

Knowledge and Practice of Nurses on the Use of Chlorhexidine Gel in Prevention of Neonatal Cord Infection in Lagos University Teaching Hospital

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Abstract: Neonatal cord infection remains a significant contributor to neonatal mortality in low- and middle-income countries, with umbilical cord care practices playing a central preventive role. Chlorhexidine gel is a World Health Organization-recommended intervention for cord care in high-risk settings, yet its uptake among nursing professionals in Nigeria remains suboptimal. This study assessed the knowledge and practice of nurses regarding the use of chlorhexidine gel in neonatal cord infection prevention at Lagos University Teaching Hospital. A cross-sectional descriptive survey was conducted among 70 neonatal nurses selected by purposive sampling from five wards. Data were collected using a structured self-administered questionnaire and analysed with Statistical Package for the Social Sciences version 25.0. Descriptive statistics and chi-square tests were applied at a 5% significance level. All respondents were female (100%), with the majority aged 36–45 years (27.1%) and holding a Bachelor of Nursing Science qualification (74.3%). The majority (71.4%) demonstrated good knowledge of chlorhexidine gel use, while only 47.1% demonstrated good practice. There was no significant association between knowledge or practice and most socio-demographic variables ($p > 0.05$), except for a borderline association between age and practice ($p = 0.05$). A statistically significant association was found between knowledge and practice ($\chi^2 = 3.583$; $p = 0.048$). Despite adequate knowledge levels, practice of chlorhexidine gel use remains poor among nurses at Lagos University Teaching Hospital. Hospital administration should enforce clinical protocols, strengthen training programmes, and ensure consistent supply of chlorhexidine gel to bridge the knowledge-practice gap.

Keywords: Chlorhexidine gel, Neonatal cord infection, Omphalitis, Nursing practice, Umbilical cord care

INTRODUCTION

The stump of the umbilical cord is one of the most fragile points of the newborn's body for infection. After birth, the devitalised cord tissue is an ideal medium for bacterial colonization and once the infection has been established, the effects can be quick and deadly. Untreated neonatal cord infection (also known as omphalitis) can lead to necrotising fasciitis, systemic sepsis and death within hours of infection, with case fatality rates of between 7% and 15% (Painter & Russell, 2019). Although preventable, omphalitis still takes a significant toll on neonatal survival, especially in low- and middle-income countries where the health care system is weak and traditional methods of cord care are still in use (Blencowe et al., 2011).

The burden of neonatal mortality is still far too high at global level. Infections, intrapartum related conditions and preterm birth complications are the three major causes of neonatal deaths, accounting for almost 90% of all neonatal deaths in the world each year, with approximately 2.5 million neonates dying per year (Rudd et al., 2020; Rosa-Mangeret et al., 2022). This burden is disproportionately carried by sub-Saharan Africa which has the highest neonatal mortality rates in the world, with Nigeria alone accounting for about 25% of all neonatal and child deaths in the region (UNICEF, 2019). Infection associated deaths in high burden countries like Nigeria remain a threat to the possibility of achieving Sustainable Development Goal 3 (SDG 3) which aims to achieve neonatal mortality rate of 12 per 1000 live births by 2030 (World Health Organization [WHO], 2020).

To overcome this challenge, the World Health Organization recommends the use of 4% chlorhexidine to clean the umbilical cord stump for the first week of life, in neonates born at home with high neonatal mortality rates (NMR > 30 per 1000 live births) (WHO, 2017). Chlorhexidine digluconate is a broad-spectrum antiseptic which works by binding electrostatically to the negatively charged surface of the bacterial cell membrane, disrupting the integrity of the membrane, and thereby preventing microbial growth (National Center for Biotechnology Information, 2023). It is an effective intervention that is cost-effective and therefore is very useful in low resource settings where the risk of death is highest and funds for healthcare are limited (Kleinhouet et al., 2021). A cluster-randomised trial in Nepal has been carried out and revealed that daily application of chlorhexidine on the umbilical stump had a significant impact on the incidence of omphalitis and neonatal mortality, based on which it has been adopted globally (Mullany et al., 2006).

