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RESEARCH ARTICLE

A QUASI EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF BREAST MILK APPLICATION ON UMBILICAL HEALING AMONG NEONATES IN MATERNITY WARDS OF SELECTED HOSPITALS, PUNJAB

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Abstract

A quasi experimental study to assess the effectiveness of breast milk application on umbilical healing among neonates in maternity wards of selected hospitals, Punjab. A Quantitative Quasi experimental Non Randomized Control Group Research Approach and Design was used and non probability purposive sampling technique was used to select 80 neonates (40 in experimental and 40 in control group). Study was conducted in Civil Hospitals of Faridkot and Guru Gobind Singh Medical College and Hospital, Faridkot. Observational checklist had been used to assess umbilical healing among neonates. Breast milk application has been implemented to umbilicus of neonates in experimental group only. Post interventional assessment had been done.The finding of the study revealed that in experimental group the mean of sign of separation 2.6± 0.47 improved to 6± 0.64 after application of breast milk. In control group the mean of separation 2±0 which was 4.2± 0.41.The 't' value 9.4 was significantly associated at $p<0.001$ level of significance. In experimental group the mean of sign of infection 0 and in control group the mean of sign of infection 0.2±0.35 increased to 0.9± 1.94 after application of breast milk. In experimental group 40 were having day of separation between 4-6 day .In control group 25 were having day of separation between 10-12 days.

Introduction:-

Background of the study

"Prevention is not only better but also cheaper than cure" - Desiderius Erasmus

The newborn has no protective flora at birth, and normal skin flora begin to be acquired within 24hours. The first stage of microbial infection is colonization which means the establishment of the pathogen at the appropriate portal of entry. Pathogens usually colonize host tissues that are in contact with the external environment.[1]

After delivery of the newborn the umbilical cord is cut using a sterile technique, and the newborn must make the essential transition to extra-uterine life. The umbilical cord is clamped (or tied tightly) in order to keep the umbilical vessels occluded to prevent bleeding. Once the umbilical cord is cut, the oxygen and blood supply to the cord

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stump is stopped and it begins to dry, turning black and stiff in appearance. The freshly cut umbilical cord is a prime site of bacterial colonization. Omphalitis is proximally caused by colonization that progresses to local signs of infection including pus, discharge, redness, swelling, or foul odor.[2]

In 1998, the World Health Organization (WHO) established umbilical cord care recommendations at birth and after discharge from the hospital that are currently being observed in developed countries. Although application of a topical antimicrobial to the cord stump after cutting the cord once a day for the first 3 days may reduce cord colonization, it may delay cord separation time.[3]

A variety of disinfectants or antibiotics for neonatal umbilical cord care have been reported: alcohol, triple dye, chlorhexidine, antibiotics, mupirocin, polybactrin, bacitracin, hexachlorophene-containing powder, silver sulphadiazine and povidone-iodine. Practices include use of traditional herbs mixed with cooking oil or water that has been used to wash an adult woman's genitals (numbati) or application of ash, fluid from pumpkin flowers, powder ground from local trees, cow dung, ghee and saliva that may be applied to the cord area and which may be harmful.[4]

Breast milk known as liquid gold is a deep yellow serous fluid. It contains antibodies IgA, IgG, IgM. The cells, hormones, and antibodies in breast milk protect babies from infections. Breast milk is available easy, easy to use, and non invasive method for cord care. It can accelerate complex umbilical extraction according to its leukocytes or polymorph nuclear cells. Neonates who used human milk had lower umbilical extraction time compared to those who used antiseptic solutions. Breast milk has been used as a home remedy for minor ailments, such as conjunctivitis, insect bites and stings, contact dermatitis, and infected wounds, burns, and abrasions.[5]

Need of study:-

The greatest period of risk for umbilical stump contamination with bacteria and Tetanus, is the first three days of life and the risk decreases with time as the umbilical wound heals and the stump separates.Factors that delay the process of cord stump separation are the application of antiseptics to the stump and infection. Delayed cord separation with antiseptics may be due to destruction of the normal flora around the umbilicus (navel) and a subsequent decrease in the number of leucocytes attracted to the cord.[6]

One hospital study found that in 47% of infants hospitalized with sepsis, cord infections was the source of the illness and that 21% of infants admitted for other reasons had omphalitis, (cord infection) . The greatest period of risk for umbilical stump contamination with bacteria including C. tetani is the first three days of life. Risk decreases with time as the umbilical heals and stump separates .[7]

