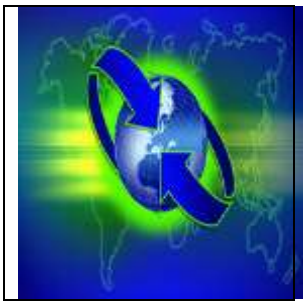

Navel String Preservation among Nursing Mothers in Ogoja Local Government Area of Cross River State

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Abstract

The purpose of this study is to assess navel string preservation among nursing mothers in Ogoja Local Government Area of Cross River State. Two objectives were formulated to guide the study. Two research questions were posed and answered. Literature was reviewed according to the variables of the study. The study adopted a survey research design. A multistage sampling technique was used to select 200 nursing mothers used as respondents in the study. The instrument used for data collection is a structured questionnaire. The instrument was duly validated by relevant authorities. Descriptive statistics was used for data analyses. The result obtained from analysis of data revealed that nursing mothers in the study area widely use cow dung for navel string care; and there is also the prevalent use of vaseline for navel string care among nursing mothers in the study area. Based on these findings, it was recommended that the community leaders and non-governmental organizations should organize community workshops to engage nursing mothers and raise awareness about the potential harms associated with the traditional practice of using cow dung for string care. Also, local health authorities should collaborate with community leaders to implement initiatives to promote the safe use of vaseline for navel string care. They can disseminate information through health clinics, community centres, and outreach programmes, ensuring accurate information reaches nursing mothers and addresses any discrepancies in reported community practices.
Keywords: Navel String Preservation, Nursing Mothers, Use of Cow Ding, Use of Vaseline

Introduction

The navel string also known as umbilical cord, is a flexible tube-like structure that connects the fetus to the placenta during pregnancy, providing essential nutrients and oxygen (American Pregnancy Association, 2022). The method for caring for the navel string varies greatly between communities depending on the cultural and religious beliefs, level of education and resources. In developing countries most deliveries occur at home where healthcare services may not be available. In most rural communities in Ogoja Local Government, material used to tie the string include, thread and strips of cloth, scissors and sharp stone. In Ogoja Local

Government Area of Cross River State, 49% of neonatal deaths were due to navel string infection while the condition was responsible for 19% of all new admission (Antai & Effiong, 2019).

Mothers make use of unsterile thread and blade to clamp and cut the navel string; clean string with unwashed hands, apply olive oil into navel string and also use dirty pieces of cloth to wrap round the navel string area causing bacterial colonization of the umbilicus. Other techniques include placing certain leaves on the entrance to the baby's bed or on the baby's forehead or applied on the whole body including the string. At other times, the herbal medicine which are mostly made from leaves, roots and/or bark of the trees are given as oral medication to the neonate in unregulated dosage. These usually produce toxic effects which are difficult to manage, as antidotes are unknown.

As part of the effort to curb this menace, a new recommendation for string preservation was approved by the WHO Guidelines Review Committee in 2013. Chlorhexidine (CHx aqueous) application to the navel string stump during the first week of life was recommended for new born who are born at home in settings with high neonatal mortality (30 or more neonatal deaths per 1000 live births) (Uta, 2021). Clean dry string preservation is recommended for newborn in health facilities and at home in low neonatal mortality settings. Use of Chlorhexidine in these situations may be considered only to replace application of a harmful traditional substance, such as cow dung, to the string stump. The umbilical vessels are still patent for few days following birth which provides direct access to the blood stream. The devitalized tissue of the umbilical stump can be an excellent medium for bacteria, especially if the stump is kept moist or if unclean substances are applied to it (Bemor & Uta, 2021).

The navel string is a common route of entry for systemic infection in the newborn infant, keeping the string clean is therefore imperative if infection is to be prevented (Apie, Dan, Osaji, Akpa, Ekuri, Akah & Abeng, 2022). Notwithstanding this recommendation and other such efforts towards curbing high rate of neonatal tetanus resulting from unhygienic string preservation practices, many mothers and care givers still engage in the application of unhygienic substances which are either applied directly on the navel string, the water is slightly squeeze out before

application or mixed with other substances and heated on fire in local earthen pot before application.

