

UMBILICAL CORD INFECTION PREVENTION PRACTICES AMONG RURAL WOMEN ATTENDING IMMUNIZATION CLINIC IN KUMBOTSO, KANO STATE, NIGERIA

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ABSTRACT

Background: Umbilical cord infections are more prevalent in developing countries because of the high rates of unhygienic cord care practices. **Objectives:** This study was undertaken to explore the various practices related to umbilical cord care among rural community women attending an immunization clinic in Kumbotso, Kano State, Nigeria. **Method:** A descriptive cross-sectional study design was used for the study. This study was carried out in immunization clinic at Kumbotso CHC of Kumbotso Local Government Area (LGA), Kano state Nigeria. Sample size was 265. Data was collected with interviewer administered semi-structured questionnaire and analyzed using Statistical Package for Social Science (SPSS) version 20 software. The result obtained was presented in the form of tables. **Results:** Majority, 200 (75.5%) of respondents' hands were gloved. In 126 (47.5%) of respondents, new razor blades were used, in 117 (44.2%) of respondents' scissors was used and the remaining 22 (8.3%) of respondents used razor blade or knife to cut the umbilical cord. Up to 159 (60%) of respondents applied mentholated spirit. One hundred and sixty-nine (63.8%) of respondents were informed of safe umbilical cord practices by health workers. Cord infection rate occurred in 53 (20.1%) babies. **Conclusion:** Cord infection prevention and control practices were high in this community with a relatively low cord infection rate. Even though Chlorhexidine was not used, health workers should emphasize and as well recommend its use in cord care. Community-based study is recommended to generate data about cord infections and practices inside the community.

Keywords: Umbilical cord care, umbilical cord infection, practices, immunization clinic

INTRODUCTION

Umbilical cord infections are more prevalent in developing countries because of the high rates of unhygienic cord care practices.¹ Some of these practices which have been reported especially in the rural areas include the use of traditional cord dressings like cow dung, herbal preparations, ash, mud, fresh colostrum in Kenya, coconut oils and flowers by the American Samoans etc. which are usually contaminated and serve as sources of infection¹⁻⁵ Newborn sepsis is responsible for over 1.5 million deaths annually in developing countries.⁶ In Nigeria, studies have reported umbilical cord infections accounting for between 10 and 19% of neonatal admissions and resultant

estimated 30–49% neonatal deaths, and is therefore an important cause of newborn mortality.^{7,8} Soon after a normal delivery, the skin of the newborn baby including the umbilical stump is colonized mainly by nonpathogenic (non-infection causing) bacteria such as coagulase negative *Staphylococci* and *Diphtheroid* bacilli. Pathogenic bacteria such as *Coliforms* and *Streptococci* may also be present on the skin and can track up the umbilical stump causing infection To reduce the incidence of periumbilical infection (omphalitis), the cord should be cleansed in the delivery room with sterile cotton soaked in warm water at body temperature or by the use of

Gentian violet (1% aqueous) Studies by Edmond and Zaidi,⁹ Bahl et al.¹⁰ Mullany et al.¹¹ and Kayange et al.¹² have demonstrated that practices like unhygienic cord care and not washing hands before handling newborns could predispose them to sepsis. An estimated one in four neonatal deaths in Nigeria in 2016 were due to preventable infections, many of which could be averted through proper care of the umbilical cord. 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. Scale-up of this simple intervention is expected to drive significant reductions in neonatal mortality in Nigeria.¹³ Even though Nigeria's under-five mortality rate (128 per 1,000 live births in 2013)¹³ has declined over time, similar improvements in neonatal mortality have not been realized. Nigeria's neonatal mortality rate—estimated at 37 per 1,000 live births in 2013¹³—represents one of the highest rates in the world, and neonatal sepsis has been the major contributing factor in Kano.

This study was therefore undertaken to explore the various practices related to umbilical cord care among rural community women attending an immunization clinic in Kumbotso, Kano State, Nigeria. The findings can inform public health programming to reduce the prevalence of newborn sepsis and neonatal death.

