

Original article

Nurses' Knowledge regarding Immediate Care of Newborns in the Saudi Hospital for Obstetrics and Gynecology, Sudan

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Abstract

The first moments of a newborn's life are crucial, as immediate care ensures survival and sets the foundation for future health. Steps like clearing the airway, maintaining warmth, and initiating breastfeeding play a vital role in stabilizing the baby and promoting bonding. This essential care not only supports physical well-being but also nurtures emotional connection, laying the groundwork for a thriving life. This was a descriptive cross-sectional hospital-based study conducted in the Saudi Hospital for Obstetrics and Gynecology in Kasala city in December 2024, to assess nurses' knowledge regarding immediate nursing care of newborns. Data were collected using a questionnaire and analyzed using the Statistical Package for the Social Sciences (SPSS) version 22. Most respondents were aged between 20 and 30 years, with females constituting 75% of the sample. A majority of participants have less than five years of experience, and most of them hold a bachelor's degree. More than half received specialized training in neonatal care. According to the understanding of neonatal norms, the majority of nurses identified an Apgar score of 7-10 as normal. Most respondents identified correctly the normal range of newborn body temperature and emphasized immediate skin-to-skin contact. (52, 1%) recognized colostrum's role in boosting immunity. The statistical analysis showed that the only factor significantly linked to higher knowledge scores ($p=0.032$) was receiving specialized training. Heavy workload is cited as a key challenge faced by nurses in providing immediate nursing care. In contrast, the most critical knowledge gaps were concentrated in emergency resuscitation procedures, managing a non-breathing newborn, followed by poor knowledge of the chest compression-to-breathing ratio during newborn CPR. The results also revealed a gap in knowledge of the latest protocols regarding delayed cord clamping. This knowledge gap highlights an urgent need for targeted training.

Keywords: Immediate Care of Newborn, Nurses' Knowledge, Nursing Care.

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Introduction

Quality of nursing care and competent health care providers, particularly skilled birth attendants, are essential requirements for providing care for both mothers and newborns. The current study aimed to assess the quality of nursing care provided immediately after birth to newborns by nurses [1]. The care given to newborns immediately within the first few hours of birth is critical for their survival. However, the ability of the healthcare provider to provide suitable infant care interventions is what will determine their survival [2]. In 2023, the World Health Organization reported that the neonatal mortality rate was 19 per 1000 live births globally (2.3 million), and neonates die in the first four weeks after birth [3].

Infant mortality rates can be significantly decreased with appropriate guidelines for initial newborn care, especially in developing countries. Nurses and midwives perform a rapid physical examination of the newborn's status in the delivery room as part of the immediate newborn care that follows birth. The newborn's health is assessed using the APGAR assessment, a scoring system, within the first minute following birth [4], assessing vital signs and appearance [4]. Breastfeeding is critical to promote maternal and child health. Kangaroo mother care, "a type of newborn care involving skin-to-skin contact with the mother, reduces mortality in infants with low birth weight (<2.0 kg) when initiated after stabilization, but the majority of deaths occur before stabilization [5]. To give neonates the greatest care possible, nurses and midwives need to be knowledgeable about proper heat protection, airway clearance, and physical examinations [4]. Within one minute of birth, the normal newborn adapts from a dependent, fatal existence to an independent one, capable of breathing and carrying on the life process. The first hours are crucial because multiple organ systems are making the transition to extruterine functions. The care given immediately after birth is simple but important [6].

Immediate newborn care interventions provided by midwives and nurses within 48 h of birth are invaluable in the reduction of neonatal morbidity and mortality [7]. This study was conducted to assess Nurses' knowledge regarding nursing care for the immediate newborn.

Methodology

Study Design and Settings

A descriptive cross-sectional hospital-based study was conducted to assess nurses' knowledge regarding the immediate care of newborns. The study was conducted in the Saudi Hospital for Obstetrics and Gynecology in Kasala city, located in eastern Sudan. All Nurses provided nursing care in the hospital and were available during the period of the study in December 2024.

Data Collection Tools

Data were collected using a questionnaire modified from the WHO and other relevant publications [2,9]. The researchers developed a two-part questionnaire covering socio-demographic characteristics and knowledge regarding immediate newborn care. Three qualified professionals verified the validity of the instrument, and their comments were taken into consideration; modifications were performed accordingly. Data was analyzed using the Statistical Package for Social Science (SPSS), descriptive statistics such as frequency, percentages, average, and gap analysis were done, and significant tests, Fisher's Exact, were used. A P value of < 0.05 will be considered statistically significant.