Nevertheless, the clinical use of chlorhexidine in sub-Saharan Africa is still significantly below the recommended level. Chlorhexidine gel was used by only 1.3% of caregivers for cord care in a study conducted in Kenya (Opanga et al., 2022). Methylated spirit, a product with no proven effectiveness and which may delay cord separation is still the most popular cord care product used by nurses and midwives in many facilities in Nigeria. The study conducted by Ikperite et al (2020) revealed that 45.2% of the nurses in Abeokuta used methylated spirit for cord care while 23.8% used chlorhexidine digluconate, thus indicating a gap between policy and practice. A study in Ghana also reported the use of traditional products like shea butter, herbal concoctions, and methylated spirits in addition to or instead of chlorhexidine (Duah et al., 2024).

Sub-optimal cord care practices do not just reflect a supply side issue. The resistance to adoption of evidence-based interventions is due to knowledge gaps, lack of training, lack of standardised

institutional protocols, and the cultural entrenchment of traditional cord care practices (Dhingra et al., 2014; Umar et al., 2020). Nurses and midwives are frontline health workers who are most closely involved with neonatal cord care in both facility and community settings, and therefore play a critical role in whether or not evidence-based guidelines are translated into routine practice. Their knowledge is directly related to how they educate mothers during their antenatal and postnatal care visits and their practice is the standard that is often followed outside the hospital setting.

The literature has yielded mixed results on nurses' knowledge about chlorhexidine. In Nigeria, the extent of knowledge was found to be good for 73.8% of the respondents (Afolaranmi et al., 2018), and the knowledge scores of the professional nurses was surprisingly low (Ikperite et al., 2020). Chidinm and colleagues (2024) found that less than half of postpartum women had good knowledge of the use of chlorhexidine, despite their having some exposure to healthcare at a general hospital in Enugu, Southeast Nigeria. Such variations indicate that the knowledge is highly varied between the different types of institutions, training exposure and professional cadre, which further underlines the need for facility-specific assessments. cility type, training exposure, and professional cadre, reinforcing the need for institution-specific assessments.

Lagos University Teaching Hospital (LUTH), established in 1961, is one of Nigeria's foremost tertiary healthcare institutions, housing 950 beds, 46 clinical departments, and over 2,300 staff. Its maternity and neonatal units manage a high volume of deliveries and neonatal admissions, including high-risk and preterm cases that are particularly vulnerable to cord infection (Gentry t al., 2025; Abioye et al., 2024). Despite this clinical profile, no published study has specifically examined the knowledge and practice of nurses regarding chlorhexidine gel use for neonatal cord care within this institution.

This study was therefore conducted to assess the level of knowledge and practice of nurses towards chlorhexidine gel use in neonatal cord infection prevention at Lagos University Teaching Hospital. The specific objectives were to: (i) assess nurses' knowledge of chlorhexidine gel use in neonatal cord care; and (ii) evaluate nurses' practice of chlorhexidine gel application in neonatal cord infection prevention. Three null hypotheses were tested: that there is no significant association between knowledge and socio-demographic characteristics; that there is no significant association between practice and socio-demographic characteristics; and that there is no significant relationship between knowledge and practice of chlorhexidine gel use among nurses at Lagos University Teaching Hospital.

MATERIALS AND METHODS

Study Design and Setting

A cross-sectional descriptive quantitative survey design was employed. The study was conducted at Lagos University Teaching Hospital, a 950-bed tertiary healthcare institution located in Idi-Araba, Surulere, Lagos State, Nigeria. The hospital employs over 2,300 staff, including approximately 630 nurses, of whom 70 were neonatal and paediatric nurses stationed in wards with direct involvement in neonatal cord care.

