

## Original Research Article

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# Assessment of knowledge and cord care practices among pregnant women in selected PHCs in Jos metropolis, Plateau state

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## ABSTRACT

**Background:** Umbilical cord care is an essential newborn care practice which determines newborn survival. Knowledge on cord care influences the choice of cord care practices. This study was therefore conducted to determine the umbilical cord care practices among mothers in Jos metropolis.

**Methods:** A cross sectional study involving 119 study respondents who were selected by cluster sampling technique. Data was collected using a self-administered questionnaire and analyzed using SPSS version 23.0. At 95% confidence interval, a p value of  $<0.05$  was considered statistically significant.

**Results:** Thirty-nine (35.1%) of the respondents had poor knowledge of cord care while 48 (43.3%) and 24 (21.6%) had fair and good knowledge respectively. Majority of the respondents used methylated spirit for the last delivery 54 (76.1%), 5 (6.9%) used chlorhexidine gel while 11 (15%) used substances such as salt and vaseline. Respondents with tertiary education were more likely than those with secondary and primary education to use aseptic cord care (OR 0.07; 95%CI 0.008-0.740) and (OR 0.15; 95%CI 0.047-0.507) respectively. The mean cord separation time among respondents who used chlorhexidine gel was  $6.6 \pm 2.8$  days, this was longer than those who used other substances ( $4.8 \pm 1.5$  days).

**Conclusions:** More respondents used aseptic cord care practices, however, a good number used a combination of septic and aseptic methods which could still pose a risk of infection to the neonate. There is need for health interventions to increase the awareness of mothers on using single aseptic cord care practices in order to prevent neonatal sepsis and mortality.

**Keywords:** Cord care, Chlorhexidine gel, Newborn, Plateau state

## INTRODUCTION

Optimal care for the newborn is essential for their survival. This can be achieved by integrating maternal and newborn care services in order to ensure the provision of quality health care for both the mother and neonate. A neonate is referred to as an infant who is below twenty-eight days of life. This is the most vulnerable period in infancy which contributes significantly to under five mortality rate.<sup>1</sup>

Neonatal mortality is a global problem but has more devastating effects in developing countries. In 2016, 46% of deaths among under-fives were neonatal deaths.<sup>2</sup> Majority of these deaths occurred in Africa and Asia and within the first week of life.<sup>2</sup> According to the 2018 Nigerian Demographic and Health Survey, Nigeria had a neonatal mortality rate of 38 per 1000 live births. This figure is a far cry from the Every Newborn Action Plan's (ENAP) target of reducing neonatal deaths to less than 12/1000 livebirths.<sup>3,4</sup>

Clean cord care is one of the essential newborn care practices which is required for the survival of the newborn. This is expected to begin immediately after delivery with application of aseptic substances on the umbilical stump in order to aid cord separation and prevent neonatal sepsis. This practice is vital as umbilical stump is a raw surface that may serve as portal of entry for microorganisms into the blood stream. The umbilical stump as a focus of infection can also be influenced by the method and frequency of applying these substances and the instrument used to separate the cord at birth.<sup>5</sup> Aseptic cord care practices include the use of methylated spirit, silver sulphadiazine, gentian violet, iodine, chlorhexidine, dye and topical use of antibiotics.<sup>6,7</sup> However, the World Health Organization (WHO) recommends dry cord care especially in countries with low neonatal mortality rate.<sup>7</sup> In Nigeria, methylated spirit is the commonest method of aseptic cord care, although 7.1% chlorhexidine digluconate gel which releases 4% chlorhexidine was introduced in 2013 as one of the lifesaving commodities in neonatal care.<sup>8</sup> Other non-orthodox methods of cord care used by mothers include; hot compress, use of cow dung, use of herbs, ash, salt, saliva, sand, toothpaste and petroleum jelly.<sup>7,9</sup> The 2013 NDHS showed that only 30% of mothers studied used methylated spirit while others used oil, tooth paste, ash and powder on the umbilical stump. These non-orthodox methods increase the chances of neonatal jaundice, tetanus and sepsis in the neonatal period, thereby increasing neonatal morbidity and mortality.

