

# Knowledge and Practice of Umbilical Cord Care Amongst Mothers Attending Post Natal Clinic at Nnamdi Azikiwe University Teaching Hospital Nnewi

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## ABSTRACT

Poor umbilical cord care practices have been linked with infections and mortality in newborns. Some mothers use multiple agents in umbilical cord care. It is imperative to assess the knowledge of umbilical cord care and its practices among mothers at the highest level of care.

The study utilizes a descriptive cross-sectional survey design. A simple random technique with a sample size of 199 was employed for this study. A self-constructed questionnaire was employed as the instrument for data collection, with a reliability coefficient of 0.83. This cross-sectional study aimed to assess the level of knowledge, the level of practice, and factors influencing the level of knowledge and practice of cord care among mothers attending post-natal clinic at Nnamdi Azikiwe University Teaching Hospital (NAUTH). Descriptive statistics were used for analysis of data.

The result of the study revealed a fair knowledge of umbilical cord care as shown by the mean percentage of 66.5%. Dry cord care/Antiseptic cord care (40.2%) were reported as the methods of cord care and Antiseptics (75.4%) is the major solution to be used in cleaning the umbilical cord. Furthermore, the study revealed a fair practice of umbilical cord care with 61.9% as

the mean percentage. Chlorhexidine (47.7%) was the major solution used, and the cord was kept dry and exposed to air after cleaning (52.7%). Age group, marital status, educational level, number of parities and occupation have a significant influence on umbilical cord care. In conclusion, the study identified a low incidence of reported complications, suggesting an overall adherence to evidence-based practices.

**Keywords:** knowledge, practice, umbilical cord, umbilical cord care, postnatal mothers

## INTRODUCTION

Cord care is a serial step applied in the handling of the umbilical cord after delivery of the newborn. Improper cord care contributes significantly to newborns' risk of infection and mortality (Abegunde *et al.*, 2017, Afolaranmi *et al.*, 2018; Bhatt *et al.*, 2015; Chidiebere *et al.*, 2015). Mortality among children, especially newborns, has become one of the global concerns. It is known that neonatal mortality and morbidity have remained high in many settings but the situation is worse in developing countries (Ndikom *et al.*, 2020).

The umbilical cord is regarded as the physical and emotional fondness between mother and fetus. Its structure allows for oxygen and nutrients transport from the maternal circulation into fetal circulation

while simultaneously removing waste products from fetal circulation to be eliminated maternally (Basta & Lipsett, 2020). In 2016, the World Health Organization reported that the vast majority of newborn deaths take place in developing countries where access to health care is low and the main causes of newborn deaths are prematurity, low birth weight, infections, asphyxia and birth trauma. Consequently, improving newborn survival is a global priority (Moran, Kerber, Sitrin, *et al.*, 2015). Neonatal mortality accounts for forty-three percent of under-five mortality and the decline in neonatal mortality from 1990 to 2015 has been slower than that of post-neonatal under-5-mortality (WHO, 2016). Of the several other factors, infections and sepsis remained as persistent and significant cause of mortality and morbidity among neonates (Mitul, 2015). After delivery, the newly cut umbilical cord can therefore be a pathway for bacteria that can cause newborn sepsis and death (Coffey & Brown, 2017). The umbilical cord area supports the growth of some innocuous or beneficial microorganisms (commensals) as well as pathogenic micro-organisms such as *Clostridium tetani* (Bhatt, Malik, Jindal, *et al.*, 2015). Umbilical cord care practices immediately following delivery can contribute to new-borns' risk of infection and mortality (Karumbi *et al.*, 2015). Care of the neonate's umbilical cord is crucial during the neonatal stage of life and poor umbilical cord care is crucial during the neonatal stage of life and poor umbilical cord practices have been linked with infections (Sacks *et al.*, 2015). Cord infection may be localized to the umbilical cord (omphalitis) or after entry into the blood stream, become systemic (neonatal sepsis) (Ndikom *et al.*, 2020). Umbilical cord care has been found to be poor among mothers in developing nations (Cobo *et al.*, 2015). Optimal umbilical cord care practices for newborns and during the first week of life, has the potential to reduce preventable neonatal deaths (Coffey & Brown, 2017).

