LAUTECH JOURNAL OF NURSING

VOL. 6, May, 2020 ISSN 2659-1405

LAUTECH SENATE BUILDING

A Publication of the Faculty of Nursing Sciences,
College of Health Sciences, Osogbo,
Ladoke Akintola University of Technology, Ogbomoso, Nigeria

6TH EDITION
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VOLUME 6, MAY, 2020

Address:
Faculty of Nursing Sciences,
College of Health Sciences, Osogbo,
Ladoke Akintola University of Technology
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Printed and Published in Nigeria by
Esthom Graphic Prints
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TABLE OF CONTENTS

UMBILICAL CORD MANAGEMENT OUTCOME AMONG MOTHERS IN SELECTED PRIMARY HEALTH CENTERS IN MUSHIN LOCAL GOVERNMENT AREA, LAGOS STATE.

Abazie O.H, Gbahabo D.D, Fadairo O. J.

ABSTRACT

The prevalence of umbilical cord infection in newborn infant is on the increase and constitutes 33% of neonatal mortality in Nigeria. Thus, knowledge of standard cord care management and healthy cord practices is imperative if infection is to be prevented. The aim of this study is to assess the umbilical cord care practices and management outcome among mothers in selected primary health centers in Mushin Local Government Area, Lagos State. A cross-sectional descriptive study was conducted among 240 mothers in selected primary health centers on their umbilical cord care practices and management outcomes. Data were collected through the administration of a questionnaire; the data derived was analyzed using the Statistical Package for Social Sciences (SPSS) 22, descriptive and inferential methods were used at a significant level of p = 0.005. Findings of this study indicate that the respondents' level of knowledge is high in terms of standard cord care and the common types of cord care practice used by respondents are tying, cutting and cleaning with methylated spirit only, triple dye, alcohol, antibiotics ointment, providence-iodine, polymixin bacitracin, methylated spirit and gentian violet solution (0.5-1 %). The study further observes the techniques for umbilical cord management are clean cord base before surrounding skin, close methods, Washed hands with soap and water before and after attending to the cord and clean cord stump in the morning, afternoon and evening and the respondents' reason for choice of umbilical cord management are to Prevents infection and very effective and hastens cord separation. Lastly, the study observed that the management outcome of umbilical cord care by respondents are that the cord falls off between five to fifteen days after birth and no infection and quick healing process. The result of the hypotheses tested revealed that there was a significant association between age, educational level and cord management (p=0.005). Health education during ANC and post-partum on umbilical care management is critical in reducing the incidence of cord infections and curbing the rate of neonatal morbidity and mortality due to umbilical infections.

Keywords: umbilical cord; care practices; management outcome; primary health centers.

INTRODUCTION

The prevalence of newborn deaths in developing countries is on the increase. According to the World Health Organization (WHO) estimates, ten thousand newborns die every day of which 99% occur in developing countries. Neonatal infections are the cause of 30% to 40% of those deaths, (Chiabi, Djoupomb, Mah, Nguefack, Mbuagbaw, Zafack, Ghoyap, Nkoa and Tchokoteu, 2011). Each year, 520,000 newborns die after severe bacterial infection and a significant proportion of infection-related deaths are associated with umbilical cord infections, (Blencowe, Cousens, Mullany, Lee, Kerbert, Wall, et al. 2011). According to Charbet, (2012) among the acquired bacterial neonatal infections,

umbilical cord wound is considered as one of the predominant potential sources of entry of infectious pathogenic micro-organisms.

The umbilical cord is a unique tissue consisting of two arteries and one vein which at term is about 56cm in length and extends normally from the center of the placenta to the umbilicus of the unborn baby, (Osuchukwu, Okoronkwo, Ezeruigbo 2018**).** During pregnancy, the umbilical cord connects the fetus to the mother through the placenta. The blood flowing through the cord brings nutrients and oxygen from the mother to the fetus and carries away carbon dioxide and other metabolites from the fetus, (Bello and Omotara, 2010). After the delivery of the baby, the cord should be clamped firmly and cut with sterile instrument to separate the baby from the placenta attached to the mother's uterus leaving about 6cm with the baby. The instrument used in cutting the cord cuts across the living tissues and the blood vessels which are still connected to the baby.