Studies conducted in Nigeria and India have shown that determinants of cord care practices include place of delivery, the mother's educational qualification, age of the mother, sex of the neonate and culture.<sup>6,10</sup> It is therefore imperative to determine the knowledge, practice and determinants of good cord care practices in order to provide an avenue for appropriate interventions which will reduce neonatal deaths resulting from poor cord care practices

This study aims to provide information on the various cord practices and factors that determine these practices. It will also provide information on the use of chlorhexidine gel among mothers.

## METHODS

The study was carried out in Plateau State from May to August 2017. Plateau State is located in the North Central region of Nigeria with an estimated population of 3,206,531 (1,598,998 males and 1,607,533 females).<sup>11</sup> Jos metropolis comprises of Jos North and Jos South Local Government Areas (LGAs) which are two out of the seventeen LGAs in the State. Jos metropolis is the most developed area of the state and has a population of about 736,016 inhabitants. It has a total of 69 Primary Health Care (PHC) centers, 10 secondary health care facilities and three tertiary health care facilities.<sup>12</sup>

A cross sectional study design was employed to study pregnant women assessing antenatal care services in the selected PHC facilities. All pregnant women assessing ANC services in the selected PHC facilities who gave consent to participate in the study were included in the study.

Using the Cochran's formula, the calculated sample size was 90. This was calculated using prevalence of the mothers who used methylate spirit for cord care (6.3%) from a study in Bauchi State North- Eastern Nigeria.<sup>13</sup>

Cluster sampling technique was used to select participants. From the list of 69 PHC centres in Jos metropolis, two (PHC Gangare and PHC Bukuru central) were selected using simple random sampling technique by table of random numbers. All pregnant women who presented for ANC services were included and studied after informed consent was obtained.

Data was collected using a structured interviewer administered questionnaire which was pretested in PHC Angwan Rogo.

After data collection, the responses were appropriately coded, entered into Microsoft excel software and cleaned; thereafter, the data was exported and analyzed using IBM Statistical Package for the Social Sciences (SPSS) version 23.0. Ten questions on knowledge were asked. Each correct response was awarded 2 marks and each wrong response scored 0. Respondents who scored 15 and above were adjudged as having good knowledge, those who scored 8-14 were regarded as having fair knowledge while those who scored 0-7 were regarded as those with poor knowledge on cord care.

The mean of quantitative variables such as age of respondents and cord separation time were presented. Frequency tables were used to present other variables such as income, place of last delivery and educational qualification.

Chi square test was used to test for association between variables such as age and knowledge on cord care practice, it was also used to test for association between variables such as educational qualification and method of cord care practiced. Logistic regression was used to determine the predictors of cord care practice by the respondents.

## RESULTS

Table 1 shows most of the respondents were aged 25-34 years 64 (57.7%), 43 (38.7%) had tertiary level of education, 5 (4.5%) had no formal education. Majority of respondents were Christians and earned less than ₦18,000 monthly 58 (52.3%) and 89 (80.2%) respectively.

**Table 1: Sociodemographic characteristics of study respondents (n=111).**

Variable	Frequency (%)
<b>Age group (years)</b>	
15-24	28 (28.2)
25-34	64 (57.7)
35-44	19 (17.1)
<b>Educational status</b>	
None	5 (4.5)
Primary	32 (28.8)
Secondary	31 (27.9)
Tertiary	43 (38.7)
<b>Ethnicity</b>	
Plateau indigenous	65 (58.6)
Non-plateau indigenous	46 (41.4)
<b>Religion</b>	
Christianity	58 (52.3)
Islam	53 (47.7)
<b>Occupation</b>	
Business	57 (51.4)
Unemployed	34 (30.6)
Civil servant	20 (18.2)
<b>Monthly income of respondent (Naira)</b>	
<₦18,000	89 (80.2)
≥₦18,000	22 (19.8)

**Table 2: Knowledge on cord care among respondents.**

Variable	Frequency (%)
<b>Awareness of substances usually used for cord care*</b>	
Methylated spirit	99 (88.4)
Toothpaste	60 (52.0)
Vaseline/oil	49 (43.8)
Powder	14 (12.5)
Others**	32 (34.4)
<b>Awareness on appropriateness of substances used for cord care*</b>	
Methylated spirit	95 (84.5)
Toothpaste	56 (50.0)
Hot water	24 (21.4)
Others**	34 (30.4)
<b>Awareness on effect of poor cord care practices*</b>	
Neonatal tetanus	61 (54.5)
Neonatal jaundice	39 (34.8)
Neonatal sepsis	67 (59.8)
<b>Level of knowledge of cord care</b>	
(n=111)	39 (35.1)
(n=111)	48 (43.3)
(n=111)	24 (21.6)

\*Multiple responses allowed, \*\*Others (ash, shea butter, herbs).

