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Research Article

Practice and Outcome of Umbilical Cord Care among Recently Delivered Mothers Attending Postnatal Clinics in Ibadan, Nigeria

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ABSTRACT

One of the main causes of neonatal deaths, particularly in low- and middle-income nations, has been identified as umbilical cord infection. In the first four weeks of life, 4 million (3.1 percent) of the 130 million babies born worldwide each year die. Due to their high susceptibility to infections, newborns' umbilical cord care requires extra care in order to reduce neonatal fatalities. This study aims to evaluate the knowledge and practice of umbilical cord care as well as the results of the care among recently delivered mothers visiting postnatal clinics in Ibadan, Nigeria. The three hospitals chosen for this cross-sectional study represent Nigeria's three levels of healthcare institutions. The enrolment of study participants used a simple random sampling technique. Data were gathered using a self-structured questionnaire with a reliability rating of 0.76. Utilizing SPSS version 20 for data analysis, chi-square was used to test the hypothesis at the 0.05 level of significance. Results from the study showed that only 34.7% of the mothers who had just given birth had good knowledge of umbilical cord care, while 55.3% had good practice. Only 5.3% of the mothers reported negative outcome while caring the for umbilical cord at home. Fever (3.4 percent), yellowish discharge from the umbilical cord (1.5 percent), reddish skin directly beneath the cord (1.4 percent), discomfort near the umbilical stump (1.4 percent), and foul-smelling cord are some of the negative outcomes that mothers have reported (0.7 percent).A total number of 58.1% of the mothers reported that the umbilical stump detachment lasted 5-15 days, while 38.1% of them reported that navel healing lasted for 4-6 weeks. A significant association was found between monthly income and materials used for umbilical cord care after delivery (χ^2=18.467, df=6, p=0.005). Many recently-delivered mothers lack adequate knowledge of umbilical cord care, yet, most of them had good umbilical cord care practices because they delivered their babies in the hospital. There is report of negative outcome of umbilical cord care, though very few, this is detrimental to the survival of the new-borns. Mothers' economic status is associated with the materials used for umbilical cord care, which consequently determines the outcome of the cord care practices.

Keywords: Practice, Outcome, Cord care, Mothers, Neonate.

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INTRODUCTION

In developing nations, umbilical cord infections are a major risk factor for mortality and a significant cause of neonatal morbidity (WHO, 2020). Neonates are a vulnerable group, and events of the postnatal period are critical determinants of their health, survival and wellbeing. Worldwide, around 130 million babies are born each year, and 4 million of them are predicted to die during their first four weeks of life. Of these 4 million deaths, 1.5 million are thought to be the result of infections and disorders linked to poor medical treatment (Afolaranmi et al., 2018, WHO 2020, Adamu et al 2021). Umbilical cord infections have been documented in various hospital-based investigations in Nigeria. This is responsible for up to 30-49 percent of newborn fatalities and between 10 and 26 percent of neonatal admissions are caused by this (Osuchukwu et al., 2018). When hygienic conditions are subpar or infection rates are high, the World Health Organization promotes the use of topical antiseptics (such as

chlorhexidine antiseptic gel for cord care) dry cord care (WHO 2013, Afolaranmi et al., 2018).

In some parts of sub-Saharan Africa, cultural practices for cord care that may be harmful are prevalent, particularly in relation to home deliveries. This can lead to microbial infections, particularly tetanus (Kaoje et al 2018). Examples of substances that were frequently applied to the umbilical cord include powders made of roots, burnt gourds, or ash, petroleum jelly, baby lotion from a store, cooking oil, and breast milk. In some cultural contexts, the umbilical cord has reportedly been treated with charcoal, baby powder, dust, lubricants (such as Vaseline, cooking oil, used motor oil), cow dung, and chicken droppings (Semrau et al 2016).

Regardless of a community's cultural and religious beliefs, level of education, or financial resources, umbilical cord care is an essential component of neonatal care. Proper cord care, however, lowers the risk of infection for the newborn child (Osuchukwu et al., 2018). In the postnatal period, handwashing is necessary before and after cord care, keeping the cord dry and exposed to air, and folding a napkin or diaper below the umbilicus (Adebami 2014). Therefore, it is crucial to maintain the stump dry and clean if infection is to be avoided. Because the materials used in cultural applications are frequently contaminated with bacteria and bacterial spores, complications like cord sepsis, septicaemia, umbilical cord granuloma, excessive bleeding, omphalitis, and tetanus are more common; the prevalence and mortality of newborns are significantly impacted by these conditions (Faheim et al.,2019) Therefore, proper cord care practices play a major role in the newborn's overall health.