Ambe, Bello, Yahaya and Omotora (2020) revealed that substances used by mothers in string preservation include, the application of hot fermentation, use of rag and lantern wax, use of vaseline, ash, charcoal, groundnut oil, palm oil, mangrove oil, use of powder and red sand. They pointed out that these practices are often harmful, because these substances are often contaminated with bacteria and spores, thus, increasing the risk of infection particularly neonatal tetanus. Only 12% of mothers used alcohol, while in about 10%, the string was left alone to dry on its own.

Use of cow dung for navel string preservation among nursing mothers

Hygienic navel string preservation is one of the essential interventions advocated to reduce neonatal mortality (World Health Organization, 2020). Proper string preservation with the appropriate antiseptic solution is recommended to prevent infection and promote healing of the umbilical stump, particularly in resource-constrained settings where the environment is not clean and conducive (Castellanos, Muñuzuri, Campillo, López, Fernández & Redondo, 2019; Gelano, Bacha & Abate, 2019). However, traditional string-preservation measures that have harmful health consequences are commonly practiced in Nigeria; among this application of cow dung and oil on the navel string stump are the major public health threats (Amare, 2014).

The umbilical stump is a common point of entry for microorganisms in neonates which is further worsened by the application of unsafe external substances like cow dung and oil (Muniraman, Sardesai & Sardesai, 2018). Cow dung is a special place where spores of Clostridium tetani and other important microorganisms live (Mull, Anderson & Mull, 2019). Hence applying this substance on the umbilical stump of neonates would mean inoculating those microorganisms into the newborns' circulation. Reports also indicated a significantly higher risk of umbilical infection associated with the application of oil on the umbilical stump (Mullany, Darmstadt, Katz, Khatry, LeClerq & Adhikari, 2017).

Similarly, a study by Dessie, Mekonnen, Tesfaye and Gebremedhin (2022) revealed that approximately 11% (780) of women, with a 95% confidence interval (CI) of 10.18-11.62, applied oil and/or cow dung to their neonate's navel string stump. Notably, increasing maternal age by one year and giving birth in a healthcare facility were significant factors that decreased this practice. Whereas, rural residence was the predictor at the community level that raised the practice of applying cow dung and oil on the neonate's navel string stump. This nationwide study revealed that a significant number of mothers in Ethiopia still apply cow dung and/or oil on the navel string stump of their neonates. Both the individual and community level characteristics: maternal age, place of delivery, and residence were found to have significant influence on the practice of applying cow dung and/or oil on the navel string stump in Ethiopia. Thus, to reduce neonatal mortality due to avoidable navel string infections, clean string preservation practice strategies were recommended.

Johnson (2016) reported of "bundling", which consists of wrapping an infant for prolonged periods in a sheep skin after dried cow dung is applied. This demonstrates the vulnerability of the navel string to infections during the first days after birth. Bemor and Uta (2021) also reported severing the string very close to the base, application of herbs and sacrificial marks on the face and on the anterior abdominal trunk. These measures may or may not have medical properties to heal the string as they are typically passed by lay person and majority of these substances are merely used as a result of tradition. Some, however have been demonstrated to affect string healing and one of the most popular examples is the warm compress to reduce inflammatory process and aid healing. Tetanus usually follows infection of the umbilical stump, which can result from poor obstetric procedures, delivery outside a healthcare environment, inadequate postnatal care, or cultural practices such as application of cow dung or soil to the umbilical stump. Thus, identifying factors associated with such malpractices is essential for improving neonatal survival through evidence-based care. In Nigeria however, few studies investigated string preservation practice; yet they used a small sample size representing a

specified locality and none of the studies have tried to look at individual and community levels factors simultaneously.