According to the American Academy of Pediatrics (AAP), the cord stump should be kept dry and exposed to air as much as possible, with only occasional cleaning using mild soap and water if necessary (AAP, 2015). It is important to avoid using alcohol, hydrogen peroxide, or other antiseptic solutions on the cord stump, as these can delay healing and increase the risk of infection (AAP, 2015). The dry cord care technique has been shown to be effective in reducing the incidence of cord infections and neonatal mortality in settings where the risk of infection is high (Lawn *et al.*, 2016). In a randomized controlled trial conducted in Bangladesh, the use of dry cord care was associated with a significant reduction in the incidence of cord infections compared to the use of antiseptics or traditional cord care practices (Mullany *et al.*, 2016).

Various studies carried in developing countries reported that mothers apply substances like mustard oil, turmeric, cow dung, and antiseptic lotion on the cord stump (Kesterton & Cleland, 2019). A study of home deliveries in Tanzania revealed that behavior change was acceptable for all behaviors, except cord care, for which there were strong beliefs about the importance of putting something on the cord to help it dry and fall off (Shamba *et al.*, 2015). Umbilical cord care practices studied among South-Western Nigerian women revealed that cord care practice was fair among the mothers (Cobo, *et al.*, 2015). Since most mothers will need to take care of their baby's umbilical cord on their own without supervision after discharge from the hospital, they may not do it correctly if they were not shown how to do it well or due to various cultural practices.

Reducing umbilical cord infections through teaching proper hygienic household cord care practices to mothers may help to reduce new born deaths from infections (Ndikom *et al.*, 2020). If urgent interventions to combat neonatal infections are not taken, neonatal deaths are projected to increase from forty-five percent of under five deaths in 2015 to fifty-two percent by 2030 (WHO, 2016). Much of concern lies in the community

settings where cultures and beliefs are held in high esteem. Cultural beliefs are harmful and detrimental to health and would be observed against all odds. Potentially harmful cord care cultural practices, especially with home deliveries, predominates in sub-Saharan Africa and west Africa (Herlihy *et al.*, 2015; Sacks *et al.*, 2015). A report from Saaka *et al.*, (2018) revealed that newborn care practices were generally low; newborn care practices have a positive association with high maternal educational attainment. Adequate utilization of antenatal care services and high maternal knowledge of newborn endanger signs of cord care practices. The umbilical cord stump is, colonized mainly by bacteria from environmental sources such as the mother's birth canal, skin flora, and the hands of the caregivers. However, a high percentage of these infections may originate from bacterial colonization of the umbilicus. It is because cord care practices have variations with cultural reflection among traditions within communities and disparities in health care practices worldwide (Stewart *et al.*, 2016). Kaoje *et al.*, (2018) reported in their study among mothers in a rural community of Sokoto state that inappropriate umbilical cord care practices and low utilization of postnatal care services despite the availability of a health facility. Obiora *et al.*, (2019) reported that potentially harmful newborn cord care practices among the respondents were the application of herbs and toothpastes to newborn's umbilical cord and hot balms application was to hasten cord separation.

Therefore, this study explores the knowledge and practice and cord care among mothers to its level of knowledge, level of practice, and factors influencing the level of knowledge and practice in Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi North Local Government Area, Anambra State.

## **LITERATURE REVIEW**

### **Umbilical Cord or Stump**

The umbilical cord is a flexible tube-like structure that connects a developing fetus to the placenta in the womb, providing the fetus

with essential nutrients, oxygen, and removing waste products. It consists of two arteries and one vein encased in a gelatinous substance called Wharton's jelly, which provides protection and support to the blood vessels (MedlinePlus, 2021).

Immediately after birth, the cord is clamped and cut to prevent excessive blood loss from the newborn. Early cord clamping (within 10 seconds of birth) has been a common practice, but recent studies suggest that delaying cord clamping for at least 30 to 60 seconds can have significant benefits for the newborn, including increased blood volume, iron stores, and decreased risk of anemia (Andersson *et al.*, 2019).

