Original Article

doi:10.31674/mjn.2024.v16i02.022

MJN

Methods of Applying Breast Milk for Umbilical Cord Care and its Impact on the Speed of Umbilical Cord Detachment in Newborns

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ABSTRACT

Background: In Indonesia, the infant mortality rate due to tetanus is still high; generally, more than 50% of babies affected by tetanus will end up dying. To reduce infant mortality due to tetanus attacks, umbilical cord care is needed. Effective umbilical cord care methods speed up umbilical cord spreading and reduce the frequency of infections. There are different methods of umbilical cord care. One of them is the traditional method of applying breast milk to the umbilical cord of the newborn. The aim of this study is to evaluate the effect of umbilical cord care using the breast milk application method on umbilical cord acceleration in newborns. **Methods:** The research method used was a single non-equivalent post-test control group with a sample size of 38 children. **Results:** Based on the results of this study, it was found that in the intervention group for rapid umbilical cord release there were 16 babies (84.2%) and there were 3 normal babies (15.8%); in the control group for rapid umbilical cord release there were 7 babies (36.8%) and normal as many as 12 babies (63.2%). The results of the Chi-square test analysis show that there is an effect of umbilical cord care using the method of applying breast milk to the acceleration of umbilical cord detachment with a value of p = 0.027. **Conclusion:** Umbilical cord care using breast milk application is safe, effective and efficient and can protect the baby from infection because breast milk contains immunoglobulins A, G, and M, and breast milk also contains lactoferrin and lysozyme as anti-bacterial, anti-viral and anti-microbial.

Keywords: Acceleration of Umbilical Cord Removal; Breast Milk Application; Umbilical Cord Card

INTRODUCTION

Thorough and attentive care for newborn babies is crucial to ensuring their health, well-being, and optimal development. This includes providing exclusive breastfeeding, maintaining skin and umbilical cord stump hygiene, closely monitoring growth and development, providing adequate love and affection, and ensuring cleanliness in the baby's environment. With proper care, babies can thrive and be protected from the risks of infections and other health issues. Newborn babies are very susceptible to infections caused by several problems. One of the infections that often occurs in newborn babies is caused by problems with the umbilical cord. The umbilical cord or umbilical cord is a lifeline for the foetus while it is in the womb. The umbilical cord plays a crucial role in the growth and development of the fetus. It is through the umbilical cord that food, oxygen and other nutrients needed by the baby are distributed from the mother's blood. The umbilical cord exclusively functions during pregnancy. Once the umbilical cord is born, it is no longer needed. This is why the most common customary action is to cut and tie the umbilical cord after the baby is born. the umbilical cord dries out and falls off after a few days by itself (Astuti, 2020).

In Indonesia, the incidence of infection in newborns ranges from 24% to 34%, and the infant mortality rate due to infection is 7.3% (RI, 2017). In the Indonesia case, the incidence of neonatal tetanus showed variability between 2016 and 2018. In 2016, there were 14 cases resulting in infant mortality due to neonatal tetanus, with

Received: December 8, 2023 Received in revised form: August 23, 2024 Accepted: September 3, 2024

a rate of 0.6 per 1000 live births. The figures rose in 2017 to 25 cases, causing an increase in the infant mortality rate to 1.4 per 1000 live births, as reported by the Ministry of Health in 2018. However, by 2018, there was a decline to 10 cases, and the infant mortality rate due to neonatal tetanus decreased to 0.4 per 1000 live births (RI, 2017; Kemenkes, 2019).

From the data on infant deaths above, one of the causes is that the umbilical cord becomes infected. The umbilical cord is 50–55 cm long, and another word for the umbilical cord is (funiculus umbikalis), also called funis, stretching from the foetal umbilicus to the surface of the foetal placenta. The umbilical cord lines a single umbilical vein that carries blood that has been cleaned from the placenta to the foetus and two umbilical arteries that carry blood that has taken oxygen from the foetus's body (Obeagu & Obeagu, 2024). If the umbilical cord is not clean and dry, it can cause umbilical cord infections such as a pungent odour, redness of the skin at the base of the umbilical cord, and redness that spreads to the abdomen and is purulent. In advanced conditions, if not treated after early signs of infection are found, the infection can spread to other parts of the body along the umbilical vein and will result in portal vein thrombosis, liver abscess and septicaemia. It is important to care for the umbilical cord regularly and carefully and to report as early as possible if signs of infection in the umbilical cord are found (Elsobky *et al*., 2017)

Care for the umbilical cord was attended to. initially carried out using various herbs and other ingredients and was carried out by a traditional birth attendant. The increase in infant deaths due to infections of the umbilical cord makes umbilical cord care an important thing to pay attention to, such as the use of 10% povidone iodine antiseptic fluid or 70% alcohol. Treatment of the umbilical cord using antiseptics is then considered not good because it results in the umbilical cord getting wet and moist, which slows down the breaking of the umbilical cord and creates a risk of infection (WHO, 2015).

