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Umbilical Cord Seperation Time and Related Factors

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Abstract

Objective: The aim of the study is to determine the methods used in umbilical care, the separation time of the umbilical cord, and the factors affecting it.

Methods: A quantitative longitudinal observational analytical study was conducted between May 2018-May 2019 in an obstetrics clinic of a state hospital in eastern Turkey. The study consisted of a sample of 345 newborns and their mothers. Necessary permissions were obtained before the research data were collected. The data were collected through face-to-face interviews and via telephone. The data obtained were evaluated by percentage distribution, Independent Samples t-test, ANOVA, and Mann-Whitney U test.

Results: The average gestational age of the newborns is 39.11 ± .71 week. 42.6% of the mothers stated that they performed umbilical cord care. The mean separation time of the umbilical cord in newborns was calculated as 7.55 ± 2.64 days. It was observed that the umbilical cord of the babies whose mothers put some application to the umbilical cord fell off in an average of 8.27 ± 2.97 days, while those who did not practice fell off in 7.01 ± 2.22 days ($p < 0.05$).

Conclusion: According to the findings of the study, keeping the umbilical cord open and dry without any application to it shortens the time of umbilical cord falling off.

Key words: Cord practice, Midfiwery, Newborn, Nursing, Umbilical cord

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INTRODUCTION

The navel in newborns is a susceptible area for a bacterial colonization that causes infections such as neonatal sepsis and omphalitis (1-4). Shortly after birth, the umbilical cord encounters non-pathogenic bacteria such as coagulase-negative staphylococci and diphtheroid bacilli(5-7).The World Health Organization claims that one-fourth of the neonatal deaths in the world are due to the infection; 75% of these occur in the first week of life, with the umbilical cord being the gateway (8,9). Therefore, umbilical care is important to prevent infections in the neonatal period (4,10,11).

The umbilical cord is colonized by microorganisms of the vagina, skin, and the obstetrician's hands. Hand washing is the simplest and most effective way to prevent contamination of the umbilical cord. However, since it is not always possible to apply this, it is recommended to use antiseptics in the care of the umbilical cord (7,12-14). When the conducted research are examined, it is seen that antiseptics such as alcohol, triple dye, chlorhexidine, antibiotics (mupirocin, polybactrin, bacitracin, etc.), hexachlorphene containing powder, silver sulphadiazine, and povidone-iodine are used in umbilical care (4,15-20).

It has been observed that the use of topical antiseptics or antibiotics is not predominant in developed countries, but it is effective in areas at high risk for neonatal tetanus or in poor hygienic conditions (2,3,16,19,20). Apart from the fact that antiseptics have negative effects such as its iodine and mercury compounds are absorbed into the blood, having a neurotoxic effect (3), causing burns on the skin (13). It has been also reported that it delays the separation time of the umbilical cord (12,21,22). Delay in the separation of the umbilical cord increases the risk of developing infections. However, the purpose of umbilical care is to keep the cord dry and moisture-free so as not to lead to infection (4,7,11,19,23).

There are different applications in the literature on umbilical cord care according to the development levels of the countries. Especially in developing regions with low socioeconomic levels, antiseptic applications to the umbilical core are observed (5,7,13,19-21,24). The low socio-economic level of the province where the study was planned and the lack of data on umbilical care gives an important role to the health care professionals, especially to the nurses and midwives.

Therefore, the research was carried out to determine the methods used in umbilical care, the separation time of the umbilical cord, and the factors affecting it.

METHODS

Design

A quantitative longitudinal observational analytical study.

Sampling and Setting

The study was conducted between May 2018-May 2019 in an obstetrics clinic of a state hospital in eastern Turkey. The study consisted of a sample of 492 newborns born between the specified dates in the obstetrics and gynecology service of the state hospital and their mothers.345 newborns and their mothers who met the inclusion criteria were included in the research sample. The sample represents 70% of the population.

Inclusion Criteria

"Mothers and babies without mental illness, babies and mothers who do not need intensive care, babies and mothers without abdominal malformations, and mothers willing to participate in the study".

Data Collection Tool

A 45-question form was used. The first part consists of the introductory features of the newborn and the parents (20 questions) as a data collection tool in the research. The second part includes mothers' practices for umbilical care and the separation of the umbilical cord and changes around the umbilical cord area (25 questions).

Data Collection

The purpose of the research was explained to the mothers in the obstetrics clinic after obtaining the necessary legal permissions for the research. After obtaining written consent from the mothers who volunteered to participate in the study, a questionnaire that lasted an average of 10-15 minutes was completed by the mothers. Mothers were asked to check when and how often they bathe their babies, to check the cord area, and record the separation time of the cord. Mothers were called on the 10th day following the birth of the baby. Questions about the umbilical cord were asked to the mothers on the phone and recorded on the form. This process took an average of 5 minutes. The mothers of the newborns whose umbilical cord did not fall off within the first 10 days were called on the 14th day and if it still did not fall off, the data were collected on the 20th day

Statistical analysis

The Statistical Package for the Social Sciences (SPSS) 18.0 software program was used to analyze the data in a computer environment. The data were evaluated with percentage distribution, independent samples t test, Anova and Mann Whitney U test. Normality tests were performed before the variables were analyzed. The t test was used for the normally distributed variables, and the Anova and Mann Whitney U tests were used for the non-normally distributed variables.