MATERIALS AND METHOD

A descriptive cross-sectional study design was used for the study. This study was carried out in immunization clinic at Kumbotso CHC of Kumbotso Local Government Area (LGA), Kano state Nigeria, over a 3 months period; between April 3rd, and July 3rd, 2017. Kumbotso local government is one of the forty-four LGA in Kano. It was created in 1988 from the old Dawakin- Kudu Local Government Area, and is Located in the south western part of the state approximately 16 kilometers from the state capital. According to the national population commission, a population of 294, 391 people in the 2006 population census and a population projection 347200 in 2011 in the area of study were recorded. Majority of the people are Hausas and Fulanis with few other tribes such as

Yoruba, Igbos, Kanuri, Igala and Igbira. Most of the inhabitants are subsistent farmers. Other occupations in the area include petty trading, cattle rearing and civil service. There are 25 primary health care facilities, in the LGA, 12 private clinics and several patent medicine stores. Other patients requiring specialist care are referred to Murtala Mohammed Specialist Hospital, Kano and occasionally to Aminu Kano Teaching Hospital, Kano, Nigeria.

The study population comprises of consenting mothers or care givers that brought their children at 0-23 months who come for immunization at the CHC Kumbotso. Mothers or care givers who did not consent, whose children are too sick to be interviewed and mothers or care givers with children greater than 24 months were excluded from the study. The mothers/care givers who consented and met the inclusion criteria were then recruited for the study. All aspects of the study were reviewed and approved by the research and ethical committee of Kano state ministry of health. A letter of introduction was obtained from the Department of community medicine which manned the CHC Kumbotso and was taken to the local government chairman to obtain permission. In addition, an informed consent of the participants was also obtained before administering the questionnaire to the study subjects. The questionnaire was administered in English as well as in the participants' local language. The minimum sample size (n) was calculated using the formula $n = Z^2 pq / d^2$ where n = minimum sample size, Z = the percentage point on the standard normal distribution curve corresponding to 95% confidence interval = 1.962, q = complementary probability i.e. 1-p d = maximum sampling error allowed (precision) at 95% confidence limit i.e. 0.05 or 5%, P = Proportion or prevalence of target population estimated to have a particular problem (in this case prevalence of women that have good knowledge of umbilical stump care practice obtained from a previous study, P = 21.8% (0.218)¹⁴. $n = (1.962/0.05)^2 \times 0.218 \times 0.72 = 1539.7776 \times 0.15696 = 241$

Assuming an attrition rate of 10% of the population, therefore an additional 10% of the sample i.e. 24 is required. Hence = 241 + 24 = 265

A systematic sampling technique was used to recruit the participants. This entails the following Stage 1: Average number of children immunized per day was used as sampling frame (50) and using the sample size (265) to calculate sampling interval or Sample fraction = Sample size/Sample frame. The reciprocal of the fraction was taken as the sampling interval.

Sample fraction = $50/265 = 0.1886$

Sample interval = $(0.1886)^{-1} = 5.3022$

Approximately ~ 5

Hence, every fifth child was interviewed

Stage 2: the first child was selected via balloting

A pretested, interviewer administered semi-structured questionnaire containing both open and close ended questions was used to explore the respondents' socio-demographical data, practice and malpractices related to umbilical cord infection and control. Umbilical cord infection in this study is the presence of all or any increase swelling, discharge and delayed fall out of the cord. The data collected was analyzed using Statistical Package for Social Science (SPSS) version 20 software. Qualitative data was summarized using frequency and percentages. The result obtained was presented in tabular form.

RESULTS

All questionnaires were properly and completely filled and returned giving a response rate of 100%. Table 1 shows the socio-demographic and reproductive characteristics of the respondents. The age of the respondents ranged from 17 to 45 years with mean of 25.69 ± 5.77 years and 66.4% belonging to the 21-30 years age group. Majority (90.5%) are Hausa, Muslims (97.7%), currently married (94.7%), and having Secondary level of education (52.8%). Up to 60.8% of respondents delivered their first baby at the age of 19 years and above, and majority (97.4%) having attended ANC while 80.4% delivered at PHC.

Table 2 shows series of steps taken in umbilical cord care by the respondents. Majority 75.7% (200) of the respondents' hands were gloved, while in 25 (9.4%) of respondent no any aseptic technique was observed. In 126 (47.7%) of the studied population, new razor blades were used in cutting the

umbilicus, and dirty razor or knife was used to cut the umbilical cord 22 (8.2%) respondents. Majority of respondents 170 (59.9%) applied mentholated spirit, and 6.7% only applied olive oil or Vaseline gel. Majority 181(63.7%) of respondents are informed of safe umbilical cord practices. The cord infection rate was 20.1% as shown in table 3.