Sacks, Moss, Winch, Thuma, van Dijk and Mullany (2015) reported that newborns were generally kept warm by application of hats and layers of clothing. Mothers applied various substances to the skin and navel string, with special practices for preterm infants. Applied substances included cow dung, petroleum jelly, commercial baby lotion, cooking oil and breastmilk. The most common substances applied to the navel string were powders made of roots, burnt gourds or ash. To ward off malevolent spirits, similar powders were reportedly placed directly into dermal incisions, especially in ill children.

Use of vaseline for navel string preservation among nursing mothers

Vaseline is a semi-solid mixture of hydrocarbons, originally promoted as a topical ointment for its healing properties. Vaseline has been a well-known American brand of petroleum jelly since 1870. Vaseline is an example of petroleum jelly which has been used for years to help with skin moisturizing and healing (Ginta, 2017). However, some types could contain carcinogenic ingredients. Vaseline's benefits come from its main ingredient petroleum, which helps seal the skin with a water-protective barrier. This helps the skin heal and retain moisture.

The substances applied on navel string are often believed to moisturize the string to prevent sores and promote healing. These reasons are most times given by mothers and grandmothers in the developing countries. For instance, a 55 years old grandmother in Sidama said, "we apply vaseline to the base of the baby's string so that the skin around it does not shrivel and heals sooner" (Amere, 2014). The desire to loosen up and promote healing of the skin at the point where the string will drop off is a recurring reason for applying substances to the base of the string. As noted by Ginta (2017), some people are more sensitive and can develop allergies if they use petroleum-derived products. Furthermore, not allowing the skin to dry or cleaning the skin properly before applying petroleum jelly can cause fungal or bacterial infections.

Ambe *et al.* (2020), pointed out that mothers need to know about these harmful practices, what they may cause and the problems associated with their use. Health providers should be able to educate the mothers about the harmful practices of string care. This will go a long way in reducing the morbidity or mortality in the newborn.

Smith and Kelly (2021) reported that age at first pregnancy was significantly related to the preservation for the baby's naval string and material used. Clean string preservation was found among mothers aged 35 and above while string infections were higher in babies whose mothers were 20 years and below. They therefore concluded that increased maternal age was associated with safe string practice with improved neonatal outcome. Reviews by various authors agree with Smith and Kelly (2021), in their study on influence of age on string preservation. They used descriptive survey to study 388 mothers whose babies were two months and below. Data were collected using structured questionnaire. They documented that about 48% of reported string infections among newborn were babies of mothers who were below 30 years of age. They observed that mothers with their first babies usually depend on others or other relatives who employ string preservation which depends on beliefs, customs, and social status and the babies are thus in a vulnerable situation (Amin & Khan, 2019; Agarwal & Seith, 2019).

Asiegbu, Asiegbu and Ezeonu (2018) reported that women who had good knowledge of string care were those aged 26 years and above (60.34%) and teaching hospital parturient (37.07%). Majority (84.25%) mainly secondary and tertiary educated use methylated spirit, others especially those from rural area and with low education still use Vaseline or toothpaste or dusting powder and scent leaf local herb. The study concluded that there are still gaps in knowledge, attitude and practice of string preservation among mothers at all levels, hence, recommending that periodic and quality health education on string preservation should be given and sustained at all levels of contact. Amare (2014) revealed that concepts underlying string tying practices were how to stem blood flow and facilitate delivery of the placenta. Substances such as Vaseline were applied on the string to moisturize it, facilitate its separation and promote

healing. Locally recognized string problems were delayed healing, bleeding or swelling. Few respondents reported familiarity with redness of the string - a sign of infection. Grandmothers, TBAs and HEWs were influential regarding string preservation.

Uwingabire, Tengera, Batamuriza and Mukamana (2020), pointed that a third of mothers (33%) had adequate knowledge, and a half (54%) had good navel string preservation practice. The majority (70%) reported dry string preservation practice, though many applied substances including Vaseline (23%) and Movit ointment (15%). There was a negative correlation between knowledge of string preservation and substance applied to string (R^2=0.224, p=0.001), and days applied (R^2=0.167, p=0.012). The study concluded that population had low string preservation knowledge, thus, recommending that health care providers need to educate mothers on the practice of allowing the string to dry naturally, and discourage the use of harmful substances that delay string separation and increase risk of sepsis and subsequent neonatal mortality.

