

Comparison of Umbilical Cord Separation with or without Alcohol Application in Newborn

Umbilical Cord Separation with or without Alcohol

Nazia Bashir, Aysha Razwan, Nafeesa Tariq, Ayesha Saeed, Shabina Toor and Zeeshan Ahmad

ABSTRACT

Objective: To compare the umbilical cord separation time with alcohol application and dry cord care in newborn

Study Design: comparative study

Place and Duration of Study: This study was conducted at the Pediatric Department Margalla Hospital Taxila from August 2021 to January 2022.

Materials and Methods: 60 neonates were included in each DCC (dry cord care) group and alcohol group (70% alcohol). The duration of umbilical separation and the presence of umbilical local infection were observed in all neonates. SPSS version 20 was used for analysis of data.

Results: The mean (\pm SD) cord detachment time in DCC group was 7(\pm 1) days while in alcohol group, mean (\pm SD) cord detachment time was 16(\pm 1) days. This difference between the two group was significant statistically ($p=0.021$). Cord infection was not observed in both the groups. 52 (86.67%) mothers were satisfied from the dry cord care method while only 28 (46.67%) mothers were satisfied from 70% alcohol method ($p=0.001$).

Conclusion: Our study concludes that in comparison to the 70 % Alcohol approach, dry cord care was highly beneficial in healing of umbilical cord stump, reducing the risk of cord infection, and reducing the duration of cord detachment.

Key Words: Umbilical cord; Alcohol application; Dry cord care

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INTRODUCTION

The umbilical cord is a unique tissue that is made up of two arteries and one vein that are connected by "Wharton's Jelly," a connective tissue. During pregnancy, the umbilical cord transports oxygen and nutrition to the fetus while also removing waste materials¹. Cord separation occurs between 5-15 days after birth. The residual umbilical cord stump before separation of cord may be regarded a "healing wound," allowing infections to enter the newborn's circulation via blood vessels. After 24 hours of life, the newborn begins to generate its own beneficial flora. Bacteria from external environment like mother's vagina, skin micro-flora, and hands of caregivers may all infect an infant's umbilical cord stump after birth².

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Currently, there has been a lot of debate amongst pediatrician over the most important umbilical cord care for newborns. A total of 130 million infants are born each year, with four million (3.1%) dying during the first four weeks of life. "Cord infections" account for 25% of these fatalities^{3,4}. A wide range of cleaning procedures and substances have been advised for umbilical cord care including betadine, triple dye, sterile water, alcohol 70% and dry cord care approach.

Infection has also been linked to delayed cord separation⁵. Chord cleaning with antimicrobials like alcohol has been repeatedly suggested to extend cord separation time⁶. Although in several studies, the suggested and practiced cord care protocols in the United States today vary and include Betadine, triple dye, 70% alcohol, soap antibiotic ointments, and water⁷.

Since 1998, the World Health Organization has promoted the usage of the dry approach for umbilical cord care. The American Academy of Pediatrics also believes that no one antiseptic therapy is preferable to another, and they endorse the German Association for Neonatology and Pediatric Intensive Care's recommendations for clean cord care and maintaining the umbilical cord dry⁸. Furthermore, the Association of Women's Health, Obstetric, and Neonatal Nurses advised no therapy for neonatal umbilical cord care in 2007 and regarded this new method as the gold

standard of neonatal healthcare services⁹. In addition, most hospitals continue to use traditional and outdated procedures for umbilical cord care, rather than following WHO guidelines. These findings support and highlight the immediate necessity to change the practice's policy and implement the most current gold standard in nursing cord care. As a result, the purpose of this research is to assess the efficacy of dry cord care vs % alcohol application on newborns.