Once the cord is cut, the umbilical stump remains attached to the newborn's abdomen, and it gradually dries up and falls off within 7 to 21 days. During this time, it is essential to keep the stump clean and dry to prevent infection. The stump may be cleaned with a mild soap and water and kept dry with frequent diaper changes (American Academy of Pediatrics, 2015).

### **Functions of the Umbilical Cord**

The umbilical cord is composed of three main structures: two umbilical arteries and one umbilical vein. The umbilical arteries transport deoxygenated blood and waste products from the fetus to the placenta, while the umbilical vein carries oxygenated blood and nutrients from the placenta to the fetus (Alam *et al.*, 2017). This exchange of gases, nutrients, and waste products is critical for fetal growth and development, and any disruption to this process can have severe consequences for the developing fetus.

One of the key functions of the umbilical cord is to ensure that the fetus receives an adequate supply of oxygen. Oxygen is essential for fetal development and is required for the growth and function of all organs and tissues. If the supply of oxygen to the fetus is compromised, it can lead to fetal hypoxia, a condition that can cause significant damage to the developing brain and other organs (Vyas *et al.*, 2015). The umbilical cord plays a critical role in

maintaining adequate oxygenation of the fetal blood by facilitating the exchange of gases between the fetal and maternal circulatory systems.

In addition to its role in oxygenation, the umbilical cord is also important for the transport of nutrients to the developing fetus. The umbilical vein carries a range of nutrients, including glucose, amino acids, and lipids, which are essential for fetal growth and development (Mitra *et al.*, 2018). Any disruption to the transport of these nutrients can lead to fetal malnutrition and growth restriction, which can have long-term consequences for the health and well-being of the child.

### **Umbilical Cord Care**

Knowledge of cord care influences the choice of cord care practices and has a great impact on neonate health. Poor cord care can lead to infection of the umbilical cord and thus have a bearing on the subsequent growth trajectory of the newborn. (Ayub *et al.*, 2022).

Umbilical cord care is among the essential newborn care practices recommended by the World Health Organization (WHO) to reduce neonatal morbidity and mortality. The basic principle of umbilical cord care is to keep it clean and dry, as this provides the fastest and safest umbilical cord healing. (Ayub *et al.*, 2022).

Cord care practices vary across different regions and cultures. Some women opt for traditional practices, while others rely on modern practices recommended by healthcare professionals. The World Health Organization (WHO) recommends dry cord care for neonates in the first week of life, where the cord stump is kept clean and dry, and antiseptics are not applied (WHO, 2018). However, many women still rely on traditional practices, such as applying substances like ash, oil, or cow dung to the cord stump, which can increase the risk of infection (Adadevoh *et al.*, 2018).

Cord care practices have a significant impact on neonatal health. Improper cord care practices can lead to cord infection, sepsis,

and other neonatal complications (Adadevoh *et al.*, 2018). In low-income countries, where neonatal mortality rates are high, improving cord care practices can significantly reduce neonatal mortality and morbidity (WHO, 2018).

### **Umbilical Cord Care Methods**

The World Health Organization (WHO) recommends dry cord care, which involves keeping the cord clean and dry without the use of antiseptics or other substances.

The technique for dry cord care is a method recommended by the World Health Organization (WHO) for the management of newborn umbilical cord stumps in settings where the risk of infection is high. This technique involves keeping the cord stump clean and dry to prevent infection, and avoiding the application of any substances that may interfere with the natural healing process of the cord stump.

According to the WHO (2016), the dry cord care technique involves the following steps:

1. Keep the cord stump clean by gently wiping it with a clean, dry cloth or cotton swab after each diaper change.
2. Keep the cord stump dry by exposing it to air and avoiding the use of water or any substances such as powders, oils, or antiseptics that may interfere with the natural drying process.
3. Keep the diaper below the cord stump to avoid contamination from urine or feces.
4. Watch for signs of infection such as redness, swelling, discharge, or foul odor, and seek medical attention if these occur.

Another commonly used umbilical cord care method is the use of antiseptics such as chlorhexidine or alcohol. According to the World Health Organization (WHO), antiseptic cord care is recommended for all newborns in settings with high rates of infection, including those with high neonatal mortality rates (WHO, 2019).

