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Full Length Research Paper

Assessment of Immediate Newborn Care Practices Among Health Care Workers in MOI Teaching and Referral Hospital (MTRH) Kenya

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Abstract

Introduction: *Care of all newborns includes immediate and thorough drying, skin to skin contact of the newborn with the mother, cord clamping and cutting after the first minutes after birth, early initiation of breastfeeding, and exclusive breastfeeding. Labour, birth and the immediate postnatal period are the most critical for newborn and maternal survival. Health care professionals in general play a role to ensure that the newborn has best possible beginning of life, be aware of the potential problems and be alert to the infants changing condition and to intervene appropriately when necessary.* ***Objectives:*** *The study aimed at description of the activities done in preparation for delivery and newborn care, the immediate care provided to newborns and to determine performance of potentially harmful newborn practices.* ***Methods:*** *This was a cross sectional study, carried out in the MTRH. The study subjects were all health care practitioners (39) involved in immediate care of neonates, the sampling method was a census, and an observational checklist was used to collect the data. Analysis was performed using variance statistics. Significance level was set at a=0.05.* ***Results:*** *A total of 39 health care workers participated in the study. Most items were available in the delivery room, sterile gloves (100%), clean gloves (97.4%) and hand sanitizer (64.1%). Initiation of breastfeeding within the first hour of birth is at 70.5%, reasons such as resuscitation of newborn, repair of episiotomy/tears were cited for not initiating breastfeeding. Performance of inappropriate newborn practices such as lack of provision of heat source during delivery (46.2%), inadequate drying of head (23.1%) and placements on a cold surface were noted (3.9%).* ***Conclusion:*** *Study findings highlight the fact that quality of care was good in areas such as preparation of items before delivery (sterile and clean gloves), initiation of breastfeeding within first hour of birth, but it was poor in relation to unavailability of heat source and inadequate drying of newborn.* ***Recommendations:*** *Provision of the needed supplies and items before each delivery and equipment (heat source) for provision of recommended immediate newborn care.*

Keywords: *Immediate Care of Newborn, Neonatal resuscitation, Midwife, Harmful practices, Neonate, Delivery, Practice.*

Introduction

Birth and the first few hours of life are critical period for the further growth and development of the infant. Newborn baby is considered to be tiny and powerless, completely dependent on others for life. Within one minute of birth the normal newborn adapts from a dependent foetal existence to an independent one; capable of breathing and carrying on life process. Thus these first hours are crucial because multiple organ systems are making the transition from intrauterine to extra uterine functions (Deorari, 1999).

The World Health Organization(WHO) recommended essential newborn care behaviours to include hygienic practices at delivery(clean hands and delivery surface, nothing unclean to be introduced into the vagina) and for the umbilical cord (clean cutting and tying instruments and applying nothing to the cord),thermal care (immediate drying and wrapping of the baby after delivery, skin-to-skin contact with the mother), extra care for low birth-weight/preterm birth (additional warmth, cleanliness and nutrition and early recognition of diseases) and early and exclusive breastfeeding to reduce the risk of the main causes of neonatal deaths in both community and facility deliveries (WHO,1994).

Every second of exposure to the outside environment results in heat loss via evaporation, conduction, convection and radiation. Thorough drying, direct skin-to-skin contact immediately upon delivery and covering with a blanket and bonnet (prior to cord clamping) mitigate this threat (WHO, 1993,1998). Drying also stimulates breathing. Sustained skin-to-skin contact also initiates

colonization of the newborn with maternal flora (as opposed to hospital flora) and facilitates successful intake of colostrum and sustained breastfeeding (Moore et al., 2007) delaying cord clamping until cord pulsations stop, typically around one to three minutes, reduces the risk of anaemia (Rabe et al.,2004, Macdonald et al., 2008.). Furthermore, in preterm infants, delayed cord clamping is associated with fewer transfusions and fewer intraventricular haemorrhages (Mercer et al., 2006). Initiation of breastfeeding within the first hour reduces the risk of infection-related death and increases the likelihood of sustained breastfeeding (Edmond et al., 2007). Finally, weighing, examining and providing vitamin K injections and hepatitis B vaccinations, while essential, should not interfere with the early, time-sensitive actions (ABM, 2008).

WHO documented that studies have shown that many newborn lives can be saved by the use of interventions that require simple technology. The majority of these interventions can be effectively provided by a single skilled birth attendant caring for the mother and the newborn. Care of all newborns includes immediate and thorough drying, skin to skin contact of the newborn with the mother, cord clamping and cutting after the first minutes after birth, early initiation of breastfeeding, and exclusive breastfeeding. Newborns who do not start breathing on their own by one minute after birth should receive positive pressure ventilation with room air by a self-inflating bag and mask (WHO, 2013).