Based on the results of Basic Health Research (Riskesdas) in 2013, the percentage of ways to care for the umbilical cord in children aged 0-59 months was 24.1%, given betadine/alcohol was 68.9%, given laxatives was 1.6%, and given a concoction of 5.5%, and there is still a lot of umbilical cord care that is not in accordance with standards or evidence-based practice. In adherence to the standards of Antenatal and Postnatal Care (APN), no specific treatment is administered to the cut and tied umbilical cord. In contrast, traditional cord care practices involve the application of alcohol and various antiseptic agents in the APN method. However, evidence-based practice supports the efficacy of an alternative approach, where the use of breast milk for cord care has proven effective in preventing infections during the period preceding cord removal (Kemenkes, 2013).

Based on research conducted by Vural & Kisa (2006) Indicated by research findings, the mean duration for umbilical cord detachment when employing topical breast milk was 5.03 days, whereas the average duration for umbilical cord removal with dry treatment was 6.00 days. This signifies a notable difference in the time taken for the baby's umbilical cord to detach, with the topical use of breast milk being 0.97 days faster compared to dry treatment. Breast milk, demonstrated to harbour bioactive substances and cells, is recognised for its efficacy in combating infections and inflammation, showcasing anti-infectious and anti-inflammatory properties. properties, presents itself as a valuable alternative for umbilical cord care due to its diverse beneficial components Vural & Kisa (2006).

The results of research (Madian & Ouda, 2019) entitled Efficiency of utilising breastfeeding or milk for expediting the removal of the umbilical cord were investigated in comparison to the use of ethanol and dry care for newborns. The study aimed to assess the effectiveness of applying breast milk to the umbilical cord, evaluating its impact on hastening the process of umbilical cord detachment when contrasted with the use of ethanol and dry care methods. These results also show that of the 50 babies in the topical breast milk treatment group 3 times/day or every 8 hours: umbilical cord removal 1–4 days, and 50 babies treated with ethanol with the same frequency: umbilical cord removal 2–8 days. There exists a notable distinction between the treatment of the umbilical cord with ethanol and the application of breast milk.

Given the provided background information, the research question revolves around investigating whether there is an impact Linked to the treatment of the umbilical cord, the utilisation of breast milk for care has been associated with expediting the natural detachment of the umbilical cord in newborns at the Citra Medika Clinic in Medan.

METHODOLOGY

This research is classified as quantitative research Conducting a study with a quasi-experimental design, or specifically employing a quasi-experimental approach with a post-test-only non-equivalent control group, the research is cantered on observing outcome variables concurrently in both the intervention and control groups. The primary focus is on examining the timing of umbilical cord release as a key variable in this investigation. The research was conducted at Citra Medika Medan Independent Midwife Practice from March to June 2023, targeting all newborns delivered during this period.

The population comprised newborns born at PMB Citra Medika Medan from March to June 2023. Purposive sampling was employed to select 38 newborns as subjects, divided into an intervention group (receiving umbilical cord care with the breast milk method) and a control group (receiving dry gauze treatment). The measurements were taken upon umbilical cord detachment, categorised as quick if falling off within 1–7 days and normal if falling off within 8–14 days. Primary data was collected to assess umbilical cord care and the timing of umbilical cord removal, utilising an observation sheet for both the intervention and control groups. Data analysis involved univariate and bivariate analysis using the chi-square statistical test.

Ethical Consideration

The study obtained ethical permission from the Health Research Ethical Committee of STIKes Senior Medan, Indonesia with the reference number 422.241/STIKes-SENIOR/VIII/2022 on 20th May, 2022.

RESULTS

Univariate Analysis

The application of breast milk for umbilical cord care. application and dry treatment methods can be seen in tables 1 and 2.