Mothers in developing countries have been found to have poor umbilical cord care practices (Ndikom et al 2020). For newborns delivered at home in areas with neonatal mortality rates of at least 30 per 1,000 live births, the current method for caring for the umbilical cord involves applying chlorhexidine to the stump of the cord every day for the first week of life (WHO, 2013). The Nigerian government, however, suggests using chlorhexidine solution or methylated spirit for cord care (Osuorah et al 2015). Mallick et al2018 .'s investigation into the relationship between clean cord care practices and neonatal mortality discovered a strong correlation between clean cord care and newborn survival. Similar to this, Ndikom et al. 2020 found that women who gave birth outside of a teaching hospital had a higher prevalence of harmful cord practices in their study on knowledge and practice of umbilical cord care practices among postnatal mothers in primary health care centres in Ibadan, South-West Nigeria. Only 48.1% of the respondents, according to their report, had a good knowledge of proper umbilical cord care. As a result of infections (sepsis, meningitis, and pneumonia), which consistently account for about 700,000 neonatal deaths each year, or nearly one-fourth of the 3 million neonatal deaths that occur worldwide, umbilical cord care has made significant global progress in recent decades.

The umbilical cord may be a common entry point for invasive pathogenic bacteria, with or without clinical signs of omphalitis, though the extent of its involvement in these deaths is still unknown (Lawn et al., 2014). The greatest public health issues of the twenty-first century may therefore include neonatal mortality linked to bacterial contamination of the umbilical stump.

Since post-natal mothers are the primary caregivers and umbilical cord care is done at home, this study sought to evaluate umbilical cord care practices among them as well as the relationship between the materials used and the results in health facilities in the Ibadan North local government area.

MATERIALS AND METHODS

Study setting: A descriptive cross-sectional research design was used for this study. A total number of 580 recently-delivered mothers attending postnatal clinic in three selected health facilities; University College Hospital (UCH), Adeoyo Maternity Teaching Hospital (AMTH) and Idi-ogungun Primary Healthcare Centre, all in Ibadan. This research cut across the three levels of healthcare institution in Nigeria: the primary, the secondary and the tertiary healthcare institution. The study population was selected using simple random sampling.

Study design: This study used a descriptive cross-sectional research design for the purpose of describing the practice and outcome of umbilical cord care among recently-delivered mothers.

Study population: Recently delivered mothers receiving postnatal care at the selected health facilities in Ibadan Metropolis were recruited for this study.

Sampling technique: Three healthcare facilities were purposively selected in Ibadan metropolis, each representing the three levels of healthcare institutions available in Nigeria.

Sample size: Taking into account the overall number of women in the three chosen medical facilities, Taro Yamane's formula (Habib, Johargy, Mahmood et al., 2014) was used for sample size calculation $n = \frac{N}{[1 + N (e)^2]}$

The sample size was estimated as;

Sample size (n) = Total population (N=1000)

1+ Total population x error tolerance $(e=0.05)^2$ = 580

All postpartum women who gave consent to participate in the study at the time of data collection at University College Hospital, Adeoyo Maternity Teaching Hospital, and Idi-Ogungun Primary Health Centre in Ibadan were enrolled in the study. Data from the respondents were gathered using a self-structured questionnaire with a 0.76 Cronbach's Alpha reliability coefficient. Face and content validity were used to determine the questionnaire's validity. Experts in nursing, reproductive health, sociology, demography, and social sciences were given the developed questionnaire for in-depth review. Each item on the questionnaire was evaluated for content precision, context, and study relevance.

The University of Ibadan/University College Hospital ethics review board granted permission for the study with approval number UI/EC/18/0549. It was requested that the respondents give their free and informed consent before participating. The study's aims and objectives were thoroughly explained to the participants before the questionnaire was

given to them. The respondents were also given the assurance that the information they provided would remain private and anonymous and that the data would only be used for research purposes. Therefore, it was not necessary for participants to fill out their names. The respondents were informed that their ability to leave the research at any time would not have any bearing on the care they would continue to receive from the hospital.

Procedure for data analysis: Statistical Package for Social Science (SPSS) version 20 was used to analyze the participant data. Frequency and percentages were used for descriptive analysis, and Chi-square testing was used to look for associations between variables at the 0.05 level of significance. Tables and charts were used to display the results. The scores of the individual items that make up each domain were added to yield the minimum and maximum scores for each domain. The variables' minimum and maximum scores were discovered. Scores based on percentages were obtained. As a result, the variable was segmented into "good" and "poor" using the 50% percentile.

