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Improving Neonatal Care at Discharge from Hospitals Could Reduce Neonatal Deaths: The Quality of Newborn Care During Hospital Discharge by Midwives in Swaziland

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ABSTRACT

Introduction: Newborns continue to die during the first 24 hours post-childbirth. Newborns dies from known causes including birth asphyxia, infections and preterm. In Swaziland, 88% of all births occur in hospitals, 87.7% are assisted by skilled birth attendants and 86% of all neonates receive health check immediately after delivery. However, neonatal mortality rate is on the increasing trend. The purpose of this study was to determine the quality of newborn care by midwives in Swaziland within first hour after birth. **Methods**: A quantitative descriptive cross-sectional design study was used. Data collection was done using structured questionnaires. Eighty eight (88) midwives participated in the study. Descriptive data analysis was conducted using IBM SPSS Statistics version 22.0 software. **Results**: All the midwives had the relevant qualification; 70.5% were state certified midwives with a second registered certificate in midwifery, 27.3% had bachelor's degrees, while 2.3% had Advanced Midwifery certificate. A total of 85.2% and 74% conducted APGAR and physical assessment. However, serious gaps were identified in the quality of care rendered to newborns during the first hour of life. About 58.0% (n=51) of respondents were not offering temperature conservation techniques, 64.8% did not consider drying and covering of the newborn with warm clothes as lifesaving intervention. Whilst 72.7% of the respondents reported that they counsel mothers on cord care, most midwives did not offer counselling on the dangers of a bleeding umbilical cord (69.3%), newborn refusal to feed (81.8%), fever (61.4%), high respiratory (94.3%) rate and hypothermia (89.8%). **Discussion**: These findings call for urgent attention on the quality of newborn care offered by midwives during the first hour post-childbirth. An improvement in the quality of care during this period could reduce almost 40% of neonatal deaths.

Quick points

- The study generated evidence for on the quality of newborn care during the first hour after childbirth by midwives

- The findings on the quality of newborn care during the immediate postpartum by midwives revealed gaps.

- The gaps revealed by the study findings call for urgent attention on the competencies of midwives and the provision of quality newborn care in Swaziland.

- The study recommends adaptation of international evidence-based best practice guidelines and conceptual framework to improve the quality of care during the immediate postpartum period.

INTRODUCTION

Much has been done in reducing newborn deaths, however, about 2.9 million newborn babies continue to die and 2.6 million babies are stillborn every year across the globe[1]. A significant number (75%) of these deaths occur in South Asia and sub-Saharan Africa. About 40% of all neonatal deaths and stillbirths occur at the time of labor and the first 24 hours post-childbirth [2]. In addition, the first seven days or 168 hours of newborn period accounts for 75% of all neonatal deaths, with 1 million babies dying on the day they are born worldwide. However, there has been minimal investment and focus on newborns compared with the burden [3]. The world knows the causes of newborn deaths and has the medical sciences and experts to reduce and or at least prevent neonatal deaths.

There is inconsistent action in as far as newborn death reduction at national level across countries, particularly in developing countries. Africa has the highest neonatal mortality rates and the slowest progress towards neonatal reduction. In Swaziland, where about 88% of all births are delivered in a health facility and about 87.7% are conducted by skilled birth attendants (doctors, nurse & midwives), neonatal mortality rates is on the increasing trend from 19 in 2007 to 20 in 2014[4]. Mothers with normal vaginal deliveries with no obstetric complications that take place in health facilities are to be encouraged to stay in the health facilities for at least first hour after delivery. This is not only to ensure that mothers and newborns receive quality immediate postnatal care, but also to ensure early identification and

management of postpartum complications [5]. In the Kingdom of Swaziland, a total of 90% of women who gave birth in a health facility stay 12 hours or more in the facility after delivery; 86% of newborns receive a health check following birth while in a health facility[4]. Considering the fact that 40% of neonatal deaths occur during the day of birth, and 88% of deliveries occurring in hospitals by skilled birth attendants and the increased neonatal mortality rates in Swaziland; the quality of care rendered to newborns during this time is controversial. If much investment or focus on the first 24 hours post-childbirth could be increased, more newborn deaths could be prevented and or reduced.