Purpose of the study

The purpose of the study was to assess navel string preservation practices among nursing mothers in Ogoja Local Government Area of Cross River State. Specifically, the study seeks to:

1. examine the extent to which cow dung is used for navel string preservation among nursing mothers in Ogoja Local Government Area.
2. investigate the extent in the use of vaseline for navel string preservation among nursing mothers in Ogoja Local Government Area.

Research questions

1. What is the extent to which cow dung is used among nursing mothers for navel string preservation in Ogoja LGA?
2. To what extent do nursing mothers use vaseline for navel string preservation in Ogoja LGA?

Research design and methodology

Survey research design was adopted for this study. This research design deals with the present and is oriented towards the determination of status of a given phenomenon. The population of the study consisted of all nursing mothers in the study area, giving a total of 2000 nursing mothers from Primary Health Center Post-Natal Care Registrar. Two hundred (200) respondents were randomly selected from the two thousand (2000) nursing mothers in the study area through multi-stage sampling technique.

Instrumentation

The instrument used for data collection in the study was a questionnaire titled Navel String Preservation among Nursing Mothers Questionnaire (NSPNMQ)", it was divided into two sections. Section A contained respondents' personal data. Section B was developed using modified four-point likert-scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) designed to measure navel string preservation of nursing mothers.

Results and discussion

What is the extent to which cow dung is used among nursing mothers for navel string preservation in Ogoja LGA? To provide an answer to this research question, the responses of nursing mothers were quantified using frequency counts, simple percentages, mean and standard deviation. The summary of the results pertaining to this research question is presented in table 1.

Table 1 reveals that the use of cow dung among nursing mothers for navel string preservation is high in Ogoja LGA. The result is backed by a grand mean score of 2.97, with a standard deviation of 0.94, greater than the criterion mean value of 2.50. In specific terms, nursing mothers reported a high extent of other nursing mothers in their communities applying cow dung to fasten navel string healing ($\overline{X}$ = 3.36, S = 0.94). The application of cow dung on babies' navel strings was rated highly among nursing mothers as a common practice ($\overline{X}$ = 3.22, S = 1.00). The extent to which nursing mothers noticed a smelling odour on their babies after the

application of cow dung was highly rated ($\bar{X}$ = 2.85, S = 0.90). The was a high extent in the perception of nursing mothers that applying cow dung on the navel string can expose a baby to infection ($\bar{X}$ = 3.16, S = 1.05).

Table 1: Descriptive statistics of the extent of nursing mothers' use of cow dung for navel string preservation

S/N	Items	SA	A	D	SD	Total	$\bar{X}$	S	Remark
1	Nursing mothers in my community apply cow dung to fasten navel string healing	123 [61.3]	40 [20.0]	24 [12.0]	13 [6.7]	200 [100]	3.36	0.94	High
2	I have applied cow dung on my baby's navel string before	112 [56.0]	35 [17.3]	39 [19.3]	14 [7.3]	200 [100]	3.22	1.00	High
3	I noticed a smelling odour on my baby after the application of cow dung	40 [20.0]	117 [58.7]	15 [7.3]	28 [14.0]	150 [100]	2.85	0.90	High
4	I know that applying cow dung on a baby's navel string is harmful.	12 [6.0]	15 [7.3]	80 [40.0]	93 [46.7]	200 [100]	1.73	0.84	Low
5	I perceive that applying cow dung on the navel string can expose a baby to infection	108 [54.0]	40 [20.0]	28 [14.0]	24 [12.0]	200 [100]	3.16	1.05	High
					Grand mean =		2.97	0.94	High

Criterion mean = 2.50; Percentages are in parentheses; SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree; $\bar{X}$ = Mean; S = Standard deviation

On the contrary, there was a low mean rating among nursing mothers regarding their awareness that cow dung application on a baby's string is harmful ($\bar{X}$ = 1.73, S = 0.84).

