

Umbilical Cord Care Practices and Postnatal Care Utilization in Rural Central Tanzania

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Abstract

Background: 2.6 million of newborn are dying each year, 90% occurring in SSA. Tanzania is among the top ten countries with high neonatal mortality, whereby, complications of prematurity, birth asphyxia, and infection are leading causes. Implementation of essential newborn care (ENC), including cord and thermal care proven to be the remedy, of which, its implementation is low at 12% in the country. Therefore, this study assessed the community-based practices on cord and thermal care in rural central Tanzania. **Methodology:** This was a descriptive cross-sectional study design conducted in the Chamwino District in the Dodoma Region. The purposeful sampling method was sought, and the data collection technique of a structured questionnaire using 14 questions was used. The study involved 182 mothers with recent experience of 1-year post-delivery. The data analysis was performed using IBM SPSS version 24, whereby descriptive statistics were employed to describe the frequency distribution of the study variables. The high prevalence of neonatal infection and lack of studies focusing on this particular geographical area raised the need to conduct this study. **Results:** A total of 182 women were recruited from two wards. Most of them (45.60%) were aged more than 30 years, with less than half (44%) being illiterate. Almost all respondents were peasants (72.32%), and the remaining were either traders, housewives, or civil servants. Community, generally had poor cord care practices including utilization of variety unhygienic materials such as dirty sisal thread, used fertilizer bag thread and baobab thread to tie or retie the cord to 73%. Furthermore, large proportion of mothers (92%) applied locally available substances into the umbilical cord stump, including ashes, sodium bicarbonate, body oil, and "utomvu wa minya." However, the postnatal care was also poorly practiced, as 98.3 percent of mothers with premature babies did kangaroo mother care. **Conclusion:** This study revealed a widespread reported traditional harmful cord care practice among rural community of central Tanzania. Nonetheless, the recommended skin to skin care of premature reported being unpracticed. The reported practices can be mitigated through various community pathway intervention like behavioral change communication and strengthening of the primary health care systems. This is important in order to address issues related to social determinants of health.

Keywords: Newborn cord care practices, Umbilical cord stump, thermal care, community-based study, postnatal visits, Central Tanzania

Background

Globally, 2.6 million neonates die every year¹. More than 90% of these deaths occur in low and middle-income countries². Tanzania is among the top ten countries with the highest number of neonatal deaths³. Neonatal infection remained to be the third most common and preventable cause of global neonatal deaths after complications of prematurity and intrapartum-related conditions (birth asphyxia)¹. Approximately 11.3% of total deaths in general population in Tanzania are contributed by neonates, whereby, infections are responsible for up to 20%⁴.

Neonatal thermal and cord care are critical to the health of the newborn babies. As it is well known that, the birth of a newborn baby is joy and happiness to the family and community. Though, traditionally, every community has its own way of taking care of newborn babies, of which most of the time, those practices have strong customs background. Previous studies revealed exhibition of

potential risks for the health of newborn of various existing community based thermal and cord care practices^{5,6}. Despite recent dramatic improvements in child survival in sub-Saharan Africa, neonatal mortality rates (death within the first month of life) remain largely unchanged⁷. Around 99% of all newborn deaths occur in low- and middle-income countries, with two-thirds of those occurring in Asia and Africa⁸. The jeopardized traditional thermal and cord care practices leads to acquisition of infection, hypoglycemia and hypothermia among newborn exposed to such situation⁹.

The WHO recommended extension of essential newborn care to the community, which will ensure hygienic handling of newborn umbilical cord stump and maintenance of warmth^{7,8}. According to TDHS 2022, revealed that, 81% of deliveries are happening within healthcare facilities which guarantee comprehensive health education to caregivers on hygienic handling and maintenance of warmth of their

newborn babies. Based on my level of knowledge, there has been no publication focused on the topic at central part of Tanzania. Therefore, intention of this study, was to assesses the community-based newborn thermal and cord care practices at Central Tanzania.

Methods

Study design and settings

This was a descriptive Cross-sectional study conducted in the Rural Dodoma region of Tanzania. Dodoma is a capital city Tanzania with a rapid population growth. The prevalence of neonatal infection is high in this region marking to 64%, which is comparative than national average of 20%¹⁰. The was community-based study, whereby participant visited in their households. The region was selected purposively, while ward and villages were selected to capture diversity of participants characteristics using simple random sampling. A household with postnatal mother was selected using systematic random sampling technique, whereby, participants in which the K^{th} was calculated based on the number of all postnatal mothers in the specific village divide by number of proportion participant required in that village, in which the K^{th} was 3. A first household with postnatal mother was selected using simple random technique and every third household was selected until a required sample size was achieved.

Study population, sample size and sampling

The study participants were those mothers with most recent experience of delivery of 1 year postpartum. The Yamane formula was used to determine sample size, of which it was 182 participants who selected using systematic random sampling technique.

