



NEWBORN CORD CARE PRACTICES AMONGST MOTHERS IN HAYIN DOGO COMMUNITY,
NORTHWESTERN NIGERIA: RESULTS FROM A CROSS-SECTIONAL SURVEY

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ABSTRACT

Background: Global policy regarding optimal umbilical cord care to prevent neonatal infections is an active ongoing discussion among researchers and policymakers. Newborn cord care practices may directly contribute to infections, which account for a large proportion of the 4 million annual global neonatal deaths. Umbilical cord care varies often reflecting community or health-worker beliefs. The study aimed to assess the practice and factors influencing the choice of newborn cord care amongst mothers in the Hayin Dogo Community of Samaru, Kaduna State.

Methods: A community-based cross-sectional descriptive study using a multi-staged sampling technique was carried out amongst 278 mothers. A semi-structured questionnaire was used for data collection and the data was analyzed with a statistical package for social sciences software (SPSS), version 20. Descriptive analyses were performed by calculating simple frequencies and carrying out cross-tabulations. Associations between categorical variables were tested for significance using the Chi-square test. Statistical significance was said to be achieved where the P-value is less than 0.05.

Results: The mean age of the mothers was 28.71±6.39 years and more than one-third (38.8%) were in the age group 21-27 years. The majority (64.0%) of the respondents were Hausas by tribe. Methylated spirit (53.8%) was the commonest agent used in cord care followed by the use of hot water as hot compression (27.4%) and one mother (0.4%) reported using animal dung for cord care. Two-thirds (65.5%) of the respondents had appropriate newborn cord care practices. Age, ethnicity, occupation and educational status were the factors influencing the practice and choice of newborn cord care [p=0.001].

Conclusion: The study showed that a significant proportion of mothers in the Hayin-Dogo community had appropriate newborn cord care practices. However, there is still the need for improved community awareness of appropriate cord care practices to sustain such healthy practices and also ensure more mothers are recruited into such practices.

Keywords: Cord care, Newborn, Practice

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INTRODUCTION

Neonatal sepsis is one of the leading causes of neonatal morbidity and mortality in sub-Saharan Africa. Globally 2.4 million children die in the first month of life, this accounts for 47% of all under-five mortality [1]. Sub-Saharan Africa had the highest neonatal mortality rate (27/100000 live births) [1]. Umbilical cord care is an essential newborn care practice recommended by the World Health Organization to reduce neonatal morbidity and mortality. In settings where mortality is low, dry and clean cord care is recommended for newborns delivered in a health facility or at home [1]. Daily chlorhexidine (7.1% chlorhexidine digluconate aqueous solution or gel, delivering 4% chlorhexidine) application to the umbilical cord stump during the first week of life is recommended for newborns who are born at home in settings with

high neonatal mortality (30 or more neonatal deaths per 1,000 live births) [1, 2].

The direct communication between the cord and the circulatory system of the newborn made its care of utmost importance for the survival of any child [3, 4]. Some infections are traceable to unhygienic circumstances and deliveries conducted by untrained birth attendants [4]. Harmful cord care practices have also been implicated [5, 6].

The harmful traditional umbilical cord care practice is an important public health concern [7]. To address the high rate of neonatal sepsis, it is important to understand the reasons behind traditional cord care practices in low- and middle-income countries where we have the highest neonatal mortality. The goal of this study was to determine the practices of cord care and factors influencing the choice of methods amongst mothers at the Hayin Dogo community which can be used to inform future

policy direction or programming related to cord care particularly in Kaduna state and the nation at large.

MATERIALS AND METHODS

Study area

Hayin Dogo community is located in Samaru village which is in the Basawa district of Sabon Gari local government area of Kaduna state. It is separated from Danraka to the West by the Zaria-Funtua Railway, Hayin Dan Yaro to the North, and Basawa to the East. It lies between latitude 11° 09'N 11 11'N and longitude 7° 40'E 7° 41' E. It is a semi-arid region located in the Sahel savannah belt of North-Western Nigeria. There are two seasons in the year, the dry and rainy seasons. The dry season starts in November with the onset of the dry cool and dusty Harmattan due to the North-West trade winds blowing in from the Sahara. It ends in April when the rains usually begin heralding the onset of the Rainy season which ends in October. Its proximity to two tertiary institutions (famous Ahmadu Bello University, Zaria and Leather Technology) has influenced the population characteristics of the community. Although Most of the residents are Hausa, Muslims with occupations such as trading, farming and crafting, the presence of these tertiary institutions has led to people from different parts of Nigeria and also foreigners settling in the community. The settlers have various occupations such as working as Lecturers or as non-academic staff in the University, trading in or outside the university due to the large market created by the University community. The community also provides accommodation for the majority of students staying off-campus. The consequence of this is that the number of people of different tribes such as Yoruba, Igbo, Igala, Ibirra, Idoma, Kuteb, Tiv etc. and other religions such as Christians have significantly increased [8].