The procedure for antiseptic cord care includes the following steps:



1. Wash hands with soap and water before handling the cord stump to prevent the spread of infection (WHO, 2019).
2. Clean the cord stump with a sterile cotton swab or gauze pad soaked in chlorhexidine solution, which has been shown to be more effective than other antiseptics (WHO, 2019; CDC, 2018).
3. Gently clean the base of the cord stump and the surrounding skin, taking care not to pull or irritate the cord (WHO, 2019).
4. Repeat the cleaning process two to three times per day, or as recommended by the healthcare provider (WHO, 2019).
5. Keep the cord stump dry and exposed to air to promote healing and prevent bacterial growth (WHO, 2019).
6. Monitor the cord stump for signs of infection, such as redness, swelling, discharge, or foul odor, and report any concerns to the healthcare provider (WHO, 2019).

It is important to note that some healthcare providers may have different recommendations for antiseptic cord care depending on the specific context or local practices (CDC, 2018). Therefore, it is essential to follow the instructions provided by the healthcare provider.

Antiseptic cord care has been found to be effective in reducing the risk of infections and promoting faster healing (Imdad *et al.*, 2015) However, the use of antiseptics requires careful attention to avoid overuse or misuse, which can lead to adverse effects such as skin irritation and delayed healing (Kc *et al.*, 2018).

## **MATERIALS AND METHODS**

### **Research Design**

The research design used for this study was a descriptive cross-sectional survey design. Which According to Creswell and Creswell (2018), is a research design that involves collecting data from a sample of individuals at a specific point in time to describe the characteristics of a population, which can be used to determine the prevalence of a particular condition, behavior, or attitude within a population.

### **Area of Study**

The study was conducted in Nnamdi Azikiwe University Teaching Hospital (NAUTH), which is located in Nnewi, a town in Anambra State, Nigeria. The hospital is easily accessible by road from nearby towns and cities, including Onitsha, Awka, and Enugu. The hospital is made up of 16 departments and service units namely; Anesthesiology department, community Medicine and PHC Department, Comprehensive health care, Finance and accounts department, GOPD/family medicine, Health Records department, Dental Department, Histopathology Department, Nursing services, Nutrition and Dietetics Department, Pharmacy Department, Physiotherapy Department, Works Department, Clinical Service unit, and Information Technology Unit (NAUTH Nnewi, 2023).

### **Target Population**

The population targeted for this study is postnatal mothers (who have given birth to full term babies in the past six months) with their newborns who visit Nnamdi Azikiwe University Teaching hospital (NAUTH) from January through February 2023. The study population consisted of 331 Mothers who attend the postnatal clinic over a 2-month period from January to February 2023 in Nnamdi Azikiwe University Teaching Hospital, Nnewi, Anambra State. (Clinic register records,2023).

### **Sample Size**

A simple size of 199 post natal mothers was used for this study. The Sample size was estimated using Taro Yamane formula (1967) as cited in Jacqueline (2022).

Therefore, the total sample size for the study was 199 respondents.

### **Sampling Technique**

The sample technique for the study was a random number method of simple random technique in which every individual present is assigned a number and each sample has an equal probability of being chosen. The

respondents for this study were met at the post-natal clinic. The researcher visited the clinic two times a week during their clinic days, till the calculated sample size was exhausted.

### **Instrument for Data Collection**

A Self-constructed questionnaire was employed as the instrument for data collection. The questionnaire was organized in three sections (A, B, & C). Section A comprises of the socio-demographic data of the respondents which consists of 7-questions. Section B will determine the level of Knowledge of cord care among the mothers, consisting of 7 questions, and Section C will determine the level of practice of umbilical cord care, which consists of 6 questions.

### **Validation of the Instrument**

A team of experts were instituted as a panel for the content validity of the developed questionnaire. Scrutiny was done on the different sections of the items of the instrument to justify the relevance of the contents, clarity, and suitability to meet the study objectives. Corrections were made based on the supervisor's remark.

