

Neonatal care practices in Buikwe District, Uganda: A qualitative study

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Abstract

Background: Sub-Saharan Africa is the region with the highest neonatal mortality rate, with 27 deaths per 1000 live births. The Uganda Clinical Guidelines (UCG) from 2016 have detailed descriptions on care for mothers and their newborns during pregnancy, delivery and the post-partum period, both in cases of normal as well as complicated births.

Methods: The study used a qualitative method with data collection from participant observations, interviews with key-informants and focus group discussions. Malterud's Systematic Text Condensation (STC) was used for analysis.

Results: The study found various discrepancies between performed hands-on-procedures and the UCG related to neonatal care practices, including uncertainty around timing for cord clamping, routine oronasopharyngeal suction of newborns and inadequate implementation of kangaroo care.

Conclusions: Continued focus on systemic strategies for further implementation of the UCG is recommended

Background

Sub-Saharan Africa is the region with the highest neonatal mortality rate, with 27 deaths per 1000 live births, compared to 18 per 1000 globally (1). These findings give reason for increased attention to the neonatal period which includes newborns from birth and up to 28 days, where the most vulnerable time is the first 24 hours after birth (2). Globally, 15% of women encounter birth complications that can turn into life-threatening situations for the mother or baby or both. Safe pregnancies and deliveries, early initiation of breastfeeding and good quality postnatal health care and support systems are important interventions to prevent neonatal mortality (3). Uganda, being a country with high neonatal mortality, is struggling with reducing its neonatal mortality rate of 20 deaths per 1000 live births in 2018 (1).

World Health Organization (WHO) guidelines for *Pregnancy, childbirth, postpartum and newborn care* from 2013 are current recommendations for caring for the mother and her newborn (4). Uganda has adapted these guidelines in The Uganda Clinical Guidelines (UCG) from 2016 (5). The guidelines included are for mothers and their newborns during pregnancy, delivery and the post-partum period, both in cases of normal as well as complicated births. For the post-partum period it includes delayed cord-clamping (DCC), skin-to-skin care for the newborn, also called kangaroo mother care, early initiation of breastfeeding meaning initiation within the first hour after birth, and recommended and unrecommended procedures in the mother and the child (4,5).

This study aimed at identifying provider and user perspectives regarding the knowledge of and adherence to the UCG recommendations in aspects of delivery and newborn care. Facilitators and barriers to adherence were explored both in cases with normal and complicated delivery and post-partum histories in in Buikwe District, Uganda.

Methods

The study took place in the urban centre of Nyenga and six of its surrounding 10 sub-villages. The six villages were selected from a village committee meeting in Nyenga town, where leaders of the sub-villages were

gathered for a monthly congregation. Saint Francis Hospital Nyenga and Saint Francis School of Nursing and Midwifery are located within Buikwe district. Kabizzi village includes one of several health centres for the public in the area (6,7). Selection of participants was done through purposeful recruitment from St. Francis Hospital, Kabizzi Health Centre and the defined villages.

The study used a qualitative approach with data collection through triangulation from the most commonly used qualitative methods of participant observations, interviews with key-informants and focus group discussions (8). A triangular qualitative approach was chosen in an effort to get a nuanced and deeper understanding of the topic. Locally pre-tested semi-structured interview guides were used for interviews with key-informants and for focus group discussions (additional files 1 and 2). The UCG were used as background for the inquiries and structure from delivery through the neonatal period. The UCG guidelines involve hourly monitoring of the mother's vital measurements, including the use of partograms and curves (2,9). Detailed description of newborn procedures such as delayed cord clamping, suction, kangaroo care and early initiation of breastfeeding are included, thus our interview guide focused on these stages connected to birth: Monitoring of labour using partograms gives a better indication of labour progress for easy recognition of early complications (9,10). Delayed cord clamping (DCC) refers to clamping later than 60 seconds after birth or when cord pulsation has ceased, contrary to early cord clamping (ECC) which take place within one minute after birth (11,12). Suction of newborns is a method used to clear secretions from the oropharynx and nasopharynx through the application of negative pressure via a suction catheter or bulb syringe, and is not recommended for uncomplicated births (13). Skin-to-skin care, also called kangaroo mother care, is when the newborn is placed on the mother's bare abdomen or chest and should last for at least one hour or until after the first breastfeed (14). Early initiation of breastfeeding meaning initiation within the first hour after birth. The UCG has implemented training and dissemination in the current UCG procedures regarding these issues, which when followed have been documented to reduce the risk of neonatal deaths and are therefore some of the most important focus areas for lowering the death rates of infants (15,16).