RESULTS

57.4% of the mothers with an average age of 29.52 ± 5.17 were high school graduates and 77.1% were not working in an income-generating job.83.5% of the mothers reside in the city center, 85.2% of them stated that their income is equal to their expenses. 43.8% of the mothers who had an average of 1.65 ± .68 children stated that they had their last birth via cesarean section (Table 1).

The average week of gestation of the newborns included in the study was 39.11 ± .71, the average height was 49.83 ± 1.05 cm, the average weight was 3404.78 ± 1769.22 g, 36.8% of them were born in the winter season and 58.8% were male. Although not included in the table, it was observed that the average bathing period of the newborns was 3.47 ± 2.34 days, 43.8% of them were bathed on the third day and 90.4% of them were bathed in a sunken bath (Table 2).

42.6% of the mothers stated that they performed umbilical cord care, 95.4% of them stated that they used 70% alcoholic solution package sold from the pharmacy, 4.1% used povidone iodine, and 86.4% left the umbilical cord open.5.8% of the newborns showed signs of infection, 85.0% of them were applied antibiotic ointment to the umbilical cord, while 15.0% of them received an alcoholic solution.

The umbilical cord of the newborns fell off at an average of 7.55 ± 2.64 days (Table 3).

Table 1. Characteristics of Mothers

Variables	N	%
Age (Year)(X̄±SD)	29.52±5.17	
Age		
Aged 25 and below	77	22.3
Aged 26 and above	278	77.7
Educational status		
Middle school and under	40	11.6
Highschool	198	57.4
University and above	107	31.0
Employment status		
Yes	79	22.9
No	266	77.1
Place of residence		
Centre	288	83.5
District	29	8.4
Countryside	28	8.1
Economic Condition		
Income less than expenses	51	14.8
Income equal to expenses	294	85.2
Route of delivery		
Vaginal delivery	194	56.2
Cesarean section	151	43.8
The average number of children (X̄±SD)	1.65±.68	

Table 2. Socio-demographic Variables of Newborns

Variables	n	%
Gender		
Female	142	41.2
Male	203	58.8
Gestational age(week)(X̄±SD)	39.11±.71	
Height (cm) (X̄±SD)	49.83±1.05	
Weight (gr) (X̄±SD)	3404.78±1769.22	
Season of the year		
Winter	127	36.8
Spring	99	28.7
Summer	67	19.4
Fall	52	15.1

When some factors related to the separation time of the umbilical cord were examined, it was observed that the umbilical cord of the babies whose mothers aged 26 and over fell off in a shorter time (7.52 ± 2.66) compared to the mothers 25 years and younger. It was observed that the umbilical cords of the babies whose mothers put some applications to the cords fell off in an average of 8.27 ± 2.97 days, while the umbilical cords of the babies whose mothers did not put any applications to the cords fell off in 7.01±2.22 days.A statistically significant relationship was observedbetween the practice of an application to the umbilical cord and the time for the cord to fall off(t=4.523, p=.000).While the mean time for the umbilical cord to fall off was 7.30 ± 2.40 days for those who kept the umbilical cord area open to the air, it was calculated as 9.14 ± 3.45 days for those who kept it covered.A statistically significant relationship was found between the practice of an application to the umbilical cord area and the time for the cord to fall off(t=4.571, p=.000).

Table 3. Distribution of Some Conditions Related to the Umbilical Cord and Its Care in the Newborn

Variables	n	%
Application to the umbilical cord		
Yes	147	42.6
No	198	57.4
If yes, the application (n=147)		
Umbilical cord care kit (alcoholic solution)	141	95.9
Povidone iodine	6	4.1
Taking care of the umbilical cord area		
Open	298	86.4
Covered	47	13.6
Signs of infection around the umbilical cord	20	5.8
Yes	325	94.2
No		
If yes, the application [a](n=20)		
Antibiotic Ointment	17	85.0
Cleaning with alcohol	3	15.0
Cord separation time (day) (X̄±SD)	7.55±2.64	

[a]= Number of respondents

The mean time of separation of the umbilical cord in babies who were bathed in the first 2 days after birth was 6.79 ± 2.29 days while it was 7.80 ± 2.46 days for those bathed on the 3rd day and 8.20 ± 2.64 days for those bathed on the 4th day.A statistically significant correlation was observed between the

newborns' first bath time and the separation time of the umbilical cord (F = 8.152,p=.000).It was also found that as the frequency of bathing increased, the separation time of the umbilical cord shortened, but this correlation was not statistically significant (F =2.857, p =.059) (Table 4).