### **Reliability of Instrument**

A pre-test of the instrument was carried out to ensure instrument reliability. The instrument was pre-tested on eighteen subjects in a teaching hospital (Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Amaku Awka, Anambra State). Which will not be included in the study but has similar settings with the study population. The data generated from the pilot study was analyzed using split half correlation coefficient and Spearman Brown coefficient and Reliability was determined to be 0.83 (see appendix II), which indicates that the instrument was reliable.

### **Method of Data Collection**

An introductory letter was written by the researcher and attached to the questionnaire,

to reveal the aim of the study and assured confidentiality of information provided. The researcher introduced herself to the Nursing Officers in NAUTH Nnewi North, She presented a letter of introduction endorsed by the Head of Nursing Science Department, Faculty of Health Sciences, and Technology, Nnewi Campus, alongside with the ethical approval letter from the ethical committee NAUTH.

The self-administered method of data collection which involved the use of questionnaires to collect data from study participants was employed. The researcher was assisted by two research assistants who happened to be fellow students. She explained the entire process to them and instructed them to read the questions to participants who are not literate and tick their answers accordingly without interfering with their choices. The participants were given the questionnaire to answer on their own, without the assistance of the researcher. However, the researcher read the questions to participants who were not literate and ticked their answers accordingly without interfering with their choices. This method of data collection was chosen because it is cost effective, time saving, and more participants may be likely to disclose sensitive or personal information since they are answering the questions in private.

### **Ethical Consideration**

A letter of application duly signed by Head of department of Nursing science, Nnamdi Azikiwe University, and the supervisor was presented to Health Research Ethics committee Nnamdi Azikiwe University Teaching Hospital (NAUTH) with the proposal for the purpose of obtaining approval for the study. The proposal was submitted and approval was equally obtained before data collection. A complete and comprehensive detail on the nature of the study, the importance of the study and the procedure for completing the questionnaire were briefed to the respondent. Informed consent was obtained while anonymity and confidentiality were maintained both during

and after collection of data. The respondents were assured that they could withdraw from the study at any stage and that such withdrawal or non-participation would not be prejudicial.

### STATISTICAL ANALYSIS

Data was analyzed with Statistical package for Social Sciences (SPSS) version 25 (IBM,

2018, USA). Data obtained from the demographic variables, Level of knowledge of umbilical cord care and level of practice of umbilical cord care were analyzed using descriptive statistics. Values were presented in simple frequencies and percentage tables.

### RESULT

**TABLE 1: DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS. N=199**

S/N	Items	Frequency	Percentages %
<b>Age of Respondents</b>			
	20-25 Years	98	49.3
	26-30 Years	41	20.6
	31-35 Years	50	25.1
	36-40 Years	10	5
<b>Marital Status</b>			
	Single	28	14.1
	Married	169	84.9
	Divorced	2	1
<b>Religion</b>			
	Christianity	177	88.9
	Traditional Worshiper	22	11.1
<b>Educational Level of Respondents</b>			
	Primary Level	5	2.5
	Secondary Level	39	19.6
	Tertiary Level	155	77.9
<b>Occupation</b>			
	Homemaker / House wife	30	15.1
	Trading	59	29.6
	Civil Servant	73	36.7
	Student	37	18.6
<b>Number of Parity</b>			
	Less than two	101	50.7
	Greater than two but less than five	70	35.2
	Greater than five	28	14.1
<b>Place of Delivery of Last Child</b>			
	Health Care Facility	59	29.6
	Non-health facility (Traditional birth Attendants)	11	5.5
	Home	1	0.5
	Hospital (Public or Private)	107	53.8
	This is My First Child	21	10.6

Table 1, result revealed that out of the 199 postnatal mothers, the majority were aged between 20-25 years, with 98(49.3%) and the least being 36-40 years with 10(5%). However, the majority were married with 169(84.9%) and the least being divorced with 2(1%); also, 177(88.9%) were Christians and the least being traditional worshippers 22(11.1%). Furthermore, level of education revealed that tertiary education was the highest with 155(77.9%) and the least being

primary with 5(2.5%). Civil servants were the most with 73(36.7%), and the least being homemaker/house wife with 30(15.1%). Parity of less than two was the majority with 101(50.7%) and the least being 28(14.1%) with greater than five.