Population, Sample Size, and Sampling

The target population comprised all 70 neonatal and paediatric nurses working in five wards: the Neonatal Unit (n = 16), D1 Ward (n = 13), Labour Ward (n = 16), Labour Ward Theatre (n = 14), and Postnatal Ward - C2 (n = 11). The sample size was calculated using the Taro Yamane (1975) formula:

$n = N / [1 + N(e)^2]$, where $N = 70$ and $e = 0.05$ yielding a minimum sample of 60. Applying a 10% attrition adjustment, the final sample was 66; however, all 70 eligible nurses were ultimately recruited using purposive total enumeration, given the small and accessible target population.

Instrument

A structured self-administered questionnaire was developed to align with the study objectives and comprised three sections. Section A captured socio-demographic characteristics including age, sex, religion, marital status, educational qualification, years of experience, and unit of posting. Section B assessed knowledge of chlorhexidine gel through items covering its classification, recommended concentration, duration of use, primary purpose, frequency of application, initiation timing, and pH. Each correct response was scored one mark, yielding a maximum total score converted to a percentage; scores of 50% and above were classified as good knowledge and those below 50% as poor knowledge. Section C assessed practice using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5); summed scores at or above the median were classified as good practice and those below as poor practice.

Validity and Reliability

Face and content validity were established through review and expert feedback from the study supervisor, with modifications incorporated prior to administration. A pilot study was conducted among six neonatal nurses at a separate facility (Lagos State University Teaching Hospital); participants in the pilot were excluded from the main study. A Cronbach's alpha coefficient was used to determine internal consistency of the instrument which yielded a coefficient value of 0.86.

Data Analysis

All 70 questionnaires administered were fully returned, yielding a 100% response rate. Data were entered, coded, and analysed using Statistical Package for the Social Sciences version 25.0. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarise findings. The chi-square test and Fisher's exact test were used to assess associations between knowledge, practice, and socio-demographic variables. A p-value of less than 0.05 was considered statistically significant.

Ethical Considerations

Ethical approval was obtained from the Health Research and Ethics Committee of Lagos University Teaching Hospital. Written informed consent was obtained from all participants prior to questionnaire administration. Participation was entirely voluntary, and respondents were not required to disclose their names, ensuring confidentiality and anonymity throughout the study.

RESULTS

All 70 questionnaires were administered and retrieved, giving a 100% response rate.

Table 1: *Socio-demographic Characteristics of Respondents (n = 70)*

Variable	Category	Frequency (n=70)	Percentage (%)
Age (years)	16–25	16	22.9
	26–35	12	17.1
	36–45	19	27.1
	46–55	17	24.3
	>55	6	8.5
Sex	Female	70	100.0
Religion	Christian	65	92.9
	Muslim	5	7.1
Marital Status	Single	26	37.1
	Married	43	61.4
	Widowed	1	1.4
Educational Qualification	MSc	4	5.7
	BNSc	52	74.3
	RN/RM	12	17.1
	RN	2	2.9
Years of Experience	1–9	31	44.3
	10–19	22	31.4
	20–29	11	15.7
	≥30	6	8.6
Ward/Unit	Neonatal Unit	18	25.7
	D1 Ward	17	24.3
	Labour Ward	16	22.9
	Post Natal Ward	12	17.1
	Labour Ward Theatre	7	10.0

As shown in Table 1, the largest age group was 36–45 years (27.1%), followed by 46–55 years (24.3%), 16–25 years (22.9%), and 26–35 years (17.1%), with the smallest group being those above 55 years (8.5%). All respondents were female (100%). The majority identified as Christian (92.9%), and most were married (61.4%). Regarding educational qualification, 74.3% held a Bachelor of Nursing Science degree. In terms of work experience, 44.3% had between one and nine years of

service, while 8.6% had 30 years or more. Over a quarter of respondents (25.7%) were stationed in the Neonatal Unit, followed by D1 Ward (24.3%) and the Labour Ward (22.9%).