MATERIALS AND METHODS

Design

The present study utilized a quantitative cross-sectional design to investigate the quality of newborn care offered during the first 24 hours post-childbirth by midwives in Swaziland.

Sample

A simple random sampling approach was used to select the study sites. The researcher established a sampling frame and the elements of this sampling frame were the all the 11 maternities, which were numbered to facilitate random selection. A table of random numbers was used to select the study sample. The result of this exercise was the selection of a total of six maternities across the country. Regarding the sampling of the respondents, a systematic random sampling technique was used to select respondents of the study. There were 114 midwives in the study sites and the desired sample size for the study was 88, based on table of minimum sample size for quantitative studies. The level of statistical significance for the sampling of respondents was set at $p < 0.05$. This sample size was representative of the midwifery population in maternity units and results could be generalized back to the midwifery population in maternity units in Swaziland.

Data collection, management and analysis

Data were collected using structured questionnaires, which contained open-ended questions at the end. Face-to-face structured interviews were conducted between January 2014 and June 2014 in the selected study sites. Collected data were securely kept in a locked cupboard and only accessible to the research team. Trained research assistants captured data into the

computer. Captured data were exported and analyzed using IBM SPSS Statistics, version 22.0. Descriptive and inferential statistics were the two approaches to data analysis used in the study.

Ethical considerations

The Swaziland Ethics Review Board from the Ministry of Health in Swaziland and the University of South Africa Higher Degrees Committee of the Department of Health Studies approved the protocol. Lastly, the participants who took part in the study; their consent was sought verbally and written before each interview. The researchers adhered to all ethical issues related to human research.

RESULTS

Characteristics of midwives

A majority (43.2%, n=38) of the respondents were within the age range of 30–39 years, 33.0% (n=29) were in the range of 29 years and below, and 19.3% (n=17) in the range of 40–49 years. About 4.5% (n=4) of the respondents were 50 years and above. This means that a majority of the workforce in these facilities was within the productive age. All respondents were licensed to practice midwifery in Swaziland, 67.0% (n=62) had a Post-graduate Diploma in Midwifery qualification, 27.3% (n=24) had a Bachelor's degree with midwifery speciality, and only 2.3% (n=2) had Advanced Midwifery Certificate (higher qualification midwifery in the country). Of the 88 respondents, 31.8% (n=28) had more than 6 years of experience of midwifery practice, 27.3% (n=24) had 2-4 years, 19.3% (n=17) had 4-6 years and 21.6% (n=19) had 0-2 years of experience.

Immediate newborn care within 1 hour post-delivery

The health of mothers undoubtedly has an influence on the well-being of their newborns, and this is particularly the case for mothers living with HIV. In other words, the chances for neonates to survive can be determined by the physical well-being of their mothers. While this is the case, the well-being of neonates and their survival can also be influenced by the care offered by midwives shortly after delivery.

Activity, pulse rate, grimace, appearance and respiration (APGAR) assessment

Midwives are required to conduct APGAR assessments on neonates immediately after delivery. This involves assessment of activity (muscle tone), pulse rate, grimace (reflex irritability), appearance (skin colour) and respirations, to ascertain newborns' adaptation to the extra-uterine environment. About 85.2% (n=75) of respondents recognized that the APGAR assessment is a critical intervention that should be offered to newborns. However, 14.8% (n=13) of the midwives showed limited knowledge of this intervention.

Breathing initiation support

Breathing allows blood to be pumped to the lungs to help with the exchange of oxygen and carbon dioxide. Air often moves into the lungs of the neonate for the first time after delivery, and midwives need to support this process of initial breathing of newborns. About 55.7% (n=49) of respondents mentioned that supporting the neonates in the initial process of breathing is a lifesaving intervention. However, a large number of respondents (44.3%, n=39) did not seem to agree with this view, as they failed to indicate or mention the lifesaving role of offering breathing support to neonates during the interviews.