Study design

A cross-sectional descriptive study.

Study population

The study population comprises women in the community with the following criteria:

Inclusion criteria: women in the reproductive age group with under 5 children.

Exclusion criteria: Women with no live childbirth, and women with long hospital stays of more than 2 weeks after their only live birth.

Sample size determination

The minimum sample size was determined using Cochran's formula for cross-sectional studies with categorical outcomes [9].

Where n = minimum acceptable sample size
 Z = value of standard normal deviate=1.962

P = prevalence of knowledge of newborn cord previous study

q = $1-p$, d = desired accuracy/precision at 5% = 0.05%

Therefore, using the p -value = 24.4% good practices. [10]

$n = (1.962/0.05)^2 \times 0.244 \times 0.72 = 1539.7776 \times 0.7568 = 271$ Assuming non-respondents constitute 10% of the population, therefore an additional 10% of the sample (31) is required. Hence, $= 271 + 27 = 298$

Sampling technique

A multi-stage sampling technique was adopted for the study.

Stage 1: Selection of clusters (Unguwa).

The study area has six clusters. Three clusters (Mangorori, Anguwan Gwaiba and Sabon Makabarta) were selected by simple random sampling by balloting.

Stage 2: Selection of households. The entire houses were numbered households were line listed from each selected cluster, and systematic sampling was used to select households.

Stage 3: selection of the respondents. A list of women in the reproductive age group with under-five children in each household was obtained. For a household with more than one eligible respondent a simple random sampling was used to select eligible respondents in the household. A household with no eligible respondent was replaced.

Data collection instrument

A semi-structured interviewer-administered questionnaire adapted from previous studies was used for data collection to explore the respondent's socio-demographic characteristics, knowledge, practices and factors associated with newborn cord care in the community [10].

Data collection

Six (6) trained research assistants administered the questionnaire under the supervision of the researcher. A one-day training was organized by the researcher for all data collectors before the commencement of the study. All completed questionnaires were checked by the researcher for errors, accuracy, completeness and internal consistency.

Data analysis

Data collected was analyzed using a statistical package for social sciences software (SPSS), version 23. Descriptive analyses were performed and results were presented as simple frequency tables and as cross-tabulations. Associations between categorical variables were tested for significance using the Chi-square test were applicable. Statistical significance was said to be achieved where the P -value is less than 0.05.

Ethical consideration

Permission before conducting the study was obtained from the community leader (District head). Ethical approval was obtained from the ethics, research and scientific committee of Ahmadu Bello University Teaching Hospital, Zaria (ABUTH/HREC/UG/29/08/23). Written informed consent was also sought from each eligible respondent.

RESULTS

Two hundred and seventy-eight subjects participated in the study with a response rate of 95.5%, their ages ranged between 14 and 55 years with a mean of 28.71 ±6.39 years. The main ethnic group in the study was Hausa (64.0%). Others were Igbos (10.8%), Yorubas (10.1%), Fulanis (5.8%), and other Nigerian tribes (8.6%). Twenty-seven per cent of the respondents had tertiary education, 25.5% had secondary education and 14.7% had no formal education (Table 1).

The majority (80%) of the respondents had poor knowledge of cord care practices. Only 5% had good knowledge of cord care practices (Figure 1). Maternal age, occupation and ethnicity were found to have a significant relationship with the knowledge of newborn cord care (p = < 0.001, p = 0.01 and p = 0.012) respectively (Table 2).

Regarding the decision on what to apply on the cord, two-thirds of the decisions were made by a

health worker (58.3%), mother (15.5%), and mother-in-law (13.7%) while friends made the least decisions (3.2%) (Figure 3).