The result showed that Majority had their last child delivered in a hospital which had 107(53.8%) and the least at home with 1(0.5%).

**TABLE 2: LEVEL OF KNOWLEDGE OF CORD CARE AMONG MOTHERS IN NAUTH**

S/N	Items	Frequency	Percentages (%)
	<b>Do you know what cord care is in a newborn?</b>		
	Yes	190	95.5
	No	9	4.5
	<b>What do you understand by cord care of the newborn?</b>		
	Care of the umbilical cord stump at delivery	154	81.06
	Care of the baby's nutritional need	26	13.68
	Detachment of the umbilical cord	10	5.26
	<b>What is the major reason for cord care?</b>		
	To prevent infection	156	82.10
	To facilitate falling of the cord	20	10.53
	To prevent bad odor	14	7.7.37
	<b>How often should the care giver (mother) carry out cord care on the newborn?</b>		
	Whenever she is disposed	29	15.27
	Once daily	10	5.26
	Two to three times daily	151	79.47
	<b>What is/are the methods of cord care?</b>		
	Salt solution cord care	30	15.79
	Hot water cord care	70	36.84
	Dry cord care and antiseptic cord care	80	42.11
	Herbal remedies or substances	10	5.26
	<b>What solution should be used for cleaning the umbilical cord?</b>		
	Water	27	13.6
	Antiseptics	150	75.4
	Herbal remedies	13	6.5
	<b>How is the umbilical cord stump cleaned?</b>		
	From the base of the cord stump to the surrounding skin	100	50.3
	From the surrounding skin to the base of the cord stump	90	45.2

**Mean percentage = 66.5 % Mean percentage rating: Fair Knowledge**

Table 2, showed the level of knowledge of cord care among mothers in NAUTH.

From the response, majority of the respondents 190 (95.5%), stated that they know what cord care in a newborn is while 9(4.5%) did not. Also, 154 (77.4%) had good knowledge of cord care in a newborn to be the care of the umbilical cord stump at delivery, while 36 (18.1%) did not. However,156 (78.4%) communicated a good knowledge saying that the major reason for cord care is to prevent infection while 34 respondents (17.1%) communicated a poor knowledge saying that it is to facilitate falling of the cord and to prevent bad odor. Furthermore, majority of the respondents 151 (75.9%) indicated a good knowledge on the frequency of cord care stating that it should be carried out two to three times daily while 39 (19.6%) stated that the frequency of

cord care should be whenever she is disposed and once daily. The results showed that 80 (40.2%) respondents recorded a good knowledge on the methods of cord care being both dry cord care and antiseptic cord care, while 110 (55.3%) respondents reported a poor knowledge on the methods of cord care being salt solution cord care, hot water cord care and herbal remedies or substances. The solution to be used in cleaning the cord was antiseptics with 150 (75.4%) respondents as majority while 40 (20.1%) respondents said water and herbal remedies should be used. Most of the respondents 100(50.3%) stated that the umbilical cord stump is cleaned from the base of the cord stump to the surrounding skin while 90(45.2%) stated that it is cleaned from the surrounding skin to the base of the cord stump.



**TABLE 3: THE LEVEL OF PRACTICE OF CORD CARE AMONG MOTHERS IN NAUTH**

S/N	Items	Frequency	Percentages (%)
<b>Have you ever cared for a baby's cord?</b>			
	Yes	169	84.9
	No	30	15.1
	<b>Total</b>	<b>199</b>	<b>100.0</b>
<b>What solution did you use to clean the cord stump?</b>			
	Hydrogen peroxide	20	10.0
	Normal saline	50	25.1
	Chlorhexidine Solution	95	47.7
	Herbal preparation	4	2.1
	<b>Total</b>	<b>169</b>	<b>84.9</b>
<b>How did you keep the umbilical cord stump after cleaning?</b>			
	Dry and exposed to air	105	52.7
	Wet and covered	44	22.1
	Moist and damp	20	10.1
	<b>Total</b>	<b>169</b>	<b>84.9</b>
<b>How did you place the diaper after cord care?</b>			
	Below the cord stump	137	68.9
	Above the cord stump	32	16.0
	<b>Total</b>	<b>169</b>	<b>84.9</b>
<b>When did you perform hand hygiene in cord care?</b>			
	Before handling the cord	134	67.3
	During Cord care	15	7.5
	After cleaning the cord with sterile gauze	20	10.1
	<b>Total</b>	<b>169</b>	<b>84.9</b>
<b>Which signs of infection should be watched out for during cord care?</b>			
	Dryness, moisture, necrosis	10	5.0
	Redness, swelling, discharge, foul odor	145	72.8
	Brightness, gel-like, hotness	14	7.1
	<b>Total</b>	<b>169</b>	<b>84.9</b>