Table 2: *Knowledge of Nurses Regarding Chlorhexidine Gel Use in Prevention of Neonatal Cord Infection (n = 70)*

Knowledge Item	Response	Frequency	Percentage (%)
What is chlorhexidine gel?	Topical antimicrobial agent ✓	66	94.3
	Cleansing agent	2	2.9
	Anaesthetic gel	2	2.9
Recommended concentration for neonatal cord care	4% ✓	39	55.7
	0.1%	15	21.4
	1% / 2%	16	22.9
Duration of application	Until cord separation (5–10 days) ✓	54	77.1
	For 7 days after birth	11	15.7
	For 24 hours after birth	4	5.7
Primary purpose of use	To prevent infection ✓	65	92.9
	To promote healing	5	7.1
Frequency of application	Twice daily ✓	64	91.4
	Weekly / Once at birth	6	8.6
When to initiate (WHO guideline)	Immediately after birth ✓	63	90.0
	24 hours after birth	7	10.0
pH of chlorhexidine gel	Slightly acidic (pH 5–6) ✓	34	48.6
	Neutral (pH 7)	29	41.4
	Basic / Alkaline	7	10.0
Overall knowledge level	Good knowledge	50	71.4
	Poor knowledge	20	28.6

✓ = Correct response.

As shown in Table 2, nearly all respondents (94.3%) correctly identified chlorhexidine gel as a topical antimicrobial agent. The majority (55.7%) correctly identified the recommended 4% concentration for neonatal cord care. On the question of duration, 77.1% correctly indicated that application should continue until cord separation, typically five to ten days. The primary purpose of use, infection prevention, was correctly identified by 92.9% of respondents. Most (91.4%) correctly stated that

chlorhexidine gel should be applied twice daily, and 90.0% correctly indicated that application should commence immediately after birth in line with World Health Organization guidelines. On the pH of chlorhexidine gel, 48.6% correctly identified it as slightly acidic (pH 5–6), while 41.4% incorrectly selected neutral (pH 7). Overall, 71.4% of respondents demonstrated good knowledge, while 28.6% had poor knowledge.

Table 3: *Practice of Nurses Regarding Chlorhexidine Gel Use in Prevention of Neonatal Cord Infection (n = 70)*

Practice Statement	Agree n(%)	Strongly Agree n(%)	Undecided n(%)	Disagree n(%)	Strongly Disagree n(%)
Hand hygiene is essential before applying chlorhexidine gel	17.1	78.6	4.3	0.0	0.0
Chlorhexidine gel should be applied until cord separation	21.4	70.0	7.1	1.4	0.0
Methylated spirit can be used in conjunction with chlorhexidine gel	22.9	15.7	12.9	31.4	17.1
Sterile gloves are worn when applying chlorhexidine gel	32.9	32.9	18.6	12.9	2.9
Chlorhexidine gel is not an evidence-based practice	2.9	1.4	11.4	40.0	44.3
Chlorhexidine gel is applied to the base, stump, and tip of the cord	34.3	54.3	7.1	2.9	1.4
Changing gloves is mandatory before applying chlorhexidine gel	30.0	54.3	7.1	8.6	0.0
Baby cord is covered with diaper after chlorhexidine gel application	1.4	0.0	8.6	41.4	48.6
Hospital policy influences decision to use chlorhexidine gel	30.0	28.6	11.4	18.6	11.4
Documentation is essential in baby cord care	34.3	61.4	4.3	0.0	0.0

As shown in Table 3, 95.7% of respondents agreed or strongly agreed that hand hygiene is essential before applying chlorhexidine gel, and 91.4% agreed or strongly agreed that it should be applied until cord separation. A combined 84.3% disagreed or strongly disagreed that chlorhexidine gel is not an evidence-based practice. However, 38.6% agreed or strongly agreed that methylated spirit can be used in conjunction with chlorhexidine gel, indicating residual confusion about correct practice. The large majority (90.0%) disagreed or strongly disagreed that the cord should be covered with a diaper after application. Overall, 47.1% of respondents demonstrated good practice, while 52.9% demonstrated poor practice.