Table 2 shows ninety-five (84.5%) of the respondents knew that methylated spirit is an appropriate method of cord care. Sixty-seven (59.8%) of the respondents knew that poor cord care practices can lead to neonatal sepsis, while 39 (34.8%) of them acknowledged that neonatal jaundice can be an effect of poor cord care practice. In

addition, only 24 (21.6%) of respondents had good knowledge on umbilical cord care.

Table 3 shows that of the respondents who had previous deliveries, majority 54 (76.1%) used methylated spirit to care for the umbilical cord of neonates in their last delivery while 5 (6.9%) of them used chlorhexidine gel. Other substances that were used include ash (2.8%), Vaseline (15.5%) and salt (15.5%).

**Table 3: Substances used for cord care among respondents in their last delivery.**

Variable	Frequency (%)
<b>Ash</b>	2 (2.8)
<b>Toothpaste</b>	1 (1.4)
<b>Methylated spirit</b>	54 (76.1)
<b>Vaseline</b>	11 (15.5)
<b>Hot water</b>	7 (9.9)
<b>Chlorhexidine gel</b>	5 (6.9)
<b>Powder</b>	2 (2.8)
<b>Salt</b>	11 (15.5)

\*Multiple responses allowed.

**Table 4: Determinants of umbilical cord care practice among respondents.**

Variable	Aseptic cord care practice Frequency (%) (n=51)	Septic cord care practice Frequency (%) (n=20)	$\chi^2$	df	P value
<b>Age group (years)</b>					
15-24	8 (80.0)	2 (20.0)			
25-34	32 (74.4)	11 (25.6)	1.494	2	0.474
35-44	11 (61.1)	7 (38.9)			
<b>Educational status</b>					
None	2 (50.0)	2 (50.0)			
Primary	12 (50.0)	12 (50.0)	11.737	3	0.008
Secondary	15 (78.9)	4 (21.1)			
Tertiary	22 (91.7)	2 (8.3)			
<b>Occupation</b>					
Business	22 (62.9)	14 (37.1)			
Civil servant	17 (94.4)	1 (5.6)	6.607	2	0.037
Unemployed	12 (70.6)	5 (29.4)			
<b>Religion</b>					
Christianity	29 (80.6)	7 (19.4)	2.747	1	0.097
Islam	22 (62.9)	13 (37.1)			
<b>Monthly income of respondent (Naira)</b>					
<₦18,000	37 (64.9)	20 (35.1)	6.839		0.009
≥₦18,000	14 (100)	0 (0)			

Table 4 shows majority of respondents between 15-24 years used aseptic cord care practice, 11 (61.1%) of respondents between 35-44 years used aseptic methods on their neonates. This finding was not statistically significant (p=0.47). Majority (91.7%) of respondents who had tertiary educational qualification used aseptic

cord care while 50% of those with primary and non-formal education used aseptic cord care, this finding was statistically significant ( $p=0.008$ ). Also, all respondents who earned more than ₦18,000 used aseptic cord care and this finding was statistically significant ( $p=0.009$ ).