In view of the fact that this time the umbilical cord is wet with an open surface wound and blood vessels still patent, they provide a nutritive culture medium for bacterial growth. These require that some degree of hygiene practices must be adopted to prevent infection, which may present as yellow discharge from the cord, foul smelling, red skin around the base of the cord, pain when touched the skin around the stump and excessive crying of the baby. These strengthen the need for standard cord management among mothers (Bemor, and Uta, 2011). Methods of caring for the umbilical cord vary greatly between communities depending on their cultural and religious beliefs, level of education and resources. Sometimes materials used to tie the cord include strings, thread and strips of cloth, scissors and sharp stone, (Obuekwe, and Obuekwe, 2008)

The devitalized tissue of the cord can be an excellent medium for bacterial growth, especially if the cord is kept moist and unclean substances are applied to it, Bemor, and Uta 2011). Drying and separation of the cord is facilitated by exposure to air. The use of alcohol daily and as often as each diaper is changed has been recommended by the World Health Organisation as standard care. With standard care the cord usually falls off between five to fifteen days after birth. Where clean cord care is not practiced, the cord is readily colonized and infected by pathogenic organisms (Bennett and Adetunde 2010). Therefore, mothers who adopt clean cord management will by implication contribute to the survival of their neonates and prevent neonatal death from omphalitis, neonatal tetanus and septicaemia (Bennett and Adetunde, 2010, Bemor and Uta 2011).

Peter and Johnson (2010) reports that, globally, about 150,000 neonates die annually from omphalitis. In developing countries, most of the cord care is home based since two third of births take place at home. Each year some 600,000 infants die of neonatal tetanus in Africa; in untreated cases, case fatality rate approach 100% and a further 460,000 die as a consequence of other severe bacterial infections. Maternal and Child Survival Program (MCSP), of the Nigeria Federal Ministry of Health (2018) estimate one in four neonatal deaths in Nigeria in 2016 are due to preventable infections, many of which could be averted through proper care of the umbilical cord.

According to the Nigeria Federal Ministry of Health (2018), four percent chlorhexidine gel is an over-the-counter product with efficacy in reducing infection when applied to the umbilical stump after delivery and during the first week of life. In a study by Ambe, Bello, Yahaya and Omotara (2010) in Nigeria, reported cases of umbilical cord infections. Many of the neonatal deaths occur at home and therefore unseen and unaccounted for in official statistics.

According to their report, many of these neonates are brought in for admission in bad states, consequently resulting in neonatal deaths. It is not unusual at primary health facilities to witness several cases of umbilical cord infections. The question that comes to mind which is - how do mothers manage the umbilical cord since two third of births take place at home in developing countries and cord care is home based? It is therefore desirable to determine the umbilical cord management outcome among mothers in selected primary health centers in Mushin Local Government Area of Lagos State.

OBJECTIVES

- To assess the level of knowledge of standard cord management among mothers in Mushin Local Government Area.
- To identify the type of cord care management practiced among mothers in Mushin Local Government Area.
- To determine the techniques for cord management and their level of education among mothers in Mushin Local Government Area.
- To identify the reasons for the choice of management used in umbilical cord.
- To determine outcome of cord management in relation to materials used among mothers in Mushin Local Government Area.

SIGNIFICANCE OF THE STUDY

This study helps mothers to be better enlightened as their techniques of cord management is enhanced by the study. This study also examines the effects of socio-economic factors such as level of education, age and income of mothers on umbilical cord management among mothers. The findings serve as a source of awareness to mothers in Mushin community on standard cord management thereby reducing neonatal mortality caused by umbilical infection in Mushin community and Lagos State at large. This work serves as reference to other researchers in related fields.

HYPOTHESES

- There is no statistically significant difference between mothers' level of cord management outcomes and their age in Mushin LGA.
- There is no statistically significant association between the mothers' educational level and the cord management and practices in Mushin LGA.
- There is no statistically significant relationship between the income level of the mothers' and the cord management techniques and practices in Mushin LGA.

