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Comparison of Alcohol Cleaning Versus Natural Drying of Umbilical Card

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Abstract

Background: Neonatal period is the single most hazardous period in life. Bringing children happily into a healthy life is complex and requires an approach that is carefully planned, coordinated, and implemented by knowledgeable people. Methods and Materials: A quantitative interventional comparative research design was adopted to compare the healing method's effectiveness between natural drying and alcohol cleaning of treating newborn umbilical cord. The group with natural healing was carried out using a sterile gauze at the cord's base on the first day, followed by just exposure to air and off the diaper. Any adverse effects such as infections, bleeding, and granuloma was expected to report to the healthcare providers. Results: The study findings demonstrated a statistically significant difference in the mean cord separation time among the two groups in 6- 12 days with a p-value < 0.5. Conclusion: Dry natural umbilical cord healing was considered an effective method of handling.

Keywords

Natural healing, Cord care, Alcohol application, new born.

Introduction

The increasing global concern for the child's survival and protection stems from the fundamental realization that "Todays' child is the Citizen of tomorrow." 1Therefore child care starts from the moment of its birth 2 . Umbilical cord care is so essential since the cord's infections can be so fatal that it may even lead to neonates' death 3 . Prevention of

disease can be achieved by proper hand washing, following standard precautions, knowledge of transmission of infections for the care providers 4 , and alcohol cleaning of the umbilical cord 5 .

The umbilical cord connects the fetus and the placenta in the womb, made of more blood vessels and connective tissues. After birth, cutting the cord physically and symbolically separates the mother and her baby 67 . The cord is secured with an umbilical card clamp and cut the cord leaving 1.5 to 2 cms long. The cord stump (CS) dries, falls off, and the wound heals after the baby's delivery. The vessels in the umbilical stump then fibrosis and desiccated and thus become a potential site for infection 8 . Daily care in the nursery involves the application of triple dye or alcohol and folding the diaper under the cord stump to prevent wetting it with urine. Until the cord detaches and the site is completely healed (about 12 to 14 days), the cord should be kept dry 9 .

In most health care facilities, the umbilical cord is swabbed with alcohol at each diaper change to remove urine and stool and facilitate the desiccation process. Several studies compared the efficacy of daily treatment with Isopropyl alcohol versus wiping sterile water in a randomized controlled trial of Newborns. The cord separation time shows variation from 2-3 days with the use of isopropyl alcohol 10 .

There have been studies that discourages the use of alcohol routinely for cord care. It was recommended that health care providers should continue to develop evidence to support or eliminate historical practices. Globally the accepted and recommended standards given by world health organization since 1988 is to leave the cord for natural dry 11 .

The clinical guidelines for cleaning the cord and skin area around the cord with the prescribed preparation (e.g., Erythromycin solution, triple blue dye, or alcohol.) exist with the associated unique situations. Because the umbilical cord stump is a feasible medium for bacterial growth and can quickly become infected. The cord's stump and base should be assessed for edema, redness, and purulent drainage with each diaper change 12 . A few decades ago the study conducted by Kapellen TM found that the cord separated earlier with natural drying compared to cleansing with 70% isopropyl alcohol 13 .

"Many people in the past have cleaned the wound with rubbing alcohol, and however new research has shown that leaving it well alone helps it heal faster. Although the rubbing alcohol may kill bacteria, it may also kill the good bacteria that help the stump dry out and fall off [4]. Being a developing country, 74.28% Indian population lies in a rural area, with less access to medical facilities. At this juncture, a question stands unanswered, Why not natural drying in hospital settings, if that is the practice in domiciliary midwifery care? Hence the authours decided to forgo with this study to explore the associations between natural dry and alcohol usage on umbilical cord.

Methodology

An interventional comparative study was undertaken to evaluate the effectiveness of natural drying and alcohol cleaning of umbilical cord among neonates—the random sampling technique adopted to choose the samples for both the experimental and control group. The institutional ethical review board approved the study to conduct with the institution tied up hospital of the researchers team. The consent was obtained from the babies' mother, who will be assigned to two groups—the population of the present study population comprises 120 normal full-term healthy neonates. Premature babies, babies born after premature

rupture of membrane, babies born to mother with maternal infection, and babies with congenital and other disorders are excluded from the study. The data collection tool has three sections.

Section A

The items included to collect data concerning sterile technique at the delivery time, consisting of 12 items with the five pointlikert scale.

Section B

is developed on hygienic practices of mothers and nurses in providing umbilical cord care. Part-I is on the mother's sanitary practices, and Part -II is on nurses' hygienic practices (6 items are in each part).