Table 1: Socio - demographic and reproductive characteristics of the respondents

Demographic feature	Frequency	Percentage
Age-group		
11-20	54	20.4
21-30	176	66.4
31-40	30	11.3
41-50	5	1.9
Ethnicity		
Hausa	240	90.5
Yoruba	5	1.9
Igbo	2	0.8
Others	18	6.8
Marital status		
Single	6	2.3
Married	251	94.7
Divorce	4	1.5
Widowed	4	1.5
Religion		
Islam	259	97.7
Christianity	6	2.3
Educational status		
No education	9	3.4
Quranic	29	10.9
Primary	30	11.3
Secondary	140	52.8
Tertiary	57	21.5
No of children		
<2	117	41.2
2-5	125	44.0
6-10	37	13.0
>10	5	1.8
Age at first delivery		
Above 19 years	161	60.8
Below 19 years	104	39.2
ANC attendance		
Yes	258	97.4
No	7	2.6
Place of delivery		
PHC	213	80.4
Secondary/tertiary centers	35	13.2
Private hospital	13	4.9
Others	4	1.5
Total	265	100.0

Table 2: Series of events in umbilical cord care

Series of events in cord care	Frequency	Percentage
1. Hygienic practice observed before cutting the cord		
Hands gloved	200	75.7
Hands washed	40	15.1
Nothing	25	9.4
2. What was used to cut the umbilical cord		
New razor blade		
Scissors	126	47.7
Used razor blade	117	44.3
Knife	17	6.4
	5	1.8
3. What was applied on the umbilical stump***		
Mentholated spirit	170	59.9
Hydrogen peroxide	7	2.5
Animal dung	1	0.4
Hot water	59	20.8
Maclean	28	9.9
Others (salt solution, olive oil, Vaseline gel)	19	6.7
4. Who informed the mothers of what to apply***		
Health care worker		
Mother	181	63.7
Mother in-law	55	19.4
Friends	20	7.0
Others (relatives, neighbors)	11	3.9
	17	6.0

***= multiple responses

Table 3: Experience of cord infection among the respondents

Experienced cord infection	Frequency	Percentage
Yes	53	20.1
No	212	79.9
Total	265	100.0

DISCUSSION

Our study reports relatively good umbilical cord infection prevention practices probably because it was a hospital survey and comprises women who majorly attended ANC at the hospital. The use of gloves during cord care and application of methylated spirits as they were taught by the health workers may have also play crucial roles in the low incidence of umbilical cord infection in our study. This also led to reduced cord infection rate. This is unlike studies that report that newborns from low socio-economic status and staying in poor environmental conditions to have an increased risk

of acquiring or developing sepsis^{9,15}. This is because they are exposed to unhygienic postnatal care environment that promotes spread of infection to them⁹. The evidence by Zahid et al¹⁶, Edmond and Zaidi⁹ and Pius et al¹⁷ demonstrated that the newborns delivered at homes or by traditional birth attendants in unsterile settings had a higher likelihood of acquiring sepsis as compared to babies delivered in health facilities where asepsis was ensured.

Considering what was applied on the cord, this study reports that methylated spirit was mainly used by the women, which agrees with a previous report in Kano.¹⁸ Other things applied were hot water, Maclean, the hydrogen peroxide, olive oil and Vaseline gel. Abhulihem-iyoha and colleagues reported hot water compression having the highest percentage (46.1%) followed by herbs, application of medical powder and Maclean having the least (2%)⁴. This slight variation is due to the fact that in this study, regarding who decided what to be

applied, it was found that Health worker have the highest percentage (63.7%) followed by mothers (19.4%), then mother in-law (7%). It was mainly the health workers which involve the doctor and nurse that decide what to apply on the cord while in the study conducted by Abhulihem-iyoha and colleagues⁴, only the nurses were involved in deciding what to be applied on the cord.

Cord infection prevention and control practices were relatively high and cord infection rate low. Infection rate of 20.1% was lower than 21.8% reported elsewhere.¹⁴ This is probably because our study is hospital-based and as most receive information through health workers they may have practiced what they learnt. However, because none of the women in our study used chlorhexidine,

despite the fact that the decision on what to apply on cord stump was decided by about 64% of the health care workers, health workers should emphasize and as well recommend its use in cord care. Though availability and cost may preclude its wide utilization in the community, it is imperative to counsel the women on the current recommendation on the use of chlorhexidine gel in cord care in Nigeria. Community-based study is recommended to generate data about cord infections and practices inside the community. It will also be useful to observe infection rates among those newborns on which different solutions were used for cord care viz-a-viz the goal standard of chlorhexidine.

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