Data collection methods and tools

A researcher administered questionnaire with closed ended questions adopted from Standard based management and recognition tool of 2017 was used. Background information and knowledge of the study participants collected using same tool.

Variables

The dependent variable is Postnatal mothers with one-year experience of delivery thermal and cord care practices of their newborns. It was measured in binary scale (yes/no) on whether the mother adhere to standard thermal and cord care practices or not. The independent variables were the participants social demographic background and knowledge on provision of standard thermal and cord care practices.

Data analysis

The Statistical Package for Social Science (SPSS) version 25 was used to analyze the data. To ensure consistency, data entry, cleaning, and range error checking were performed. Data was collected daily and cleaned in Microsoft Excel before being transferred to the analysis system. Thereafter, in detail description analysis was done.

Results

Social Demographic Characteristics

The Maternal age ranges were, 6% (n=11) aged >18 years, 35% (n=63) aged between 18-25 years, 14% (n=25) aged between 26-30 years and most of them to 46% (n=83) had more than 30 years old. Among 182 Postpartum mothers involved in this study, the response rate was 100%. All of them came from within Chamwino District wards. Looking into marital status, majority of them to 78% (n=142) were Married, with more less same proportion of 72% (n=131) being peasant. Less than half of participant were illiterate to 43% (n=78), while the large proportion 48% (n=87) of remaining of them had primary education (universal). Furthermore, regarding place of delivery, majority 79% (n=143) delivered at Hospital. More description are presented in the table below.

Table 1A social demographic characteristics of study participants (N = 182)

Variable	Frequency (n)	Percent (%)
Age (years)		
>18	11	6.04%
18-25	63	34.62
26 - 30	25	13.74
<30	83	45.6
Marital Status		
Single	29	16.02
Married	142	78.45
Divorced	7	3.87
Widow	3	1.66
Education Level		
No formal education	78	43.09%
Primary education	87	48.07%
Secondary education	15	8.29%
College education	1	0.055%
Occupation		
Peasant	128	72.32%
Business	28	15.82%
Civil servant	2	1.13%
House Wife	19	10.73%
Place of Delivery		
Healthcare Facility	144	79.12%
Home	33	18.13%
TBA	5	2.75%

Newborn Cord Care Practices

Huge significant proportion of the participants 90% of those births happened out of the hospital used razor blade to cut their newborn cord. Surprisingly, majority 71% (n=129) retied the cord using variety available materials including sisal thread, baobab tree thread, fertilizer's bag thread. As part of umbilical cord stump care, almost all of

them 92% (n=168) applied variety substances including ashes 41% (n=69), body oil 43% (n=72), sodium bicarbonate 13% (n=21) and *utomvu waminyaa* 3% (n=5). Lastly, cord separation time for the babies ranged from 2 to 14 days, whereby most of them about 59% (n=108) separation took 3 days to separate with small proportion 15% (n=28). Other details are described in the table below.

Table 2 Cord Care Practices

Variable	Frequency (n)	Percent (%)
Instrument used to tie cut the cord		
Cut at HCF	144	79.12%
Razor blade	35	19.23
Scissor	4	2.2
Material used to tie the cord		
Tied in the HCF	139	76.37
Baobab tree thread	58	31.87
Sisal thread	29	15.3
Fertilizer's bag thread	46	25.12
Substances applied into Umbilical Cord Stump		
Ashes	69	38.12
Body oil	72	39.78
Sodium Bicarbonate	21	11.6
Utomvu wa Minyaa	15	2.76
Cord Separation (Duration in days)		
3 days	14	7.7
4 days	15	8.24
5 days	148	81.31
1 week	2	1.09
2 weeks	3	1.64

Newborn thermal care

To keep the babies, warm almost all of the respondents 98% (n=179) immediately wrapped their baby with clothes, although skin-to-skin (STS) care was almost nonexistent 2% (n=3). Community took late bathing norm as a traditional way to preserve warmth to their newborn, as 40% (n=72) of babies were bathed after 1 week, 20% (n=37) bathed at 3rd and 5th day, while 14% (n=25) bathed after 1 month. Regarding postnatal visit, half of them 50% (n=91) did not go back to hospital for Postnatal checkup for their babies, as majority 89% mentioned being unaware as reason of them not coming back for follow up. About the remaining half who did postnatal visit. More details are presented in the table below.