Temperature conservation: skin-to-skin and drying the neonate

The change of environment for neonates, from the warm intrauterine life to extra-uterine life, exposes the neonates to the risk of hypothermia. Approximately, 42.0% (n=37) of the respondents mentioned that placing the baby, in contact with the mother's abdomen immediately after delivery is a lifesaving intervention, respondents asserted that it helps babies to conserve heat. The majority of respondents (58.0%, n=51), however, did not report that such an intervention helps neonates to conserve heat.

Another intervention that helps babies to conserve heat after delivery is 'drying of the baby and covering the same with warm clothes'. However, in this study, the majority of the respondents (64.8%, n=57) did not consider this intervention important for heat conservation (see figure 1).

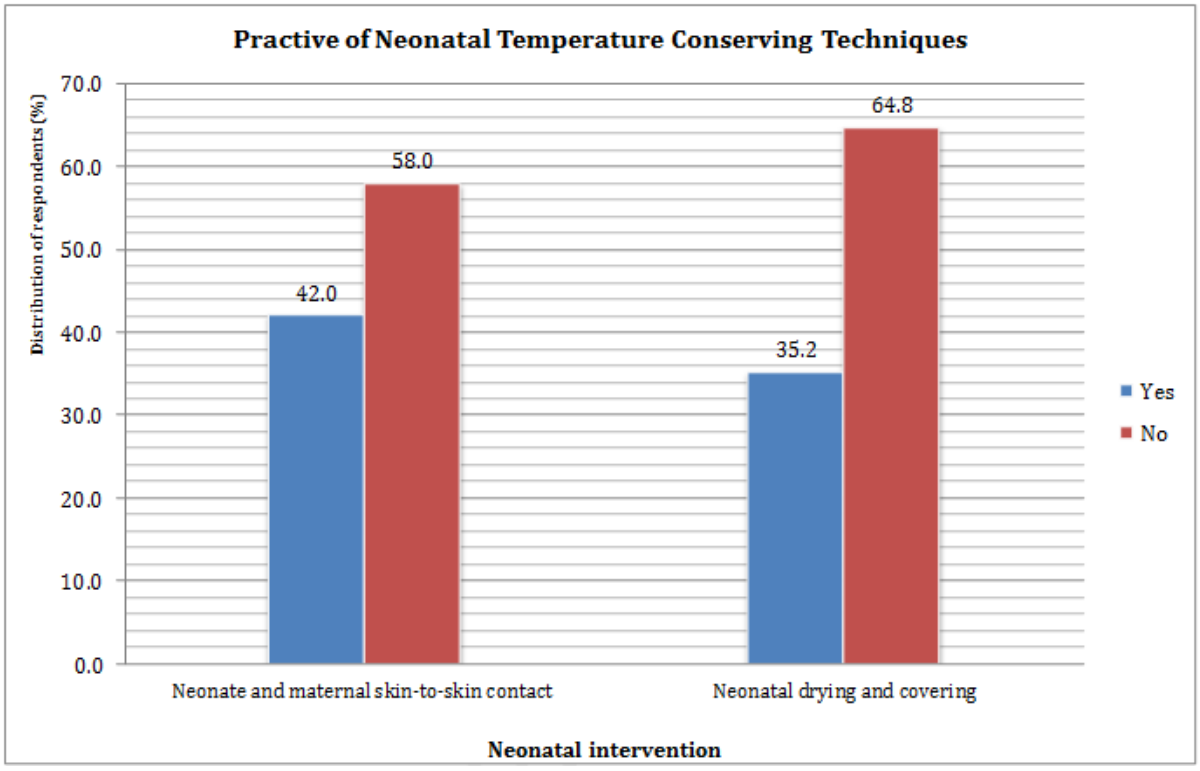

Figure 1: The practice of skin-to-skin contact and drying of neonates

Neonatal physical examination

Claims are made in the literature that there is always a need to conduct a physical examination on newborns immediately after childbirth. This is because conducting physical assessments on neonates shortly after birth would enable midwives to identify and treat life-threatening conditions, such as birth asphyxia. While 74% (n=65) of the respondents agreed with this assertion, 26.0% (n=23) were not in favour of this view. This indicates the majority of respondents were more likely to physically assess the neonates, and thus, they might have prevented at least some life-threatening conditions.