Hypotheses Testing

As shown in Table 4, hypothesis 1 examined whether a significant association existed between knowledge and socio-demographic characteristics. Chi-square analysis found no statistically significant association between knowledge level and any socio-demographic variable including age ($\chi^2 = 2.167$; $p = 0.705$), religion ($\chi^2 = 2.606$; $p = 0.106$), marital status ($\chi^2 = 0.493$; $p = 0.782$), professional rank ($\chi^2 = 2.405$; $p = 0.879$), educational qualification ($\chi^2 = 2.248$; $p = 0.523$), years of experience ($\chi^2 = 2.087$; $p = 0.554$), or unit ($\chi^2 = 2.220$; $p = 0.695$). The null hypothesis was retained.

Table 4: association between the knowledge on the use of Chlorhexidine gel in neonatal cord care and socio-demographic characteristics of Nurses.

Variable Options	Knowledge on the use of chlorhexidine gel in prevention of neonatal cord infection		X ²	df	Pvalue
	Good (n=50)	Poor (n=20)			
Age (years)					
16-25	12(75.0)	4(25.0)	2.167	4	0.705
26-35	7(58.3)	5(41.7)			
36-45	15(78.9)	4(21.1)			
46-55	11(64.7)	6(35.3)			
>55	4(80.0)	1(20.0)			
Religion					
Christian	48(73.8)	17(26.2)	2.606	1	0.106
Islam	2(40.0)	3(60.0)			
Marital status					
Single	19(73.1)	7(26.9)	0.493	2	0.782
Married	30(69.8)	13(30.2)			
Divorced	0(0.0)	0(0.0)			
Widowed	1(100.0)	0(0.0)			
Professional					
DDNS	40(66.7)	2(33.3)	2.405	6	0.879
ADNS	4(66.7)	2(33.3)			
CNO	6(60.0)	4(40.0)			
ACNO	10(76.9)	3(23.1)			

SNO	7(87.5)	1(12.5)			
NOII	7(63.6)	4(36.4)			
NOI	0(0.0)	0(0.0)			
Intern	12(75.0)	4(25.0)			
Educational cadre					
MSc	4(100.0)	0(0.0)	2.248	3	0.523
BNSC	36(69.2)	16(30.8)			
RN/RM	9(75.0)	3(25.0)			
RN	1(50.0)	1(50.0)			
Years of Work experience					
1-9	23(74.2)	8(25.8)	2.087	3	0.554
10-19	17(77.3)	5(22.7)			
20-29	6(54.5)	5(45.5)			
30years	4(66.7)	2(33.3)			
Unit					
D1	13(76.5)	4(23.5)	2.220	4	0.695
LABOUR WARD	12(75.0)	4(25.0)			
LABOUR WARD THEATRE	6(85.7)	1(14.3)			
NNU	12(66.7)	6(33.3)			
POST NATAL 2	7(58.3)	5(41.7)			

As shown in Table 5, hypothesis 2 examined whether a significant association existed between practice and socio-demographic characteristics. No significant association was found for religion ($p = 0.550$), marital status ($p = 0.355$), professional rank ($p = 0.078$), educational qualification ($p = 0.363$), years of experience ($p = 0.313$), or unit ($p = 0.274$). A borderline association was observed between age group and practice level ($\chi^2 = 9.448$; $p = 0.050$), driven by the observation that nurses aged 36–45 years were most likely to demonstrate poor practice (78.9%), while those aged above 55 years were most likely to demonstrate good practice (80.0%). The null hypothesis was retained overall, noting the borderline age finding.

Table 5: association between the practice of the use of Chlorhexidine gel in neonatal cord care and socio-demographic characteristics