After the first hour of life, newborns should receive eye care, vitamin K, and recommended immunizations (birth dose of OPV and Hepatitis B vaccine). They should be assessed for birth weight, gestational age, congenital defects and signs of newborn illness. Special care should be provided for sick newborns, those who are preterm and/or low birth weight, and those who are exposed or infected by HIV or have congenital syphilis (WHO, 2013).

According to WHO (1998) early skin-to-skin contact and the opportunity to suckle within the first hour or so after birth are both important. Some contact cannot be avoided when attempting a breastfeed but it does not necessarily result in immediate suckling, though it is recommended that breastfeeding should be initiated in the first half hour of birth. Mother-baby rooming-in on a 24-hour basis enhances opportunities for bonding and for optimal breastfeeding initiation. Whenever possible, mothers and infants are to remain together during the hospital stay (WHO, 1998). In Kenya, quality of much of the maternal and newborn care observed during the study titled Quality of Care (QoC) was below the internationally accepted standards for ANC and L&D practices and essential newborn care. Overall, 65% of women received the five elements of immediate newborn care: delayed cord clamping, placing the newborn skin-to skin with the mother, drying and wrapping the baby, cutting and tying the cord, and helping the mother initiate breastfeeding. The most frequently observed harmful practice in new born care was holding the newborn upside down (7% of deliveries) (Kenya QoC, 2010). The study recognizes good care as proper drying, skin to skin contact, breastfeeding, resuscitation and warming is done appropriately.

Of the 3.1 million newborn deaths that occurred in 2010, a quarter to half of them occurred within the first 24 hours after birth. Many of these deaths occurred in babies born too early and too small, babies with infections, or babies asphyxiated around the time of delivery. Labour, birth and the immediate postnatal period are the most critical for newborn and maternal survival. Unfortunately, the majority of mothers and newborns in low- and middle-income countries do not receive optimal care during these periods (WHO, 2013). Although standards for immediate newborn care exist in high- and low-income countries alike, direct observational studies may uncover substandard practices. Even in developed countries, the sequence and timing of critical interventions may still require changes or standardization (Sobel et al., 2011).

The health care professional in general and nurses in particular play a role to ensure that the newborn has best possible beginning of life and the nurse must be aware of the potential problems and be alert to the infants changing condition and to intervene appropriately when necessary. The nurse is the first health care provider who has direct contact with the neonate during birth. Hence nurses require the knowledge and skill to take care of the babies keeping in mind the basic principles so that many complications can be prevented (Fattah et al., 2012). The main aim of the study is to assess the immediate care provided to a newborn during delivery in RMBH, which includes description of the activities done in preparation for delivery and newborn care, the immediate care provided to newborns in RMBH and determination of performance of any potentially harmful newborn practices.

Materials and methods

Study area

The research study was conducted in Riley Mother and Baby Hospital (RMBH), Moi Teaching and Referral Hospital (MTRH) which is located in Eldoret town, Uasin-Gishu County. RMBH is an ultra-modern maternity that has an average of 40-50 deliveries a day. MTRH is the 2nd largest referral hospital in Kenya after Kenyatta National Hospital; it is also a training centre for all cadres of staff.

Sample collection methods

Data collection was done through non-participatory observational study; waiver consent was granted. The checklist contents filled while observing one health care worker conduct a delivery and the care offered to the neonate to a period of one hour. This study was done during the day as well as night due to midwives' work schedule and coverage.

Sample size

All the health care providers attending to these deliveries were sampled; this was a total of 35 midwives, 2 registrars and 2 MO interns, thus making a sample size of 39 participants.

Data analysis

To facilitate analysis, data collected was converted to numerical codes that represented the attributes of variables, coded and entered into SPSS version 12 statistical software package and analysed into frequencies and percentages. Data was presented in tables and figures.

Results and data analysis

Birth attendants

A total of 78 checklists were completed, midwives were the majority at 35(90%) while the registrars and MO-Interns had 4(5%) each as illustrated in the pie-chart below: -

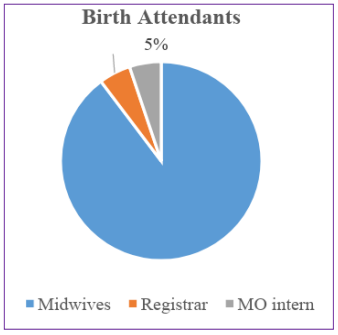

Fig 1: Birth attendants

Availability of items in the delivery room

From the table below most available items were sterile gloves 78(100%) whereas hand sanitizer 50(64%) was the least available in the delivery room.