Mean percentage = 61.9% Mean percentage rating: Fair practice

Table 3, showed the level of practice of cord care among mothers in NAUTH.

Majority of the respondents 169 (84.9%) stated that they have cared for a baby's cord, while 30 (15.1%) stated that they have not. However, 95 (47.7%) indicated a good practice by stating that the solution they use is chlorhexidine, while 74 (37.2%) indicated that hydrogen peroxide, normal saline and herbal preparation are the solutions they used in cleaning the cord. Most of the respondents 105 (52.7%) reported that the umbilical cord stump is kept dry and exposed to air after cleaning, while 64 (32.2%) respondents reported that the umbilical cord stump is kept wet & covered and moist & damp after cleaning. Furthermore, majority of the respondents 137 (68.9%) had a good practice

on how they place the diaper after cord care by keeping it below the cord stump, while 32 (16.0%) placed the diaper above the cord stump after cord care. Most respondents 134 (67.3%) had a good practice by performing hand hygiene before handling the cord, while 35 (17.6%) respondents did not have a good practice, stating that hand hygiene should be performed during cord care and after cleaning the cord with sterile gauze. Majority of the mothers 145 (72.8%) indicated a good practice by watching out for redness, swelling, discharge and foul odor as signs of infection during cord care, while 24 (12.1%) indicated a poor practice by watching out for dryness, moisture, necrosis and brightness, gel-like, hotness as signs of infection during cord care

**TABLE 4: FACTORS INFLUENCING THE KNOWLEDGE AND PRACTICE OF UMBILICAL CORD CARE AMONG MOTHERS IN NAUTH**

<i>Sociodemographic variables</i>	<b>Knowledge of umbilical cord care</b>		<b>Practice of umbilical cord care</b>	
	<i>X<sup>2</sup></i>	<i>P value</i>	<i>X<sup>2</sup></i>	<i>P value</i>
Age group	38.45	0.002*	23.04	0.190
Religion	2.75	0.326	62.06	0.216
Marital status	44.26	0.001*	0.77	<0.001*
Educational level	64.26	0.012*	15.40	0.038*
Occupation	6.78	0.210	4.22	0.014*
Number of parities	27.32	0.016*	0.49	0.004*
Place of delivery of last child	22.31	0.026*	12.15	0.001*

Table 4, showed the factors influencing the knowledge and practice of cord care.

From the results, age group, marital status, educational level, number of parities and place of delivery of last child have a significant influence on the knowledge of umbilical cord care while religion and occupation do not have a significant influence on the knowledge of umbilical cord care. Also, Marital status, educational level, occupation, number of parities and place of delivery of last child have a significant influence on the practice of umbilical cord care while age group and religion do not have a significant influence on the practice of umbilical cord care.

## DISCUSSION

The findings revealed that there is a fair knowledge of umbilical cord care among mothers in NAUTH as shown by the mean percentage of 66.5%. This is in accordance with the findings of Ayub *et al.*, (2022)) which revealed that 62.2% of the young mothers had adequate knowledge of cord care. Although majority of the respondents 95.5% stated that they know what cord care in a newborn is, 4.5% did not. Also 77.4% had good knowledge of cord care in a newborn to be the care of the umbilical cord stump at delivery, while 18.1% did not. The reason for their good knowledge could be attributed to their high level of education and the place of delivery which provides a better source of information from the health workers. This conforms to the study carried out by Ango *et al.*, (2021) which revealed that majority, with 74.4% had good knowledge of umbilical cord care. Shwe *et al.*, (2023), Hamina *et al* (2018); had similar

reports to the current findings revealing that mothers showed good knowledge of cord care. However, the study of Mohammed *et al.*, (2020) confute with the study findings revealing a poor knowledge of cord care with 35.1% being majority.