MATERIALS AND METHODS

This was quasi experimental comparative study carried out at the pediatric department; Margalla Hospital Taxilla for duration of six months from August 2021 to January 2022. The hospital committee for research and ethics approve our study. The criteria for inclusion in our study, includes medically stable, full term neonates of either the gender not on antibiotics or anti-inflammatory therapy while the criteria for exclusion in our study includes preterm neonates and neonates whose parents are not willing to include. Totally, 120 neonates were included in the study. They were categorized into DCC (dry cord care) group and alcohol group (70% alcohol). 60 neonates were included in each group. All the information's were collected on a predesigned Performa. Sterile equipment was used to cut umbilical cords of all the neonates. In the alcohol group, moms cleansed the umbilical stump twice daily for two days following umbilical separation, but in the DCC group, mothers just dried it till umbilical separation. Hospitalized newborns were visited on the third and seventh days after delivery and were followed up by phone for one week until the umbilical cord was cut. The umbilical cords of neonates that were not detached in the first week of birth were tracked until they were detached. The duration of umbilical separation and the presence of umbilical local infection were the outcomes of our study. SPSS version 20 was used for analysis of data. Mean and standard were computed for quantitative variables whereas frequencies and percentages were calculated for qualitative variables. In order to compare the outcomes of two groups, Chi-square test was applied by taking p value of less than 0.05 as significant statistically.

RESULTS

Amongst 60 neonates in DCC group, there were 32 (53.33%) male neonates while female neonates were 28 (46.67%). In alcohol group, amongst 60 neonates, males were 24 (40%) while females were 36 (60%). (Figure 1) The mean (\pm SD) cord detachment time in DCC group was 7(\pm 1) days while in alcohol group, mean (\pm SD) cord detachment time was 16(\pm 1) days. (Figure 2) This difference between the two group was significant statistically ($p=0.021$). Cord infection was not observed in both the groups. 52 (86.67%) mothers

were satisfied from the dry cord care method while only 28 (46.67%) mothers were satisfied from 70% alcohol method ($p=0.001$). (Figure 3) The findings are shown in Figures 1 to 3 and Table 1 to 3.

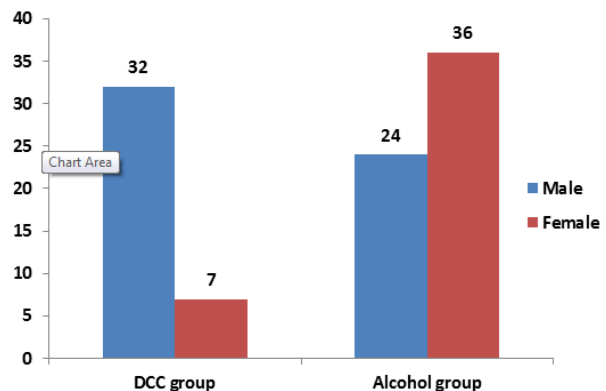


Figure No. 1: Gender wise comparison between the two groups

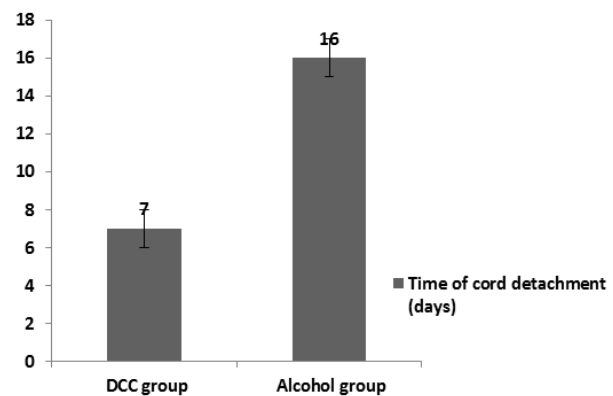


Figure No. 2: Comparison of cord detachment time in both the groups

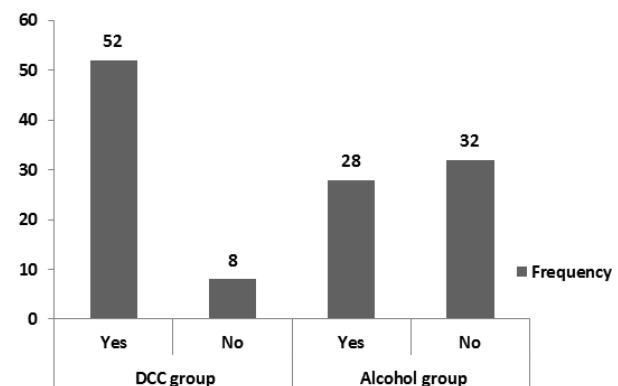


Figure No. 3: Comparison of mother's satisfaction in both the groups

Table No. 1: Gender-wise Comparison between DCC (Dry Cord Care) and Alcohol Groups