Table 1: Availability of items in the delivery room

Item	Available	Not available
Sterile gloves	78(100%)	
Sink with running water	77(99%)	1(1%)
Clean gloves	76(97%)	2(3%)
Delivery pack(sterile)	76(98%)	2(2%)
Sterile cord clamps	76(97%)	2(3%)
Functional Wall clock	74(95%)	4(5%)
Soap	73(94%0	5(6%)
2-5 dry warm towels or cloths	73(94%)	5(6%)
Source of warmth (heater)	61(78%)	17(22%)
Sanitizer dispenser	53(68%)	25(32%)
Hand Sanitizer	50(64%)	28(36%)

Adherence to infection prevention and control

The graph below demonstrates that a high number 75(97%) of health care providers adhered to infection prevention and control by wearing sterile gloves whereas a lower number 13(17%) wore boots**.**

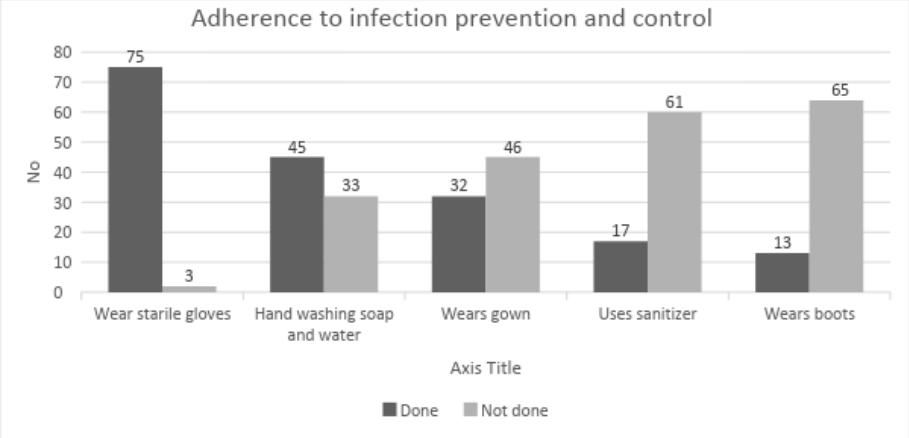

Fig 2: Adherence to infection prevention and control

Items and conditions prepared for birth

Preparation of towels/shawls by health care workers topped 75(95%) the items and conditions in preparation for birth while the lowest 24(31%) was the putting on the source of warmth. This is shown in the figure below: -

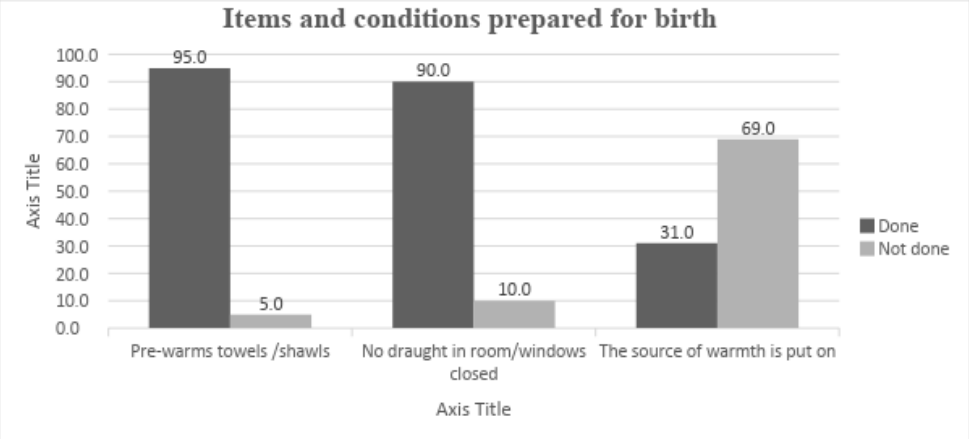

Fig 3: Items and conditions prepared for birth

Availability and functionality of supplies/items for resuscitation.