Table 1: Frequency Distribution of Respondents Based on Acceleration of Umbilical Cord Removal by Applying Breast Milk to the Umbilical Cord

Variable Acceleration of Umbilical Cord Removal	N	%
Fast	16	94.2
Normal	3	15.8
Total	19	100

Table 1 shows that 16 newborns in the umbilical cord care group using the breast milk method fell into the category of rapid umbilical cord removal (84.2%).

Table 2: Frequency Distribution of Respondents Based on Acceleration of Umbilical Cord Removal with the Dry Gauze Treatment Method

Variable Acceleration of Umbilical Cord	N	%
Fast	7	36.8
Normal	12	63.2
Total	19	100

Table 2 shows the acceleration of umbilical cord detachment of newborn babies In the control group, umbilical cord care was administered using sterile gauze. was in the normal category, namely 12 babies (63.2%).

Bivariate Analysis

Table 3 below provides clear evidence of the impact of utilising the breast milk method for umbilical cord

care on expediting the detachment of the umbilical cord in newborns. The findings presented in Table 3 indicate the results of the analysis concerning umbilical cord care through the application of breast milk and its impact on the speed of umbilical cord detachment. The statistical test results reveal a *p*-value of 0.027, which is less than the significance level (α) of 0.05. Therefore, it can be deduced that there is a significant influence of employing the breast milk method for umbilical cord care on accelerating the detachment of the umbilical cord in newborns.

Table 3: Results of Analysis of Umbilical Cord Care Using the Method of Applying Breast Milk to The Acceleration of Umbilical Cord Removal in Newborn Babies at PMB Citra Medika Medan Year 2023

Topical Administration of Breast Milk	**Variable Acceleration of Umbilical Cord**				**Total**		***p***
	Fast		**Normal**				
	N	**%**	**n**	**%**	**n**	**%**	
Breast Milk Method	16	69.6	3	20.0	19	50	0.027
No (Dry Gauze)	7	30.4	12	81.8	19	50	
Total	23	100	15	100	38	100	

DISCUSSION

Accelerating the release of the umbilical cord with the breast milk application treatment method thorough and attentive care for newborn babies is crucial to ensuring their health, well-being, and optimal development. This includes providing exclusive breastfeeding, maintaining skin and umbilical cord stump hygiene, closely monitoring growth and development, providing adequate love and affection, and ensuring cleanliness in the baby's environment. With proper care, babies can thrive and be protected from the risks of infections and other health issues.

From the results of research conducted on 19 newborns using the method of applying breast milk to the umbilical cord, 16 (84.2%) babies were found in the rapid umbilical cord detachment category, while for the normal category the umbilical cord detachment was 3 babies (15%). These results show that the majority quickly release the umbilical cord by applying breast milk to the baby's umbilical cord. This is because breast milk has many benefits, including fulfilling the baby's nutrition, acting as an immune substance, anti-inflammatory, anti-bacterial, anti-viral, anti-parasite and anti-allergic. Umbilical cord care using the topical breast milk method is the care of the umbilical cord, which is cleaned and cared for by applying colostrum to the wound and around the umbilical cord wound. This fluid, whose volume ranges from 150-300 ml/24 hours, is the first-time fluid This substance is produced by the mammary glands and consists of cellular debris and residual materials present in the alveoli and ducts of the breast glands, both before and after the postpartum period.

SigA in colostrum is very effective in protecting the baby's body against infection. Uruakpa, Ismond & Akobundu (2002). SigA is the antibody most commonly produced by the body through the mucosal system, especially in MALT (Mucosa Associated Lymphoid Tissues). SigA in breast milk functions to prevent the absorption of foreign proteins when the baby's SigA has not yet been formed. SigA in babies originates from plasma cells in the lamina propria and lymph nodes under the mucosa of the digestive tract and is not produced in the first week of birth. The benefit of giving breast milk to newborns is as protection from infections caused by viruses, bacteria, parasites and other antigens. The protein content in breast milk, notably high at 4.1%, serves a crucial function in repairing damaged cells, thereby expediting the healing process and potentially accelerating the time for umbilical cord detachment ((Helmy, Ahmed & Ayed, 2021).