A randomized control study was conducted regarding umbilical cord care at birth using five different methods among 500 newborns (100 in each group). The different methods used were colostrum, alcohol, neosporine, sterile water and natural drying. Newborns were randomized at birth into five groups and cord care was given as per the group parameters till the time of cord separation. The results shows that the mean duration of umbilical cord separation in no care or natural drying was 7-14 days. Sterile water and alcohol seems to be effective in cord healing and reduction in bacterial colonization rates.In this study colostrum application was seen to show reduction in colonization when compared with no care group. The study concluded that colostrum can be used as an easily available effective intervention in reducing the cord separation time and cord colonization.[8]

As researcher during her clinical experience found that umbilical infections cause neonatal mortality and morbidity. Umbilical infections increasing day by day. Several agents have been used to prevent the umbilical infections. As breast milk is readily available, sterile and costless method among neonates for prevention of infection. In view of this researcher felt the need to assess effectiveness of breast milk application on umbilical healing among neonates.

Statement of problem:-

A Quasi experimental study to assess the effectiveness of breast milk application on umbilical healing among neonates in maternity wards of selected hospitals, Punjab.

Objectives:-

1. To intervene the breast milk application on umbilicus among neonates in experimental group.
2. To assess umbilical healing among neonates in experimental and control group.

3. To compare the umbilical healing among neonates in experimental and control group.
4. To find out association of umbilical healing among neonates with the selected variables.

Hypothesis:-

$H_{1:-}$ There will be statistically significant difference in umbilical healing among neonates between experimental group who will receive breast milk application and control group who will receive only routine care at $p<0.05$ level of significance.

Delimitations:-

This study will be delimited to:

1. Healthy term babies having normal characteristics of umbilical cord.
2. Neonates staying in the maternity wards for at least 4 days.

Material and Methodology:-

A Quantitative Quasi experimental research approach and Non-randomized control group Design was used .The present study was conducted in the Hospitals of Punjab- Guru Gobind Singh Medical College , Faridkot for the experimental group and Civil Hospital, Faridkot for the control group. The study was conducted on 80 Neonates rooming-in with their mothers in maternity wards of selected hospitals, Punjab.Non-probability purposive sampling technique was used to select the target population.

Inclusion Criteria:-

1. Neonates of mothers with gestational age 38-42 weeks after 3 hours of L.S.C.S.
2. Neonates who was free from any disease or congenital anomalies.
3. Neonates who was available at the time of data collection.
4. The mothers who were allow the researcher to apply breast milk on neonates umbilicus.
5. Nothing was applied on umbilical stump such as any topical agent.

Exclusion Criteria:-

Neonates who were :-

1. Sick, unstable and critically ill.
2. Admitted in NICU
3. Premature, pre-term and low birth weight babies.
4. Newborns receiving antibiotics

Formal permission was obtained from Senior Medical Officers of selected hospitals prior to data collection. Data collection was done in month of February 2016. The investigator introduced herself and explained the purpose of study to the mother of neonate. Informed consent was obtained from the mother of neonate. They ensured that their responses was kept confidential and used for research purpose only. The sample consisted to 80 neonate i.e. 40 in experimental and 40 and control group. Before application of breast milk umbilicus was observed for 3 consecutive days.

The tool(s) was constructed and verified to collect data and it consist of 2 parts:-

1. Demographic variables,
2. Umbilical healing:-
3. Signs of cord separation
4. Signs of infection on umbilicus
5. Day of separation

Data analysis plan:-

Data will be analyzed by using both descriptive and inferential statistics i.e. mean, standard deviation, chi square „t" test and ANOVA.

1. Assessment of umbilical healing among neonates in experimental and control group.
2. Comparison of umbilical healing among neonates in experimental and control group was done by using „t" test.
3. Association of umbilical healing among neonates with the selected variables. In experimental and control group with selected demographic variables was checked by using t-test and ANOVA.

Result:-

Findings of the Study:-

Findings related to post-interventional assessment of signs of separation:-

1. The present study revealed that in experimental group majority 32(80%) have good cord signs and minority 8(20%) have moderate cord signs.
2. In control group majority 30(75%) have moderate cord signs and minority number 10(25%) have mild cord signs

Table 1:-N=80.