Variable	Options	Practice of the use of chlorhexidine gel in prevention of neonatal cord infection		X ²	df	Pvalue
		Good (n=33)	Poor (n=36)			
Age (years)						
	16-25	10(62.5)	6(37.5)	9.448	4	0.050*
	26-35	7(58.3)	5(41.7)			
	36-45	4(21.1)	15(78.9)			
	46-55	8(47.1)	9(52.9)			
	>55	4(80.0)	1(20.0)			
Religion						
	Christian	30(46.2)	35(53.8)	0.357	1	0.550
	Islam	3(60.0)	2(40.0)			
Marital status						
	Single	14(53.8)	12(46.2)	2.072	2	0.355
	Married	18(41.9)	25(58.1)			
	Divorced / Widowed	1(100.0)	0(0.0)			
Professional						
	DDNS	2(33.3)	4(66.7)	11.364	6	0.078
	ADNS	5(83.3)	1(16.7)			
	CNO	6(60.0)	4(40.0)			
	ACNO	2(15.4)	11(84.6)			
	SNO	3(37.5)	5(62.5)			
	NOII	5(45.5)	6(54.5)			
	Intern	10(62.5)	6(37.5)			

Educational cadre					
MSc	2(50.0)	2(50.0)	3.192	3	0.363
bNSC	25(48.1)	27(51.9)			
RN/RM	4(33.3)	8(66.7)			
RN	2(100.0)	0(0.0)			
Years of Work experience					
1-9	14(45.2)	17(54.8)	3.558	3	0.313
10-19	9(40.9)	13(59.1)			
20-29	5(45.5)	6(54.5)			
30years	5(83.3)	1(16.7)			
Unit					
D1	9(52.9)	8(47.1)	5.129	4	0.274
Labour ward	7(43.8)	9(56.3)			
Labour ward theatre	4(57.1)	3(42.9)			
NNU	5(27.8)	13(72.2)			
Post Natal 2	8(66.7)	4(33.3)			

As shown in Table 6, Hypothesis 3 examined the association between knowledge and practice. A statistically significant association was found between knowledge and practice levels ($\chi^2 = 3.583$; $p = 0.048$). Among those with good knowledge, 40.0% demonstrated good practice and 60.0% demonstrated poor practice. Conversely, among those with poor knowledge, 65.0% had good practice and 35.0% had poor practice. The null hypothesis was rejected.

Table 6: Association Between Knowledge and Practice of Chlorhexidine Gel Use Among Nurses ($n = 70$)

Knowledge Level	Good Practice n(%)	Poor Practice n(%)	Chi-square (χ^2)	df	p-value
Good Knowledge	20 (40.0)	30 (60.0)	3.583	1	0.048
Poor Knowledge	13 (65.0)	7 (35.0)			

DISCUSSION

The level of knowledge and practice of nurses in the use of chlorhexidine gel in the prevention of cord infection in neonatal care was evaluated in this study in Lagos University Teaching Hospital. Socio-

demographic characteristics of respondents showed that all the nurses were female, consistent with the female dominated nature of the nursing workforce composition in Nigeria which is similar to the national trend. Respondents mostly belonged to the age group of 36 to 45 and the high percentage of respondents with Bachelor of Nursing Science qualification indicates a relatively experienced and formally educated population that may account for the high level of knowledge reported.

The overall result of good knowledge about the use of chlorhexidine gel by 71.4% of the respondents is encouraging and consistent with the findings of Afolaranmi and colleagues (2018) which reported good knowledge about use of chlorhexidine gel by 73.8% of the respondents in a similar study in Nigeria. The high level of knowledge about specific items, such as the correct classification of chlorhexidine as a topical antimicrobial agent (94.3%), its main role as an infection prevention tool (92.9%) and when to start treatment immediately after birth (90.0%), indicates that formal nursing education and clinical experience have successfully communicated basic knowledge about this intervention. These findings are consistent with the study by Chidinm et al. (2024) which found that most of those who had heard about chlorhexidine had a good knowledge of the use and application method of chlorhexidine.

However, the results indicated that only 55.7% correctly identified the 4% concentration as the recommended formulation and that 41.4% incorrectly classified the chlorhexidine gel as having a neutral pH, which may be considered as specific areas in which refresher training could be targeted. However, unlike the current study, Ikperite et al. (2020) reported that even the professional nurses in Nigeria had low knowledge scores suggesting that knowledge level is not the same across institutions and may depend on the type of institution, frequency of training, and clinical exposure of the institutions.