Table 1:
Socio-demographic characteristics of recently delivered mothers receiving postnatal care in Ibadan.

	Variables	Frequency N = 580	Percentage (%)
Age group (28.5±5.4)	≤35years	517	89.6
	>35years	63	10.4
Tribe	Yoruba	494	85.2
	Igbo	68	11.7
	Hausa	18	3.1
Marital status	Single	46	7.9
	Married	524	90.4
	Divorced	8	1.4
	Widowed	2	0.3
Number of children (2.1±0.95)	≤3 children	412	71.0
	>3 children	168	29.0
Age of infant (4.8±3.0)	≤5years	336	57.9
	>5years	244	42.1
Religion	Christianity	365	62.9
	Islam	211	36.4
	Traditional	4	0.7
Highest educational attainment	No formal educati	17	2.9
	Primary education	43	7.4
	Secondary educati	329	56.8
	Tertiary education	191	32.9
Occupation	Housewife	97	16.7
	Student	37	6.4
	Civil servant	92	15.9
	Self-employed/ traders/business	52	9.0
	Others	302	52.1
Income per month (49333.30±44 286.94)	<N18,000	264	45.5
	Between N19,000 and N30,000	207	35.7
	>N30,000	109	18.8

RESULTS

Socio demographic characteristics of the respondents: Findings as presented on Table 1 show that the mean age of the respondents was 28.5±5.4years. The mean number of children per woman was 2.1±0.95. Most of the respondents 329(56.8%) have secondary education as their highest level of educational attainment. Only 348(18.8%) of the respondents earn above thirty thousand naira as their monthly income.

Knowledge of Umbilical Cord Care
Results are shown in figure 1 below, which indicates that 379 people (65.3 percent) had good knowledge of how to care for the umbilical cord.

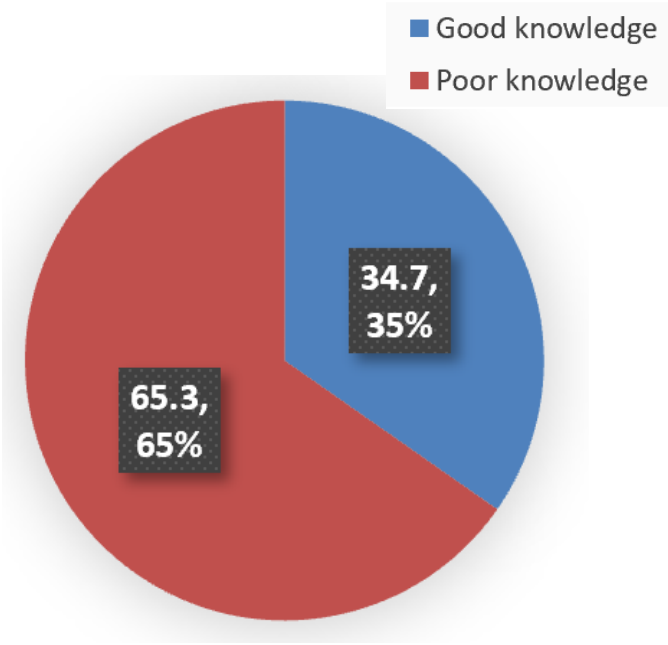

Figure 1:
Level of knowledge of recently-delivered mothers on umbilical cord care

Practice of Umbilical Cord Care
This study found that cord clamp was used in tying the umbilical cord for 74.8% of babies at birth. Sterile scissors/surgical blade was used in separating umbilical cord from placental in 35.7% of the babies, while 92.1% of mothers used Chlorhexidine/Methylated spirit in cleaning the umbilical cord at home.

Findings as presented in figure 2 shows the cumulative practice score, more than half (55.3%) of the recently-delivered mothers had good practice of umbilical cord delivery.

Outcome of umbilical cord care: Findings as presented on table 3 indicate that 337(58.1%) of the women reported the duration of detachment of umbilical cord to be between 5 to 15 days. Only 31(5.3%) of them observed negative outcome while caring for the umbilical cord. Negative outcome observed by mothers include; Reddish skin at the nuchal stump's base (1.5%), yellowish discharge from the umbilical cord (1.4%). Details are as presented on table 2.