This aligns with findings from research conducted by Javadian *et al*. (2024) stating that the time for cutting the umbilical cord with human milk treatment is shorter (approximately 28.68 hours) compared to dry cord care (more or less 37.42 hours). Furthermore, according to research conducted by Subiastutik (2012),

umbilical cord care using topical breast milk is 5.69 days and using the dry method is 7.06 days; using topical breast milk comes off faster than in the dry method. Meanwhile, research conducted by Awad Helmy, Ibrahim Ahmed and Mohamed Ahmed Ayed (2021) stated that there was a difference in the time of umbilical cord removal using the colostrum method (average 94.23 hours) and dry gauze (average 128.94 hours).

Accelerate umbilical cord removal with dry gauze treatment

The proper care of the umbilical cord involves maintaining cleanliness, monitoring for signs of infection, handling with care, regularly changing dressings, cutting the cord with sterilised equipment, and keeping the baby's surrounding environment clean. Always consult with a doctor or healthcare professional for specific guidance tailored to your baby's condition.

From the results of research conducted on 19 newborns using the open umbilical cord care method (using dry gauze), the majority were 12 (81.8%) babies in the normal category of umbilical cord release, while for the rapid category of umbilical cord release there were 7 babies. (30.4%). Caring for the umbilical cord with dry gauze involves cleaning it and loosely wrapping it with sterile gauze. When performed correctly, following clean and dry principles, this method proves to be quite effective in preventing umbilical cord infections.

Almost the entire community, especially the families of babies born at the Citra Medika Clinic in Medan, already know the open method. In the past few years, umbilical cord treatment using 70% alcohol, povidone, iodine, turmeric or other ingredients is still found in several places, so cases of infant death due to tetanus are still common. Even though health workers had some difficulty conveying this information, over time people finally understood that how to care for the umbilical cord using an open method is more natural and better for the baby. The public also understands that a safe way to remove the umbilical cord can be done without using 70% alcohol, povidone, iodine, turmeric or concoctions.

The results of this study are in accordance with the results of research conducted by Umrah (2017) that in the dry gauze group (control), the length of umbilical cord release was fast for 6 babies (31.6%) and normal for 13 babies (68.4%). Also, in line with the research results of Kasati *et al*. (2013), in the dry umbilical cord treatment group, the average time for umbilical cord removal was 6.9 days, and the longest time was 10.1 days. The results of this research are also in line with Hunt's statement in Astari and Nurazizah 2019, which explains that one of the factors that influences the wound healing process is tissue oxygenation. This process really requires sufficient oxygenation. The better the oxygenation, the faster the wound healing process will be. Oxygen levels in tissues are important for the formation of new wound healing cells. In wounds that are open or left exposed to air, the surface layer will dry out quickly. Oxygen plays an important role in the formation of collagen, new capillaries, epithelial repair, and controlling infection. Therefore, the umbilical cord cover or dressing must be chosen appropriately so that gas and air exchange remain smooth. However, it is best to leave the umbilical cord open so that the umbilical cord is freely exposed to air so that the umbilical cord removal process takes place quickly (Astari & Nurazizah, 2019).

The Effect of Breast Milk Application Methods on Umbilical Cord Care on Umbilical Cord Acceleration

From this study, it can be concluded that the application of breast milk in umbilical cord care has the potential to accelerate the healing process and cord separation. However, there is still no consensus on the most effective method of breast milk application. Further research is needed to more deeply evaluate the effects of various breast milk application methods on cord separation acceleration and overall cord care success. Nevertheless, the results of this study indicate that the application of breast milk in umbilical cord care has the potential to be a beneficial practice in newborn care.

Based on the results of this study, on 19 newborns in the intervention group whose umbilical cords were treated with breast milk (50%), the results showed that 16 babies (69.6%) had rapid umbilical cord detachment, and 3 babies (20.0%) were normal. Meanwhile, in the control group of 19 newborns whose umbilical cords were treated with dry gauze (50%), it was found that 7 babies (30.4%) of the umbilical cord detachment were in the rapid category and 12 babies (81.8%) were normal. The results of this study showed

that the majority of umbilical cord removal times were treated with breast milk, whereas in the control group treated with dry gauze, the majority of umbilical cord detachment times were normal. The Chi-Square statistical test results for the application of breast milk on umbilical cord care and its impact on the timing of umbilical cord removal in newborns at PMB Citra Medika Medan demonstrated a significant relationship, as indicated by a p-value of 0.027. This value is less than the predetermined significance level (α) of 0.05. Consequently, it can be inferred that there is a significant influence of umbilical cord care involving the application of breast milk in expediting the release of the umbilical cord in newborns.