Furthermore, 75.9% of the respondents indicated a good knowledge on the frequency of cord care stating that it should be carried out two to three times daily, 19.6% stated that the frequency of cord care should be whenever she is disposed and once daily. Most of the respondents 50.3% stated that the umbilical cord stump is cleaned from the base of the cord stump to the surrounding skin while 45.2% stated that it is cleaned from the surrounding skin to the base of the cord stump. The study showed the level of knowledge of cord care among women in NAUTH, which could be attributed to their marital status and their occupation as civil servants. The report of Kayom *et al.*, (2015) revealed that 89.6% cleaned the cord twice daily which conforms to the study findings. Furthermore, Udosen *et al*; (2019) findings have similarity with the report of this study on frequency of cord cleaning, which revealed in their study that 97.9% cleaned babies' cord always.

The findings revealed that there is a fair practice of umbilical cord care among mothers in NAUTH as shown by the mean percentage of 61.9%. Ango *et al.*, (2021) has similar results to the study findings which revealed that 54.4% of the respondents had an excellent practice of umbilical cord care. Also, the findings of Ndikom *et al.*, (2020) conforms to the study findings which revealed that 61.4% practiced good cord care. However, the findings of Ayub *et al.*,

(2022) has conflicting results to the study findings which revealed that 21% had an exceptional poor practice of umbilical cord care. Although majority of the respondents 84.9% stated that they have cared for a baby's cord, 15.1% stated that they have not. However, 47.7% indicated a good practice by stating that the solution they use is chlorhexidine, while 37.2% indicated that normal saline and herbal preparation are the solutions they use in cleaning the cord. Most of the respondents, 52.7% reported that the umbilical cord stump is kept dry and exposed to air after cleaning, while 32.2% respondents reported that the umbilical cord stump is kept wet & covered and moist & damp after cleaning. The reason for their level of practice could be attributed to the knowledge they have about cord care. This confutes the study carried out by Udosen *et al.*, (2019) which revealed that 22.8% of the respondents used Chlorhexidine while 29.9% still used herbs. Shwe *et al.*, (2023) had dissimilar results with the study findings revealing that only 2.2% of chlorhexidine gel for cord care.

From the results, age group, marital status, educational level, number of parities and place of delivery of last child have a significant influence on the knowledge of umbilical cord care while religion and occupation do not have a significant influence on the knowledge of umbilical cord care. According to the findings of this study, mothers' education level is an important factor in having a high level of knowledge about cord care. Those with no formal education had a higher odd of having low knowledge. This finding is in accordance with the findings of Ayub *et al.*, (2022) revealing that having a higher educational level, and having delivered in a health facility were important factors in having knowledge on cord care. The findings of Mohammed *et al.*, (2020) corroborates with the study findings by revealing that Mothers with Tertiary education were more likely to use aseptic cord care.

Also, marital status, educational level, occupation, number of parities and place of

delivery of last child have a significant influence on the practice of umbilical cord care while age group and religion do not have a significant influence on the practice of umbilical cord care. The reason for this could be attributed to the fact that mothers with no formal education are less likely to have the ability to read, understand and practice the safe umbilical cord care. These findings align with the report of Eyeberu *et al.*, (2022) revealing that being in age of 20–29, attending tertiary education and having good knowledge about safe cord care were determinants of safe cord care practice. Udosen *et al.*, (2019) has similar reports with the study findings by stating a significant correlation between level of education, and number of children on cord care practice.

## CONCLUSION

The study revealed a fair knowledge on the cord care and its practices, however the most used method employed was dry cord care/antiseptic cord care with chlorhexidine being the most solution used. However, maternal education showed a significant impact on the knowledge and practice of umbilical cord care. The study also identified a low incidence of reported complications, suggesting an overall adherence to evidence-based practices.

## Declaration by Authors

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