Ethical consideration

Ethical clearance from the ethical approval committee, University of Al-Butana. Official letters to the Kassala teaching hospital manager and the medical director. Verbal consent from Nurses who participate in this study.

Results

Table 1 shows that the majority of nurses' ages ranged between 20 - 30 years, followed by (12.5%) their ages ranged between 31-40 years, and most of them were female, 75.0%. 64.6% held bachelor's degrees; 75% of them had less than 5 years.

Table 1: Demographic Data (No. 48)

Age (Years)	Frequency	Percentage
20-30 years	41	85.4
31-40 years	6	12.5
40-50 years	1	2.1
Gender		
Male	12	25.0
Female	36	75.0
Qualification		
Diploma in nursing	14	29.2
Bachelors in nursing	31	64.6
Postgraduate studies	3	6.3
Years of experience		
Less than 5 years	36	75
5- 10	11	22.92
More than 10	1	2.08
Received specialized training in neonatal care		
Yes	30	62.5
No	18	37.5

Nurses' knowledge regarding APGAR Score (85.4%) of them correctly identified 7-10 as the normal range for a healthy newborn. Thermal Regulation: (91.6%) identified the correct method (wrapping the newborn and using a

warm blanket). Initiation of Breastfeeding: (91.7%) knew it should begin within one hour of birth. Airway Clearing Timing: (89.6%) was correctly identified immediately after birth. Skin-to-Skin Contact: 81.3% knew to begin immediately after birth. Vital Signs Monitoring: (6.3%) identified the correct frequency (every hour). In emergency neonatal resuscitation knowledge, Initial Action for a Non-Breathing Newborn: Only 20.8% identified the correct first step (Provide positive pressure ventilation). This was the lowest score. CPR Compression-to-Breath Ratio: Only 10.42% knew the correct ratio. Delayed Cord Clamping Benefit: Only (58.3%) knew its primary benefit is "Reducing the risk of anemia. Umbilical Cord Care: A majority (64.6%) believed that no substance is needed. Primary Benefit of Colostrum: (52.08%) correctly identified. Boosting immunity, a significant portion 31.25% of nurses said that the Heavy workload is the main challenge they faced in providing newborn care.

Table 2: Assessment of Nurses' Knowledge regarding Immediate Care of Newborn (No. 48)

Items	Frequency	Percentage
1- What is the normal APGAR score for a healthy newborn?		
0-3	2	4.2
4-6	5	10.4
7-10	41	85.4
2-What time frame should a newborn's airway be cleared (if needed)?		
Immediately after birth	43	89.6
Within 1minute	5	10.4
3-What is the range of normal body temperature for a newborn?		
35-36	10	20.8
36.5 - 37.5	37	77.1
38-39	1	2.1
4-What is the importance of delaying umbilical cord clamping?		
Reducing the risk of anemia	28	58.3
Increase the infection risk	16	33.3
Preventing Jaundice	4	8.4
5-What are the essential steps in assessing a newborn immediately after birth?		
Check Breathing	31	64.6
Measure Heart Rate	5	10.4
Weight Newborn and Observe Reflexes	12	25
6-How often should the newborn's vital signs be measured during the first hours after birth?		
Every 15 minutes	37	77.1
Every 30 minutes	8	16.7
Every Hour	3	6.3
7-When should kangaroo mother care (skin-to-skin contact) begin?		
Immediately after birth	39	81.3
After cleaning the newborn	5	10.4
After the first breastfeeding	4	8.3
8-What is the correct method to ensure thermal regulation for the newborn?		
Using an incubator	4	8.3
Wrapping the newborn and using a warm blanket	44	91.6
9-What substance should be applied to the newborn's umbilical cord to prevent infection?		
Alcohol	10	20.8
Chlorhexidine	7	14.6
No substance is needed	31	64.6

10-What is the action to take if the newborn does not breathe after birth, even with warmth, a clear airway, and rub back?		
Start chest compression	23	47.92
Provide positive pressure ventilation	10	20.83
Immediately give oxygen	15	31.25
11- Which is the recommended chest compression to breathing rate during newborn CPR?		
1-3	17	35.42
2-15	26	54.17
2-30	5	10.42
12- When should breastfeeding begin after birth?		
Within one hour	44	91.67
After 3 hours	1	2.04
After 6 hours	3	6.2
13- What are the benefits of colostrum for the newborn?		
Boosting immunity	25	52.08
Improving digestion	12	25
Preventing jaundice	11	22.92
What are the challenges you faced in providing newborn care?		
Lack of equipment	22	45.83
Insufficient training	11	22.92
Heavy workload	15	31.25
Total	48	100%