In this study, it was found that in the breast milk application group, on the first day the umbilical cord appeared yellowish white, on the second day it wilted, shrivelled and changed colour to brown, on the third day the umbilical cord appeared black and dry, odourless and there was no fluid like pus at the base of the umbilical cord. The umbilical cord falls off on the third to eighth day. Meanwhile, for the control group, on the first day the umbilical cord still appeared yellowish white; on the second day it began to wilt; on the third day it wilted and shrivelled brownish; on the fourth and fifth days it dried and turned black; during this process, mucosal fluid appeared like pus at the base of the cord. centre, so that the umbilical cord becomes wet and sticky, which causes the umbilical cord to fall off longer; the umbilical cord falls off on the sixth to ninth day.

Apart from that, umbilical cord care using breast milk can reduce the incidence of omphalitis and faster delivery time (Golshan & Hossein, 2013), Breast milk, rich in nutrients like lactose, proteins, fats, and minerals, delivers these components directly to cells, making it a suitable option for umbilical cord care. The elevated protein content in breast milk aids in cell repair and accelerates the healing process, contributing to the prompt release of the umbilical cord. Furthermore, breast milk is confirmed to contain bioactive factors such as immunoglobulins, enzymes, cytokines, and cells, which exhibit effective anti-infectious and anti-inflammatory properties. Utilising breast milk for umbilical cord care is advantageous not only for its nutritional richness but also for its affordability and sterility. This technique is straightforward for mothers to execute, offering both practicality and psychological satisfaction in nurturing their infants (Harahap *et al*., 2022).

The findings from the aforementioned study align with another research, which explored the comparison between the colostrum method and the open method in terms of the duration of umbilical cord removal in newborns. The research revealed that the average duration of umbilical cord removal in newborns using the colostrum method was approximately 4.9 days, while it was 5.8 days for the open method. This indicates a discernible difference in the length of umbilical cord release, with a time gap of 0.87 days or 20.88 hours between the two methods. Importantly, the study's results indicate a significant relationship (p-value = 0.002) between the chosen methods of umbilical cord care and the duration of umbilical cord removal (Astari & Nurazizah, 2019).

The colostrum method and the open method of umbilical cord care share a common underlying principle., namely that they are not covered with anything or left open, but it turns out there are differences between colostrum care and open care. The research results of Allam *et al*. (2015) showed that there were 80% of the experimental group with an average length of umbilical cord removal on days 4 and 5, and only 20% of the control group on days 5 and 6. Meanwhile , in the control group, there were only 11 babies (3%) who "pooped" on day 5 and 75% more than 7 days (Allam *et al*., 2015). Health workers and mothers need to know that the colostrum method can also be used to speed up the process of removing the umbilical cord in newborn babies. Implementing umbilical cord care using the colostrum method in newborns holds significance as it can expedite the separation of the umbilical cord. Additionally, this method is associated with a reduced risk of infections, contributing to potential cost savings. Preventing infections through effective umbilical cord care is economically advantageous, considering the expenses associated with medical treatments for infections. Therefore, the colostrum method not only promotes a quicker and safer umbilical cord separation but also presents economic benefits by minimising the likelihood of infection-related expenditures (Madian & Ouda, 2019).

Similarly, in a study conducted by Sari, Salimo and Budihastuti (2017), it was reported that the average

time for umbilical cord removal using breast milk was 127.41 hours. The significance value for the duration of umbilical cord removal using breast milk compared to dry gauze was 0.000. Due to the non-normal distribution of the data ($p < \alpha$), the Mann-Whitney correlation test was employed as an alternative test. The results of the Mann-Whitney correlation test yielded a significance level of $\alpha = 0.05$, with a p-value of 0.00. Since the obtained significance p value was less than α, the hypothesis in the study was accepted, indicating that breast milk is effective for umbilical cord care in newborns. Accordance with the theory of Elliot and Williams (2022), which states that the umbilical cord gradually dries up, turns black and will fall off within 10 days, the time span for umbilical cord removal does not exceed 10 days. Also in accordance with the theory, the umbilical cord will fall off within 5 to 14 days, but this is not the standard because it can be faster or longer, where the umbilical cord that is treated with topical breast milk has a faster shedding time, so it is effective in preventing infection and the umbilical cord is released more quickly. Apart from that, breast milk offers the advantage of being both anti-infectious and anti-inflammatory, containing antibodies that play a protective role for the baby's umbilical cord, shielding it against infections and promoting the healing process. The presence of IgA, a crucial immunoglobulin, facilitates leukocyte infiltration at the base of the umbilical cord, providing direct antibacterial defence against pathogenic bacteria. T and B lymphocytes contribute to antibody synthesis, forming specific immunoglobulins with bacteriostatic effects against antigens. This bacteriostatic effect is instrumental in preventing the growth of pathogenic bacteria, reducing the risk of infections, and potentially expediting the release of the umbilical cord (Lestari *et al*., 2021).