Table 2:
Materials used in umbilical cord care

Practice	Frequency (N)	Percentage (%)
Materials used in tying umbilical cord		
Hair thread	39	6.8
String of cloth	107	18.4
Cord clamp	434	74.8
Materials used in separating the cord from placenta		
Knife	4	0.7
Razor blade	16	2.8
Sterile scissors/surgical blade	207	35.7
Farm instrument	86	14.8
Solutions used in cleaning the umbilical cord		
Dettol solution	30	5.1
Hot water	5	0.9
Saliva/Salt	10	1.7
Chlorhexidine/Spirit	534	92.1
Herbal preparation	1	0.2

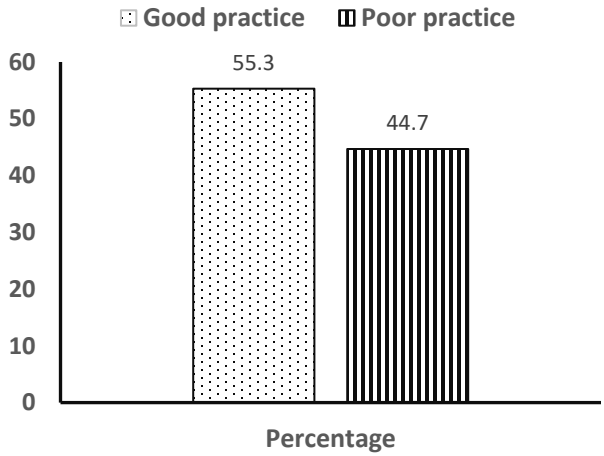

Figure 2:
Practice of umbilical cord care among recently-delivered mothers in Ibadan, Nigeria.

Relationship between educational attainment and knowledge of cord care practice.: Table 4 shows that there is no correlation between the mothers' educational attainment and their understanding of umbilical cord care. (χ^2=1.216, df=3, p>0.749). This implies that knowledge of umbilical cord care does not depend on level of education of mothers.

Association between economic status and materials used for umbilical cord care among recently-delivered mothers in Ibadan: There is significant association between monthly income of recently-delivered mothers and materials being used in umbilical cord care (χ^2=18.467, df=6, p=0.005) as presented on table 5. It shows that monthly income for the women determines the type of materials being used the umbilical cord care.

Table 3:
Outcome of umbilical cord care after delivery

Outcome	Frequency (N =580)	Percentage (%)
Detachment duration		
3 – 4 days	222	38.3
5 – 15 days	337	58.1
More than 15 days	21	3.6
Observation of negative outcome		
Yes	31	5.3
No	549	94.7
Observed negative outcome		
Reddish skin at the nuchal stump's base	8	1.4
a cord discharge that is yellow in colour	9	1.5
Cord with a foul odour	4	0.7
Pain	8	1.4
Inability to suck breast	2	0.4
Persistent fever	20	3.4
Twitching on the body	2	0.4
Difficulty in breathing	2	0.4
Duration of navel healing		
4 - 6 weeks	221	38.1
7 - 11 weeks	58	10.0
12 weeks and above	177	30.5
“I can’t remember”	124	21.4

Table 4:
Relationship between educational attainment and knowledge of cord care practice among recently delivered mothers in Ibadan.

	Knowledge of cord care		Chi-square	Df	p-value
Level of education	Poor	Good	χ^2		
Primary	26(7.0%)	17(8.8%)			
Secondary	211(57.2%)	102(52.6%)	1.216	3	0.749
Tertiary	122(32.9%)	69(35.6%)			
No formal education	11(2.9%)	6(3.0%)			

Table 5:
Association between economic status and materials used for cord care.

Materials used in umbilical cord care	Monthly income			Chi-square statistic χ^2	Df	p-value
	<N18,000	(N19,000 - N30,000)	>N30,000	18.467	6	0.005
Hair thread	18	3	1			
String of cloth	61	34	8			
Cord clamp	182	160	61			

DISCUSSION

Most of the study's participants belonged to the Yoruba tribe. This is an indication that the study's location in the south-western region of the nation. The mean age of the recently-delivered mothers who participated in the study was 28.5±5.4years. This is consistent with many studies conducted among pregnant women and recently-delivered mothers (Adamu et al, 2021). This could be so because many women in the South-western Nigeria are well educated, hence, majority of them have their babies at later age.