Two local research assistants, male and female, fluent in both English and Luganda with bachelor's degrees in social sciences were recruited for logistic organization, moderator roles in focus group discussions, recruitment of key-informants and transcriptions and translations of recordings in local languages.

The total number of participants was 57. The key-informants amounted to 15, and 42 mothers attended focus-group discussions. The principal investigator, who is a nurse, was present for participant observation in the maternity ward at the hospital and health centre for six weeks. Key-informants were chosen purposefully because of their involvement and every-day encounter with deliveries and neonatal issues. Mothers were purposefully selected on the inclusion criteria that they had given birth within the past month.

In-depth interviews were done with mothers and other key-informants such as students in nursing and midwifery, midwives, traditional birth attendants (TBAs) and village health team workers (VHTs) (Additional files 1 and 2). TBA's and VHT's are the key frontline service providers in rural areas of Uganda, often being the first, and sometimes the only contact point for mothers in need of help and guidance on maternal issues (17,18).

The time period for data collection was from January 15th to February 25th, 2019. Qualitative semi-structured interviews with key-informants in English (n = 5) were conducted face-to-face by the principal investigator or if in other languages by one of the two research assistants (n = 10). For most interviews the primary investigator was

present for observations and note taking. All focus group discussions were conducted by one of the research assistants in Luganda. The duration of the interviews ranged from 10 to 30 minutes and focus group discussions from 40–60 minutes. Audio-recorded interviews were transcribed word for word into Microsoft Word documents within 2–4 days. Interviews and focus group discussions conducted in Luganda were transcribed first in Luganda, then into English by the same research assistant. Proof readings, consisting of listening to the recordings in Luganda while reading the Luganda and English transcriptions, were done by another colleague fluent in both English and Luganda. No discrepancies were found in the translations.

The analysis was performed using the inductive method developed by Malterud called Systematic Text Condensation (STC), modified from Giorgi's psychological phenomenological analysis (19). The NVIVO 12 pro software program was used for the analysis, where the transcribed text was sorted into code-groups to fit emerging themes that revealed themselves to the researcher during the initial reading. Further decontextualization of the meaningful units were grouped into sub-codes to create a systematic overview and used as bases for condensed narratives of the findings.

In this study the principal investigator was a female nurse (MBRL) from Norway who had previously lived short term in Uganda. She was doing the primary data collection, coding and analysis of the data. IMSE was co-reading the raw-data and discussed the main themes with the first author. RM was handling the logistics around focus group discussions and had the role as moderator and translator. He contributed with developing the interview guides and critical revision of the final paper.

After analysis, the respondents were invited for a dissemination meeting followed by a traditional celebration. The researchers disseminated the key findings and their interpretation of the data and asked the participants openly about any needs for modification of their understanding. The participants were invited to comment, modify and ask questions about the findings. The participants did not know the status of the other participants as informants and all informants were informed about this planned dissemination meeting at inclusion.

Results

The following section will display results extracted from the final code group labelled *pregnancy and birth* which emerged during the analysis using Malterud's Systematic Text Condensation (19). The study found discrepancies between performed hands-on-procedures and the UCG related to neonatal care practices.