Prophylaxis provision

As part of best midwifery practice, infants should be given tetracycline eye ointment and a vitamin K 0.5-milligram injection irrespective of their HIV-exposure status. All babies born from HIV-positive mothers should be given, as part of best midwifery practice, infant nevirapine (I-NVP) prophylaxis immediately after delivery. The majority of respondents (86.4%, n=76) mentioned that newborns were to be provided with eye ointment prophylaxis, but 13.6% (n=12) of the respondents did not mention this at interviews. It was stipulated by

the majority of respondents (81.8%, n=72) that vitamin K should be administered to infants immediately after delivery. However, about 18.2% of the respondents did not support this intervention, namely administration of vitamin K to infants immediately after delivery. Respondents emphasised that failing to offer vitamin K to infants would put them at risk of bleeding to death even when delivered by professionals. The literature is clear about the need to initiate infant nevirapine prophylaxis to HIV-exposed infants prophylaxis immediately after delivery. About 60.2% of respondents agreed with this, while 39.8% (n=35) did not support this view.

Immediate postnatal care counselling within 1 hour after childbirth

Apart from the provision of physical treatment and care, the provision of psychological support, such as counselling (on areas like personal hygiene, cord care, newborn danger signs, infant feeding and maternal danger signs) was considered by respondents as an important intervention for mothers in the postnatal phase. The majority of respondents (79.5%, n=70) offered counselling to mothers on personal hygiene and encouraged the use of saline sitz baths. However, 20.5% (n=18) of respondents did not value the importance of providing information on how to maintain good hygiene and using saline sitz baths. It was noted in this study that counselling on cord care was an essential service for mothers during the immediate postnatal period in preventing postpartum infections. While 72.7% (n=64) of respondents agreed with this, 27.3% (n=18) did not believe that mothers should be counselled on cord care during the PNC period; as such some newborns were put in risk of developing infection of the cord stump (see figure 2).