This study reveals the discrepancy between knowledge and practice as most clinically significant finding. There was a significant difference between good knowledge (71.4%) and good practice (47.1%). This is not the only study to reveal this knowledge-practice gap. This was corroborated by Ikperite et al (2020) who reported that only 23.8% of the nurses in Abeokuta adopted the use of chlorhexidine gel for cord care, even though they were aware of it. Opanga and colleagues (2022) observed in Kenya that the knowledge of using chlorhexidine for cord care had been translated into practice by only 1.3% of caregivers, which is a near failure. The qualitative aspects of this gap, such as ongoing trust in methylated spirit, institutional resistance, insufficient stocking, and lack of enforcement of protocols have been reported in various African health facilities (Duah et al., 2024; Muriuki et al., 2017).

The result of this study that 38.6 % of the respondents agreed or strongly agreed that methylated spirit could be used along with chlorhexidine gel is of particular concern. The co-use pattern represents an incomplete shift away from the traditional cord care practices and is similar to findings in Ghana, where Duah et al. (2024) observed that some health care providers were still prescribing methylated spirit alongside or instead of chlorhexidine gel, citing the belief that both were equally effective. This false belief in the face of evidence suggests that it is important to educate nurses not just about chlorhexidine, but about why it should be used instead of other cord care products.

The relationship between age and practice was at the borderline of significance ($p = 0.050$), and so should be interpreted with caution. The higher proportion of poor practice among the 36-45 age group

of nurses, although the most common age group in the study, may be because these nurses had received their basic education before chlorhexidine practices were firmly established. This is in contrast to nurses older than 55 years, most of whom showed good practice, possibly because of their longer time in hospital, and having adapted to the successive guidelines issued in hospitals. Similarly, Dhingra et al. (2014) did not reveal any significant association between socio-demographic variables and chlorhexidine utilisation, which was also found in this study in respect to hypothesis one and hypothesis two.

The statistically significant relationship between knowledge and practice ($\chi^2 = 3.583$; $p = 0.048$) validates the theory that knowledge is a meaningful predictor of practice, and thus a necessary but not sufficient condition for behaviour change. Sixty-five percent (65.0%) of respondents who reported low knowledge exhibited good practice, which may be due to the effect of ward-specific supervision, peer modelling and de facto institutional norms influencing practice, independent of formal knowledge. On the other hand, the fact that 60.0% of the people with good knowledge exhibited poor practice confirms that knowledge does not guarantee practice, and that structural, attitudinal, and logistical factors need to be taken care of (Adebola & Adebayo, 2021).

CONCLUSION

The knowledge level of the nurses in Lagos University Teaching Hospital (LUTH) on the use of chlorhexidine gel in preventing neonatal cord infection (NCI) was found to be largely good while practice was found to be largely poor. There is a statistically significant relationship between the knowledge and practice which is proof of the fact that the knowledge has an impact on behaviour. The ongoing knowledge-practice gap suggests that institutional-level interventions beyond education, such as the enforcement of protocols, regular clinical supervision, sufficient provision of chlorhexidine gel, and targeted retraining, in particular for nurses aged 36–45 and those working in the Neonatal Unit who had the lowest practice rates, are needed

RECOMMENDATIONS

1. A standardised institutional protocol for use of chlorhexidine gel for cord care should be developed, documented, publicised and enforced for all nurses who are trained at induction and at regular intervals.
2. Systems of routine monitoring and audit of cord care practices should be in place at the ward level, focusing on wards with the highest rate of poor practice such as the Neonatal Unit and Labour Ward.
3. There is a need to ensure uninterrupted availability of 4% chlorhexidine gel in all neonatal wards, as this is a barrier to good practice, which can be addressed through hospital pharmacy and supply chain management.
4. Community health education programmes should be integrated into the antenatal and postnatal care visits to address the misconceptions associated with the use of different traditional cord care products and to strengthen the evidence based use of chlorhexidine among mothers and caregivers.
5. There is a need for the Federal Government to recruit more professional nurses to alleviate the shortage of skilled personnel to supervise and ensure regular use of evidence-based neonatal care practices.

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