reduce the mortality rate of newborns, infants and toddlers. The trend of child mortality from year to year has shown a decrease. Regulation of the Minister of Health of the Republic of Indonesia Number 25 of 2014 concerning Child Health Efforts states that every child has the right to survival, growth and development and the right to protection from violence and discrimination so that it is necessary to make integrated, comprehensive and sustainable Child Health Efforts. Child health efforts are carried out from the fetus in the womb until the child is 18 years old.

The results of the 2017 Indonesian Demographic and Health Survey (IDHS) showed a Neonatal Mortality Rate (NMR) of 15 per 1000 live births, an Infant Mortality Rate (IMR) of 24 per 1000 live births. The under-five mortality rate (IMR) was 32 per 1,000 live births. However, the mortality rates for neonates, infants and toddlers are expected to continue to decline. Interventions that support child survival are aimed at reducing the IMR to 10 per 1000 live births and the IMR to 16 per 1000 live births by 2024. Meanwhile, in accordance with the Sustainable Development Goals, IMR is expected to reach 18.8 per 1000 live births by 2030.

Based on data reported to the directorate of family health through komdat.kesga.kemenkes.go.id, in 2020, of the 28,158 deaths of children under five, 72.0% (20,266 deaths) of them occurred during the neonates period. Of all reported neonates deaths occurred at the age of 0-28 days. Meanwhile, 19.1% (5,386 deaths) occurred between 29 days and 11 months and 9.9% (2,506 deaths) occurred between 12-59 months. In 2020, the most common cause of neonatal death was low fetal weight condition (LBW). Other causes of death were asphyxia, infection, congenital abnormalities, tetanus neonatorum and others.

Jambi Province in 2021 the number of baby births was 10,649 and the infant mortality rate was 9 cases and the neonatal mortality rate of 0-28 days was 4 cases, the causes were low birth weight 1 person, congenital abnormalities 1 person, asphyxia 1 person and other diseases 1 person.

The umbilical cord is the lifeline for the fetus while in the womb, as it is through the umbilical cord that all needs for the fetus are met. The umbilical cord is protected and covered by Wharthon's jelly, a sticky substance formed from the mesoderm. The umbilical cord as a whole is wrapped by the amniotic layer along with the one that wraps the placenta. After the neonate is born, the umbilical cord connecting the neonate to the mother's placenta is cut. As a result of the cord cut, the umbilical artery and vein and ductus venosus are obliterated. The arteries become the umbilical ligament lateralis, the veins become the ligamentum teres, and the ductus venosus becomes the ligamentum venosus. The remaining umbilical cord that is still attached to the baby's abdomen is also called the umbilical stump which requires good care to prevent infection.

Umbilical cord care is one of the efforts to prevent neonatal infections. The umbilical cord can be an entry point for infection into the baby's body. So it is necessary to take appropriate cord care measures so that the baby avoids infection, one of which is tetanus neonatorum infection. This disease is caused by clostridium tetani spores due to the entry of tetanus germ spores into the body through the umbilical cord due to care or actions that do not meet hygiene requirements. Poor umbilical cord care results in the umbilical cord becoming long. The risk of prolonged cord detachment is umbilical cord infection and tetanus neonatorum.

Based on research conducted by Andi Umrah (2017) on the Effect of Topical Breastfeeding on Cord Care Time in Newborns at the Angkona Health Center, Angkona District, East Luwu Regency. The results showed that there was an effect of topical breast milk administration on cord care time with a value of $p = 0.000 < \alpha = 0,05$. Topical breast milk administration in cord care in newborns requires a faster time of less than 7 days in cord care compared to babies who only get cord care using open or dry care.

Based on a preliminary survey that has been conducted, PMB Nuri is one of the clinics that has the highest labor in Jambi City with an average of 40 births per month. Based on the initial survey that the researchers conducted at PMB Nuri, they applied umbilical cord care with dry care to all newborns with an average loose umbilical cord on days 4-7 and did not know about the umbilical cord care technique using topical breast milk.

The purpose of the study was to determine "the difference between Topical Breastfeeding and Dry Care on Cord Release Time at PMB Nuri Jambi City in 2022".