The most available and functional item was the newborn face mask 72(92%).However, suction catheters were the least items 37(47%) found in the delivery room as shown in the table below:

Table 2: Availability and functionality of supplies/items for resuscitation

Item	Available		Not available
	Functional	Not Functional	
Wall clock	67(86%)	9(11%)	2(3%)
Bulb syringe	64(82%)	10(13%)	4(5%)
Self-inflating bag	52(67%)	7(9%)	19(24%)
Resuscitation table for the newborn	52(67%)	15(19%)	11(14%)
Newborn face masks (right size)	72(92%)	0(0%)	6(8%)
Suction catheters (right size)	37(47%)	0(0%)	41(53%)
Suction machine	59(76%)	19(24%)	0(0%)

Activities done during delivery

From the study results all 78(100%) the health care providers waited for restitution and delivery of shoulders while the lowest 53(67.5%) checks for cord pulsation before clamping and cutting as illustrated in the table below: -

Table 3: Activities done during delivery

No.	Activity	Done	Not Done	Done by Assistant
a	Prepares trolley with equipment.	58(74.1%).	9(12.4%).	11(13.5%).
b	Opens pack when cervix is fully dilated.	64(82.3%).	2(2.8%).	12(14.9%).
c	Arranges instruments on trolley before delivery of newborn.	60(76.8%).	9(12.4%).	8(9.8%).
d	Wipes face after birth of head (before delivery of shoulders).	74(94.5%).	4(5.5%).	0(0%).
e	Time head comes out.			
f	Checks cord around neck.	60(77%).	18(21%).	0(0%).
g	Waits for restitution.	78(100%).	0(0%).	0(0%).
h	Delivers anterior and posterior shoulder.	78(100%).	0(0%).	0(0%).
i	Delivers newborn onto the abdomen.	70(90.3%).	8(9.7%).	0(0%).
j	Notes/asks/communicates time of birth.	55(69.9%).	10(17.7%).	9(12.4%).
k	Immediately dries newborn thoroughly with towel.	70(90.3%).	8(9.7%).	0(0%).
l	Discards wet towel and covers with dry towel.	65(83.4%).	4(4.2%).	9(12.4%).
m	Announces/shows sex of newborn.	66(85.9%).	5(5%).	7(9.1%).
n	Places the newborn on skin to skin contact.	74(95.7%).	4(4.3%).	0(0%).
o	Checks for cord pulsation before clamping and cutting	53(67.5%).	25(32.5%).	0(0%).
p	Cuts cord with sterile scissors.	74(95.7%).	0(0%).	4(4.3%).
q	Weighs newborn.	63(82.1%).	4(4.4%).	11(13.5%).

Confirmation and estimation of Apgar score

Apgar scores were confirmed at the recommended intervals at birth, 5 minutes and 10 minutes after birth, and were accurate at 96.1%, 91% and 97.4% respectively throughout the study.

Stimulation of the neonate

Of the 12 new-borns who did not respond immediately on delivery, majority10 (83%) of the new-borns were stimulated through drying while 29(17%) back rub as indicated in the figure below: -

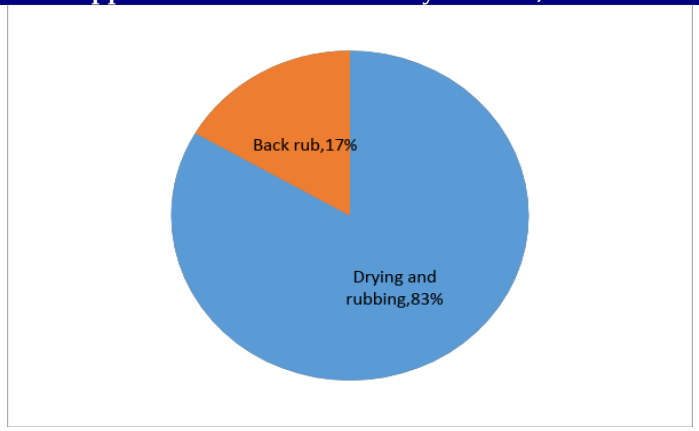

Fig 4: Stimulation of the neonate

Newborn needed resuscitation by bag and mask ventilation

The newborns who needed resuscitation by use of bag and mask ventilation were 7(58%) while the newborn who did not require use of bag and mask ventilation were 5(42%) as indicated in the chart below: -