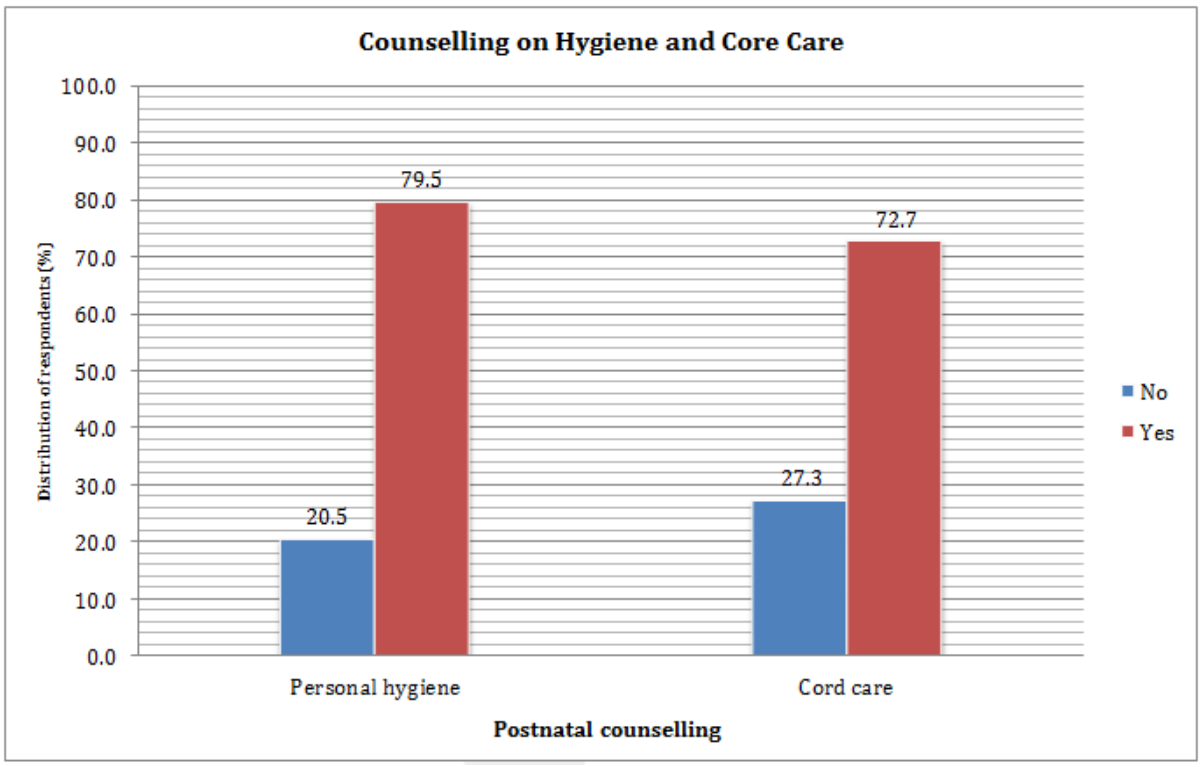

Figure 2. Midwives' counselling practice on personal hygiene and cord care

Newborn danger signs

Newborns usually die from occurrences, such as hypothermia, fever and umbilical cord bleeding. The majority of the respondents (89%, n=79) failed to provide information on hypothermia. Added to this, 94.3% (n=83) of the respondents also failed to provide information on indications of high neonatal respiratory rate. An increase in temperature of newborns immediately after delivery could indicate infection. Urgent interventions are needed in such instances if the lives of newborns are to be saved. Respondents emphasised the need to teach mothers to take note of changes in temperature of their babies. However, 61.4% (n=54) of the respondents did not report that they taught the women how to take note or monitor this danger sign. Newborns' refusal to feed during the first few hours after delivery could have detrimental effects on their lives. Such effects could include hypoglycemia. About 81.8% (n=72) of respondents reported that they had not offered information to mothers on the dangers on neonatal refusal to feed.

Any form of bleeding of newborns could be fatal. Therefore, midwives should advise mothers or provide them with information on the need to prevent bleeding as much as possible. Despite this, about 69.3% (n=61) of respondents reported that they did not provide

information on this matter. This suggests that only a small number of respondents (30.7%) provided such information (see figure 3).