METHOD AND MATERIAL

This study is a time series study using two groups, namely the treatment group and the control group. One group was given topical breast milk treatment while the other group was given dry treatment. This research was conducted at PMB Nuri in Jambi city in February-August 2022.

The population in this study were all babies born at PMB Nuri in May-July 2022. The number of all births were divided into two groups of neonates namely, topical breastfeeding group and dry care group. The groups were determined randomly. Samples were taken with random sampling technique. Random sampling is a simple sampling method because sampling from a population is done randomly without regard to the strata in that population. The researcher will determine specific criteria that are in accordance with the research objectives.

The type of data used in this study is primary data through observation sheets to determine the difference in topical breast milk and dry care on cord release time at PMB Nuri

Jambi City 2022. Filling in the observation sheet by giving a checklist if the action has been taken. Data collection instruments in this study used observation guidelines.

Univariate analysis aims to explain or describe the characteristics of each research variable. Bivariate analysis to test the mean difference in cord release time with topical breastfeeding and dry cord care in newborns.

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RESULT

Univariate Analysis

Table 1 Cord Release Time

With Topical Administration of Breast Milk

Table 1 shows that out of 15 respondents, 5 people (33.3%) released the umbilical cord with topical breast milk after 3 days and 10 people (66.7%) released the umbilical cord with topical breast milk after 4 days.

No	Umbilical Cord Removal Time	f	%
1	3 hari	5	33,3
2	4 hari	10	66,7
	Total	15	100

Table 2 Cord Removal Time

With Dry Care

No	Umbilical Cord Removal Time	f	%
1	5 days	3	20
2	6 days	6	40
3	7 days	4	26,7
4	8 days	2	13,3
	Total	15	100

Based on table 2 that of the 15 respondents, as many as 3 people (20%) cord release time with dry care after 5 days and as many as 6 people (40%) cord release time with topical breast milk after 6 days, as many as 4 people (26.7%) cord release time with dry care after 7 days and as many as 2 people (13.3%) cord release time with topical breast milk after 8 days.

Bivariate Analysis

Differences in cord detachment time after topical breastfeeding and dry care.

The difference in cord release time with topical breastfeeding and dry care can be seen in Table 3 below:

Table 3: Differences in cord detachment time after topical breastfeeding and dry care.

No	Variabel	Median	Minimum	Maksimum	P Value
1	Waktu pelepasan tali pusat setelah pemberian topikal ASI	4	3	4	0,000
2	Waktu pelepasan tali pusat dengan perawatan kering	6	5	8	

Based on the Mann Whitney test in table 3, the median cord release time after topical breast milk application was 4 days. The median value of cord detachment time with dry care was 6 days. Based on the results of the analysis, the value of $p=0.000$ was obtained because $p<0.05$, so statistically there was an effect of topical application of breast milk on cord release time at PMB Nuri Jambi City.

Cord care can start from colostrum to transitional breast milk. Colostrum will develop into mature breast milk within 3-4 days after delivery. Colostrum/breast milk contains antibodies and anti-infective substances such as IgA, lysosomes, lactoferrin, and white blood cells in high concentrations compared to formula milk. Breast milk contains many elements or substances that meet the needs.

Based on research conducted by Andi Umrah in 2017 on the Effect of Topical Breastfeeding on Cord Care Time in Newborn Babies at the Angkona Health Center, Angkona District, East Luwu Regency. The results of the study obtained umbilical cord with a p value = $0.000 < \alpha$ value = 0, 05. Topical administration of breast milk in cord care in newborns requires a faster time of less than 7 days in cord care compared to babies who only get cord care using open or dry care.

According to research conducted by Simanungkalit (2019) on umbilical cord care with topical breast milk on the length of cord release, it was found that there was an effect of cord care with topical breast milk on the length of cord release in newborns at PMB N Palangka Raya with p value = 0.023. The breast milk topical treatment group had an average cord release time of 5.6 days, with the fastest cord release time being 4.1 days and the longest time being 8.7 days.