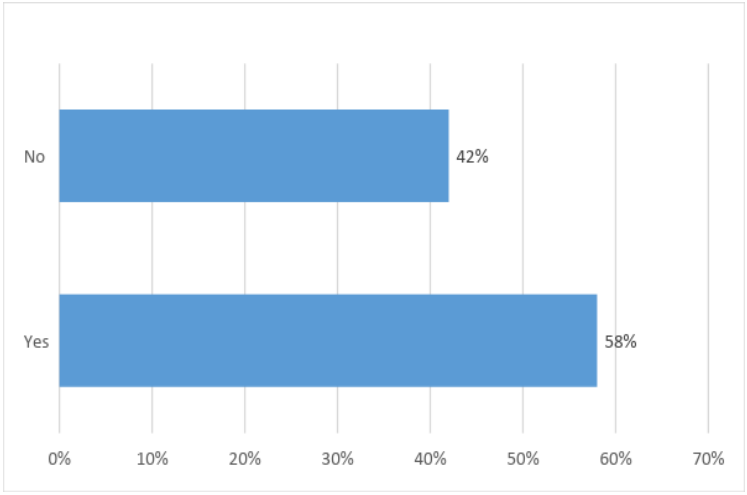

Fig 5: New-born needed resuscitation by bag and mask ventilation

Newborn resuscitation

Newborns who needed further interventions had the cords cut immediately when need of resuscitation was established, checking of the bag and mask seal (43%), right position of head (57%), placement of correct mask size over chin (57%) and ventilation of 30 breaths per minute at an average of 57% as shown in the table below:

Table 4: Newborn resuscitation

No.	Procedure	Out come
a	Cuts cord immediately.	7(100%)
b	Calls for help	4(57%)
c	Places on warm clean and flat surface.	7(100%)
d	Position head in slightly extended position.	4(57%)
e	Suction with bulb	4(57%)
f	Suction with catheter.	0(0%)
g	Places correct size mask covering chin.	4(57%)
h	Checks the seal by ventilating 2-3 times(observes chest rising)	3(43%)
i	Ventilation of 40 breaths per minute.	4(57%)
j	If breathing is normal, put on skin to skin care.	3(43%)

End point (outcome)

The outcome of the 7 newborns resuscitated using bag and mask were as follows; successful resuscitation for 3(43%) achieved, other 3(43%) were referred to NBU and only 1(14%) resulted in death.

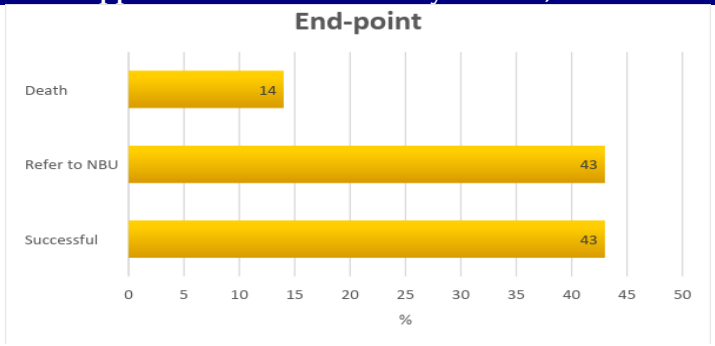

Fig 6: End point (outcome)

Time taken to initiate breastfeeding

Higher proportion 27(36%) of the health care providers initiated breastfeeding within 30 minutes, 25(34%) 30 minutes and 1 hour while 22 (30%) did not initiate breastfeeding. For those who did not initiate breastfeeding within 1 hour, the reasons noted were resuscitation of neonate or mother, transfer of newborn to New born unit, and repair of episiotomy/tears.

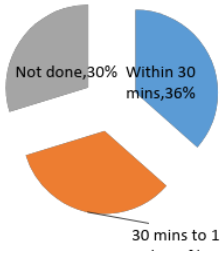

Fig 7: Time taken to initiate breastfeeding

Support during initiation of breastfeeding

Majority 57 (76%) of the mothers were offered support/supervision during initiation of breastfeeding while 19 (24%) did not (self-support) was done as indicated in the chart below: -

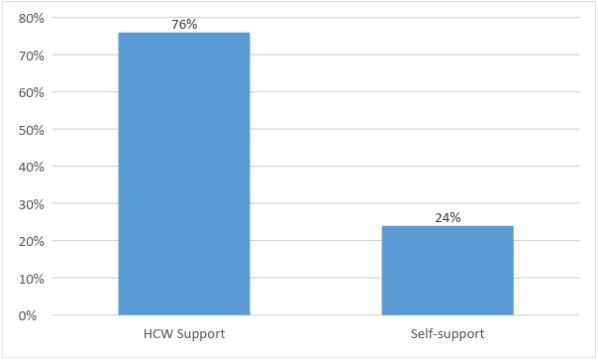

Fig 8: *Support during initiation of breastfeeding*

Type of support offered during initiation of breastfeeding

The study revealed that most 48(62%) of the mothers had encouragement as the utmost support offered, followed by latching 41(53%) while other support accounted for 10(13%). This illustrated in the graph below: -