Research question two

To what extent do nursing mothers use vaseline for navel string preservation in Ogoja LGA? This research question sought to estimate how much nursing mothers use Vaseline for navel string care. To fulfill this aim, collected data was analyzed using descriptive statistical techniques, encompassing frequency counts, simple percentages, and the computation of mean and standard deviation. The results of this analysis are detailed in Table 6.

Table 2: Descriptive statistics of the extent of nursing mothers' use of vaseline for navel string preservation

S/N	Items	SA	A	D	SD	Total	$\bar{X}$	S	Remark
1	Vaseline is common in my community as a necessity for baby's care.	67 [33.3]	93 [46.7]	35 [17.3]	5 [2.7]	200 [100]	3.11	0.78	High
2	Other women in my community apply vaseline on the navel string for quick healing.	27 [13.3]	33 [16.7]	40 [20.0]	100 [50.0]	200 [100]	1.93	1.10	Low
3	I regularly apply vaseline on my baby's navel string.	55 [27.3]	87 [43.3]	31 [15.3]	28 [14.0]	200 [100]	2.84	0.98	High
4	I use vaseline on my baby's string without any known risk to newborns.	47 [23.3]	94 [48.7]	43 [22.0]	16 [8.0]	200 [100]	2.87	0.86	High
5	My baby's navel string heals within days after consistent use of vaseline.	125 [62.7]	40 [20.0]	27 [13.3]	8 [4.0]	200 [100]	3.41	0.87	High
						Grand mean =	2.83	0.92	High

Criterion mean = 2.50; Percentages are in parentheses; SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree; $\bar{X}$ = Mean; S = Standard deviation

Table 2 indicates a high extent in the overall rating of nursing mothers on using vaseline for navel string preservation in Ogoja LGA. This conclusion is drawn from the grand mean value of 2.83 with a standard deviation of 0.92, surpassing the criterion mean value of 2.50. However, while many specific practices in vaseline use for string preservation were highly rated, others were not. For example, nursing mothers provided a high rating that vaseline is common in their community as a necessity for baby care ($\bar{X}$ = 3.11, S = 0.78), they regularly applied vaseline on their babies' navel string ($\bar{X}$ = 2.84, S = 0.98), they used vaseline on their babies' strings without any known risk to newborns ($\bar{X}$ = 2.87, S = 0.86). Also, nursing mothers provided a high rating that their babies' navel string heals within days after consistent use of vaseline ($\bar{X}$ = 3.41, S = 0.87). However, one practice that nursing mothers did not highly rate is the statement that other

women in their communities apply vaseline on the navel string for quick healing ($\bar{X}$ = 1.93, S = 1.10).

Discussion of findings

The first finding of this study reveals the widespread use of cow dung for navel string preservation among nursing mothers in Ogoja LGA. Specifically, nursing mothers reported a high extent of community-wide application of cow dung to facilitate navel string healing and its common practice on babies' strings. Despite the prevalence of this practice, there was also a high extent of reported smelling odours on babies after application and a perception among nursing mothers that it could expose infants to infection. However, there was a notable lack of awareness among nursing mothers regarding the potential harm associated with cow dung application on a baby's string, as indicated by a low mean rating. This finding is surprising in its prevalence and persistence despite potential risks. It reveals a cultural practice deeply ingrained within the community, suggesting a significant gap in knowledge regarding infant healthcare practices. The reported high extent of community-wide application indicates a shared belief in the effectiveness of cow dung for navel string healing, despite concerns about odors and potential infection risks.

Several reasons can be offered for this finding. Firstly, cultural norms and traditions often dictate healthcare practices in many communities, leading to the perpetuation of certain rituals even when evidence suggests potential harm. Secondly, limited access to healthcare resources and education may contribute to the reliance on traditional remedies such as cow dung, especially in rural areas where modern medical facilities may be scarce. Additionally, the lack of awareness among nursing mothers regarding the potential risks associated with cow dung application points to a need for targeted health education initiatives aimed at improving maternal and infant healthcare knowledge. Efforts should focus on raising awareness about the potential risks associated with cow dung application on infants' navel strings, as well as providing accessible alternatives that are safe and effective.