DISCUSSION

The results of this study are in line with Umrah's research (2017), in his research showing that in cord care with topical breast milk most of the length of cord release is faster. The results of this study are also in accordance with Simanugkalit's research (2019: 365) that the umbilical cord will break within 5 to 14 days. The umbilical cord treated with topical breast milk has a faster release time so that it is effective in preventing infection and faster cord release. Research conducted by Sari & Dhesi, (2016: 90) the average cord release using topical breast milk is 6.18 days and dry care is 7.41 days.

The release of the umbilical cord with topical breast milk is more in the fast category, this is because after the baby is born the umbilical cord is cut, then the process of tissue death will occur. Here the umbilical cord is treated using colostrum / breast milk by applying breast milk to the umbilical cord of the newborn and kept clean and dry to prevent infection and accelerate the release of the umbilical cord from the baby's abdomen. Breast milk contains proteins that will bind to umbilical cord proteins so that cells experience programmed death and accelerate tissue drying. Breast milk also contains anti-infective and anti-inflammatory substances that play a role in protecting the baby's umbilical cord from infection and helping the wound healing process so as to accelerate the release of the umbilical cord.

Infants whose umbilical cords were treated with dry gauze had more cord releases in the normal category than in the fast category. According to the researchers' findings in the field, umbilical cords treated with dry gauze tend to dry more slowly, and there is pus-like fluid at the base of the cord.

Based on the results of the study, the median cord release time after topical breastfeeding was 4 days. The median cord detachment time with dry care was 6 days. Based on the results of the analysis, the value of $p = 0.000$ was obtained because $p < 0.05$, so statistically there was an effect of topical breast milk administration on cord release time at PMB Nuri Jambi City. The results of this study showed that the average length of cord release using topical breast milk was 5.69 days and treatment using dry gauze was 7.06 days, with a value of $p = 0.000 < \alpha 0.05$, so there was a significant difference between cord care with topical breast milk and dry gauze on the length of cord release, cord care time with topical breast milk was 1.37 days faster than dry gauze.

The results of this study are in line with the research of Kasiati et al. (2012) that the breast milk topical treatment group had an average cord release time of 5.6 days with the fastest cord release time being 4.1 days and the longest time being 8.7 days. The results of Supriyanik & Sri's research (2011) showed that the average length of cord detachment in the breast milk treatment group was 4 days and 3 hours. This study is in line with Subiastutik's (2012) research on the effectiveness of topical breastfeeding compared to that which states that topical breast milk is rich in antibodies, anti-inflammatory substances, and leukocytes play a role in suppressing the colonization of pathogenic microorganisms that can cause infection, and accelerate the time of cord detachment.

According to Kasiati, et al (2013; 45), umbilical cord care using breast milk is a safe, effective and efficient umbilical cord care and can protect babies from infection because breast milk contains immunoglobulins A, G and M and breast milk also contains lactoferrin and lysozyme as anti-bacterial, antiviral and anti-microbial.

Topical umbilical cord care with breast milk is better used in treating the umbilical cord because it prevents infection and the cord release time is faster. The proteins in breast milk bind to cord proteins that play a role in the process of repairing damaged cells and accelerating the wound healing process, resulting in faster cord release time. In addition, breast milk contains anti-infective and anti-inflammatory substances, as well as high antibodies that will prevent

bacterial colonies on the umbilical cord from becoming infected. In addition, the advantage of topical umbilical cord care using breast milk is that it is easily available.

CONCLUSION

Umbilical cord care using topical breast milk is a safe, effective and efficient umbilical cord care and can protect babies from infection because breast milk contains immunoglobulins A, G and M and breast milk also contains lactoferrin and lysozyme as anti-bacterial, antiviral and anti-microbial.

Umbilical cord care using the colostrum/breast milk method is cord care that is cleaned and treated by applying colostrum/breast milk to the wound and around the umbilical cord wound. Good care can prevent umbilical cord infection so the need for mothers to know the latest and good methods, this must be supported by the provision of reliable evidence-based service information, one of the recommended treatments is cord care using topical breast milk. Cord care using breast milk does not cause complications.

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