Table 1
Overview of results from various respondents' perspectives

	Partogram	Cord clamping	Suction	Kangaroo care	Initiation of breastfeeding	Complications
Mothers	N/A	Uncertain	Not mentioned	Various experiences	As recommended	Deviant from UCG
Health workers	Rarely used	Deviant from UCG	Against UCG recommendations	Timing of KC too short	As recommended	Marginal resources and infra-structure
TBAs/ VHTs	N/A	Various procedures	As recommended	Uncertain	As recommended	Hospital referrals

Time aspects on newborn procedures

None of the respondents confirmed knowledge about UCG. When asked to describe what happens to the baby after birth, they talked of procedures related to body warmth, hygiene, cord clamping, resuscitation and necessary injections and medicines. These procedures were also closely observed by the researcher when present during and after deliveries. Initiation of breastfeeding was found to be according to guidelines both from observations and interviews.

Monitoring of delivery

Observations in the hospital and health centre found common use of freehand journal writing as documentation of delivery. Although charts and partograms were available, they were rarely or randomly used which could sometimes cause difficulties or delays when searching for specific vital data or monitoring of a patient's delivery progression.

Cord clamping – timing

Optimally, from the health workers' perspective, clamping of the umbilical cord was done using forceps, but from observations done by the researcher, the cut-off ends of surgical gloves were frequently used for cord clamping in cases where the forceps had not been sterilized or were unavailable. The clamping and cutting of the baby's umbilical cord was normally performed on the mother's abdomen *immediately* after birth. Further shortening of the cord was then done in the infant warmer, or sometimes also on the abdomen of the mother:

"The baby is placed on the stomach of the mother, then you get two forceps, then you use them to attach to the umbilical cord, then you cut. You tell the mother to first look at the baby, then the baby is taken...it is put in the warmer...". (Nursing student 19–21 years)

The "warmer" is an electrically heated machine where the newborn was placed after birth while the health workers cleaned the mother and where procedures on the baby were performed.

Traditional birth attendants naturally did not have the equipment and resources available at the health facilities, but several of them had attended training with medical doctors and had been taught what steps and measurements to take after attending to a delivery. The procedure of cord-clamping varied from village to village as described by two different attendants below:

"I shorten the cord before the remaining of the placenta comes out because that's how the doctors told us". (Traditional birth attendant 50–80 years, village 3)

"I help the mother to remove the remains of a placenta from the mother's womb then after removing it I cut it off". (Traditional birth attendant 50–80 years, village 7)

Oronasopharyngeal suction

From observations, routine suction of the nose and mouth was performed various places. Sometimes it happened on the abdomen or chest of the mother, whereas other times it could be performed on a separate bed or in the infant warmer:

"After clamping, if the child is OK, you resuscitate, you first suck out the secretion from the nose and the mouth to open the air to breath, you have to resuscitate with the barb syringe, and you remove the mucus here in the mouth. If you don't, that's when you find some babies having fever, then flu at an early age". (Midwife 25–35 years)

As a variation to oronasopharyngeal suction by bulb syringes mentioned by the health workers, another method used by the TBAs was described as follows:

"If the baby has been born, immediately you clean the baby very well with a clean cloth because they (health workers) provided us with them, so I use those clean clothes to clean the baby in the ears and mouth for the baby to breath well". (Traditional birth attendant 50–80 years, village 3)

Kangaroo care

Placing the newborn baby on the mother's abdomen or in her arms immediately after birth is often referred to as kangaroo care, skin-to-skin contact or *kulubutu* in Luganda. Many mothers confirmed having the baby put on their chest after birth and they spoke of the importance related to hygiene and warmth. Others had experiences of being separated from their newborns for unknown reasons:

"after birth they cut the cord, they covered the baby and placed the baby on the bed". (Mother 15–25, village 3)

From observations, the newborn was routinely put on the mother's abdomen immediately after being born, but there were often only a few minutes of contact before the baby was moved to the infant warmer for further procedures, then wrapped in several layers of blankets before returned to the mother. In the Health Centre, where there was no warmer, the baby was more likely to be placed in the arms of the mother during the cleaning process or given to a family member or attendant for safekeeping.