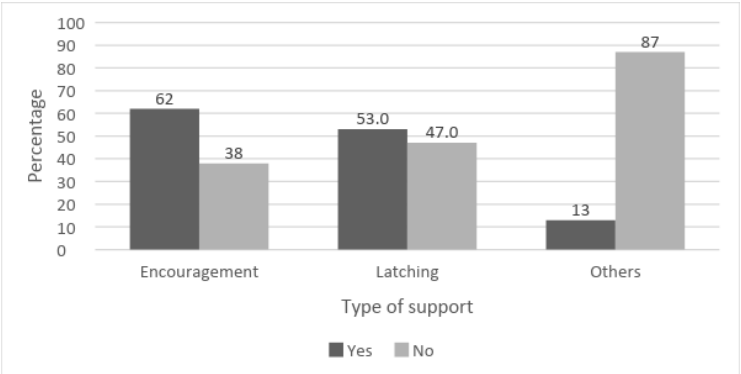

Fig 9: Type of support offered during initiation of breastfeeding

Skin to skin contact

Skin to skin contact was practiced immediately after delivery and drying of the neonate with 95.7% of newborn placed on mothers' abdomen as shown in figure below.

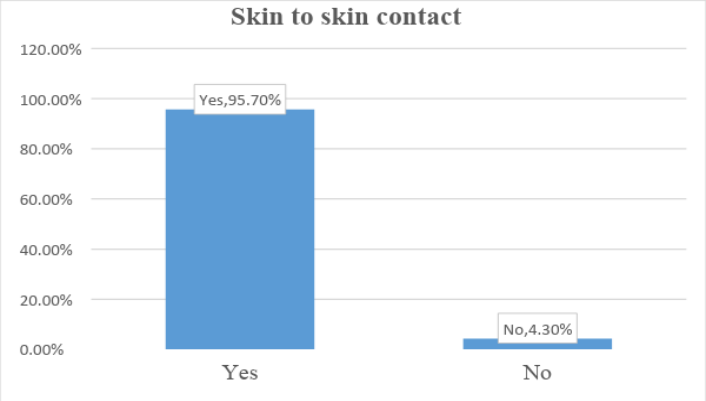

Fig 10: Skin to skin contact

Drug administration

The study revealed that 60(80%) of the newborn had eye prophylaxis administered while 15(20%) did not. It was also observed that administration of vitamin K drug was administered in 60(80%) of the newborn whereas 15(20%) was not administered.

Reasons for lack of administration of drugs were as follows; 8(33%) of the newborn were transferred to NBU, 11(38%) high workload noted and 5(21%) due to unavailability of the drugs.

Provider checks on latching and breastfeeding establishment

Health care practitioners 56(73%) are actively involved in ascertaining proper latching and breastfeeding establishment among the newborn.

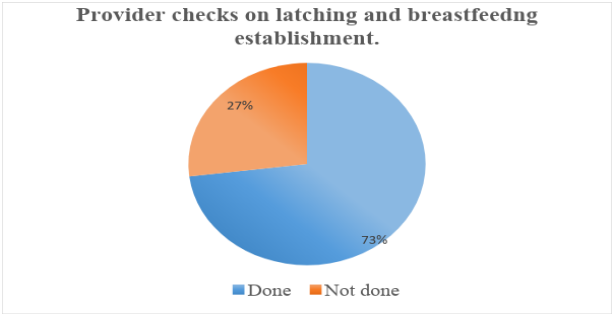

Fig 11: Provider checks on latching and breastfeeding establishment

Frequency of newborn observation

The study showed that majority 58(88%) of the health care practitioners took 15 minutes to check on neonate, 49(79%) in 30 minutes, 49(69%) in 45 minutes and 42 (69%) in 60 minutes.

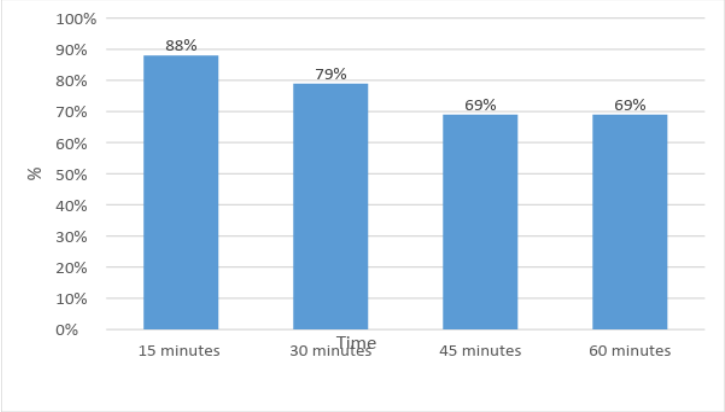

Fig 12: Frequency of newborn observation

Presence of Birth companion

A significant mothers had birth companions compared to 72(92%) compared to 6(8%) that did not have birth companions. On average, there was one birth companion (minimum 1, maximum 3)