A significant relationship exists between appropriate cord care practice and maternal age ($\chi^2=23.255$, df =5, p = <0.001) ethnicity, occupation, level of education and religion of the mothers were also significantly associated with appropriate newborn cord care practice (p = <0.001 and p = <0.001 respectively) (Table 3).

Sixty-five per cent of the respondents practiced appropriate newborn cord care. (figure2) The utilization of Antenatal care (ANC) services by the respondents and the place of ANC attendance, had a significant influence on the practice of cord care in the newborn. Both have a p-value of <0.001 (Table 4).

Health workers accounted for 58.3% of the decisions taken on the type of cord care to be carried out on the newborn and what to apply (Figure 4). There was a statistically significant relationship between who decides what to be applied on the cord and the appropriate practice of newborn cord care (p = <0.001) (Table 5).

More than half (53.8%) of the mothers in Hayin Dogo applied methylated spirit on the cord of their newborn followed by hot water (27.0%), Maclean (13.3%), and animal dung (0.4%). There was a statistically significant relationship between the respondent’s place of last childbirth and the practice of newborn cord care (p = <0.001) (Table 6).

Table 1: Sociodemographic characteristics of women of Hayin Dogo Community (n= 278)

Socio-demographic characteristics	Frequency	Percentages
Age group in Years		
15 - 24	127	45.7
25 - 34	100	36.0
35 - 44	49	17.6
45 - 54	2	0.7
Ethnic Group		
Hausa	179	64
Yoruba	28	10.1
Igbo	30	10.8
Fulani	17	6.2
Others	24	8.6
Religion		
Islam	189	68.0
Christianity	89	32.0
Educational Level		
No Education	41	14.7
Quranic	46	16.2
Primary	45	16.2
Secondary	71	25.5
Tertiary	75	27.0
Marital status		

Married	252	90.6
Divorced	2	0.7
Widow	16	3.6
Separated	8	2.9
Occupation		
Housewife	195	60.2
Civil Servant	27	9.7
Business Woman	56	20.1
No. of Children		
1	42	15.1
2-5	146	52.1
6-10	69	24.8
>10	21	7.6