Table 4. Distribution of Factors Associated with the Separation Time of the Umbilical Cord

Variables	Cord separation time (day)	Test/p
Mother Age		
Aged 25 and below	7.67±2.56	t=.447, p=.665
Aged 26 and above	7.52±2.66	
Application to the umbilical cord		
Yes	8.27±2.97	t=4.523,p=.000
No	7.01±2.22	
Taking care of the umbilical cord area		
Open	7.30±2.40	t=4.571,p=.000
Covered	9.14±3.45	
First bath time		
Within the first 2 days	6.79±2.29	F=8.152,p=.000
3rd day	7.80 ±2.46	
4th day and after	8.20 ±2.64	
Frequency of bathing		
Everyday	7.43±2.70	F=2.857,p=.059
Every other day	7.41±2.32	
Other	8.38±3.54	
Signs of infection around the navel		
Yes	8.40±2.56	U=2449.500,
No	7.50±2.64	p=.060

t= t test F= Anova U=Mann-Whitney U

DISCUSSION

The umbilical cord falls off within the first 15 days after birth (25). The delay of the separation time of the umbilical cord by exceeding 1 month suggests bacterial infections and some blood diseases (15). Therefore, evaluation of the separation time of the umbilical cord and related factors becomes important for healthcare professionals. In this study, the separation time of the umbilical cord is 7.55 ± 2.64 (Min = 3 Max = 18) days. The World Health Organization recommends keeping the cord clean and dry (26). A study reports that keeping the area around the umbilical cord dry is a safe, economical, and easy practice (27). However, it is seen that there are different practices regarding umbilical cord care in health institutions and some families (25). 70% of alcohol consumption is recommended for umbilical cord care in the hospital where the study was conducted. However, only less than half of mothers practiced the umbilical cord care. Almost all of the mothers who practice cord care use the alcohol solution recommended by the hospital for the care. Although the number is low, it is seen that mothers also use povidone iodine in cord care. When the literature is examined, the use of alcohol in neonatal umbilical care contradicts the general recommendations and delays the fall of the umbilical cord (9,18). In this study, the fact that almost half of the mothers use alcohol in umbilical care as a routine practice does not coincide with the evidence-based practice approach in nursing. In other studies, it is seen that practices such use of alcohol and chlorhexidine are preferred for cord care in different hospitals (5,7,10,18,24,25). In the research, it is seen that the umbilical cord of the babies that weren't taken care of and left dry and open (7.01 ± 2.22, 7.30 ± 2.40) falls off in a shorter time. A study reported that the umbilical cord of the babies treated with chlorhexidine took 13.28 ± 6.7 9 days to fall off while the mean time for the dry umbilical cord group to fall off was reported as 7.85 ± 2.51 days (15). Also, in another study it was found that the mean separation time of the umbilical cord was 6.36 ± 2.88, and the separation time of the umbilical cords left dry without application was 4.78 ± 1.82 days (28). Quattrin et al.

(25) reported that the umbilical cords applied alcohol fell off in 12.0 ± 4.2 days and those left dry fell off in 10.1 ± 4.0 days. Khairuzzaman et al. (18) stated in his study that the mean cord separation time in chlorhexidine and dry cord care groups were 7.44 ± 3.75 and 4.83 ± 2.05 days after birth respectively. Ozdemir et al. (24) reported that the umbilical cords of babies who were treated with dry care fell off in a short time (average 7 days), and those who were applied 4% chlorhexidine (average 10 days) fell off in a longer time. As seen in this latest study and other studies, the umbilical cord of newborns that were left open and dry without any application fell off earlier. It is observed that mothers who are young, have a high economic level, and reside in the center have a higher rate of practice on the umbilical cord care. In the hospital where the study was conducted, it is recommended not to bathe the newborns until their umbilical cord falls off. However, in this study, it was observed that almost all mothers had their babies bathed before this recommended period. It was observed that the umbilical cord of the babies who were bathed in the first 2 days fell off in a shorter time. Ayyildiz et al. (29) reported that the umbilical cord fell off in 6.1 ± 1.4 days in babies given a sponge bath, and 8.3 ± 2.5 days in those given tub bath. It was reported that 3.9% of babies who were given tub bathing had symptoms of omphalitis. In this last study, 5.8% of mothers reported that newborns had symptoms of omphalitis. Also, it is observed that the separation time of the umbilical cord is delayed in newborns with omphalitis.

Limitation

In this study, the separation time of the umbilical cord and related factors were obtained from the mothers' self-reports. Data are subjective. In addition, the results obtained in the study can be generalized to the study group in which the research was conducted.

CONCLUSION

According to the findings obtained in the study, keeping the umbilical cord open and dry of the newborns and the first bath time shorten the separation time of the umbilical cord. Therefore, unless there is a medical requirement, it is recommended to use "the dry care method (" keep clean and dry "), as suggested by the World Health Organization and America Academy of Pediatrics. In this context, it is recommended that both health professionals and mothers be supported with evidence-based practices in belly care.

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Ethics Committee Approval: Ethics approval was obtained from Munzur University (the approval code: 30603717-050.01.04-). Written approval was obtained from the state hospital (the approval code: 31425239-900-).

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