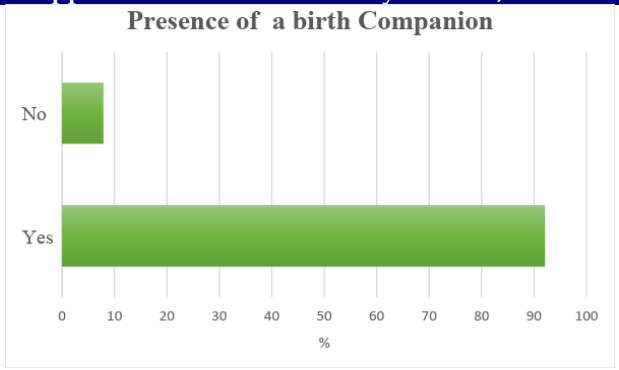

Fig 13: Presence of Birth companion

Potentially harmful practices

Unavailability of a heat source is the most noted potentially harmful practice at 46.2 % (33), and the least is placing a newborn on a cold surface 3.9% (3).

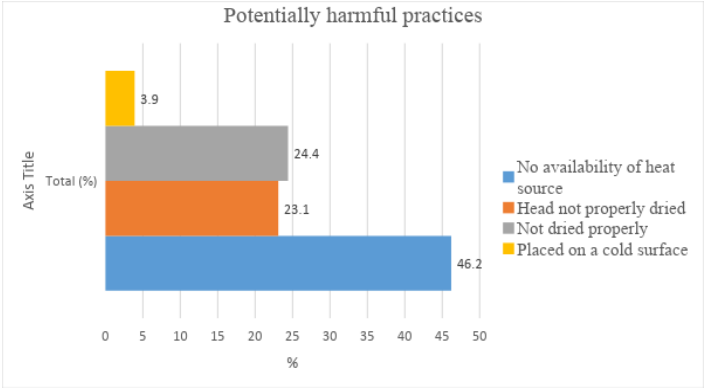

Fig 14: Potentially harmful newborn practices

Discussion

WHO has identified simple interventions that, if applied routinely, mitigate some of the threats newborns face? These early interventions are integral to hospital infection control practices because they reduce the risk of neonatal sepsis (Hemingstong et al, 2010). People receiving health and medical care, whether in a hospital or clinic, are at risk of becoming infected unless precautions are taken to prevent infection. Nosocomial (hospital-acquired) infections are a significant problem throughout the world and are increasing (Alvarado 2000). Hand hygiene significantly reduces the number of disease-causing significantly reduces the number of disease causing microorganisms on hands and can minimize cross-contamination (e.g., from health worker to patient), the study shows a reflection that both hand washing and use of a sanitizer is low, at an average of 58%(45) and 22%(17), though the study findings reveal that availability of sinks with running water and soap was at an average of 99%(77) and 94%(73) respectively. This can further be linked to possible micro-organisms spread, according to Boyce and Pittet failure to perform appropriate hand hygiene is considered to be the leading cause of nosocomial infections and the spread of multi resistant microorganisms, and has been recognized as a significant contributor to outbreaks (Boyce and Pittet 2002).

Antiseptic hand rubs use in health care setting is quick, appropriate to perform and more effective in killing both transient and resident hand flora than hand washing. (Girou et al 2002). Despite having these advantages and its availability in the delivery rooms at 64 %(50), use of hand sanitizers in the study is low at 22 %(17), despite provision of the sanitizer dispenser and its contents. This study depicts adherence to infection a prevention and control having 96.2% of all health care workers wearing of sterile gloves, gloves however do not provide complete protection against hand contamination. According to Kotilaein et al, 1989, approximately 30% of staff who wear gloves while performing certain procedures or while caring for patients may have residual bacteria from patients. Given the generally poor compliance with hand hygiene practices, every effort must be made to reinforce the message that gloves do not replace the use of hand hygiene (Kotilaein et al,1989). Low body temperatures may result in worsening of respiratory distress and can predispose neonates to pulmonary haemorrhage and disseminated intravascular coagulation (Loughhead et al, 1997). In anticipation to receive a newborn, this study established that warm chain is maintained through preparation of items and conditions such as towels to receive the neonate, closing the windows and putting on the source of heat at an average of 95%, 90% and 30.8% respectively.