Criteria	Score	Experimental group (n=40)		Control group (n=40)	
Cord signs		n	%	n	%
Mild	2-3	0	0	10	25
Moderate	4-5	8	20	30	75
Good	6-7	32	80	0	0

1. Maximum score-7
2. Minimum score-2

Findings related to post-interventional assessment of signs of infection:-

1. In experimental group majority 0(0%) of neonates have no signs of infection .
2. In control group majority 4 (10%) have moderate signs of infection and minority 2(5%) have mild and severe signs of infection.
3. Findings related to post-interventional assessment of day of separation among neonates
4. In experimental group majority 40(100%) were having day of separation between 4-6 day .
5. In control group majority 25(62.5%) were having day of separation between 10-12 days and minority number 15(37.5%) were having day of separation between 7-9 days.

Table 2:- Frequency and Percentage distribution of day of separation among neonates in experimental and control group.

Day of separation	Experimental group		Control group	
	f	%	f	%
4-6 days	40	100	0	0
7-9 days	0	0	15	37.5
10-12 days	0	0	25	62.5

Objective 3:-To compare the umbilical healing among neonates in experimental and control group.

1. Breast milk application was effective in increasing sign of separation among neonates(t value 24.4 at df 39) in experimental group
2. Breast milk application was effective in the absence of sign of infection among neonates (t value 0 at df 39) in experimental group

Objective 4:- To find out association of sign of separation with selected demographic variables

Gender of neonate in experimental group which was statistically significant at $p<0.05$ level of significance. Type of caesarean section in control group which was statistically significant at $p<0.05$ level of significance.

Discussion:-

Major findings of the study:-

Findings related to post-interventional assessment of signs of separation:-

1. The present study revealed that in experimental group majority 32(80%) have good cord signs and minority 8(20%) have moderate cord signs.
2. In control group majority 30(75%) have moderate cord signs and minority number 10(25%) have mild cord signs.
3. Findings related to post-interventional assessment of signs of infection.
4. In experimental group majority 0(0%) of neonates have no signs of infection.

5. In control group majority 4 (10%) have moderate signs of infection and minority 2(5%) have mild and severe signs of infection.
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7. In experimental group majority 40(100%) were having day of separation between 4-6 day .
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9. Objective 3:-To compare the umbilical healing among neonates in experimental and control group.
10. Breast milk application was effective in increasing sign of separation among neonates(t value 24.4 at df 39) in experimental group
11. Breast milk application was effective in the absence of sign of infection among neonates (t value 0 at df 39) in experimental group

Objective 4:- To find out association of sign of separation with selected demographic variables
Gender of neonate in experimental group which was statistically significant at $p<0.05$ level of significance. Type of caesarean section in control group which was statistically significant at $p<0.05$ level of significance.

Implications of the study:-
The findings of this study will be used in different areas of nursing like area of service , education , administration and research.

Nursing practice:-
1. Nurses should be equipped with updated knowledge prevention of umbilical cord infection.
2. Nurses need to take up the responsibility create awareness among the mothers of newborn babies regarding cord care.
3. Nurse should use wide variety of intervention to prevent umbilical cord infections.
4. Nurses and health care providers play a vital role in motivatingthe mothers to keep cord clean and dry always.
5. Nursing practice in the community should focus on prevention of cord infection and promotion of normal healing.
6. Nurses should organize health education campaign to community about prevention of cord infection in newborn and importance of keeping the cord clean and dry.
7. Nursing Education
8. The Nurse educator should emphasize health education on prevention of cord infection.
9. Students should be encouraged to identify the signs and symptoms of omphalitis, to teach the mothers of newborn babies.
10. The Nurse educators should arrange for the in-service education programme (seminars, workshops) for student nurses regarding cord care and its prevention of infection
11. The Nurse educator can provide an opportunity for students to actively participate in implementation of cord care.
12. Nursing Adminstration
13. The Nursing administrators should concentrate on periodical conduction of refresher courses to update the knowledge of nurses and in-service education in cord care.
14. Nursing research
15. Nurse researcher should disseminate the findings of the studies through conference, seminar and publishing in professional journals to the pediatric staff.
16. As there is a limited study on this area, nursing researcher should encourage and conduct further researchers related to topical application breast milk for umbilical cord care.
17. Evidenced based nursing practice must takes in order to increase the knowledge about non -pharmacological interventions in umbilical cord care among newborns.

Conclusion:-
1. Most of the neonate had mild to moderate sign of separation
2. Most of the neonate had sign of infection
3. Most of the neonate had lengthier days of separation of umbilical stump
4. Breast milk application was effective in improving sign of separation and days of separation and reducing sign of infection

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