This finding supports previous research documenting that traditional string- preservation measures such as the application of cow dung and oil on the navel string stump are the major public health threats (Amare, 2014). Cow dung is a special place where spores of clostridium tetani and other important microorganisms live (Mull et al., 2019). Hence applying this substance on the umbilical stump of neonates would mean inoculating those microorganisms into the newborns' circulation. Reports also indicated a significantly higher risk of umbilical infection associated with the application of oil on the umbilical stump (Mullany et al., 2017). Similarly, revealed that approximately 11% (780) of women, with a 95% confidence interval (CI) of 10.18-11.62, applied oil and/or cow dung to their neonate's navel string stump. This nationwide study revealed that a significant number of mothers in Ethiopia still apply cow dung and/or oil on the navel string stump of their neonates. Moreover, Sacks et al. (2015) found that mothers applied various substances to the skin and navel string, such as cow dung, petroleum jelly, commercial baby lotion, cooking oil and breastmilk.

The second finding reveals a prevalent use of vaseline for navel string care among nursing mothers in Ogoja LGA. Specific practices related to vaseline application were highly rated, including its common usage in the community for baby care, regular application on babies' strings, and the perception of its efficacy in facilitating quick healing. However, there was a notable disparity in the extent to which nursing mothers reported the practice of other women in their communities applying Vaseline for quick healing, which was not highly rated. This finding is somewhat surprising, given its widespread adoption despite variations in reported practices among community members. It suggests a significant reliance on vaseline as a traditional remedy for infant care, highlighting its perceived efficacy in promoting quick healing of the navel string stump. However, the notable disparity in reporting the practice among other women in the community suggests a potential lack of consensus or consistency in the use of vaseline for this purpose.

Several reasons can be offered for this finding. Firstly, vaseline is readily available and affordable, making it a convenient option for navel string preservation, particularly in areas where access to medical supplies may be limited. Its perceived effectiveness in facilitating quick healing may contribute to its widespread use among nursing mothers, who prioritize the well-being of their infants. Additionally, cultural beliefs and practices may influence the adoption of vaseline for navel string preservation, as it may be viewed as a traditional and trusted remedy passed down through generations. The finding implies a need for further investigation into the variations in reported practices among community members regarding the use of vaseline for navel string preservation.

This finding provides empirical support to the position of Ambe *et al.* (2020 that mothers need to know about these harmful practices, what they may cause and the problems associated with their use. Health providers should be able to educate the mothers about the harmful practices of string preservation. This will go a long way in reducing the morbidity or mortality in the newborn. The findings by Asiegbu *et al.* (2018) Majority (84.25% revealed secondary and tertiary educated use methylated spirits, especially those from rural areas and with low education, still use Vaseline or toothpaste or dusting powder and scent leaf local herbs.

Conclusion

The essence of this study was to assessed navel string preservation among nursing mothers in Ogoja Local Government Area of Cross River State. The findings of the study revealed that cow dung and vaseline are frequently employed for string preservation. The findings of this study are important for targeted education and awareness campaigns to address misconceptions and promote evidence-based practices. However, understanding and respecting local customs is vital for healthcare providers in delivering culturally sensitive guidance on newborn care, ultimately contributing to improved maternal and infant health outcomes in the community.

Recommendations for policy directions

Based on the conclusion of this study, the following recommendations were made:

1. Community leaders and non-governmental organisations should organise community workshops to engage nursing mothers and raise awareness about the potential harms associated with the traditional practice of using cow dung for string preservation. They should collaborate with healthcare providers to ensure that these workshops are culturally sensitive and address any misconceptions or concerns among mothers.
2. Local health authorities should collaborate with community leaders to implement initiatives to promote the safe use of vaseline for navel string preservation. They can disseminate information through health clinics, community centres, and outreach programmes, ensuring accurate information reaches nursing mothers and addresses any discrepancies in reported community practices.

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