**Table 5: Predictors of umbilical cord care practice among respondents.**

Variable	Odds ratio	95% confidence interval	P value
<b>Educational status</b>			
None	0.437	0.136-1.409	0.166
Primary	0.154	0.047-0.507	0.002
Secondary	0.079	0.008-0.740	0.026
Tertiary	1		
<b>Income</b>			
<₦18,000	1		
≥₦18,000	1.97	0.433-8.965	0.381
<b>Occupation</b>			
Civil servant	1.53	0.442-5.277	0.090
Business	0.14	0.015-1.697	0.501
Unemployed	1		

Respondants with tertiary education were more likely than those with secondary and primary education to use aseptic cord care (OR 0.07; 95% CI 0.008-0.740) and (OR 0.15; 0.047-0.507) respectively. This finding was statistically significant ( $p=0.026$  and  $p=0.002$  respectively). Those who earned more than ₦18,000 monthly had about 2 times more odds than those who earned less than ₦18,000 naira to use aseptic cord care (95% CI 0.433-8.965) but this was not statistically significant as shown in Table 5.

Table 6 shows the mean cord separation time among respondents who used chlorhexidine gel was  $6.6 \pm 2.8$  days, this was longer than those who used other substances (CST  $4.8 \pm 1.5$  days), this finding was statistically significant ( $p \leq 0.001$ ).

**Table 6: Mean cord separation time among respondents.**

Variable	Mean (days)	T statistic	P value
<b>Cord separation time</b>			
Used chlorhexidine gel	$6.615 \pm 2.789$	-4.200	<0.001
Used other methods	$4.796 \pm 1.507$		

## DISCUSSION

Having good knowledge and good cord care practice play a significant role in ensuring quality newborn care and prevention of neonatal sepsis which may arise from poor cord care practices. Findings on proportion of women with good knowledge and practice in this study was similar to studies conducted in Jos, Kano and Edo states where as many as 77.8%, 60.9% and 77% of mothers

used aseptic cord care methods.<sup>6,15,16</sup> However, this was different from findings from a study in Pakistan where only 26% of respondents used aseptic methods of cord care despite the fact that they delivered their index children in the health facility.<sup>6,14-16</sup> Although the proportion of those who used aseptic cord care practices was higher, the use of non-orthodox methods is still a common practice as observed in studies conducted in Kano and Edo states where in addition to the use of methylated spirit, mothers also used toothpaste, hot compress, oil and herbs on the umbilical cord. Non-orthodox methods still pose an increased risk of developing complications such as neonatal jaundice, sepsis and tetanus. These practices are mostly linked to age long traditional practices transferred through generations which may be difficult change. Higher educational status and higher income as shown by these studies may have also influenced cord care practice. Women who have higher educational qualification are more likely to understand and have better knowledge on good child care practices. This reiterates the need for women of reproductive age to be educated. The financial capacity to acquire proper aseptic substances for cord care also influences the substances used.<sup>15,16</sup>

Furthermore, the use of chlorhexidine gel has increasingly become a common practice as it has been made readily available at PHC facilities and communities through the Community Owned Resource Persons who are expected to identify women who deliver at home and apply the substance to the umbilical cord in order to reduce neonatal sepsis. This is in keeping with the Nigerian protocol on cord care. Chlorhexidine use has been associated with reduced risk of neonatal sepsis though has been shown to have longer cord separation time as shown by studies in Bangladesh and a systematic review which showed the cord separation time was longer among those who used chlorhexidine gel which was similar to finding in this study.<sup>17,18</sup> Other studies conducted in Kano, Benin and Egypt showed the average cord separation time was  $6.3 \pm 3.7$  days,  $8.2 \pm 2.2$  days and  $4.2 \pm 1.7$  days respectively.<sup>15,19,20</sup> The study in Kano also showed that the cord separation time was longer among those who used methylated spirit compared to those who used other non-orthodox methods of cord care. This may explain why some mothers prefer to use non-orthodox traditional substances in order to facilitate cord separation time.<sup>15,19,20</sup> However, early cord separation should not be emphasized to mothers, as it does not reduce the risk of infection. It is also worthy to note that other factors also play a role in cord separation time. Providing mothers and caregivers with appropriate information may reduce the risk of neonatal mortality and morbidity from the poor practices.

## CONCLUSION

This study has shown that more respondents had poor and fair knowledge on cord care. Although aseptic cord care practices were used by many of the respondents, some

still used non-orthodox methods of cord care. Higher educational qualification and higher income were found to be predictors of good cord care practice.

### Recommendations

Health workers should engage and educate women at the facility and community level on the need to use single aseptic umbilical cord care method in order to prevent neonatal morbidity and mortality.

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