The total score is 124, a score of above 65% was considered as good technique, a score of 45 to 65% as average, and a score of below 45% as a poor technique.Signs of infections were observed using the rating scale (checklist) for six days with yes or no responses. An observation checklist was used to mark the sterile techniques followed at the delivery time, followed by the measurement of the hygienic practice of mother/ attendant and nurses, and monitor any local/ systemic infection used for six days. Collected data were analyzed using the spss latest version. The $p<0.05$ accepted as a statistical reference to associate the statistically significant differences among the variables.

Results

In the present study, 58% of mothers were in the age group of 23-27 years in the natural drying group, 42% were in 18-22 years in the alcohol drying group. Concerning the type of family majority (68%) in the nuclear family type and (32%) in the the Joint family system.

Table1. Basic Demographic Characteristics

Variables	Natural Dry(%)	Alcohol used(%)
23-27 years	58	-
18-22 years		42
High school	30	40
Un educated	20	10
2.5 Kg	42	-
2.6 to 2.75	8	14
2.75 to 3 kg	-	36
Adverse events	20	-

Table 2. Follow up questions based on the observation

Follow-up questions	Natural Dry	Alcohol Dry	P value
Feeding pattern			
Breast feeding	39	34	
Formula	9	8	<.010
Combined	2	8	
Types of infections			
Mild	1	2	
Moderate	-	-	<0.080
Redness	-	-	
bleeding	1	2	
Cord Separartion			
Mean	9.8(4)	11(3.8)	<0.001
Range	4-25	4-23	
Median	10	11	

Table 3. Baseline data of two groups statistical association

Characteristics	Natural dry Mean	Alcohol used	P value
Signs of Infection	16.3 ± 2.8	-	41.16*
Use of Sterile Technique at the time of delivery	78.2±3.7	79.2±4.2	0.53*
Measuring the Hygienic Practice			
Mothers / Attendant.	66.7±12.6	70.3±13.6	1.37
Nurse	83.3	75.5	0.00
Evidence of any Local / systemic infection	21.8±3.3	20±1.8	0.75

The overall mean response scores on measurement of others' hygienic practices are more excellent (70.3 ± 13.6) in alcohol drying group comparatively (66.7±12.6) in natural drying group and found to be non-significant. The overall mean response scores on evidence of any local/systemic infection are more outstanding (21.8 ± 12.3) in the natural drying group comparatively (20±11.8) with the alcohol drying group.

Discussion

The study was undertaken to explore the effectivesness and The highest percentage of infection signs was demonstrated on Day 2, followed by Day 3, Day 4, and Day 1. However, lesser percentage of signs of infection evidenced on Day 5 and Day 6. In the present study highest rate of respondents (20%) evidenced signs of infection on Day 3 (X = 17.65) which is significant at 5% level, and the lowest percentage of respondents (4%) evidenced signs of infection on Day 6 (X = 101) which is found to be non-significant.

In the present study majority of the respondents received 75% of sterile technique practiced at the time of delivery (74%) in the natural drying group and (50%) in the alcohol drying group. 83.3% of sterile techniques were practiced by (26%) of the samples in the natural drying group and (50%) of the alcohol drying group samples. Further, the data subject to the chi-square test found signs indicating a significant difference in performance. [X= 6.11 (P < 0. 05)).

Scores of washing hands before and after caring for the baby (76%) in alcohol drying group (72%) in natural drying group (46%) of the respondents washes hands with soap and water after going to the toilet in alcohol drying group, whereas (28%) in natural drying group. Further, the data subjected to statistical test found to be significant. (P > 0.05)

In the present study majority of the respondents evidenced exclusive crying (54%) in the natural drying group and (50%) in the alcohol drying group, followed by Poor feeding (48%) in the natural drying roup and (44%) in alcohol drying group, Lethargy is (18%) in natural drying group and (10%) in alcohol drying group. Excessive sleepiness is evidenced (28%) in both the groups, Physiological Jaundice (2%) in the natural drying group. Eye infection (4%) in the natural drying group and (8%) in the alcohol drying group, there was no single evidence on infection of the hair follicles, (20%) of septic spots were evidenced in both the groups. Further, the data subjected to statistical test was non-

significant, indicating there is no significant difference in performance. (P> 0.05).

The overall mean response scores on umbilical cord infection signs are more outstanding (163 ± 2.8) among the natural drying group comparatively (0%) with alcohol drying group. Student t-test was applied for the data and found to be significant (t=41.16). The overall mean response scores on the use of sterile technique at the delivery time are more excellent (79.2±4.2) in the alcohol drying group comparatively (77.2 ±3.7) with the natural drying group. Student-test was applied for the data and found to be significant (t=2.53).