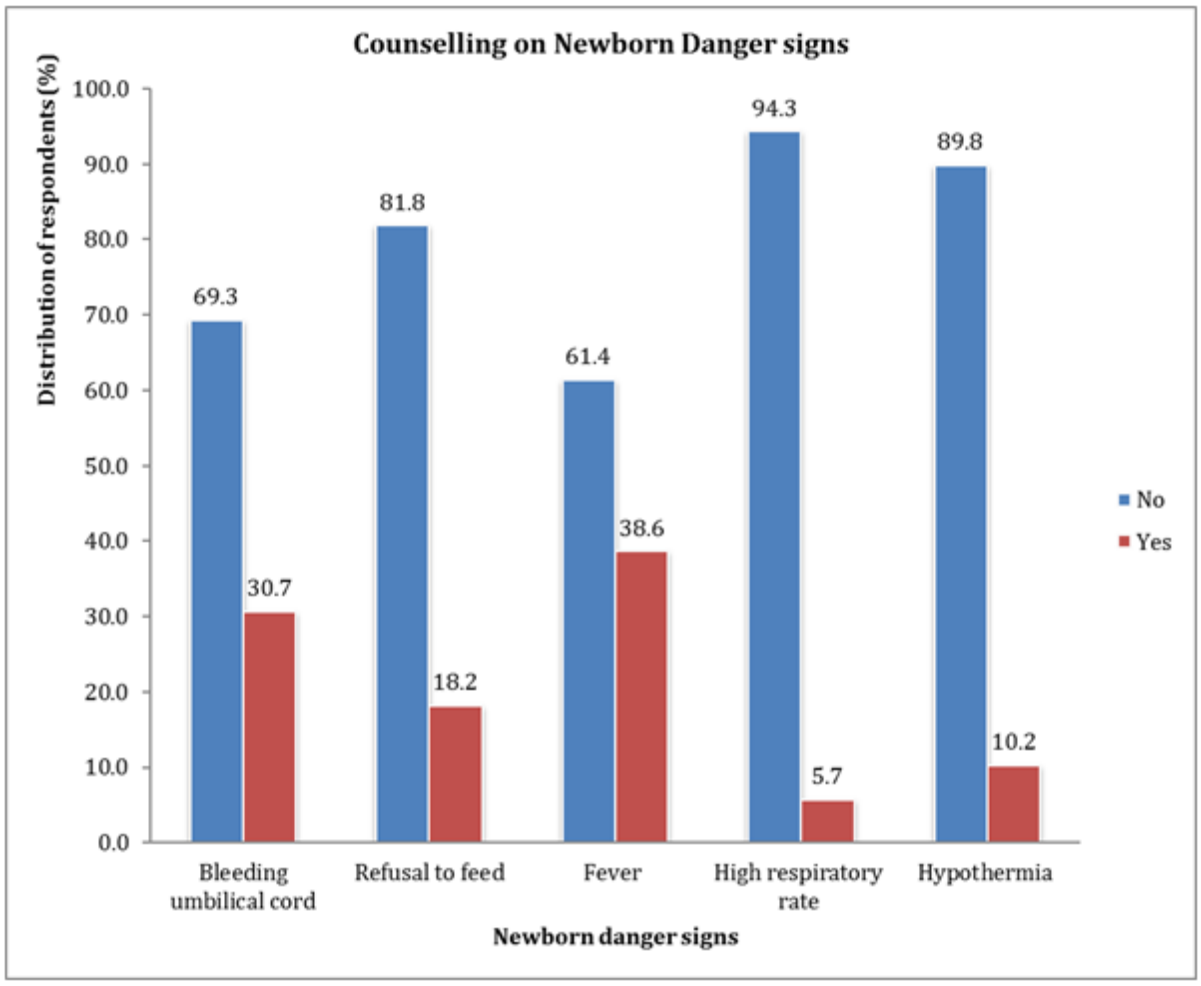

Figure 3: Proportions of information provided on infants' danger signs

Infant feeding

There was agreement among some respondents on the role of midwives in promoting adherence to medication among mothers. They emphasised that it is the responsibility of midwives to ensure that mothers adhere to their medication. The majority of respondents (87.5%, n=77) counselled HIV-positive mothers on the importance of taking their medication. Only 12.5% (n=11) of respondents failed to do so. Respondents reiterated that midwives are required to advocate for exclusive breastfeeding of infants for the first six months of life. Approximately 60.2% (n=58) of respondents reported providing information to mothers on infant feeding choices: exclusive breastfeeding or exclusive replacement

feeding. This implies that 38.6% (n=30) of respondents did not give any information on infant feeding to mothers.

DISCUSSIONS

Didactic training alone cannot generate clinical expertise in midwifery [6]. This suggests that other forms or approaches to teaching and learning are needed to compliment the didactic styles frequently used in the Kingdom of Swaziland. It is for this reason that midwifery is a practice-based profession, and its training requires student midwives to acquire clinical experience. The acquisition of clinical experience and theoretical knowledge in the classroom enables the student midwives on registration to be fit for purpose, practice and award. Although this is the case, it is stated that clinical judgment and the provision of quality care by midwives could also develop when these practitioners begin to test and refine both theoretical and practical knowledge in actual clinical situations under the supervision of mentors [6]. All the respondents in this study had the requisite training and experience in midwifery and had the acquired relevant qualifications.