However, the risk of developing hypothermia in this study may arise due to health care workers low levels of putting on sources of heat, this is shown as way below half of the deliveries conducted in rooms that have no heater switched on. . Dehdashtian et al reported that 85% of newborns had a rectal temperature of below 36^{O}c two hours after delivery (Dehdashtian et al,2009) and in Uganda, the prevalence of neonatal hypothermia within 90 minutes postpartum was 79%(Byaruhanga et al, 2005), while in Nigeria and Zimbabwe this rate was 68% and 85%, respectively upon admission of newborns(Kambarami et al 2003 and Ogunlesi

et al 2009.) Many interventions, such as providing eye prophylaxis and vitamin K, were observed to be carried out in the study, scores for both interventions were at 80 %(60). The reasons noted for the missed opportunities were drug unavailability, transfer of the neonate to NBU and the high work load. Though part of routine care, Vitamin K is administered to prevent haemorraghic disease of the newborn and eye prophylaxis, against gonorrhoea conjunctivitis or ophthalmic neonaturom, Darmstadt et al noted that these interventions including weighing and examining were performed in sequences that did not allow the newborns to benefit from all of their mothers' natural protection in the first hour of life, such as provision of warmth, protection from infection via skin-to-skin contact(Darmstadt et al.,2008).

It is encouraging that m most of the neonates (more than half), 70.5% did initiate breast feeding the first hour after birth, those that did not had various reasons cited for not initiating breastfeeding such as resuscitation of the neonate, repair of episiotomy/tears, and transfer of the neonate to NBU. According to KDHS 2014, nearly two thirds of children (62%) were breastfed within one hour of birth and vast majority (91%) of children were breastfed within one day of birth (KDHS, 2014). Furthermore, breastfeeding within one hour of birth is evident of Kenyan Policy to initiate and exclusively breastfeed infants is practiced, the study shows a difference of approximate 8% higher than the national initiation of breastfeeding within the first hour of birth. It is evident that 56(73%) primary health care workers offered the greatest support to mothers during initiation of breastfeeding; these findings are consistent with KQoC whereby initiation of breastfeeding was at an average of 76 %(KQoC, 2010).

Neonatal morbidity and mortality is mainly dependent on quality of resuscitation and stabilization of neonate after birth especially high reisk infants (Garcia et al, 2007). The study reveals availability of functional resuscitation equipment to the participants, these includes self-inflating bag (67 %,) newborn face mask (92 %) and bulb or penguin sucker (82%) respectively, hence an indication of resuscitation preparedness. KQoC established availability of suction bulb at 26% and suction machine at 71% in the participating health facilities, (KQoC, 2010).

According to Russel et al, Microbial contamination is minimized by reducing the number of people permitted into an area and by defining the activities that take place there (Russel et al, 1982). Regulating the flow of visitors, patients and staff plays a central role in preventing disease transmission in health care facilities. Presence of birth companions for the mothers admitted in RMBH is encouraged to offer company, support, and encouragement during labour and to encourage mothers to breastfeed and keep neonate warm.

Because the number of microorganisms in a designated area tends to be related to the number of people present and their activity, microbial contamination is expected. The study provides an indication that mothers in labour receive great support during labour due to presence of birth companions, each mother had an was an average of one birth companion. Immediately following the delivery of the newborn, the birth attendant focuses mostly on the mother who is cleaned and taken care of so that she gets a chance to rest, and mostly after completion of cleaning and caring for the mother is the newborn taken care of, often placed next to the mother in bed. Performance of inappropriate newborn practices are a common practice in most hospital settings during delivery, the current study is no exception as provision of heat source during delivery at 46.2%(33), head not properly dried at 23.1%(3) and placement on a cold surface at 3.9% respectively. KQoC established harmful practices that were carried out in various health facilities such as slapping the neonate (2%), holding the neonate upside down (7%), compared to a study done in Ethiopia that identified slapping the neonate and holding the neonate upside down at 12% and 22% respectively(QoC,2011). According to Sobel et al in a study carried out in Philippines, unsuitable interventions such as early bathing, non-immediate drying, placement on a cold surface and transfer to a nursery were observed. (Sobel et al., 2011).

Conclusion

This study provides the baseline data about the quality of care received by the neonates immediately after birth which will help the policy makers and health professionals to plan for strategies where the quality of care is not satisfactory. Study findings highlight the fact that quality of care was good in areas such as preparation of towels and closure of windows before a delivery, support during initiation of breastfeeding, administration of Vitamin K and eye prophylaxis, but it was poor in relation to skin to skin care, hand washing and availability of heat source. There is no data available regarding the infection arising from the lack of care immediately after the delivery, since mothers get discharged within few hours after delivery due to high turnover of patients admitted for delivery, treatment (Antenatal and postnatal) as well as mothers whose neonates are admitted in Newborn Unit.

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