The overall mean response score is more excellent in the alcohol drying group on aspects of the use of sterile technique at the time of delivery and measuring the hygienic practices of mothers/attendant comparatively with lesser scores in natural drying groups of signs of infection and evidence of any local/systemic disease. Further, the data subjected to statistical test is significant at a 5% level, indicating a considerable difference in performance.

In this study, the highest percentage of signs and evidence of Infections were found in the natural drying group (21.31 ± 12.2) compared with the alcohol drying group /17.76 ±10.5). Further, the data subjected to F-test is non-significant, indicating there is no significant difference in performance. (F = 2.42). Appropriate hygienic practices were found in the alcohol drying group (77.98±5.2), who compared with the Further, the data subjected to F-test is significant, indicating a significant difference in performance. (F = 3.65)

In the present study, there is no significant association between age and signs and evidence of both groups' infections and hygienic practices. (P>0.05) . There is no significant association found between education evidence of infections and hygienic practices in natural drying group (P > 0.05) in the present study. However, there is a significant association between education and signs and evidence of infections and hygienic practices in the alcohol drying group. (P< 0.05) There is no significant association between occupation and signs and evidence of infections and hygienic practices in both natural drying and alcohol drying groups in the present study.
(P > 0.05).

A study compared cord bacterial colonization and morbidity among neonates whose cords were treated with triple dye and alcohol versus dry cord care. Seven hundred sixty-six newborns were selected randomly, 384 samples were treated with antibacterial agents, and 382 samples were left alone dry by natural method; observations were made up to one week. The cord care by dry method showed an incidence of Omphalitis. Hence, the study suggests cessation of bacteriocidal care of the umbilical stump must be accompanied by metticulous attention to the signs and symptoms of Omphalitis.

On par with the present study, the signs of infections raise the temperature, redness. Swelling and tenderness at the periumbilical area were statistically significant in both the natural and alcohol drying group (X= 17.65). The colonization of bacteria was not assessed by using culture swabs. Signs of infection were based on the investigators' clinical assessment. Evidence of local/systemic disease in the neonates was not statistically significant (P > 0.05). Overall the mean scores of signs of infections are statistically significant [t = 41.16 (P> 0.05).

The comparison of infection rate in natural and alcohol drying groups suggests that elimination of alcohol showed a significant difference in infection rate in the natural drying group. (30%) evidenced with signs of infection in the natural drying group, whereas none of the samples (0%) evidenced signs of disease in the alcohol drying group. Variables like age of the mother, occupation and education status of the mother, type of family mother belonged, weight and sex of the neonates, weeks of gestation at birth, hemoglobin status of the mother, and economic status of the mother were not statistically significant with infection rate (P>0.05).

On contradiction, the investigator had based the study on the research done by Dore S et al. (1998), who compared the effectiveness between alcohol cleaning and natural drying of newborn umbilical cords. One thousand eight hundred eleven samples were selected for the study. They were treated randomly with either 70% Isopropyl alcohol at each diaper change or the umbilical site's natural drying without special treatment. Results of the study evidenced no newborn in either group developed a cord infection.

The sterile technique scores at the time of delivery are found to be non-significant for the First 11 items and found to be significant for clean baby linen to mummify the baby (X^2= 4,12). Overall sterile technique scores at the time of delivery are signs indicating a significant difference in performance between alcohol cleaning and natural drying group (t = 2.53).

As per the investigator's observation, 15 (30%) of 50 neonates had an infection score of 1-30. The predominant signs were the rise of temperature, redness, swelling, and tenderness at the periumbilical area. The use of dirty linen to mummify the baby could have been a possible cause of infection in the natural drying group. The mother's hygienic practices were not statistically significant in the alcohol cleaning and natural drying group. [t= 1.37 (P> 0.005)]

As per the investigator's observation on hygienic practices, out of 50 mothers, 36 (72%) mothers did not wash hands before and after caring for the baby, and 14 (28%) mothers did not wash hands with soap and water.

It is a nurse's role to create awareness among mothers regarding safe and meticulous techniques that prevent the spread of infection. Mothers need to be knowledgeable, skillful to make use of available resources and supplies.

In this study, analysis of aspect wise response on effectiveness between natural and alcohol drying of the umbilical cord of neonates reveals, Mean percentage scores on signs and evidence of infections are higher in the natural drying group (2 1.31 +/- 12.2) when compared to alcohol drying group (17.76 +/-, 10.5).

Conclusion

The randomized case-control study demonstrated the effectiveness of UC care natural and alcohol-used healing method. In terms of infections and bleeding between the two groups, no statistical differences were found. Simultaneously, UC separation (fall-off) occurred in a short duration among the natural dry group babies. Dry natural cord care healing is an easy and safe procedure of facilitating healing in healthy newborn babies.

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