Newborns end their dependency on the placenta for oxygen and nutrition immediately after birth [7]. Therefore, the availability and timely provision of quality interventions by midwives during the first hour post-child-birth is vital, as the newborns are completely dependent on others for feeding, warmth and comfort [8]. The immediate postpartum period is a time of vital physiological adaptation of the newborn. The newborn has to adapt from being completely dependent on the mother for life-sustaining oxygen and nutrients to an independent being. One important tool by which to assess this adaptation process is the use of the APGAR score test [9]. Thus, in addition to the principles of newborn adaptation to extra-uterine life [10], midwives are required to have the knowledge and/or understanding of elements of assessment of the newborn (including the APGAR scoring system). The APGAR score test comprises 5 components: pulse (heart) rate, respiratory effort, activity (muscle tone), reflex irritability, and appearance (colour). APGAR score test has since become the global standardized assessment tool to assess adaptation of infants after delivery [8][10]. Despite this, 14.8% of the respondents of this study did not report that they routinely conduct the APGAR score assessment to babies immediately after delivery. This gap in midwives' practices could be contributing to the increasing neonatal mortality rate in Swaziland. Midwives' failure to render this vital assessment may result in delayed interventions, for example, to initiate breathing in newborns.

Birth asphyxia is largely invisible in health policy and programmes and receives limited programmatic or research funding internationally [11]. Midwives should have the skill and ability to provide emergency measures for respiratory distress or birth asphyxia[7]. If a country is to attain a reduction in child mortality, midwives should ensure that neonatal breathing is initiated immediately after birth to prevent not only neonatal deaths but also neurologic disorders [7][5]. A simple stroke on the neonate skin can help initiate breathing [10]. The present study revealed that 44.3% of the respondents did not report that this is an integral part of the immediate newborn care. This could be one of the contributing factors to the high neonatal mortality rate in Swaziland. Hypothermia at birth is one of the important risk factors for morbidity and mortality in newborns of all birth weights and gestational ages, because of their immature thermoregulatory system[12]. Therefore, hypothermia needs to be prevented at birth, and the strategies for preventing hypothermia. The temperature conservation strategies can assist the neonate to conserve heat, such strategies can help reduce neonatal mortality and morbidity by 25%[12]. Midwives are one of the skilled professionals who are expected to have the knowledge and ability to ensure and maintain normal newborn body temperature [7]. However, this study revealed that 64.8% of the respondents did not mention that placing the baby shortly after delivery on the mother's abdomen is a lifesaving intervention. In addition, 58.0% of the respondents did not report that drying and covering the baby with a warm cloth is a key intervention for enabling neonates to conserve heat. One could, therefore, argue that some midwives in the Kingdom of Swaziland are probably not putting into practice these lifesaving strategies.

It is the professional responsibility of the Kingdom of Swaziland's midwives to provide prophylactic eye treatment to infants immediately after birth. The Ministry of Health of the Kingdom of Swaziland states that all newborns – regardless of HIV-exposure status – are to be provided with 1% tetracycline eye ointment and vitamin K 0.5 milligram. In addition, all HIV-exposed newborns are also to be provided with I-NVP prophylaxis immediately after delivery[13]. This is because babies are exposed to the risk of infections when passing through the birth canals of mothers, particularly in instances when the same are infected [14]. However, the present study revealed that 13.6% of the respondents did not mention that newborns are to be provided with prophylactic eye ointment. This suggests a different approach to prophylactic treatment of the eyes of the newborns among midwives of the study sites.

The prevention of mother to child transmission (PMTCT) of HIV is one of the key functions of midwives, and this is particularly the case in countries with high incidence and prevalence of HIV/AIDS[15]. It is for this reason that it is recommended that all neonates of HIV-positive mothers to be provided with I-NVP from birth to about 6 weeks if not breastfeeding. But if breastfeeding, the World Health Organization recommends for neonates to be offered I-NVP up to about a week after exposure to breast milk [15]. The Ministry of Health in Swaziland adopted these recommendations because of the efficacy of I-NVP in contributing to the prevention of MTCT of HIV [13]. Despite the positive outcomes of I-NVP use, about 39.8% of midwives in this study did not report that they gave this prophylaxis to newborns immediately after delivery. This is a worrying practice, and it explains the reason for the continuing increase in HIV among infants in the Kingdom of Swaziland.