Sari, Salimo and Budihastuti (2017) revealed that the average duration for umbilical cord treatment using indigenous breast milk was 6.18 days, whereas the average duration for treatment with dry gauze was 7.14 days. The correlation coefficient (ρ) was calculated as 0.010, which is less than the significance level (α) of 0.05. Thus, it can be inferred that the release of the umbilical cord through the local method with breast milk occurs one day faster compared to the open method or the use of dry gauze.

Breast milk is readily available and easy to use as a non-invasive method of umbilical cord care. Using breast milk takes less time to separate the umbilical cord than using antiseptic solutions. Breast milk is used as a home remedy to treat minor illnesses such as conjunctivitis, insect bites, contact dermatitis, and infected cuts, burns and scrapes (Elsobky *et al*., 2017).

Umbilical cord treatment with breast milk can provide benefits for both the mother and the baby in utilising breast milk for umbilical cord care. For the mother, it helps prevent breast milk blockages. Meanwhile, for the baby, this method results in a quicker removal of the umbilical cord compared to the treatment with dry sterile gauze. It's important to note that the impact of umbilical cord care with breast milk is minimal. meaning it is very small and the cost of care is more efficient (Hartono & Purwanto, 2016). According to Allam *et al*. (2015), good care can prevent umbilical cord infections, so mothers need to know the latest and best methods; this must be supported by the provision of reliable, evidence-based service information. One of the recommended treatments is cord care. The centre uses breast milk application. Umbilical cord treatment using breast milk does not cause complications. Research conducted by Sari *et al*. (2017) found that the average umbilical cord removal using topical breast milk was 6.18 days and dry treatment was 7.41 days. Umbilical cord care using breast milk is safe, effective and efficient 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, anti-viral and anti-microbial (Kasiati *et al*., 2013; Astari & Nurazizah, 2019).

Limitations

As the sample size is limited, sample size, uncontrolled variations in environmental factors, and potential differences in the application of the breast milk method must be considered. Additionally, the short observation period, varying health conditions of the infants, and the absence of a control group affect the validity of the results. These limitations indicate that further research is needed to strengthen the conclusions.

CONCLUSION

The analysis of this study demonstrates a noteworthy impact on accelerating the detachment of the umbilical cord when utilising the breast milk method for care. The results suggest that employing breast milk for umbilical cord care is associated with a faster natural detachment of the umbilical cord in newborns.

Most infants in the group where umbilical cord care involved the application of breast milk belonged to the rapid cord removal category, comprising 16 babies (84.2%). The majority of newborns in the control group, where umbilical cord care involved sterile gauze, experienced a normal acceleration of umbilical cord release, with 12 babies (63.2%). The application of statistical tests yielded a *p*-value of 0.027, which is less than the predetermined significance level (α) of 0.05. This indicates a significant influence of employing the method of applying breast milk for umbilical cord care on expediting the detachment of the umbilical cord in newborns.

Recommendation

Future researchers are encouraged to explore and develop other methods of umbilical cord care to accelerate cord detachment in newborns. Further studies should examine various interventions that are effective, safe, and easy to apply, while considering factors that influence the healing process. Health practitioners are encouraged to apply the method of breast milk application in umbilical cord care for newborns. This method may help expedite cord detachment while maintaining hygiene and preventing infections. Proper training and evidence-based guidelines should support the implementation of this practice.

Conflict of Interest

The authors state that they do not have any conflicts of interest.

ACKNOWLEDGEMNT

The authors are thankful to the institutional authority for completion of the work.

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