METHODOLOGY

Design: A cross - sectional descriptive design was used for this study.

Research Setting: The area of study is Mushin Local Government Area of Lagos State, Nigeria. It is one of Nigeria's 774 Local `Government Areas, located 10km north of Lagos city core. It shares its northern boundary with Oshodi Isolo Local Government, its eastern boundary with Somolu, and on the south, with Surulere. It is a surburb of Lagos city and its inhabitants are mostly Yoruba people. Mushin Local Government was a part of Ikeja Local Government of old. It was carved out as a district in 1954 with the boundary extending to the present Shomolu Local Government.

Continuous expansion from 1950 led to problems of overcrowding, inadequate housing and poor sanitation. Mushin Local Government is located right in the heart of Lagos state, and has 633,009 inhabitants as at

2006 census, (the world gazetteer 2007). Mushin is the site of a large industrial estate. Commercial enterprises include spinning and weaving cotton, shoe manufacturing, bicycle and motorized-cycle assembly, and the production of powdered milk. Agricultural produce is brought for sale in the large central market. The town is served by secondary schools and has a hospital. Mushin lies on the railway from Lagos and at the intersection of roads from Lagos, Shomolu and Ikeja. Mushin has six functional primary health centers at Palm Avenue, Alvis/Omobola, Isolo Road, Itire, Ajeabo, some of the basic services they provide are antenatal care, family planning, mmunization, preventive and curative health care services, nursing mothers attending the selected primary health care facilities (PHC) for routine immunization of their infants at Mushin Local Government, Lagos State, Nigeria and mothers who booked and attend ante-natal clinic at those PHCs.

Sample Size Determination: Each of these health centers run immunization services weekly. They have an average number of 150 mothers attending immunization clinic every week. Hence the total study population from the three selected PHCs is 450 nursing mothers.

Sample size is calculated using the formula developed by Cochran (1977)

$n=Z^2pq/e^2$.

Where; n=Sample size for population greater than 10,000

Z = confidence interval set at 1.96 for 95% confidence level

p = prevalence i.e. proportion in target population estimated to have the particular characteristic of interest.

q = 1-p

e = precision value/degree of error set at 0.05

A sample size of 240 was used for the study. Ten percentage attrition was applied.

Sampling Technique: A simple random sampling technique was used to select the three PHCs required for the study which included, Palm Avenue primary health centre, Ayantuga primary health centre and Isolo primary health centre.

Balloting was used to select 80 respondents from each of the PHCs thus giving a total of 240 respondents from the PHCs.

Instrument: A self developed questionnaire with 7 sections was used for this study. A score of 59% and above is good knowledge while 58% and below is poor knowledge.

Validity: The validity of the instrument was carried out by expects in the field of study.

Reliability: A test retest was carried out on ten nursing mothers in Ita Elewa primary health center in Ikorodu to verify the reliability of the tools. Reliability index of 0.70 was calculated.

Data Analysis: The data derived from the completed questionnaire, was analyzed using the Statistical Package for Social Sciences (SPSS 22), Chi Square (X^2) was used for testing the differences in the hypotheses. All the calculation was set at a significance level of $p < 0.05$.

Ethical Considerations: Ethical approval was obtained from the Health Research Ethics Committee of the Lagos University Teaching Hospital. Informed consent was obtained from the respondents, also they were assured of anonymity and confidentiality.

Results

A total number of 240 questionnaires were distributed to mothers who did their booking and attended ante-natal clinic at the selected PHCs. Two hundred and twenty (220) questionnaires were adequately completed and returned. This gave a response rate of 91.7%.

Table 1 shows the demographic characteristics of the respondents. All the respondents in the study, are within the child bearing age. Majority (77.3%) of the women are married, while (54.5%) are Muslims. Only (13.6%) of the women are unemployed. About half of the women (59.1%) are middle income earners with a salary range of N19,000- N30,000, while (13.6%), of the respondents have formal education.