Gender	DCC Group (n=60)	Alcohol Group (n=60)
Male	32 (53.33%)	24 (40%)
Female	28 (46.67%)	36 (60%)

Table No. 2: Comparison of Cord Detachment Time in DCC (Dry Cord Care) and Alcohol Groups

Group	Mean Cord Detachment Time (days)	Standard Deviation (\pm SD)
DCC Group	7	± 1
Alcohol Group	16	± 1

Table No. 3: Results of the Study

Outcome Measure	DCC Group (Dry Cord Care)	Alcohol Group (70% Alcohol)
Cord Detachment Time	Mean: 7 days (± 1)	Mean: 16 days (± 1)
Cord Infection	Not observed	Not observed
Maternal Satisfaction	52 mothers (86.67%) satisfied	28 mothers (46.67%) satisfied

DISCUSSION

In both industrialized and underdeveloped nations, neonatologists are concerned about umbilical cord infection. To control the negative effects of the umbilical cord, a range of methodologies have been tried. The most prevalent method is dry cord care, which is even endorsed by the World Health Organization. Furthermore, a variety of drugs have been used to avoid or minimize these negative effects^{10, 11}. While unsafe conventional umbilical cord-care methods continue to be used, it appears that introducing effective and safe control methods are required. The aim of our study was to assess the efficacy of dry cord care vs % alcohol application on newborns. Based on the results post-intervention of two studied group our study shows that the mean (\pm SD) cord detachment time in DCC group was 7(± 1) days while in alcohol group, mean (\pm SD) cord detachment time was 16(± 1) days. This difference between the two group was significant statistically ($p=0.021$). These findings are in agreement with previous study which reported that cord separation timing length was higher in 70% alcohol group as compared to dry cord care¹². Another study reported a statistically significant difference of cord separation between the two groups. They reported that cord detachment time was shorter in dry cord care than 70% alcohol. The need of thorough hand cleaning and dry cord care practices by nurses and guardians was emphasized by the investigators¹³. Another study also supported our findings and reported that cord detachment time was shorter significantly in dry cord care than 70% alcohol (13 vs 16 days and $p=0.003$)¹⁴. In accordance with our finding, a study reported that cord detachment time was shorter significantly in dry cord care as compared to 70% alcohol. They concluded that in healthy newborns delivered in a high-income society, the umbilical cord care may be easily, safely, and cost-effectively handled using the natural drying

process of the cord¹⁵. Based on frequency of infections, cord infection was not observed in both the groups in our study. These findings are in agreement with the study reported no cord infection in both the groups¹⁶. Another study use different cord care techniques and reported no infection in all cord care techniques. These findings could be due to proper care of neonates by caregivers. Based on status of mothers satisfaction, 52 (86.67%) mothers were satisfied from the dry cord care method while only 28 (46.67%) mothers were satisfied from 70% alcohol method in our study ($p=0.001$). These results might be attributed to the shorter length of the cord separation time, the ease of dry cord procedures, and the cost-effective advantages associated with the dry cord care approach. In accordance with our finding another study reported that more mothers were satisfied from dry cord care as compared to 70% alcohol¹⁷. In contrast to our findings, a previous study reported equal satisfaction of mothers in both the group¹².

CONCLUSION

Our study concludes that in comparison to the 70 % Alcohol approach, dry cord care was highly beneficial in healing of umbilical cord stump, reducing the risk of cord infection, and reducing the duration of cord detachment. The findings of this research recommended that the policies on neonatal cord care practices be changed immediately to encourage the use of dry cord care approach as an evidence-based nursing practice that is safe, economic and natural.

Author's Contribution:

Concept & Design of Study: Nazia Bashir
 Drafting: Aysha Razwan, Nafeesa Tariq
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 Revisiting Critically: Nazia Bashir, Aysha Razwan
 Final Approval of version: Nazia Bashir

Conflict of Interest: The study has no conflict of interest to declare by any author.

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