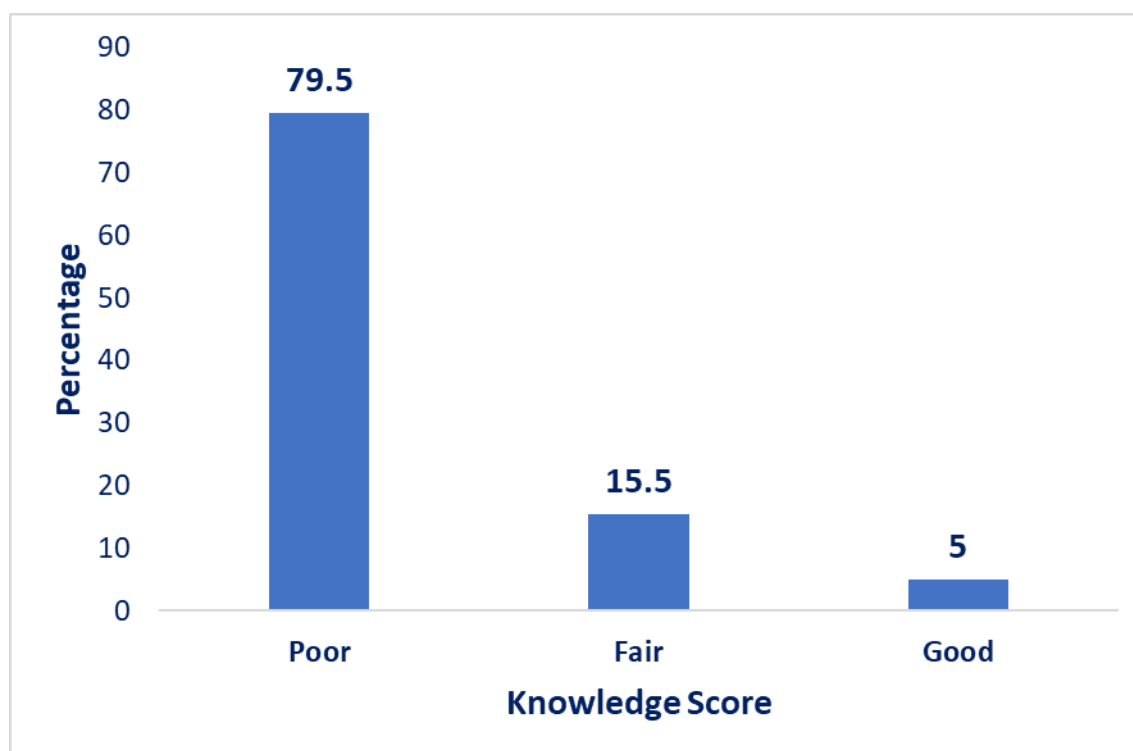


Figure 1: Knowledge grade of women of Hayin Dogo on newborn cord care

Table 2: Association between the socio-demographical characteristics of women of Hayin Dogo and overall knowledge of newborn cord care (n=278)

Knowledge Socio-demographic Xtics	poor	Fair	Good	χ^2	df	p
Age	218	47	13	33.016	10	<0.001*
Ethnicity	218	47	13	39.66	22	0.012*
Marital Status	214	48	16	11.4	8	0.180
Religion	218	43	17	37.20	2	0.300
Educational Level	218	46	14	4.25	8	0.800
Occupation	210	50	18	20.20	8	0.010*
Parity	219	45	14	3.86	6	0.695

* Shows statistically significant relationship.

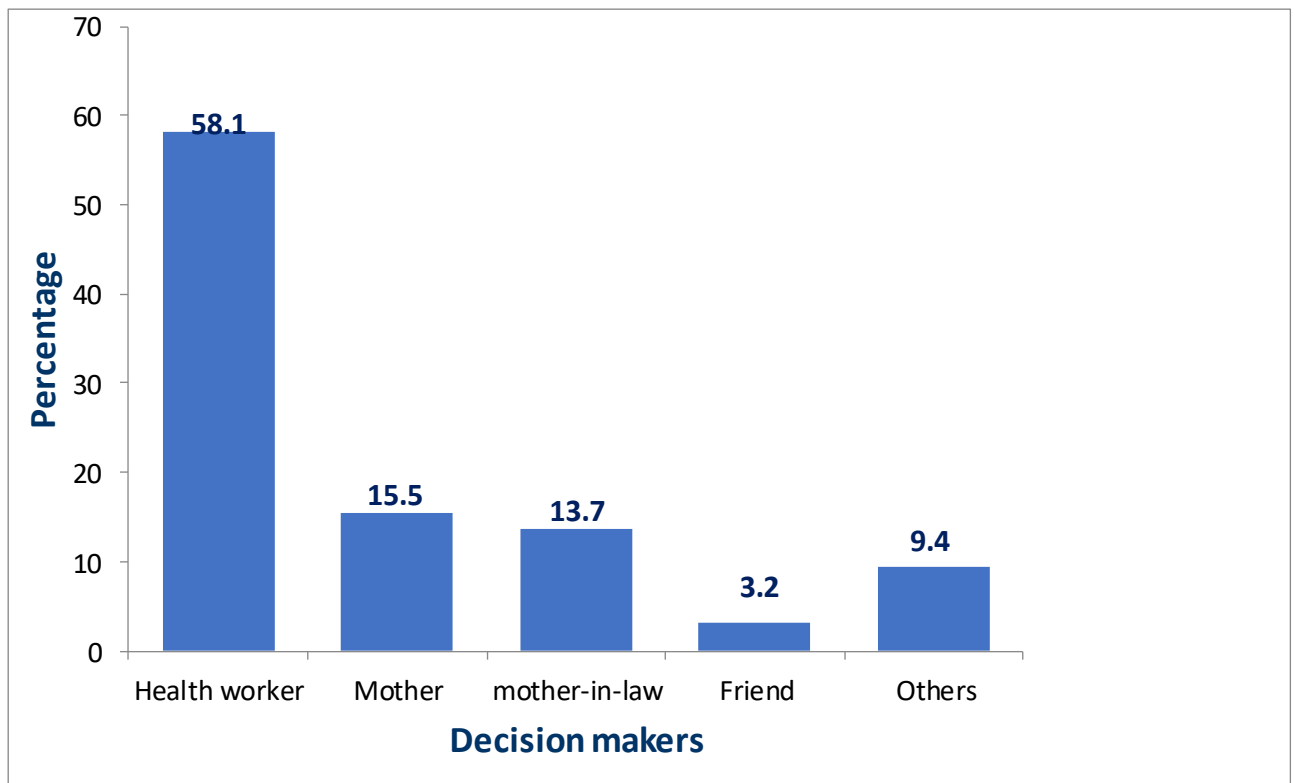


Figure 3: Who decides what to be applied on the cord of the newborn of Hayin Dogo women