Discussion

This was A descriptive cross-sectional hospital-based study conducted in the Saudi Hospital for Obstetrics and Gynecology in Kasala city, in December 2024 to assess nursing knowledge regarding the immediate care of newborns. The study sample consisted of 48 nurses (25%) male and (75%), (85.4%) of whom were in the (18-30) years of age category. (64.6%) of them held a bachelor's degree (62.5%), of nurses received specialized training in neonatal care and (75%), and of them had less than five years of experience. The results revealed that the nurses have a moderate level of knowledge (64.4%) on immediate newborn care. This result is similar to the findings in Northwestern Tigray (64.8%) [8] and Jimma (66.4%) [9], but lower than eastern Tigray (75%) [10]. The level of nurses' knowledge in this study is slightly higher compared to studies in Addis Ababa (51%) [11]. and Bahir Dar city (56%) [12], Uganda (47%) [13], and in India (40%) [14]. and 41% [15].

According to the understanding of neonatal norms, 85.4% identified an Apgar score of 7–10 as normal, consistent with studies indicating a high level of knowledge about this critical assessment among trained professionals [16]. The study results also showed a gap in knowledge of the latest protocols regarding delayed cord clamping (41.7%). This finding is similar to a study that stated that most nurses lack enough expertise in umbilical cord care [17]. Timing of Breastfeeding and Skin-to-Skin Contact showed that the majority (91.7%) recognized the importance of initiating breastfeeding within one hour after birth, aligning with WHO recommendations and findings from prior studies in South Asia 81.3% emphasized immediate skin-to-skin contact, consistent with global efforts to promote early bonding and thermal regulation [18].

The survey results indicate that inadequate equipment (45.8%) and heavy workload (25%) are the most frequently cited key challenges. These findings align with those from other studies conducted in low-resource settings. Addressing these barriers is crucial for improving the quality of neonatal care. The poor nurse's knowledge regarding the compression-to-ventilation ratio question further underscores a systemic lack of standardized training in Neonatal Resuscitation protocols. Nurses' knowledge regarding the Importance of colostrum was (52.08%), recognizing colostrum's role in boosting immunity, which is less than the findings of a study done in Ethiopia, where more people are aware of the value of colostrum [19].

The knowledge gap analysis revealed a clear variation in the level of knowledge across different domains of immediate neonatal care. The results showed notable strength in knowledge related to basic practices, with the highest scores recorded for questions on thermal regulation (91.6%), timing of initiating breastfeeding (91.67%), and timing of clearing the airway (89.6%). The normal APGAR score for a healthy newborn (85.4%).

In contrast, the most critical knowledge gaps were concentrated in emergency resuscitation procedures. The question regarding the initial action for managing a non-breathing newborn (providing positive pressure ventilation) was the weakest by far (20.8% correct answers), followed by poor knowledge of the chest compression-to-breathing ratio during newborn CPR (54.17%). The results also revealed a gap in knowledge of the latest protocols regarding delayed cord clamping (41.7%). This knowledge gap highlights an urgent need for targeted training. The results of the statistical study revealed that the only factor significantly linked to higher knowledge scores ($p=0.032$) was receiving specialized training. This compelling result emphasizes that proficiency in this area requires focused, planned training rather than being passively gained from general education or clinical experience. This finding is supported by the lack of association between knowledge and years of experience, education, or employment, indicating that extended clinical exposure without formal training does not ensure competency in crucial procedures.

Conclusion

Based on the results, the study concluded that while knowledge of routine care is strong, there is a need for urgent training of immediate neonatal care programs focused on neonatal resuscitation protocols, evidence-based practices like delayed cord clamping, and updated umbilical cord care guidelines to improve patient safety outcomes. Implement compulsory training for nurses who provide newborn care, develop and disseminate clear, unified institutional protocols for newborn care, and conduct regular refresher courses and simulation-based training focusing specifically on identified weak areas.

Conflict of interest

The authors confirm that there are no conflicts of interest associated with this study.

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