Table 1: Socio-demographic Data of Respondents (n = 220)

Variables	Frequency	Percentage
Age		
15-25	40	18.1
26-36	90	40.9
37-47	70	31.8
47 and above	20	9.1
Marital Status		
Married	170	77.3
Single	50	22.7
Religion		
Christianity	80	36.4
Muslims	120	54.5
Traditionalist	20	9.1
Occupation		
Unemployed	30	13.6
Trading	130	59.1
Civil servant	40	18.2
Student	20	9.1
Income in naira		
18,000 and below	40	18.2
19,000 - 30,000	130	59.1
31,000 and above	50	22.7
Level of Education		
No formal education	30	13.6
Primary	40	18.2
Secondary	70	31.8
Tertiary	80	36.4

Table 2 demonstrates that out of the 220 respondents, (75.5 %) have good knowledge of standard umbilical cord management. Also (81.8%) have good knowledge of cord clamp as material used for tying the umbilical cord. However, (63.6%) have poor knowledge of the stipulated range of time for cord separation which is between 5 – 15 days. With regards to knowledge of the advantage of cord care, (68.2%) account for good knowledge which is to prevent infection. This study concludes that the respondents' level of knowledge on standard cord care is high.

Table 2: Knowledge of standard cord care (n = 220)

Questions	Options	Frequency	Percentage
What do you understand by standard cord care?	Tying, cutting and cleaning with methylated spirit only	166	75.5
	Use of herbs and isolation of baby	20	9.1
	Use of herbs	30	13.6
	Nothing on the cord until separation	4	1.8
What material should be used in tying the cord?	Cord clamp	180	81.8
	Rubber band	6	2.7
	Hair thread	10	4.6
	String of cloth	24	10.9
How long does it take the cord to detach?	3-4 days	110	50.0
	5-15 days	80	36.4
	4 weeks and above	30	13.6
What is the advantage of cord care?	Prevents infection	150	68.2
	Wades off evil spirit	10	4.5
	Prevents neonatal tetanus	46	20.9
	Prevents abdominal pain	14	6.4

Table 3 shows that 6.8% of the respondents' use non- application of antiseptics to the cord after birth type of cord care Tying, cutting and cleaning with methylated spirit only practice, 22.7% used tying, cutting and cleaning with methylated spirit only, 9% use open method, 4.5% use closed method, 2.3% use of herbs and isolation of baby, 1.3% use herbs, 1.8 % use nothing on the cord until separation, 18% use triple dye, alcohol, antibiotics ointment, providence-iodine and polymixin bacitracin, 5% use Salicylic powder and salicylic sugar and 28.1% use methylated spirit and gentian violet solution (0.5-1 %). This study reveals that the common types of cord care practice used by respondents include tying, cutting and cleaning with methylated spirit only, triple dye, alcohol, antibiotics ointment, providence-iodine and polymixin bacitracin and methylated spirit and gentian violet solution (0.5-1 %).

Table 3: Type of Cord Care ManagementPractice

Items	**Frequency**	**Percentage**
non- application of antiseptics to the cord after birth,	15	6.8
Tying, cutting and cleaning with methylated spirit only	50	22.7
Open method	20	9
Closed method	10	4.5
Use of herbs and isolation of baby	5	2.3
Use of herbs	3	1.3
Nothing on the cord until separation	4	1.8
triple dye, alcohol, antibiotics ointment, providence - iodine and polymixin bacitracin	40	18
Salicylic powder and salicylic sugar	11	5
methylated spirit and gentian violet solution (0.5-1 %)	62	28.1
	220	**100.0**

Table 4 shows that (67.3%) respondents affirmed they clean cord base before surrounding skin, while (66.4%) practice dry method, only (30%) observe clean hand care before and after umbilical cord care. On the other hand, (76.4%) respondents practice open method and bandage are used by (70.0%) of the respondents who used the closed method. This study implies that the techniques for umbilical cord management are clean cord base before surrounding skin, close methods, Washed hands with soap and water before and after attending to the cord and clean cord stump in the morning, afternoon and evening.