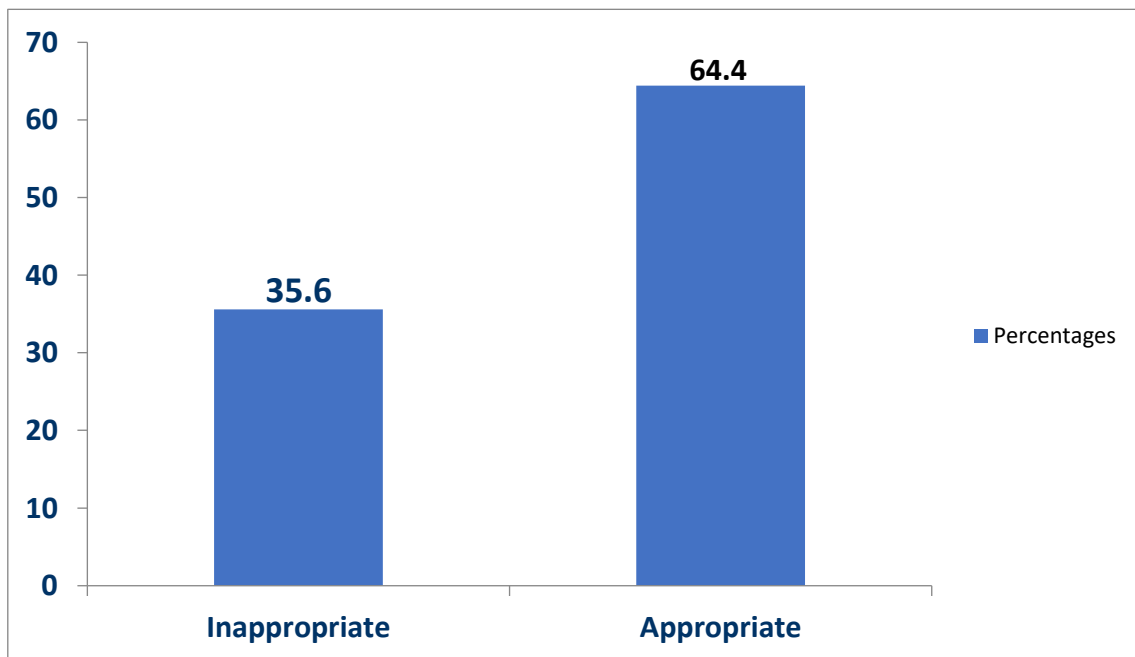


Figure 2: Practices of women of Hayin Dogo on newborn cord care

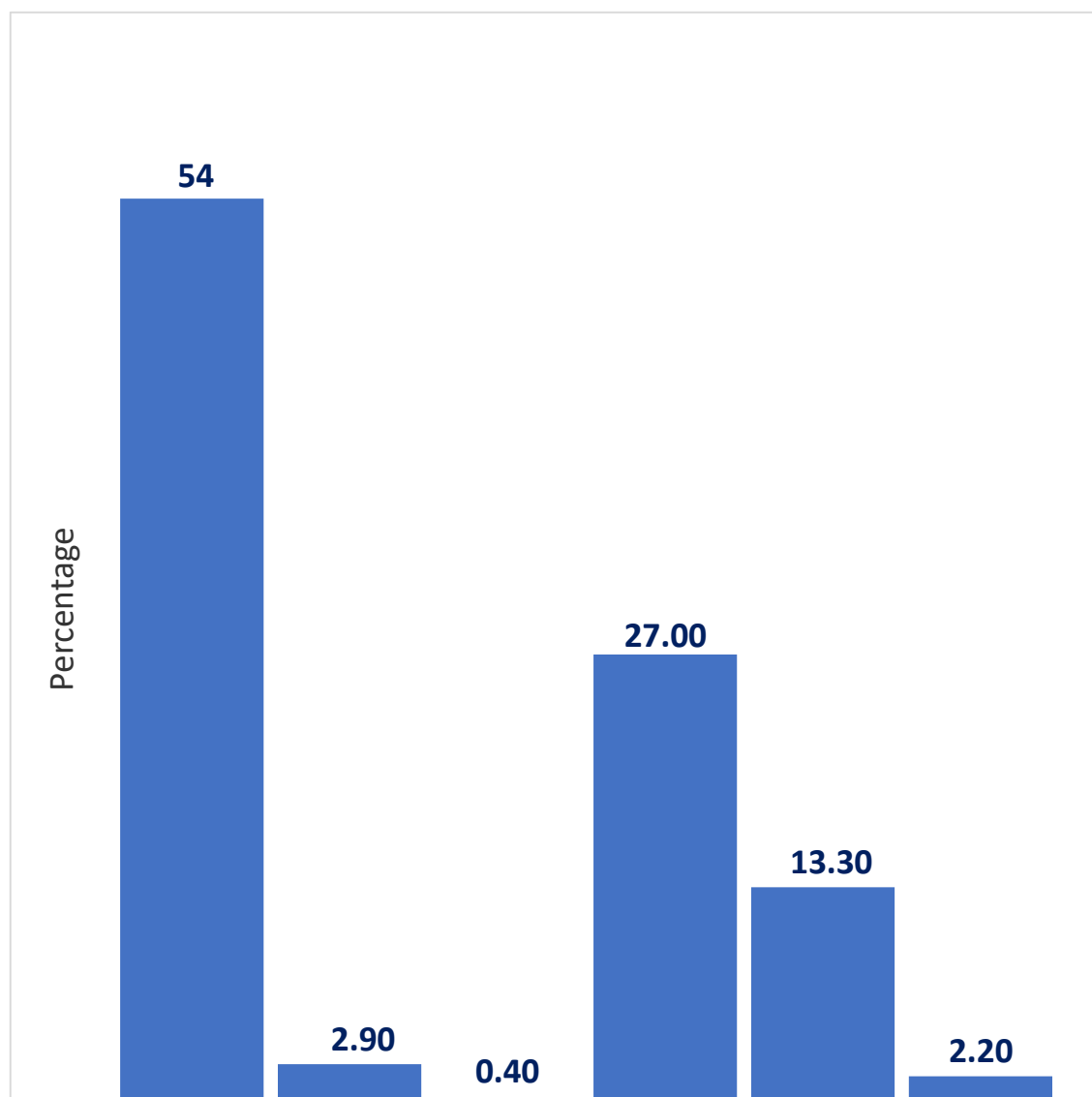


Figure 4: Substances that were applied on the cord of newborns of Hayin Dogo women.

Table 3: Relationship between mothers' socio-demographical characteristics and overall practice of newborn cord care (n=278)

Socio-demographic Xtics	Practice		X2	df	p
	Inappropriate	Appropriate			
Age	95	183	23.255	5	<0.001*
Ethnicity	97	181	22.791	5	<0.001*
Marital Status	95	183	5.384	4	0.250
Religion	95	183	16.219	1	<0.001*
Educational Level	95	183	45.765	4	<0.001*
Occupation	95	183	37.360	4	<0.001*
Parity	95	183	0.179	3	0.981

*Shows statistically significant relationship.

Table 4: Association of antenatal (ANC) attendance and Place of ANC with overall practices of newborn cord care

Variable	Practice		X ²	df	P
ANC	Inappropriate	Appropriate			
Attended	49	180	80.27	1	<0.001
Did not attend	43	6			
Place of ANC	Practice		X ²	df	P
PHC	Inappropriate	Appropriate			
Secondary/Tertiary	25	134	27	2	<0.001
Private	7	55			

Table 5: Relationship between the decision maker who decides what to apply on the cord and the overall practice of newborn cord care (n=278)

Variable	Practice		X ²	df	P
Decision Maker	Inappropriate	Appropriate			
Health worker	23	140	84.67	4	0.0001
Mother	22	20			
Mother-in-law	27	12			
Friend	5	3			
Others	22	5			

Table 6: Relationship between the place of last childbirth to the overall practice of cord care (n=278)

Variable	practices		X ²	df	P
Place	Inappropriate	Appropriate			
Home	72	35	95.956	3	< 0.001
PHC	11	15			
SEC/Tertiary Centres	9	88			
Private	2	41			