It is worth reiterating that midwives are expected to provide counseling to mothers during the postnatal stage to enable the latter to understand their new roles. Evidence shows that sepsis accounts for 28% of all neonatal deaths globally [16]. The cord stump is considered a hotspot for the development of infections [17]. Hence, good care of the cord stump is essential for the prevention of infections, and reduction of infant mortality incidence. It is therefore critical for midwives to offer counseling to mothers during the immediate postnatal stage on care of the cord stump. A very good proportion of respondents of this study (72.7%) did not believe that counseling on a subject of this nature is important and essential for mothers in the PNC period. However, 27.3% of the respondents noted that they have offered such counselling to mothers during this period.

The continent of Africa is considered a high risk of maternal mortality, as about 62% of women die of pregnancy-related causes [18]. Each day, approximately 7,700 newborns die of complications related to pregnancy and childbirth [11]. Most newborns die of recognisable signs and symptoms such as birth asphyxia[18]. Exposure to extra-uterine environment puts the neonates at risk of hypothermia. Mothers are to be informed of the importance of keeping their babies warm. About 89% of the midwives who participated in the study did not report that they routinely rendered counselling to mothers on hypothermia. This is a concern, and such practice is not consistent with the best practice guidance for PNC and midwives as prescribed by the ICM and the WHO.

Respiratory distress in newborns is a clinically challenging problem, as it accounts for about 4–6% of newborn mortality [19]. Given that respiratory distress can be prevented, early

identification of its sign (high respiratory rate) and timely management of the same can save the lives of neonates [19]. Swaziland has a high neonatal mortality rate of 20 per 1000 live births [4]. Although this is the case, a significant proportion of the respondents (94.3%) did not routinely offer counselling on high neonatal respiratory rate to mothers in the postnatal period. This is worrying given that high respiratory rates account for 4-6% of neonatal mortality in the world [19].

Counselling mothers on the diagnosis and management of fever of neonates is useful for the prevention of neonatal mortality of this population. It is therefore advisable for midwives to encourage mothers during counselling to report to health care providers any signs of fever their babies may be experiencing. About 61.4% of respondents of this study did not report that they counselled mothers on how to manage fever of neonates if indicated. This could mean that they either forget to indicate this during the interviews or they have never talked about fever to mothers, including its management and implications on neonates. Respiratory illnesses, such as pneumonia and bronchiolitis are often associated with fever [9]. Exposure to these illnesses may result in fatal outcomes of neonates.

Neonates' refusal to feed could result in hypoglycaemia. Glucose is the main energy source for neonates. Given that glucose regulatory mechanisms are sluggish in neonates, these newborns are considered susceptible to hypoglycaemia, particularly when glucose demands are increased or when exogenous or endogenous supply of the same is limited. Severe or prolonged hypoglycaemia may result in long-term neurologic damage [10][3]. Therefore, newborns who refuse to feed are to be attended to in a timely manner in order to prevent life-threatening physiological risks. Mothers, therefore, need to be provided with knowledge and skills on how to attend to neonates who are reluctant to eat by midwives during the immediate PNC period [7]. The majority (81.8%) of respondents of this study reported that they did not provide information to mothers on neonates' refusal to feed, and the implications of this. This is a reflection of poor midwives' practice in Swaziland.

Early initiation of breastfeeding has many benefits for the survival of neonates. It helps with motor development of the neonates[20]. Early initiation of breastfeeding prevents neonatal and infant deaths largely by reducing the risk of infectious diseases [20]. Colostrum contains large numbers of protective factors that provide passive and active protection of neonates from a wide variety of known pathogens, and thus prevents neonatal mortality. It also protects the immunologic barriers in the infant's gut from contaminants or allergenic

substances in infant formula or food. Acknowledging this, midwives are required to provide information to mothers on infant feeding, including its benefits [7]. This study revealed that 38.6% of the respondents reported that they were not offering counselling to mothers on infant feeding. Although the number of respondents who offered counselling in this context was significant (over 60%), more needs to be done to promote exclusive breastfeeding given its benefits.

CONCLUSIONS

The findings on the quality of newborn care during the immediate postpartum by midwives revealed gaps. The gaps revealed by the study findings call for urgent attention on the competencies of midwives and the provision of quality newborn care in Swaziland. Strategic inventions need to be undertaken; such as capacity building of in-services midwives, strengthen midwifery education and implement evidence-based guidelines.

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