When someone gives birth from home with the help of a TBA, the option of putting the baby somewhere other than on the mother's body is limited. Even so, the practices varied, as revealed from one group interview with two TBAs:

"... you clean up the baby and place the baby somewhere and then clean up the mother". (Traditional birth attendant 50–80 years, village 2)

Initiation of breastfeeding

Overall knowledge about the usefulness of breastfeeding was found among all the participants in the study, and the option of not breastfeeding seemed none-existent, or even unheard of. Time of initiation was found in accordance with the UCG in most of the observed cases and no adverse knowledge or recommendation were detected on this subject. Mothers who had faced complications during or after birth, were naturally more likely to initiate breastfeeding later than the recommendations.

Complicated births

Some mothers had experienced complications that lead to emergency Caesarean section surgeries, and this could be a challenge. They lost control of the situation and the initiation of breastfeeding was delayed. Sometimes it was the baby who faced complications, and a mother of three who delivered in a hospital explained how she was separated from her baby for three days before the initial breastfeeding occurred:

"I remained in the ward for the mothers. This one they took him in the room. Special care room, for these children, and they worked on him for three days before I saw him, yeah (...) for three days, after there, they give me to breastfeed, to start breastfeeding him". (Mother 25–35 years, village 2)

The traditional birth attendants interviewed were aware of the risks connected with childbirth, and when asked about how they dealt with complications, most of them said that they refer the mothers to the hospital. One traditional birth attendant said she used her herbal medicine to help with complications and one respondent talked about high-risk selection screening of the birthing mother based on the numbers of deliveries she had undergone previously.

Discussion

The UCG were unfamiliar to the health workers in the study, but the researcher found the printed guidelines present in both the Health Centre and the Hospital, and responses and actions from the health workers were mostly found to be in accordance with the guidelines (5). Areas for improvements involve better documentation of labour progress and higher awareness of recent research-based updated guidelines on specific newborn procedures such as timing of cord clamping, suction and kangaroo care as described in the UCG.

The observed minimal documentation on charts and partograms during deliveries could be attributed to time restrictions and health workers' confidence in own clinical observations. However, assessment of labour progress is important, and especially so if labour is prolonged or if complications occur. Monitoring of labour using partograms gives a better indication of labour progress, and together with knowledgeable and observant

midwives it may prevent unnecessary emergency Caesarean Sect. (9,10). A Ugandan study on the use of partograms found poor use and lack of training among the staff on how to use them (9).

Clamping and cutting of the umbilical cord in the hospital and health centre was performed immediately after birth and normally before the presentation of the placenta. One of the traditional birth attendants mentioned that she waited for the placenta to come out and thereafter she cut the cord. Benefits from delayed cord clamping has been found both for pre-term babies as well as for those born at term. Qian et. Al. (2019) found benefits involving higher Hemoglobin levels and reduced anemia. Also, higher levels of iron supplies have been found in infants up to 6 months (20). Another study from 2019 found higher levels of Oxygen in babies with delayed cord clamping than in those who had early cord clamping, in addition to slower heart beat and higher Apgar scores (12). Studies have not found an elevated risk of postpartum haemorrhage of the mothers, and the benefits to the baby is equally high or higher when delivered by Caesarean section (11,12,20,21).

The procedure of oronasopharyngeal suction is not in alignment with the Uganda Clinical Guidelines which states this as "*Harmful and ineffective resuscitation practices*" (UCG 16.5.1) (5). When investigating it further, the health workers explained that it was a necessary measure, so the baby would be able to breath. Also, the nursing- and midwife-students interviewed referred to this practice as routine, and the reason behind could be questioned to lay in the curriculum of the schools, or just a continuous practice from earlier recommendations. The practice of routine suction of newborns have been found to cause side effects like bradycardia and apnoea, although not with the use of a bulb syringe (22). Traditional birth attendants explained how they wiped the baby's nose and mouth with a clean cloth after birth. According to recent studies from the U.S. and Austria, wiping is superior to suction, unless the baby has difficulty breathing (23,24).