Table 4: Techniques for Umbilical Cord Management (n = 220)

Questions	Options	Frequency	Percentage
Which of the cleaning technique was practiced?	Clean cord base before surrounding skin	148	67.3
	Clean cord base and surrounding skin at same time	26	11.8
	Clean cord stump only	28	12.7
	Clean surrounding skin only	10	4.5
	Clean only material used in tying stump	8	3.6
Did you practice dry or wet method?	Dry method	146	66.4
	Wet method	74	33.6
How did you take care of your hands during cord care?	Washed hands with water before attending to the cord	38	17.3
	Washed hands with soap and water before and after attending to the cord	66	30
	Washed hands with soap and water after attending to the cord	80	36.4
	Cleaned hands on wrapper after cord care	24	10.9
	Cleaned hands with clean serviette	12	5.4
Which of the following did you practice?	Open	168	76.4
	Closed	52	23.6
How often was the cord stump cleaned?	Morning, afternoon and evening (thrice)	100	45.5
	Once a day	44	20.0
	After each nappy is changed	72	32.7
	Delivery time only	4	1.8
	No cleaning	0	0
If closed, which of the following was used to cover the stump?	Bandage	36	69.2
	Piece of mother's cloth	4	7.7
	Gauze bandage	12	23.1
	Abdominal binder	0	0

Table 5 reveals that 59.1% of respondents' reason for choice of umbilical cord management is to prevent infection, while 6.4% respondents is because of pressure from family members , 21.8% of respondents reason is that very effective and hastens cord separation, 9.1% is to Prevents neonatal tetanus and 3.6% is to wade off evil spirit and hasten cord separation. This study concludes that respondents' reasons for choice of umbilical cord management are to Prevents infection, very effective and hastens cord separation.

Table 5: Reason for Choice of Umbilical Cord Management. (n = 220)

Questions		Frequency	Percentage
Reason for choice of umbilical cord management	Prevents infection	130	59.1
	Pressure from family members	14	6.4
	Very effective and hastens cord separation	48	21.8
	Prevents neonatal tetanus	20	9.1
	To wade off evil spirit and hasten cord separation	8	3.6

Table 6 shows that 3.6% of the respondents' management outcome of umbilical cord care is that colonization rate with pathogens are unacceptably high, 1.8 % is that neonatal death from omphalitis, 0% are that there is neonatal death from neonatal tetanus and neonatal death from omphalitis septicaemia. The result further reports that 45.5% of respondents' outcome of umbilical cord care is that the cord falls off between five to fifteen days after birth. 0.9% is that foul smelling, red skin around the base of the cord, while 1.8% outcome of care is severe bacterial infections and lastly, 2.7% is pain when touched the skin around the stump and excessive crying of the baby. The study observes that the management outcome of umbilical cord care by respondents are that the cord falls off between five to fifteen days after birth and

no infection and quick healing process. This result is positive.

Table 6: Management Outcome of Umbilical Cord Care (n = 220)

Questions	**Management Outcome**	Frequency	Percentage
What is your management outcome of umbilical cord care	colonization rate with pathogens are unacceptably high	8	3.6
	neonatal death from omphalitis	4	1.8
	neonatal death from neonatal tetanus	0	0
	neonatal death from omphalitis septicaemia	0	0
	The cord falls off between five to fifteen days after birth	100	45.5
	yellow discharge from the cord.	2	0.9
	No infection and quick healing process	95	43.1
	Foul smelling, red skin around the base of the cord,	3	1.4
	severe bacterial infections	4	1.8
	pain when touched the skin around the stump and excessive crying of the baby.	6	2.7

HYPOTHESES

Table 7 shows that there is a significant association between age and cord management outcome with r = 0.717, p = 0.000. Also, there is a significant association between educational level and techniques of cord management among respondents, with r = 0 .243, p = 0.005. There was no significant association between respondent's income level and their techniques of cord care with r = 0.061, p = 0.264, hands care r = 0.038, p = 0.348 and frequency of stump cleaning r = 0.091, p = 0.173 respectively.