The majority of the respondents had poor knowledge about how to care for the umbilical cord. This might be the result of insufficient prenatal education they received. Previous study conducted among nurses in Nigeria (Akinwaare et al, 2020) on content of antenatal education provided by nurses during antenatal education reported that nurses focus on five major areas during antenatal education. These areas are; hygiene, diet, immunization, birth preparedness, and breastfeeding. Ndikom et al, (2020) in another study conducted in Nigeria reported that most women learnt about umbilical cord care from direct observation of people doing it, instead of being properly taught during the antenatal care. On the contrary, Afolaranmi et al (2018) reported in another study conducted in Nigeria that majority of recently-delivered women who took part in the study had good knowledge of umbilical cord care. This could be due different environment. More so, the authors did not report whether the mothers were educated on umbilical cord care during antenatal care.

Additionally, there was no connection between mothers' educational attainment and their knowledge of umbilical cord care in the present study. This was comparable to the report by Afolaranmi and colleagues (2018). This suggests that mothers' knowledge of how to care for umbilical cords is independent of their educational background. Other factors that might be connected to newly delivered mothers' knowledge of umbilical cord care could be determined through further research.

The majority of the mothers stated that the umbilical cord was tied at birth with a cord clamp and cleaned with chlorhexidine/methylated spirit. This might be the case because the most of them gave birth in hospitals. This has implications for the prevention of infection among newborns delivered in hospitals. This outcome is comparable to those of Kaoje et al. (2018), who found that the vast majority of study participants used methylated spirit to clean their babies' umbilical cords. The methods used for umbilical cord care vary by cultural group within a nation and make use of a variety of substances (Coffey et al, 2017). Therefore, it is not surprising that some mothers in this study used saliva, salt solution, hot water, antiseptic lotion, and herbal solution. However, the majority of the mothers had good practices for cord care when looking at the study's overall umbilical cord care practices. The fact that the majority of them gave birth in hospitals may also be relevant. This claim is comparable to a study by Mallick et al (2018). The authors found that babies that were delivered in a medical facility used the recommended cord care practices more frequently. Therefore, it can be concluded that institutional or hospital delivery promotes good umbilical cord care practices. The time it took for the umbilical cord to detach in this study was comparable to the American Academy of Paediatrics' recommendations (2020). Healthdirect also supports it (2020). This is a result of umbilical cord care that may be linked to the use of a cord clamp during labor and the home cleaning of the stump with chlorhexidine/methylated spirit. Therefore, during the prenatal care phase and immediately following delivery, this should be promoted and emphasized to mothers. Few mothers, in contrast, noticed negative effects like reddish skin at the stump's base, yellow discharge from the cord, pain when the stump was touched, and a foul-smelling cord. All these are regarded as signs of infection, which is a leading cause of deaths among the new-borns (UNICEF, 2018). Thus, good umbilical cord care practices could prevent deaths among the new-borns.

In conclusion, recently delivered mothers receiving post-natal care in health facilities do not have adequate knowledge of umbilical cord care. This, however, does not reflect on the umbilical cord practices because majority of them had institutional delivery. Hence, appropriate materials were used in tying the umbilical cord, as well as in cleaning the cord. Also, the mothers had the experience of both positive and negative outcomes of umbilical cord care. The negative outcomes are leading causes of deaths among new-borns.

Therefore, midwives have a crucial role in teaching mothers about umbilical cord care. This should start during prenatal care and immediately after delivery to prevent neonatal sepsis, which can increase morbidity and mortality. Additionally, targeted interventions in the form of media-based health education should be provided to strengthen evidence-based approaches to effective cord care for better neonatal outcomes.

The study design did not cover identifying factors which could influence umbilical cord care practice among the participants. Further studies are on-going to identify factors which could be responsible for umbilical cord care practice.

REFERENCES

Adamu A, Onankpa BO, Jega MR, Ali M, Ango UM, Isezuo KO, Ibitoye PK, Ugege MO, Jiya FB, Garba BI. (2021): Determinants of umbilical cord care practices among mothers of neonates admitted into special care baby unit of

Uthman DanFodio University Teaching Hospital, Sokoto, Nigeria. International Journal of Contemporary Medical Research. 8(4): http://dx.doi.org/10.21276/ijcmr.2021.8.4.3

Adebami OJ. (2014): Evaluation of home care management of umbilical cord stumps by mothers at Ilesa, Southwestern Nigeria. Nigeria Journal of Paediatrics, ; 41 (3):218 –222. http://dx.doi.org/10.4314/njp.v41i3,13

Afolaranmi TO, Hassan ZI, Akinyemi OO, Sule SS, Malete MU, Choji CP, Bello DA. (2018): Care Practices: A Perspective of Contemporary African Setting. Public Health 6:10. doi: 10.3389/fpubh.2018.00010

Akinwaare, M.O., Oyebode, A.O., Brown, V.B., Ogunniran, A.A, and Adeleye, K.K. (2021): Content of Antenatal Education and Modalities of Delivery among Nurses in Oyo State, Nigeria. *European Journal of Medical and Health Sciences*. Vol. 3, No. 2 pp. 185-191.