DISCUSSION

Appropriate practice of newborn cord care is paramount to the survival of any child. Various factors influenced cord care practices among mothers in Hayin Dogo. The older mothers' practice newborn cord care more appropriately than the younger ones, this finding is similar to that of Abhulihem-Your *et al.* and Nuru Kalifya [10, 11]. This may have been from experience gathered over time even though our study showed maternal parity was not a significant factor in cord care practice but other the study conducted in Tabora Tanzania showed a significant relationship between parity and cord care practices. The increasing maternal education level also showed statistical significance in this study as demonstrated by Abhulihem-Iyoha *et al.* and Nuru Kalifya [10, 11]. The mean age in the study was 28.71±6.39 which was similar to that reported by Padiyath *et al.*, Sharafi *et al.*, Obimbo *et al.*, and Abhulihem-your *et al.* [12, 13, 14]. This similarity may be due to the uniformity of reproductive age for most countries. In our study, only 5% had good knowledge as against 35% reported by Padiyath, 13.3%, 28% and 71.2% were reported by Sharafi, Obimbo *et al.* and Abhulihem-Your *et al.* respectively [10 - 14]. The study in Tanzania reported that 65% of mothers had good knowledge [11]. The application of methylated spirit to the cord was common among women and considered to be good practice by Abhulihem-Iyoha

[10]. This study revealed that 65.3% of the mothers cared for the cord appropriately as against 20.5% reported by Abhulihem-Iyoha even though most women were aware of the beneficial cord care practices [10]. This variation may be because in our study many other health workers were involved in the decision-making on cord care as against only nurses as reported by Abhulihem-Iyoha [10]. Regional variation might be responsible for the difference observed. Decisions taken by the mothers on what to use for cord care accounted for 15.1%. This was similar to the 19.9% reported by Peace *et al.* but against the 3.2% reported by Abhulihem-Iyoha probably because his study was hospital-based [10, 15]. Considering the substances applied to cord this study has Methylated spirit (53.8%) followed by Hot water (27.4) the least being animal dung (0.4%) which is different from what was reported by Padiyath *et al.* where the dry cord has the highest per cent (65%) followed by the application of Coconut oil with an application of medical powder and ash having the least (2%) [11]. Similar findings were observed in Bauchi and Sokoto states [16]. These findings are similar to umbilical cord-care practices in low- and middle-income countries as reported by Patricia and Siobhan [17]. The use of animal dung as a harmful traditional practice was observed in this study in less than one per cent of the respondents. The findings are consistent with results from Haiti, Uganda and Zambia where the use of

chicken/lizard/cow dung was reported [18, 19]. Similarly, the traditional birth attendant in northern Ghana reported the same findings [20]. Data from Mali in the Diema and Kita districts also reported the application of cow dung, shea butter, ash, alcohol, and Maggi cubes to the umbilical cord [17]. Although the harmful practice was reported, there is a progressive decline in the use of animal dung in our setting due to an increase in awareness among the traditional birth attendants and the public. Regarding who decides what to be applied we found in our study that health workers have the highest percentage (57.9%) followed by mothers (15.5%), and mothers-in-law (13.7%). This was similar to what was reported by Abhulihem-Your *et al.* where nurses have 51.3%, followed by mothers (32.0%), then mothers-in-law (3.2%) [10]. Delivery in health facilities, poor knowledge of cord care, parity and maternal education had a significant relationship with cord care practices in our study. However, in other studies, urban residence, and family type were found as predictors of cord care practices [21 - 25]. This finding is consistent with studies conducted in Cameroon. The possible reason could be that mothers who visited ANC would receive counselling on the advantages of delivery by skilled birth attendants and institutional delivery, which is believed to increase their knowledge and practice about good cord care. These predictors could play an important role in future research aimed at addressing safe cord care practices in a present setting by using them as the basis for providing evidence-based interventions.

CONCLUSION

The study showed that the majority of mothers in the Hayin Dogo community though had poor knowledge but the majority had appropriate practice of newborn cord care. Delivery in health facilities, poor knowledge of cord care, parity and maternal education were factors associated with cord care practices. Animal dung was the least substance applied to the umbilical cord in Hayin Dogo, Samaru, Zaria.

RECOMMENDATIONS

The health workers are the major decision influencers, there is then the need to include in their routine health talks the appropriate cord care practices both at health facilities and at community outreaches. Sabon Gari Local government area in collaboration with the state government should also engage in community sensitization and awareness creation on appropriate newborn cord care.

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