Table 7: Correlation test of association between age, educational level a nd income on cord management outcomes among respondents.

		Age	**AbnormalChanges**	**Child'sDeath**	**ProblemResolved**
Spearman's rho	Correlation Coefficient Sig. (1 - tailed)N	1.000 . 220	.717 .000 220	.729 .000 220	.323 .024 220
		Educational Level	Cleaning Technique	Hands Care	Frequency of Stump Cleaning
Spearman's rho	Correlation Coefficient Sig(1tailed) N	1.000 . 220	.243 .005 220	-.327 .000 220	.506 .000 220
		Income Level	Cleaning Technique	Hands Care	Frequency of Stump Cleaning
Spearman's rho	Correlation Coefficient Sig. (1 - tailed)N	1.000 . 220	-.061 .264 220	-.038 .348 220	-.091 .173 220

*** Correlation is significant at the 0.05 level (1-tailed).**

DISCUSSION

The demographic profiles of the respondents reveals that majority of them are young adults. Hence, they are at the peak of their reproductive health and require information on neonatal health and child survival. Most of the respondents are literate because half of the respondents have tertiary education. As a result, they can easily imbibe recommended health practices, influence those with less education as well as those holding unto unhealthy traditional practices and invariably putting an end to unhygienic cord management. This agrees with the study carried out by (Eneji, Eyemba, and Markinde 2010) who noted a significant correlation between mothers' level of education and clean cord management. They conclude that it is nearly impossible to consider behavioral changes in health care practice without simultaneously considering the level of education of the subjects, which deeply influences personal conduct especially in the area of child bearing and neonatal care.

Findings of this study indicate that the respondent's level of knowledge is high in terms of standard cord care. This agrees with the report of (Luka, 2011) in which majority of the mothers knew hygienic cord care. It however, disagrees with the findings of Obimbo and Oruambo (2008) who showed that that knowledge of standard care was poor among mothers. The health outcome of neonates could be improved significantly by

strengthening information, education and communication of standard cord management to mothers.

This study revealed that the common types of cord care practice used by respondents are tying, cutting and cleaning with methylated spirit only, triple dye, alcohol, antibiotics ointment, providence-iodine and polymixin bacitracin and methylated spirit and gentian violet solution (0.5-1%).This is supported by a study conducted by Abegunde, Orobatan, Beal, Bassi, Bamidele, Akomolafe, Olayinka, Umar-Farouk O, Trends in newborn umbilical cord care practices in Sokoto and Bauchi States of Nigeria where their respondents have the same practice. This study implies that the techniques for umbilical cord management are clean cord base before surrounding skin, close methods, Washed hands with soap and water before and after attending to the cord and clean cord stump in the morning, afternoon and evening. This finding is contrary to Karumbi, Mulaku, Aluvaala, English and Opiyo (2013), recommendation on hand care which is washing before and after cord care to prevent cord infection particularly neonatal tetanus and omphalitis. Majority of the mothers clean the cord base before surrounding skin which discouraged transfer of pathogenic organisms and spread of infection. On frequency of cleaning, a low percentage of mothers clean the cord stump after each nappy is changed. Karumbi, Mulaku, Aluvaala, English and Opiyo (2013 recommend on the average, cleaning as often as each diaper is changed. This should constitute the health measures adopted by mothers to promote healing, prevent infection, neonatal morbidity and mortality

This study concludes that respondents' reason for choice of umbilical cord management are to prevent infection and very effective and hastens cord separation. This is similar to *Opara, Jaja, and Okari (2012)* result in their study on Newborn cord care practices amongst mothers in Port Harcourt, Nigeria. The study observes that the management outcome of umbilical cord care by respondents are that the cord falls off between five to fifteen days after birth and no infection and quick healing process. *Adebami* (2014) in a study on *Evaluation of home care management of umbilical cord stumps by mothers at Ilesa, Southwestern Nigeria* have a similar observation

The result also reveals that there is a significant association between age of the respondents and cord management. The older the maternal age, the better the cord care practices. The result agrees with Obimbo and Oruambo (2008) in which unsafe methods and unhygienic cord cares were seen to be more among younger mothers. They report that older maternal age is associated with decreased use of unsafe methods because older mothers are aware of the importance of clean cord care and the risk of cord infections. The result is also in line with the study by Smith and Kelly (2011), which reveal that about 48% of reported unclean cord care and cord infections among new born were babies of mothers who were below age 30 years.