The use of kangaroo care after birth was common practice, although the time period for the skin-to-skin connection could be only a few minutes. The UCG has divergent approaches to skin-to-skin care. In the description of the "3rd stage of birth" it is recommended "*to wrap the baby in warm towels and give to the mother to introduce breast feeding*" whereas in the section for "Care of Baby Immediately After Delivery", the recommendation is to "*keep baby warm with skin-to-skin contact*" (5). UNICEF recommends skin-to-skin contact for one hour, or until after the first breastfeed (14). The routine of placing the baby in a warmer for the following newborn procedures also seemed to prevent further skin-to-skin contact. One explanation for this practice may be due to the marginal bedding on the delivery beds. The mother is required to bring a plastic sheet to cover the delivery bench, which creates blood and other substances to stick to the body of the mother and require thorough cleaning before she can be moved to another bed. The use of one-time absorption sheets for delivery surfaces would seem more beneficial and shorten the time span of separation between mother and child, but this may be an economical issue.

Separation between the mother and the newborn when complications occur, whether during or after delivery, is sometimes inevitable. Ideally the separation period should be as short as possible (25). One mother reported being away from the baby for three days when the baby became ill post-partum, where the baby was placed in the children's ward in a hospital and the mother stayed put in the maternity ward. There may be unknown medical reasons for the separation in this individual case, but further inquiries are recommended to ensure this is not standard procedure. Separation between the mother and the newborn may create insecurity and unnecessary worrying for the mother and delay the bonding and breastfeeding initiation. Studies have also

revealed separation as a cause for stressors in the newborn which could lead to neurodevelopmental problems (26–28).

Study Strengths And Limitations

Reliability of the study was sought obtained by using local translators and trained interviewers of both sexes. Limitations of the study include possible bias as the principal investigator was a foreign person. However, sometimes that is perceived as non-threatening by the interviewees who may speak more freely than with somebody belonging to the same health system that may criticize their practices. There were few midwives included in the study because of the low number of midwives on the chosen study sites. Recordings from one focus group discussion and one interview were transcribed from notes due issues with electric power and technical difficulties.

Conclusion

High-quality health care was found among professional health workers and traditional birth attendants when exploring skills and knowledge connected to delivery and neonatal procedures, although several discrepancies were found between the UCG and performed neonatal procedures. Low use of partograms and uncertainty around timing for cord clamping are issues to be further explored. Routine oronasopharyngeal suction of newborns and inadequate implementation of adequate kangaroo care are examples of deviations from the UCG recommendations. Additional bottlenecks to compliance with the guidelines were lack of appropriate bedding on delivery beds and little knowledge of the existence of the guidelines. The traditional birth attendants in the study seemed to be operating in accordance with the guidelines in most cases, to the extent of their capabilities and medical equipment. Further research on mother-infant contact and initiation of breastfeeding when complications occur and strategies to implement recommendations even further is recommended.

Abbreviations

DCC - Delayed cord clamping

ECC – Early cord clamping

IRB - Institutional Review Board

MCH – Maternal and Child Health program

REC - Regional ethical committee

STA - Systematic text analysis

TBA - Traditional birth attendant

UCG – Uganda clinical guidelines

UDHS - Uganda district and health survey

UNICEF - United Nations International Children's Emergency Fund

VHT – Village health team worker

WHO – World Health Organization

Declarations

Ethics approval and consent to participate

The research was approved by the Makerere University Higher Degrees Research and Ethics Committee, Uganda (HDREC/2018/6) and registered with Uganda National Council for Science and Technology (HS302ES). The Regional Committee for Medical and Health Research Ethics, Norway (2018/602/REC West) approved the study. Signed consent for internship/research was obtained from St. Francis Hospital Nyenga and Kabizzi Health Centre. Participation in the study was fully voluntary and the subjects were given the possibility to withdraw consent at any given time and without reason, and demand that any personal input be deleted. All participants were given an information sheet about the study in either English or Luganda when asked for participation, and if agreeing asked to sign or fingerprint a consent form.

Consent for publication

Not applicable

Availability of data and materials

Questions regarding the datasets can be discussed with the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests

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Authors' contributions

MBR did the primary data collection, coding and analysis of the data. IMSE was co-reading the raw-data and discussed the main themes with the first author. RM was handling the logistics around focus group discussions and had the role as moderator and translator. All authors read and approved the final manuscript.

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