American Academy of Pediatrics. (2020): Umbilical cord care. Bulletin.

Cobo T, Kacerovsky M, Andrys C, et al. (2013) Umbilical Cord Blood IL-6 as Predictor of Early Onset Neonatal Sepsis in Women with Preterm Prelabour Rupture of Membranes. Zakar T. PLoS ONE. 8(7): e69341. doi:10.1371/journal.pone.0069341.

Coffey PS and Brown SC. 2017. Umbilical Cord care practices in low and middle-income countries: a systematic review. BMC: Pregnancy and Childbirth 17, 68. https://doi.org/10.1186/s12884-017-1250-7

Faheim S.S , Hassan, H.E and Gamel A.M. 2019. Topical Application of Human Milk versus Alcohol and Povidine-Iodine on Clinical Outcomes of Umbilical Cord in Healthy Newborn: Impact of an Educational Program of Mothers' Knowledge and Practice Regarding Umbilical Cord Care. International Journal of Studies in Nursing; Vol. 4, No. 2; 2019 ISSN 2424-9653 E-ISSN 2529-7317.

Habib, A., Johargy, A., Mahmood, K., and Humma, 2014. Design and Determination of the sample size in medical research IOSR. *Journal of Dental and Medical Sciences* (IOSRJDMS)5:21-31. www.10srjournals.org.

Healthdirect. 2020. Pregnancy, Birth and Baby. Department of Health, Austalia.

Kaoje AU, Okafoagu NC, Raji MO, Adamu YH, Nasir MA, Bello M, Ango UM. 2018. Home Delivery, Umbilical Cord Care Practices and Postnatal Care Utilization among Mothers in a Rural Community of Sokoto State. Journal of Community Medicine and Primary Health Care. 30 (2) 36-46.

Lawn JE, Blencowe H, Oza S, et al. 2014. Every Newborn: progress, priorities, and potential beyond survival. Lancet.;384(9938):189–205

Mallick, Lindsay, Jennifer Yourkavitch, and Courtney Allen. 2018. Thermal Care and Umbilical Cord Care Practices and Their Associations with Newborn Mortality. DHS Analytical Studies No. 68. Rockville, Maryland, USA: ICF.

National Population Commission (NPC) [Nigeria] and ICF International. Nigeria Demographic and Health Survey. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF International. 2018.

Ndikom CM, Oluwatosin F and Oluwatosin OA (2020) Umbilical Cord Care Knowledge and Practices of Mothers attending Selected Primary Health Care Centres in Ibadan, Nigeria. International Journal of caring sciences; volume 13, issue 1 page 143.

Osuchukwu C , Okoronkwo I.L and Ezeruigbo C.S. 2018. Umbilical Cord Care and Management Outcome among Mothers in Calabar South Local Government Area of Cross River State – Nigeria. International Journal of Nursing, Midwife and Health Related Cases Vol.4, No.1, pp.1-11, Print ISSN: ISSN 2397-0758, Online ISSN: 2397-0766

Osuorah D, Ekwochi U, Onah S & Bernard E. 2015. Umbilical Cord Care Practices and Incidence of Febrile Illnesses in the First Month of Life among Newborns . British Journal of Medicine and Medical Research.

Semrau K, Herlihy J, Grogan C, et al. Effectiveness of 4% chlorhexidine umbilical cord care on neonatal mortality in Southern Province, Zambia (ZamCAT): a cluster-randomised controlled trial. Lancet Glob. Health. 2016;4(11):e827–e836. doi: 10.1016/S2214-109X(16)30215-7.

UNICEF. 2018. Every Child Alive: The Urgent Need to End Newborn Deaths. UNICEF: New York, NY, USA.

World Health Organisation (2020) https://www.who.int/news-room/fact-sheets/detail/newborns-reducing-mortality

World Health Organization (2013): WHO Recommendations on Postnatal Care of the Mother and Newborn. 2013. http://apps.who.int/iris/bitstream/10665/97603/1/9789241506649_eng.pdf. Accessed 24 Aug 2018.