Furthermore, another finding revealed that there was significant association between educational attainment of mothers and cord management. The higher the mothers' educational attainment the better the use of standard cord management. This is in line with the assertions of Okedo, Nelson and Lawal, (2010) that a significant correlation is noted between mothers' level of education and clean cord management and better neonatal outcome. Uneducated mothers lack decision making power and are unable to resist social pressure from families and peers; as such they comply with existing tradition. Peter, Johnson Okedo, Nelson and Lawal (2010), Sharan, (2010) also observe unclean cord management among mothers with low educational level. With regards to the association between cord management and income of respondents, the result showed that there was no significant association between income of the respondent and cord management.

SUMMARY AND CONCLUSION

This study is carried out to assess umbilical cord care and management outcome among mothers in selected Primary Health Care Centers in Mushin Local Government Area, Lagos state, Nigeria. The objectives were to determine the knowledge of standard cord management among mothers, identify the reasons for the choice of materials and techniques used in umbilical cord management, and the outcome in relation to material used. The respondents have good knowledge of standard umbilical cord management. They have the Knowledge of tying the cord stump, cutting it with a clean object and cleaning with methylated spirit only with no application of any other material. The major reason for choice of materials is mainly to prevent infections. Majority of respondents use the recommended technique for cord management.

Outcome of cord management is good as most of the respondents did not report signs of infections in their neonates indicating the use of clean materials for cord care. A very low percentage of the respondents report the problem to health facility within 24 hours of onset of illness. Umbilical cord management is associated with age, the older the respondents the likelihood of practicing clean cord care. Umbilical cord management is also associated with educational attainment; the educated respondents practice clean cord care than the non-educated. Umbilical cord management is not associated with income of respondents.

IMPLICATION FOR NURSING

Majority of the respondents did not seek timely medical attention, The implication of this is that delay in presentation at health facilities could lead to poor neonatal outcome, thus increasing the neonatal morbidity and mortality rates which are already unacceptably high. Nurses should assess the level of knowledge and practice of candidates that increase vulnerability to infant's mobility and mortality and strategically intervene by health education of mothers on the importance of reporting any abnormal conditions to the health facility early, which will in turn prevent infection of the neonates.

Nurses should educate the mothers on the importance of good hand washing technique which is a major factor in preventing cord infections. Nurses should increase mothers' knowledge on cord separation time as majority of the umbilical cord fell off within 3-4 days contrary to WHO report of between 5 and 15 days; This could be achieved through well planned effective and consistent health education of mothers. Nurses could also repeat health talk after antenatal session for the benefit of those who arrived late and after delivery for those who are not regular during antenatal period. There should be direct and focused health education to mothers, home visit where mothers and other care givers living conditions could be accessed, and hence reducing the rate of neonatal mortality.

RECOMMENDATIONS

Nurses should continue to promote awareness of standard cord management, knowledge of acceptable range of cord separation time and non-application of any other substance to the umbilical cord after cleaning. Nurses should also emphasize during ante natal and post-natal clinics the importance of timely reporting of any deviations from the normal health status of the mother and baby to prevent complications. The role of good hand washing technique of mothers will help break the infection chain. Nurses should educate mothers on the latest improved umbilical care management to reduce the incidence of cord infections thereby curbing the rate of neonatal morbidity and mortality in the PHCs.

SUGGESTIONS FOR FURTHER STUDIES

Based on the findings of this research work and other related similar studies, additional research should be carried out on cord management. The aim of the new studies will be on developing strategies to strengthen standard cord care management as recommended by WHO among mothers especially in other rural communities, hence reducing the rate of neonatal morbidity and deaths.

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