Table 3 Thermal care practices

Variable	Frequency (n)	Percent (%)
Bathing of the newborn (Duration in Days)		
At Same day	1	0.55
At the 2nd Day	10	5.49
At the 3rd Day	37	20.33
At the 5th Day	37	20.33
After 1 week	72	39.56
After 1 month	25	13.74
Ways to maintain warmth of the baby		
Covering baby with clothes	179	98.35
Skin to skin	3	1.65
Postnatal Visit		
Yes	90	49.45
No	92	50.54
Timing of Postnatal visit		
Within 7 days	66	73.33
Within 7 - 14 days	8	8.88
More than 21 days	16	17.78
Reason for not postnatal follow up		
Didn't know	80	89.1
My baby was fine	12	11.9

Discussion

Cord care Practices

This study investigated the community based newborn cord and thermal care practices among women who gave birth at in the last 12 months preceding the survey at central rural Tanzania. Poor newborn cord care practices have been observed due to non-beneficial cord care practices of the neonate to their very first days of life among mothers in Central Tanzania. The good majority of the respondents have used variety of unhygienic materials such as dirty sisal thread, used fertilizer's bag thread, baobab thread to tie or retie the cord. These findings are in agreement with those studies done in Uganda, Rwanda and Nigeria, whereby, cord often was tied or retied using various harmful materials including string cloth, tailor's thread, Banana fibers, Piece of clothes and other unknown materials¹¹⁻¹⁸. The reasons for that practice they might have been influenced by sociocultural belief.

Tanzanian Central zone community cord care practices, did not ended there, as still almost all of the study participants extended their practices into topical application of various available non-medical substances into the stumps including ashes, sodium bicarbonate, body oil and "*utomvu wa minyaa*". Same practices were found similar in contemporary analysis of African Settings, studies done in

Nigeria, Rwanda, Kenya, India, Ethiopia, Zimbabwe, Uganda, Bangladesh, Eastern and Northern part of Tanzania, of which, they used salt solution, hot water, cow dung, methylated spirit, breast milk, cow ointment, onion, saliva, Vaseline ointment, native chalk, palm oil, toothpaste, sand ashes, bread, excretory waste from rat, family jelly, movit ointment, oil, pumpkin's flowers, sante soap, tree wax, application of heat to the cord, talc powder and coconut oil^{9,11,26-28,12,19-25}. Surprisingly, some studies revealed that, the practices were due to believe that, the cord will dry quickly, cord will fall off quickly, baby will not have an infection, cord will heal quickly. These practices are often harmful, because the substances are liable to being contaminated with bacteria and spores, thus increasing the risk of infection, which might complicate to development of tetanus, omphalitis, fever and septicemia.

The fact that majority of the infants to 81% in this study their cord separation takes within only 5 days and didn't bleed from the umbilical cord suggests that, the agents applied on the umbilical cord stump did not pose the risk of omphalitis, regardless of the materials used being usually not sterilized or contaminated dirty which could therefore harbor pathogens including tetanus spores and contribute to the infection of the cord.

Community Newborn thermal care

Maintaining warmth in Newborn Babies is crucial for their survival and healthy as they in transitioning to extrauterine life. They are prone to lose heat due to their ability to regulate body temperature. All most of the mothers of this community good practice of immediate wrapping of their babies with warm clothes after being born, although skin-to-skin care was almost not practiced. However, so interestingly, family took late bathing norm as a traditional way to preserve warmth to their newborn, of which majority long waited bathing for more than a week. This finding differs with what reported in the systematic reviews done in 2021, whereby, most of the studies reported delayed bathing, and most reported reasons for the practices were preventing hypothermia, improving exclusive breast feeding and infection prevention approach²⁹. However, study done in South East Asia, reported, the community delayed wrapping and but bathed their babies early within six hours^{9,27}. The similar findings reported in the study done in Uganda, whereby, immediate wrapping and delayed first bath, was also a practice²⁶.

Looking into, postnatal visits, as clearly shown in the results section, most of the mothers did not show up for the visits. Being unaware emerged as a reason for them not attending for postnatal visit. Such findings, were similar with what found in the study done in Nigeria, whereby community has same trends of postnatal visit with reasons³⁰. The findings were similar with the study done by Hamidu in Tanzania, where, the visit were low at 36%. Another similar finding of the study done in Morogoro, reported utilization of postnatal visit service to less than 25

percent, which was mainly associated with low education level³¹. The postnatal visit is crucial for wellbeing of both of them, a mother and baby, by ensuring proper recovery and addressing of potential complications³². Therefore, much emphasis must put during exist in order to change behaviors of the society.

Limitation of the study

While this study on community-based newborn cord and thermal care practices, highlighted out some key findings on the prevalences and perceived practices. The study failed to establish inferential statistics and exploration of participants lived experience. There must another longitudinal and qualitative studies to get deeper insight.

Conclusion

The observed poor cord care practices among communities at Central Tanzania, poses immediate and lifelong risks to the newborn babies. But also, this underscores the need for immediate comprehensive interventions which might include behavioral change communications to address potential existing social determinants of health. Furthermore, available primary healthcare facilities must be empowered to provide comprehensive health education on hygienic handling of newborn babies and thermal protection to parents/ care givers before discharge.

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